MITSUBISHI

GRAPHIC OPERATION TERMINAL
GOT

GRAPHIC OPERATION TERMINAL

GOT1000

GOT1000 Series Connection Manual 1/3

MITSUBISHI PLC CONNECTIONS

THIRD PARTY PLC CONNECTIONS

MICROCOMPUTER CONNECTION

MODBUS® CONNECTION

TEMPERATURE CONTROLLER CONNECTIONS

OTHER CONNECTIONS

OTHER FUNCTIONS



● SAFETY PRECAUTIONS ●

(Always read these precautions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product.
In this manual, the safety precautions are ranked as "WARNING" and "CAUTION".

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the ⚠ caution level may lead to a serious accident according to the circumstances.
Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠ WARNING

- Some failures of the GOT, communication unit or cable may keep the outputs on or off.
  An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
  Not doing so can cause an accident due to false output or malfunction.

- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  For bus connection : The CPU becomes faulty and the GOT becomes inoperative.
  For other than bus connection : The GOT becomes inoperative.
  A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur.
  Not doing so can cause an accident due to false output or malfunction.

- Do not use the GOT as the warning device that may cause a serious accident.
  An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.
  Failure to observe this instruction may result in an accident due to incorrect output or malfunction.

[DESIGN PRECAUTIONS]

⚠WARNING

- Incorrect operation of the touch switch(s) may lead to a serious accident if the GOT backlight is gone out.
  When the GOT backlight goes out, the POWER LED flickers (green/orange) and the display section turns black and causes the monitor screen to appear blank, while the input of the touch switch(s) remains active.
  This may confuse an operator in thinking that the GOT is in "screensaver" mode, who then tries to release the GOT from this mode by touching the display section, which may cause a touch switch to operate.
  Note that the following occurs on the GOT when the backlight goes out.
  The POWER LED flickers (green/orange) and the monitor screen appears blank.

- The display section of the GT16 is an analog-resistive type touch panel.
  If you touch the display section simultaneously in 2 points or more, the switch that is located around the center of the touched point, if any, may operate.
  Do not touch the display section in 2 points or more simultaneously.
  Doing so may cause an accident due to incorrect output or malfunction.

- When programs or parameters of the controller (such as a PLC) that is monitored by the GOT are changed, be sure to reset the GOT or shut off the power of the GOT at the same time.
  Not doing so can cause an accident due to false output or malfunction.

⚠CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm apart.
  Not doing so noise can cause a malfunction.

- Do not press the GOT display section with a pointed material as a pen or driver.
  Doing so can result in a damage or failure of the display section.

[MOUNTING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT to/from the panel.
  Not doing so can cause the GOT to fail or malfunction.

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the communication unit, option function board or multi-color display board onto/from the GOT.
  Not doing so can cause the unit to fail or malfunction.

- Before mounting an optional function board or Multi-color display board, wear a static discharge wrist strap to prevent the board from being damaged by static electricity.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Use the GOT in the environment that satisfies the general specifications described in the User's Manual.
  Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT.
- When loading the communication unit or option unit to the GOT (GT16, GT15), fit it to the extension interface of the GOT and tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, failure or malfunction due to the damage of the screws or unit.
- When mounting the multi-color display board onto the GOT (GT15), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
  Loose tightening may cause the unit and/or GOT to malfunction due to poor contact.
  Overtightening may damage the screws, unit and/or GOT; they might malfunction.
- When mounting the option function board onto the GOT (GT16), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
- When mounting an optional function board onto the GOT(GT15), fully connect it to the connector until you hear a click.
- When mounting an optional function board onto the GOT(GT11), fully connect it to the connector.
- When inserting a CF card into the GOT(GT16, GT15, GT11), push it into the CF card interface of GOT until the CF card eject button will pop out.
  Failure to do so may cause a malfunction due to poor contact.
- When inserting/removing a CF card into/from the GOT(GT16, GT15, GT11), turn the CF card access switch off in advance.
  Failure to do so may corrupt data within the CF card.
- When removing a CF card from the GOT, make sure to support the CF card by hand, as it may pop out.
  Failure to do so may cause the CF card to drop from the GOT and break.
- When installing a USB memory to the GOT(GT16), make sure to install the USB memory to the USB interface firmly.
  Failure to do so may cause a malfunction due to poor contact.
- Before removing the USB memory from the GOT(GT16), operate the utility screen for removal.
  After the successful completion dialog box is displayed, remove the memory by hand carefully.
  Failure to do so may cause the USB memory to drop, resulting in a damage or failure of the memory.
- For closing the USB environmental protection cover, fix the cover by pushing the △ mark on the latch firmly to comply with the protective structure.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Remove the protective film of the GOT.
  When the user continues using the GOT with the protective film, the film may not be removed.
- Operate and store the GOT in environments without direct sunlight, high temperature, dust, humidity, and vibrations.
- Use the protective cover for oil when the GOTs (GT16, GT15, GT11 and GT10) are used in the environment with oil or chemicals.
  Not doing so can cause failures or malfunction due to the infiltration of oil or chemicals.

[WIRING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before wiring.
  Failure to do so may result in an electric shock, product damage or malfunctions.

⚠CAUTION

- Please make sure to ground FG terminal and LG terminal and protective ground terminal of the GOT power supply section by applying Class D Grounding (Class 3 Grounding Method) or higher which is used exclusively for the GOT.
  Not doing so may cause an electric shock or malfunction.
- Be sure to tighten any unused terminal screws with a torque of 0.5 to 0.8N•m.
  Failure to do so may cause a short circuit due to contact with a solderless terminal.
- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product.
  Not doing so can cause a fire or failure.
- Tighten the terminal screws of the GOT power supply section in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT. Not doing so can cause a fire, failure or malfunction.
- The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring.
  Do not peel this label during wiring.
  Before starting system operation, be sure to peel this label because of heat dissipation.

[WIRING PRECAUTIONS]

⚠CAUTION

- Plug the bus connection cable by inserting it into the connector of the connected unit until it "clicks". After plugging, check that it has been inserted snugly. Not doing so can cause a malfunction due to a contact fault.
- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.
- Plug the QnA/ACPU/Motion controller (A series) bus connection cable by inserting it into the connector of the connected unit until it "clicks". After plugging, check that it has been inserted snugly. Not doing so can cause a malfunction due to a contact fault.

[TEST OPERATION PRECAUTIONS]

⚠WARNING

- Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method. During test operation, never change the data of the devices which are used to perform significant operation for the system. False output or malfunction can cause an accident.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠WARNING

- When power is on, do not touch the terminals. Doing so can cause an electric shock or malfunction.
- Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Doing so will cause the battery to produce heat, explode, or ignite, resulting in injury and fire.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases. Not switching the power off in all phases can cause a unit failure or malfunction. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- Do not drop or apply strong impact to the unit.
  Doing so may damage the unit.
- Do not drop or give an impact to the battery mounted to the unit.
  Doing so may damage the battery, causing the battery fluid to leak inside the battery.
  If the battery is dropped or given an impact, dispose of it without using.
- Before touching the unit, always touch grounded metal, etc. to discharge static electricity from human body, etc.
  Not doing so can cause the unit to fail or malfunction.
- Replace battery with GT15-BAT(GT16, GT15) or GT11-50BAT(GT11, GT10) by Mitsubishi electric Co. only.
  Use of another battery may present a risk of fire or explosion.
- Dispose of used battery promptly.
  Keep away from children. Do not disassemble and do not dispose of in fire.

[TOUCH PANEL PRECAUTIONS]

⚠CAUTION

- For the analog-resistive film type touch panels, normally the adjustment is not required. However, the difference between a touched position and the object position may occur as the period of use elapses. When any difference between a touched position and the object position occurs, execute the touch panel calibration.
- When any difference between a touched position and the object position occurs, other object may be activated. This may cause an unexpected operation due to incorrect output or malfunction.

[BACKLIGHT REPLACEMENT PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply of the GOT (and the PLC CPU in the case of a bus topology) and remove the GOT from the control panel before replacing the backlight (when using the GOT with the backlight replaceable by the user).
  Not doing so can cause an electric shock.
  Replacing a backlight without removing the GOT from the control panel can cause the backlight or control panel to drop, resulting in an injury.

⚠CAUTION

- Wear gloves for the backlight replacement when using the GOT with the backlight replaceable by the user.
  Not doing so can cause an injury.
- Before replacing a backlight, allow 5 minutes or more after turning off the GOT when using the GOT with the backlight replaceable by the user.
  Not doing so can cause a burn from heat of the backlight.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- When disposing of the product, handle it as industrial waste.
- When disposing of this product, treat it as industrial waste.
  When disposing of batteries, separate them from other wastes according to the local regulations.
  (For details of the battery directive in EU member states, refer to the User's Manual of the GOT to be used.)

[TRANSPORTATION PRECAUTIONS]

⚠CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.
  (For details on models subject to restrictions, refer to the User's Manual for the GOT you are using.)
- Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of the User's Manual, as they are precision devices.
  Failure to do so may cause the unit to fail.
  Check if the unit operates correctly after transportation.

REVISIONS

* The manual number is given on the bottom left of the back cover.

Print Date	* Manual Number	Revision
Oct., 2004	SH(NA)-080532ENG-A	First edition
Mar., 2005	SH(NA)-080532ENG-B	Compatible with GT Designer2 Version2.09K Addition Chapter 5, Chapter 6, Chapter 7, Chapter 8, Chapter 10, Chapter 11, Chapter 12, Chapter 13, Chapter 19, Chapter 20, Chapter 21, Chapter 22, Chapter 23,Section 3.1.8, Section 3.1.9 Section numbers revised Revised throughout the manual due to addition of the new connection types and functions. Partial correction SAFETY PRECAUTIONS, ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, HOW TO READ THIS MANUAL, Chapter 1, Section 1.1, 1.2, 2.1.3, 2.1.5, 2.1.7, 2.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 4.1.7, 4.4.1, 14.1.3, 14.2, 15.3.3, 21.3, 21.4.4, 21.5
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INTRODUCTION

Thank you for choosing Mitsubishi Graphic Operation Terminal (Mitsubishi GOT).
Read this manual and make sure you understand the functions and performance of the GOT thoroughly in advance to ensure correct use.

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The following manuals are also related to this product.
In necessary, order them by quoting the details in the tables below.
Stored in the GT Works2/GT Designer2 in PDF format.

Related Manuals

Manual Name	Manual Number (Model Code)
GT16 User's Manual (Hardware) - Describes the GT16 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. (Sold separately)	SH-080928ENG (1D7MD3)
GT16 User's Manual (Basic Utility) - Describes the GT16 utility-relevant contents, including the screen settings, operation method settings, program/ data management, and self check function. (Sold separately)	SH-080929ENG (1D7MD4)
GT15 User's Manual - Describes the GT15 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT15 functions, including the utility. (Sold separately)	SH-080528ENG (1D7M23)
GT11 User's Manual - Describes the GT11 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT11 functions, including the utility. (Sold separately)	JY997D17501 (09R815)
GT10 User's Manual - Describes the GT10 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT10 functions, including the utility. (Sold separately)	JY997D24701 (09R819)
GT11 Handy GOT User's Manual - Describes the Handy GOT hardware-relevant contents, including the system configurations, specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the Handy GOT functions, including the utility, and how to make cables. (Sold separately)	JY997D20101 JY997D20102 (09R817)
GT SoftGOT1000 Version2 Operating Manual Describes the screen configuration, functions and using method of GT SoftGOT1000. (Sold separately)	SH-080602ENG (1D7M48)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series) Describes methods of the GT Designer2 installation operation, basic operation for drawing and transmitting data to GOT1000 series (Sold separately)	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) (1/3, 2/3, 3/3) Describes specifications and settings of each object function applicable to GOT1000 series. (Sold separately)	SH-080530ENG (1D7M25)

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Manual Name	Manual Number (Model Code)
GOT1000 Series Extended / Option Functions Manual Describes extended functions and option functions applicable to GOT series. (Sold separately)	SH-080544ENG (1D7M32)
GOT1000 Series Gateway Functions Manual Describes specifications, system comfigurations and setting method of the gateway function. (Sold separately)	SH-080545ENG (1D7M33)
GOT1000 Series MES Interface Function Manual Describes the specifications, system configurations, and setting method of GT MES interface function. (Sold separately)	SH-080654ENG (1D7M63)

ABBREVIATIONS AND GENERIC TERMS

Abbreviations and generic terms used in this manual are as follows:

■ GOT

Abbreviations and generic terms			Description
GOT1000 Series	GT SoftGOT1000		Abbreviation of GT SoftGOT1000
	GT1695	GT1695M-X	Abbreviation of GT1695M-XTBA, GT1695M-XTBD
	GT1685	GT1685M-S	Abbreviation of GT1685M-STBA, GT1685M-STBD
	GT1675	GT1675M-S	Abbreviation of GT1675M-STBA, GT1675M-STBD
		GT1675M-V	Abbreviation of GT1675M-VTBA, GT1675M-VTBD
	GT1665	GT1665M-S	Abbreviation of GT1665M-STBA, GT1665M-STBD
		GT1665M-V	Abbreviation of GT1665M-VTBA, GT1665M-VTBD
	GT16□□, GT16		Abbreviation of GT1695,GT1685, GT1675, GT1665
	GT1595	GT1595-X	Abbreviation of GT1595-XTBA, GT1595-XTBD
	GT1585	GT1585V-S	Abbreviation of GT1585V-STBA, GT1585V-STBD
		GT1585-S	Abbreviation of GT1585-STBA, GT1585-STBD
	GT157□	GT1575V-S	Abbreviation of GT1575V-STBA, GT1575V-STBD
		GT1575-S	Abbreviation of GT1575-STBA, GT1575-STBD
		GT1575-V	Abbreviation of GT1575-VTBA, GT1575-VTBD
		GT1575-VN	Abbreviation of GT1575-VNBA, GT1575-VNBD
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD
	GT156□	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD
		GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD
	GT155□	GT1555-V	Abbreviation of GT1555-VTBD
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD
		GT1550-Q	Abbreviation of GT1550-QLBD
	GT15□□, GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
	GT115□	GT1155-Q	Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD
	Handy GOT	GT1155HS-Q	Abbreviation of GT1155HS-QSBD
		GT1150HS-Q	Abbreviation of GT1150HS-QLBD
	GT11□□, GT11		Abbreviation of GT1155-Q, GT1150-Q, GT11 Handy GOT
	GT105□	GT1055-Q	Abbreviation of GT1055-QSBD
		GT1050-Q	Abbreviation of GT1050-QBBD
	GT104□	GT1045-Q	Abbreviation of GT1045-QSBD
		GT1040-Q	Abbreviation of GT1040-QBBD
	GT1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBDW, GT1030-LBDW2
	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW
	GT10□□, GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020
GOT900 Series			Abbreviation of GOT-A900 series, GOT-F900 series
GOT800 Series			Abbreviation of GOT-800 series

■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z*1, GT15-75J71BR13-Z*2
CC-Link IE controller network communication unit	GT15-J71GP23-SX
CC-Link communication unit	GT15-J61BT13, GT15-75J61BT13-Z*3
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S

*1 A9GT-QJ71LP23 + GT15-75IF900 set
*2 A9GT-QJ71BR13 + GT15-75IF900 set
*3 A8GT-J61BT13 + GT15-75IF900 set

■ Option unit

Abbreviations and generic terms		Description
Printer unit		GT15-PRN
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit		GT16M-MMR
CF card unit		GT15-CFCD
CF card extension unit*1		GT15-CFEX-C08SET
External I/O unit		GT15-DIO, GT15-DIOR
Sound output unit		GT15-SOUT
Fingerprint unit		GT15-80FPA

*1 GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

■ Option

Abbreviations and generic terms		Description			
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-256MC	GT05-MEM-32MC, GT05-MEM-512MC,	GT05-MEM-64MC, GT05-MEM-1GC,	GT05-MEM-128MC, GT05-MEM-2GC
Memory card adaptor		GT05-MEM-ADPC			
Option function board		GT16-MESB, GT15-QFNB32M,	GT15-FNB, GT15-QFNB48M,	GT15-QFNB, GT15-MESB48M,	GT15-QFNB16M, GT11-50FNB
Battery		GT15-BAT,	GT11-50BAT		
Protective Sheet	For GT16	GT16-90PSCB, GT16-80PSCB, GT16-70PSCB, GT16-60PSCB,	GT16-90PSGB, GT16-80PSGB, GT16-70PSGB, GT16-60PSGB,	GT16-90PSCW, GT16-80PSCW, GT16-70PSCW, GT16-60PSCW,	GT16-90PSGW, GT16-80PSGW, GT16-70PSGW, GT16-60PSGW
	For GT15	GT15-90PSCB, GT15-80PSCB, GT15-70PSCB, GT15-60PSCB, GT15-50PSCB,	GT15-90PSGB, GT15-80PSGB, GT15-70PSGB, GT15-60PSGB, GT15-50PSGB,	GT15-90PSCW, GT15-80PSCW, GT15-70PSCW, GT15-60PSCW, GT15-50PSCW,	GT15-90PSGW, GT15-80PSGW, GT15-70PSGW, GT15-60PSGW, GT15-50PSGW
	For GT11	GT11-50PSCB, GT11H-50PSC	GT11-50PSGB,	GT11-50PSCW,	GT11-50PSGW,
	For GT10	GT10-50PSCB, GT10-40PSCB, GT10-30PSCB, GT10-20PSCB,	GT10-50PSGB, GT10-40PSGB, GT10-30PSGB, GT10-20PSGB,	GT10-50PSCW, GT10-40PSCW, GT10-30PSCW, GT10-20PSCW,	GT10-50PSGW, GT10-40PSGW, GT10-30PSGW, GT10-20PSGW
Protective cover for oil		GT05-90PCO, GT05-50PCO	GT05-80PCO,	GT05-70PCO,	GT05-60PCO,
USB environmental protection cover		GT16-UCOV,	GT15-UCOV,	GT11-50UCOV	
Stand		GT15-90STAND, GT05-50STAND	GT15-80STAND,	GT15-70STAND,	A9GT-50STAND,
Attachment		GT15-70ATT-98, GT15-60ATT-87,	GT15-70ATT-87, GT15-60ATT-77,	GT15-60ATT-97, GT15-50ATT-95W,	GT15-60ATT-96, GT15-50ATT-85
Backlight		GT16-90XLTT, GT16-70SLTT, GT15-70SLTT, GT15-60VLTN	GT16-80SLTT, GT16-70VLTT, GT15-70VLTT,	GT15-90XLTT, GT16-60SLTT, GT15-70VLTN,	GT15-80SLTT, GT16-60VLTT, GT15-60VLTT,
Multi-color display board		GT15-XHNB,	GT15-VHNB		
Connector conversion box		GT11H-CNB-37S			
Emergency stop sw guard cover		GT11H-50ESCOV			
Memory loader		GT10-LDR			
Memory board		GT10-50FMB			

■ Software

Abbreviations and generic terms	Description
GT Works2 Version□	SW□D5C-GTWK2-E, SW□D5C-GTWK2-EV
GT Designer2 Version□	SW□D5C-GTD2-E, SW□D5C-GTD2-EV
GT Designer2	Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series
GT Converter2	Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series
GT Simulator2	Abbreviation of screen simulator GT Simulator 2 for GOT1000 / GOT900 series
GT SoftGOT1000	Abbreviation of monitoring software GT SoftGOT1000
GT SoftGOT2	Abbreviation of monitoring software GT SoftGOT2
GX Developer	Abbreviation of SW□D5C-GPPW-E(-EV)/SW□D5F-GPPW-E type software package
GX Simulator	Abbreviation of SW□D5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)
Document Converter	Abbreviation of document data conversion software Document Converter for GOT1000 series
PX Developer	Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control

License key (for GT SoftGOT1000)

Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

License key (for GT SoftGOT2)

Abbreviations and generic terms	Description
License key	A9GTSOFT-LKEY-P (For DOS/V PC)
License key FD	SW5D5F-SGLKEY-J (For PC CPU module)

Others

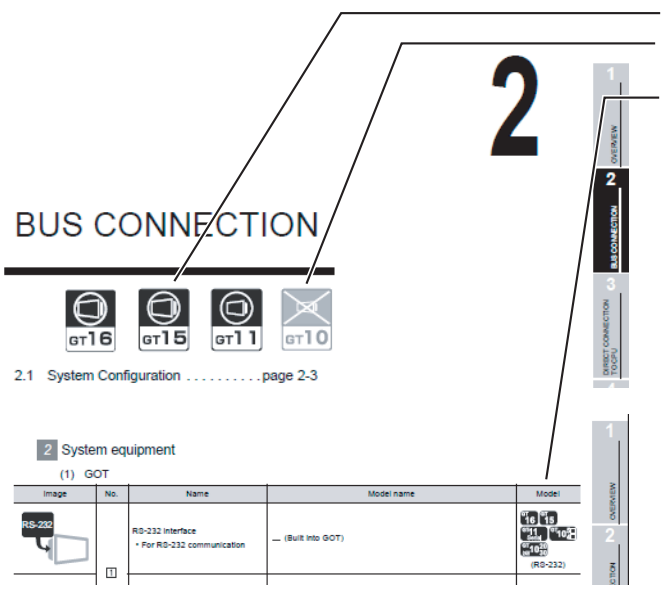
Abbreviations and generic terms		Description
OMRON PLC		Abbreviation of PLC manufactured by OMRON Corporation
KEYENCE PLC		Abbreviation of PLC manufactured by KEYENCE CORPORATION
KOYO EI PLC		Abbreviation of PLC manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.
SHARP PLC		Abbreviation of PLC manufactured by Sharp Manufacturing Systems Corporation
JTEKT PLC		Abbreviation of PLC manufactured by JTEKT Corporation
TOSHIBA PLC		Abbreviation of PLC manufactured by TOSHIBA CORPORATION
TOSHIBA MACHINE PLC		Abbreviation of PLC manufactured by TOSHIBA MACHINE CO., LTD.
HITACHI IES PLC		Abbreviation of PLC manufactured by Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI PLC		Abbreviation of PLC manufactured by Hitachi, Ltd.
FUJI FA PLC		Abbreviation of PLC manufactured by Fuji Electric FA Components & Systems Co., Ltd.
PANASONIC PLC		Abbreviation of PLC manufactured by Panasonic Electric Works Co., Ltd.
YASKAWA PLC		Abbreviation of PLC manufactured by YASKAWA Electric Corporation
YOKOGAWA PLC		Abbreviation of PLC manufactured by Yokogawa Electric Corporation
ALLEN-BRADLEY PLC		Abbreviation of Allen-Bradley PLC manufactured by Rockwell Automation, Inc.
GE FANUC PLC		Abbreviation of PLC manufactured by GE Fanuc Automation Corporation
LS IS PLC		Abbreviation of PLC manufactured by LS Industrial Systems Co., Ltd.
SCHNEIDER PLC		Abbreviation of PLC manufactured by Schneider Electric SA
SIEMENS PLC		Abbreviation of PLC manufactured by Siemens AG
Temperature controller	OMRON temperature controller	Abbreviation of temperature controller manufactured by OMRON Corporation
	SHINKO indicating controller	Abbreviation of temperature controller manufactured by Shinko Technos Co., Ltd.
	CHINO controller	Abbreviation of temperature controller manufactured by CHINO CORPORATION
	FUJI SYS temperature controller	Abbreviation of temperature controller manufactured by Fuji Electric Systems Co., Ltd.
	YAMATAKE temperature controller	Abbreviation of temperature controller manufactured by Yamatake Corporation
	YOKOGAWA temperature controller	Abbreviation of temperature controller manufactured by Yokogawa Electric Corporation
	RKC temperature controller	Abbreviation of temperature controller manufactured by RKC INSTRUMENT INC.
PC CPU module		Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD
GOT (server)		Abbreviation of GOTs that use the server function
GOT (client)		Abbreviation of GOTs that use the client function
Windows® font		Abbreviation of TrueType font and OpenType font available for Windows® (Differs from the True Type fonts settable with GT Designer2)
Intelligent function module		Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit.
MODBUS® /TCP		Generic term for the protocol designed to use MODBUS® protocol messages on a TCP/IP network.

1 About each of functions

This manual includes information of GT Designer2 Version2.96A.
For additional functions of upgraded version, refer to the List of functions added by version upgrade.
In addition, GT Designer2 Version2.98C supports the multimedia function of recording and playing video files with sound, and GT Works3 Version1.14Q supports the multidrop connection on GT16 and GT15.

2 Symbols

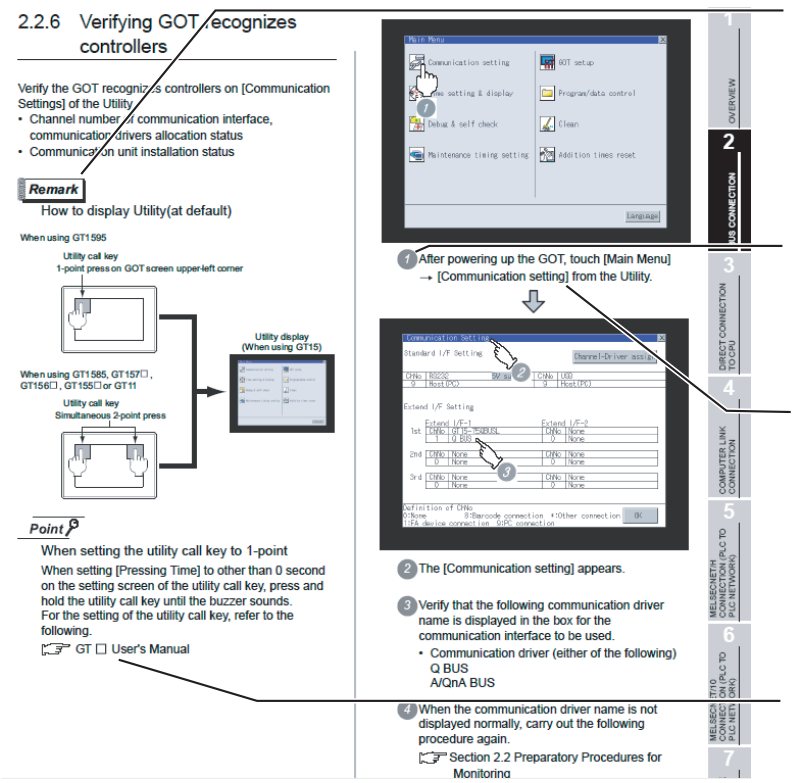
Following symbols are used in this manual.



Connectable model name
Not connectable model name

Applicable model name

GT16	Shows GT16.
GT15	Shows GT15.
GT11 Bus / GT11 Serial	Shows GT11.
GT11 Bus	Shows GT11 (BUS).
GT11 Serial	Shows GT11 (SERIAL).
GT105□ GT104□	Shows GT105□, GT104□.
GT10 24V 10 20 30 / GT10 5V 10 20	Shows GT10.
GT10 24V 10 20 30	Shows GT10(input power supply : 24V).
GT10 5V 10 20	Shows GT10(input power supply : 5V).



Point — Refers to the information required.

Hint! — Refers to information useful for operation.

Remark — Refers to the supplementary explanations for reference.

1 → 2 → 3 · · · · Indicates the operation steps.

Menu and items are differentiated with parentheses.

[ ] : Refers to an item displayed on the computer screen or the GOT screen.

□ : Refers to a button displayed on the computer screen or the GOT screen, or a key of thecomputer keyboard.

Indicates the items in which the detailed explanation is described (manual, chapter, section, item of the manual).

*Since the above page was created for explanation purpose, it differs from the actual page

1

OVERVIEW

This manual describes the specifications, system configuration, setting method, connection cables and other information on each connection type supported by GOT.
When applying the following program examples to the actual system, make sure to examine the applicability and confirm that it will not cause system control problems.

1.1 Connections and Functions Supported by GOT . . . . . page 1-4

This section describes the connections and functions supported by the GOT1000 Series.
Please read this section to confirm the connection overview.

1.2 Overall System Configurations . . . page 1-8

This section describes the system configuration of the GT16, GT15, GT11 and GT10.
Please read this section and check the GOT connection and system configuration optimum for your application.

Point

PLC CPUs that can be Monitored from GOT and Access Ranges

For details on PLC CPUs that can be monitored from GOT and access ranges, refer to the following:

☞ GT Designer2 Version □ Screen Design Manual (Section2.7 PLC CPU that can be monitored and the accessible range)

1 Relevant Manuals

There are the following manuals available for use of the GOT1000 series.
Refer to each of them according to the intended purpose.

(1) Installing software → Drawing → Data transfer
For operations from creating project data to transferring data to GOT, refer to the following manuals.

Purpose	 GT Designer2 Version □ Basic Operation/ Data Transfer Manual*1	 GT Designer2 Version □ Screen Design Manual*1
Installing product on PC	Detailed	
Creating projects	Detailed	
Creating screens	Detailed	
Drawing figures	Detailed	
Making common settings	Overview	Detailed
Placing/setting objects	Overview	Detailed
Transferring data for GOT	Detailed	

*1 Stored in the GT Works2/GT Designer2 in PDF format.

(2) Installing a GOT → Connecting with a PLC
For the operations from installing a GOT to communicating with a PLC CPU, refer to the following manuals.

Purpose	 (Included) GT16 General Description GT15 General Description GT11 General Description GT10 General Description	 GT16 User's Manual (Hardware)*1 GT15 User's Manual*1 GT11 User's Manual*1 GT10 User's Manual*1	 GT16 User's Manual (Basic Utility)*1 GT15 User's Manual*1 GT11 User's Manual*1 GT10 User's Manual*1	 GOT1000 Series Connection Manual*1
Confirming part names and specifications of the GOT	Overview	Detailed		
Confirming the GOT installation method	Overview	Detailed		
Confirming the mounting method for communication units or option devices		Detailed		Overview
Confirming the PLC connection method				Detailed
Confirming the utility operation method			Detailed	
Confirming error codes (system alarm) displayed on GOT		Detailed		

*1 Stored in the GT Works2/GT Designer2 in PDF format.

(3) Other manuals
The following manuals are also available.
The following manuals are stored in the GT Works2/GT Designer2 in PDF format.

(a) GOT1000 Series Extended/Option Functions Manual
Describes how to use the ladder monitoring function, system monitor function and list editor for A/F, network monitor function, Q motion monitor function, servo amplifier monitor function, CNC monitor function, intelligent module monitor function.

(b) GOT1000 Series Gateway Functions Manual
Describes how to use the gateway function.

(c) GT Simulator2 Version ☐ Operating Manual
Describes how to simulate the created project data with the GT Simulator2.

(d) GT Converter2 Version ☐ Operating Manual
Describes how to use the GT Converter2.

(e) GOT1000 Series MES Interface Function Manual
Describes how to use the MES Interface Function.

1.1 Connections and Functions Supported by GOT

1 Various connection types

The GOT can perform monitoring with the following connection types for MITSUBISHI PLC.
The connection type suitable for your system configuration or usage can be selected.

Connection type	Application	Reference
Bus connection	Bus connection is a method using an extension connector of a base unit in order to connect a GOT (connection by I/O bus). This connection type enables the fastest response to a PLC CPU among all GOT connection types. Multiple GOTs can be connected to a PLC CPU placed in a distant position.	☞ Chapter 2 BUS CONNECTION
Direct connection to CPU	Direct connection to CPU represents a connection type in which a GOT is connected to the RS-232/RS-422 connector on a PLC CPU. This is the most economical way of connection since an RS-232 or RS-422 cable only is needed for the connection. (When connecting the GT15 to an RS-422 connector on a PLC CPU, the RS-422 conversion unit is required.)	☞ Chapter 3 DIRECT CONNECTION TO CPU
Computer link connection	In this connection type, a GOT is connected to a computer link module or a serial communication module mounted together with a PLC CPU. Connection of multiple GOTs is available depending on the model type of the computer link module or the serial communication module mounted with the PLC CPU. For the serial communication module (QJ71C24(N)(-R2/-R4)), 2 GOTs can also be connected to 2 channels.	☞ Chapter 4 COMPUTER LINK CONNECTION
MELSECNET/H connection (PLC to PLC network)	As a normal station of the MELSECNET/H (PLC to PLC network), the GOT can be connected to the network. It can monitor cyclic data of the MELSECNET/10 (PLC to PLC network) and devices of the PLC CPU within the same network.	☞ Chapter 5 MELSECNET/H CONNECTION (PLC TO PLC NETWORK)
MELSECNET/10 connection (PLC to PLC network)	As a normal station of the MELSECNET/10 (PLC to PLC network), the GOT can be connected to the network. It can monitor cyclic data of the MELSECNET/10 (PLC to PLC network) and devices of the PLC CPU within the same network.	☞ Chapter 6 MELSECNET/10 CONNECTION (PLC TO PLC NETWORK)
CC-Link IE controller network connection	As a normal station of the CC-Link IE controller network, the GOT can be connected to the network. The GOT can monitor cyclic data of the CC-Link IE controller network and devices of the PLC CPU within the same network.	☞ Chapter 7 CC-Link IE CONTROLLER NETWORK CONNECTION
CC-Link connection (intelligent device station)	As an intelligent device station of the CC-Link System, the GOT can be connected to the network. It can monitor cyclic data of the CC-Link System and devices of the PLC CPU on the master or local station.	☞ Chapter 8 CC-Link CONNECTION (INTELLIGENT DEVICE STATION)
CC-Link connection (via G4)	The GOT can be connected to a peripheral connection module in the CC-Link System. It can monitor devices of the QCPU (Q mode) on the master or local station via the peripheral connection module.	☞ Chapter 9 CC-Link CONNECTION (Via G4)

Connection type	Application	Reference
Ethernet connection	This allows PLC CPU devices monitoring via Ethernet (UDP/IP communications). Networks can be configured with commercially available products such as hubs and cables.	☞ Chapter 10 ETHERNET CONNECTION ☞ Chapter 22 CONNECTION TO YASKAWA PLC ☞ Chapter 23 CONNECTION TO YOKOGAWA PLC ☞ Chapter 24 CONNECTION TO ALLEN-BRADLEY PLC

2 Connection with another manufacture's PLC

Since the GOT can monitor a PLC manufactured by a vendor other than Mitsubishi, the flexible system configuration is available.

- OMRON PLC (☞ Chapter 11 CONNECTION TO OMRON PLC)
- KEYENCE PLC(☞ Chapter 12 CONNECTION TO KEYENCE PLC)
- KOYO EI PLC (☞ Chapter 13 CONNECTION TO KOYO EI PLC)
- SHARP PLC (☞ Chapter 14 CONNECTION TO SHARP PLC)
- JTEKT PLC (☞ Chapter 15 CONNECTION TO JTEKT PLC)
- TOSHIBA PLC (☞ Chapter 16 CONNECTION TO TOSHIBA PLC)
- TOSHIBA MACHINE PLC (☞ Chapter 17 CONNECTION TO TOSHIBA MACHINE PLC)
- HITACHI IES PLC (☞ Chapter 18 CONNECTION TO HITACHI IES PLC)
- HITACHI PLC(☞ Chapter 19 CONNECTION TO HITACHI PLC)
- FUJI FA PLC(☞ Chapter 20 CONNECTION TO FUJI FA PLC)
- PANASONIC PLC (☞ Chapter 21 CONNECTION TO PANASONIC PLC)
- YASKAWA PLC (☞ Chapter 22 CONNECTION TO YASKAWA PLC)
- YOKOGAWA PLC (☞ Chapter 23 CONNECTION TO YOKOGAWA PLC)
- ALLEN-BRADLEY PLC (☞ Chapter 24 CONNECTION TO ALLEN-BRADLEY PLC)
- GE FANUC PLC (☞ Chapter 25 CONNECTION TO GE FANUC PLC)
- LS INDUSTRIAL SYSTEMS PLC (☞ Chapter 26 CONNECTION TO LS INDUSTRIAL SYSTEMS PLC)
- SIEMENS PLC (☞ Chapter 27 CONNECTION TO SIEMENS PLC)

3 Connection with devices other than PLCs

The GOT can be connected to and monitor devices other than PLCs.

Devices	Application	Reference
Microcomputer	This type of connection allows data reading/writing to a virtual device on GOT from a PC, microcomputer board, PLC, etc. (hereinafter, referred to as host). Interrupt output is also available from a GOT to a host.	☞ Chapter 28 MICROCOMPUTER CONNECTION
MODBUS® /RTU	Various kinds of monitoring and parameter change are available to the PLCs that are connectable using MODBUS® /RTU.	☞ Chapter 29 MODBUS(R)/RTU CONNECTION
MODBUS® /TCP	Various kinds of monitoring and parameter change are available to the PLCs that are connectable to MODBUS® /TCP.	☞ Chapter 30 MODBUS(R)/TCP CONNECTION

Devices	Application	Reference
Temperature controller	Various kinds of monitoring and parameter change are available to temperature controller.	☞ Chapter 31 CONNECTION TO OMRON TEMPERATURE CONTROLLER ☞ Chapter 32 CONNECTION TO SHINKO TECHNOS INDICATING CONTROLLER ☞ Chapter 33 CONNECTION TO CHINO CONTROLLER ☞ Chapter 34 CONNECTION TO FUJI SYS TEMPERATURE CONTROLLER ☞ Chapter 35 CONNECTION TO YAMATAKE TEMPERATURE CONTROLLER ☞ Chapter 36 CONNECTION TO YOKOGAWA TEMPERATURE CONTROLLER ☞ Chapter 37 CONNECTION TO RKC TEMPERATURE CONTROLLER
Inverter	Various kinds of monitoring and parameter change are available to inverter.	☞ Chapter 38 INVERTER CONNECTION
Servo amplifier	Various kinds of monitoring and parameter change are available to servo amplifiers.	☞ Chapter 39 SERVO AMPLIFIER CONNECTION
Robot controller	When the GOT is connected to a robot controller, the GOT can read/write the devices of robot controller.	☞ Chapter 40 ROBOT CONTROLLER CONNECTION
CNC	Various kinds of monitoring and parameter change are available to CNC.	☞ Chapter 41 CNC CONNECTION
GOT multidrop	Makes 1:N communication by connecting one PLC CPU to multiple GOTs, using the serial multidrop connection module.	☞ Chapter 42 GOT MULTI-DROP CONNECTION
Sound output function	This function allows to press the touch switches and to output the sound file from a speaker with the sound output unit when it meets the set condition.	☞ Chapter 43 CONNECTION TO SOUND OUTPUT UNIT
External I/O function	This function allows to import the input data from the external input device (switch, operation panel and etc.) to GOT or to output the data from GOT to the general output device (lamp, relay and etc.) with the external I/O unit .	☞ Chapter 44 CONNECTION TO EXTERNAL I/O DEVICE
Fingerprint authentication device	Recognizes the fingerprint of the registered user and restricts the operation of other users, by connecting to GOT.	☞ Chapter 45 FINGERPRINT AUTHENTICATION DEVICE CONNECTION
Bar code reader	Data read by the bar code reader can be written to the PLC CPU.	☞ Chapter 46 BAR CODE READER CONNECTION
Video/RGB	Images from a video camera or a vision sensor can be displayed on the GOT. Also, GOT screens can be displayed on the external monitor.	☞ Chapter 47 VIDEO/RGB CONNECTION
Multimedia function	Images from video cameras connected to the multimedia unit can be displayed or recorded, and movie files stored in the CF card can be played. Also, recorded movie files can be sent to the personal computer via Ethernet.	☞ Chapter 45 MULTIMEDIA CONNECTION
Printer	The printing data in GOT can be printable to a PictBrige Compatible printer.	☞ Chapter 49 PRINTER CONNECTION

Devices	Application	Reference
Remote personal computer operation function	Operates the mouse pointer on the personal computer by touching the personal computer screen displayed on the GOT using the RGB display.	☞ Chapter 50 REMOTE PERSONAL COMPUTER OPERATION CONNECTION
RFID	Data read from the IC tag can be monitored or written to the PLC CPU. Data edited by GOT or imported from the PLC CPU can be written to the IC tag.	☞ Chapter 51 RFID CONNECTION

4 Various useful functions

The GOT offers various functions convenient for connection with the PLC CPU.

Devices	Application	Reference
Multi-channel function	Installing two or more communication units and communication drivers in GOT, one GOT can monitor maximum four FA controllers (PLC CPU, temperature controller, inverter etc.).	☞ Chapter 52 MULTI-CHANNEL FUNCTION
FA transparent function	With the GOT connected to a Mitsubishi PLC, a personal computer can be connected to the GOT and the sequence programs in the PLC can be read from or written to the computer via the GOT.	☞ Chapter 53 FA TRANSPARENT FUNCTION
Multiple-GT11, GT10 connection function	The function enables multiple GOT connections for GT11 or GT10.	☞ Chapter 54 MULTIPLE-GT11, GT10 CONNECTION FUNCTION
Gateway function	This function allows data transfer between GOTs, remote monitoring and remote maintenance via Ethernet. Reading or writing the gateway device (EG) in the GOT is also available from a personal computer where MX Component is installed.	☞ Chapter 55 GATEWAY FUNCTION
MES interface function	This function allows sending SQL texts to the database in the server computer connected to the GOT via Ethernet, writing the GOT device values to the database, and reading values from the database to set for the devices of the GOT.	☞ Chapter 56 MES INTERFACE FUNCTION

1.2 Overall System Configurations

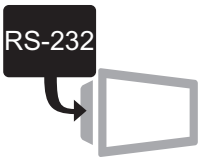
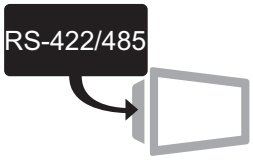
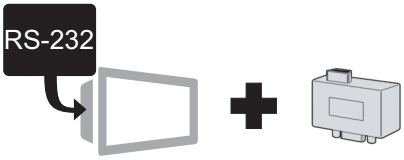
The following shows the system configurations for each GOT model.

1 GT16 system configuration

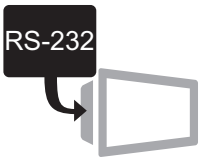
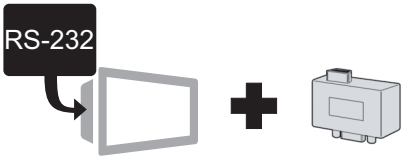
Bus connection (☞ Chapter 2)

Communication Type	Communication Interface on GOT Side	Connected to
Bus connection	Bus connection unit • GT15-75QBUSL • GT15-75QBUS2L • GT15-QBUS • GT15-QBUS2 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700
	Bus connection unit • GT15-75ABUSL • GT15-75ABUS2L • GT15-ABUS • GT15-ABUS2 	• QnACPU • ACPU • Motion controller CPU (A Series)

Direct connection to CPU (☞ Chapter 3)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	• QCPU (Q mode) • QCPU (A mode) • FXCPU • Motion controller CPU (Q Series) • Remote I/O station in the MELSECNET/H network system • CNC C70 • CRnQ-700
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	Built in GT16 body 	• QCPU (Q mode) • QCPU (A mode) • QnACPU • ACPU • FXCPU • Motion controller CPU (A Series)
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	

Computer link connection (☞ Chapter 4)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	Serial communication module • QCPU (Q mode) • QnACPU • Motion controller CPU (Q Series) • Remote I/O station in the MELSECNET/H network system • CNC C70 • CRnQ-700 Computer link module • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (A Series)
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	Built in GT16 body 	
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	

MELSECNET/H connection (PLC to PLC network) (☞ Chapter 5)

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	MELSECNET/H communication unit • GT15-J71LP23-25 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700 • QSCPU
Coaxial bus	MELSECNET/H communication unit • GT15-J71BR13 	

MELSECNET/10 connection (PLC to PLC network) (☞ Chapter 6)

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	MELSECNET/H communication unit (Use the unit in the MELSECNET/10 mode.) • GT15-J71LP23-25 	MELSECNET/H network module • QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700 • QSCPU MELSECNET/10 network module • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (A Series)
Coaxial bus	MELSECNET/H communication unit (Use the unit in the MELSECNET/10 mode.) • GT15-J71BR13 	

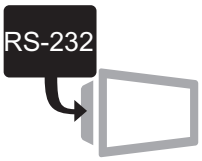
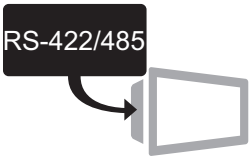
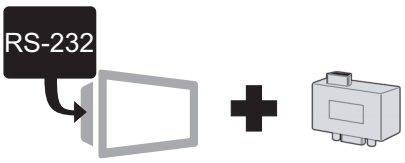
CC-Link IE controller network connection (☞ Chapter 7)

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	CC-Link IE controller network communication unit • GT15-J71GP23-SX 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700 • QSCPU

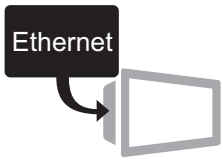
CC-Link connection (intelligent device station) (☞ Chapter 8)

Communication Type	Communication Interface on GOT Side	Connected to
CC-Link (Ver. 2)	CC-Link communication unit • GT15-J61BT13 	• QCPU (Q mode) • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (Q Series) • Motion controller CPU (A Series) • CNC C70 • CRnQ-700
CC-Link	CC-Link communication unit • GT15-J61BT13 (Use the unit in the ver. 1 mode.) 	

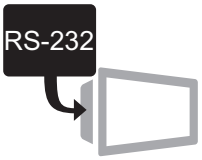
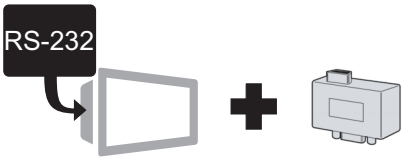
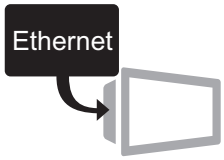
CC-Link connection (via G4) (☞ Chapter 9)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	Built in GT16 body 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	

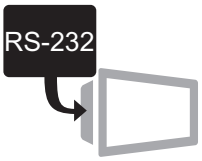
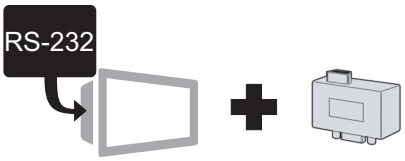
Ethernet connection (☞ Chapter 10)

Communication Type	Communication Interface on GOT Side	Connected to
Ethernet	Built in GT16 body 	• QCPU (Q mode) • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (Q Series) • Motion controller CPU (A Series) • CNC C70 • CRnQ-700 • QSCPU

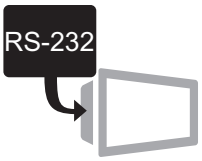
Third party PLC connections (☞ Chapter 11 to Chapter 27)

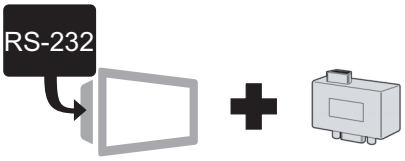
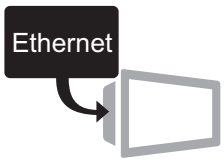
Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	• OMRON PLC • KEYENCE PLC • KOYO EI PLC • SHARP PLC • JTEKT PLC • TOSHIBA PLC • TOSHIBA MACHINE PLC • HITACHI IES PLC • HITACHI PLC • FUJI FA PLC • PANASONIC PLC • YASKAWA PLC • YOKOGAWA PLC • ALLEN-BRADLEY PLC • GE FANUC PLC • LS INDUSTRIAL SYSTEMS PLC • SIEMENS PLC
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	Built in GT16 body 	• OMRON PLC • KEYENCE PLC • KOYO EI PLC • SHARP PLC • JTEKT PLC • TOSHIBA PLC • HITACHI IES PLC • HITACHI PLC • FUJI FA PLC • YASKAWA PLC • YOKOGAWA PLC • GE FANUC PLC
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	
Ethernet	Built in GT16 body 	• YASKAWA PLC • YOKOGAWA PLC • ALLEN-BRADLEY PLC

Microcomputer connection (☞ Chapter 28)

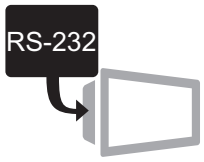
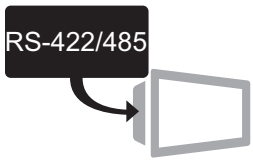
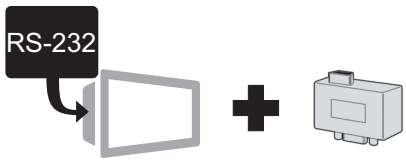
Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	• PC • Microcomputer • PLC, etc.
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	Built in GT16 body 	
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	

MODBUS® (☞ Chapter 29 to Chapter 30)

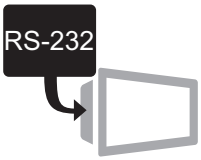
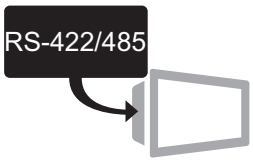
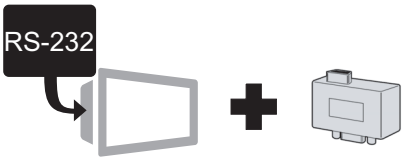
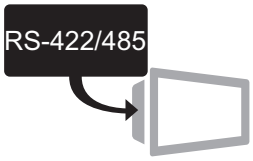
Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	• Device compatible with the MODBUS/RTU slave communication function
	RS-232 Communication Unit • GT15-RS2-9P 	

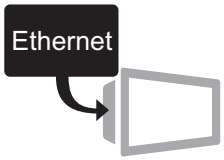
Communication Type	Communication Interface on GOT Side	Connected to
RS-422 communication	Built in GT16 body 	• Device compatible with the MODBUS/RTU slave communication function
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	
RS-485 communication	Built in GT16 body 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	
	RS-422/485 Communication Unit • GT15-RS4-TE 	
Ethernet	Built in GT16 body 	• SCHNEIDER PLC • YOKOGAWA PLC

Temperature controller connection (☞ Chapter 31 to Chapter 37)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	• OMRON temperature controller • SHINKO TECHNOS indicating controller • CHINO controller • FUJI SYS temperature controller • YAMATAKE temperature controller • YOKOGAWA temperature controller • RKC temperature controller
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	Built in GT16 body 	• SHINKO TECHNOS indicating controller • CHINO controller • YOKOGAWA temperature controller • RKC temperature controller
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	
RS-485 communication	RS-422/485 Communication Unit • GT15-RS4-9S 	• YAMATAKE temperature controller • YOKOGAWA temperature controller
	Built in GT16 body 	• OMRON temperature controller • SHINKO TECHNOS indicating controller • CHINO controller • FUJI SYS temperature controller • YAMATAKE temperature controller • YOKOGAWA temperature controller • RKC temperature controller
	RS-422/485 Communication Unit • GT15-RS4-TE 	

Other connections (☞ Chapter 38 to Chapter 51)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT16 body 	• Servo amplifier • CNC • Fingerprint authentication device • Bar code reader • RFID • PC
	RS-232 Communication Unit • GT15-RS2-9P 	• Servo amplifier • CNC • Bar code reader • RFID • PC
RS-422 communication	Built in GT16 body 	• Inverter • Servo amplifier • CNC
	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	
RS-485 communication	Built in GT16 body 	• Serial multidrop connection module
	RS-422/485 Communication Unit • GT15-RS4-9S 	
	RS-422/485 Communication Unit • GT15-RS4-TE 	

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	MELSECNET/H communication unit (Use the unit in the MELSECNET/10 mode.) • GT15-J71LP23-25 	• CNC
Coaxial bus	MELSECNET/H communication unit (Use the unit in the MELSECNET/10 mode.) • GT15-J71BR13 	
CC-Link	CC-Link communication unit • GT15-J61BT13 	
Ethernet	Built in GT16 body 	• CNC • Robot controller • PC
Sound signal	Sound output unit • GT15-SOUT 	• Speaker
	Multimedia unit • GT16M-MMR 	• Microphone • Speaker
External I/O signal	External I/O unit • GT15-DIO • GT15-DIOR 	• Operation panel

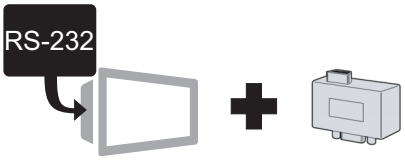
Communication Type	Communication Interface on GOT Side	Connected to
Video signal	Video input unit • GT16M-V4 	• Video camera • Vision sensor
	Multimedia unit • GT16M-MMR 	• Video camera
RGB signal	RGB input unit • GT16M-R2 	• Vision sensor • PC
Video signal RGB signal	Video/RGB input unit • GT16M-V4R1 	• Video camera • Vision sensor • PC
RGB signal	RGB output unit • GT16M-ROUT 	• External monitor
USB	Printer unit • GT15-PRN 	• Printer

2 GT15 system configuration

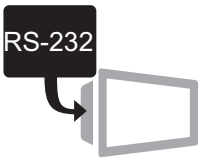
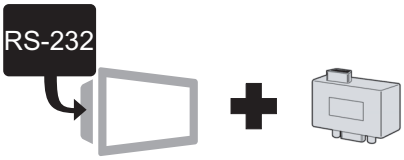
Bus connection (☞ Chapter 2)

Communication Type	Communication Interface on GOT Side	Connected to
BUS connection	BUS connection unit • GT15-75QBUSL • GT15-75QBUS2L • GT15-QBUS • GT15-QBUS2 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700
	BUS connection unit • GT15-75ABUSL • GT15-75ABUS2L • GT15-ABUS • GT15-ABUS2 	• QnACPU • ACPU • Motion controller CPU (A Series)

Direct connection to CPU (☞ Chapter 3)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	• QCPU (Q mode) • QCPU (A mode) • FXCPU • Motion controller CPU (Q Series) • Remote I/O station in the MELSECNET/H network system • CNC C70 • CRnQ-700
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	• QCPU (Q mode) • QCPU (A mode) • QnACPU • ACPU • FXCPU • Motion controller CPU (A Series)
	RS-422/485 Communication Unit • GT15-RS4-9S 	

Computer link connection (☞ Chapter 4)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	Serial communication module • QCPU (Q mode) • QnACPU • Motion controller CPU (Q Series) • Remote I/O station in the MELSECNET/H network system • CNC C70 • CRnQ-700 Computer link module • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (A Series)
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	

MELSECNET/H connection (PLC to PLC network) (☞ Chapter 5)

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	MELSECNET/H communication unit • GT15-J71LP23-25 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700 • QSCPU
Coaxial bus	MELSECNET/H communication unit • GT15-J71BR13 	

MELSECNET/10 connection (PLC to PLC network) (☞ Chapter 6)

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	MELSECNET/H communication unit (Use the unit in the MELSECNET/10 mode.) • GT15-J71LP23-25 MELSECNET/10 communication unit • GT15-75J71LP23-Z 	MELSECNET/H network module • QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700 • QSCPU MELSECNET/10 network module • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (A Series)
Coaxial bus	MELSECNET/H communication unit (Use the unit in the MELSECNET/10 mode.) • GT15-J71BR13 MELSECNET/10 communication unit • GT15-75J71BR13-Z 	

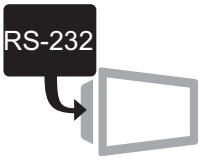
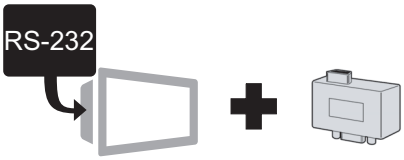
CC-Link IE controller network connection (☞ Chapter 7)

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	CC-Link IE controller network communication unit • GT15-J71GP23-SX 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700 • QSCPU

CC-Link connection (intelligent device station) (☞ Chapter 8)

Communication Type	Communication Interface on GOT Side	Connected to
CC-Link (Ver. 2)	CC-Link communication unit • GT15-J61BT13 	• QCPU (Q mode) • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (Q Series) • Motion controller CPU (A Series) • CNC C70 • CRnQ-700
CC-Link	CC-Link communication unit • GT15-J61BT13 (Use the unit in the ver. 1 mode.) • GT15-75J61BT13-Z 	

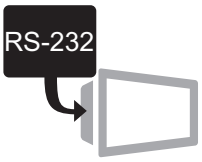
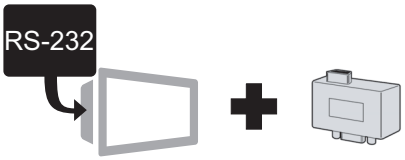
CC-Link connection (via G4) (☞ Chapter 9)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700
	RS-422/485 Communication Unit • GT15-RS4-9S 	

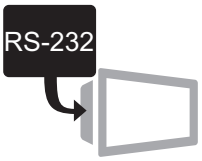
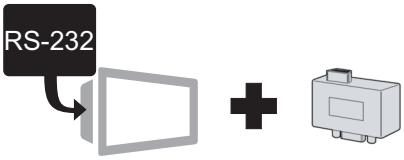
Ethernet connection (☞ Chapter 10)

Communication Type	Communication Interface on GOT Side	Connected to
Ethernet	Ethernet communication unit • GT15-J71E71-100 	• QCPU (Q mode) • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (Q Series) • Motion controller CPU (A Series) • CNC C70 • CRnQ-700 • QSCPU

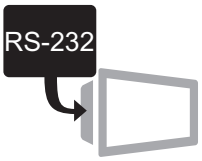
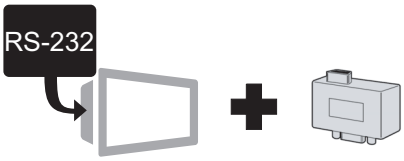
Third party PLC connections (☞ Chapter 11 to Chapter 27)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	• OMRON PLC • KEYENCE PLC • KOYO EI PLC • SHARP PLC • JTEKT PLC • TOSHIBA PLC • TOSHIBA MACHINE PLC • HITACHI IES PLC • HITACHI PLC • FUJI FA PLC • PANASONIC PLC • YASKAWA PLC • YOKOGAWA PLC • ALLEN-BRADLEY PLC • GE FANUC PLC • LS INDUSTRIAL SYSTEMS PLC • SIEMENS PLC
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	• OMRON PLC • KEYENCE PLC • KOYO EI PLC • SHARP PLC • JTEKT PLC • TOSHIBA PLC • HITACHI IES PLC • HITACHI PLC • FUJI FA PLC • YASKAWA PLC • YOKOGAWA PLC • GE FANUC PLC
	RS-422/485 Communication Unit • GT15-RS4-9S 	
Ethernet	Ethernet communication unit • GT15-J71E71-100 	• YASKAWA PLC • YOKOGAWA PLC • ALLEN-BRADLEY PLC

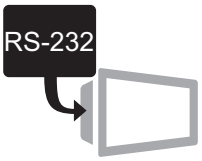
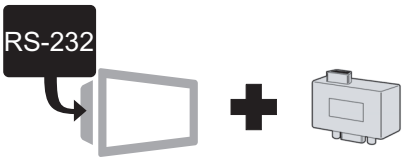
Microcomputer connection (☞ Chapter 28)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	• PC • Microcomputer • PLC, etc.
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	

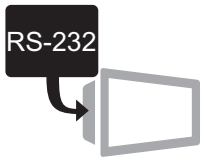
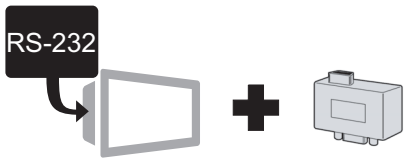
MODBUS® (☞ Chapter 29 to Chapter 30)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	• Device compatible with the MODBUS/RTU slave communication function
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	
	RS-422/485 Communication Unit • GT15-RS4-9S 	
RS-485 communication	RS-422/485 Communication Unit • GT15-RS4-9S 	
	RS-422/485 Communication Unit • GT15-RS4-TE 	
Ethernet	Ethernet communication unit • GT15-J71E71-100 	• SCHNEIDER ELECTRIC PLC • YOKOGAWA PLC

Temperature controller connection (☞ Chapter 31 to Chapter 37)

Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	• OMRON temperature controller • SHINKO TECHNOS indicating controller • CHINO controller • FUJI SYS temperature controller • YAMATAKE temperature controller • YOKOGAWA temperature controller • RKC temperature controller
	RS-232 Communication Unit • GT15-RS2-9P 	
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	• CHINO controller • YOKOGAWA temperature controller • RKC temperature controller
	RS-422/485 Communication Unit • GT15-RS4-9S 	
RS-485 communication	RS-422/485 Communication Unit • GT15-RS4-9S 	• YAMATAKE temperature controller • YOKOGAWA temperature controller
	RS-422/485 Communication Unit • GT15-RS4-TE 	• OMRON temperature controller • CHINO controller • FUJI SYS temperature controller • YAMATAKE temperature controller • YOKOGAWA temperature controller • RKC temperature controller

Other connections (☞ Chapter 38 to Chapter 51)

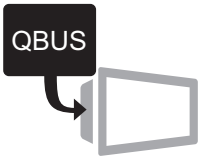
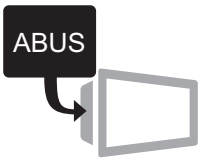
Communication Type	Communication Interface on GOT Side	Connected to
RS-232 communication	Built in GT15 body 	• Servo amplifier • CNC • Fingerprint authentication device • Bar code reader • RFID • PC
	RS-232 Communication Unit • GT15-RS2-9P 	• Servo amplifier • CNC • Bar code reader • RFID • PC
RS-422 communication	RS-422 conversion unit • GT15-RS2T4-9P 	• Inverter • Servo amplifier • CNC
	RS-422/485 Communication Unit • GT15-RS4-9S 	
RS-485 communication	RS-422/485 Communication Unit • GT15-RS4-TE 	• Serial multidrop connection module
	RS-422/485 Communication Unit • GT15-RS4-9S 	

Communication Type	Communication Interface on GOT Side	Connected to
Optical loop	MELSECNET/10 communication unit • GT15-75J71LP23-Z 	• CNC
Coaxial bus	MELSECNET/10 communication unit • GT15-75J71BR13-Z 	
CC-Link	CC-Link communication unit • GT15-75J61BT13-Z 	
Ethernet	Ethernet communication unit • GT15-J71E71-100 	• CNC • Robot controller
Sound signal	Sound output unit • GT15-SOUT 	• Speaker
External I/O signal	External I/O unit • GT15-DIO • GT15-DIOR 	• Operation panel
Video signal	Video input unit • GT15V-75V4 	• Video camera • Vision sensor
RGB signal	RGB input unit • GT15V-75R1 	• Vision sensor • PC

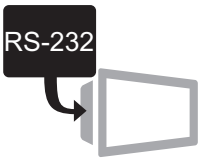
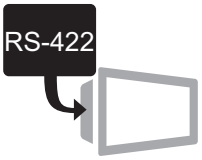
Communication Type	Communication Interface on GOT Side	Connected to
Video signal RGB signal	Video/RGB input unit • GT15-75V4R1 	• Video camera • Vision sensor • PC
RGB signal	RGB output unit • GT15V-75ROUT 	• External monitor
USB	Printer unit • GT15-PRN 	• Printer

3 GT11 system configuration

Bus connection (☞ Chapter 2)

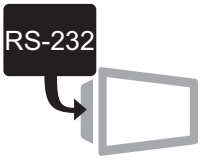
Communication Type	Communication Interface on GOT Side	Connected to	Model
BUS connection	Built in GT11 body 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700	GT11 Bus (QBUS)
	Built in GT11 body 	• QnACPU • ACPU • Motion controller CPU (A Series)	GT11 Bus (ABUS)

Direct connection to CPU (☞ Chapter 3)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	• QCPU (Q mode) • QCPU (A mode) • FXCPU • Motion controller CPU (Q Series) • Remote I/O station in the MELSECNET/H network system* • CNC C70 • CRnQ-700	GT11 Serial
RS-422 communication	Built in GT11 body 	• QCPU (Q mode) • QCPU (A mode) • QnACPU • ACPU • FXCPU • Motion controller CPU (A Series)	GT11 Serial

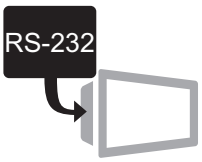
* GT11can not access the master station on MELSECNET/H network system. GT11 can access only the connected host station (remote I/O station).

Computer link connection (☞ Chapter 4)

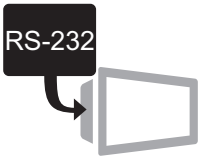
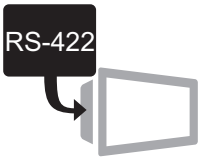
Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	Serial communication module • QCPU (Q mode) • QnACPU • Motion controller CPU (Q Series) • Remote I/O station in the MELSECNET/H network system* • CNC C70 • CRnQ-700 Computer link module • QCPU (A mode) • QnACPU • ACPU • Motion controller CPU (A Series)	GT11 Serial
RS-422 communication	Built in GT11 body 		

* GT11can not access the master station on MELSECNET/H network system. GT11 can access only the connected host station (remote I/O station).

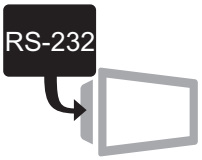
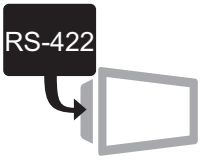
CC-Link connection (via G4) (☞ Chapter 9)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700	GT11 Serial
RS-422 communication	Built in GT11 body 	• QCPU (Q mode) • Motion controller CPU (Q Series) • CNC C70 • CRnQ-700	GT11 Serial

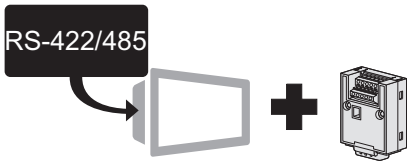
Third party PLC connections (☞ Chapter 11 to Chapter 27)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	• OMRON PLC • KEYENCE PLC • KOYO EI PLC • SHARP PLC • JTEKT PLC • TOSHIBA PLC • TOSHIBA MACHINE PLC • HITACHI IES PLC • HITACHI PLC • FUJI FA PLC • PANASONIC PLC • YASKAWA PLC • YOKOGAWA PLC • ALLEN-BRADLEY PLC • GE FANUC PLC • LS INDUSTRIAL SYSTEMS PLC • SIEMENS PLC	GT11 Serial
RS-422 communication	Built in GT11 body 	• OMRON PLC • KEYENCE PLC • KOYO EI PLC • SHARP PLC • JTEKT PLC • TOSHIBA PLC • HITACHI IES PLC • HITACHI PLC • FUJI FA PLC • YASKAWA PLC • YOKOGAWA PLC • GE FANUC PLC	GT11 Serial

Microcomputer connection (☞ Chapter 28)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	• PC • Microcomputer • PLC, etc.	GT11 Serial
RS-422 communication	Built in GT11 body 		

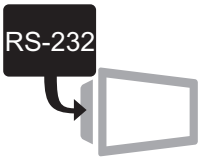
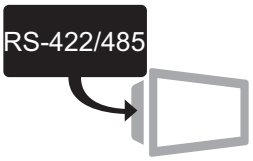
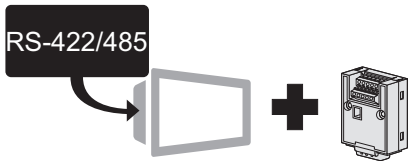
MODBUS® (☞ Chapter 29 to Chapter 30)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	• Device compatible with the MODBUS/ RTU slave communication function	GT11 Serial
RS-422 communication	Built in GT11 body 		GT11 Serial
RS-485 communication	Built in GT11 body 		
	Connector conversion adapter • GT10-9PT5S 		GT11 Serial

Temperature controller connection (☞ Chapter 31 to Chapter 37)

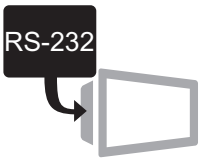
Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	• OMRON temperature controller • SHINKO TECHNOS indicating controller • CHINO controller • FUJI SYS temperature controller • YAMATAKE temperature controller • RKC temperature controller • YOKOGAWA temperature controller	GT11 Serial
RS-422 communication	Built in GT11 body 	• CHINO controller • RKC temperature controller	GT11 Serial
RS-485 communication	Built in GT11 body 	• YAMATAKE temperature controller • YOKOGAWA temperature controller	GT11 Serial

Other connections (☞ Chapter 38 to Chapter 51)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT11 body 	• Servo amplifier • Bar code reader • RFID • CNC	GT11 Serial
		• Bar code reader • RFID	GT11 Bus
RS-422 communication	Built in GT11 body 	• Inverter • Servo amplifier • CNC	GT11 Serial
RS-485 communication	Built in GT11 body 	• Serial multidrop connection module	GT11 Serial
	Connector conversion adapter • GT10-9P T5S 		

4 GT10 system configuration

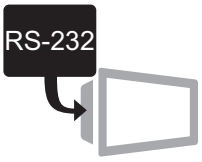
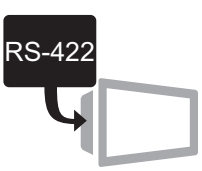
Direct connection to CPU (☞ Chapter 3)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT10 body 	• QCPU (Q mode) • FXCPU	GT 10 5□ 4□ GT 24V 10 20 30 (RS-232)
RS-422 communication	Built in GT10 body 	• QCPU (Q mode) • QnACPU • ACPU • FXCPU	GT 10 5□ 4□ GT 24V 10 20 30 (RS-422)
		• FXCPU	GT 5V 10 20 (RS-422)

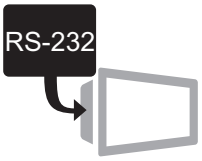
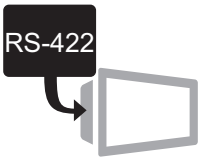
Computer link connection (☞ Chapter 4)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT10 body 	Serial communication module • QCPU (Q mode) Computer link module • QnACPU • ACPU	GT 10 5□ 4□ GT 24V 10 20 30 (RS-232)
RS-422 communication	Built in GT10 body 	Serial communication module • QCPU (Q mode) • QnACPU Computer link module • QnACPU • ACPU	GT 10 5□ 4□ GT 24V 10 20 30 (RS-422)

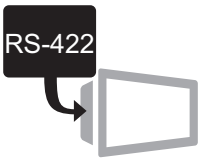
CC-Link connection (via G4) (☞ Chapter 9)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT10 body 	• QCPU (Q mode)	GT 10 5□ 4□ GT 24V 10 20 30 (RS-232)
RS-422 communication	Built in GT10 body 	• QCPU (Q mode)	GT 10 5□ 4□ GT 24V 10 20 30 (RS-422)

Third party PLC connections (☞ Chapter 11 to Chapter 27)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT10 body 	• OMRON PLC • KEYENCE PLC • TOSHIBA MACHINE PLC • PANASONIC PLC • YASKAWA PLC • ALLEN-BRADLEY PLC • LS INDUSTRIAL SYSTEMS PLC • SIEMENS PLC	GT10 5□ 4□ GT 24V 10 20 30 (RS-232)
RS-422 communication	Built in GT10 body 	• OMRON PLC • KEYENCE PLC • PANASONIC PLC • YASKAWA PLC	GT10 5□ 4□ GT 24V 10 20 30 (RS-422)

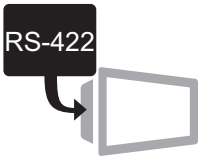
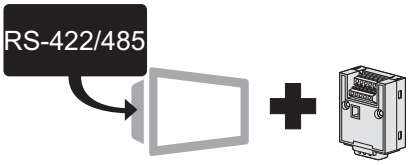
Microcomputer connection (☞ Chapter 28)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT10 body 	• PC • Microcomputer • PLC, etc.	GT10 5□ 4□ GT 24V 10 20 30 (RS-232)
RS-422 communication	Built in GT10 body 		GT10 5□ 4□ GT 24V 10 20 30 (RS-422)

MODBUS® (☞ Chapter 29 to Chapter 30)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT10 body 	• Device compatible with the MODBUS/RTU slave communication function	GT105□ GT24V1020 30 (RS-232)
RS-422 communication	Built in GT10 body 		GT105□ GT24V1020 30 (RS-422)
RS-485 communication	Built in GT10 body 		GT105□ GT24V1020 30 (RS-422)

Other connections (☞ Chapter 38 to Chapter 51)

Communication Type	Communication Interface on GOT Side	Connected to	Model
RS-232 communication	Built in GT10 body 	• Servo amplifier • Bar code reader	GT105□ GT24V1020 30 (RS-232)
RS-422 communication	Built in GT10 body 	• Inverter • Servo amplifier • Bar code reader	GT105□ GT24V1020 30 (RS-422)
RS-485 communication	Built in GT10 body 	• Serial multidrop connection module	GT105□ GT24V1020 30 (RS-422)
	Connector conversion adapter • GT10-9P T5S 		GT105□

5 Handy GOT

Connect the handy GOT and the controllers (PLC CPU, temperature controller, inverter, etc.), referring to the following manual.

☞ GT11 Handy GOT User's Manual

1.2.1 Terminating resistors of GOT

The following shows the terminating resistor specifications on the GOT side.
When setting the terminating resistor in each connection type, refer to the following.

1 RS-422/485 communication unit

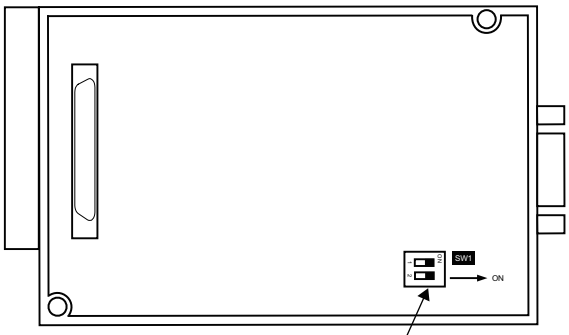
Set the terminating resistor using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
100 OHM	ON	ON
Disable	OFF	OFF



*1 The default setting is "Disable".

- For RS-422/485 communication unit



Terminating resistor setting switch
Rear view of RS-422/485 communication unit

2 GT16

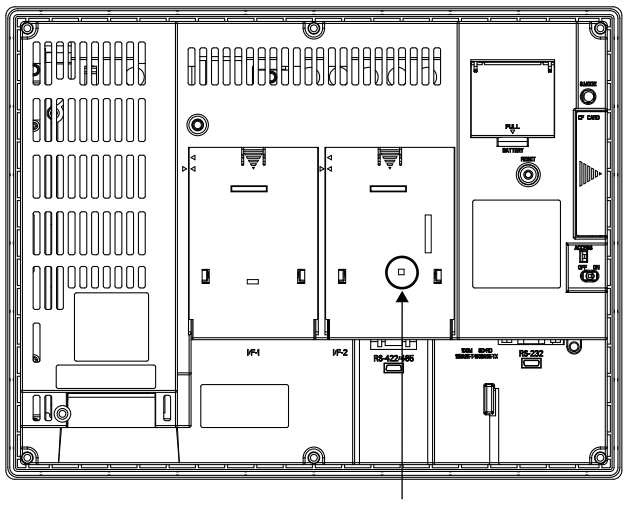
Set the terminating resistor using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
100 OHM	ON	ON
Disable	OFF	OFF



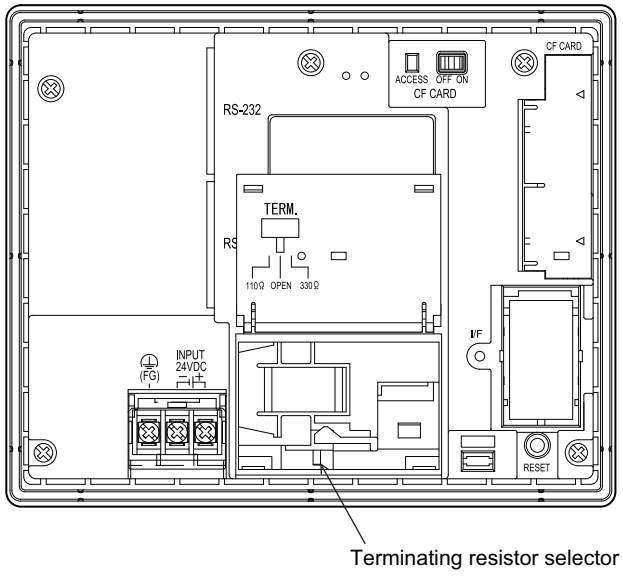
*1 The default setting is "Disable".

- For GT1685M-S



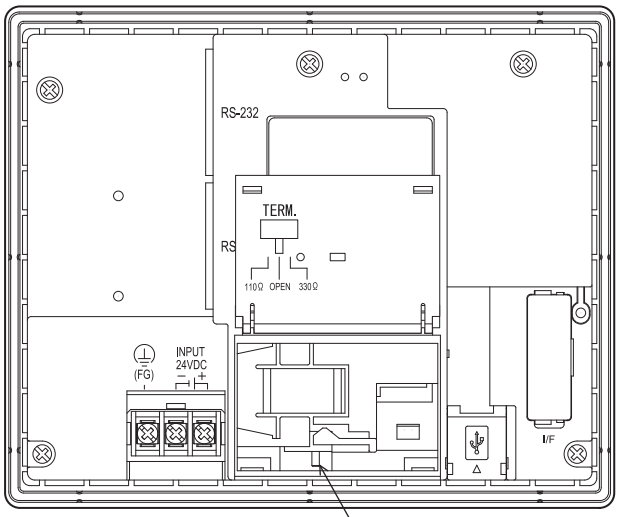
3 GT11

Set the terminating resistor using the terminating resistor setting switch.



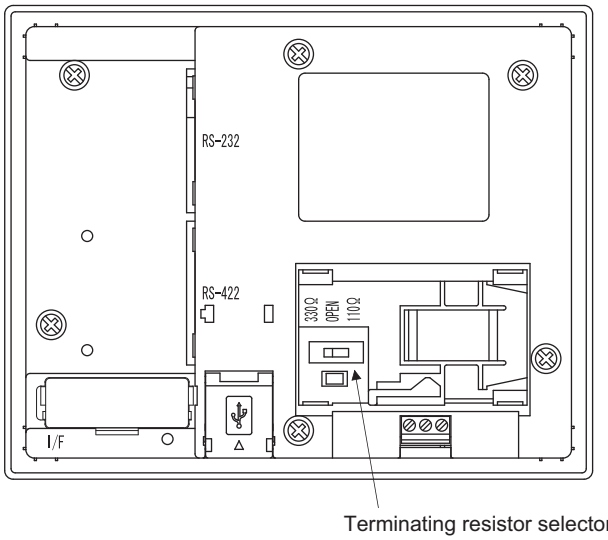
4 GT105 □

Set the terminating resistor using the terminating resistor setting switch.



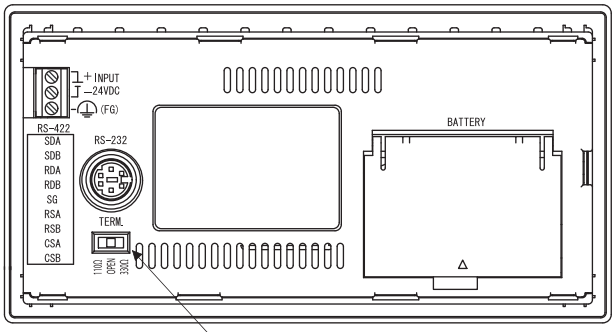
5 GT104 □

Set the terminating resistor using the terminating resistor setting switch.



6 GT1030

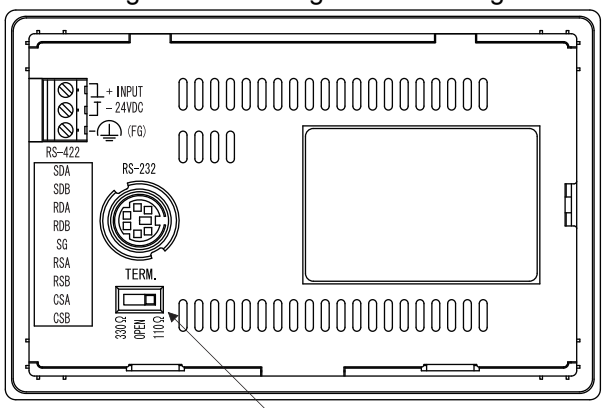
Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

7 GT1020

Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

MITSUBISHI PLC CONNECTIONS

Chapter 2 BUS CONNECTION

Chapter 3 DIRECT CONNECTION TO CPU

Chapter 4 COMPUTER LINK CONNECTION

Chapter 5 MELSECNET/H CONNECTION (PLC TO PLC NETWORK)

Chapter 6 MELSECNET/10 CONNECTION (PLC TO PLC NETWORK)

Chapter 7 CC-Link IE CONTROLLER NETWORK CONNECTION

(Continued to next page)

Chapter 8 CC-Link CONNECTION (INTELLIGENT DEVICE STATION)

Chapter 9 CC-Link CONNECTION (Via G4)

Chapter 10 ETHERNET CONNECTION

2

BUS CONNECTION



2.1 System Configuration . . . . . page 2-2

This section describes the equipment and cables needed for bus connection.
Select a system suitable for your application.

2.2 Preparatory Procedures for Monitoring . . . . . page 2-27

This section describes the procedures to be followed before monitoring in bus connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

2.3 Precautions . . . . . page 2-36

This section provides the precautions on bus connection.
Be sure to read this when establishing a bus connection.

2.4 Communication Check Sheet . . . page 2-44

The items to be checked before actual communication by bus connection can be written down to the check sheet.

2.5 List of Functions Added by Version Upgrade . . . . . page 2-46

This section describes the functions added by version upgrade of GT Designer2 or OS.

2.1 System Configuration

Select a system configuration suitable for your application.

Point

(1) Conventions used in this section
Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.

(2) About connection cables
Select a proper connection cable whose length satisfies the distance conditions according to the connection conditions.

(3) When "CONTROL BUS ERR" or "UNIT VERIFY ERR" occurs
A noise produced from a long bus connection cable may be the cause.
Confirm that a signal line such as a bus cable is not installed close to an operating device. If installed, make sure the distance between the cable and device is 100mm or longer.

Write Check Sheet

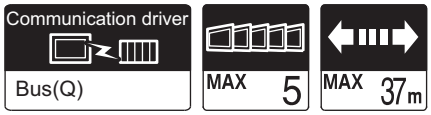
Section 2.4 Communication Check Sheet

Write down the items selected in this section to the check sheet.

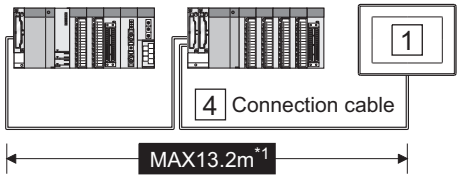
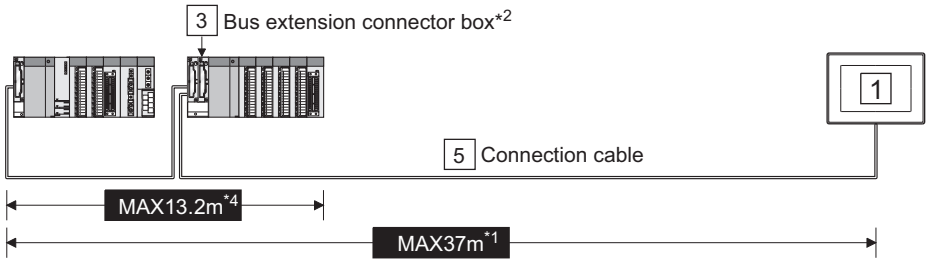
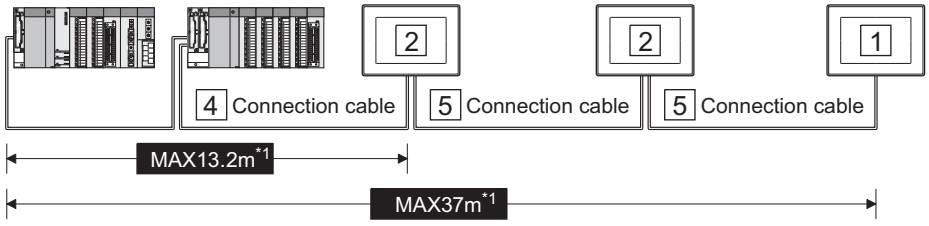
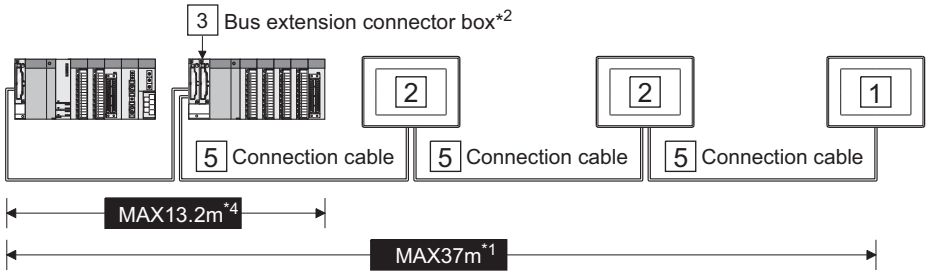
1 OS selection
- Communication driver: Name of the communication driver

2 Unit selection
- Communication module: Model name
- Bus extension connector box/Bus connector conversion box: Model name

2.1.1 Connecting to QCPU (Q mode)

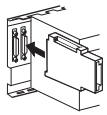


1 System configurations and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance from main base unit to 1st GOT	
1	13.2m or less	
	More than 13.2m	
2 to 5	13.2m or less	
	More than 13.2m *3	

*1 When an extension base unit is used, this includes the extension cable length (between the base unit and extension base unit).

*2 Attach the bus extension connector box to the extension connector of the base unit as follows.



Also, connect the connection cable to the bus extension connector box.
When using no extension base unit : Attach it to the main base unit.
When using the extension base unit : Attach it to the extension base unit on the last stage.

*3 When connecting 3 or more GOTs, the overall cable length is restricted.

Section 2.3 9 When connecting to a QCPU (Q mode)

*4 The overall extension cable length must be 13.2m or less.

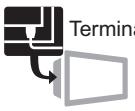
Point

Bus extension connector box

When installing the 1st GOT 13.2m or more away from the main base unit, the bus extension connector box is required.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Bus connection unit*1 • For terminal GOT	GT15-75QBUSL, GT15-75QBUS2L, GT15-QBUS, GT15-QBUS2	GT16 GT15
	1	Bus interface (Built into GOT)*2	GT1155-QTBDQ, GT1155-QSBDQ, GT1150-QLBDQ	GT11 Bus
	2	Bus connection unit*1 • For intermediary GOT	GT15-75QBUS2L, GT15-QBUS2	GT16 GT15

*1 The bus connection unit
GT15-75QBUSL, GT15-QBUS: Used for a terminal GOT. (Not available for an intermediary GOT.)
GT15-75QBUS2L, GT15-QBUS2: Used for an intermediary GOT. (Can be used for a terminal GOT.)

*2 About the connection of multiple GOTs
When connecting to multiple GOTs with GT 16, GT15 and GT11 mixed, use GT11 as a terminal.

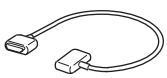
(2) PLC

Image	No.	Name	Model name
	3	Bus extension connector box*3 • Unit used for extending distance between GOT and base unit	A9GT-QCNB

*3 Set the bus extension connector box to the same Stage No. as that of the GOT unit.
For details on the Stage No. setting, refer to the following.

Section 2.2.3 Setting communication interface (Communication settings)

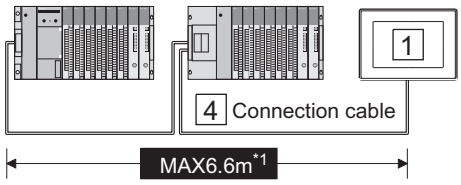
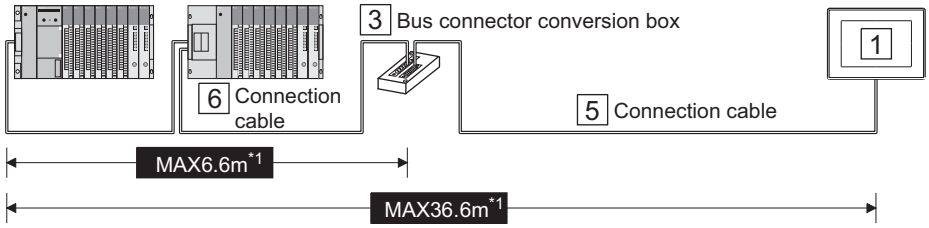
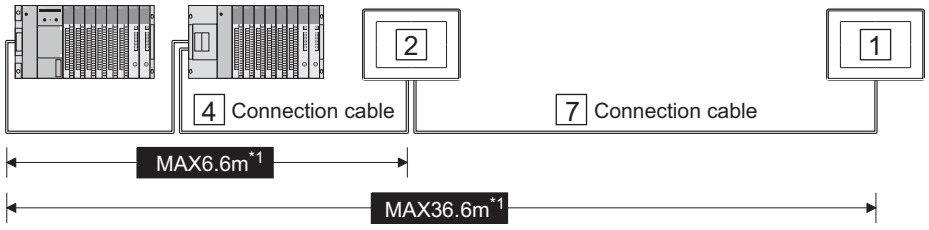
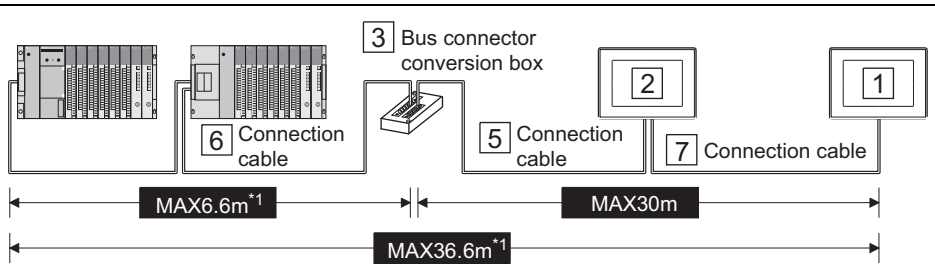
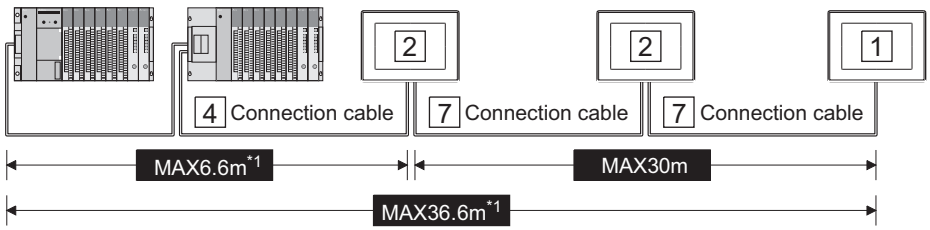
(3) Cable

Image	No.	Name	Model name		
	4	Connection cable • Between base unit and GOT	GT15-QC06B(0.6m), GT15-QC50B(5m),	GT15-QC12B(1.2m), GT15-QC100B(10m)	GT15-QC30B(3m),
	5	Connection cable • Between bus extension connector box and GOT • Between GOTs	GT15-QC06B(0.6m), GT15-QC50B(5m), GT15-QC150BS(15m), GT15-QC300BS(30m),	GT15-QC12B(1.2m), GT15-QC100B(10m), GT15-QC200BS(20m), GT15-QC350BS(35m)	GT15-QC30B(3m), GT15-QC250BS(25m),

2.1.2 Connecting to QnACPU or AnCPU type

Communication driver: Bus(A/QnA) | MAX 3 | MAX 36.6m

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs *2	Distance from main base unit to 1st GOT	
1	6.6m or less	
	More than 6.6m	
2	6.6m or less	
	More than 6.6m	
3	6.6m or less	

*1 When an extension base unit is used, this includes the extension cable length (between the base unit and the extension base unit).

*2 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

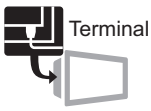
Point

Bus connector conversion box

When installing the 1st GOT 6.6m or more away from the main base unit, the bus connector conversion box is required.

2 System equipment

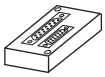
(1) GOT

Image	No.	Name	Model name	Model
	1	Bus connection unit*1 • For terminal GOT	GT15-75ABUSL, GT15-75ABUS2L, GT15-ABUS GT15-ABUS2	GT16 GT15
	1	Bus interface (Built into GOT)*2	GT1155-QTBDA, GT1155-QSBDA, GT1150-QLBDA	GT11 Bus
	2	Bus connection unit*1 • For intermediary GOT	GT15-75ABUS2L, GT15-ABUS2	GT16 GT15

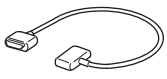
*1 The bus connection unit
GT15-75ABUSL, GT15-ABUS: Used for a terminal GOT. (Not available for an intermediary GOT.)
GT15-75ABUS2L, GT15-ABUS2: Used for an intermediary GOT. (Can be used for a terminal GOT.)

*2 About the connection of multiple GOTs
When connecting to multiple GOTs with GT 16, GT15 and GT11 mixed, use GT11 as a terminal.

(2) PLC

Image	No.	Name	Model name
	3	Bus connector conversion box • Unit used for converting connection cable connector and extending distance between GOT and base unit	A7GT-CNB

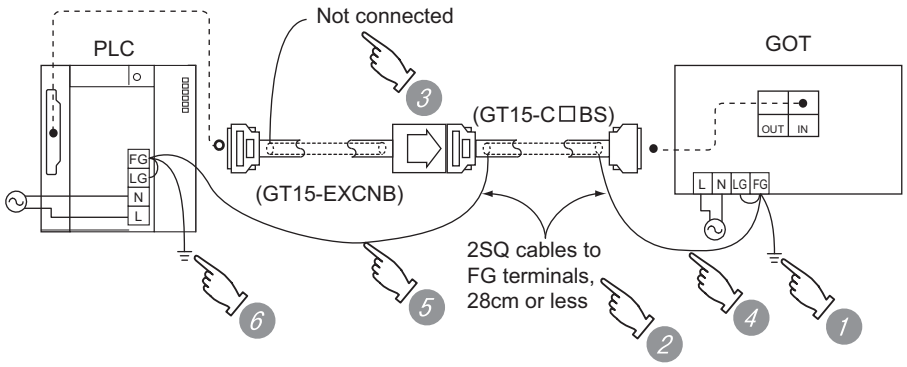
(3) Cable

Image	No.	Name	Model name		
	4	Connection cable • Between base unit and GOT	GT15-C12NB(1.2m),	GT15-C30NB(3m),	GT15-C50NB(5m)
	5	Connection cable*3*4*5 • Between bus connector conversion box and GOT	GT15-C100EXSS-1(10.6m), GT15-C300EXSS-1(30.6m)	GT15-C200EXSS-1(20.6m),	
	6	Connection cable • Between base unit and bus connector conversion box	GT15-AC06B(0.6m), GT15-AC30B(3m),	GT15-AC12B(1.2m), GT15-AC50B(5m)	
	7	Connection cable*4 • Between GOTs	GT15-C07BS(0.7m), GT15-C50BS(5m), GT15-C200BS(20m),	GT15-C12BS(1.2m), GT15-C100BS(10m), GT15-C300BS(30m)	GT15-C30BS(3m),

*3 Connect the GT15-C □ EXSS-1 connectors as follows:
Connector [COM1] → PLC CPU side
Connector [COM2] → GOT side

*4 When using GT15-C ☐ EXSS-1 or GT15-C ☐ BS, perform the grounding in the following steps.

(1) When using GT15-C ☐ EXSS-1



1 Connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.

2 Use the GT15-C ☐ BS's FG cable of 28cm or less.

3 Do not connect the GT15-EXCNB's FG ground cable.

4 Connect the GT15-C ☐ BS's FG cable on the GOT side to FG of the GOT unit power's terminal block.

5 Connect the GT15-C ☐ BS's FG cable on the PLC side to FG of the PLC's power supply module.

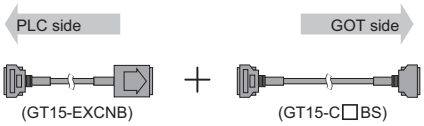
6 Connect the LG and FG terminals of the terminal block on the PLC and ground them with a cable.

(2) When using GT15-C ☐ BS

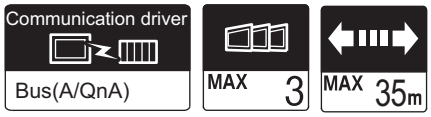
Follow the GOT side grounding steps in (1) above for both GOTs.

*5 About GT15-C ☐ EXSS-1

- It is composed of GT15-EXCNB (0.5m) and GT15-C ☐ BS (10 to 30m).
- Calculate the cable length based on GT15-C100EXSS-1 (10m), GT15-C200EXSS-1 (20m) and GT15-C300EXSS-1 (30m).
- Connect the connectors as follows:
  GX15-EXCNB→ PLC CPU side
  GT15-C ☐ BS→ GOT side

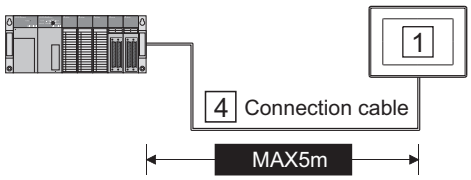
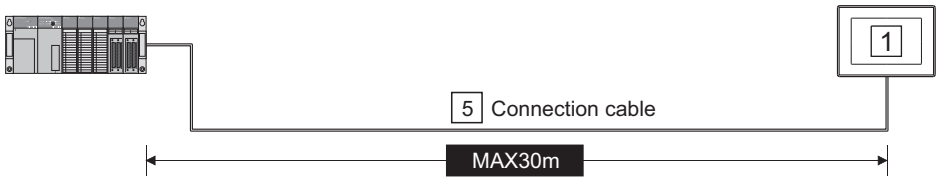
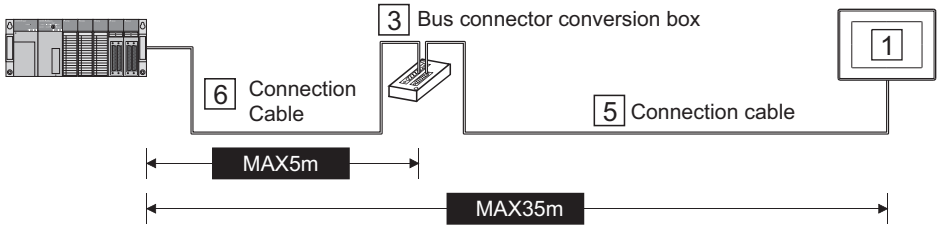


2.1.3 Connecting to QnASCPU or AnSCPU type



1 System configuration and connection conditions

(1) When using no extension base unit

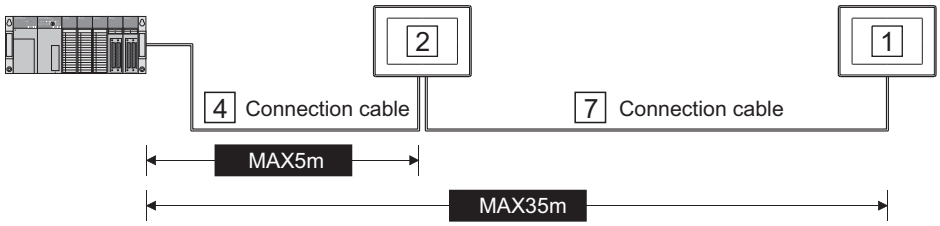
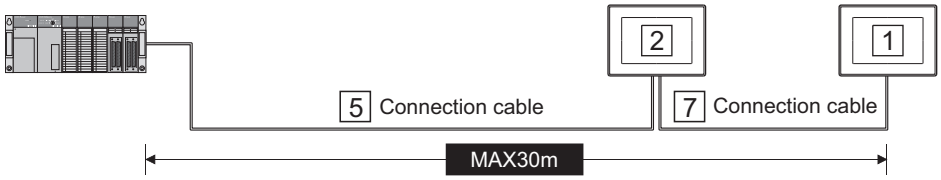
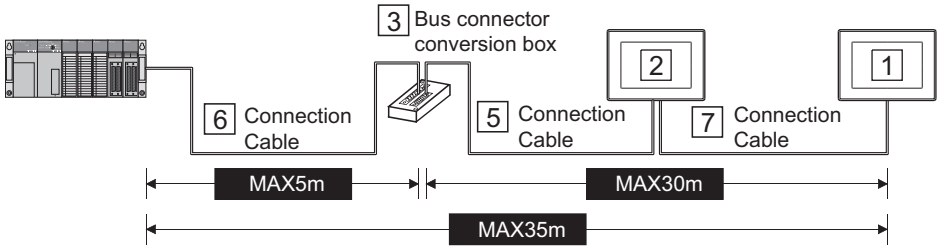
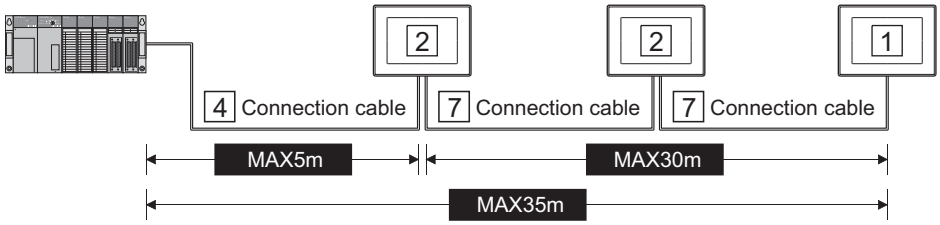
Connection conditions		System configuration
Number of GOTs *1	Distance from main base unit to 1st GOT	
1	5m or less	
	More than 5m, 30m or less	
	More than 30m	

(Continued to next page)

*1 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

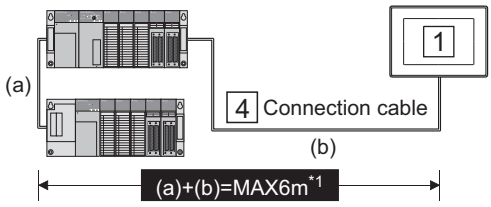
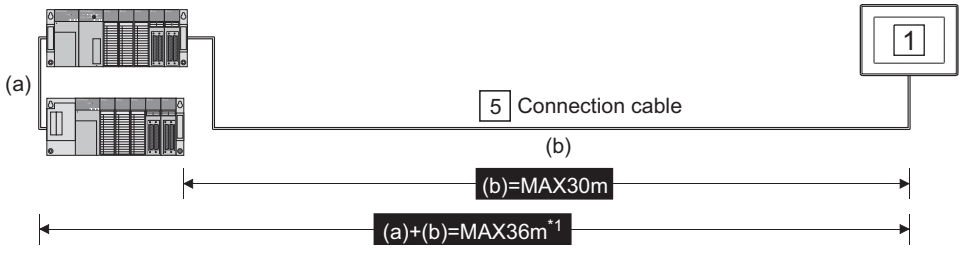
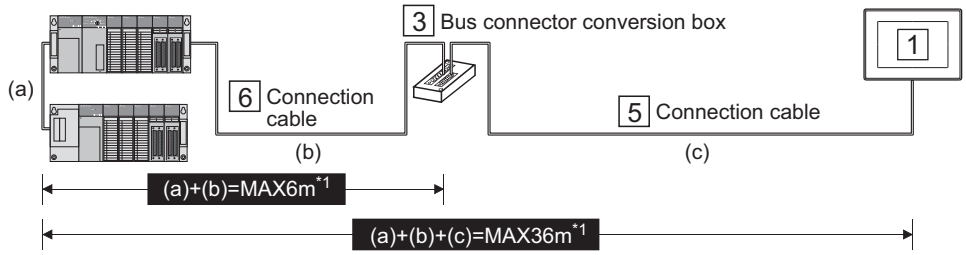
(from previous page)

Connection conditions		System configuration
Number of GOTs *1	Distance from main base unit to 1st GOT	
2	5m or less	
	More than 5m	
		
3	5m or less	

*1 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

(2) When using the extension base unit

Connection conditions		System configuration
Number of GOTs *2	Distance from main base unit to 1st GOT	
1	6m or less	
	More than 6m	
		

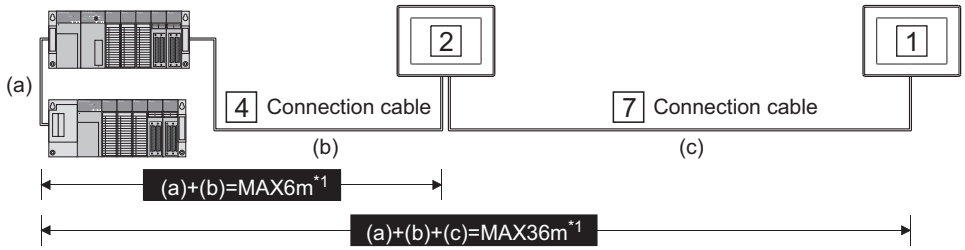
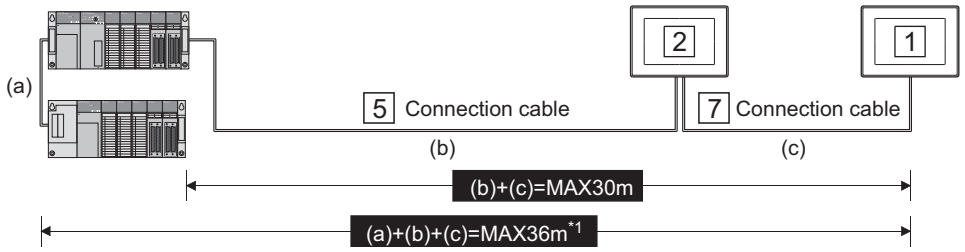
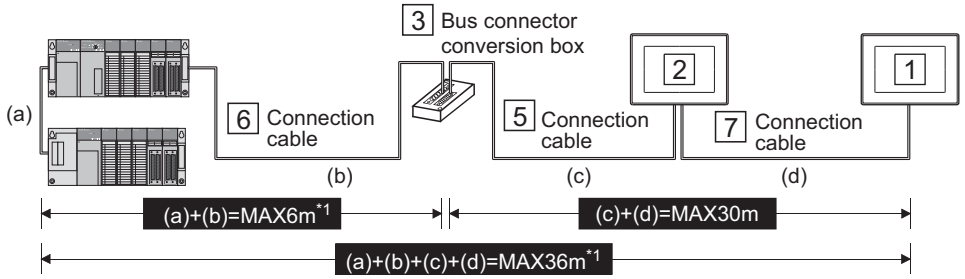
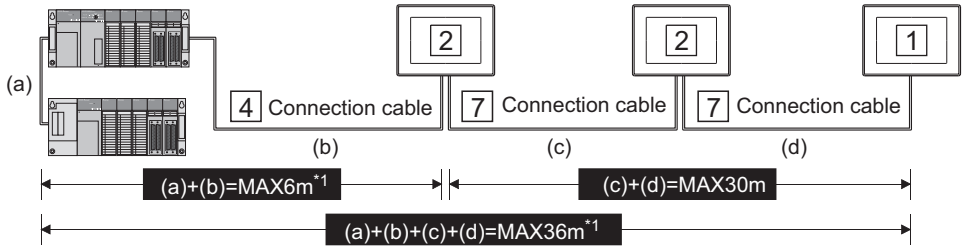
(Continued to next page)

*1 This includes the extension cable length (between the base unit and the extension base unit).

*2 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

(from previous page)

Connection conditions		System configuration
Number of GOTs *2	Distance from main base unit to 1st GOT	
2	6m or less	
	More than 6m	 
3	6m or less	

*1 This includes the extension cable length (between the base unit and the extension base unit).

*2 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

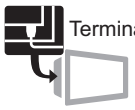
Point

Bus connector conversion box

When installing the 1st GOT 30m or more away from the main base unit, the bus connector conversion box is required.

2 System equipment

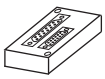
(1) GOT

Image	No.	Name	Model name	Model
	1	Bus connection unit*1 • For terminal GOT	GT15-75ABUSL, GT15-75ABUS2L, GT15-ABUS GT15-ABUS2	GT16 GT15
	1	Bus interface (Built into GOT)*2	GT1155-QTBDA, GT1155-QSBDA, GT1150-QLBDA	GT11 Bus
	2	Bus connection unit*1 • For intermediary GOT	GT15-75ABUS2L, GT15-ABUS2	GT16 GT15

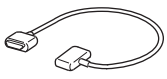
*1 The bus connection unit
GT15-75ABUSL, GT15-ABUS: Used for a terminal GOT. (Not available for an intermediary GOT.)
GT15-75ABUS2L, GT15-ABUS2: Used for an intermediary GOT. (Can be used for a terminal GOT.)

*2 About the connection of multiple GOTs
When connecting to multiple GOTs with GT 16, GT15 and GT11 mixed, use GT11 as a terminal.

(2) PLC

Image	No.	Name	Model name
	3	Bus connector conversion box • Unit used for converting connection cable connector and extending distance between GOT and base unit	A7GT-CNB

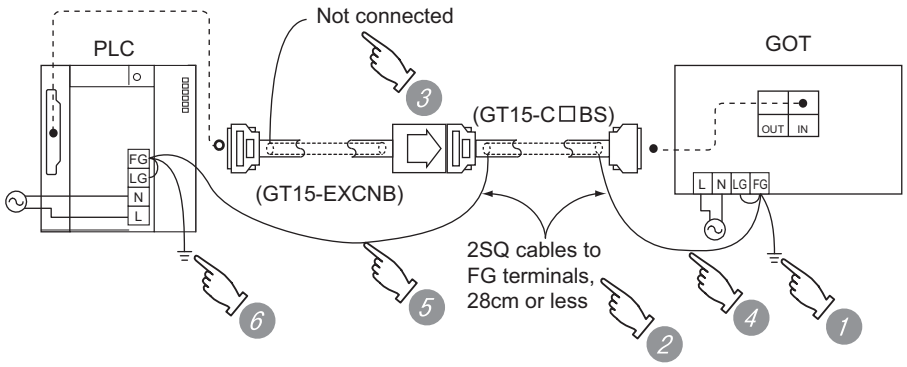
(3) Cable

Image	No.	Name	Model name
	4	Connection cable • Between base unit and GOT	GT15-A1SC07B(0.7m), GT15-A1SC12B(1.2m), GT15-A1SC30B(3m), GT15-A1SC50B(5m)
	5	Connection cable*3*4*5 • Between base unit and bus conversion box • Between bus connector conversion box and GOT	GT15-C100EXSS-1(10.6m), GT15-C200EXSS-1(20.6m), GT15-C300EXSS-1(30.6m)
	6	Connection cable • Between base unit and bus connector conversion box	GT15-A1SC05NB(0.45m), GT15-A1SC07NB(0.7m), GT15-A1SC30NB(3m), GT15-A1SC50NB(5m)
	7	Connection cable*4 • Between GOTs	GT15-C07BS(0.7m), GT15-C12BS(1.2m), GT15-C30BS(3m), GT15-C50BS(5m), GT15-C100BS(10m), GT15-C200BS(20m), GT15-C300BS(30m)

*3 Connect the GT15-C □ EXSS-1 connectors as follows:
Connector [COM1] → PLC CPU side
Connector [COM2] → GOT side

*4 When using GT15-C ☐ EXSS-1 or GT15-C ☐ BS, perform the grounding in the following steps.

(1) When using GT15-C ☐ EXSS-1



1 Connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.

2 Use the GT15-C ☐ BS's FG cable of 28cm or less.

3 Do not connect the GT15-EXCNB's FG ground cable.

4 Connect the GT15-C ☐ BS's FG cable on the GOT side to FG of the GOT unit power's terminal block.

5 Connect the GT15-C ☐ BS's FG cable on the PLC side to FG of the PLC's power supply module.

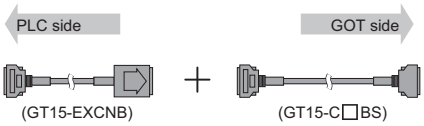
6 Connect the LG and FG terminals of the terminal block on the PLC and ground them with a cable.

(2) When using GT15-C ☐ BS

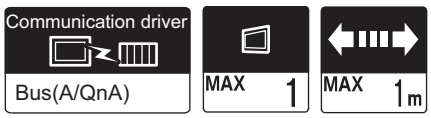
Follow the GOT side grounding steps in (1) above for both GOTs.

*5 About GT15-C ☐ EXSS-1

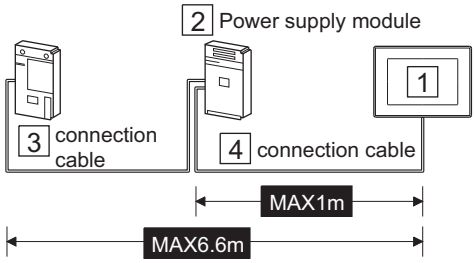
- It is composed of GT15-EXCNB (0.5m) and GT15-C ☐ BS (10 to 30m).
- Calculate the cable length based on GT15-C100EXSS-1 (10m), GT15-C200EXSS-1 (20m) and GT15-C300EXSS-1 (30m).
- Connect the connectors as follows:
  GX15-EXCNB→ PLC CPU side
  GT15-C ☐ BS→ GOT side



2.1.4 Connecting to A0J2HCPU



1 System configurations and connection conditions

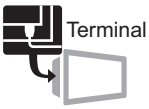
Connection conditions		System configuration
Number of GOTs*1	Distance from main base unit to 1st GOT	
1	1m or less	

*1 The number of connectable GOTs is restricted depending on the number of intelligent function modules mounted to the A0J2HCPU.

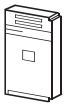
Section 2.3 11 When connecting multiple GOTs

2 System equipment

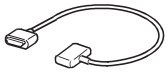
(1) GOT

Image	No.	Name	Model name	Model
	1	Bus connection unit • For terminal GOT	GT15-75ABUSL, GT15-75ABUS2L, GT15-ABUS, GT15-ABUS2	GT16 GT15
	1	Bus interface (Built into GOT)*2	GT1155-QTBDA, GT1155-QSBDA, GT1150-QLBDA	GT11 Bus

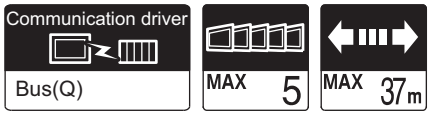
(2) PLC

Image	No.	Name	Model name
	2	Power supply module • Module that supplies power to A0J2HCPU	A0J2-PW

(3) Cable

Image	No.	Name	Model name
	3	Connection cable • Between A0J2HCPU and Power supply module	A0J2C03(0.3m), A0J2C06(0.55m), A0J2C10(1m), A0J2C20(2m)
	4	Connection cable • Between Power supply module and GOT	GT15-J2C10B(1m)

2.1.5 Connecting to motion controller CPU (Q Series)



1 When connecting to a CPU other than Q170MCPU

A motion controller CPU (Q Series) mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

The system configuration, connection conditions, and system equipment for connecting a GOT to a motion controller CPU (Q Series) are the same as those for connecting to the QCPU (Q mode).

(☞ Section 2.1.1 Connecting to QCPU (Q mode))

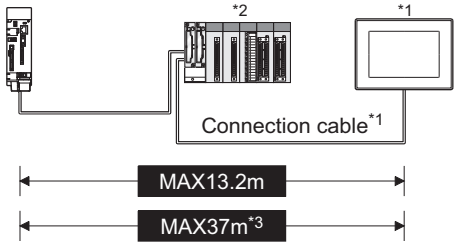
2 When connecting to Q170MCPU

The following shows the system configuration and connection conditions between Q170MCPU and the GOT.

The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for the QCPU (Q mode).

(☞ Section 2.1.1 Connecting to QCPU (Q mode))

(1) System configuration and connection conditions

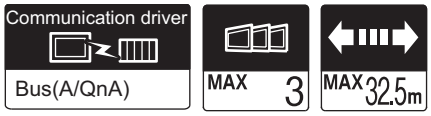
Connection conditions		System configuration
Number of GOTs	Distance	
*1	Between motion controller and GOT: 37m or less	

*1 The system configuration and connection conditions are same as those for connecting to the QCPU (Q mode).

*2 Connect GT15-QC □ B to the motion controller directly or to the extension base unit (Q52B/Q55B).
Only the first step can be used on the extension base unit.

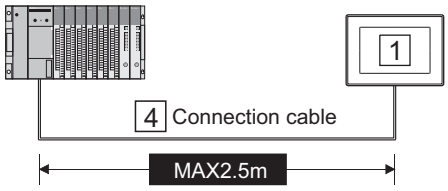
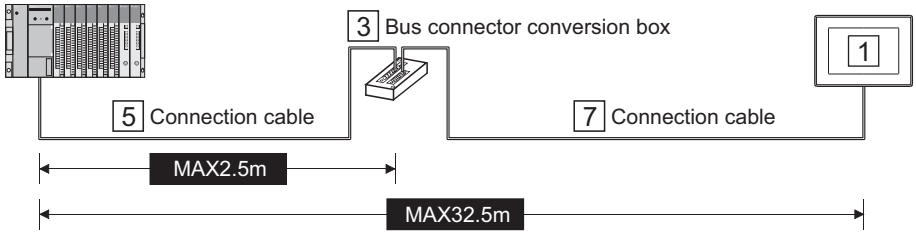
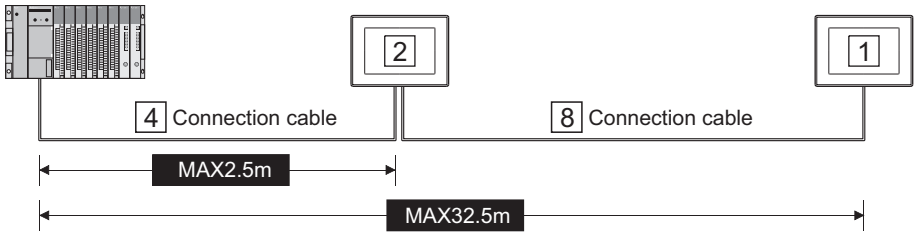
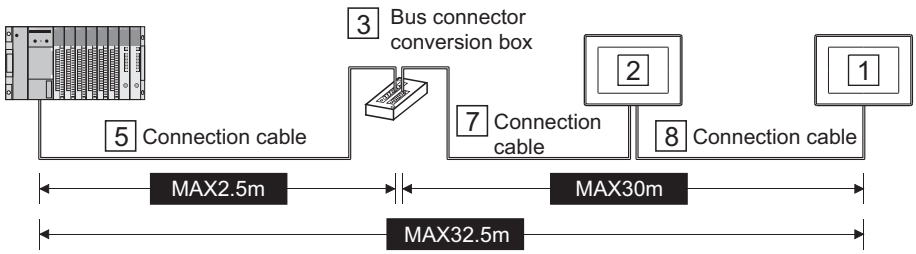
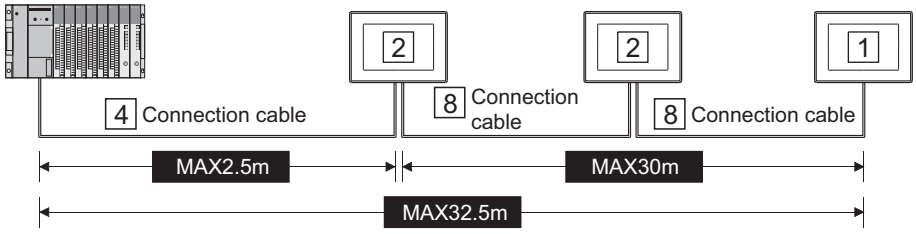
*3 It is the overall extension cable length for using the bus extension connector box.

2.1.6 Connecting to motion controller CPU (A273UCPU, A273UHCPU(-S3), A373UCPU(-S3))



1 System configuration and connection conditions

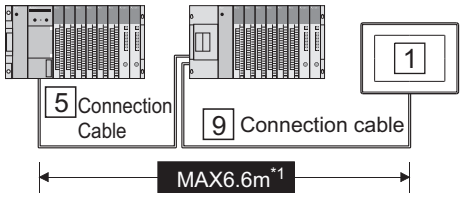
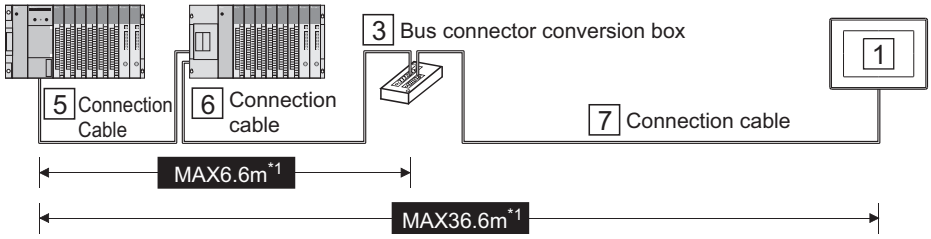
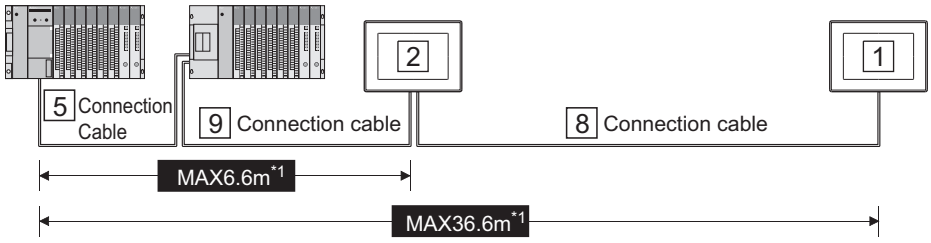
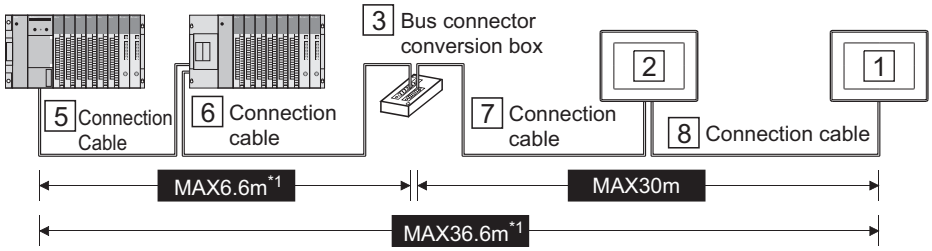
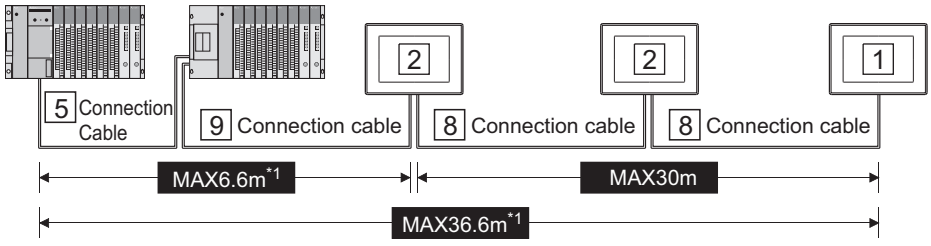
(1) When using no extension base unit

Connection conditions		System configuration
Number of GOTs *1	Distance from main base unit to 1st GOT	
1	2.5m or less	
	More than 2.5m	
2	2.5m or less	
	More than 2.5m	
3	2.5m or less	

*1 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

(2) When using the extension base unit

Connection conditions		System configuration
Number of GOTs *2	Distance from main base unit to 1st GOT	
1	6.6m or less	
	More than 6.6m	
2	6.6m or less	
	More than 6.6m	
3	6.6m or less	

*1 This includes the extension cable length (between the base unit and the extension base unit).

*2 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

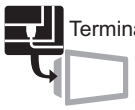
Point

Bus connector conversion box

A bus connector conversion box is required when installing the first GOT in a place 2.5m or more away from the main base unit (6.6m or more when using an extension base unit.)

2 System equipment

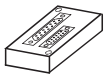
(1) GOT

Image	No.	Name	Model name	Model
	1	Bus connection unit*1 *2 • For terminal GOT	GT15-75ABUSL, GT15-75ABUS2L, GT15-ABUS GT15-ABUS2	GT16 GT15
	1	Bus interface (Built into GOT) *2	GT1155-QTBDA, GT1155-QSBDA, GT1150-QLBDA	GT11 Bus
	2	Bus connection unit*1 *2 • For intermediary GOT	GT15-75ABUS2L, GT15-ABUS2	GT16 GT15

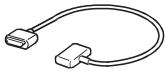
*1 About the bus connection unit
GT15-75ABUSL, GT15-ABUS: Used for a terminal GOT. (Not available for an intermediary GOT.)
GT15-75ABUS2L, GT15-ABUS2: Used for an intermediary GOT. (Can be used for a terminal GOT.)

*2 About the connection of multiple GOTs
When connecting to multiple GOTs with GT 16, GT15 and GT11 mixed, use GT11 as a terminal.

(2) PLC

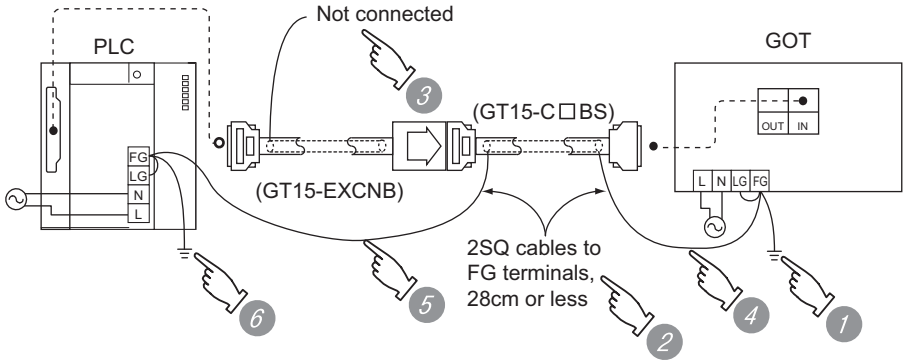
Image	No.	Name	Model name
	3	Bus connector conversion box • Unit used for converting connection cable connector and extending distance between GOT and base unit	A7GT-CNB

(3) Cable

Image	No.	Name	Model name
	4	Connection cable*6 • Between base unit and GOT	GT15-A370C12B-S1(1.2m), GT15-A370C25B-S1(2.5m)
	5	Connection cable*6 • Between base unit and GOT • Between base unit and bus connector conversion box • Between base units	GT15-A370C12B(1.2m), GT15-A370C25B(2.5m)
	6	Connection cable • Between base unit and bus connector conversion box	GT15-AC06B(0.6m), GT15-AC12B(1.2m), GT15-AC30B(3m), GT15-AC50B(5m)
	7	Connection cable*3*4*5 • Between bus connector conversion box and GOT	GT15-C100EXSS-1(10.6m), GT15-C200EXSS-1(20.6m), GT15-C300EXSS-1(30.6m)
	8	Connection cable*4 • Between GOTs	GT15-C07BS(0.7m), GT15-C12BS(1.2m), GT15-C30BS(3m), GT15-C50BS(5m), GT15-C100BS(10m), GT15-C200BS(20m), GT15-C300BS(30m)
	9	Connection cable Between base unit and GOT	GT15-C12NB(1.2m), GT15-C30NB(3m), GT15-C50NB(5m)

*3 Connect the GT15-C ☐ EXSS-1 connectors as follows:
Connector [COM1] → PLC CPU side
Connector [COM2] → GOT side

*4 When using GT15-C ☐ EXSS-1 or GT15-C ☐ BS, perform the grounding in the following steps.
(1) When using GT15-C ☐ EXSS-1



1 Connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.

2 Use the GT15-C ☐ BS's FG cable of 28cm or less.

3 Do not connect the GT15-EXCNB's FG ground cable.

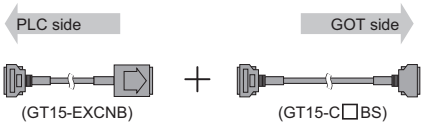
4 Connect the GT15-C ☐ BS's FG cable on the GOT side to FG of the GOT unit power's terminal block.

5 Connect the GT15-C ☐ BS's FG cable on the PLC side to FG of the PLC's power supply module.

6 Connect the LG and FG terminals of the terminal block on the PLC and ground them with a cable.

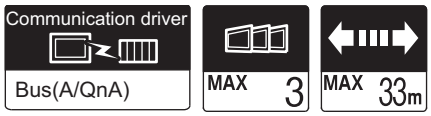
(2) When using GT15-C ☐ BS
Follow the GOT side grounding steps in (1) above for both GOTs.

*5 About GT15-C ☐ EXSS-1
- It is composed of GT15-EXCNB (0.5m) and GT15-C ☐ BS (10 to 30m).
- Calculate the cable length based on GT15-C100EXSS-1 (10m), GT15-C200EXSS-1 (20m) and GT15-C300EXSS-1 (30m).
- Connect the connectors as follows:
GX15-EXCNB→ PLC CPU side
GT15-C ☐ BS→ GOT side



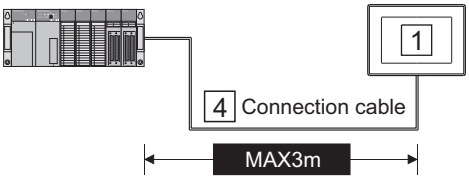
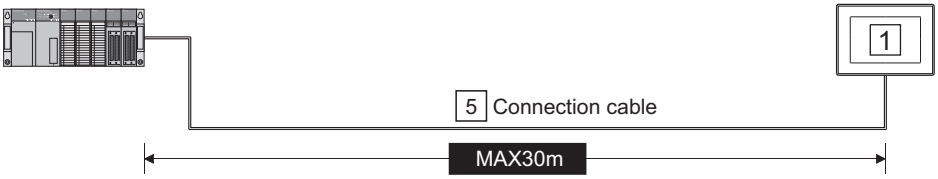
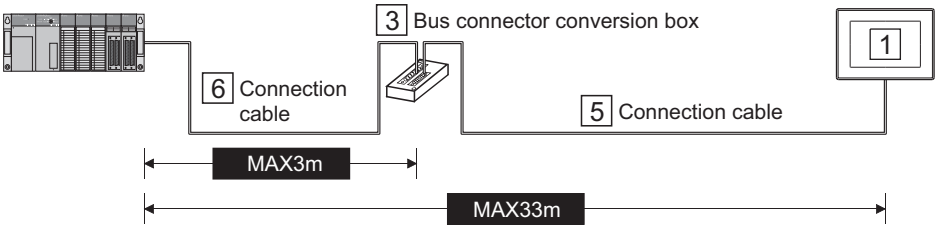
*6 Connect the cable to the connector dedicated to PLC extension.

2.1.7 Connecting to motion controller CPU (A171SHCPUN, A172SHCPUN, A173UHCPU(-S1))



1 System configuration and connection conditions

(1) When using no extension base unit

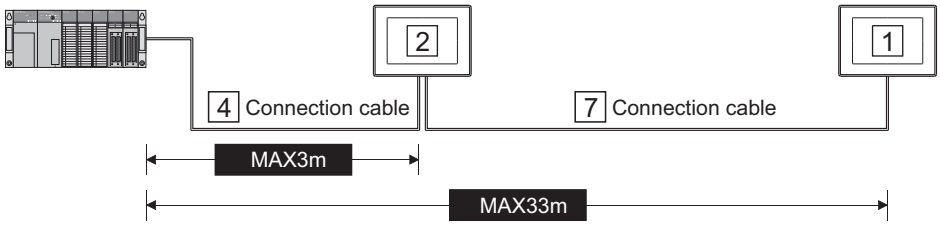
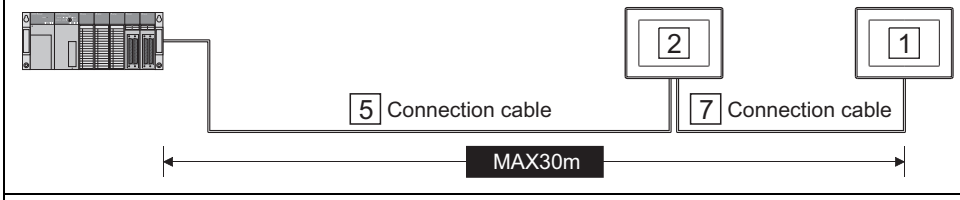
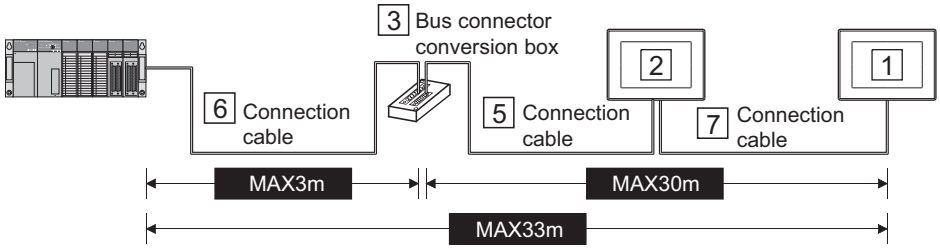
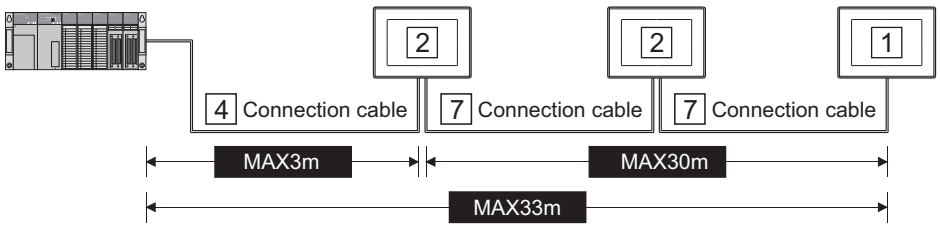
Connection conditions		System configuration
Number of GOTs *1	Distance from main base unit to 1st GOT	
1	3m or less	
	More than 3m, 30m or less	
	More than 3m, 33m or less	

(Continued to next page)

*1 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

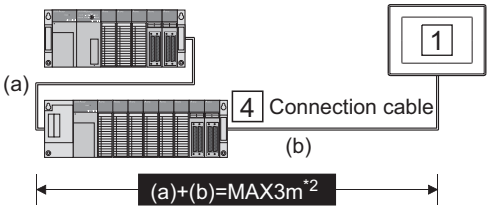
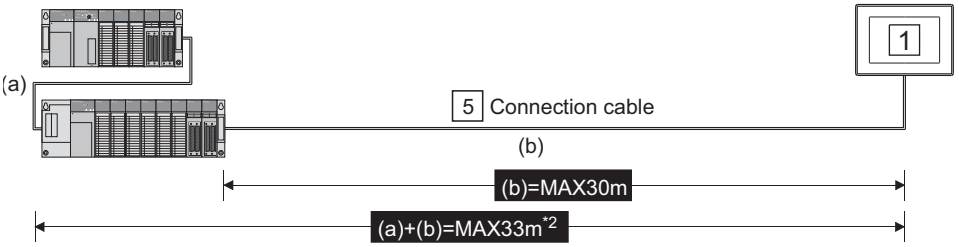
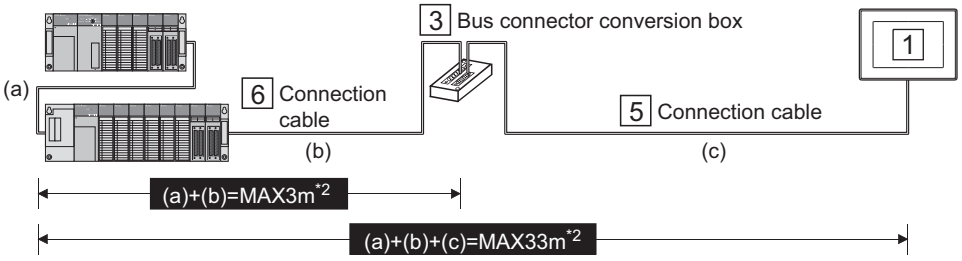
(from previous page)

Connection conditions		System configuration
Number of GOTs *1	Distance from main base unit to 1st GOT	
2	3m or less	
	More than 3m	
		
3	3m or less	

*1 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

(2) When using the extension base unit*1

Connection conditions		System configuration
Number of GOTs *3	Distance from main base unit to 1st GOT	
1	3m or less	
	More than 3m	 

(Continued to next page)

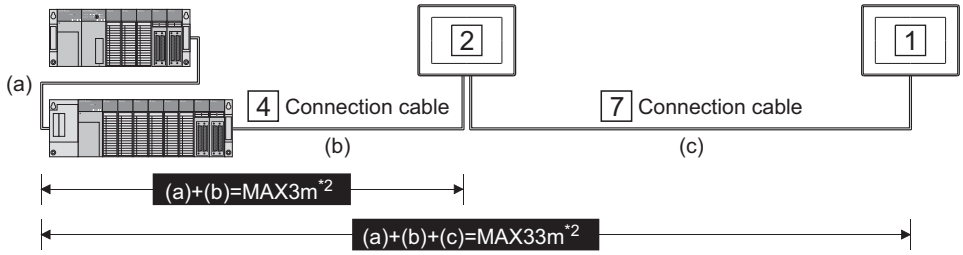
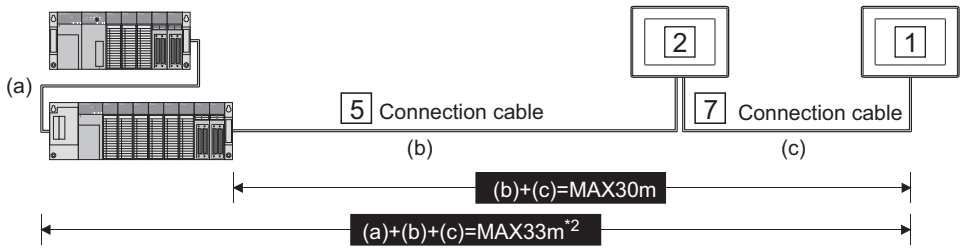
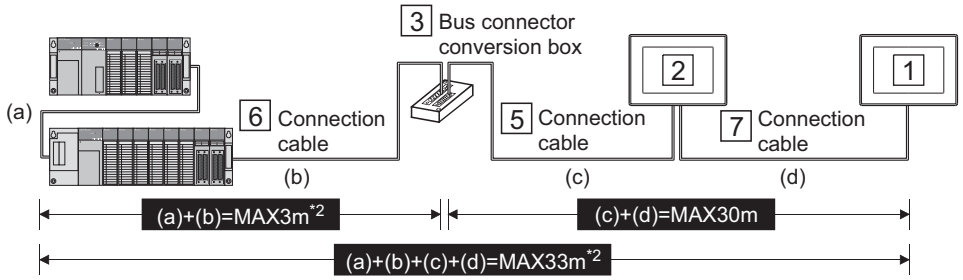
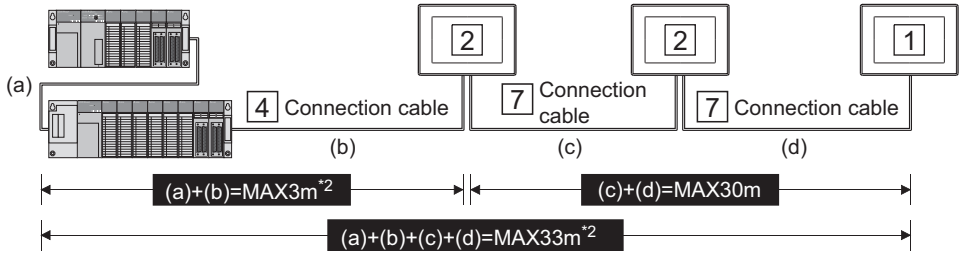
*1 Use the A168B extension base unit for connecting GOTs.

*2 This includes the extension cable length (between the base unit and the extension base unit).

*3 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

(from previous page)

Connection conditions		System configuration
Number of GOTs *3	Distance from main base unit to 1st GOT	
2	3m or less	
	More than 3m	
		
3	3m or less	

*1 Use the A168B extension base unit for connecting GOTs.

*2 This includes the extension cable length (between the base unit and the extension base unit).

*3 The number of connectable GOTs is limited by the type of the connected CPU and the number of the intelligent function modules.

Section 2.3 11 When connecting multiple GOTs

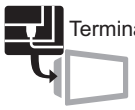
Point

Bus connector conversion box

When installing the 1st GOT 30m or more away from the main base unit, the bus connector conversion box is required.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Bus connection unit*1 *2 • For terminal GOT	GT15-75ABUSL, GT15-75ABUS2L, GT15-ABUS GT15-ABUS2	GT16 GT15
	1	Bus interface (Built into GOT) *2	GT1155-QTBDA, GT1155-QSBDA, GT1150-QLBDA	GT11 Bus
	2	Bus connection unit*1 *2 • For intermediary GOT	GT15-75ABUS2L, GT15-ABUS2	GT16 GT15

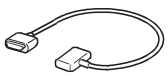
*1 About the bus connection unit
GT15-75ABUSL, GT15-ABUS: Used for a terminal GOT. (Not available for an intermediary GOT.)
GT15-75ABUS2L, GT15-ABUS2: Used for an intermediary GOT. (Can be used for a terminal GOT.)

*2 About the connection of multiple GOTs
When connecting to multiple GOTs with GT 16, GT15 and GT11 mixed, use GT11 as a terminal.

(2) PLC

Image	No.	Name	Model name
	3	Bus connector conversion box • Unit used for converting connection cable connector and extending distance between GOT and base unit	A7GT-CNB

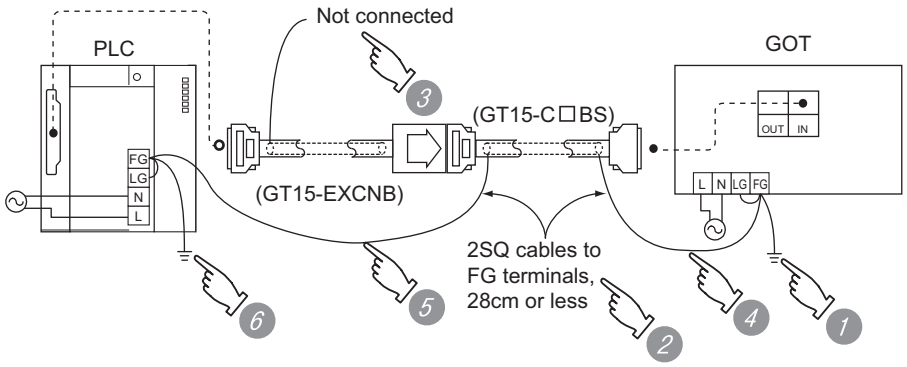
(3) Cable

Image	No.	Name	Model name
	4	Connection cable • Between base unit and GOT	GT15-A1SC07B(0.7m), GT15-A1SC12B(1.2m), GT15-A1SC30B(3m)
	5	Connection cable*3*4*5 • Between base unit and GOT • Between bus connector conversion box and GOT	GT15-C100EXSS-1(10.6m), GT15-C200EXSS-1(20.6m), GT15-C300EXSS-1(30.6m)
	6	Connection cable • Between base unit and bus connector conversion box	GT15-A1SC05NB(0.45m), GT15-A1SC07NB(0.7m), GT15-A1SC30NB(3m)
	7	Connection cable*4 • Between GOTs	GT15-C07BS(0.7m), GT15-C12BS(1.2m), GT15-C30BS(3m), GT15-C50BS(5m), GT15-C100BS(10m), GT15-C200BS(20m), GT15-C300BS(30m)

*3 Connect the GT15-C □ EXSS-1 connectors as follows:
Connector [COM1] → PLC CPU side
Connector [COM2] → GOT side

*4 When using GT15-C ☐ EXSS-1 or GT15-C ☐ BS, perform the grounding in the following steps.

(1) When using GT15-C ☐ EXSS-1



1 Connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.

2 Use the GT15-C ☐ BS's FG cable of 28cm or less.

3 Do not connect the GT15-EXCNB's FG ground cable.

4 Connect the GT15-C ☐ BS's FG cable on the GOT side to FG of the GOT unit power's terminal block.

5 Connect the GT15-C ☐ BS's FG cable on the PLC side to FG of the PLC's power supply module.

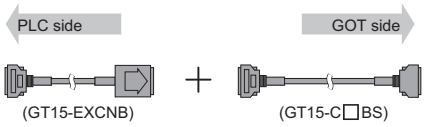
6 Connect the LG and FG terminals of the terminal block on the PLC and ground them with a cable.

(2) When using GT15-C ☐ BS

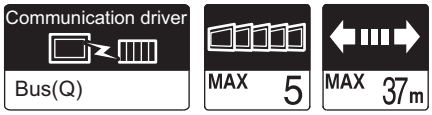
Follow the GOT side grounding steps in (1) above for both GOTs.

*5 About GT15-C ☐ EXSS-1

- It is composed of GT15-EXCNB (0.5m) and GT15-C ☐ BS (10 to 30m).
- Calculate the cable length based on GT15-C100EXSS-1 (10.6m), GT15-C200EXSS-1 (20.6m) and GT15-C300EXSS-1 (30.6m).
- Connect the connectors as follows:
  GX15-EXCNB→ PLC CPU side
  GT15-C ☐ BS→ GOT side

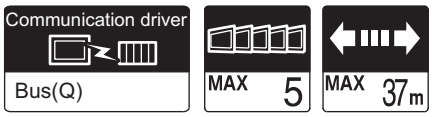


2.1.8 Connecting to CNC C70



The GOT can monitor the CNC C70 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CNC C70 are the same as those for connecting to the QCPU (Q mode).
(☞ Section 2.1.1 Connecting to QCPU (Q mode))

2.1.9 Connecting to CRnQ-700



The GOT can monitor the CRnQ-700 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CRnQ-700 are the same as those for connecting to the QCPU (Q mode).
(☞ Section 2.1.1 Connecting to QCPU (Q mode))

2.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 2.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 2.2.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 2.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 2.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 2.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 2.2.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

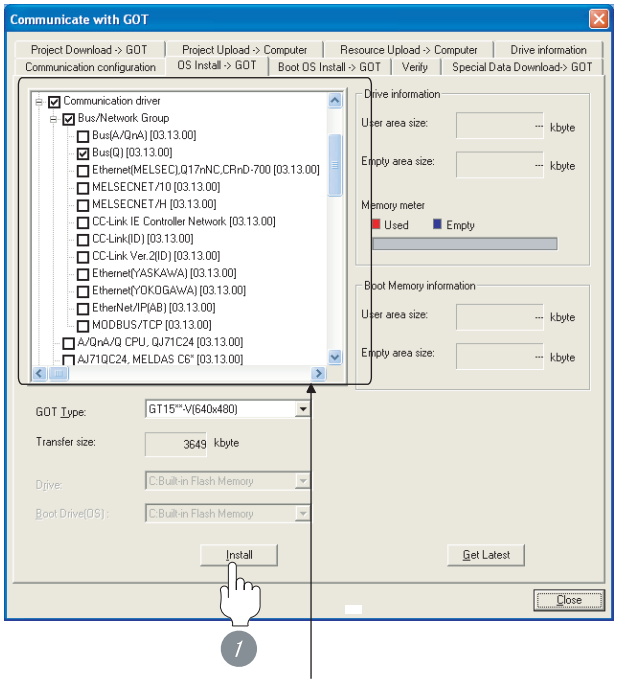
☞ Section 2.2.7
Checking for normal monitoring

2.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check either of the following under the Communication driver.
- When connecting to QCPU (Q mode) or motion controller CPU (Q Series): Bus (Q)
- When connecting to other than the above: Bus (A/QnA)

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

Write Check Sheet

☞ Section 2.4 Communication Check Sheet

Write down the items selected in this section to the check sheet.

1 OS selection

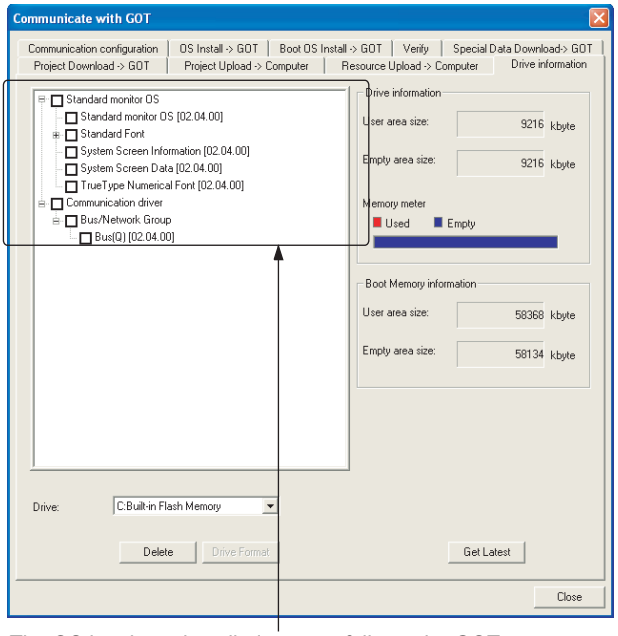
- Standard monitor OS
  : Version, font
- Communication driver
  : Version
- Option OS
  : Name of the option OS, version

2.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (either of the following):
- Bus(Q)
- Bus(A/QnA)

☞ Section 2.4 Communication Check Sheet

Check

After making sure at the Drive information that the OS has been successfully installed on the GOT, mark the check sheet.

1 OS selection (Standard monitor OS, Communication driver, Option OS)

2.2.3 Setting communication interface (Communication settings)

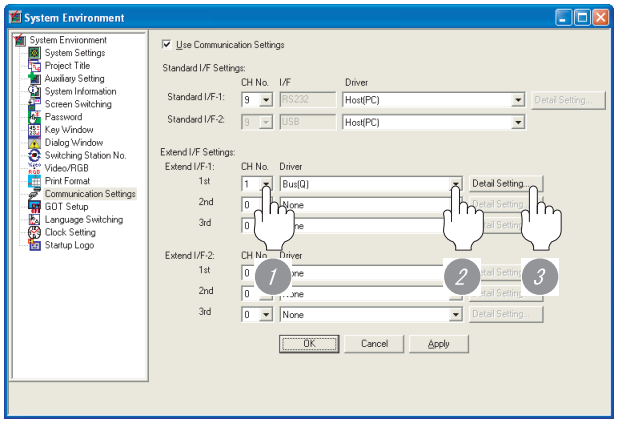
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

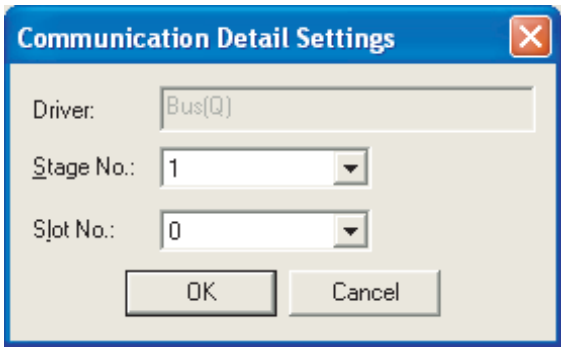
1 Set [1] to the channel No. used.

2 Set the following to the driver.
- When connecting to QCPU (Q mode) or motion controller CPU (Q Series): Bus(Q)
- When connecting to other than the above: Bus(A/QnA)

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

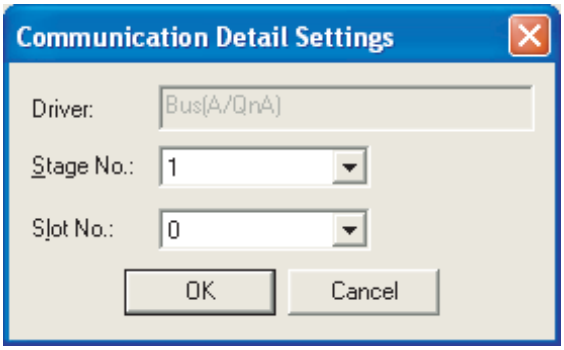
2 Communication detail settings

(1) Bus(Q)



Item	Description	Range
Stage No.	<Default: 1>	1 to 7
Slot No.	<Default: 0>	0 to 9
Monitor	<Default: Normal>	High/Normal/Low

(2) Bus(A/QnA)



Item	Description	Range
Stage No.	<Default: 1>	1 to 7
Slot No.	<Default: 0>	0 to 7

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(3) When changing Stage No. and Slot No.

Change these settings with the PLC CPU turned OFF, and then reapply the power to the PLC CPU and GOT.
Failure to do so may generate a system alarm (No.487).

3 Setting Stage No. and Slot No.

Point

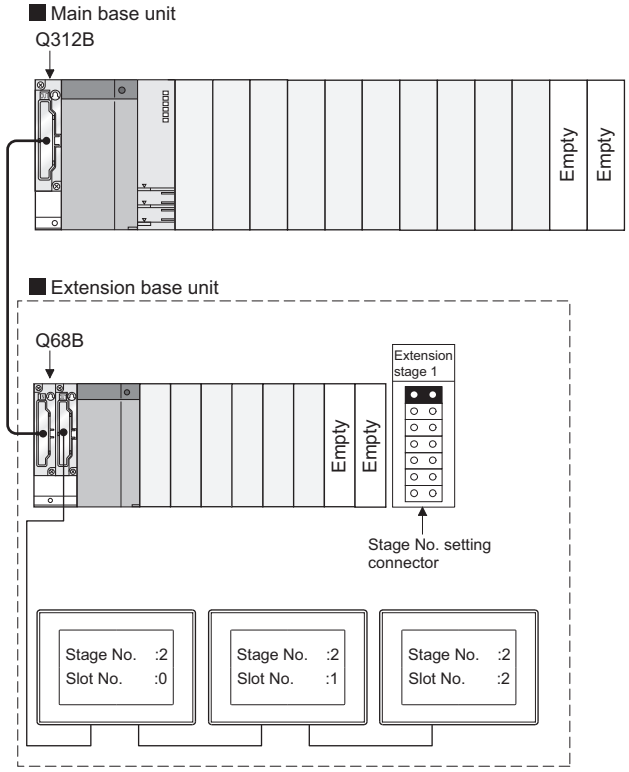
Before setting Stage No. and Slot No.

The PLC CPU recognizes the GOT as follows.
- QCPU (Q mode):
  Intelligent function module of 16 I/O points
- Other than QCPU (Q mode):
  Intelligent function module of 32 I/O points

At the [Communication Detail Settings], assign the GOT to an empty I/O slot on the PLC CPU.

(1) When connecting to QCPU (Q mode)

Set an additional stage (16 points x 10 slots) for GOT connection, and assign a GOT to one of the I/O slots. (The GOT cannot be assigned to empty slots of the main base unit or extension base unit.)



Point

When using the bus extension connector box

Set the Stage No. switch on the bus extension connector box to the same Stage No. as the GOT.
For setting details, refer to the following manual:

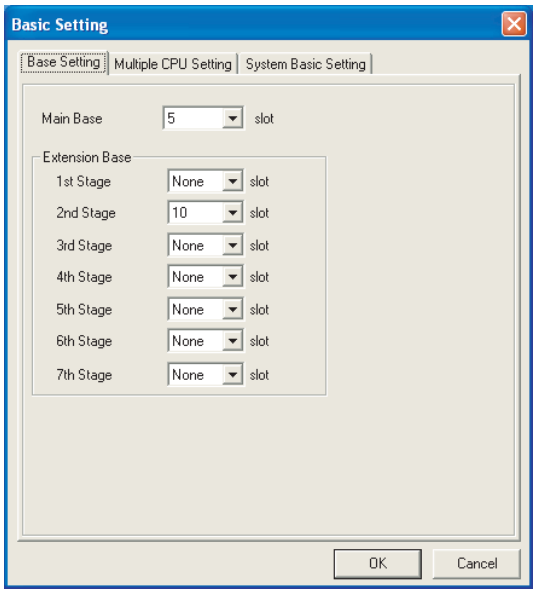
☞ A9GT-QCNB Bus Extension Connector Box User's Manual

Point

When connecting to motion controller CPU (Q Series)

In the [Base Setting] on MT Developer, set "10" to the number of slots for the extension base used for GOT connection.

Example: When setting "2" to Stage No. and "0" to Slot No. in the communication interface settings, set "10" to [2nd Stage].



Hint!

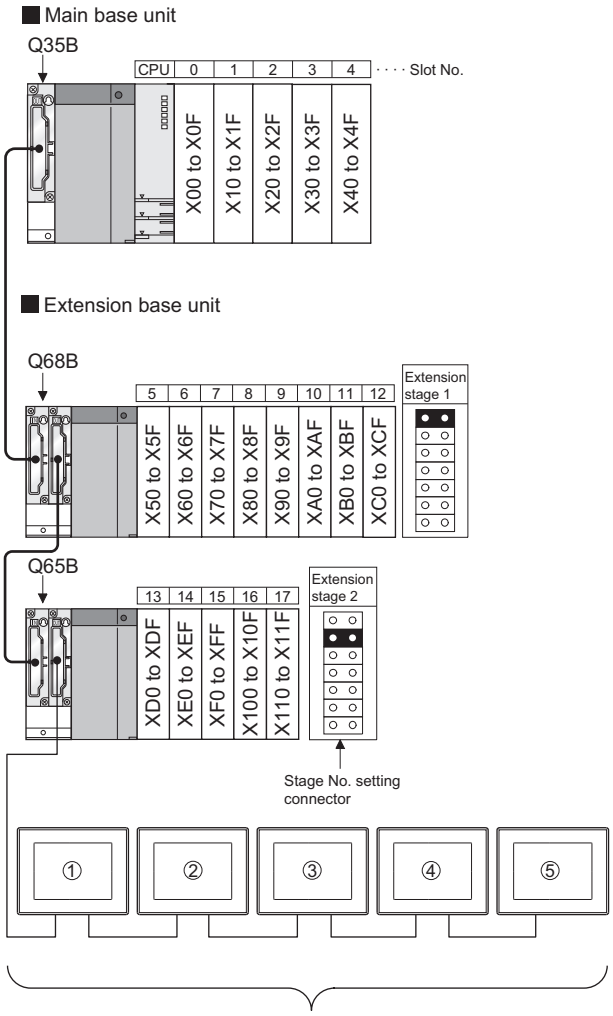
Setting unused I/O slots to empty (0 points) (only when connecting to QCPU (Q mode))

Setting unused I/O slots as empty slots (0 points) from "PC parameters"→ "I/O assignments" of GX Developer allows you to use I/O numbers of "16 points x number of empty slots" for other purposes.
For details on I/O assignment settings, refer to the following manual:

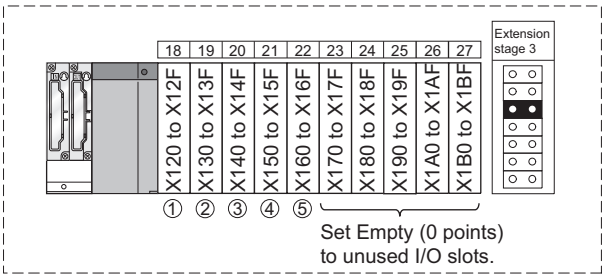
☞ QnU User's Manual (Function Explanation, Program Fundamentals)

☞ Qn(H)/QnPH/QnPRHCPU User's Manual (Function Explanation, Program Fundamentals)

Example: I/O assignment (when 16 points are assigned to each of all modules installed with the PLC CPU)



Schematic image of Stage No. for GOT connection viewed from PLC CPU (16 points x 10 slots occupied)



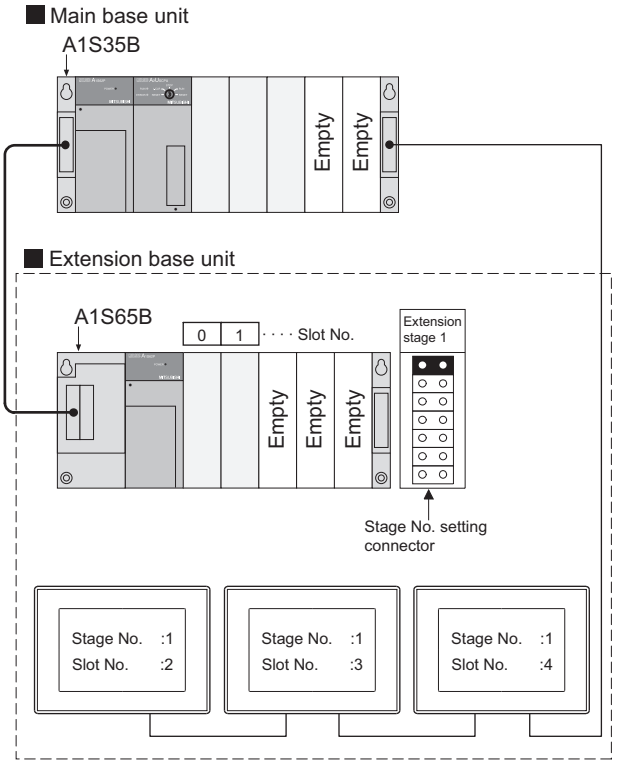
(2) When connecting to other than QCPU (Q mode)

Assign the GOT to an empty I/O slot on the extension base unit.

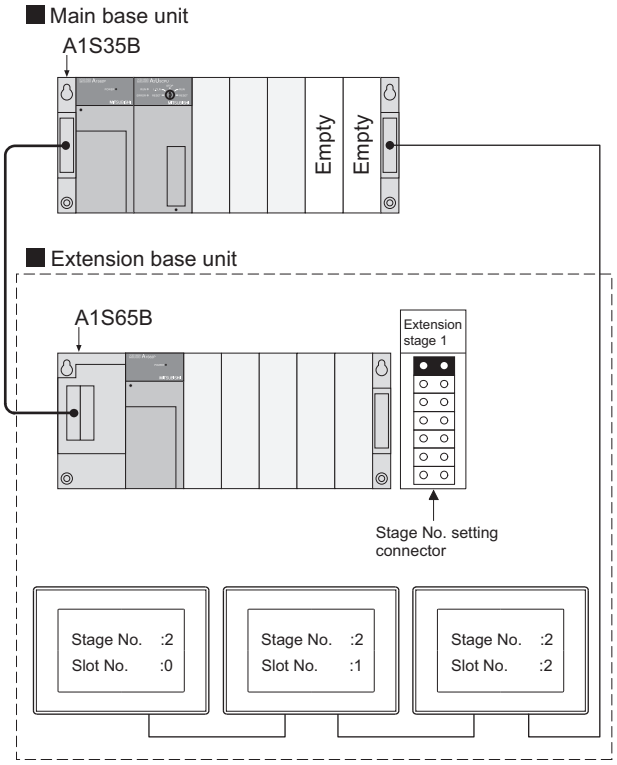
When there is no extension base unit or no empty I/O slots are left on an extension base unit, set an additional stage, and assign the GOT to one of the I/O slots.

(Assigning the GOT to an empty slot on the main base unit is not allowed.)

(a) When there is an empty I/O slot on the extension base unit



(b) When there are no empty I/O slots on the extension base unit





Write Check Sheet

Section 2.4 Communication Check Sheet

Write down the items selected in this section to the check sheet.

3 Communication setting. (Stage No., Slot No.)



Check

Section 2.4 Communication Check Sheet

When using the bus extension connector box, mark the check sheet after confirming that the Stage No. of the GOT is the same as the Stage No. of the bus extension connector box.

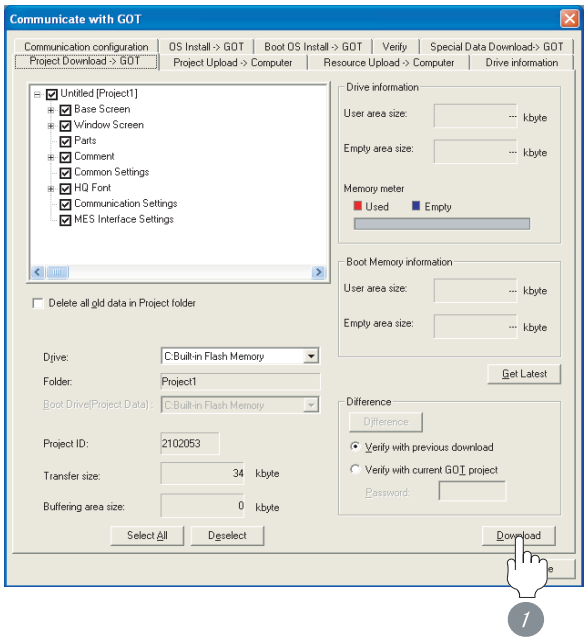
2 Unit selection (Bus extension connector box/Bus connector conversion box)

2.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

2.2.5 Attaching communication unit and connecting cable

Point

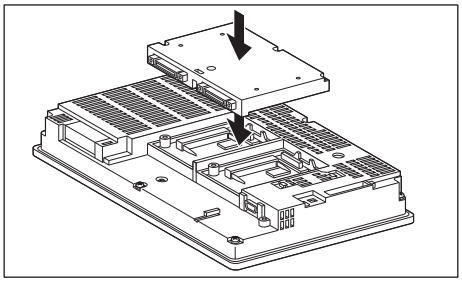
Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

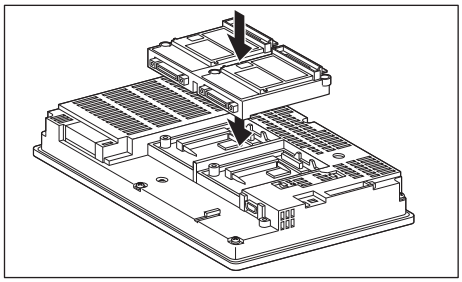
(1) When mounting GT15-75QBUS, GT15-75QBUS2, GT15-75ABUSL, GT15-75ABUS2L

1 Attach the bus connection unit to the extension unit connector on the GOT.



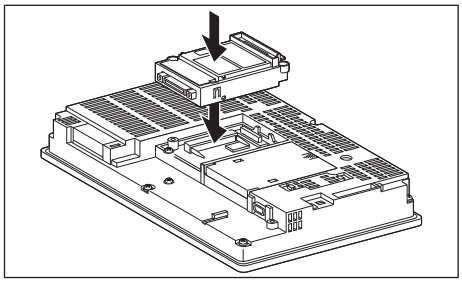
(2) When mounting GT15-QBUS2, GT15-ABUS2

1 Attach the bus connection unit to the extension unit connector on the GOT.



(3) When mounting GT15-QBUS, GT15-ABUS

1 Attach the bus connection unit to the extension unit connector on the GOT.



Point

Bus connection unit

For details on the bus connection unit, refer to the following manual:

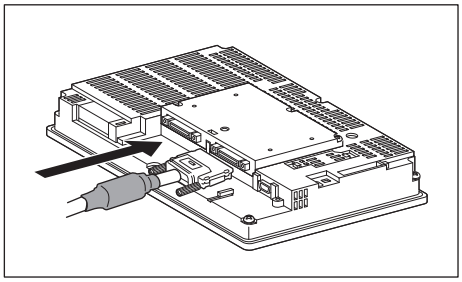
☞ GT15 BUS CONNECTION UNIT User's Manual

☞ GT15-QBUS/GT15-QBUS2/GT15-ABUS/GT15-ABUS2
GT15 BUS CONNECTION UNIT User's Manual

2 Connecting the cable

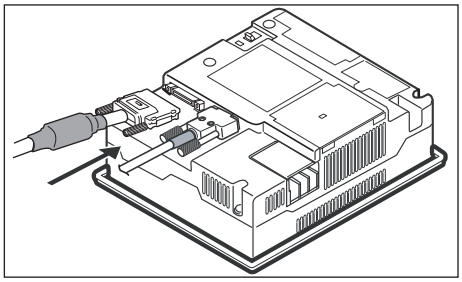
(1) When using GT 16, GT15

1 Connect the bus connection cable to the bus connection unit.



(2) When using GT11

1 Connect the bus connection cable to the bus interface of GOT.



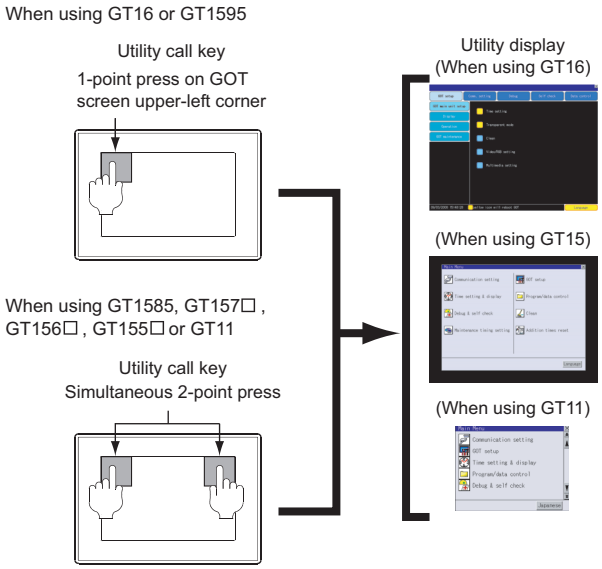
2.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

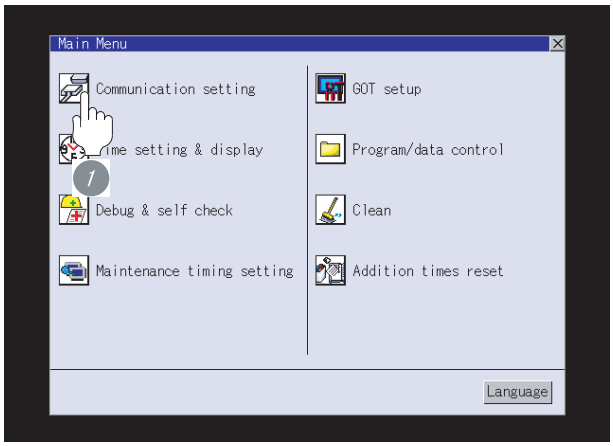


Point

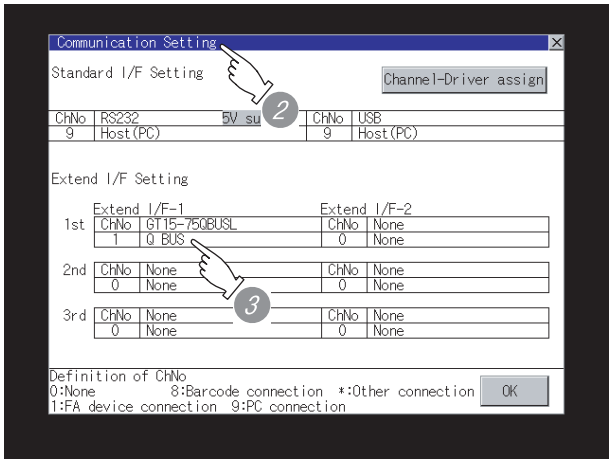
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver (either of the following)
  Q BUS
  A/QnA BUS

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 2.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

Check

Section 2.4 Communication Check Sheet

When you have verified in the Communication setting that the GOT recognizes the connected equipment, mark the check sheet.

2 Unit selection (Communication module)

2.2.7 Checking for normal monitoring

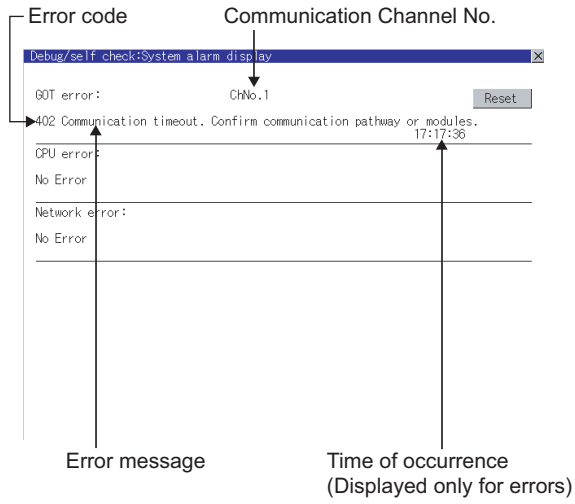
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Check if the PLC CPU recognizes the GOT. (QCPU (Q mode) only)

Using the [System monitor] of GX Developer, check if the PLC CPU recognizes the GOT or not.

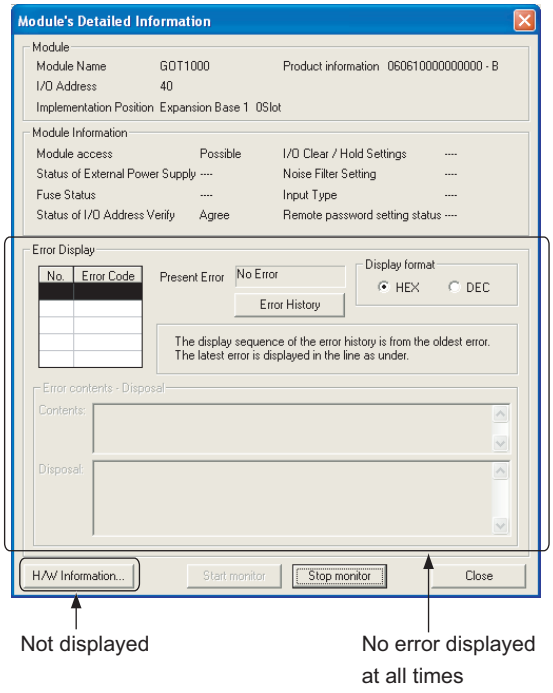
For details on GX Developer operations, refer to the following manual.

GX Developer Version ☐ Operating Manual

(1) Check the Module Name, I/O Address and Implementation Position. (The display example is based on GX Developer Version 8.

Startup procedure

GX Developer → [Diagnostics] → [System monitor]



All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

Check

Section 2.4 Communication Check Sheet

(1) When you have made sure that the Stage No. and Slot No. currently set to the GOT are correct, mark the check sheet.

3 Communication setting (Stage No., Slot No.)

(2) If no problems are identified by 1 and 2, then mark the check sheet.

4 Communication check (System alarm of GOT, [System monitor] on GX Developer)

2.3 Precautions

1 Turning the GOT ON

(1) System configuration
The PLC CPU remains in the reset status until the GOT is started.
Therefore, no sequence program will run until then.
The system configuration, in which the GOT is turned on from a sequence program, is not available.

(2) Time taken until the PLC runs after power-on of the GOT
The following time is taken from when the GOT is powered on until when the PLC runs.
• QCPU (Q mode), motion controller (Q series): 10 seconds or more
• MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs. Adjust the opening screen time in the GOT setup so that no system alarm occurs.

☞ GT Designer2 Version □ Screen Design Manual

(3) Power-up sequence for connection of 3 GOTs or more (when connecting QCPU (Q mode))

☞ 9 (1) Restrictions in overall cable length to No. of GOTs

(4) Power-up sequence for connection of the Q4ARCPU redundant system

☞ 13 (2) Power-On sequence for GOT and Q4ARCPU redundant system

(5) Power-up sequence for cases other than (3) and (4)
The GOT and PLC can both be started up whichever of these devices is turned ON first. (There is no specific sequence in which they are powered ON.)
Note, however, that operation is as follows when the GOT is turned ON followed by the PLC:
When the PLC power is OFF with the GOT turned ON, the system alarm (No.402: timeout error) is generated.
Upon power-on of the PLC CPU, the GOT automatically starts monitoring.
Use System Information to reset the alarm.
For the System Information, refer to the following manual:

☞ GT Designer2 Version □ Screen Design Manual

2 Powering OFF the GOT, reapplying the power (OFF to ON)

(1) Precautions for reapplying the power to the GOT (OFF to ON)
Do not power-cycle the GOT (OFF to ON) while the PLC is ON.
Before doing so, be sure to turn off the PLC first.

Remark

Operations causing automatic reboot of the GOT1000 Series

Since the GOT1000 Series is automatically rebooted in the following cases, the power does not need to be reapplied to the GOT (OFF to ON).
• When an OS is installed from GT Designer2 or a CF card
• When utility settings have been changed

(2) When turning OFF the GOT before display of the user creation screen
When the GOT is turned OFF before the user creation screen is displayed on the GOT, subsequent communications may be no longer possible.
In such a case, reapply the power to the PLC CPU and GOT.

(3) Precautions for connection of 3 GOTs or more (when connecting QCPU (Q mode))

☞ 9 (1) Restrictions in overall cable length to No. of GOTs

3 Reset switch on GOT

When bus connection is used, the reset switch on the GOT does not function.

4 Powering OFF or resetting the PLC

(1) When turning OFF or resetting the PLC during monitoring
When turning OFF or resetting the PLC during monitoring, the system alarm (No.402: timeout error) is generated.
When the PLC CPU is restored, the GOT automatically resumes monitoring.
Use System Information to reset the alarm.
For the System Information, refer to the following manual:

☞ GT Designer2 Version □ Screen Design Manual

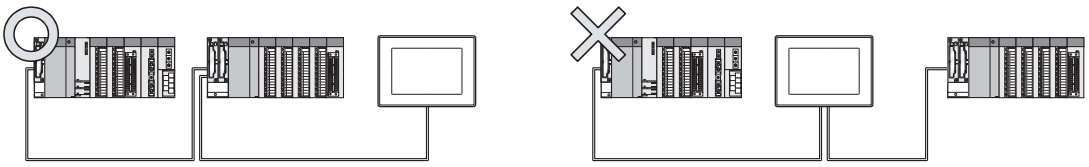
(2) When turning OFF or resetting the PLC CPU before display of the user creation screen
When the PLC CPU is turned OFF or reset before the user creation screen is displayed on the GOT, subsequent communications may be no longer possible.
In such a case, reapply the power to the PLC CPU and GOT.

(3) Precautions for connection of 3 GOTs or more (when connecting QCPU (Q mode))

☞ 9 (1) Restrictions in overall cable length to No. of GOTs

5 Position of the GOT

Always connect the GOT to the last base unit.
Connecting a GOT between base units is not allowed.



6 When the GOT is bus-connected to a PLC CPU without the communication driver installed

When the GOT is bus-connected to a PLC CPU without the standard monitor OS and the communication driver for the bus connection being installed onto the GOT, the PLC CPU is reset. (Communications with the PLC CPU using GX Developer are no longer possible.)
In this case, disconnecting the bus connection cable from the GOT will cancel the reset status of the PLC CPU.

7 When designing the system

When the GOT is OFF, the following currents are supplied to the GOT from the PLC CPU side (the power supply module on the main base unit). (The GOT does not operate when it is OFF.)
Design the system so that the 5V DC current consumption of the modules on the main base unit and the total current consumption of the GOTs will not exceed the rated output current of 5V DC of the power supply module in use.

When connecting to	No. of GOTs	Total current consumption
QCPU (Q mode)	5	2200mA
	4	1760mA
	3	1320mA
	2	880mA
	1	440mA
Other than QCPU (Q mode)	3	360mA
	2	240mA
	1	120mA

8 When assigning GOT I/O signals

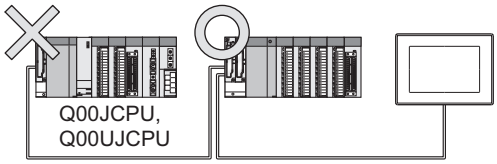
Do not use the I/O signals assigned to the PLC CPU in sequence programs, as these signals are used by the GOT system.
When these signals are used, GOT functions cannot be assured.

9 When connecting to a QCPU (Q mode)

(1) Restrictions in overall cable length to No. of GOTs
The following restrictions apply when 3 of more GOTs are connected:

Number of GOTs	Overall Cable Length	Restriction	Overall Cable Length	Restriction
1	(No restrictions)			
2				
3	Less than 25m	(No restrictions)	25 to 37m	Use the same power supply for the PLC and all GOTs, and turn these devices ON and OFF simultaneously.
4	Less than 20m		20 to 37m	
5	Less than 15m		15 to 37m	

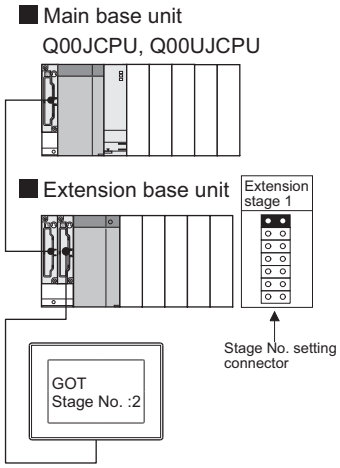
(2) When using a Q00JCPU, Q00UJCPU
The bus extension connector box can be connected only to the extension base unit.
(Connecting it to the main base unit is not allowed.)

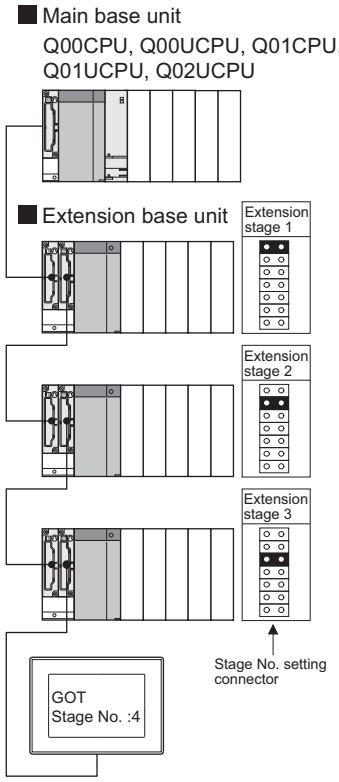


(3) When using a Q00J/Q00UJ/Q00/Q00U/Q01/Q01U/Q02UCPU

When a GOT is bus-connected to a Q00JCPU or Q00UJCPU, number of extension stages including the GOT must be 2 or less.

When a GOT is bus-connected to a Q00CPU, Q00UCPU, Q01CPU, Q01UCPU or Q02UCPU, number of extension stages including the GOT must be 4 or less.

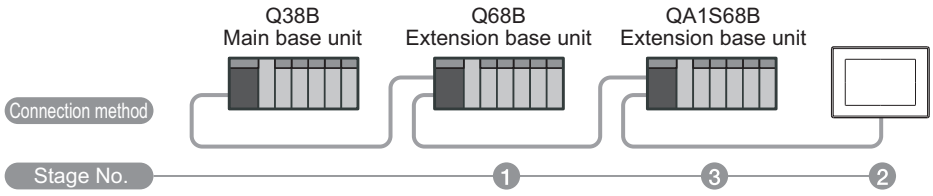




(4) When using the QA1S6 □ B extension base unit

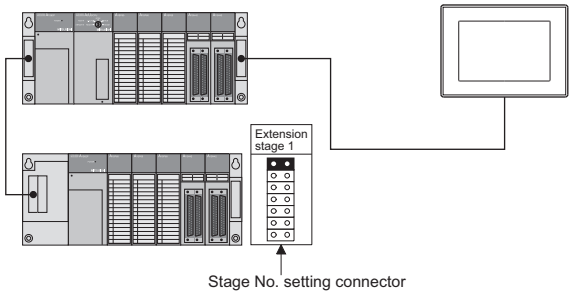
A GOT is physically connected to the last of all extension base units. In the Stage No. setting, however, assign the GOT as a stage next to the last Q □□ B type extension base unit.

Assign the QA1S6 □ B type extension base unit as a stage next to the GOT.



10 When connecting to a QnA(S)CPU or An(S)CPU type

(1) When connecting with a QnASCPU type and an AnSCPU type
A GOT can be connected to an extension connector on only one side of the main base unit.
(Concurrently connecting GOTs to extension connectors on both sides is not allowed.)



(2) In the case of Q4A(R)CPU, Q3ACPU, A3 □ CPU, A4UCPU
Empty I/O slots are required within the max. number of extension stages.

(3) For A0J2HCPU
Assign the GOT to the I/O slots 0 to 3 of extension stage 1.

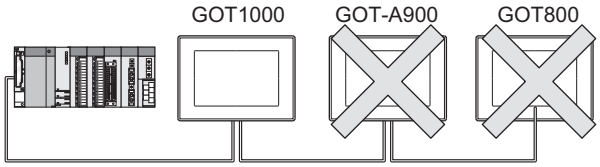
(4) In the case of CPUs other than (2) (3) above
Even if the max. number of stages are used with no empty I/O slots, when there is a free space of 32 I/O points or more, a GOT can be connected under the following communication interface setting.
For the communication interface setting, refer to the following.

☞ Section 2.2.3 Setting communication interface (Communication settings)

When connecting to	Max. stage No.	Communication interface setting	
		Stage No.	Slot No.
A1 □ CPU/A2USCPU(-S1) /QnAS(H)CPU(-S1)	1	2	0
A2 □ CPU/Q2ACPU	3	4	0
A3 □ CPU/A4 □ CPU	7	Cannot be used	
Q3ACPU/Q4ACPU	7		
A0J2HCPU	1		

11 When connecting multiple GOTs

(1) System including different GOT series
The GOT1000 series cannot be used with different GOT series in a system.



(2) Restrictions on No. of GOTs
The number of connectable GOTs is restricted according to the CPU type and the number of intelligent function modules.

When connecting to		Number of connectable GOTs	Total number of connectable GOTs and intelligent function modules*1
QCPU (Q mode), motion controller CPU (Q Series)		Up to 5	5 GOTs + 6 intelligent function modules*2
QCPU (A mode)		Not connectable	————
QnACPU		Up to 3	6 in total
ACPU	AnUCPU,AnACPU,A2US(H)CPU	Up to 3	6 in total
	AnNCPU,AnS(H)CPU,A1SJ(H)CPU	Up to 2	2 in total
	A0J2HCPU	Up to 1	2 in total
	A1FXCPU	Not connectable	————
Motion controller CPU (A Series)	A273UCPU,A273UHCPU(-S3), A373UCPU(-S3),A173UHCPU(-S1)	Up to 3	6 in total
	A171SHCPUN,A172SHCPUN	Up to 2	2 in total

*1 Indicates the following models:
AD51(S3), AD51H(S3), AD51FD(S3), AD57G(S3), AJ71C21(S1), AJ71C22(S1), AJ71C23, AJ71C24(S3/S6/S8), AJ71UC24, AJ71E71(-S3), AJ71E71N-B2/B5/T/B5T, AJ71E71N3-T, AJ61BT11(in intelligent mode only), A1SJ71C24(-R2/PRF/R4), A1SJ71UC24(-R2/PRF/R4), A1SJ71E71-B2/B5(-S3), A1SJ71E71N-B2/B5/T/B5T, A1SJ71E71N3-T, A1SD51S, A1SJ61BT11(in intelligent mode only)

*2 Only the A1SD51S can be connected to the QCPU (Q Mode).

12 When using a PLC CPU in the direct mode

Note that when the I/O control mode of the PLC CPU is the direct mode, and if the 1st GOT is connected to the main or extension base unit with a 5m extension cable (GT15-AC50B, GT15-A1SC50NB), the input X of the empty I/O slot cannot be used.
No restrictions apply when the I/O control mode is the refresh mode.
On PLC CPUs whose I/O control mode can be selected by a switch, set the I/O control mode to the refresh mode before use.

Point

In the cases where input X of an empty I/O slot is used

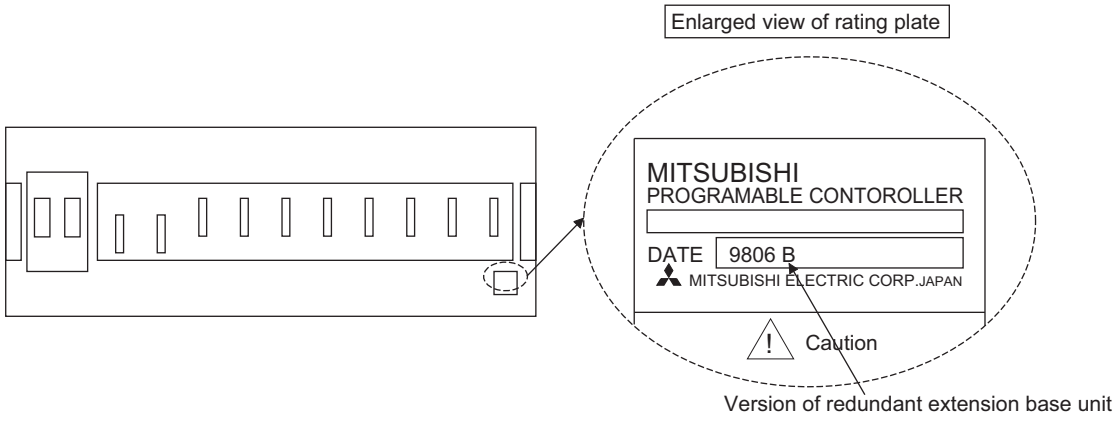
(1) When input X is assigned on the MELSECNET/10 network

(2) When input X of an empty I/O slot is turned ON/OFF by the computer link module

(3) When input X of the I/O slot is turned ON/OFF by the touch switch function (Bit SET/RST/Alternate/Momentary) of GOT

13 When connecting to a Q4ARCPU redundant system

(1) When the GOT is bus-connected to a Q4ARCPU redundant system
Connect the GOT to the last redundant extension base unit (A68RB) of the Q4ARCPU redundant system.
For the redundant extension base units, use version B or later.
The version can be confirmed in the DATE field of the rating plate.



Point

Precautions for Q4ARCPU redundant system configurations

The GOT does not operate normally in the following system configurations.

(1) When the GOT is bus connected to the bus switching module (A6RAF) on a redundant main base unit (A32RB/A33RB)

(2) When the GOT is bus connected to a version-A redundant main base unit (A68RB)

(2) Power-On sequence for GOT and Q4ARCPU redundant system
Apply the power to the GOT and Q4ARCPU redundant system in the following sequence.

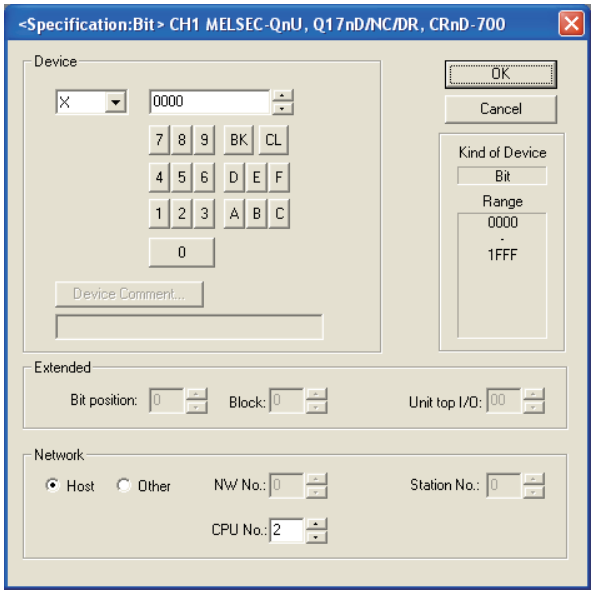
1. Turn ON the GOT.
2. After the monitor screen is displayed on the GOT, turn ON the Q4ARCPU redundant system. At this time, a timeout is displayed on the system alarm. Use System Information to reset the alarm.
For the system alarm, refer to the following manual:
☞ GT Designer2 Version □ Screen Design Manual

14 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



15 Troubleshooting

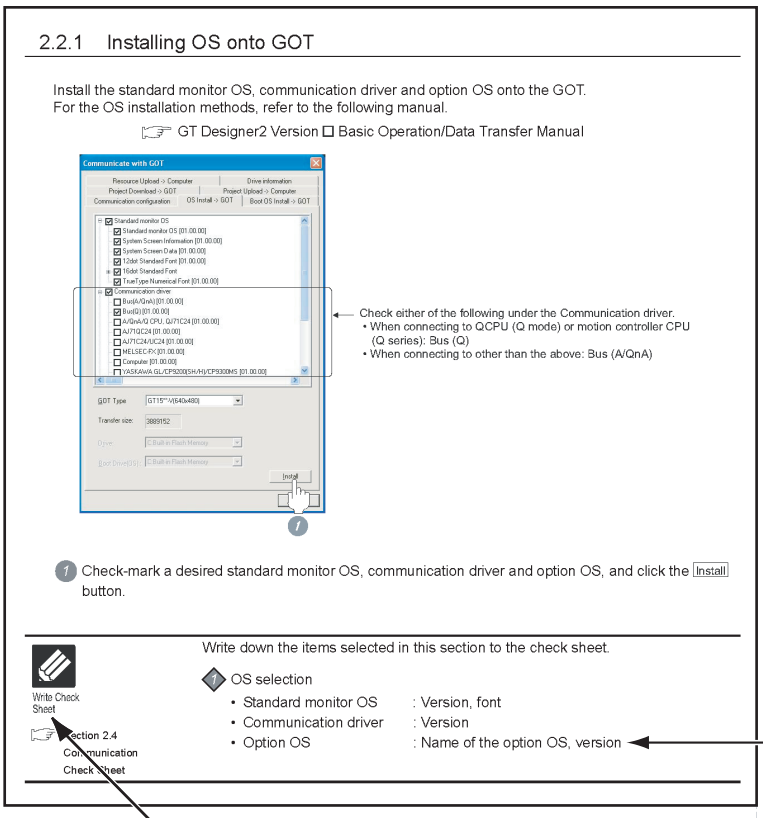
For the troubleshooting, refer to the User's Manual for the GOT you are using.

2.4 Communication Check Sheet

This section explains a check sheet by which the information can be checked beforehand when starting communications by bus connection.

1 How to use the check sheet

Sections 2.1 and 2.2 contain explanations of the items to be checked on the check sheet.
Checking items explained these sections using the check sheet on the following page allows you to complete the procedures for communications between the GOT and the PLC CPU.



Shows items to be written or checked on the check sheet.
Lists the same items as those on the check sheet.

The following symbols are used for each purpose.

Write Check Sheet
Indicates parts where items and details are to be written.
Confirm the details and write them to the check sheet.

Check
Indicates parts where written details are to be checked.
Confirm the details and check the check sheet.

2 Example of how to fill in the check sheet

3 Communication check sheet [Sheet No.]

	OS type	Item (Refer to)	Version (Refer to)	Check mark (Refer to)
1 OS selection	Standard monitor OS	Standard monitor OS	Ver. 01.00.00 (Section 2.2.1)	OK ☑ Not OK ☐ (Section 2.2.2)
		Font: 12 dot Standard (Section 2.2.1)	Ver. 01.00.00 (Section 2.2.1)	OK ☑ Not OK ☐ (Section 2.2.2)
	Communication driver	BUS connection Q (Section 2.1)	Ver. 01.00.00 (Section 2.2.1)	OK ☑ Not OK ☐ (Section 2.2.2)

*Since the above page was created for explanation purpose, it differs from the actual page.

3 Communication check sheet [Sheet No.]

	OS type	Item (Refer to)	Version (Refer to)	Check mark (Refer to)
1 OS selection	Standard monitor OS	Standard monitor OS	Ver. . . (Section 2.2.1)	OK ☐ Not OK ☐ (Section 2.2.2)
		Font (Section 2.2.1)	Ver. . . (Section 2.2.1)	OK ☐ Not OK ☐ (Section 2.2.2)
	Communication driver	(Section 2.1)	Ver. . . (Section 2.2.1)	OK ☐ Not OK ☐ (Section 2.2.2)
	Option OS	(Section 2.2.1)	Ver. . . (Section 2.2.1)	OK ☐ Not OK ☐ (Section 2.2.2)

	Item	Model name (Refer to)	Check mark (Refer to)
2 Unit selection	Communication module	(Section 2.1)	OK ☐ Not OK ☐ (Section 2.2.6)
	Bus extension connector box or Bus connector conversion box (only when necessary)	(Section 2.1)	OK ☐ Not OK ☐ (Section 2.2.3)

	Item	Setting (Refer to)	Check mark (Refer to)
3 Communication settings	Stage No.	(Section 2.2.3)	OK ☐ Not OK ☐ (Section 2.2.7)
	Slot No.	(Section 2.2.3)	OK ☐ Not OK ☐ (Section 2.2.7)

	Item	Check mark (Refer to)
4 Communication check	Check for errors occurring on the GOT. (GOT system alarm)	OK ☐ Not OK ☐ (Section 2.2.7)
	Check if the PLC CPU has recognized the GOT. (QCPU (Q mode) only) ([System Monitor] on GX Developer)	OK ☐ Not OK ☐ (Section 2.2.7)

2.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT11 Bus	Bus connection	Supporting the connection to GT11	2.58L	Communication driver Bus(Q) [03.03.**] Bus(A/QnA) [03.03.**]
Applicable CPU		Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q172DCPU, Q173DCPU, Q173NCCPU	2.63R	Communication driver Bus(Q) [03.07.**]
Robot controller connection		Supporting the connection to CRnQ-700	2.73B	Communication driver Bus(Q) [03.09.**]
Applicable CPU		Supporting the connection to the following CPUs Q13UDHCPU, Q26UDHCPU	2.77F	Communication driver Bus(Q) [03.12.**]
Applicable CPU		Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q02PHCPU, Q06PHCPU	2.82L	Communication driver Bus(Q) [03.13.**]
Bus connection		Supporting the connection to GT16	2.90U	Communication driver Bus(Q) [04.02.**]
Applicable CPU		Supporting the connection to the following CPUs Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU	2.91V	Communication driver Bus(Q) [04.03.**]
Applicable CPU		Supporting the connection to Q170MCPU	2.96A	Communication driver Bus(Q) [04.04.**]

3

DIRECT CONNECTION TO CPU



3.1 System Configuration . . . . . page 3-2
This section describes the equipment and cables needed for direct connection to a CPU.
Select a system suitable for your application.

3.2 Connection Cable . . . . . page 3-41
This section describes the specifications of the cables needed when connecting a GOT to a FX PLC.
Check the specifications of the connection cables.

3.3 Preparatory Procedure for Monitoring . . . . . page 3-48
This section describes the procedures to be followed before monitoring in direct connection to a CPU.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

3.4 Precautions . . . . . page 3-60
This section describes the precautions about direct connection.
Refer to this section without fail before monitoring FXCPU(FX3U/FX3UC series).

3.5 List of Functions Added by Version Upgrade . . . . . page 3-63
This section describes the functions added by version upgrade of GT Designer2 or OS.

3.1 System Configuration

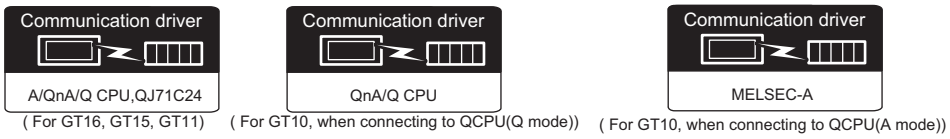
Select a system configuration suitable for your application.

Point

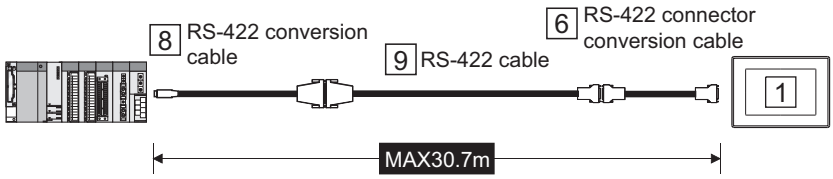
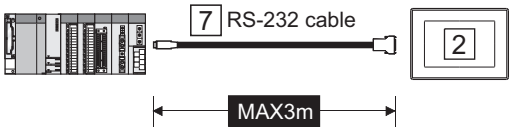
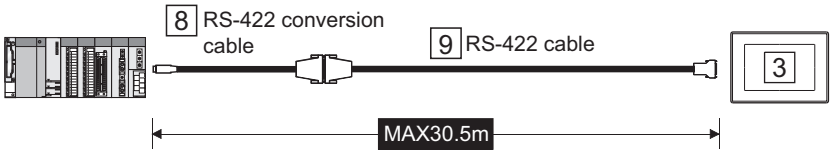
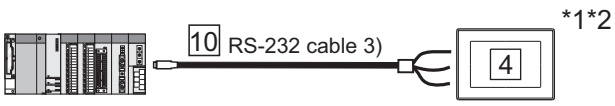
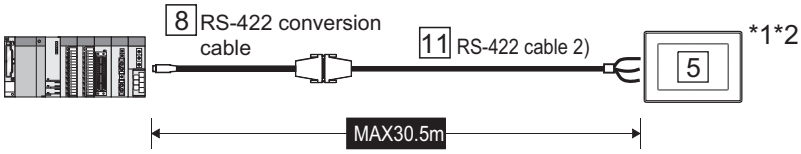
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

3.1.1 Connecting to QCPU



1 System configuration and connection conditions

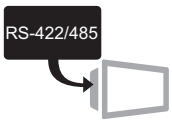
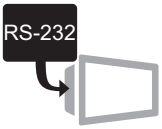
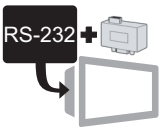
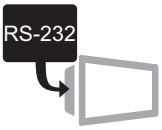
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.7m or less		GT16
	3m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	30.5m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	3m or less		GT24V 10 20 30 (RS-232)
	30m or less		GT24V 10 20 30 (RS-422)

*1 GT10 does not support the following CPU models.
CPU models : Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU

*2 When connecting GT10 to a multi-CPU system, only the system that consists of High performance model CPUs (Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU) is supported.

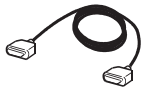
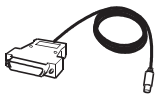
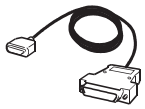
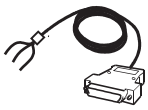
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ GT104□
	2	RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	Serial Multi-Drop Connection Unit • For RS-232 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
	3	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ GT104□
	3	RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
	3	Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	4	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT24V10 20 30 (RS-232)
	5	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V10 20 30 (RS-422)

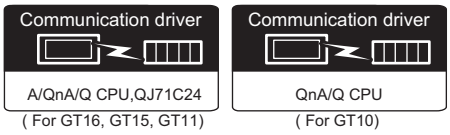
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

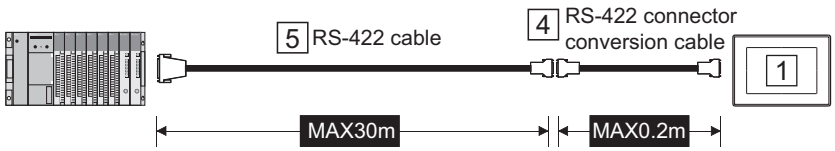
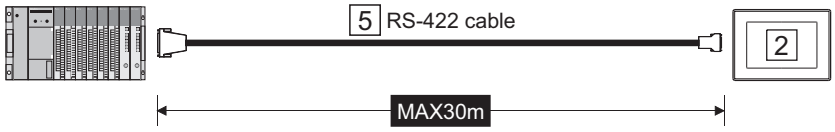
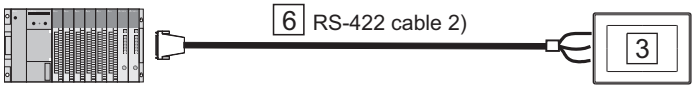
Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	7	RS-232 cable • Between QCPU and GOT	GT01-C30R2-6P (3m)	GT16 GT15 GT11 Serial GT105□4□
	8	RS-422 conversion cable • Between QCPU and RS-422	FA-CNV2402CBL (0.2m), FA-CNV2405CBL (0.5m)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
	9	RS-422 cable • Between RS-422 conversion cable and GOT • Between RS-422 connector conversion cable and RS-422 connector conversion cable	GT01-C30R4-25P (3m), GT01-C100R4-25P (10m), GT01-C200R4-25P (20m), GT01-C300R4-25P (30m)	GT16 GT15 GT11 Serial GT105□4□
	10	RS-232 cable 3)*1 • Between QCPU and GOT	GT10-C30R2-6P(3m)	GT24V1020 30 (RS-232)
	11	RS-422 cable 2)*1 • Between QCPU and GOT	GT10-C30R4-25P(3m), GT10-C100R4-25P(10m) GT10-C200R4-25P (20m), GT10-C300R4-25P (30m)	GT24V1020 30 (RS-422)

*1 For the connection to GOT, refer to the connection diagram. (☞ 3.2.1RS-232 cable)

3.1.2 Connecting to QnACPU

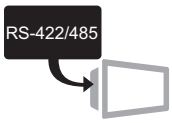
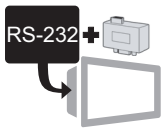


1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
1	30m or less		GT16 GT15 GT11 Serial GT105□ GT104□
1	30m or less		GT24V10 GT24V20 GT24V30 (RS-422)

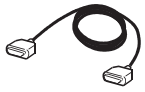
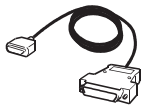
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□
		Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V10 20 30 (RS-422)

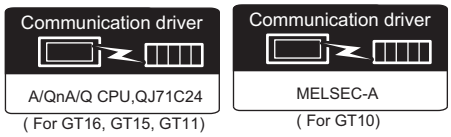
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

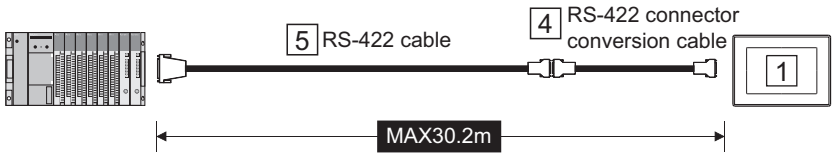
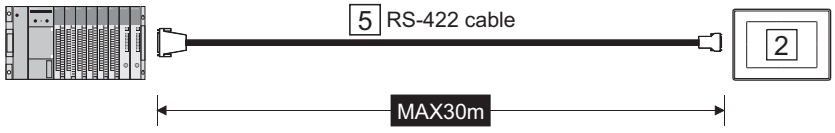
Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	5	RS-422 cable • Between QnACPU and GOT • Between QnACPU and RS-422 connector conversion cable	GT01-C30R4-25P (3m), GT01-C100R4-25P (10m), GT01-C200R4-25P (20m), GT01-C300R4-25P (30m)	GT16 GT15 GT11 Serial GT105□ 4□
	6	RS-422 cable 2)*1 • Between QnACPU and GOT	GT10-C30R4-25P(3m), GT10-C100R4-25P(10m) GT10-C200R4-25P (20m), GT10-C300R4-25P (30m)	GT24V10 20 30 (RS-422)

*1 For the connection to GOT, refer to the connection diagram. (3.2.1RS-232 cable)

3.1.3 Connecting to ACPU

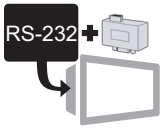


1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
1	30m or less		GT16 GT15 GT11 Serial GT105□ GT104□
1	30m or less		GT24V10 GT24V20 GT24V30 (RS-422)

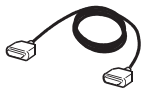
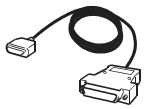
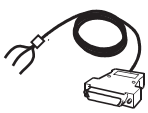
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□
		Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V 10 20 30 (RS-422)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	5	RS-422 cable • Between ACPU and GOT • Between QnACPU or ACPU and RS-422 connector conversion cable	GT01-C30R4-25P (3m), GT01-C100R4-25P (10m), GT01-C200R4-25P (20m), GT01-C300R4-25P (30m)	GT16 GT15 GT11 Serial GT105□ 4□
	6	RS-422 cable 2)*1 • Between ACPU and GOT	GT10-C30R4-25P(3m), GT10-C100R4-25P(10m) GT10-C200R4-25P (20m), GT10-C300R4-25P (30m)	GT24V 10 20 30 (RS-422)

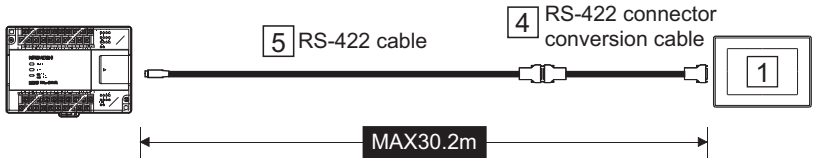
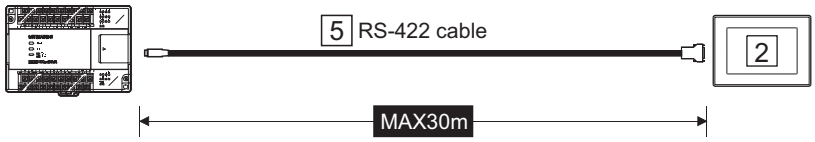
*1 For the connection to GOT, refer to the connection diagram. (3.2.1RS-232 cable)

3.1.4 Connecting to FXCPU (FX0, FX0S, FX0N, FX1, FX2, FX2C Series)

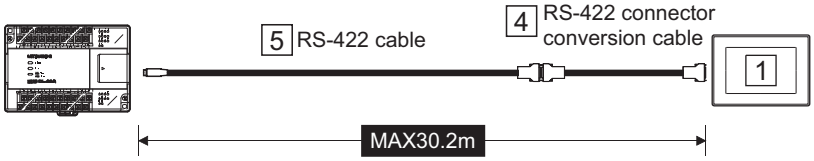
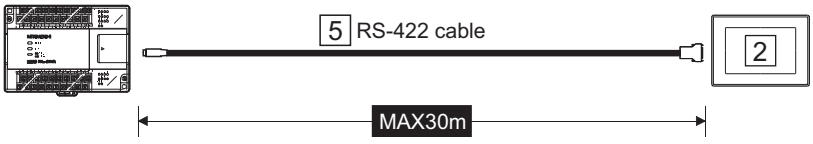
Communication driver
MELSEC-FX

1 System configuration and connection conditions

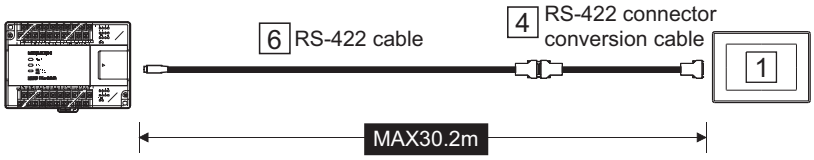
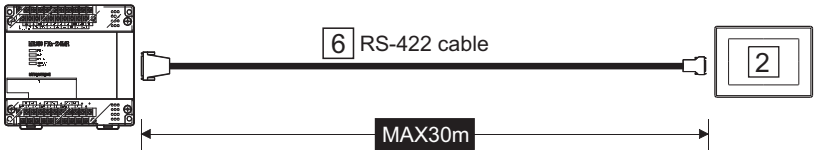
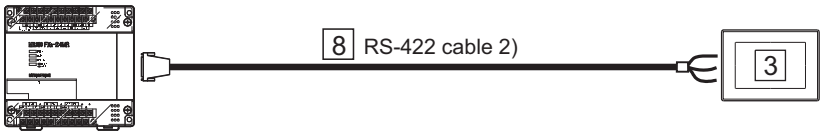
Connecting to FXCPU (FX0 Series)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
1	30m or less		GT16 GT15 GT11 Serial GT105□4□
1	30m or less		GT24V10 20 30 (RS-422)

Connecting to FXCPU (FX0S, FX0N Series)

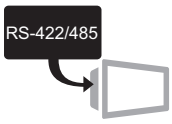
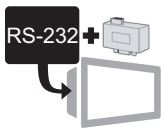
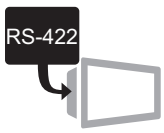
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
1	30m or less		GT16 GT15 GT11 Serial GT105□4□
1	GT10 (input power supply : 24V) 30m or less GT10 (input power supply : 5V) 3m or less		GT24V10 20 30 GT5V10 20 (RS-422)

Connecting to FXCPU (FX1, FX2, FX2C Series)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
1	30m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
1	30m or less		GT24V10 20 30 (RS-422)

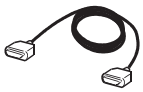
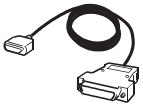
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT10 5□ 4□
		Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V10 20 30 GT5V10 20 (RS-422)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Mode
	4	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	5	RS-422 cable • Between FXCPU (FX0, FX0S, FX0N) and GOT • Between FXCPU (FX0, FX0S, FX0N) and RS-422 connector conversion cable	GT01-C10R4-8P (1m), GT01-C30R4-8P (3m), GT01-C100R4-8P (10m), GT01-C200R4-8P (20m), GT01-C300R4-8P (30m)	GT16 GT15 GT11 Serial GT105□4□
	6	RS-422 cable • Between FXCPU (FX1, FX2, FX2C) and GOT • Between FXCPU (FX1, FX2, FX2C) and RS-422 connector conversion cable	GT01-C30R4-25P (3m), GT01-C100R4-25P (10m), GT01-C200R4-25P (20m), GT01-C300R4-25P (30m)	GT16 GT15 GT11 Serial GT105□4□
	7	RS-422 cable 1)*1 • Between FXCPU (FX0, FX0S, FX0N) and GOT	GT10-C10R4-8P(1m), GT10-C30R4-8P(3m), GT10-C100R4-8P(10m), GT10-C200R4-8P(20m), GT10-C300R4-8P(30m), GT10-C10R4-8PL	GT24V1020 30 (RS-422)
		RS-422 cable 1)*1 • Between FXCPU (FX0S, FX0N) and GOT	GT10-C10R4-8P(1m), GT10-C30R4-8P(3m), GT10-C10R4-8PL	GT5V1020 (RS-422)
	8	RS-422 cable 2)*1 • Between FXCPU (FX1, FX2, FX2C) and GOT	GT10-C30R4-25P(3m), GT10-C100R4-25P(10m) GT10-C200R4-25P(20m), GT10-C300R4-25P(30m),	GT24V1020 30 (RS-422)

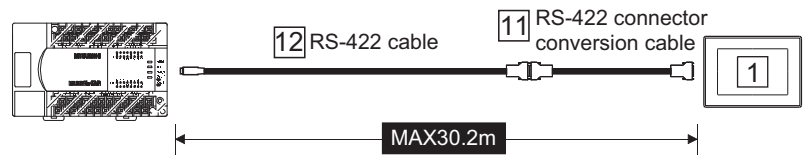
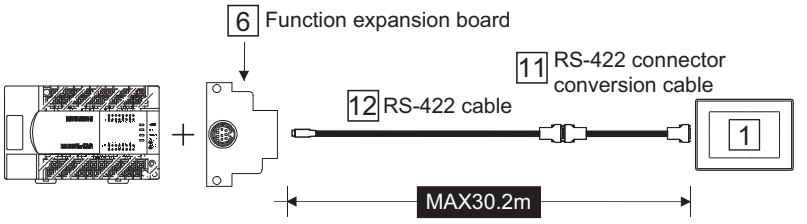
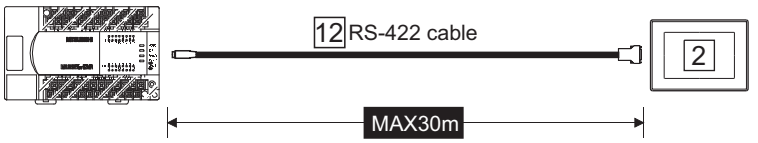
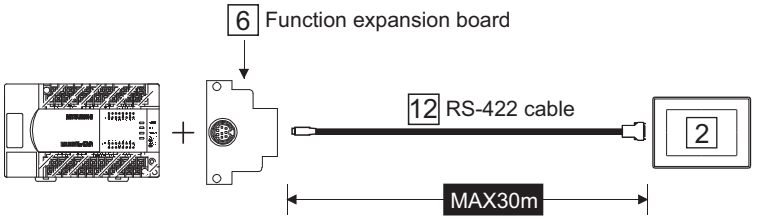
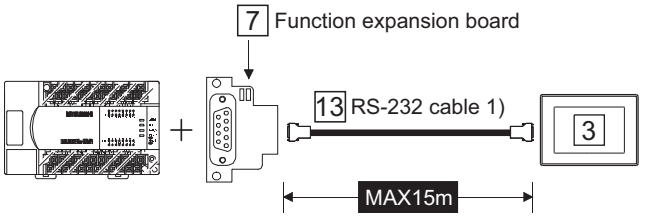
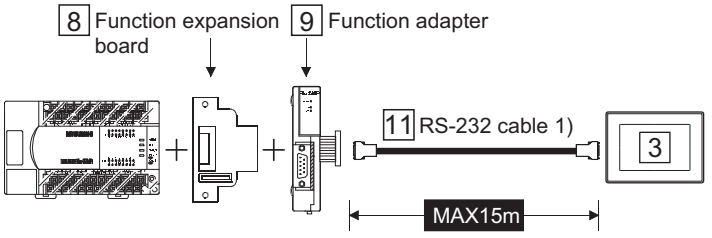
*1 For the connection to GOT, refer to the connection diagram. (☞ 3.2.1RS-232 cable)

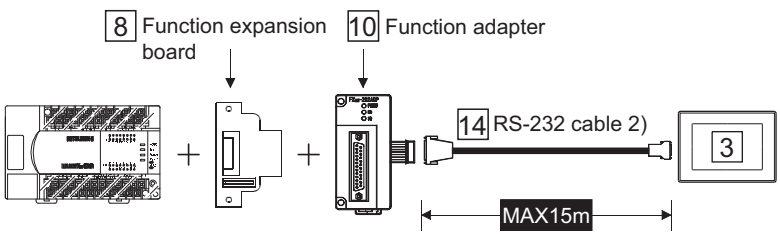
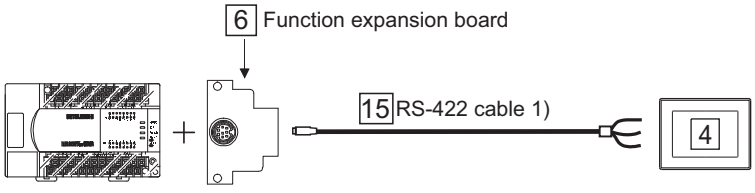
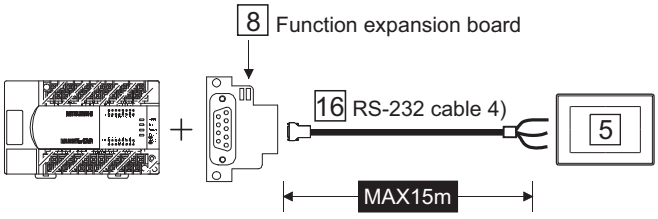
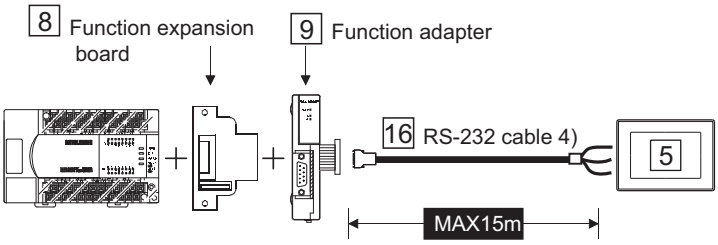
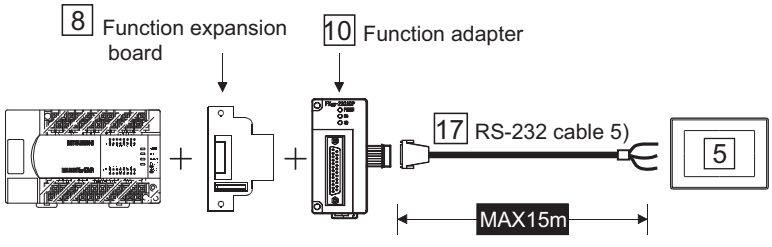
3.1.5 Connecting to FXCPU (FX1S, FX1N, FX2N Series)

Communication driver

MELSEC-FX

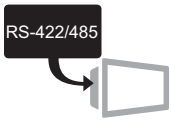
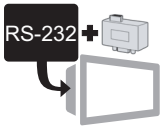
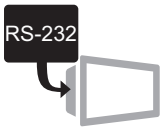
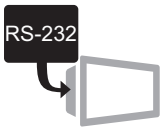
1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
			GT16
	30m or less		GT16 GT15 GT11 Serial GT10
			GT16 GT15 GT11 Serial GT10
	15m or less		GT16 GT15 GT11 Serial GT10
			GT16 GT15 GT11 Serial GT10

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	GT10 (input power supply : 24V) 30m or less GT10 (input power supply : 5V) 3m or less		GT 24V 10 20 30 GT 5V 10 20 (RS-422)
	GT10 (input power supply : 24V) 30m or less GT10 (input power supply : 5V) 3m or less		GT 24V 10 20 30 GT 5V 10 20 (RS-422)
	15m or less		GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)

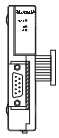
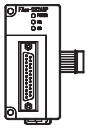
2 System equipment

(1) GOT

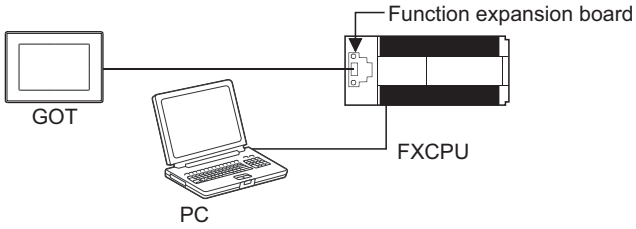
Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT10 5□ 4□
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT10 5□ 4□
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
		Serial Multi-Drop Connection Unit • For RS-232 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	4	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V 10 20 30 GT5V 10 20 (RS-422)
	5	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT24V 10 20 30 (RS-422)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name	
	6	Function expansion board *1*2 • Unit for simultaneously connecting GOT and peripheral equipment (GX Developer, etc.) to FXCPU	FX1N-422-BD,	FX2N-422-BD
	7		FX1N-232-BD,	FX2N-232-BD
	8		FX1N-CNV-BD,	FX2N-CNV-BD
	9	Function adapter*1	FX2NC-232ADP	
	10		FX0N-232ADP	

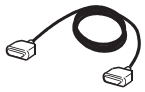
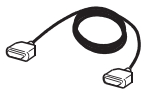
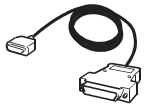
*1 When the function expansion board or function adapter is used, a GOT and a peripheral such as a PC with GX Developer installed can be connected to the FXCPU and the function expansion board or function adapter individually.
(Example) In the case of the function expansion board



*2 The function expansion board to be used differs according to the type of the FXCPU to be connected.
Use the applicable function expansion board shown in the following table.

Item	Function expansion board to be used	
	When connecting to FX1N, FX1S Series	When connecting to FX2N Series
RS-232 communication	FX1N-232-BD	FX2N-232-BD
RS-422 communication	FX1N-422-BD	FX2N-422-BD
When the function adapter is used	FX1N-CNV-BD	FX2N-CNV-BD

(3) Cable

Image	No.	Name	Model name	Model
	11	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	12	RS-422 cable • Between FXCPU and GOT • Between FX1N-422-BDor FX2N-422-BD and GOT • Between FX1N-422-BD or FX2N-422-BD and RS-422 connector conversion cable	GT01-C10R4-8P (1m), GT01-C30R4-8P (3m), GT01-C100R4-8P (10m), GT01-C200R4-8P (20m), GT01-C300R4-8P (30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	13	RS-232 cable 1)*1 • Between FX1N-232-BD or FX2N-232-BD and GOT • Between GOT and FX2NC-232ADP	GT01-C30R2-9S (3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	14	RS-232 cable 2)*1 • Between GOT and FX0N-232ADP	GT01-C30R2-25P (3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	15	RS-422 cable 1)*2 • Between FXCPU and GOT • Between FX1N-422-BDor FX2N-422-BD and GOT	GT10-C10R4-8P(1m) GT10-C30R4-8P(3m) GT10-C100R4-8P(10m) GT10-C200R4-8P(20m), GT10-C300R4-8P(30m) GT10-C10R4-8PL(1m)	GT24V10 20 30 (RS-422)
			GT10-C10R4-8P(1m) GT10-C30R4-8P(3m)	GT5V10 20 (RS-422)
	16	RS-232 cable 4) • Between FX1N-232-BD or FX2N-232-BD and GOT • Between GOT and FX2NC-232ADP	(To be prepared by the user. Section 3.2 Connection Cable)	GT24V10 20 30 (RS-232)
	17	RS-232 cable 5) • Between GOT and FX0N-232ADP		

*1 The RS-232 cable can be prepared by the user. (3.2.1RS-232 cable)

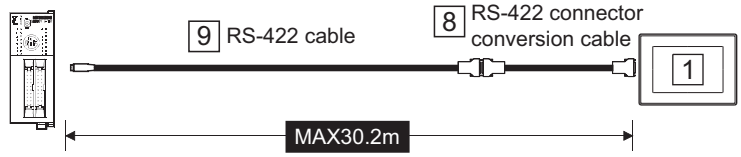
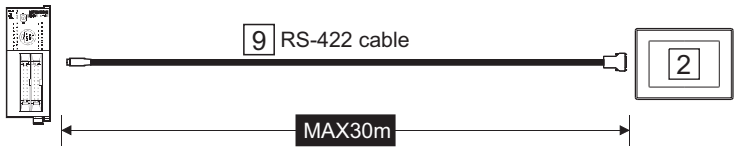
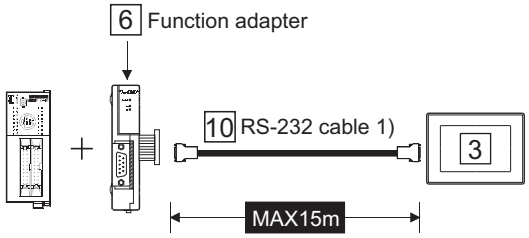
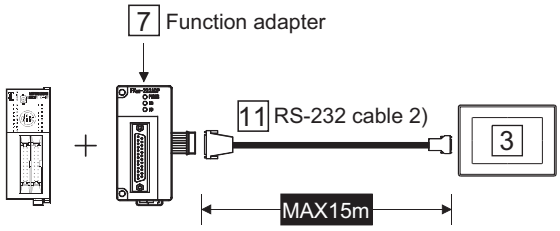
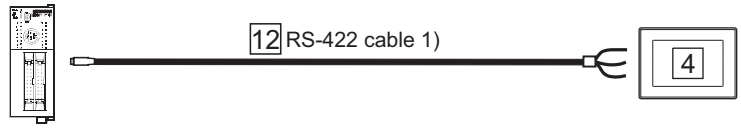
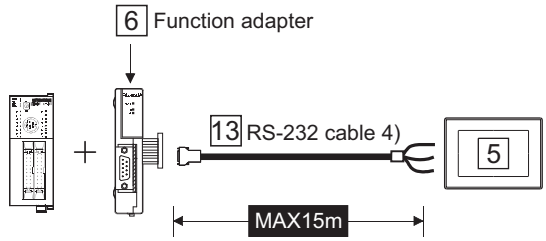
*2 For the connection to GOT, refer to the connection diagram. (3.2.1RS-232 cable)

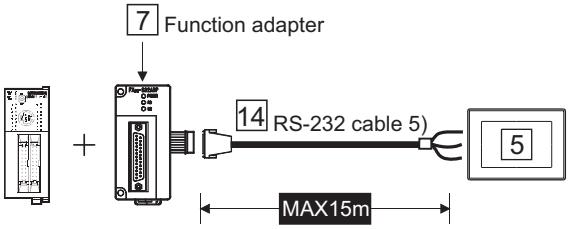
3.1.6 Connecting to FXCPU (FX1NC, FX2NC Series)

Communication driver

MELSEC-FX

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
	30m or less		GT16 GT15 GT11 Serial GT105□ GT104□
	15m or less		GT16 GT15 GT11 Serial GT105□ GT104□
	15m or less		GT16 GT15 GT11 Serial GT105□ GT104□
	GT10 (input power supply : 24V) 30m or less		GT24V1020 1030 GT5V1020 (RS-422)
	GT10 (input power supply : 5V) 3m or less		
	15m or less		GT24V1020 1030 (RS-232)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT 24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

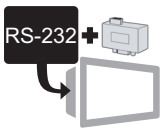
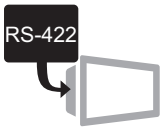
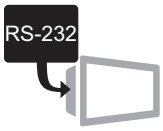
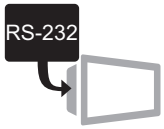
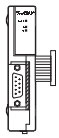
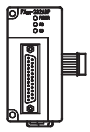
Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT 16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT 16 GT 15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT 11 Serial GT 10 5□ 4□
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT 16 GT 15
		Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT 16 GT 15 GT 11 Serial GT 10 5□ 4□
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT 16 GT 15
		Serial Multi-Drop Connection Unit • For RS-232 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—

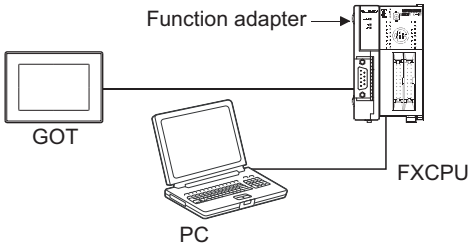
Image	No.	Name	Model name	Model
	4	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V10 20 30 GT5V10 20 (RS-422)
	5	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT24V10 20 30 (RS-232)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

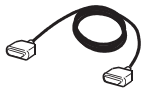
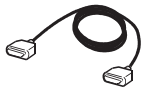
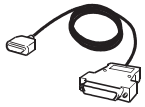
(2) PLC

Image	No.	Name	Model name
	6	Function adapter*1	FX2NC-232ADP
	7		FX0N-232ADP

*1 When the function adapter is used, a GOT and a peripheral such as a PC with GX Developer installed can be connected to the FXCPU and the function adapter individually.



(3) Cable

Image	No.	Name	Model name	Model
	8	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	9	RS-422 cable • Between FXCPU and GOT • Between FXCPU and 422 conversion cable	GT01-C10R4-8P (1m), GT01-C30R4-8P (3m), GT01-C100R4-8P (10m), GT01-C200R4-8P (20m), GT01-C300R4-8P (30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	10	RS-232 cable 1)*1 • Between GOT and FX2NC-232ADP	GT01-C30R2-9S (3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	11	RS-232 cable 2)*1 • Between GOT and FX0N-232ADP	GT01-C30R2-25P (3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	12	RS-422 cable 1)*2 • Between FXCPU and GOT	GT10-C10R4-8P(1m) GT10-C30R4-8P(3m) GT10-C100R4-8P(10m) GT10-C200R4-8P(20m), GT10-C300R4-8P(30m)	GT24V10 20 30 (RS-422)
			GT10-C10R4-8P(1m) GT10-C30R4-8P(3m)	GT5V10 20 (RS-422)
	13	RS-232 cable 4) • Between GOT and FX2NC-232ADP	(To be prepared by the user. Section 3.2 Connection Cable)	GT24V10 20 30 (RS-232)
	14	RS-232 cable 5) • Between GOT and FX0N-232ADP		

*1 The RS-232 cable can be prepared by the user. (3.2.1RS-232 cable)

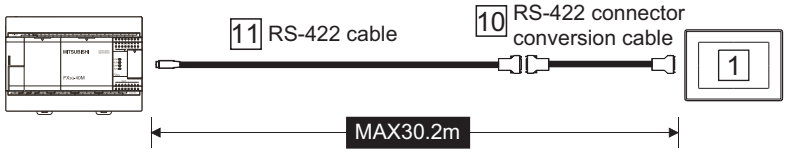
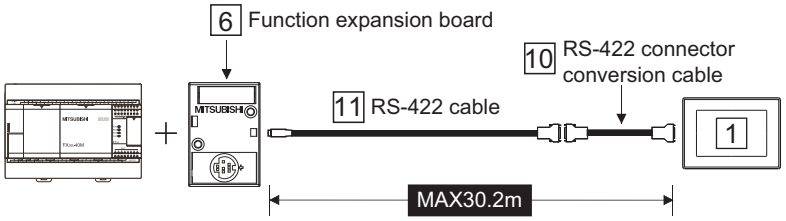
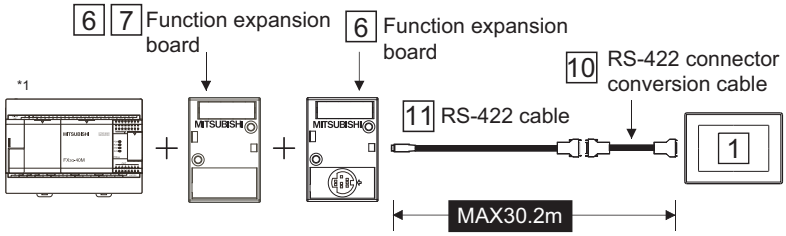
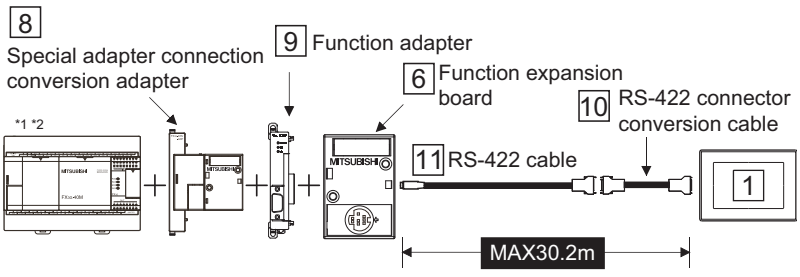
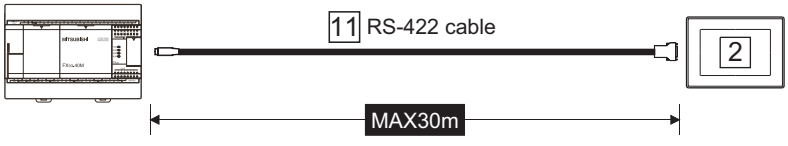
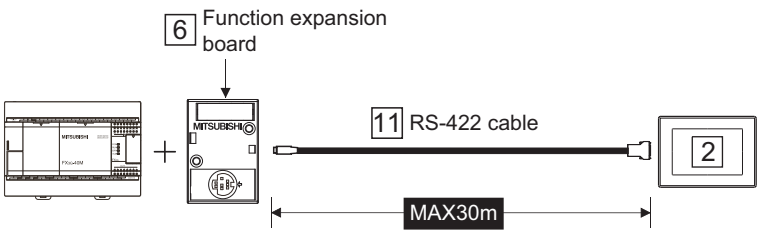
*2 For the connection to GOT, refer to the connection diagram. (3.2.1RS-232 cable)

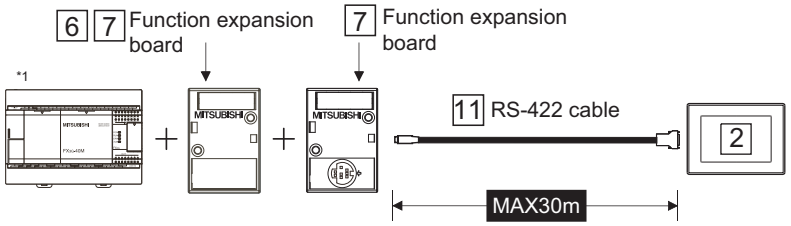
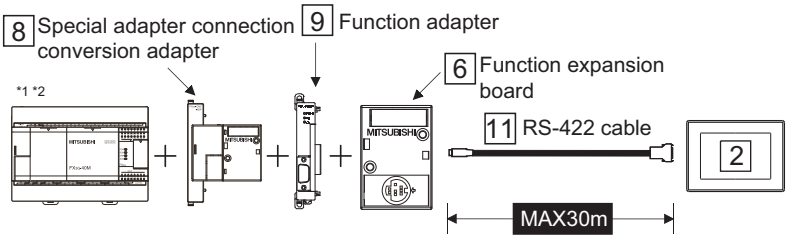
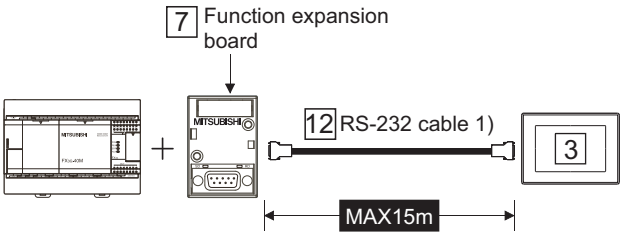
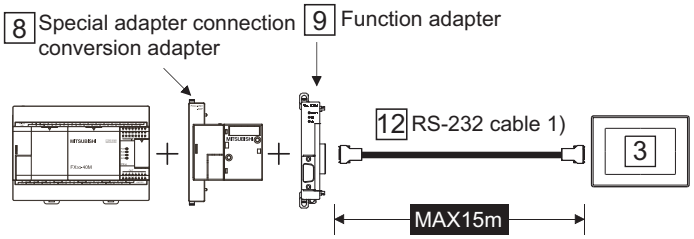
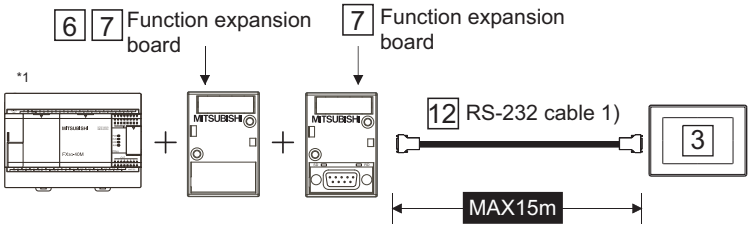
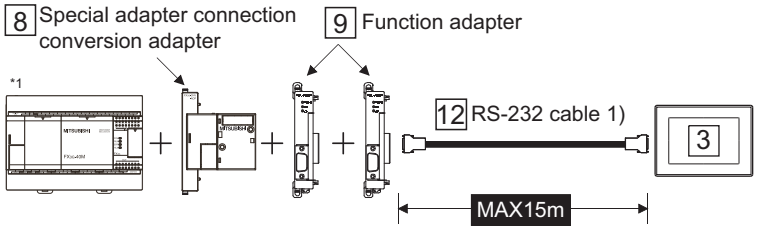
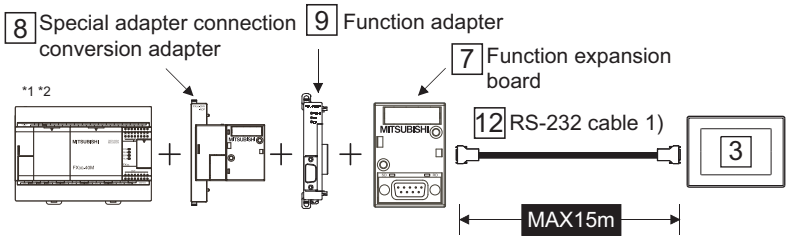
3.1.7 Connecting to FXCPU (FX3G Series)

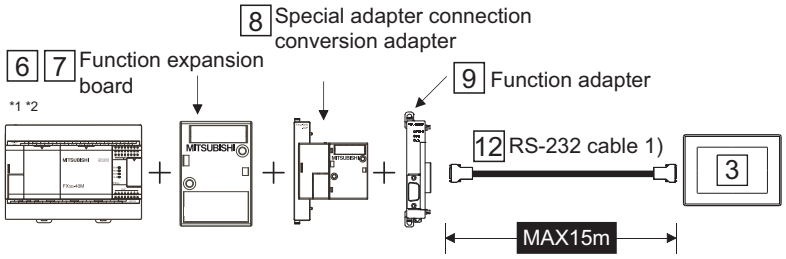
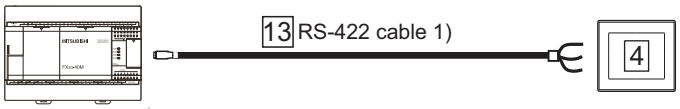
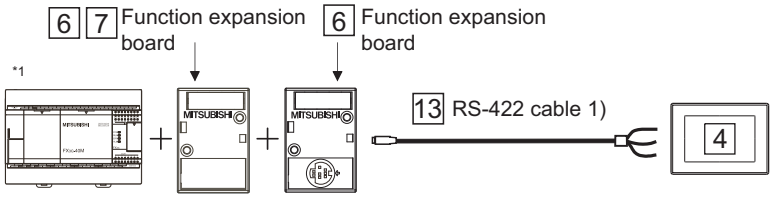
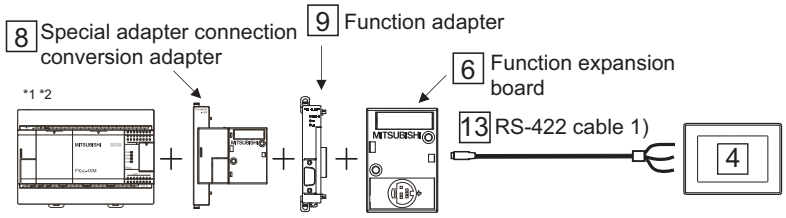
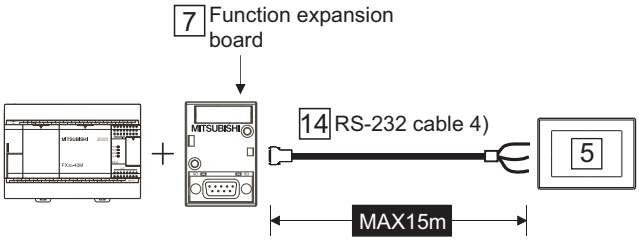
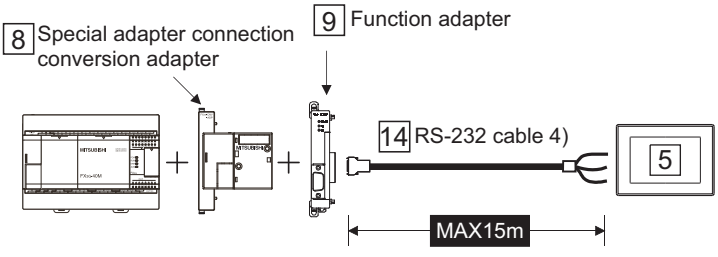
Communication driver

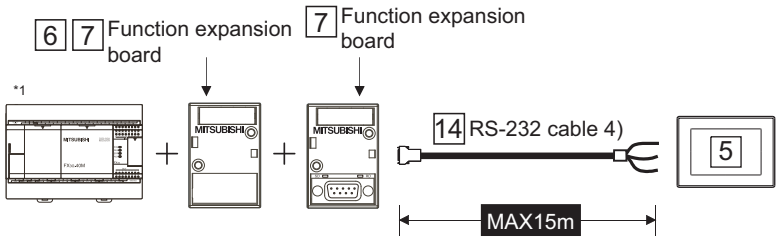
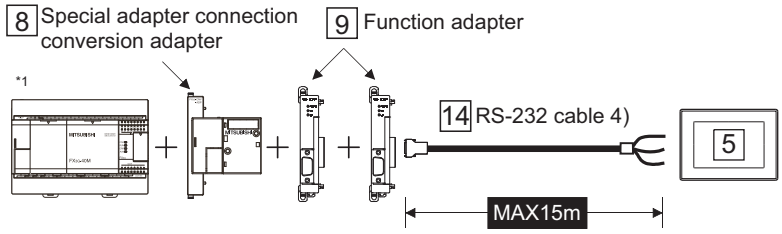
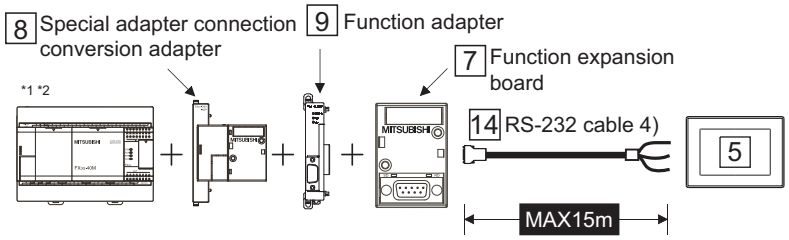
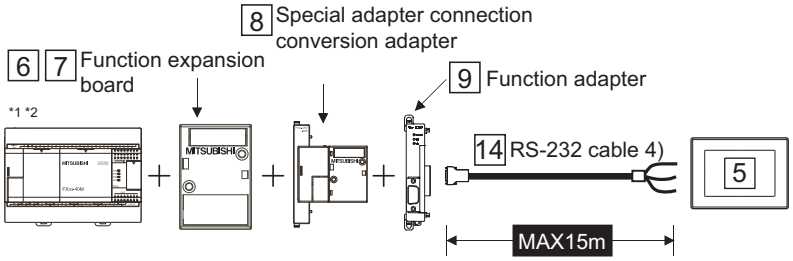
MELSEC-FX

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
	30.2m or less		GT16
	30.2m or less		GT16
	30.2m or less		GT16
	30m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	30m or less		GT16 GT15 GT11 Serial GT10 5□ 4□

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	30m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	GT10 (input power supply : 24V) 30m or less GT10 (input power supply : 5V) 3m or less		GT24V10 20 30 GT5V10 20 (RS-422)
	GT10 (input power supply : 24V) 30m or less GT10 (input power supply : 5V) 3m or less		GT24V10 20 30 GT5V10 20 (RS-422)
	GT10 (input power supply : 24V) 30m or less GT10 (input power supply : 5V) 3m or less		GT24V10 20 30 GT5V10 20 (RS-422)
	GT10 (input power supply : 24V) 30m or less GT10 (input power supply : 5V) 3m or less		GT24V10 20 30 GT5V10 20 (RS-422)
	15m or less		GT24V10 20 30 (RS-232)
	15m or less		GT24V10 20 30 (RS-232)

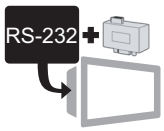
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT 24V 10 20 30 (RS-232)
	15m or less		GT 24V 10 20 30 (RS-232)
	15m or less		GT 24V 10 20 30 (RS-232)
	15m or less		GT 24V 10 20 30 (RS-232)

*1 Only 40 and 60 point types can be used.

*2 When the function expansion board is connected to option connector 2, only one function adapter can be mounted.

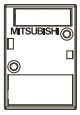
2 System equipment

(1) GOT

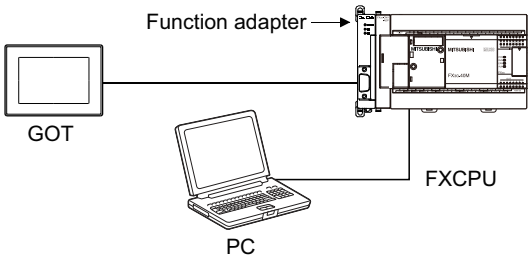
Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
	2	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□
	2	RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
	2	Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□
	3	RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	3	Serial Multi-Drop Connection Unit • For RS-232 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	4	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V10 20 30 GT5V10 20 (RS-422)
	5	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT24V10 20 30 (RS-232)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	6	Function expansion board*1*2*3 • Unit for simultaneously connecting GOT and peripheral equipment (GX Developer, etc.) to FXCPU	FX3G-422-BD
	7		FX3G-232-BD
	8	Special adapter connection conversion adapter • Conversion adapter for connecting function adapter to FXCPU	FX3G-CNV-ADP
	9	Function adapter*1*2*3	FX3U-232ADP

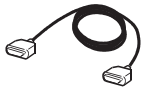
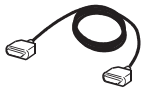
*1 When the function expansion board or function adapter is used, a GOT and a peripheral such as a PC with GX Developer installed can be connected to the FXCPU and the function expansion board or function adapter individually.
However, when connecting FX3G series and GT10 (5V power supply type), they cannot be connected to standard built-in port (RS-422) and function expansion board (FX3G-422-BD) simultaneously.
(Example) In the case of the function adapter



*2 When the function expansion board (communication board) and the function adapter are connected, a GOT and a peripheral such as a PC with GX Developer installed can be connected to them individually.

*3 Only the FX3U-232-BD and FX3U-422-BD function extension boards and the FX3U-232ADP function adapters can be connected to GOTs.

(3) Cable

Image	No.	Name	Model name	Model
	10	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	11	RS-422 cable • Between FXCPU and GOT • Between FXCPU and RS-422 connector conversion cable • Between FX3G-422-BD and GOT • Between FX3G-422-BD and RS-422 connector conversion cable	GT01-C10R4-8P (1m), GT01-C30R4-8P (3m), GT01-C100R4-8P (10m), GT01-C200R4-8P (20m), GT01-C300R4-8P (30m)	GT16 GT15 GT11 Serial GT105□4□
	12	RS-232 cable 1)*1 • Between FX3G-232-BD and GOT • Between FX3U-232ADP and GOT	GT01-C30R2-9S (3m)	GT16 GT15 GT11 Serial GT105□4□
	13	RS-422 cable 1)*2 • Between FXCPU and GOT • Between FX3G-422-BD and GOT	GT10-C10R4-8P(1m) GT10-C30R4-8P(3m) GT10-C100R4-8P(10m) GT10-C200R4-8P(20m), GT10-C300R4-8P(30m)	GT24V1020 30 (RS-422)
			GT10-C10R4-8P(1m) GT10-C30R4-8P(3m)	GT5V1020 (RS-422)
	14	RS-232 cable 4) • Between FX3G-232-BD and GOT • Between FX3U-232ADP and GOT	(To be prepared by the user. Section 3.2 Connection Cable)	GT24V1020 30 (RS-232)

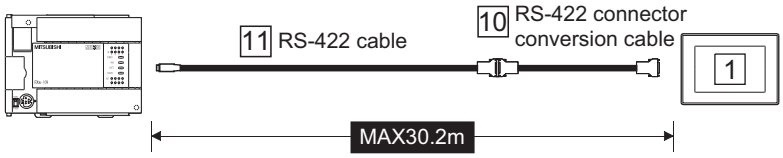
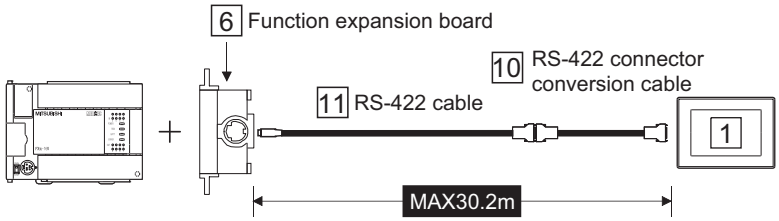
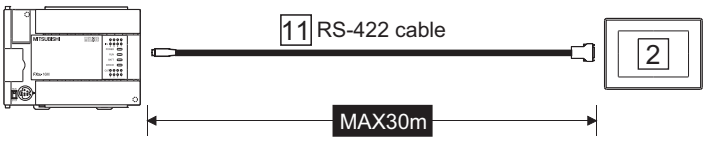
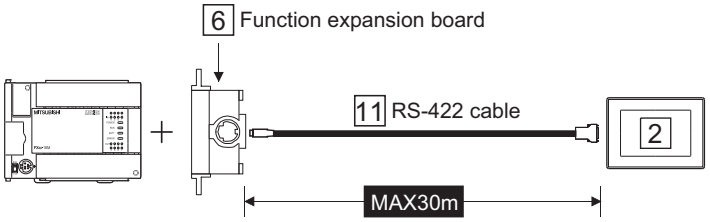
*1 The RS-232 cable can be prepared by the user. (3.2.1RS-232 cable)

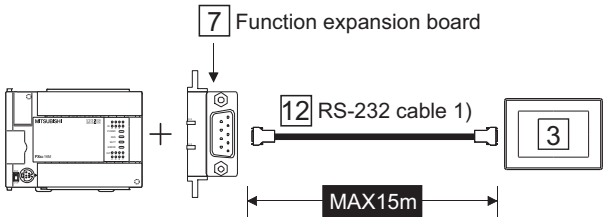
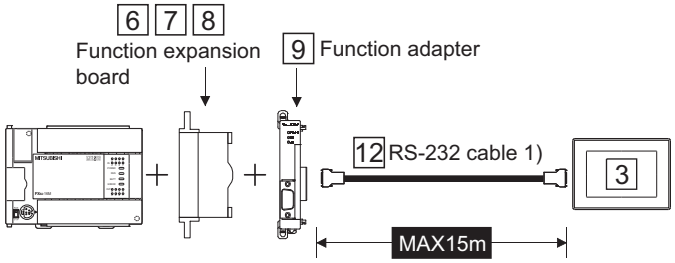
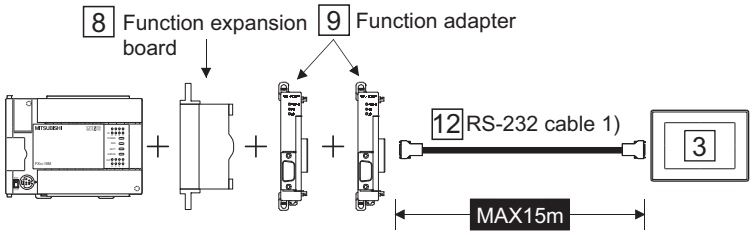
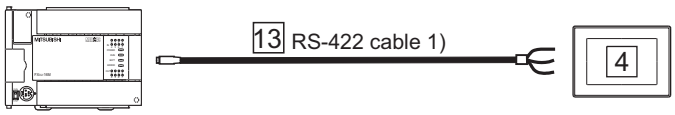
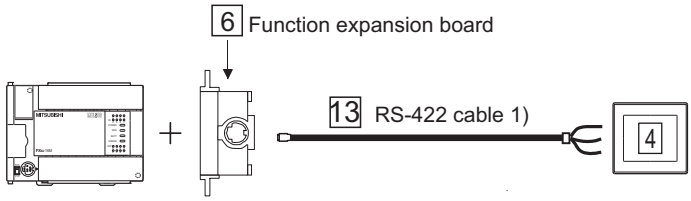
*2 For the connection to GOT, refer to the connection diagram. (3.2.1RS-232 cable)

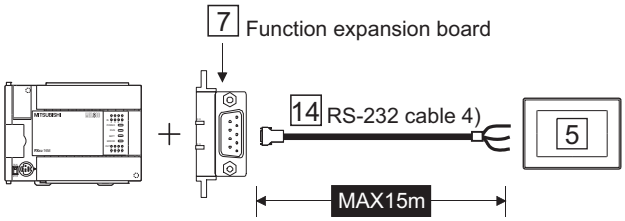
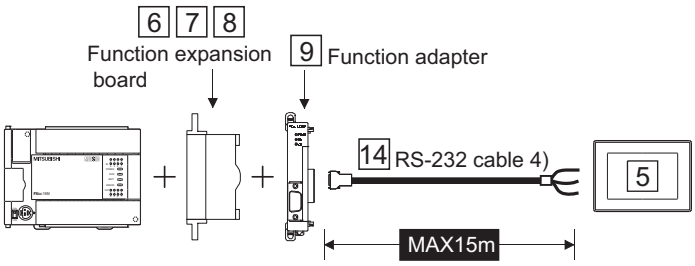
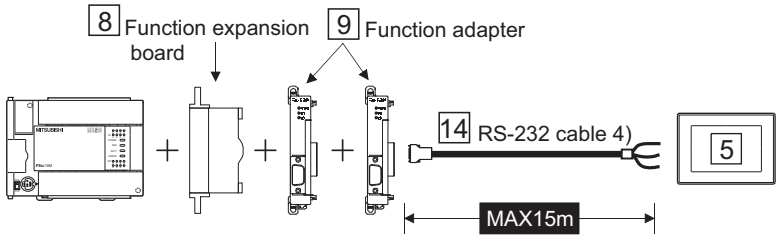
3.1.8 Connecting to FXCPU (FX3U Series, FX3UC Series (FX3UC-[ ][ ]-LT))

Communication driver
MELSEC-FX

1 System configuration and connection conditions

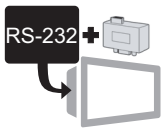
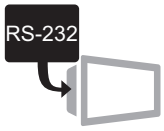
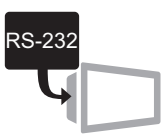
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
			GT16
	30m or less		GT16 GT15 GT11 Serial GT10
			GT16 GT15 GT11 Serial GT10

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT105□ 4□
			GT16 GT15 GT11 Serial GT105□ 4□
			GT16 GT15 GT11 Serial GT105□ 4□
	GT10 (input power supply : 24V) 30m or less		GT24V1020 30 GT5V1020 (RS-422)
	GT10 (input power supply : 5V) 3m or less		
	GT10 (input power supply : 24V) 30m or less		GT24V1020 30 GT5V1020 (RS-422)
	GT10 (input power supply : 5V) 3m or less		

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

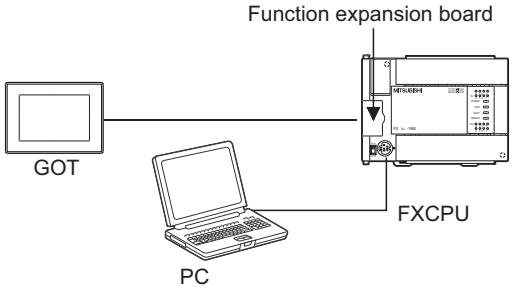
Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
	2	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□
	2	RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
	2	Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□
	3	RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	3	Serial Multi-Drop Connection Unit • For RS-232 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	4	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V10 20 30 GT5V10 20 (RS-422)
	5	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT24V10 20 30 (RS-232)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	6	Function expansion board[*1*2*3] • Unit for simultaneously connecting GOT and peripheral equipment (GX Developer, etc.) to FXCPU	FX3U-422-BD
	7		FX3U-232-BD
	8		FX3U-CNV-BD
	9	Function adapter[*1*2*3]	FX3U-232ADP

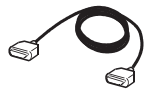
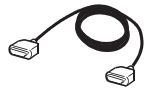
*1 When the function expansion board or function adapter is used, a GOT and a peripheral such as a PC with GX Developer installed can be connected to the FXCPU and the function expansion board or function adapter individually.
(Example) In the case of the function expansion board



*2 When the function expansion board (communication board) and the function adapter are connected, a GOT and a peripheral such as a PC with GX Developer installed can be connected to them individually.

*3 Only the FX3U-232-BD and FX3U-422-BD function extension boards and the FX3U-232ADP function adapters can be connected to GOTs.

(3) Cable

Image	No.	Name	Model name	Model
	10	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	11	RS-422 cable • Between FXCPU and GOT • Between GOT and FX3U-422-BD • Between FXCPU and 422 connector conversion cable • Between FX3U-422-BD and RS-422 connector conversion cable	GT01-C10R4-8P (1m), GT01-C30R4-8P (3m), GT01-C100R4-8P (10m), GT01-C200R4-8P (20m), GT01-C300R4-8P (30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	12	RS-232 cable 1)*1 • Between GOT and FX3U-232-BD • Between FX3U-232ADP and GOT	GT01-C30R2-9S (3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	13	RS-422 cable 1)*2 • Between FXCPU and GOT • Between GOT and FX3U-422-BD	GT10-C10R4-8P(1m) GT10-C30R4-8P(3m) GT10-C100R4-8P(10m) GT10-C200R4-8P(20m), GT10-C300R4-8P(30m) GT10-C10R4-8PL(1m)	GT 24V 10 20 30 (RS-422)
			GT10-C10R4-8P(1m) GT10-C30R4-8P(3m)	GT 5V 10 20 (RS-422)
	14	RS-232 cable 4) • Between GOT and FX3U-232-BD • Between FX3U-232ADP and GOT	(To be prepared by the user. Section 3.2 Connection Cable)	GT 24V 10 20 30 (RS-232)

*1 The RS-232 cable can be prepared by the user. (3.2.1RS-232 cable)

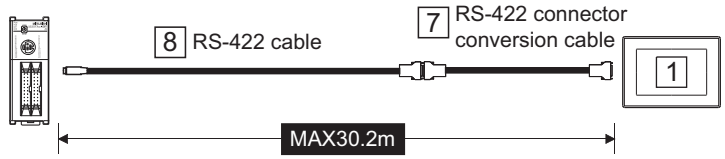
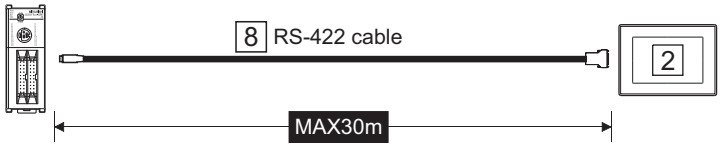
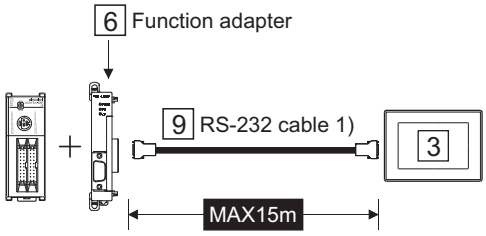
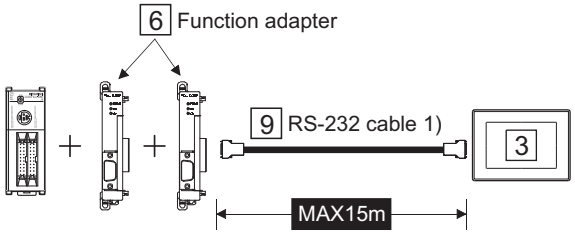
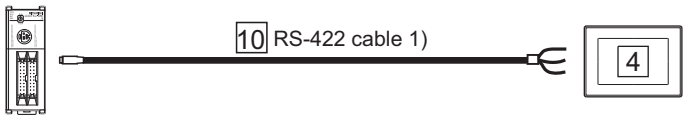
*2 For the connection to GOT, refer to the connection diagram. (3.2.1RS-232 cable)

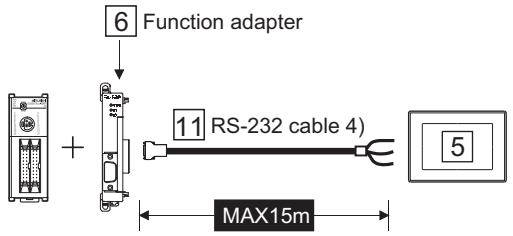
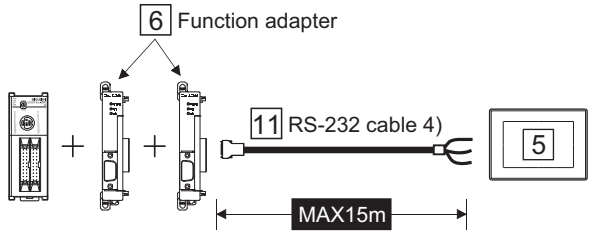
3.1.9 Connecting to FXCPU (FX3UC Series (FX3UC-[ ][ ]/D, FX3UC-[ ][ ]/DSS))

Communication driver

MELSEC-FX

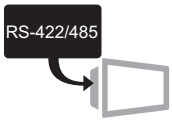
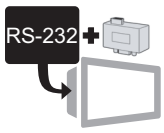
1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	30.2m or less		GT16
	30m or less		GT16 GT15 GT11 Serial GT105□ 4□
	15m or less		GT16 GT15 GT11 Serial GT105□ 4□
			GT16 GT15 GT11 Serial GT105□ 4□
	GT10 (input power supply : 24V) 30m or less		GT24V1020 30 GT5V1020 (RS-422)
	GT10 (input power supply : 5V) 3m or less		

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

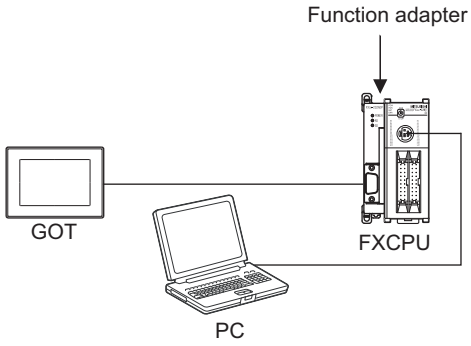
Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		Serial Multi-Drop Connection Unit • For RS-422 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	3	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
		Serial Multi-Drop Connection Unit • For RS-232 communication (GOT Multi-Drop Connection)	GT01-RS4-M refer to the following. (Chapter 42 GOT MULTI-DROP CONNECTION)	—
	4	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT24V10 20 30 GT5V10 20 (RS-422)
	5	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT24V10 20 30 (RS-232)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

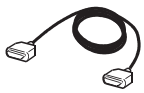
Image	No.	Name	Model name
	6	Function adapter*1*2	FX3U-232ADP

*1 When the function adapter is used, a GOT and a peripheral such as a PC with GX Developer installed can be connected to the FXCPU and the function adapter individually.



*2 Only the FX3U-232ADP function adapter can be connected to the GOT.

(3) Cable

Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	8	RS-422 cable • Between FXCPU and GOT	GT01-C10R4-8P(1m), GT01-C30R4-8P(3m), GT01-C100R4-8P(10m), GT01-C200R4-8P(20m), GT01-C300R4-8P(30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	9	RS-232 cable 1)*1 • Between FX3U-232ADP and GOT	GT01-C30R2-9S(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	10	RS-422 cable 1)*2 • Between FXCPU and GOT	GT10-C10R4-8P(1m), GT10-C30R4-8P(3m), GT10-C100R4-8P(10m) GT10-C200R4-8P(20m), GT10-C300R4-8P(30m)	GT 24V 10 20 30 (RS-422)
			GT10-C10R4-8P(1m), GT10-C30R4-8P(3m),	GT 5V 10 20 (RS-422)
	11	RS-232 cable 4) • Between FX3U-232ADP and GOT	(To be prepared by the user. ☞ Section 3.2 Connection Cable)	GT 24V 10 20 30 (RS-232)

*1 The RS-232 cable can be prepared by the user.

*2 For the connection to GOT, refer to the connection diagram. (☞ 3.2.1RS-232 cable)

3.1.10 Connecting to motion controller CPU (Q Series)

Communication driver

A/QnA/Q CPU,QJ71C24

(For GT16, GT15, GT11)

1 When connecting to a CPU other than Q170MCPU

A motion controller CPU (Q Series) mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

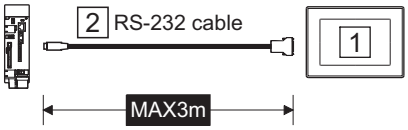
The system configuration, connection conditions, and system equipment for connecting a GOT to a motion controller CPU (Q Series) are the same as those for connecting to the QCPU.

(☞ Section 3.1.1 Connecting to QCPU)

GT16 GT15 GT11 Serial

2 When connecting to Q170MCPU

(1) System configuration and connection conditions

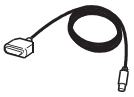
Connection conditions		System Configuration	Model
Number of GOTs	Distance		
1	3m or less		GT16 GT15 GT11 Serial

(2) System equipment

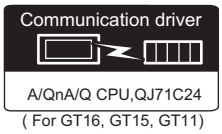
(a) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15 GT11 Serial

(b) Cable

Image	No.	Name	Model name	Model
	2	RS-232 cable	GT01-C30R2-6P(3m)	GT16 GT15 GT11 Serial

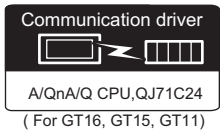
3.1.11 Connecting to motion controller CPU (A Series)



The system configuration, connection conditions, and system equipment when connecting to a motion controller CPU (A Series) are the same as those for the ACPU.
(☞ Section 3.1.3 Connecting to ACPU)

GT16 GT15 GT11 Serial

3.1.12 Connecting to remote I/O station in MELSECNET/H network system



When the GOT is connected to a remote I/O station in the MELSECNET/H network system, the system configuration, connection conditions and system equipment are identical with those in the case of QCPU connection.
(☞ Section 3.1.1 Connecting to QCPU)

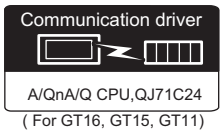
GT16 GT15 GT11 Serial

Point

Connection to GT11 and remote I/O station on MELSECNET/H

GT11 can not access the master station on MELSECNET/H network system.
GT11 can access only the connected host station (remote I/O station).

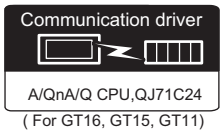
3.1.13 Connecting to CNC C70



The GOT can monitor the CNC C70 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CNC C70 are the same as those for connecting to the QCPU.
(☞ Section 3.1.1 Connecting to QCPU)

GT16 GT15 GT11 Serial

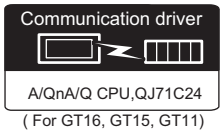
3.1.14 Connecting to CRnQ-700



The GOT can monitor the CRnQ-700 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CRnQ-700 are the same as those for connecting to the QCPU.
(☞ Section 3.1.1 Connecting to QCPU)

GT16 GT15 GT11 Serial

3.1.15 Connecting to Built-in Ethernet port QCPU



The GOT can monitor Built-in Ethernet port QCPU in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to Built-in Ethernet port QCPU are the same as those for connecting to the QCPU.
(☞ Section 3.1.1 Connecting to QCPU)

GT16 GT15 GT11 Serial

3.2 Connection Cable

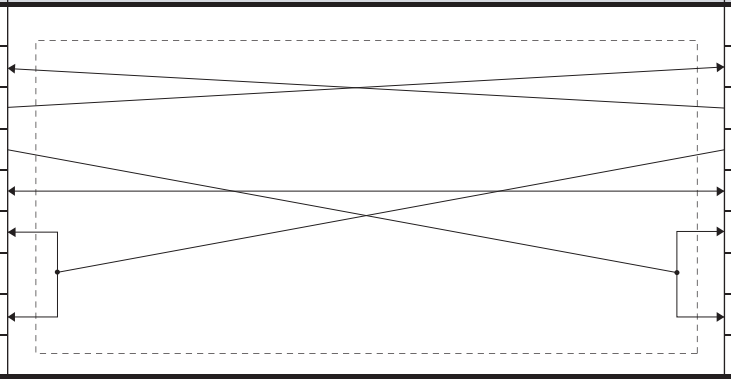
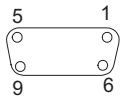
- For wiring the RS-232 cable or RS-422 cable connecting GT1030 or GT1020 to PLC, refer to the connection diagrams for cables.
- If an RS-232 cable connecting GOT (GT16, GT15, GT11, GT105□, GT104□ or Serial Multi-Drop Connection Unit) to the FX PLC that is longer than 3m is required, it should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

Model name		Connection cable	
		RS-232 cable (Refer to Section 3.2.1)	RS-422 cable (Refer to Section 3.2.2)
PC	QCPU	RS-232 cable 3)	RS-422 cable 2)
	QnACPU	-	RS-422 cable 2)
	FXCPU	-	RS-422 cable 1) RS-422 cable 2)
Function expansion board	FX1N-422-BD, FX2N-422-BD,FX3U-422-BD, FX3G-422-BD	-	RS-422 cable 1)
	FX1N-232-BD, FX2N-232-BD,FX3U-232-BD, FX3G-232-BD	RS-232cable 1) RS-232cable 4)	-
Function adapter	FX2NC-232ADP, FX3U-232ADP	RS-232cable 1) RS-232cable 4)	-
	FX0N-232ADP	RS-232cable 2) RS-232cable 5)	-

3.2.1 RS-232 cable

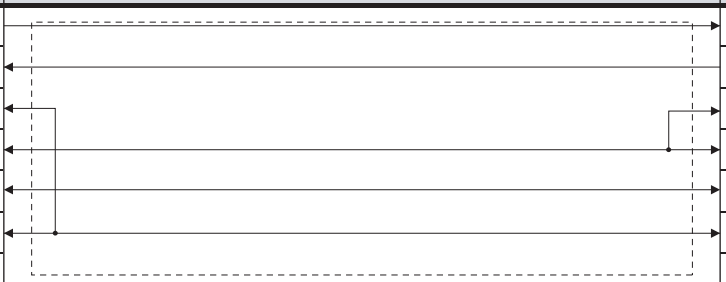
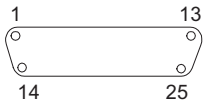
1 Connection diagram

(1) RS-232cable 1) (for GT16, GT15, GT11, GT105□, GT104□, Serial Multi-Drop Connection Unit)

GOT Side	Cable connection	FX PLC side (Dsub9 pin)	
PIN No.		PIN No.	Pin layout*1
1		1	 D-SUB 9 pins:female
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	

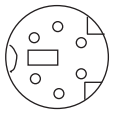
*1 The pin layput shows the engagement face.

(2) RS-232cable 2) (for GT16, GT15, GT11, GT105□, GT104□, Serial Multi-Drop Connection Unit)

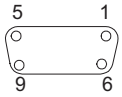
GOT Side	Cable connection	FX PLC side (Dsub25 pin)	
PIN No.		PIN No.	Pin layout*1
2		2	 D-SUB 25 pins:male
3		3	
8		5	
4		6	
5		7	
6		20	

*1 The pin layput shows the engagement face.

(3) RS-232cable 3) (for GT1030, GT1020)

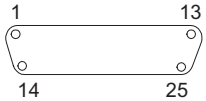
GOT Side (terminal block) Signal name	Cable connection	Untied wire color of GT10-C30R2-6P	PLC side Pin layout
SD		Brown	 MINI-DIN 6Pin:male
RD		Red	
ER		Blue	
DR		Yellow	
SG		Green	
RS		Purple	
CS			
NC			
NC			

(4) RS-232cable 4) (for GT1030, GT1020)

GOT Side (terminal block) Signal name	Cable connection	FX PLC side (Dsub 9 pin) PIN No.	Pin layout*1
SD		1	 D-SUB 9 pins:female
RD		2	
ER		3	
DR		4	
SG		5	
RS		6	
CS		7	
NC		8	
NC		9	

*1 The pin layput shows the engagement face.

(5) RS-232cable 5) (for GT1030, GT1020)

GOT Side (terminal block) Signal name	Cable connection	FX PLC side (Dsub 25 pin) PIN No.	Pin layout*1
SD		2	 D-SUB 25 pins:male
RD		3	
ER		5	
DR		6	
SG		7	
RS		20	
CS			
NC			
NC			

*1 The pin layput shows the engagement face.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector specifications

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

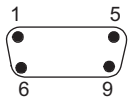
☞ GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105 □, GT104 □,
Seial Multi-Drop Connection Unit

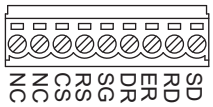
GOT main part connector
see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a
GOT main part



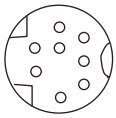
9-pin terminal block

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

3.2.2 RS-422 cable

(1) RS-422 cable 1) (for GT1030, GT1020)

GOT Side (terminal block) Signal name		Cable connection	Untied wire color of GT10-C□□□R4-8P	PLC side Pin layout
24V products	5V products			
SDA			Brown	 MINI-DIN 8Pin:male
SDB			Red	
RDA			Orange	
RDB			Yellow	
SG			Green	
RSA			Black	
RSB			White	
CSA	INPUT --			
CSB	5VDC +			

(2) RS-422 cable 2) (for GT1030, GT1020)

GOT Side (terminal block) Signal name	Cable connection	Untied wire color of GT10-C□□□R4-8P	PLC side Pin layout
SDA		Brown	 D-SUB 25Pin:male
SDB		Red	
RDA		Orange	
RDB		Yellow	
SG		Green	
RSA		Blue	
RSB		Purple	
CSA		Black	
CSB		White	

1 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface on the GOT (GT1030, GT1020).

(a) Connector type

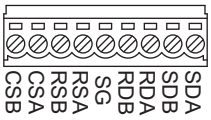
GOT	Connector type	Model	Manufacturer
GT1030, GT1020	9-pin terminal block*1	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.

*1 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

3.3 Preparatory Procedure for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 3.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 3.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 3.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 3.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 3.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 3.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 3.3.7
Checking for normal monitoring

Point

For the procedure for monitoring using the serial multi-drop connection unit, refer to the following.

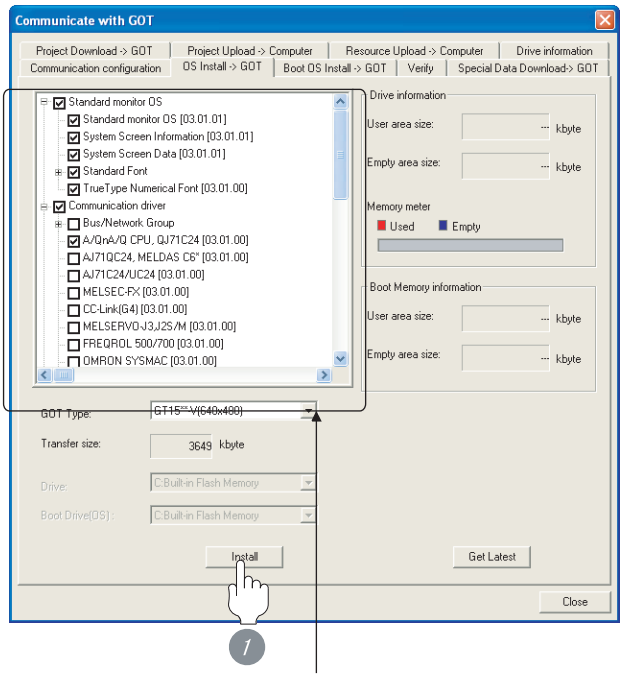
☞ Chapter 42.GOT MULTI-DROP CONNECTION

3.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check either of the following under the Communication driver.

(for GT16, GT15, GT11)

- •A/QnA/Q CPU, QJ71C24
- •MELESEC-FX

(for GT10)

- •QnA/Q CPU
- •MELESEC-FX
- •MELESEC-A

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

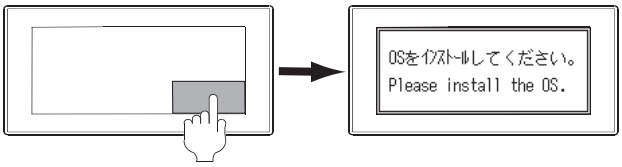
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



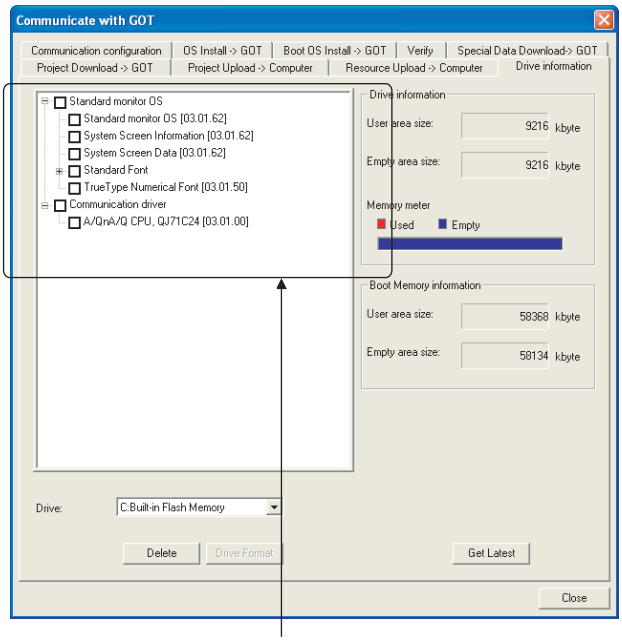
Turn on the GOT while the bottom right corner is touched.

3.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (either of the following)

(for GT16, GT15, GT11)

- •A/QnA/Q CPU, QJ71C24
- •MELESEC-FX

(for GT10)

- •QnA/Q CPU
- •MELESEC-FX
- •MELESEC-A

3.3.3 Setting communication interface (Communication settings)

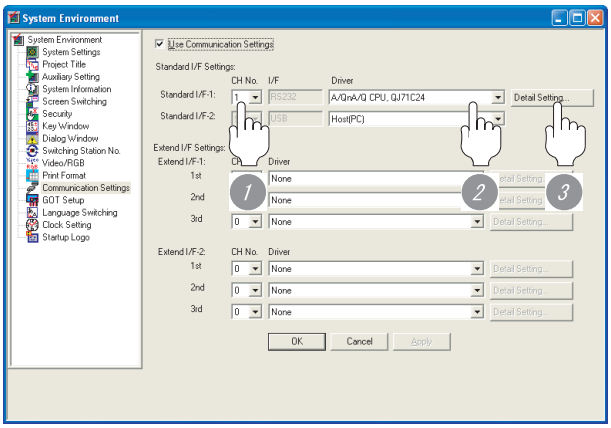
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set [1] to the channel No. used.

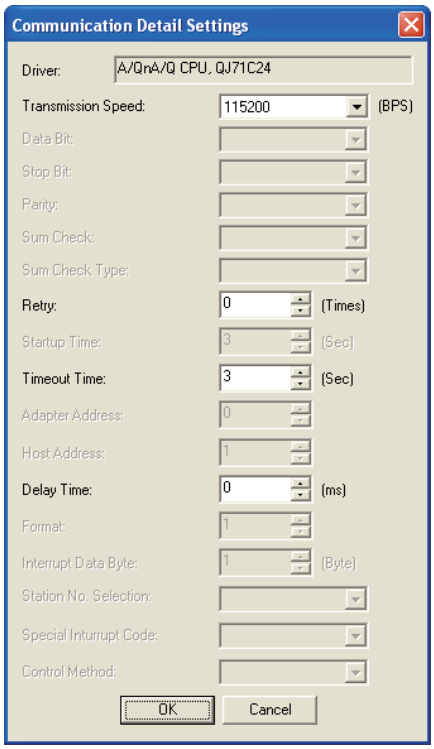
2 Set the following to the driver.
(For GT16, GT15, GT11)
- When connecting to an A/QnA/QCPU or a motion controller: A/QnA/Q CPU, QJ71C24
- When connecting to a FXCPU: MELSEC-FX

(For GT10)
When connecting to an QnA/QCPU
- When connecting to a ACPU: MELSEC-A
- When connecting to a FXCPU: MELSEC-FX

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

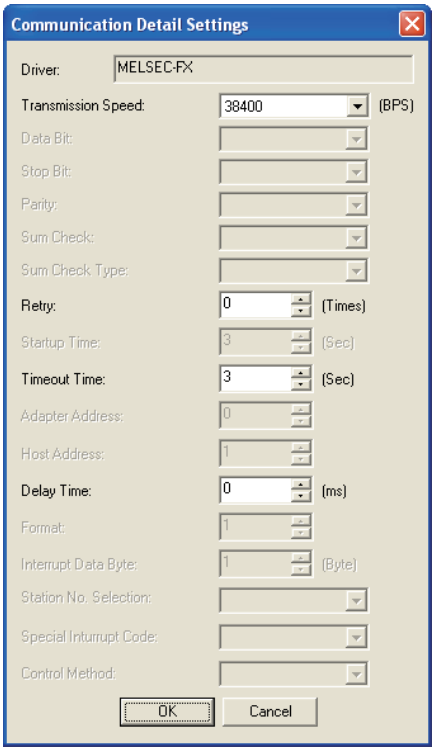
2 Communication detail settings

(1) A/QnA/QCPU, QJ71C24



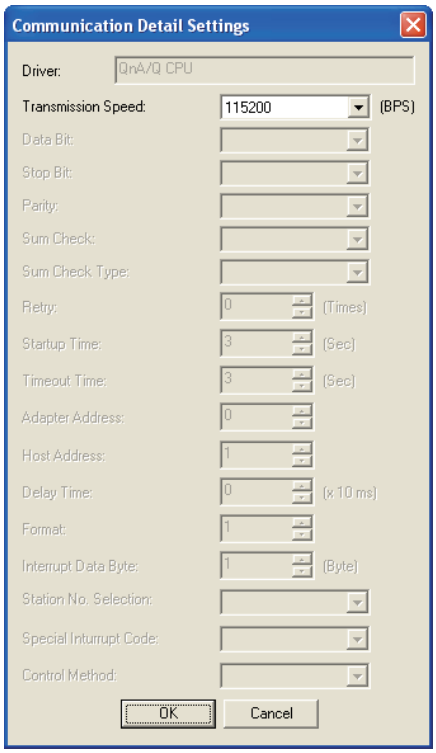
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(2) MELSEC-FX



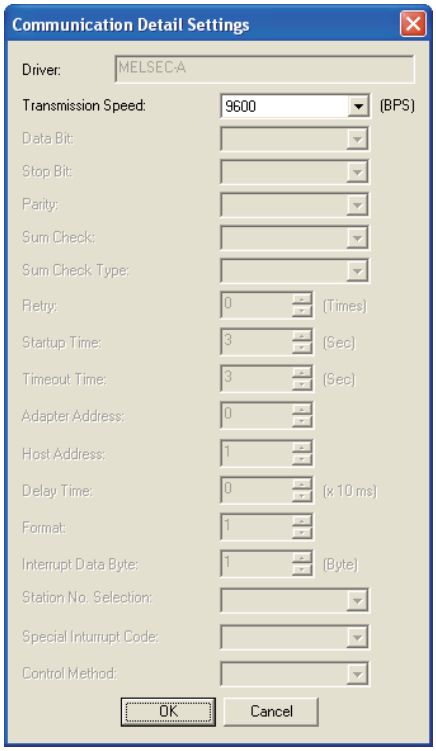
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 38400bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(3) QnA/Q CPU



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment.	9600bps, 19200bps, 38400bps, 57600bps, 115200bps

(4) MELSEC-A



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment.	9600bps,

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manuall (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

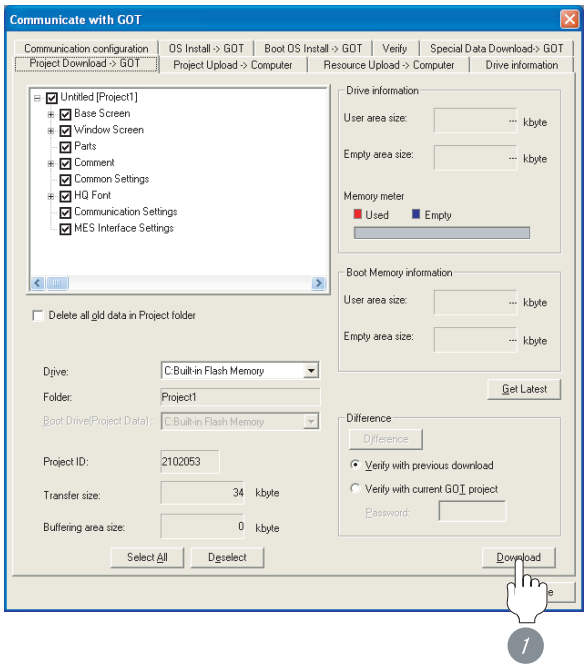
Communication settings can be changed on only GT Designer2.

3.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

3.3.5 Attaching communication unit and connecting cable

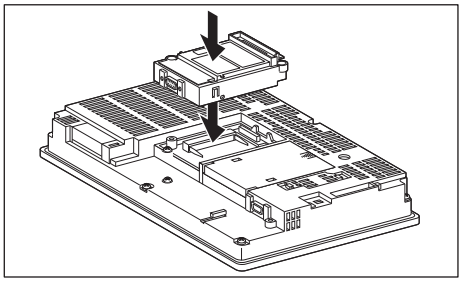
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

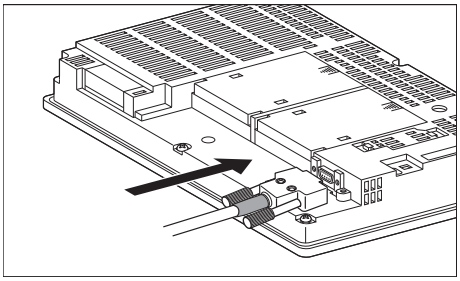
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

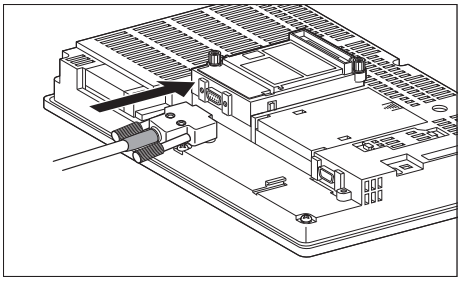
• connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



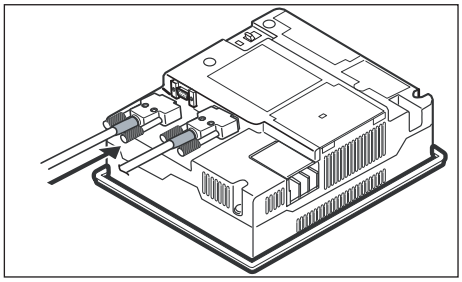
• connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



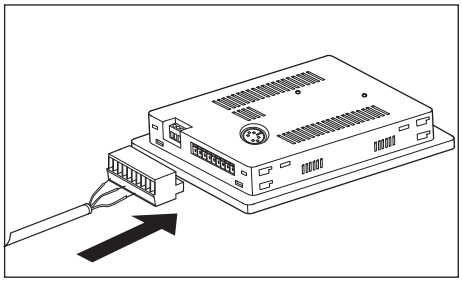
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

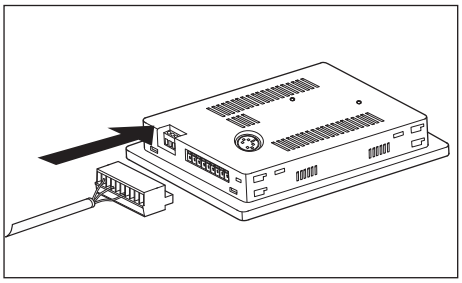


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

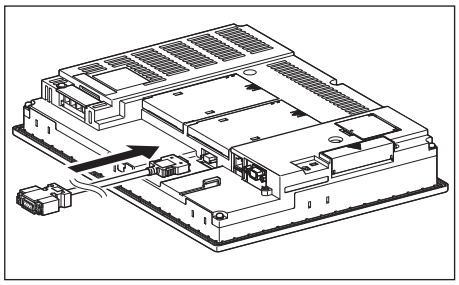


(2) How to connect the RS-422 cable

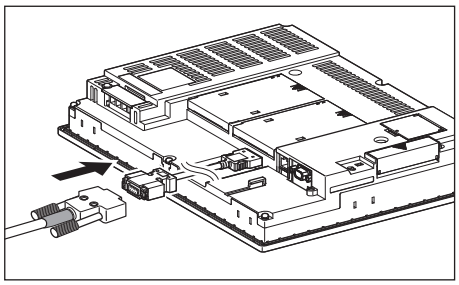
(a) For GT16

• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

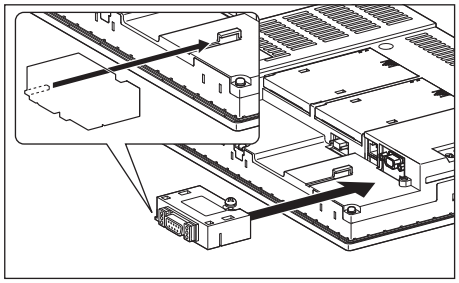


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

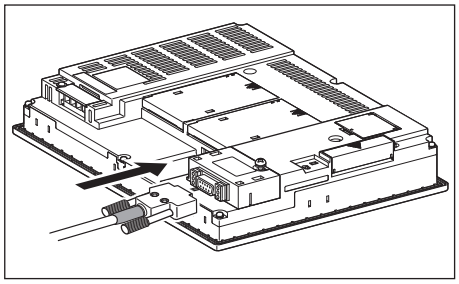


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

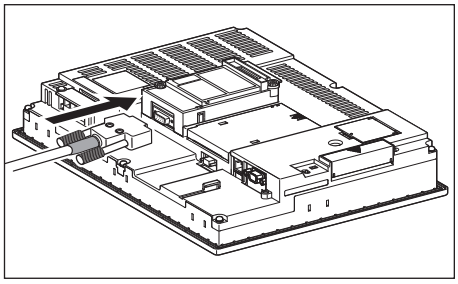


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

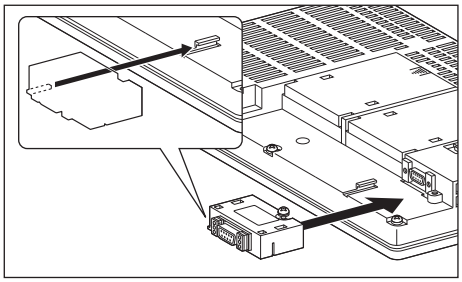
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



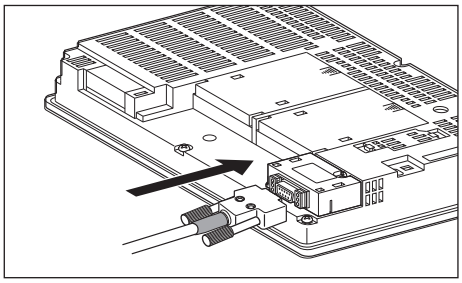
(b) For GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

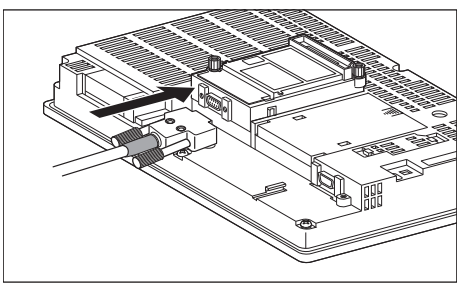


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

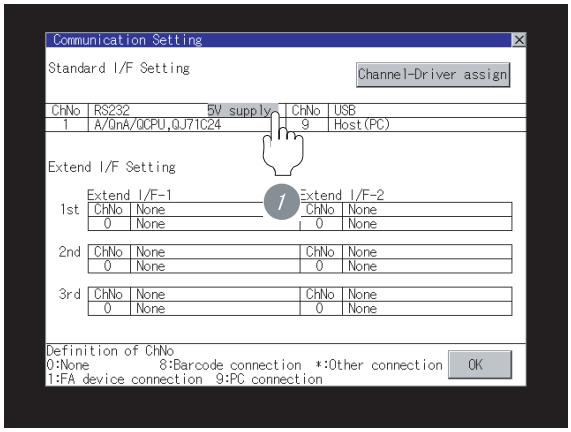
When using the RS-422 conversion unit

On "Communication settings" on the GOT utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the RS-422 conversion unit and the GOT utility, refer to the following manual:

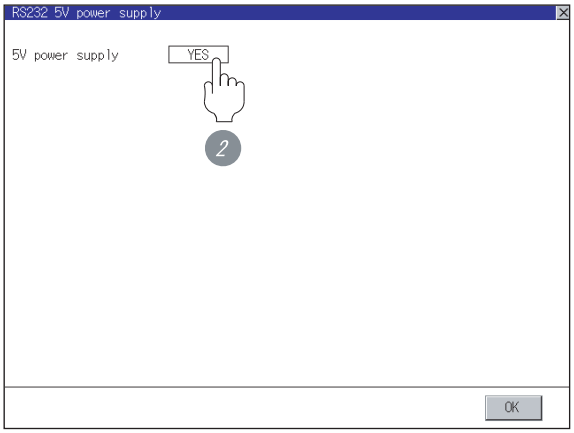
☞ GT15 Serial Communication Unit User's Manual

☞ GT ☐ User's Manual

1 Touch [5V supply].

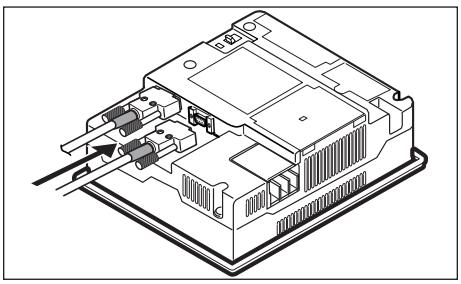


2 Set [5V power supply] to "YES".



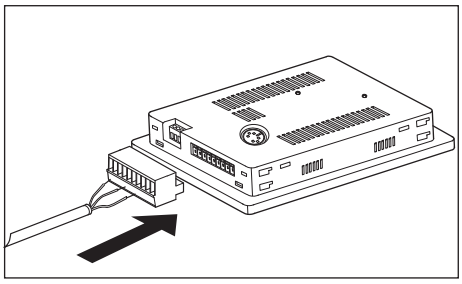
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

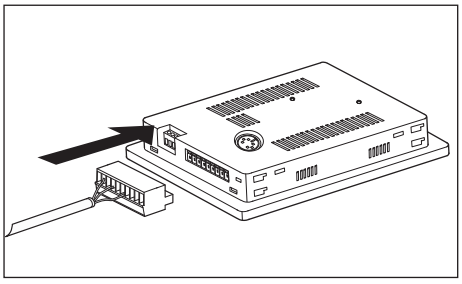


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



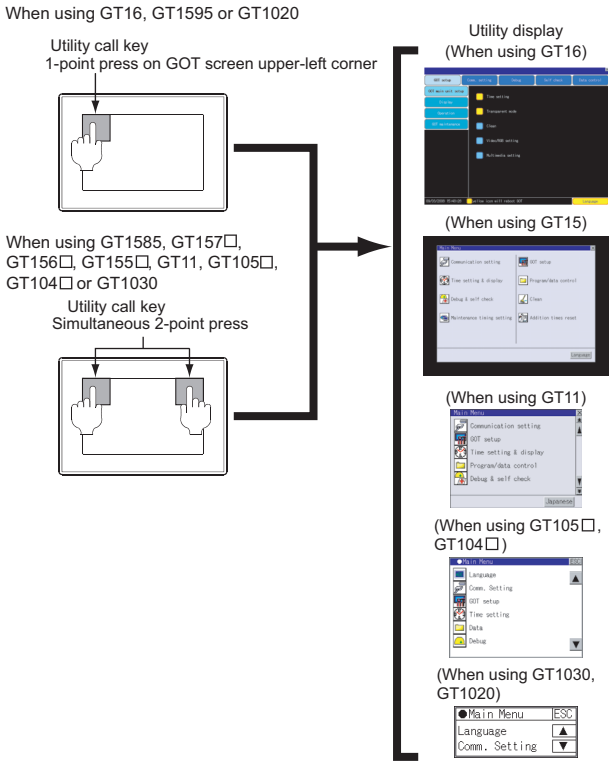
3.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

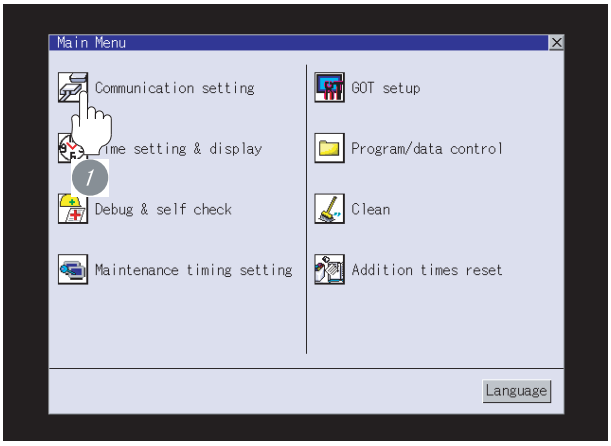


Point

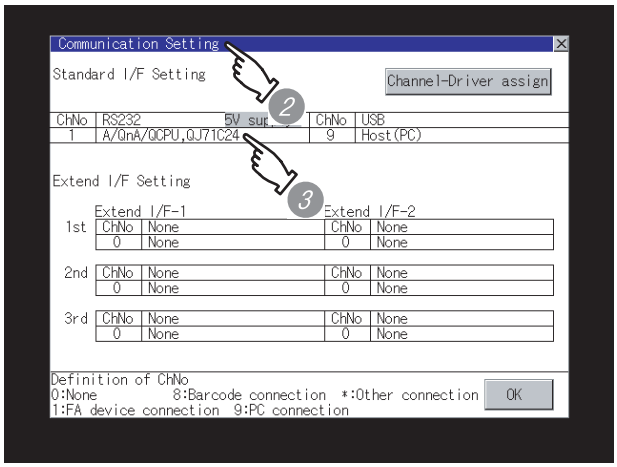
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

(For GT16, GT15, GT11)

- Communication driver (either of the following)
  A/QnA/Q CPU, QJ71C24
  MELSEC-FX

(For GT10)

- Communication driver (either of the following)
  QnA/Q CPU
  MELSEC-A
  MELSEC-FX

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 3.3 Preparatory Procedure for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manuall (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

3.3.7 Checking for normal monitoring

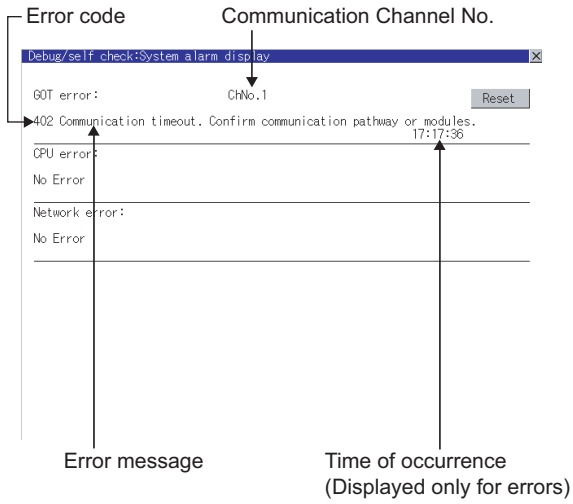
1 Check for errors occurring on the GOT(for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check(for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

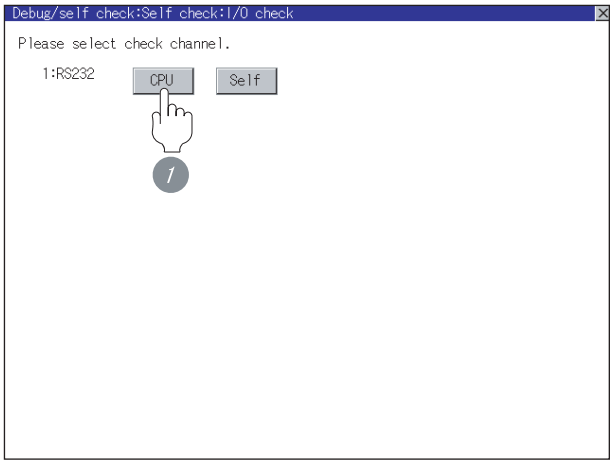
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

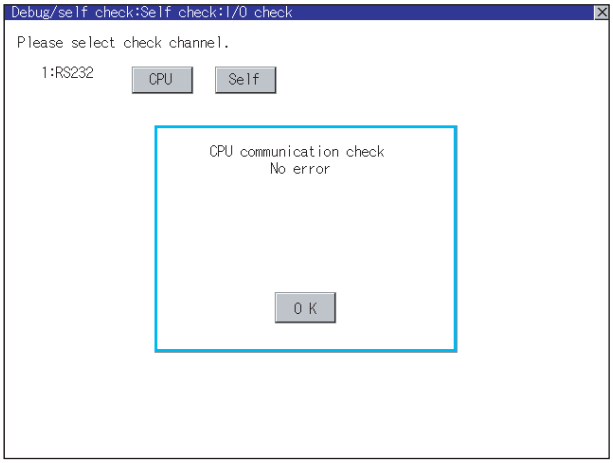
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

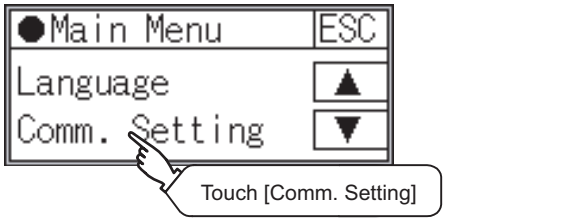
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

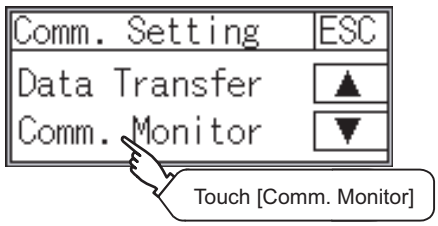
(Operation of communication monitoring function screen)

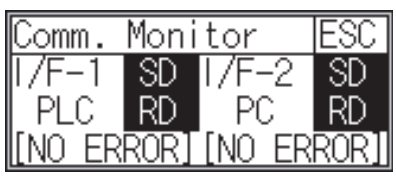
Main Menu





Communication settings





All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

3.4 Precautions

1 Communication settings

The communication driver names differs depending on the GT Designer2 versions.

GT Designer2 versions	
2.32J or before	2.43V or later
A/QnA/Q CPU, QJ71C24, MELDAS C6*	A/QnA/Q CPU, QJ71C24
AJ71QC24	AJ71QC24, MELDAS C6*

2 When connecting to FXCPU (FX3G/FX3U/FX3UC series)

When the keyword of FXCPU (FX3G/FX3U/FX3UC series) has been set, GOT may not be able to monitoring. Perform an I/O check again. (☞ 2 Perform an I/O check (for GT16, GT15, GT11) When the result of the I/O check is normal, check the status of keyword registration.

3 When connecting to FXCPU with function extension board or communication special adapter

When a sequence program and settings that the FXCPU communicates with devices other than the GOT are set with software, including GX Developer, the FXCPU cannot communicate with the GOT.

(1) Settings with sequence program
Check the sequence program and delete the following.

☞ FX SERIES PROGRAMMABLE CONTROLLERS USER'S MANUAL - Data Communication Edition

(a) No protocol communication (RS instruction)

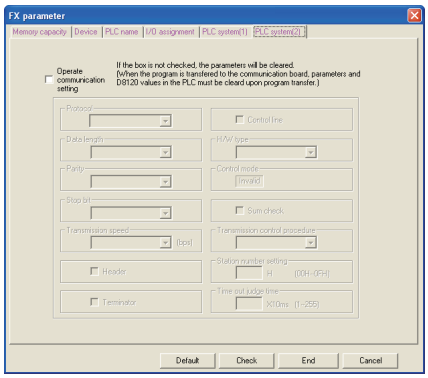
(b) Sequence program with the computer link, N:N network, and parallel link

(c) Parameter setting
Set the following special registers to 0.
- Except FX3U, FX3UC: D8120
- FX3U, FX3UC : D8120, D8400, D8420
- FX3G : D8120, D8400, D8420, D8370

(2) Settings with GX Developer

Select [PLC parameter] in [Parameter], and then click the PLC system(2) tab on the FX parameter screen.

Uncheck [Operate communication setting], and then transfer the parameter to the programmable controller. After the transfer, turn off the programmable controller, and then turn on the programmable controller again.



4 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.

QCPU (Q mode), motion controller (Q series): 10 seconds or more

MELDAS C70: 18 seconds or more

When the GOT starts before the PLC runs, a system alarm occurs. Adjust the opening screen time in the GOT setup so that no system alarm occurs.

☞ GT Designer2 Version □ Screen Design Manual

5 When connecting to GT1020-LBL□

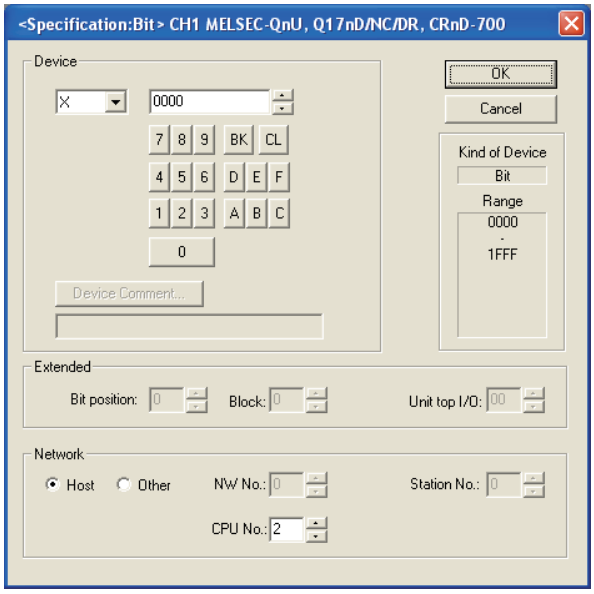
When connecting FX3G series and GT1020-LBL□, they cannot be connected to standard built-in port (RS-422) and function expansion board (FX3G-422-BD) simultaneously.

6 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



3.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	Applicable CPU	Supporting the FX3U/FX3UC (Ver2.20 and above) connection	2.18U	Communication driver MELSEC-FX[02.01.**]
GT15 GT11 Serial	DIRECT CONNECTION TO CPU	Changing communication driver names	2.43V	Communication driver A/QnA/Q CPU, QJ71C24 [03.01.**] AJ71QC24, MELDAS C6* [03.01.**]
GT24V10 20 30 GT5V10 20	DIRECT CONNECTION TO CPU	Supporting the connections to GT10	2.43V	Communication driver QnA/Q CPU[01.00.**] MELSEC-FX[01.00.**] MELSEC-A[01.00.**]
GT24V10 20 30	DIRECT CONNECTION TO CPU	Supporting the connections to GT1030	2.58L	Standard monitor OS [01.03.**] Communication driver QnA/Q CPU[01.00.**] MELSEC-FX[01.00.**] MELSEC-A[01.00.**]
GT15 GT11 Serial	Applicable CPU	Supporting the connection to Q02UCPU, Q03UDCPU, Q04UDHCPU, and Q06UDHCPU	2.63R	Communication driver A/QnA/QCPU, QJ71C24 [03.07.**]
GT15 GT11 Serial	Robot Controller connection	Supporting the connection to CRnQ-700	2.73B	Communication driver A/QnA/QCPU, QJ71C24 [03.09.**]
GT15 GT11 Serial	DIRECT CONNECTION TO CPU	Supporting the retry, the timeout time and the delay time	2.73B	Communication driver A/QnA/QCPU, QJ71C24 [03.09.**] MELSEC-FX[03.09.**]
GT24V10 20 30	Applicable CPU	Supporting the connection to Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, and Q26UDHCPU	2.77F	Standard monitor OS [01.08.**] Communication driver QnA/Q CPU[01.03.**]
GT15 GT11 Serial	Applicable CPU	Supporting the connection to Q13UDHCPU, Q26UDHCPU	2.77F	Communication driver A/QnA/QCPU, QJ71C24 [03.12.**]
GT15 GT11 Serial	Applicable CPU	Supporting the connection to the Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q02PHCPU, and Q06PHCPU	2.82L	Communication driver A/QnA/Q CPU, QJ71C24 [03.13.**]

(Continued to next page)

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	DIRECT CONNETION TO CPU	Supporting the connection to the FX3UC-□□/D, FX3UC-□□/DSS	2.82L	Communication driver MELSEC-FX [03.13.**]
GT24V10 20 30 GT5V10 20				Standard monitor OS [01.09.**] Communication driver MELSEC-FX [01.05.**]
GT16	DIRECT CONNETION TO CPU	Supporting the connection to GT16	2.90U	Communication driver A/QnA/Q CPU, QJ71C24 [04.02.**] MELSEC-FX [04.02.**]
GT10 5□ 4□	DIRECT CONNETION TO CPU	Supporting the connection to GT105□ Supporting the connection to GT104□		Standard monitor OS [01.10.**] Communication driver QnA/Q CPU [01.05.**] MELSEC-A [01.05.**] MELSEC-FX [01.06.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to FX3G series		Communication driver MELSEC-FX [04.02.**]
GT10 5□ 4□ GT24V10 20 30 GT5V10 20				Standard monitor OS [01.10.**] Communication driver MELSEC-FX [01.06.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to the Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU,	2.91V	Communication driver A/QnA/Q CPU, QJ71C24 [04.03.**]
GT10 5□ 4□ GT24V10 20 30				Standard monitor OS [01.11.**] Communication driver QnA/Q CPU [01.11.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver A/QnA/Q CPU, QJ71C24 [04.04.**]

4

COMPUTER LINK CONNECTION



4.1 System Configuration . . . . . page 4-2
This section describes the equipment and cables needed for computer link connection.
Select a system suitable for your application.

4.2 Connection Cable . . . . . page 4-26
This section describes the specifications of the cables needed for establishing a computer link connection.
Check the specifications of the connection cables.

4.3 Preparatory Procedures for Monitoring . . . . . page 4-37
This section provides the procedures to be followed before performing monitoring in computer link connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

4.4 PLC Side Setting . . . . . page 4-50
The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

4.5 Precautions . . . . . page 4-58
This section describes the precautions about computer link connection.
Be sure to read this when establishing a computer link connection.

4.6 List of Functions Added by Version Upgrade . . . . . page 4-59
This section describes the functions added by version upgrade of GT Designer2 or OS.

4.1 System Configuration

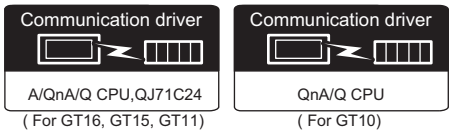
Select a system configuration suitable for your application.

Point

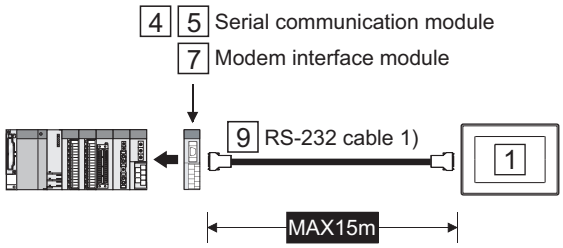
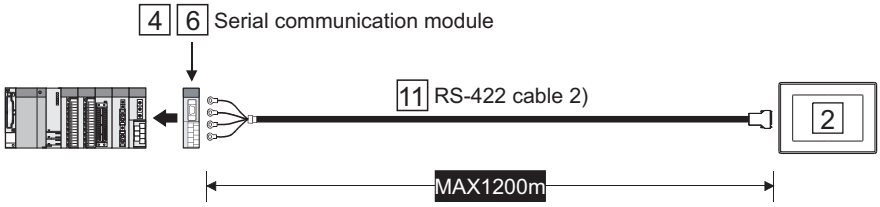
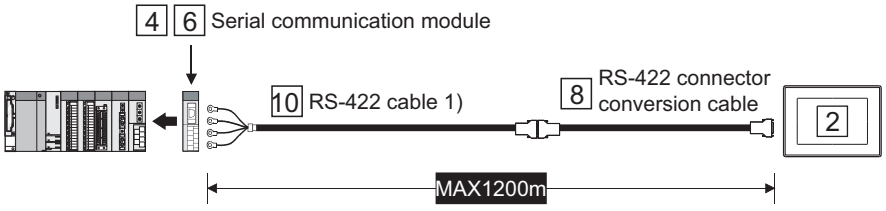
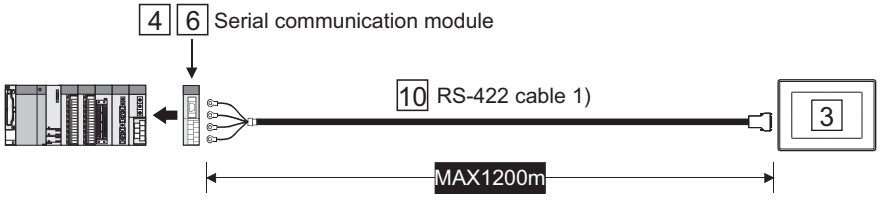
Conventions used in this section

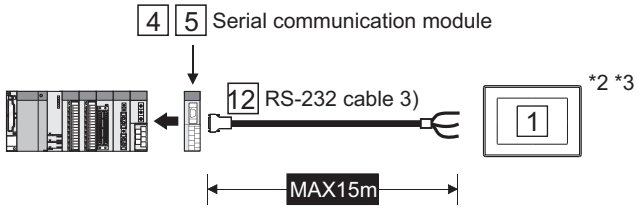
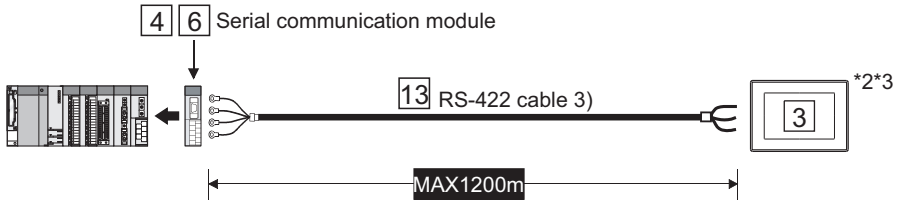
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

4.1.1 Connecting to QCPU (Q mode)



1 System configuration and connection conditions

Connection conditions		System configuration *1	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	1200m or less		GT16
	1200m or less		GT16
	1200m or less		GT16 GT15 GT11 Serial GT10 5□ 4□

Connection conditions		System configuration *1	Model
Number of GOTs	Distance		
1	15m or less		GT 24V 10 20 30 (RS-232)
	1200m or less		GT 24V 10 20 30 (RS-422)

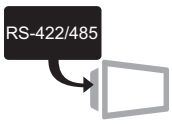
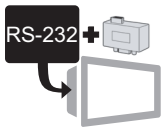
*1 Direct connection from the GOT to a basic model QCPU is recommended. For this reason, the GOT does not support the serial communication function of the basic model QCPU. (☞ Section 3.1.1 Connecting to QCPU)

*2 GT10 is not supporting the connections to following CPU models .
CPU models : Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU

*3 When connecting GT10 to a multi-CPU system, the system configurations which consist of only High performance model CPUs (Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU) are supported.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

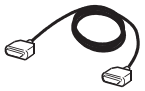
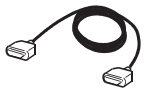
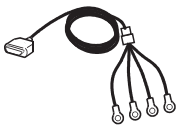
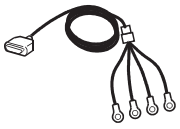
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Serial communication module *2	QJ71C24, QJ71C24N
	5		QJ71C24-R2, QJ71C24N-R2
	6		QJ71C24N-R4
	7	Modem interface module	QJ71CMO, QJ71CMON

*2 For details on the system configuration on the serial communication module side, refer to the following manual.
☞ Q Corresponding Serial Communication Module User's Manual (Basic)

(3) Cable

Image	No.	Name	Model name	Model
	8	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	9	RS-232 cable 1)*1 • Between serial communication module and GOT • Between modem interface module and GOT	GT09-C30R2-9P(3m)	GT16 GT15 GT11 Serial GT105□4□
	10	RS-422 cable 1)*1 • Between serial communication module and RS-422 connector conversion cable • Between serial communication module and GOT	GT09-C30R4-6C(3m), GT09-C100R4-6C(10m) GT09-C200R4-6C(20m), GT09-C300R4-6C(30m)	GT16 GT15 GT11 Serial GT105□4□
	11	RS-422 cable 2)*1 • Between serial communication module and GOT	(To be prepared by the user. ☞ Section 4.2 Connection Cable)	GT16
	12	RS-232 cable 3) • Between serial communication module and GOT	(To be prepared by the user. ☞ Section 4.2 Connection Cable)	GT24V10 20 30 (RS-232)
	13	RS-422 cable 3) • Between serial communication module and GOT	(To be prepared by the user. ☞ Section 4.2 Connection Cable)	GT24V10 20 30 (RS-422)

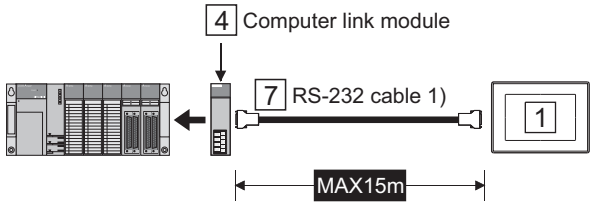
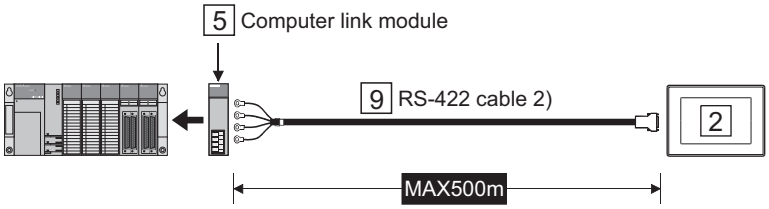
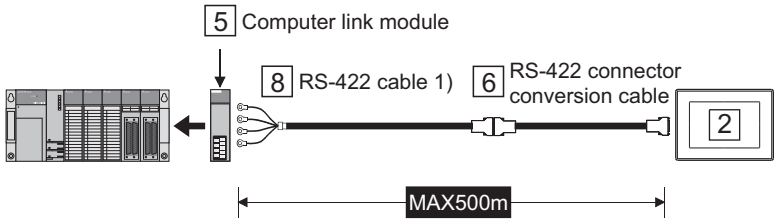
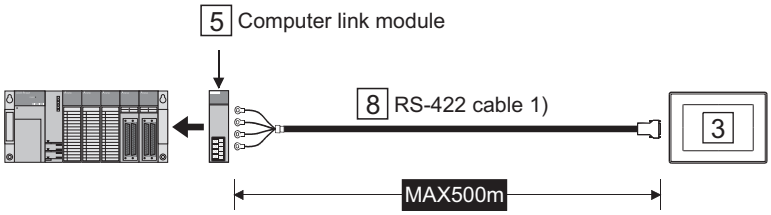
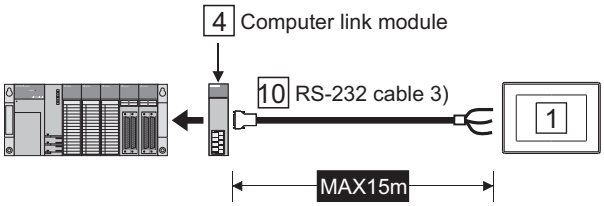
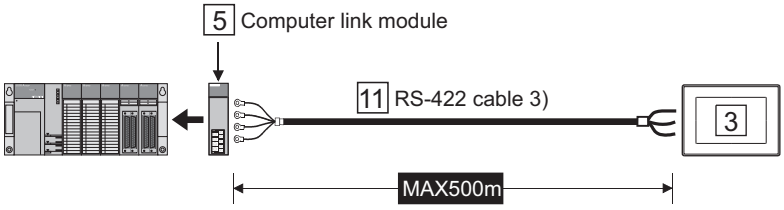
*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ 4.2Connection Cable)

4.1.2 Connecting to QCPU (A mode)

Communication driver

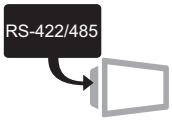
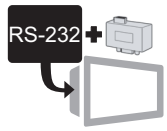
AJ71C24/UC24

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	500m or less		GT16
	500m or less		GT16
	500m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT24V10 20 30 (RS-232)
	500m or less		GT24V10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

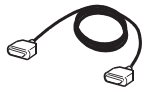
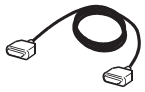
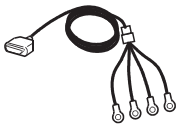
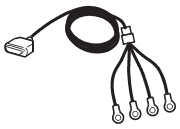
(2) PLC

Image	No.	Name	Model name
	4	Computer link module *2	A1SJ71UC24-R2, A1SJ71C24-R2, A1SJ71UC24-PRF, A1SJ71C24-PRF
	5		A1SJ71UC24-R4, A1SJ71C24-R4

*2 For the system configuration on the computer link module side, refer to the following manual.

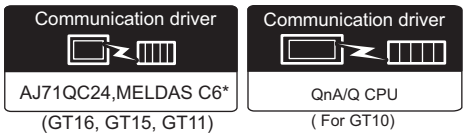
☞ Computer Link Module (Com. link func./Print. func.) User's Manual

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-232 cable 1)*1 • Between computer link module and GOT	GT09-C30R2-9P(3m)	GT16 GT15 GT11 Serial GT105□4□
	8	RS-422 cable 1)*1 • Between computer link module and RS-422 connector conversion cable • Between computer link module and GOT	GT09-C30R4-6C(3m), GT09-C100R4-6C(10m) GT09-C200R4-6C(20m), GT09-C300R4-6C(30m)	GT16 GT15 GT11 Serial GT105□4□
	9	RS-422 cable 2)*1 • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT16
	10	RS-232 cable 3) • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT24V10 20 30 (RS-232)
	11	RS-422 cable 3) • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT24V10 20 30 (RS-422)

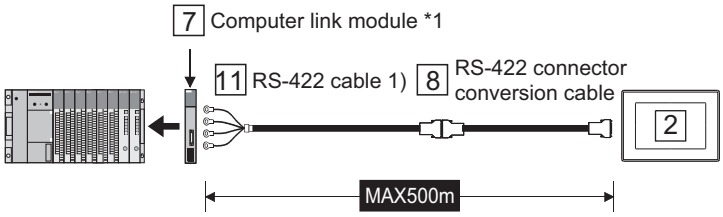
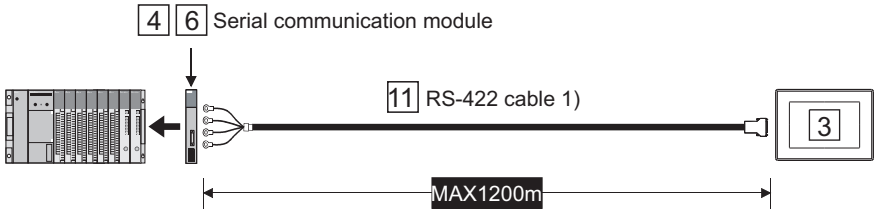
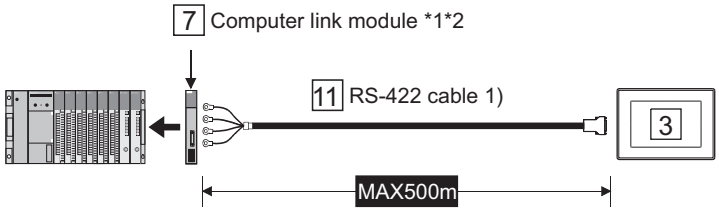
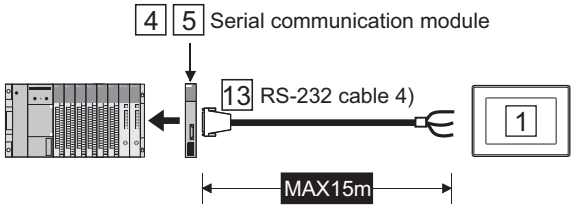
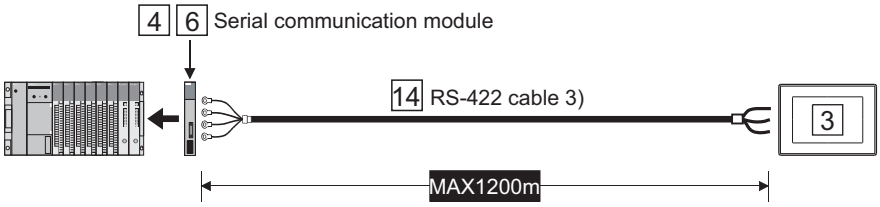
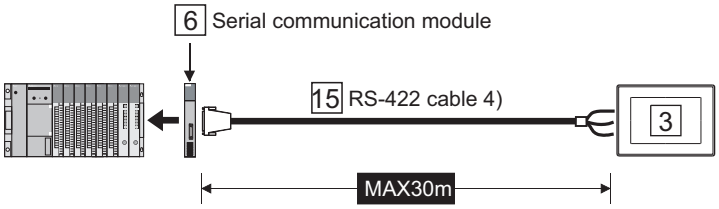
*1 The RS-232 and RS-422 cable can be prepared by the user. (4.2Connection Cable)

4.1.3 Connecting to QnACPU type



1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less	4 5 Serial communication module 7 Computer link module *1*2 9 RS-232 cable 2) 1 MAX15m	GT16 GT15 GT11 Serial GT105□ 4□
	30m or less	6 Serial communication module 10 RS-422 cable 3 MAX30m	GT16 GT15 GT11 Serial GT105□ 4□
	1200m or less	4 6 Serial communication module 12 RS-422 cable 2) 2 MAX1200m	GT16
	500m or less	7 Computer link module *1 12 RS-422 cable 2) 2 MAX500m	GT16
	30.2m or less	6 Serial communication module 10 RS-422 cable 8 RS-422 connector conversion cable 2 MAX30.2m	GT16
	1200m or less	4 6 Serial communication module 11 RS-422 cable 1) 8 RS-422 connector conversion cable 2 MAX1200m	GT16

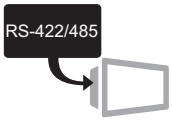
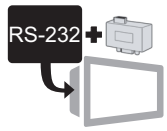
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	500m or less		GT16
	1200m or less		GT16 GT15 GT11 Serial GT10
	500m or less		GT16 GT15 GT11 Serial GT10
	15m or less		GT24V10 20 30 (RS-232)
	1200m or less		GT24V10 20 30 (RS-422)
	30m or less		GT24V10 20 30 (RS-422)

*1 When connecting to a computer link module, set the communication driver to "AJ71C24/UC24".

*2 Connection to GT10 are not supported.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

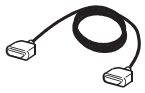
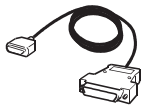
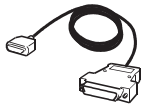
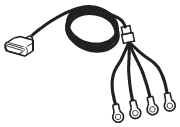
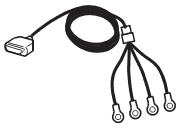
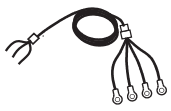
(2) PLC

Image	No.	Name	Model name
	4	Serial communication module *2	AJ71QC24, AJ71QC24N
	5		AJ71QC24-R2, AJ71QC24N-R2
	6		AJ71QC24-R4, AJ71QC24N-R4
	7	Computer link module *2	AJ71UC24

*2 For the system configuration on the serial communication module side, refer to the following manual.

• Serial Communications Module User's Manual (Modem Function Additional Version)
• Computer Link Module (Com. link func./Print. func.) User's Manual

(3) Cable

Image	No.	Name	Model name	Model
	8	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	9	RS-232 cable 2)*1 • Between serial communication module and GOT • Between computer link module and GOT	GT09-C30R4-25P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	10	RS-422 cable • Between serial communication module and GOT	GT01-C30R4-25P (3m), GT01-C100R4-25P (10m), GT01-C200R4-25P (20m), GT01-C300R4-25P (30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	11	RS-422 cable 1)*1 • Between serial communication module and RS-422 connector conversion cable • Between serial communication module and GOT • Between computer link module and GOT	GT09-C30R4-6C(3m), GT09-C100R4-6C(10m) GT09-C200R4-6C(20m), GT09-C300R4-6C(30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	12	RS-422 cable 2) • Between serial communication module and GOT • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT16
	13	RS-232 cable 4) • Between serial communication module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT 24V 10 20 30 (RS-232)
	14	RS-422 cable 3) • Between serial communication module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT 24V 10 20 30 (RS-422)
	15	RS-422 cable 4)*1 • Between serial communication module and GOT	GT10-C30R4-25P(3m), GT10-C100R4-25P(10m) GT10-C200R4-25P(20m), GT10-C300R4-25P(30m)	GT 24V 10 20 30 (RS-422)

*1 The RS-232 and RS-422 cable can be prepared by the user. (4.2Connection Cable)

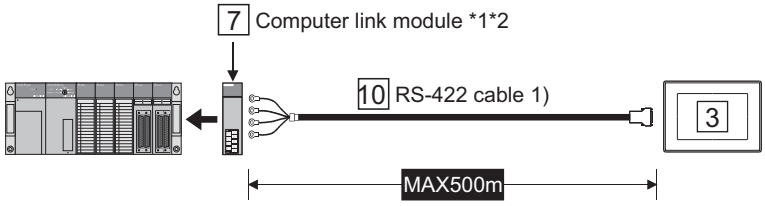
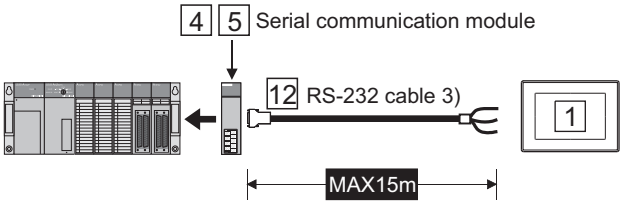
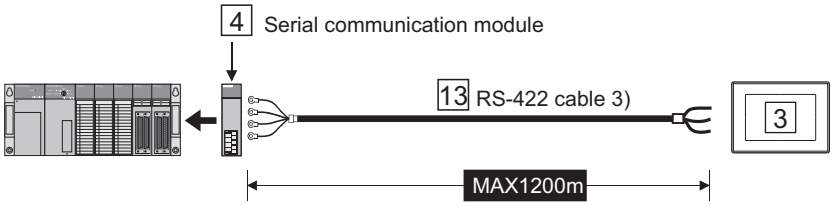
4.1.4 Connecting to QnASCPU type

Communication driver — AJ71QC24,MELDAS C6* (GT16, GT15, GT11)

Communication driver — QnA/Q CPU (For GT10)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less	4 5 Serial communication module 6 Computer link module *1*2 9 RS-232 cable 1) 1 MAX15m	GT16 GT15 GT11 Serial GT10 5□ 4□
	1200m or less	4 Serial communication module 11 RS-422 cable 2) 2 MAX1200m	GT16
	500m or less	7 Computer link module *1 11 RS-422 cable 2) 2 MAX500m	GT16
	1200m or less	4 Serial communication module 10 RS-422 cable 1) 8 RS-422 connector conversion cable 2 MAX1200m	GT16
	500m or less	7 Computer link module *1 10 RS-422 cable 1) 8 RS-422 connector conversion cable 2 MAX500m	GT16
	1200m or less	4 Serial communication module 10 RS-422 cable 1) 3 MAX1200m	GT16 GT15 GT11 Serial GT10 5□ 4□

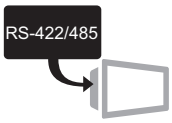
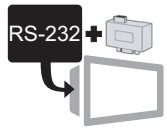
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	500m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT 24V 10 20 30 (RS-232)
	1200m or less		GT 24V 10 20 30 (RS-422)

*1 When connecting to a computer link module, set the communication driver to "AJ71C24/UC24".

*2 Connection to GT10 are not supported.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

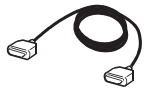
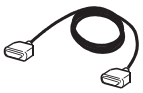
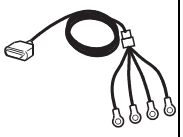
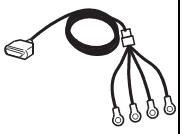
Image	No.	Name	Model name		
	4	Serial communication module *2	A1SJ71QC24,	A1SJ71QC24N,	A1SJ71QC24N1
	5		A1SJ71QC24-R2,	A1SJ71QC24N-R2,	A1SJ71QC24N1-R2
	6	Computer link module *2	A1SJ71UC24-R2, A1SJ71C24-PRF	A1SJ71C24-R2,	A1SJ71UC24-PRF,
	7		A1SJ71UC24-R4,	A1SJ71C24-R4	

*2 For the system configuration on the serial communication module side, refer to the following manual.



• Serial Communications Module User's Manual (Modem Function Additional Version)
• Computer Link Module (Com. link func./Print. func.) User's Manual

(3) Cable

Image	No.	Name	Model name	Model
	8	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	9	RS-232 cable 1)*1 • Between serial communication module and GOT • Between computer link module and GOT	GT09-C30R2-9P(3m)	GT16 GT15 GT11 Serial GT105□4□
	10	RS-422 cable 1)*1 • Between serial communication module and RS-422 connector conversion cable • Between serial communication module and GOT • Between computer link module and GOT	GT09-C30R4-6C(3m), GT09-C100R4-6C(10m) GT09-C200R4-6C(20m), GT09-C300R4-6C(30m)	GT16 GT15 GT11 Serial GT105□4□
	11	RS-422 cable 2)*1 • Between serial communication module and GOT • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT16
	12	RS-232 cable 3) • Between serial communication module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT24V10 20 30 (RS-232)
	13	RS-422 cable 3) • Between serial communication module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT24V10 20 30 (RS-422)

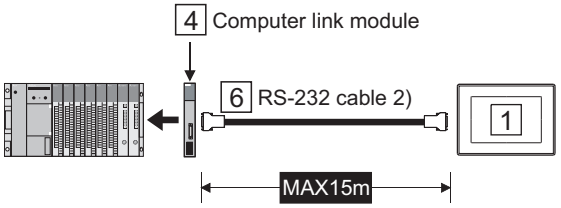
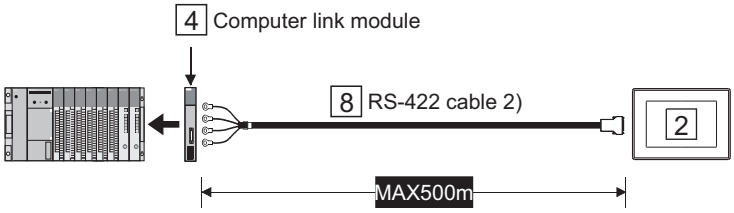
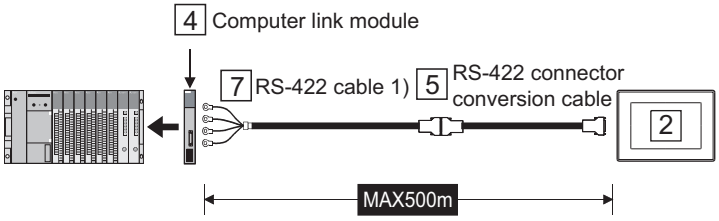
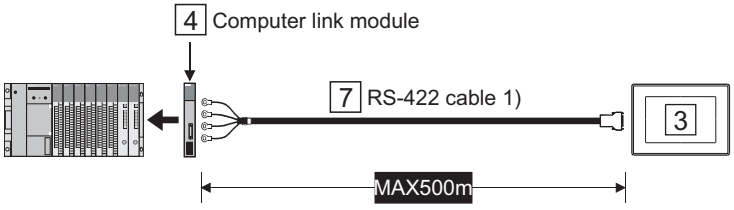
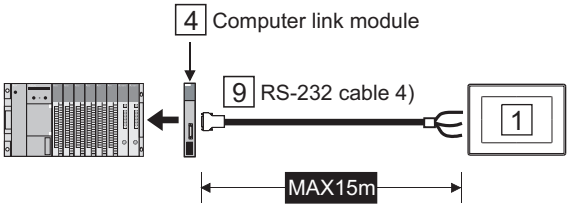
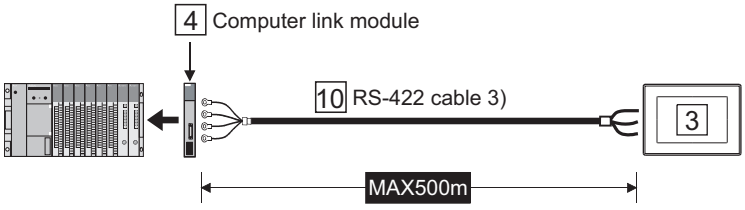
*1 The RS-232 and RS-422 cable can be prepared by the user. (4.2Connection Cable)

4.1.5 Connecting to AnCPU type

Communication driver

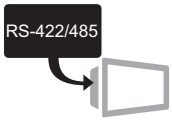
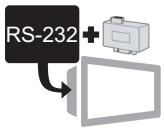
AJ71C24/UC24

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	500m or less		GT16
	500m or less		GT16
	500m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT24V10 20 30 (RS-232)
	500m or less		GT24V10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

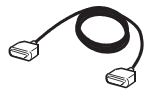
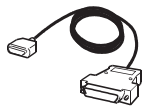
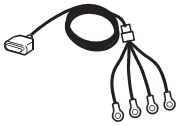
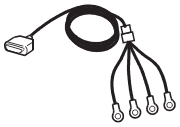
(2) PLC

Image	No.	Name	Model name
	4	Computer link module *2	AJ71UC24

*2 For the system configuration on the computer link module side, refer to the following manual.

☞ Computer Link Module (Com. link func./Print. func.) User's Manual

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-232 cable 2)*1 • Between computer link module and GOT	GT09-C30R2-25P(3m)	GT16 GT15 GT11 Serial GT105□ GT104□
	7	RS-422 cable 1)*1 • Between computer link module and RS-422 connector conversion cable • Between computer link module and GOT	GT09-C30R4-6C(3m), GT09-C100R4-6C(10m) GT09-C200R4-6C(20m), GT09-C300R4-6C(30m)	GT16 GT15 GT11 Serial GT105□ GT104□
	8	RS-422 cable 2)*1 • Between computer link module and GOT	(To be prepared by the user. ☞ Section 4.2 Connection Cable)	GT16
	9	RS-232 cable 4) • Between computer link module and GOT	(To be prepared by the user. ☞ Section 4.2 Connection Cable)	GT24V10 GT24V20 GT24V30 (RS-232)
	10	RS-422 cable 2) • Between computer link module and GOT	(To be prepared by the user. ☞ Section 4.2 Connection Cable)	GT24V10 GT24V20 GT24V30 (RS-422)

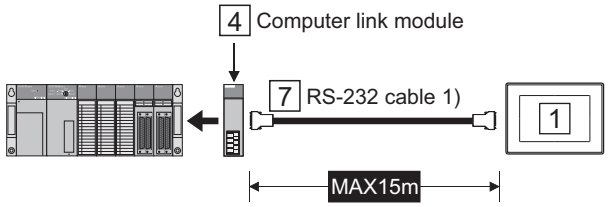
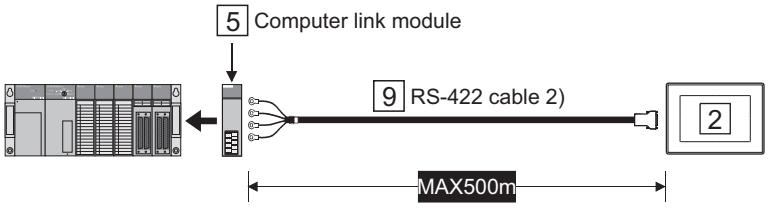
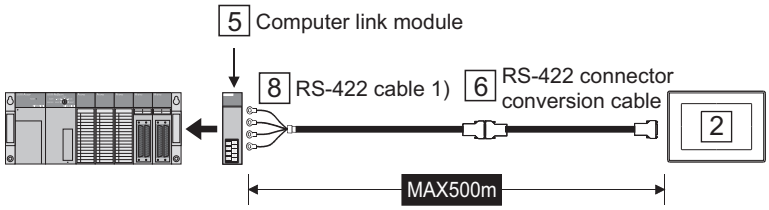
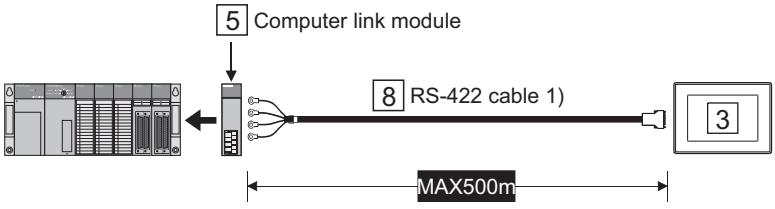
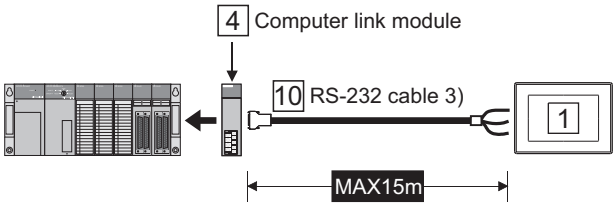
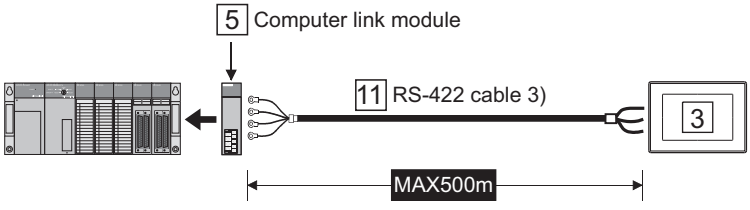
*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ 4.2Connection Cable)

4.1.6 Connecting to AnSCPU type

Communication driver

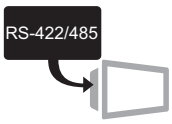
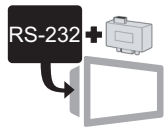
AJ71C24/UC24

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	500m or less		GT16
	500m or less		GT16
	500m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT24V 10 20 30 (RS-232)
	500m or less		GT24V 10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

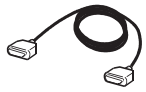
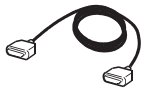
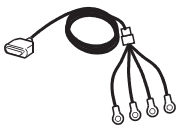
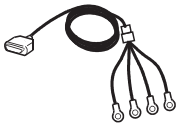
(2) PLC

Image	No.	Name	Model name		
	4	Computer link module *2	A1SJ71UC24-R2, A1SJ71C24-PRF, A2CCPUC24-PRF	A1SJ71C24-R2, A1SCPUC24-R2,	A1SJ71UC24-PRF, A2CCPUC24,
	5		A1SJ71UC24-R4,	A1SJ71C24-R4	

*2 For the system configuration on the computer link module side, refer to the following manual.

☞ Computer Link Module (Com. link func./Print. func.) User's Manual

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-232 cable 1)*1 • Between computer link module and GOT	GT09-C30R2-9P(3m)	GT16 GT15 GT11 Serial GT105□4□
	8	RS-422 cable 1)*1 • Between computer link module and RS-422 connector conversion cable • Between computer link module and GOT	GT09-C30R4-6C(3m), GT09-C100R4-6C(10m) GT09-C200R4-6C(20m), GT09-C300R4-6C(30m)	GT16 GT15 GT11 Serial GT105□4□
	9	RS-422 cable 2)*1 • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT16
	10	RS-232 cable 3) • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT24V1020 30 (RS-232)
	11	RS-422 cable 3) • Between computer link module and GOT	(To be prepared by the user. Section 4.2 Connection Cable)	GT24V1020 30 (RS-422)

*1 The RS-232 and RS-422 cable can be prepared by the user. (4.2Connection Cable)

4.1.7 Connecting to motion controller CPU (Q Series)

Communication driver

A/QnA/Q CPU,QJ71C24

(For GT16, GT15, GT11)

1 When connecting to a CPU other than Q170MCPU

A motion controller CPU (Q Series) mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

The system configuration, connection conditions, and system equipment for connecting a GOT to a motion controller CPU (Q Series) are the same as those for connecting to the QCPU (Q mode).

(☞ Section 4.1.1 Connecting to QCPU (Q mode))

GT16 GT15 GT11 Serial

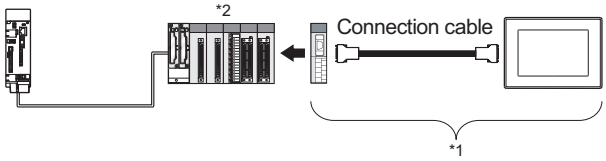
2 When connecting to Q170MCPU

The following shows the system configuration and connection conditions between Q170MCPU and the GOT.

The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for the QCPU (Q mode).

(☞ Section 4.1.1 Connecting to QCPU (Q mode))

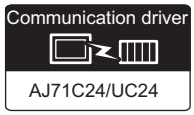
(1) System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
*1	*1		GT16 GT15 GT11 Serial

*1 The system configuration and connection conditions are same as those for connecting a GOT to the QCPU (Q mode).

*2 Only the first step can be used on the extension base unit (Q52B/Q55B).

4.1.8 Connecting to motion controller CPU (A Series)



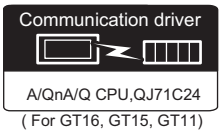
(For only GT16, GT15, GT11)

The system configuration, connection conditions and system equipment when connecting the GOT to a motion controller CPU (A273UCPU, A273UHCPU (-S3), A373UCPU (-S3)) are the same as the case of the AnCPU type. (☞ Section 4.1.5 Connecting to AnCPU type)

The system configuration, connection conditions and system equipment when connecting the GOT to a motion controller CPU (A171SHCPUN, A172SHCPUN, A173UHCPU (-S1)) are the same as the case of the AnSCPU type. (☞ Section 4.1.6 Connecting to AnSCPU type)

GT16 GT15 GT11 Serial

4.1.9 Connecting to remote I/O station in MELSECNET/H network system



(For GT16, GT15, GT11)

When the GOT is connected to a remote I/O station in the MELSECNET/H network system, the system configuration, connection conditions and system equipment is identical with those in the case of QCPU connection. (☞ Section 4.1.1 Connecting to QCPU (Q mode))

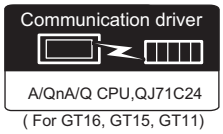
GT16 GT15 GT11 Serial

Point

Connection to GT11 and remote I/O station on MELSECNET/H

GT11 can not access the master station on MELSECNET/H network system.
Only the connected host station (remote I/O station) can be monitored.

4.1.10 Connecting to CNC C70

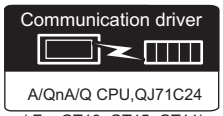


(For GT16, GT15, GT11)

The GOT can monitor the CNC C70 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CNC C70 are the same as those for connecting to the QCPU.
(☞4.1.1Connecting to QCPU (Q mode))

GT16 GT15 GT11 Serial

4.1.11 Connecting to CRnQ-700



(For GT16, GT15, GT11)

The GOT can monitor the CRnQ-700 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CRnQ-700 are the same as those for connecting to the QCPU.
(☞ 4.1.1Connecting to QCPU (Q mode))

GT16 GT15 GT11 Serial

4.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ section 4.2.1)

Model		Connection cable	
		GT16, GT15, GT11, GT105□, GT104□	GT1030/GT1020
Serial communication module (Q Series)	QJ71C24N, QJ71C24	RS-232 cable 1)	RS-232 cable 3)
	QJ71C24N-R2, QJ71C24-R2		
Modem interface module	QJ71CMO, QJ71CMON	RS-232 cable 1)	RS-232 cable 3)
Serial communication module (QnA Series)	AJ71QC24N, AJ71QC24	RS-232 cable 2)	RS-232 cable 4)
	AJ71QC24N-R2, AJ71QC24-R2		
	A1SJ71QC24N1, A1SJ71QC24N, A1SJ71QC24	RS-232 cable 1)	RS-232 cable 3)
	A1SJ71QC24N1-R2, A1SJ71QC24N-R2, A1SJ71QC24-R2		
Computer link module	AJ71UC24	RS-232 cable 2)	RS-232 cable 4)
	A1SJ71UC24-R2, A1SJ71UC24-PRF, A1SJ71C24-R2, A1SJ71C24-PRF	RS-232 cable 1)	RS-232 cable 3)
	A1SCPUC24-R2	RS-232 cable 1)	RS-232 cable 3)
	A2CCPUC24, A2CCPUC24-PRF	RS-232 cable 1)	RS-232 cable 3)

2 RS-422 cable (☞ section 4.2.2)

Model		Connection cable		
		GT16	GT16, GT15, GT11, GT105□, GT104□	GT1030/GT1020
Serial communication module (Q Series)	QJ71C24N, QJ71C24	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 1)	RS-422 cable 3)
	QJ71C24N-R4			
Serial communication module (QnA Series)	AJ71QC24N, AJ71QC24	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 1)	RS-422 cable 3)
	AJ71QC24N-R4, AJ71QC24-R4			RS-422 cable 3) RS-422 cable 4)
	A1SJ71QC24N1, A1SJ71QC24N, A1SJ71QC24			RS-422 cable 3)
Computer link module	AJ71UC24	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 1)	RS-422 cable 3)
	A1SJ71UC24-R4, A1SJ71C24-R4			

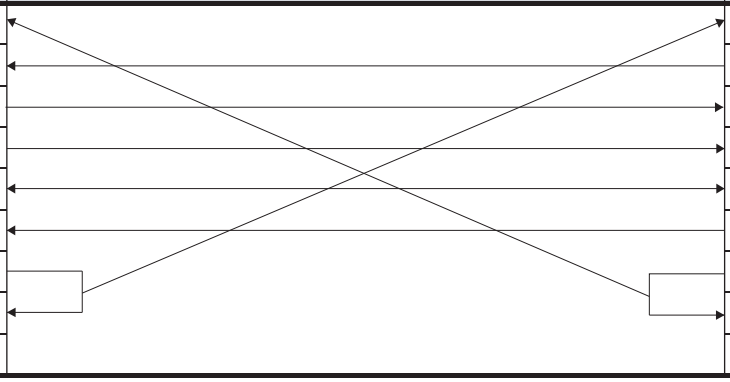
4.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

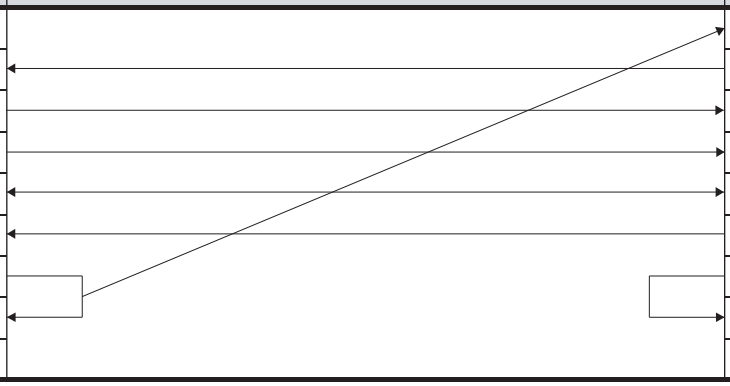
(1) RS-232 cable 1) (when PLC CPU side connector is D-sub 9-pin)

(a) For the GT16, GT15

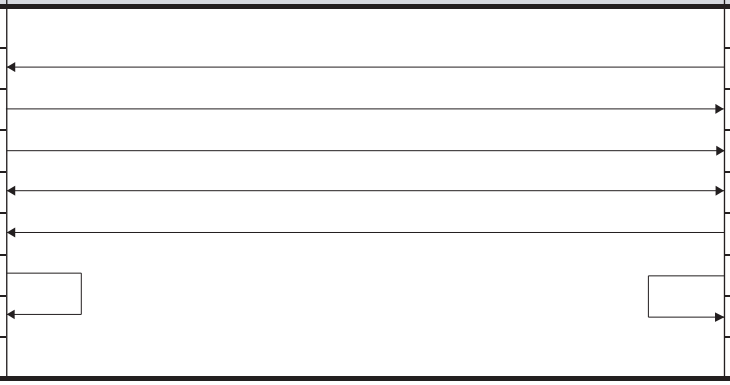
GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	CD
RD(RXD)	2		3	SD(TXD)
SD(TXD)	3		2	RD(RXD)
ER(DTR)	4		6	DR(DSR)
SG	5		5	SG
DR(DSR)	6		4	ER(DTR)
RS(RTS)	7		7	RS(RTS)
CS(CTS)	8		8	CS(CTS)
—	9		9	—

(b) For the GT11, GT105□, GT104□

<When connecting to the Q/Qn Serial Communication Module>

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	CD
RD(RXD)	2		3	SD(TXD)
SD(TXD)	3		2	RD(RXD)
ER(DTR)	4		6	DR(DSR)
SG	5		5	SG
DR(DSR)	6		4	ER(DTR)
RS(RTS)	7		7	RS(RTS)
CS(CTS)	8		8	CS(CTS)
—	9		9	—

<When connecting to the Computer Link Module>

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
NC	1		1	CD
RD(RXD)	2		3	SD(TXD)
SD(TXD)	3		2	RD(RXD)
ER(DTR)	4		6	DR(DSR)
SG	5		5	SG
DR(DSR)	6		4	ER(DTR)
RS(RTS)	7		7	RS(RTS)
CS(CTS)	8		8	CS(CTS)
—	9		9	—

(2) RS-232 cable 2) (when PLC CPU side connector is D-sub 25-pin)

(a) For the GT16, GT15

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	FG
RD(RXD)	2		2	SD(TXD)
SD(TXD)	3		3	RD(RXD)
ER(DTR)	4		4	RS(RTS)
SG	5		5	CS(CTS)
DR(DSR)	6		6	DR(DSR)
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	ER(DTR)

(b) For the GT11, GT105□, GT104□

<When connecting to the Q/Qn Serial Communication module>

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
NC	1		1	FG
RD(RXD)	2		2	SD(TXD)
SD(TXD)	3		3	RD(RXD)
ER(DTR)	4		4	RS(RTS)
SG	5		5	CS(CTS)
DR(DSR)	6		6	DR(DSR)
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	ER(DTR)

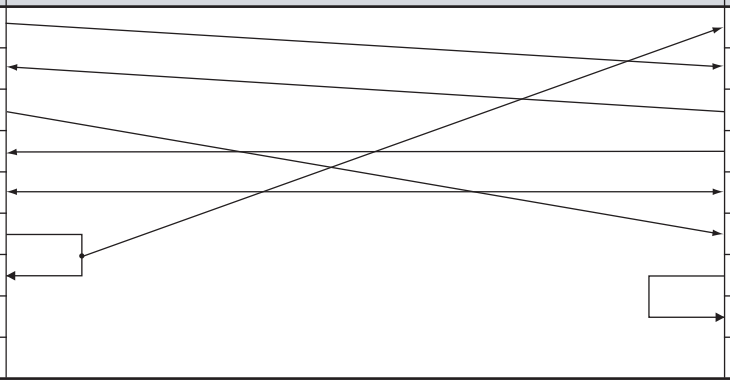
<When connecting to the Computer Link Module>

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
NC	1		1	FG
RD(RXD)	2		2	SD(TXD)
SD(TXD)	3		3	RD(RXD)
ER(DTR)	4		4	RS(RTS)
SG	5		5	CS(CTS)
DR(DSR)	6		6	DR(DSR)
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	ER(DTR)

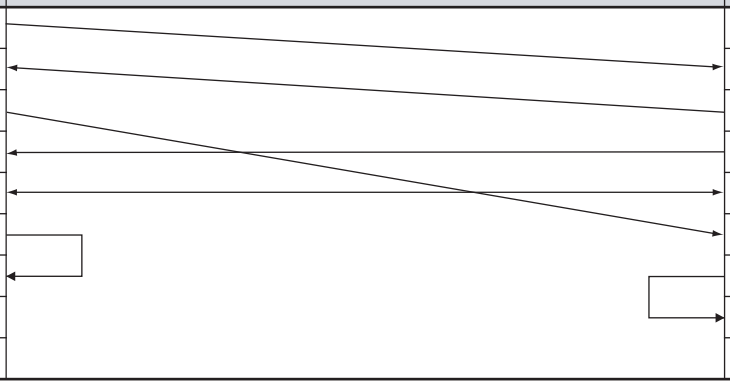
(3) RS-232 cable 3) (when PLC CPU side connector is D-sub 9-pin)(for GT1030, GT1020)

(a) For the GT1030, GT1020

<When connecting to the Q/Qn Serial Communication module>

GOT side (terminal block) Signal name	Cable connection and signal direction	PLC side Pin No.	PLC side Signal name
SD		1	CD
RD		2	RD(RXD)
ER		3	SD(TXD)
DR		4	ER(DTR)
SG		5	SG
RS		6	DR(DSR)
CS		7	RS(RTS)
NC		8	CS(CTS)
NC		9	—

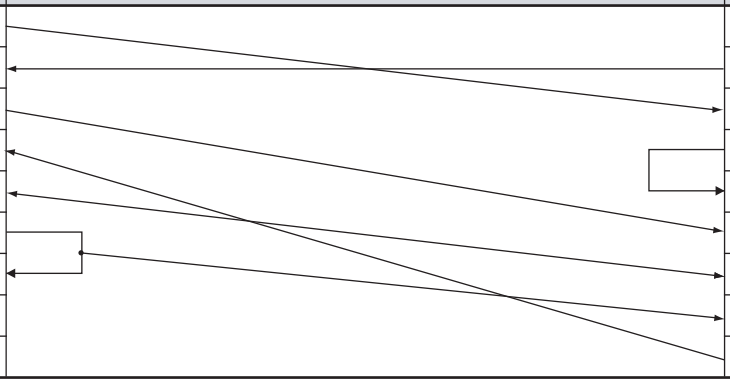
<When connecting to the Computer Link Module>

GOT side (terminal block) Signal name	Cable connection and signal direction	PLC side Pin No.	PLC side Signal name
SD		1	CD
RD		2	RD(RXD)
ER		3	SD(TXD)
DR		4	ER(DTR)
SG		5	SG
RS		6	DR(DSR)
CS		7	RS(RTS)
NC		8	CS(CTS)
NC		9	—

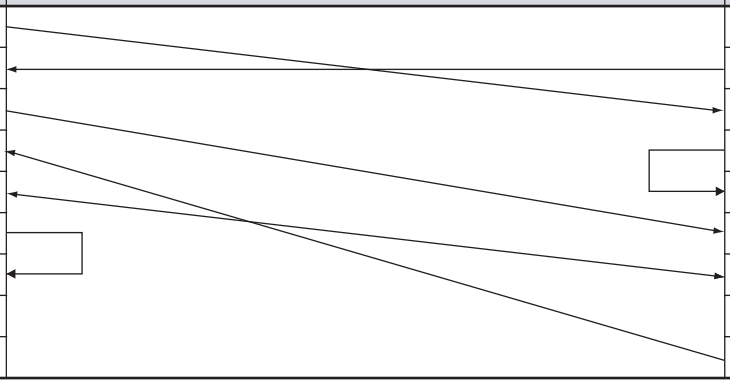
(4) RS-232 cable 4) (when PLC CPU side connector is D-sub 25-pin)(for GT1030, GT1020)

(a) For the GT1030, GT1020

<When connecting to the Q/Qn Serial Communication module>

GOT side (terminal block) Signal name	Cable connection and signal direction	PLC side Pin No.	PLC side Signal name
SD		1	FG
RD		2	SD(TXD)
ER		3	RD(RXD)
DR		4	RS(RTS)
SG		5	CS(CTS)
RS		6	DR(DSR)
CS		7	SG
NC		8	CD
NC		20	ER(DTR)

<When connecting to the Computer Link Module>

GOT side (terminal block)	Cable connection and signal direction	PLC side	
Signal name		Pin No.	Signal name
SD		1	FG
RD		2	SD(TXD)
ER		3	RD(RXD)
DR		4	RS(RTS)
SG		5	CS(CTS)
RS		6	DR(DSR)
CS		7	SG
NC		8	CD
NC		20	ER(DTR)

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

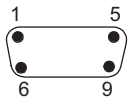
GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

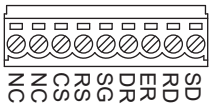
GOT main part connector
see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a
GOT main part



9-pin terminal block

(2) PLC side connector

Use the connector compatible with the PLC side module.

For details, refer to the following manual.

☞ User's Manual for the serial communication module or computer link module

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

4.2.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Connection diagram

(1) RS-422 cable 1) (for GT16, GT15, GT11, GT105□, GT104□)

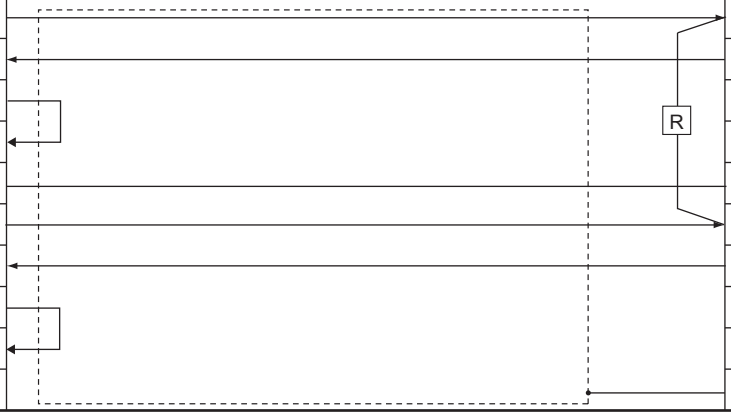
GOT side		Cable connection and signal direction	PLC side
Signal name	Pin No.		Signal name
SDA	1		RDA
RDA	2		SDA
RSA	3		—
CSA	4	R	—
SG	5		SG
SDB	6		RDB
RDB	7		SDB
RSB	8		—
CSB	9		—
FG	—		FG

(2) RS-422 cable 2) (for GT16)

GOT side		Cable connection and signal direction	PLC side
Signal name	Pin No.		Signal name
SDA1(TXD1+)	1		RDA
SDB1(TXD1-)	2		SDA
RDA1(RXD1+)	3		RDB
RDB1(RXD1-)	4		SDB
SDA2(TXD2+)	5		SG
SDB2(TXD2-)	6		FG
RDA2(RXD2+)	7		
RDB2(RXD2-)	8		
RSA(RTS+)	9		
RSB(RTS-)	10		
CSA(CTS+)	11		
CSB(CTS-)	12		
SG	13		
NC	14		
	Shell		

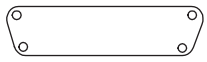
(3) RS-422 cable 3) (for GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	PLC side Signal name
SDA		RDA
RDA		SDA
RSA		—
CSA		—
SG		SG
SDB		RDB
RDB		SDB
RSB		—
CSB		—
		FG



(4) RS-422 cable 4) (for GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection	Untied wire color of GT10-C □□□ R4-25P	PLC side Pin layout
SDA		Brown	
SDB		Red	
RDA		Orange	
RDB		Yellow	
SG		Green	
RSA		Blue	
RSB		Purple	
CSA		Black	
CSB		White	



D-SUB 25 pins:male

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT. For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*2	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1045-Q, GT1040-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin terminal block*1	PHOENIX CONTACT Inc.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

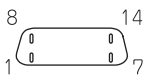
*1 The terminal block (MC1.5/9-ST-3.5BK or corresponding product)of the cable side is packed together with the GT1030, GT1020.

*2 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

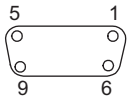
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

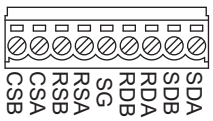
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) PLC side connector

Use the connector compatible with the PLC side module.

For details, refer to the following manual.

☞ User's Manual for the serial communication module or computer link module

3 Precautions when preparing a cable

The length of the RS-422 cable must be 1200m or less.

4 Connecting terminating resistors

(1) GOT side
When connecting the GOT with the PLC, set the terminating resistor on the GOT side.

(a) For GT16 and GT15
Set "Disable" for the terminating resistor setting switch.

(b) For GT11 and GT10
Set the terminating resistor selector switch to "330Ω".

For the procedure to set the terminating resistor, refer to the following.

☞ Section 1.2.1 Terminating resistors of GOT

(2) Serial communication unit or computer link module side
Connect the terminating resistors (330 1/4W (orange/orange/brown/☐)) on the serial communication module or computer link module side. No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.
For details, refer to the following manual:

☞ The User's Manual of the serial communication module or computer link module

(a) Other than A2CCPUC24(-PRF)
Connect the terminating resistors supplied with the module across RDA and RDB.

(b) A2CCPUC24(-PRF)
Set TXD and RXD on the terminating resistor setting pin to "A".

4.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS on the GOT.

Section 4.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 4.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 4.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 4.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 4.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 4.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 4.3.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

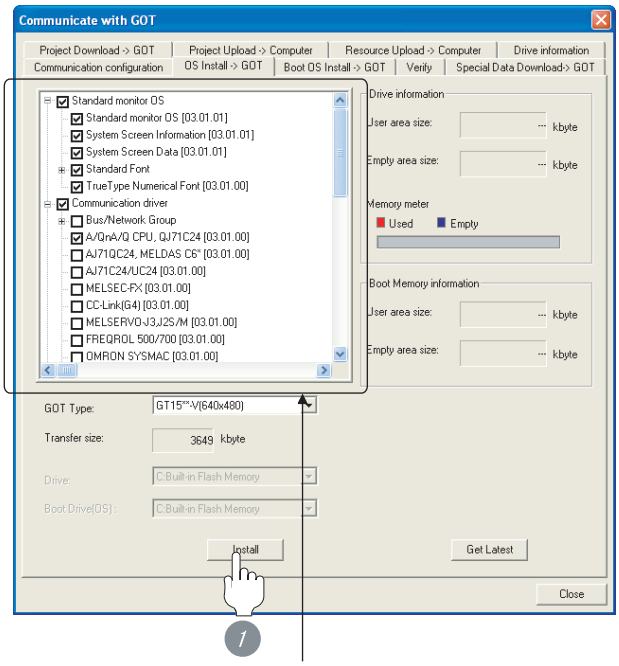
Section 4.4 PLC Side Setting

4.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check any of the following under the Communication driver.

<For GT16, GT15, GT11>

- When connecting to QCPU (Q mode) or motion controller CPU (Q Series): A/QnA/QCPU, QJ71C24
- When connecting to QnACPU: AJ71QC24, MELDAS C6*
- When connecting to ACPU, QCPU (A mode) or motion controller CPU (A Series): AJ71C24/UC24

<For GT10>

- When connecting to QnACPU or QCPU (Q mode): QnA/QCPU
- When connecting to ACPU or QCPU (A mode): AJ71C24/UC24

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

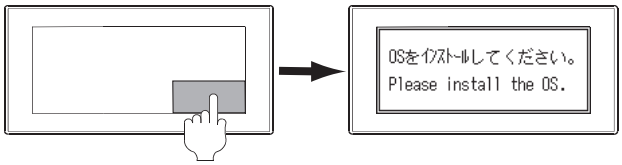
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



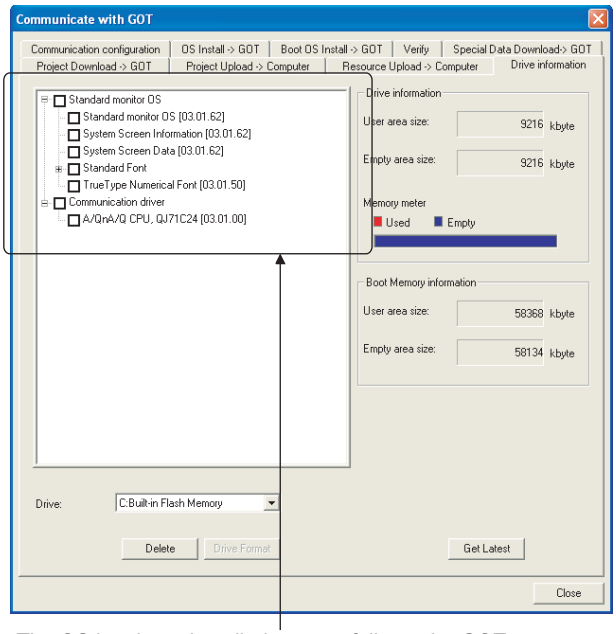
Turn on the GOT while the bottom right corner is touched.

4.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (any of the following):

<For GT16, GT15, GT11>

- A/QnA/QCPU, QJ71C24
- AJ71QC24
- AJ71C24/UC24

<For GT10>

- QnA/Q CPU
- AJ71C24/UC24

4.3.3 Setting communication interface (Communication settings)

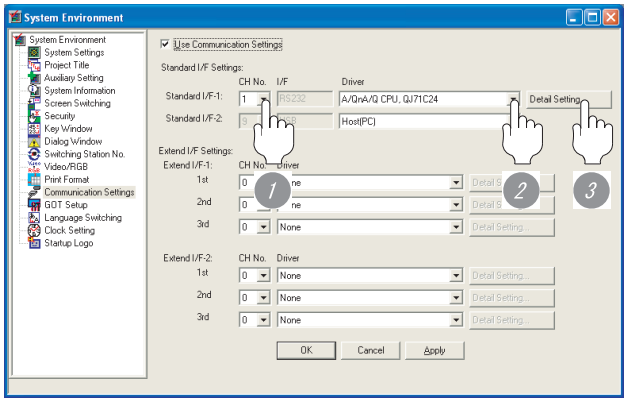
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set [1] to the channel No. used.

2 Set the following in the driver setting box.
<For GT16, GT15, GT11>

- When connecting to QCPU (Q mode) or motion controller CPU (Q Series): A/QnA/QCPU, QJ71C24
- When connecting to QnACPU: AJ71QC24, MELDAS C6*
- When connecting to ACPU, QCPU (A mode), motion controller CPU (A Series): AJ71C24/UC24

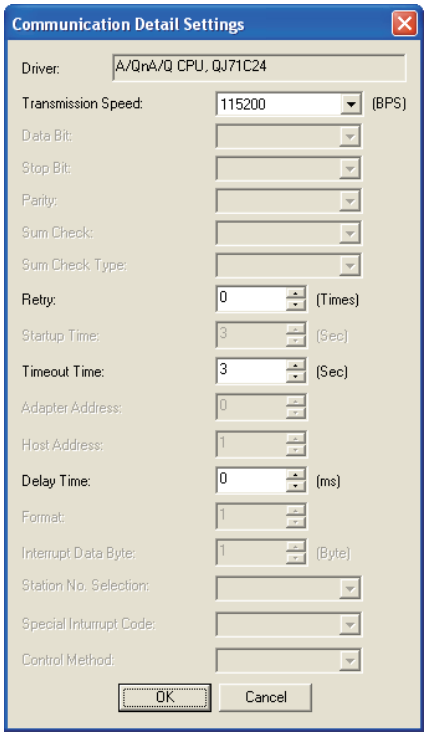
<For GT10>

- When connecting to QCPU (Q mode) or QnACPU:QnA/Q CPU
- When connecting to ACPU or QCPU (A mode): AJ71C24/UC24

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

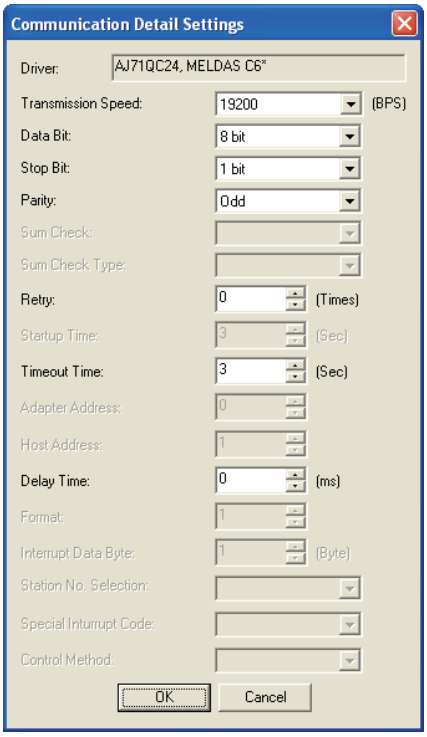
2 Communication detail settings

(1) A/QnA/Q CPU, QJ71C24



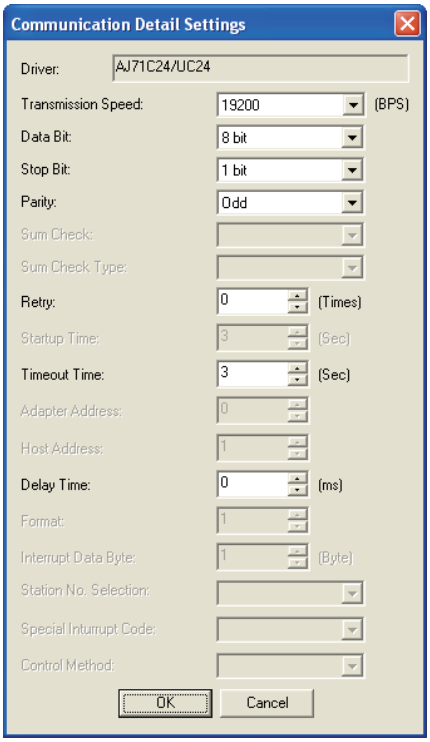
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(2) AJ71QC24, MELDAS C6*



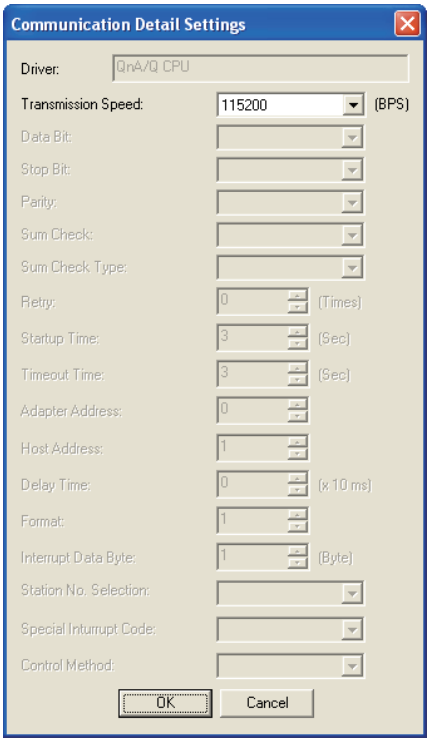
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(3) AJ71C24/UC24



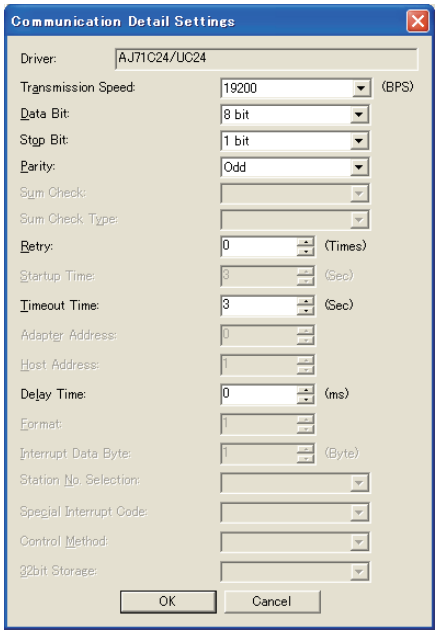
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(4) QnA/Q CPU (GT10)



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment	9600bps, 19200bps, 38400bps, 57600bps, 115200bps

(5) AJ71C24/UC24 (GT10)



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.

For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

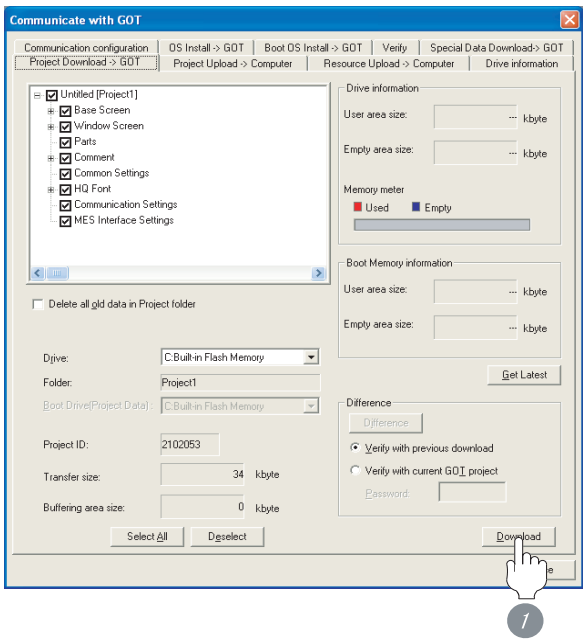
Communication settings can be changed on only GT Designer2.

4.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

4.3.5 Attaching communication unit and connecting cable

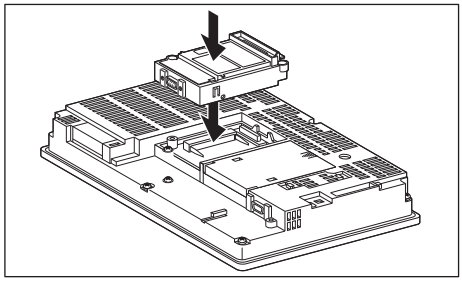
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

GT15 Serial Communication Unit User's Manual

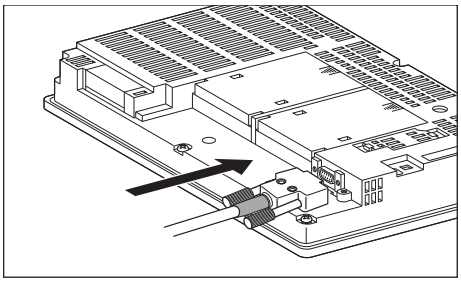
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

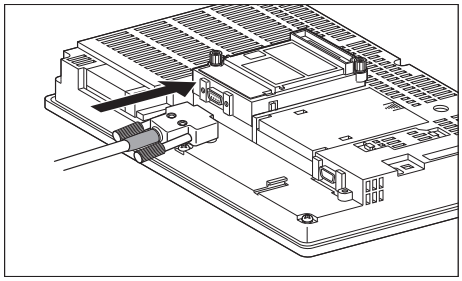
• connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



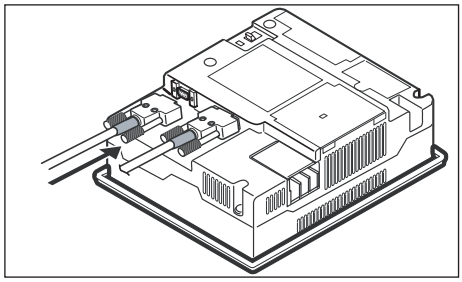
• connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



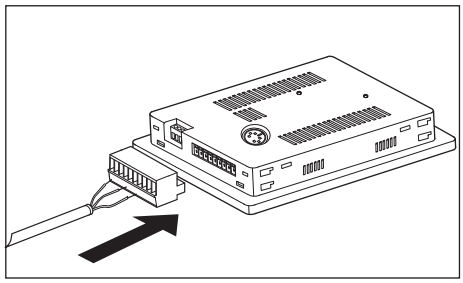
(b) For GT11, GT105 □ , GT104 □

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

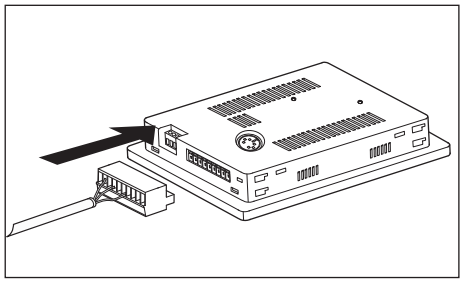


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

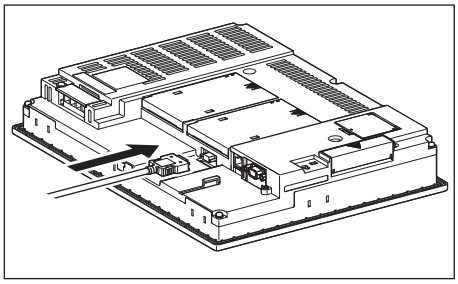


(2) How to connect the RS-422 cable

(a) For GT16

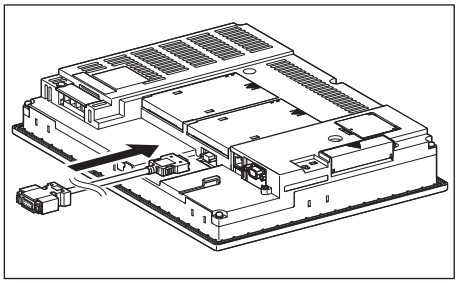
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

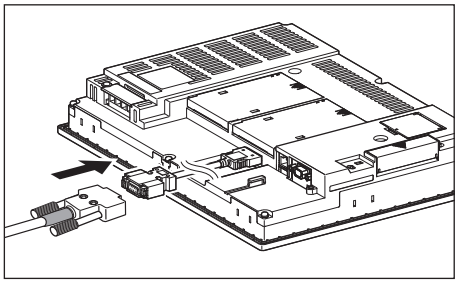


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

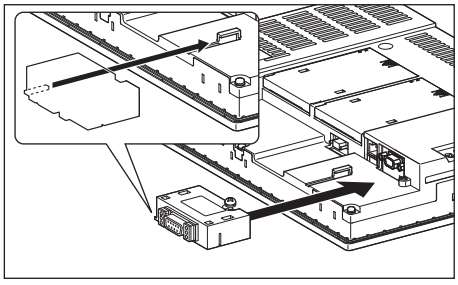


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

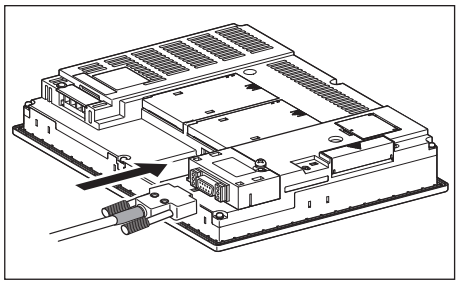


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

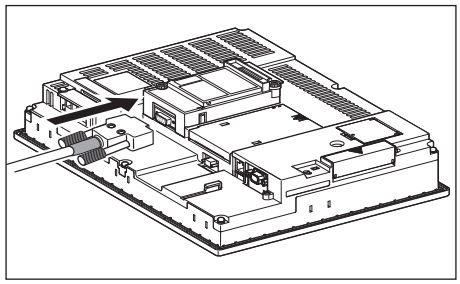


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

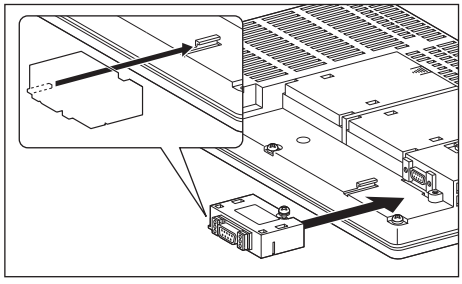
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



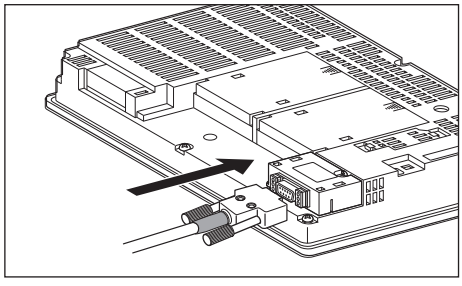
(b) For GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155□)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

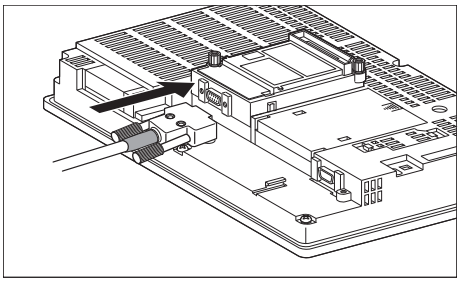


2 Connect the RS-422 cable to the RS-422 conversion unit.



- Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

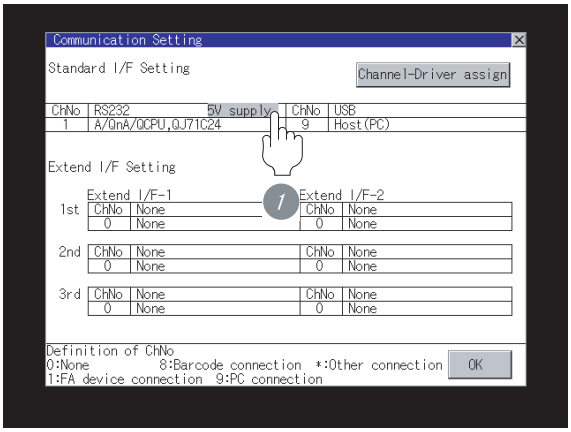
When using the RS-422 conversion unit

On "Communication settings" on the GOT utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the RS-422 conversion unit and the GOT utility, refer to the following manual:

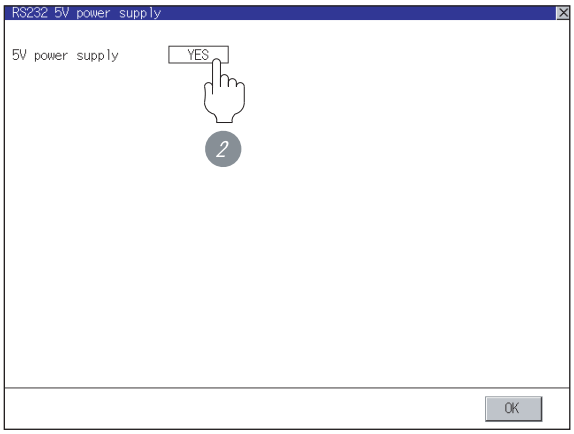
☞ GT15 Serial Communication Unit User's Manual

☞ GT ☐ User's Manual

1 Touch [5V supply].

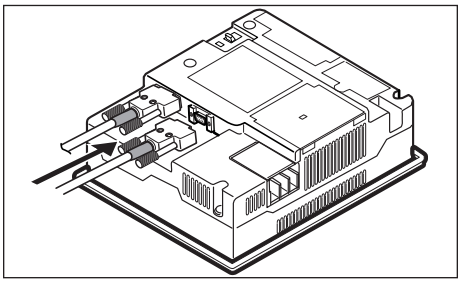


2 Set [5V power supply] to "YES".



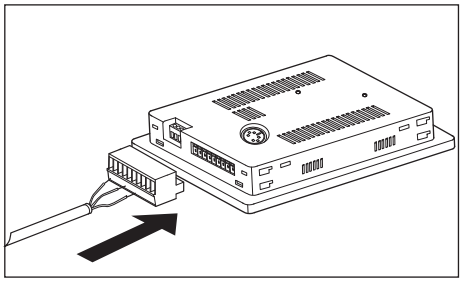
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

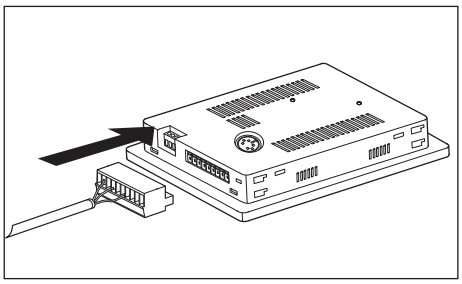


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



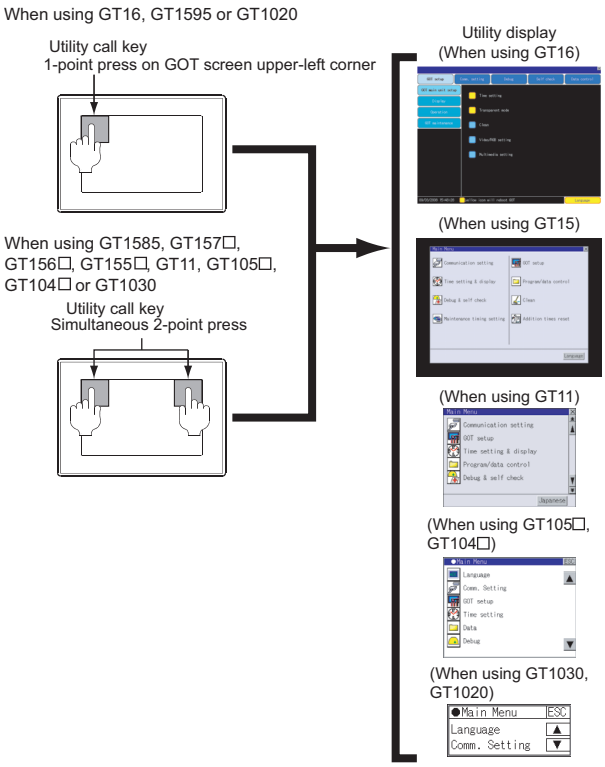
4.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

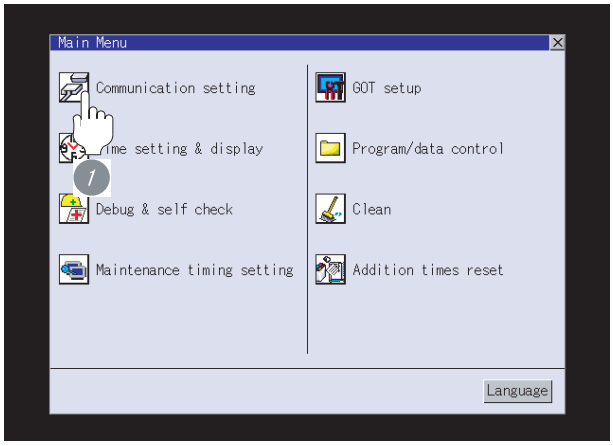


Point

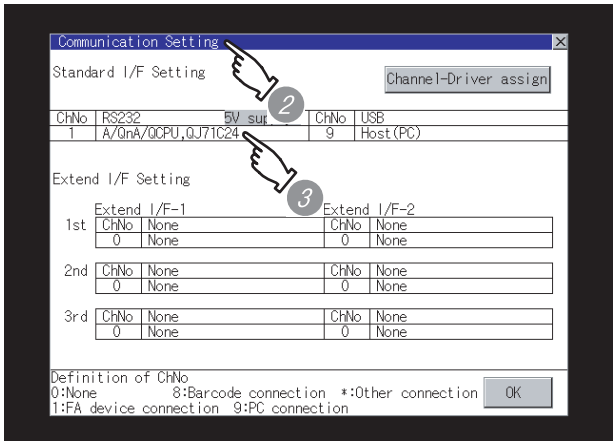
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication Setting] from the Utility.



2 The [Communication Settings] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver (either of the following)
  <For GT15, GT11>
  A/QnA/QCPU, QJ71C24
  AJ71QC24, MELDAS C6*
  AJ71C24/UC24
  <For GT10>
  • QnA/Q CPU
  AJ71C24/UC24

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 4.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

4.3.7 Checking for normal monitoring

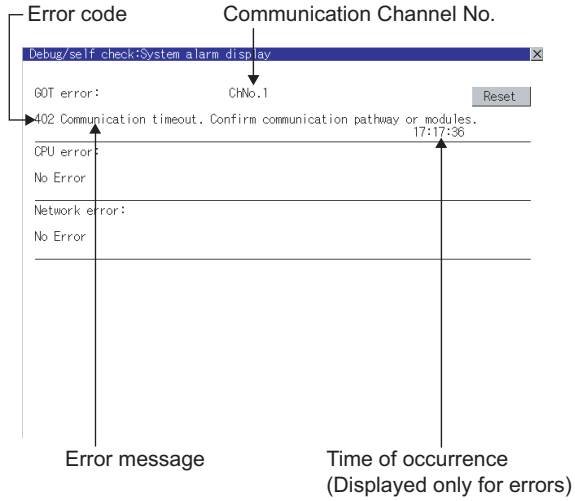
1 Check for errors occurring on the GOT(for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check(for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

• For GT16

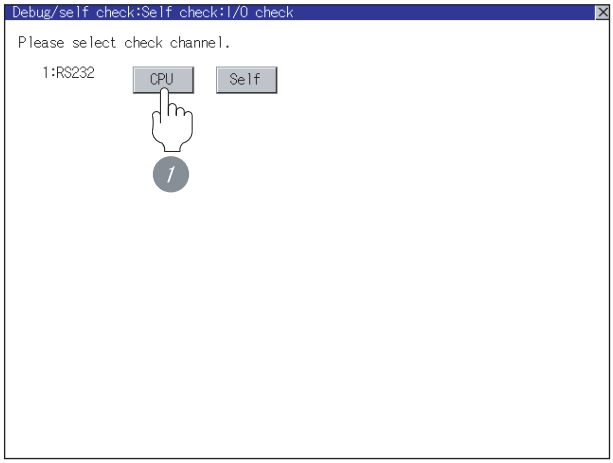
Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

• For GT15, GT11

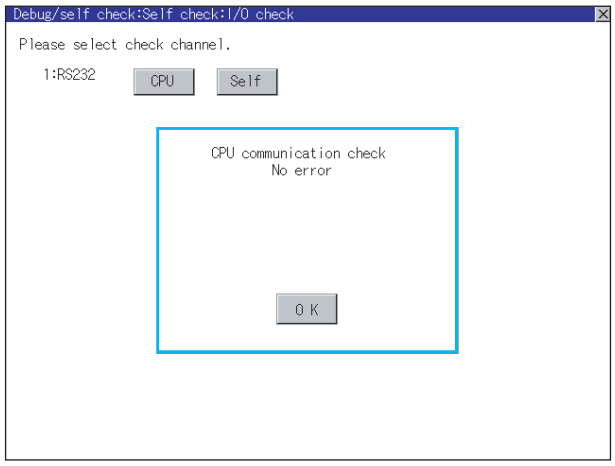
Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function(for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

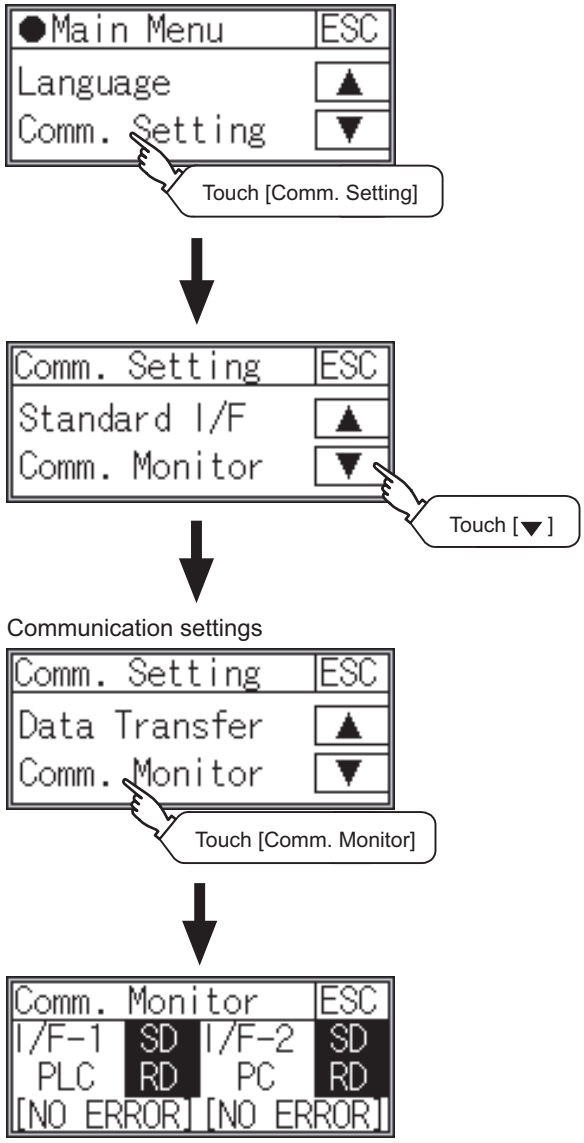
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 4.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

4.4 PLC Side Setting

The GOT operates under the following transmission specifications when it is connected to a Mitsubishi PLC in the computer link connection.

Transmission specifications	Setting
Data bit	8 bits
Parity bit	Yes (Odd)
Stop bit	1 bit
Sum check	Yes
Transmission speed	Set the same transmission speed on both the GOT and the PLC.

The PLC side settings (the serial communication module, computer link module) are explained in Section 4.4.1 to Section 4.4.3.

Model		Connection channel	
		CH1	CH2
Serial communication module (Q Series)	QJ71C24N, QJ71C24	Section 4.4.1	Section 4.4.1
	QJ71C24N-R2, QJ71C24-R2		
	QJ71C24N-R4		
Modem interface module	QJ71CMO, QJ71CMON	—	Section 4.4.1
Serial communication module (QnA Series)	AJ71QC24N, AJ71QC24	Section 4.4.2	Section 4.4.2
	AJ71QC24N-R2, AJ71QC24-R2		
	AJ71QC24N-R4, AJ71QC24-R4		
	A1SJ71QC24N1, A1SJ71QC24N, A1SJ71QC24		
	A1SJ71QC24N1-R2, A1SJ71QC24N-R2, A1SJ71QC24-R2		

Model		Connection interface	
		RS-232	RS-422
Computer link module	AJ71UC24	Section 4.4.3	Section 4.4.3
	A1SJ71UC24-R2, A1SJ71UC24-PRF, A1SJ71C24-R2, A1SJ71C24-PRF	Section 4.4.3	—
	A1SJ71UC24-R4, A1SJ71C24-R4	—	Section 4.4.3
	A1SCPUC24-R2	Section 4.4.3	—
	A2CCPUC24, A2CCPUC24-PRF	Section 4.4.3	Section 4.4.3

4.4.1 Connecting serial communication module (Q Series)

Point

Serial communication module (Q Series)

For details of the serial communication module (Q Series), refer to the following manual.

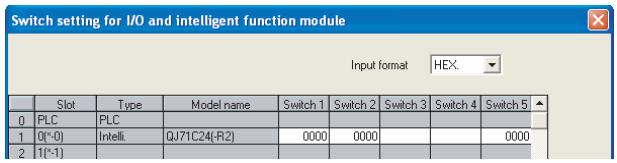
☞ Q Corresponding Serial Communication Module User's Manual (Basic)

1 [Intelligent function module switch setting] on GX Developer

[The intelligent function module switch setting] on GX Developer is not necessary. (When no [intelligent function module switch setting] is made, the module runs in the GX Developer connection mode.)

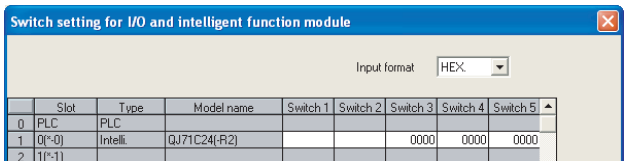
A module can be also connected to a GOT by making the following [intelligent function module switch setting] on GX Developer.

(1) When connecting to the CH1 side



Switch No.	Bit		Description			Setting
	Position	Specified value				
Switch 1	b0	OFF	CH1 transmission settings *1	Operation setting	(Operates according to the GOT side specifications.)	0000H
	b1	OFF		Data bit		
	b2	OFF		Parity bit		
	b3	OFF		Even/odd parity		
	b4	OFF		Stop bit		
	b5	OFF		Sum check code		
	b6	OFF		Write during RUN		
	b7	OFF		Setting modifications		
	b8 to b15	—	CH1 transmission speed setting *2			
Switch 2	—		CH1 Communication protocol setting		GX Developer connection	0000H
Switch 5	—		Station number setting		0th station	0000H

(2) When connecting to the CH2 side



Switch No.	Bit		Description			Setting
	Position	Specified value				
Switch 3	b0	OFF	CH2 transmission setting *1	Operation setting	(Operates according to the GOT side specifications.)	0000H
	b1	OFF		Data bit		
	b2	OFF		Parity bit		
	b3	OFF		Even/odd parity		
	b4	OFF		Stop bit		
	b5	OFF		Sum check code		
	b6	OFF		Write during RUN		
	b7	OFF		Setting modifications		
	b8 to b15	—	CH2 transmission speed setting *2			
Switch 4	—		CH2 Communication protocol setting		GX Developer connection	0000H
Switch 5	—		Station number setting		0th station	0000H

*1 The module operates under the following transmission specifications.

Transmission specifications	Setting details
Operatiom setting	Independent
Data bit	8 bits
Parity bit	Yes
Even/odd parity	Odd
Stop bit	1 bit
Sum check code	Yes

*2 The serial communication module operates at the transmission speed set on the GOT.
For details on the transmission speed setting on the GOT side, refer to the following.

Section 4.3.3 Setting communication interface (Communication settings)

Point

(1) When the [intelligent function module switch setting] has been set

After writing PLC parameters to the PLC CPU, turn the PLC CPU OFF then back ON again, or reset the PLC CPU.

(2) Connection of multiple GOTs

To some serial communication module models, two GOTs can be connected using both CH1 and CH2.

Model	Connection of 2 GOTs	
	Function version A	Function version B
QJ71C24(-R2)	△	○
QJ71C24N(-R2/R4)	—	○

○: 2 GOTs connectable, △: 1 GOT connectable, —: Not applicable

4.4.2 Connecting serial communication module (QnA Series)

Point

Serial communication module (QnA Series)

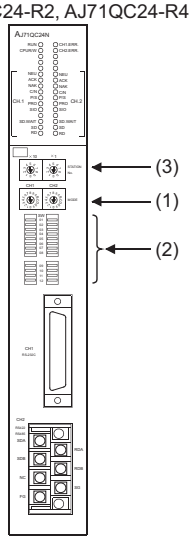
For details of the serial communication module (QnA Series), refer to the following manual.

Serial Communication Module User's Manual (Modem Function Additional Version)

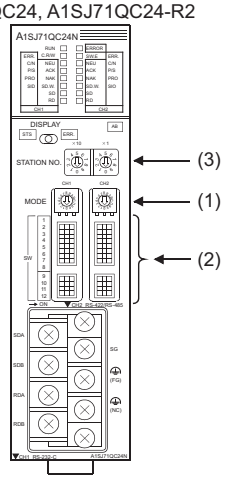
1 Switch setting on serial communication module

Set the Station number switches, the Mode switch for the channel used for GOT connection, and the Transmission specifications switches.

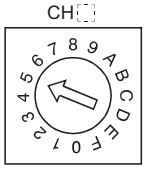
AJ71QC24N, AJ71QC24N-R2, AJ71QC24N-R4,AJ71QC24, AJ71QC24-R2, AJ71QC24-R4



A1SJ71QC24N1, A1SJ71QC24N1-R2, A1SJ71QC24N, A1SJ71QC24N-R2, A1SJ71QC24, A1SJ71QC24-R2



(1) Mode switch

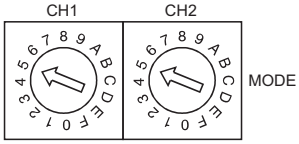
Mode switch *1	Description	Setting
CH  MODE	Dedicated protocol (Format 5) (Binary mode)	5

*1 The mode switch in the figure is for the AJ71QC24 (N) (-R2/R4).

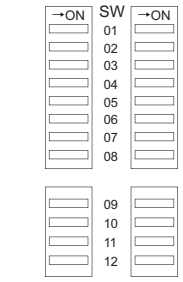
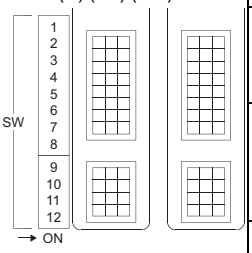
Point

When connecting a GOT to CH2

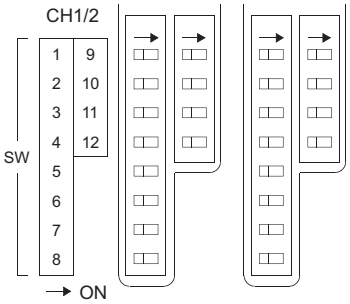
Set the CH1 side mode switch to any other than "0" (interlocked operation).



(2) Transmission specifications setting switch

Transmission specifications setting switch	Setting switch	Description		Setting
AJ71QC24 (N) (-R2/R4)  A1SJ71QC24 (N) (N1) (-R2) *1  	SW01	Operation setting	Independent operation	OFF
	SW02	Data bit setting	8 bits	ON
	SW03	Parity bit enable/ disable setting	Enable	ON
	SW04	Even/odd parity setting	Odd	OFF
	SW05	Stop bit setting	1 bit	OFF
	SW06	Sum check enable/ disable setting	Enable	ON
	SW07	Write during RUN enable/ disable setting	Enable	ON
	SW08	Setting change enable/ disable	Disable (prohibit)	OFF
	SW09 to SW12	Transmis-sion speed setting	(Consistent with the GOT side specifica-tions.)	See (a)
	SW13 to SW15	—	The switch is located on the left side of the module. (only on AJ71QC24 (-R2/R4))	All OFF

*1 The following shows the layout of switches in the case of the following hardware versions for the module,
Switch settings and switch ON/OFF directions are the same.



Target unit	Hardware version
A1SJ71QC24	Version E hardware or earlier
A1SJ71QC24-R2	Version D hardware or earlier
A1SJ71QC24N, A1SJ71QC24N-R2	Version A hardware

(a) Transmission speed setting (SW09 to SW12)
Set the transmission speed (SW09 to SW12) as follows.
The transmission speed setting must be consistent with that of the GOT side.
For how to set the GOT side transmission speed, refer to the following.

☞ Section 4.3.3 Setting communication interface (Communication settings)

Setting Switch	Transmission speed *1*2*3					
	4800 bps	9600 bps	19200 bps	38400 bps *4	57600 bps *4	115200 bps *4
SW09	OFF	ON	OFF	ON	OFF	ON
SW10	OFF	OFF	ON	ON	ON	ON
SW11	ON	ON	ON	ON	OFF	OFF
SW12	OFF	OFF	OFF	OFF	ON	ON

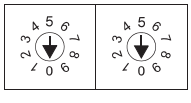
*1 Only transmission speeds available on the GOT side are shown.

*2 When the software version of AJ71QC24 (-R2/R4) and A1SJ71QC24 (-R2) is "L" or earlier, and when 2 devices are connected to the two interfaces individually, make the setting so that the total transmission speed of the two interfaces is within 19200bps.
When the total transmission speed of the two interfaces is within 19200bps, one controller other than the GOT can be connected to the computer link.
When only one device is connected to either of the interfaces, a maximum transmission speed of 19200bps can be set to the one where the device is connected. In this instance, set SW09 to SW12 to "OFF" on the other side.

*3 When 3 devices are connected to the two interfaces individually in the case of AJ71QC24N(-R2/R4), A1SJ71QC24N(-R2), and A1SJ71QC24N1(-R2), make the setting so that the total transmission speed of the two interfaces is within 115200bps (230400bps or more in the case of A1SJ71QC24N1(-R2)).
When the total transmission speed of the two interfaces is within 115200bps (within 230400bps for A1SJ71QC24N1(-R2)), one controller other than the GOT can be connected to the computer link.
When only one device is connected to either of the interfaces, a maximum transmission speed of 115200bps can be set to the one where the device is connected. In this instance, set SW09 to SW12 to "OFF" on the other side.

*4 This can be set only in the case of AJ71QC24N (-R2/R4), A1SJ71QC24N (-R2) or A1SJ71QC24N1 (-R2).

(3) Station number switch (for both CH1 and CH2)

Station number switch *5	Description	Setting
×10 ×1  	Set the station number of the serial communication module to which an access is made from the GOT.	0

*5 The station number switch in the figure is for the AJ71QC24 (N) (-R2/R4).

Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

4.4.3 Connecting computer link module

Point

Computer link module

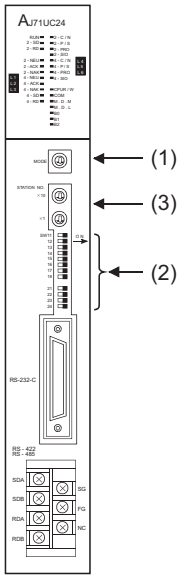
For details of the computer link module, refer to the following manual.

Computer Link Module (Com. link func./Print. func.) User's Manual

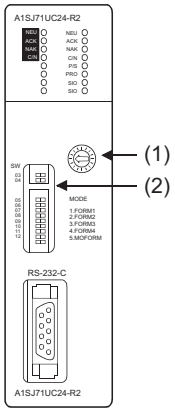
1 Switch setting on the computer link module

Set the Mode setting switch, the Transmission specifications switches and the Station number setting switches.

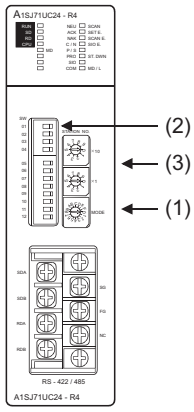
AJ71UC24



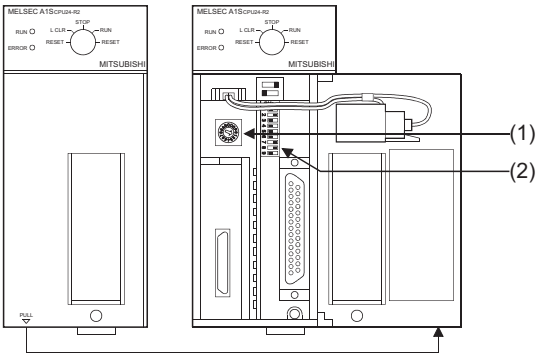
A1SJ71UC24-R2, A1SJ71UC24-PRF, A1SJ71UC24-R2, A1SJ71UC24-PRF



A1SJ71UC24-R4, A1SJ7124-R4

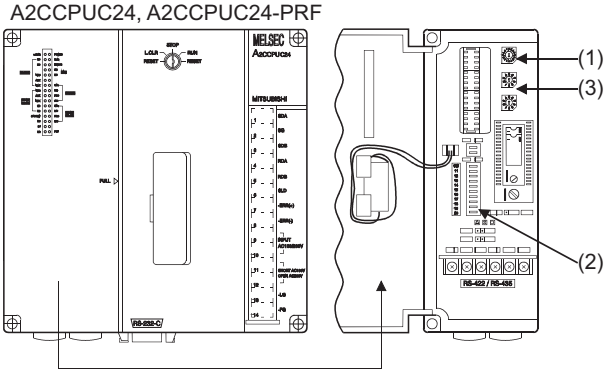


A1SCPUC24-R2



When the cover is open

A2CCPUC24, A2CCPUC24-PRF



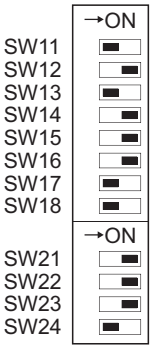
When the cover is open

(1) Mode setting switch

Mode setting switch	Description		Setting
	Dedicated protocoltype 1	RS-232 connection	1
		RS-422 connection	5

(2) Transmission specifications switch

(a) AJ71UC24

Transmission specifications switch	Setting switch	Description		Setting
	SW11	Main channel setting	RS-232 connection	OFF
			RS-422 connection	ON
	SW12	Data bit setting	8 bits	ON
	SW13	Transmission speed setting	(Consistent with the GOT side specifications.)	See descrip-tions below.
	SW14			
	SW15			
	SW16	Parity bit setting	Set	ON
	SW17	Even/odd parity setting	Odd	OFF
	SW18	Stop bit setting	1 bit	OFF
	SW21	Sum check setting	Set	ON
	SW22	Write during RUN enabled/disabled setting	Enabled	ON
	SW23	Computer link/ Multidrop selection	Computer link	ON
	SW24	Master station/ Local station setting	(Setting ignored)	OFF

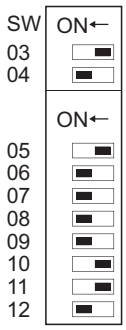
• Transmission speed setting (SW13 to SW15)
Set the transmission speed (SW13 to SW15) as follows.
The transmission speed setting must be consistent with that of the GOT side.
For how to set the GOT side transmission speed, refer to the following.

☞ Section 4.3.3 Setting communication interface (Communication settings)

Setting switch	Transmission speed *1		
	4800bps	9600bps	19200bps
SW13	OFF	ON	OFF
SW14	OFF	OFF	ON
SW15	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

(b) A1SJ71UC24-R2, A1SJ71UC24-PRF, A1SJ71C24-R2, A1SJ71C24-PRF

Transmission specifications switch	Setting switch	Description		Setting
	SW03	Unused	—	OFF
	SW04	Write during RUN enabled/disabled setting	Enabled	ON
	SW05	Transmission speed setting	(Consistent with the GOT side specifications.)	See descrip-tions below.
	SW06			
	SW07			
	SW08	Data bit setting	8 bits	ON
	SW09	Parity bit setting	set	ON
	SW10	Even/odd parity setting	Odd	OFF
	SW11	Stop bit setting	1 bit	OFF
	SW12	Sum check setting	Set	ON

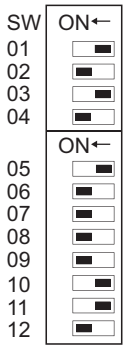
• Transmission speed setting (SW05 to SW07)
Set the transmission speed (SW05 to SW07) as follows.
The transmission speed setting must be consistent with that of the GOT side.
For how to set the GOT side transmission speed, refer to the following.

☞ Section 4.3.3 Setting communication interface (Communication settings)

Setting switch	Transmission speed *1		
	4800bps	9600bps	19200bps
SW05	OFF	ON	OFF
SW06	OFF	OFF	ON
SW07	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

(c) A1SJ71UC24-R4, A1SJ71C24-R4

Transmission specifications switch	Setting switch	Description		Setting
	SW01	Master station/ Local station setting	(Setting ignored)	OFF
	SW02	Computer link/ multidrop link selection	Computer link	ON
	SW03	Unused	—	OFF
	SW04	Write during RUN enabled/disabled setting	Enabled	ON
	SW05	Transmission speed setting	(Consistent with the GOT side specifications.)	See descrip-tions below.
	SW06			
	SW07			
	SW08	Data bit setting	8 bits	ON
	SW09	Parity bit setting	Set	ON
	SW10	Even /odd parity setting	Odd	OFF
	SW11	Stop bit setting	1 bit	OFF
	SW12	Sum check setting	Set	ON

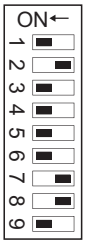
• Transmission speed setting (SW05 to SW07)
Set the transmission speed (SW05 to SW07) as follows.
The transmission speed setting must be consistent with that of the GOT side.
For how to set the GOT side transmission speed, refer to the following.

☞ Section 4.3.3 Setting communication interface (Communication settings)

Setting switch	Transmission speed *1		
	4800bps	9600bps	19200bps
SW05	OFF	ON	OFF
SW06	OFF	OFF	ON
SW07	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

(d) A1SCPUC24-R2

Transmission specifications switch	Setting switch	Description		Setting
	1	Write during RUN enabled/disabled setting	Enabled	ON
	2	Transmission speed setting	(Consistent with the GOT side specifications.)	See descrip-tions below.
	3			
	4			
	5	Data bit setting	8 bits	ON
	6	Parity bit setting	Set	ON
	7	Even/odd parity setting	Odd	OFF
	8	Stop bit setting	1 bit	OFF
	9	Sum check setting	Set	ON

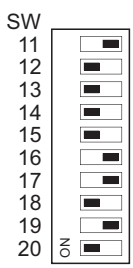
• Transmission speed setting (2 to 4)
Set the transmission speed (2 to 4) as follows.
The transmission speed setting must be consistent with that of the GOT side.
For how to set the GOT side transmission speed, refer to the following.

☞ Section 4.3.3 Setting communication interface (Communication settings)

Setting switch	Transmission speed *2		
	4800bps	9600bps	19200bps
2	OFF	ON	OFF
3	OFF	OFF	ON
4	ON	ON	ON

*2 Only transmission speeds available on the GOT side are shown.

(e) A2CCPUC24, A2CCPUC24-PRF

Transmission specifications switch	Setting switch	Description		Setting
	SW11	Transmission speed setting	(Consistent with the GOT side specifications.)	See descrip-tions below.
	SW12			
	SW13			
	SW14	Data bit setting	8 bits	ON
	SW15	Parity bit setting	Set	ON
	SW16	Even/odd parity setting	Odd	OFF
	SW17	Stop bit setting	1 bit	OFF
	SW18	Sum check setting	Set	ON
	SW19	Main channel setting	RS-232	OFF
	SW20	Write during RUN enabled/disabled setting	Enabled	ON

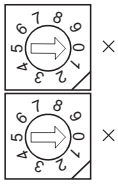
• Transmission speed setting (SW11 to SW13)
Set the transmission speed (SW11 to SW13) as follows.
The transmission speed setting must be consistent with that of the GOT side.
For how to set the GOT side transmission speed, refer to the following.

☞ Section 4.3.3 Setting communication interface (Communication settings)

Setting switch	Transmission speed *1		
	4800bps	9600bps	19200bps
SW11	OFF	ON	OFF
SW12	OFF	OFF	ON
SW13	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

(3) Station number setting switch

Station number setting switch *2	Description	Setting
	Set the station number of the computer link module to which an access is made from the GOT.	0

*2 The station number setting switch in the figure is for the A1SJ71UC24-R4.

Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

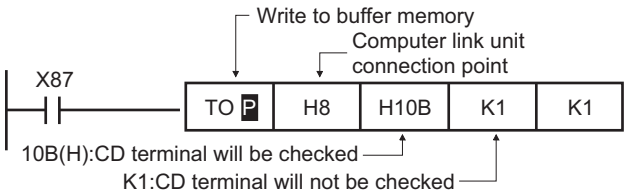
Point

When connecting the GT11, GT10 and the computer link unit

When the GT11, GT10 and the computer link unit are connected via RS-232C, set the buffer memory in the computer link unit using the sequence program so that CD signals are not checked.
Examples of the CPU units equipped with built-in computer link are explained below also.

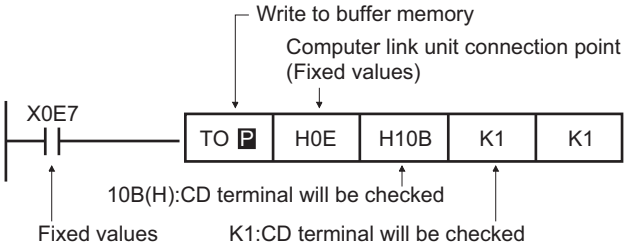
(1) In the case of A computer link

Refer to the program example below in which the I/O signals of the computer link unit are 80 to 9F (H).

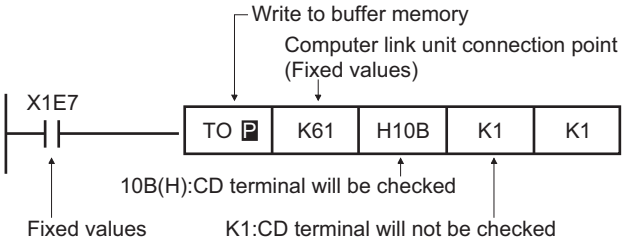


(2) In the case of CPU equipped with built-in computer link

(a) A1SCPUC24-R2



(b) A2CCPUC2



4.5 Precautions

1 Communication settings

The communication driver names differs depending on the GT Designer2 versions.

GT Designer2 versions	
2.32J or before	2.43V or later
A/QnA/Q CPU, QJ71C24, MELDAS C6*	A/QnA/Q CPU, QJ71C24
AJ71QC24	AJ71QC24, MELDAS C6*

2 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.
QCPU (Q mode), motion controller (Q series): 10 seconds or more
MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs.
Adjust the opening screen time in the GOT setup so that no system alarm occurs.

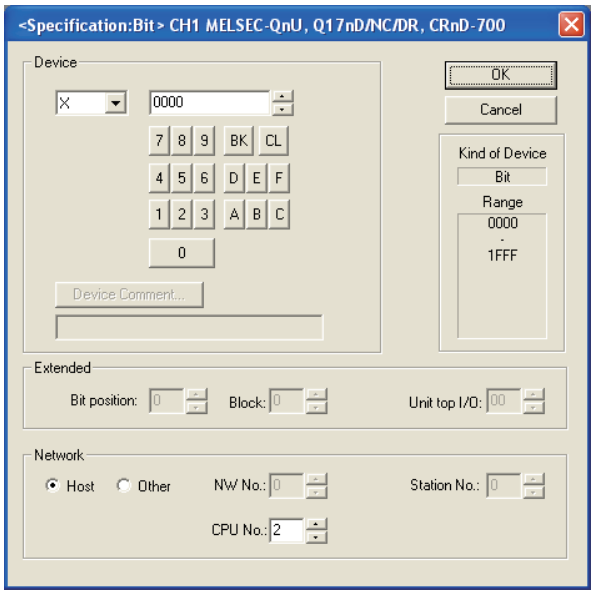
☞ GT Designer2 Version ☐ Screen Design Manual

3 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

Example) Setting dialog box of the bit device



4.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT24V 10 20 30	COMPUTER LINK CONNECTION	Supporting the connections to GT1020	2.35M	Communication driver QnA/Q CPU [01.00.**]
GT15 GT11 Serial	COMPUTER LINK CONNECTION	Changing communication driver names	2.40S	Communication driver A/QnA/Q CPU, QJ71C24 [03.01.**] AJ71QC24, MELDAS C6* [03.01.**]
GT24V 10 20 30	COMPUTER LINK CONECTION	Supporting the connection to GT1030	2.58L	Standard monitor OS [01.03.**] Communication driver QnA/Q CPU [01.00.**]
GT15 GT11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q172DCPU, Q173DCPU, Q173NCCPU	2.60N	Communication driver A/QnA/Q CPU, QJ71C24 [03.06.**]
GT15 GT11 Serial	Robot controller connection	Supporting the connection to the following CPU CRnQ-700	2.72A	Communication driver A/QnA/Q CPU, QJ71C24 [03.09.**]
GT15 GT11 Serial	COMPUTER LINK CONECTION	Supporting the retry, the timeout time and the delay time	2.72A	Communication driver A/QnA/Q CPU, QJ71C24 [03.09.**] AJ71QC24, MELDAS C6* [03.09.**] AJ71C24/UC24 [03.09.**]
GT24V 10 20 30	Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, and Q26UDHCPU	2.73B	Standard monitor OS [01.08.**] Communication driver QnA/Q CPU [01.03.**]
GT15 GT11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q13UDHCPU, Q26UDHCPU	2.76E	Communication driver A/QnA/Q CPU, QJ71C24 [03.12.**]
GT24V 10 20 30				Standard monitor OS [01.08.**] Communication driver QnA/Q CPU [01.03.**]
GT15 GT11 Serial	COMPUTER LINK CONECTION	Supporting the connection to the following CPU QJ71CMON	2.76E	Communication driver A/QnA/Q CPU, QJ71C24 [03.12.**]

(Continued to next page)

Model	Item	Description	Version of GT Designer2	Version of OS
GT 24V 10 20 30	COMPUTER LINK connection	Supporting the connection to ACPU	2.80J	Standard monitor OS [01.09.**] Communication driver AJ71C24/UC24 [01.04.**]
GT 15 GT 11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, and Q26UDEHCPU	2.80J	Communication driver A/QnA/Q CPU, QJ71C24 [03.13.**]
GT 24V 10 20 30				Standard monitor OS [01.09.**] Communication driver QnA/Q CPU [01.04.**]
GT 16	COMPUTER LINK connection	Supporting the connection to GT16	2.90U	Communication driver A/QnA/Q CPU, QJ71C24 [04.02.**] AJ71QC24, MELDAS C6* [04.02.**] AJ71C24/UC24 [04.02.**]
GT 10 5□ 4□	COMPUTER LINK connection	Supporting the connection to GT105 □ Supporting the connection to GT104 □		Standard monitor OS [01.10.**] Communication driver QnA/QCPU [01.05.**] MELSEC-A [01.05.**] AJ71C24 [01.05.**]
GT 16 GT 15 GT 11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU	2.91V	Communication driver A/QnA/Q CPUACQJ71C24 [04.03.**]
GT 10 5□ 4□ GT 24V 10 20 30				Standard monitor OS [01.11.**] Communication driver QnA/Q CPU [01.07.**]
GT 16 GT 15 GT 11 Serial	Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver A/QnA/Q CPU, QJ71C24 [04.04.**]

5

MELSECNET/H CONNECTION (PLC TO PLC NETWORK)



5.1 System Configuration . . . . . page 5-2
This section describes the equipment and cables needed when connecting to MELSECNET/H (PLC to PLC network). Select a system suitable for your application.

5.2 Preparatory Procedures for Monitoring . . . . . page 5-6
This section describes the procedures to be followed before monitoring in MELSECNET/H connection (PLC to PLC network).
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

5.3 PLC Side Setting . . . . . page 5-15
The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

5.4 Precautions . . . . . page 5-19
This section describes the precautions on MELSECNET/H connection (PLC to PLC network).
Be sure to read this when establishing a MELSECNET/H connection (PLC to PLC network).

5.5 List of Functions Added by Version Upgrade . . . . . page 5-21
This section describes the functions added by version upgrade of GT Designer2 or OS.

5.1 System Configuration

Select a system configuration suitable for your application.

Point

(1) Connectable network
Connect the GOT to the following network systems as an ordinary station.
• MELSECNET/H network system (PLC to PLC network) optical loop system
• MELSECNET/H network system (PLC to PLC network) coaxial bus system

(2) MELSECNET/H network module
When connecting the MELSECNET/H network module to the MELSECNET/H network system, specify the MELSECNET/H Mode or the MELSECNET/H Extended Mode as a network type.

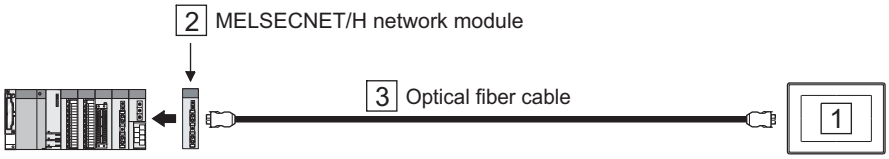
(3) Conventions used in this section
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

5.1.1 Connecting to optical loop system

Communication driver

MELSECNET/H

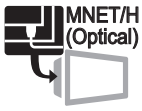
1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
63 (max.)	*1	

*1 The overall extension cable length and the length between stations vary depending on the cable type to be used and the total number of stations.
For details, refer to the following manual.
Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

2 System equipment

(1) GOT

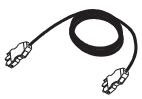
Image	No.	Name	Model name	Model
	1	MELSECNET/H communication unit • For optical loop system	GT15-J71LP23-25	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	MELSECNET/H network module*2	QJ71LP21, QJ71LP21-25, QJ71LP21S-25

*2 For the system configuration of the MELSECNET/H network module, refer to the following manual.
Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

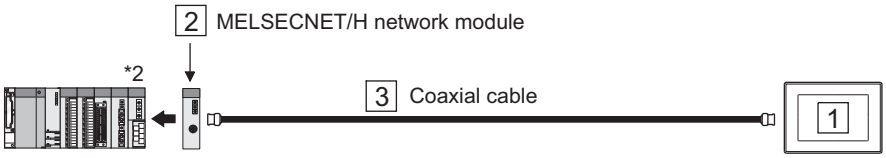
(3) Cable

Image	No.	Name	Model name
	3	Optical fiber cable	For the optical fiber cable, refer to the following manual. Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

5.1.2 Connecting to the coaxial bus system

Communication driver
MELSECNET/H

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
31 (max.)	*1	

*1 The overall extension cable length and the length between stations vary depending on the cable type to be used and the total number of stations.
For details, refer to the following manual.
☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

*2 Use a PLC CPU of function version B or a later version.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MELSECNET/H communication unit • For coaxial bus system	GT15-J71BR13	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	MELSECNET/H network module*1	QJ71BR11*2

*1 For the system configuration of the MELSECNET/H network module, refer to the following manual.
☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

*2 Use a MELSECNET/H network module of function version B or a later version.

(3) Cable

Image	No.	Name	Model name
	3	Coaxial cable	For the coaxial cable, refer to the following manual. ☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

5.1.3 Connecting to the motion controller CPU (Q170MCPU)

Communication driver

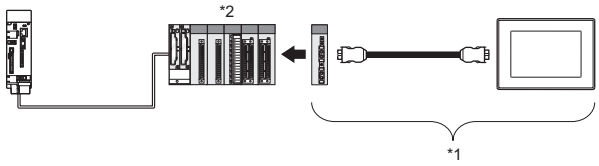
MELSECNET/H

The following shows the system configuration and connection conditions between Q170MCPU and the GOT. The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for the QCPU.

(☞ Section 5.1.1 Connecting to optical loop system)

(☞ Section 5.1.2 Connecting to the coaxial bus system)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
*1	*1		GT16 GT15

*1 The system configuration and connection conditions are same as those for connecting to the QCPU (Q mode).

*2 Only the first step can be used on the extension base unit (Q52B/Q55B).

5.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS on the GOT.

☞ Section 5.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 5.2.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 5.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 5.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 5.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 5.2.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 5.2.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

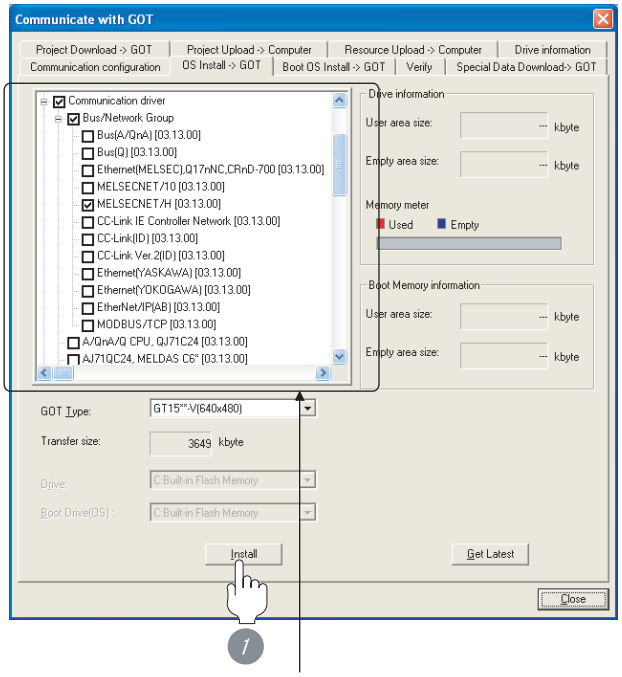
☞ Section 5.3 PLC Side Setting

5.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• MELSECNET/H

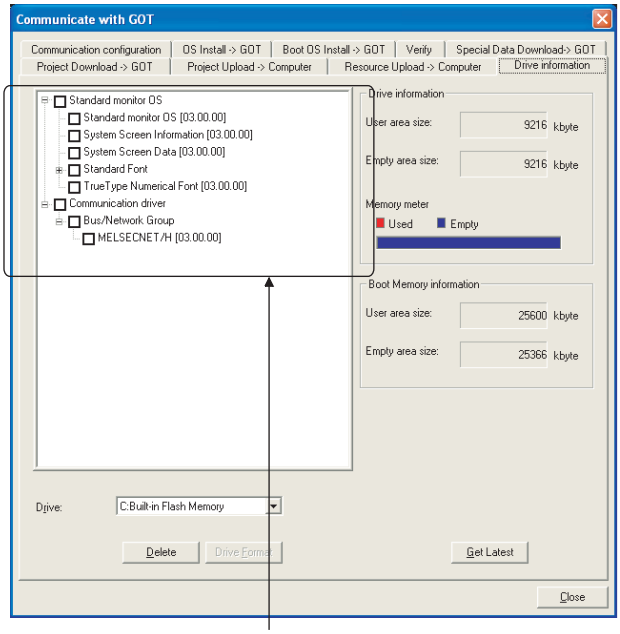
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

5.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: MELSECNET/H

5.2.3 Setting communication interface (Communication settings)

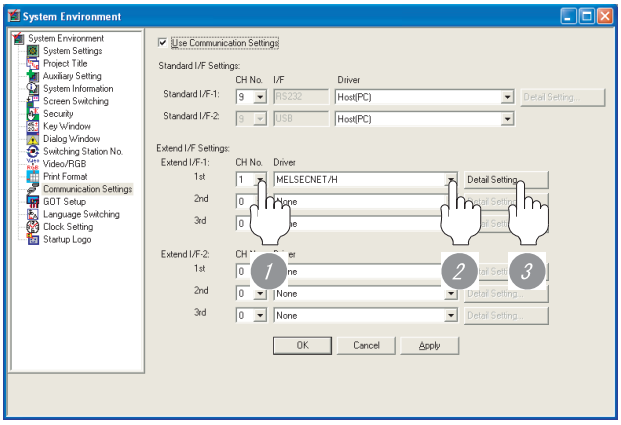
Make the GOT communication interface settings on [Communication Setting] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



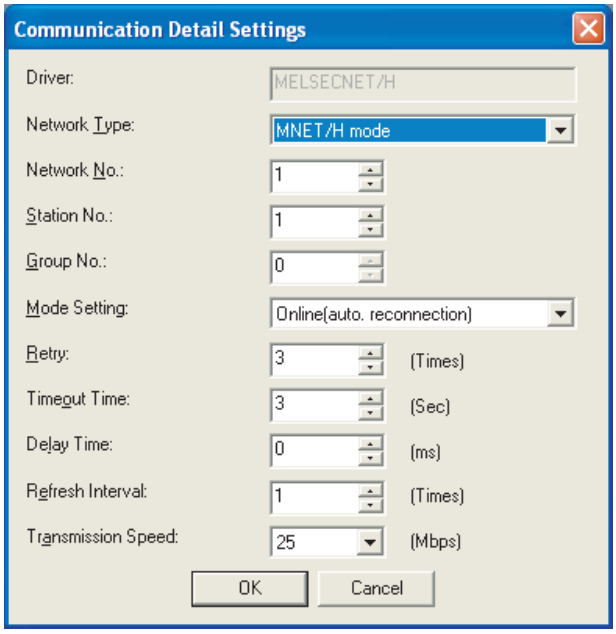
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to [MELSECNET/H].

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Network Type	Set the network type. <Default: MNET/H Mode>	• MNET/H mode • MNET/10 mode • MNET/H Extended mode *1
Network No.	Set the network No. <Default: 1>	1 to 239
Station No.	Set the station No. of the GOT. <Default: 1>	1 to 64
Mode Setting	Set the operation mode of the GOT. <Default: Online (auto. reconnection)>	• Online (auto. reconnection) • Offline • Test between slave station *2 • Self-loopback test *2 • Internal self-loopback test *2 • H/W test *2
Retry	Set the number of retries to be performed when a communication times out. When no response is received after retries, a communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/destination PLC. <Default: 0ms>	0 to 300ms
Refresh Interval	Set the number of refreshes to secure the send/receive data in station units during communication. <Default: 1 Time> Valid when [Secured data send/ Secured data receive] is marked by the control station side network parameters of the MELSECNET/H network system.	1 to 1000 Times
Transmis-sion Speed	Set the communication transmission speed. <Default: 25Mbps> When specifying [MENT/10 Mode] as the network type, only 10Mbps can be set applicable.	10Mbps/25Mbps

*1 Cannot be set for the QCPU redundant system.
*2 For details, refer to the following manual.
☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

Point

(1) Switch setting example
For the switch setting example, refer to the following.
☞ Section 5.3 PLC Side Setting

(2) Communication interface setting by Utility
The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
☞ GT ☐ User's Manual

(3) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

3 Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.

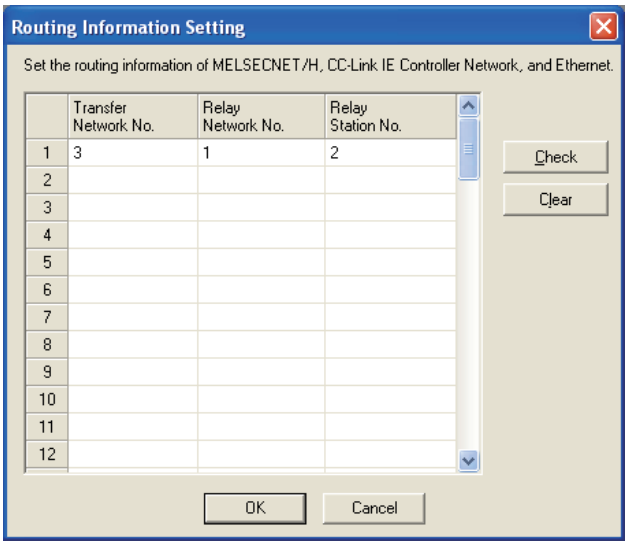
However, the same transfer network number cannot be set twice or more (multiple times).

Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.

Point

Routing parameter setting

When communicating within the host network, routing parameter setting is unnecessary.
For details of routing parameters, refer to the following manual.
☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)



Item	Range
Transfer Network No.	1 to 239
Relay Network No.	1 to 239
Relay Station No.	1 to 64

Point

Routing parameter setting of relay station

Routing parameter setting is also necessary for the relay station.
For the setting, refer to the following.

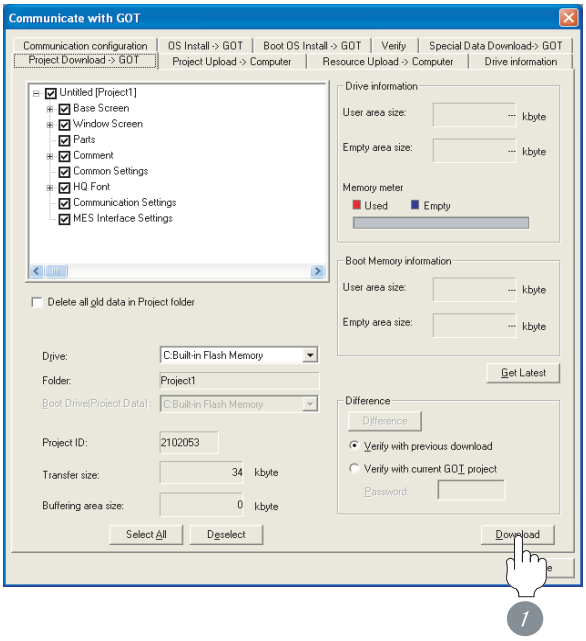
Section 5.3 PLC Side Setting

5.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

5.2.5 Attaching communication unit and connecting cable

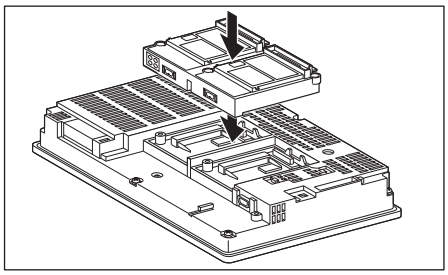
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Mount the MELSECNET/H communication unit on the extension unit connector of the GOT.



Point

MELSECNET/H communication unit

For the details of mounting the MELSECNET/H communication unit, refer to the following manual.

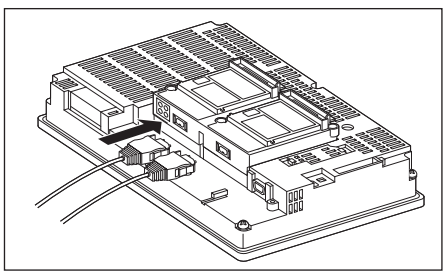
GT15 MELSECNET/H communication unit User's Manual

2 Connecting the cable

(1) Optical fiber cable

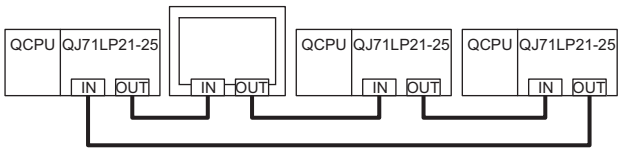
(a) Optical fiber cable connection method

1 Mount the optical fiber cable to the MELSECNET/H communication unit.



(b) Wiring diagram

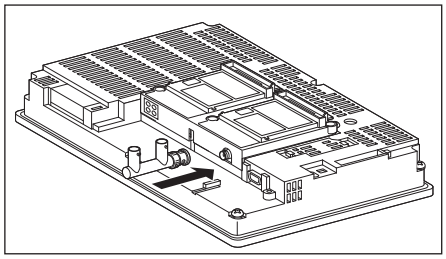
When connecting the adjacent stations, connect the IN with the adjacent OUT as follows.



(2) Coaxial cable

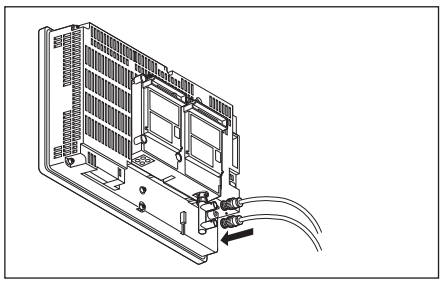
(a) Coaxial cable connection method

1 Mount the F-type connector to the MELSECNET/H communication unit.



2 Mount the coaxial cable to the F-type connector.

If the MELSECNET/H communication unit is terminal station of the network, be sure to connect a terminating resistor (sold separately: A6RCON-R75) to the F-type connector.



Point

Precautions for connection of coaxial cable

Before connecting or disconnecting the coaxial connector, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may result in a MELSECNET/H communication unit malfunction.

(b) Coaxial cable connector connection method
The following describes the method for connecting the BNC connector (connector plug for coaxial cable) and the cable.

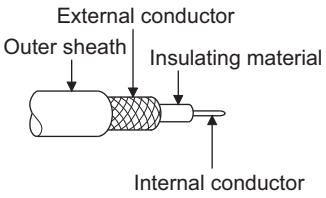
⚠CAUTION

● Solder the coaxial cable connectors properly. Insufficient soldering may result in malfunctions.

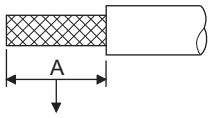
Components of the BNC connector



Structure of the coaxial cable



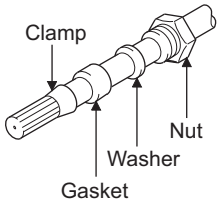
1 Remove the external sheath of the coaxial cable with dimensions as shown on the left.



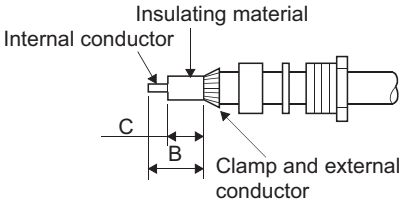
Cut this portion of the outer sheath

Cable in use	A
3C-2V	15mm
5C-2V, 5C-2V-CCY	10mm

2 Pass the nut, washer, gasket, and clamp through the coaxial cable as shown on the left and loosen the external conductor.

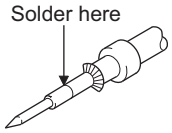


3 Cut the external conductor, insulting material, and internal conductor with the dimensions as shown on the left.
Note that the external conductor should be cut to the same dimension as the tapered section of the clamp and smoothed down to the clamp.

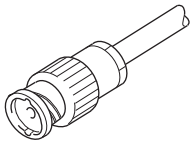


Cable in use	B	C
3C-2V	6mm	3mm
5C-2V, 5C-2V-CCY	7mm	5mm

4 Solder the contact to the internal conductor



5 Insert the connector assembly shown in 4 into the plug shell and screw the nut into the plug shell.



Point

Precautions for soldering

Note the following precautions when soldering the internal conductor and contact.
- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

5.2.6 Verifying GOT recognizes controllers

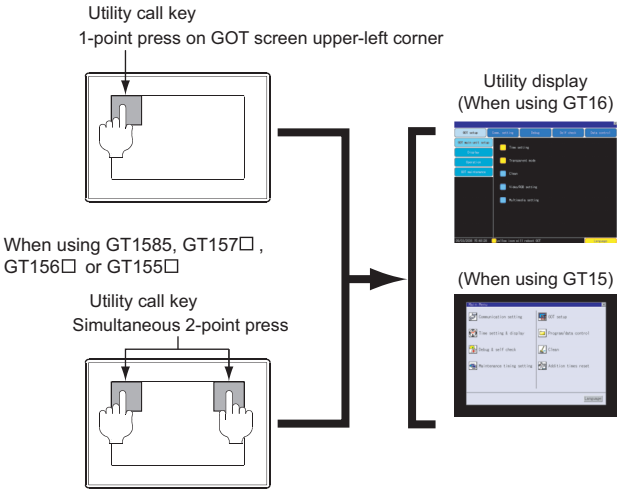
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

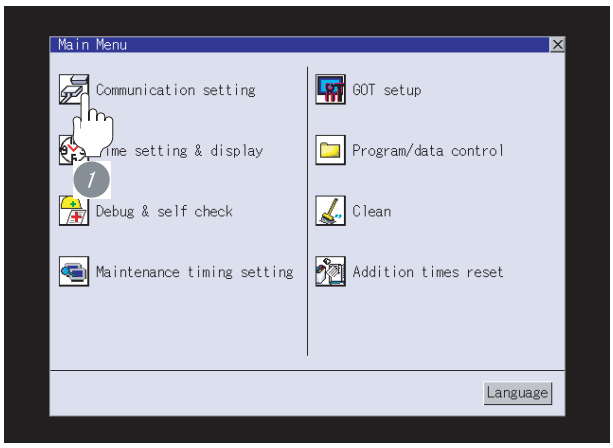


Point

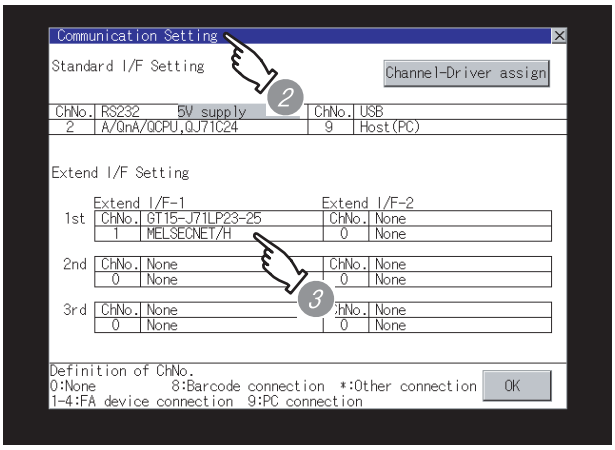
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: MELSECNET/H

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 6.3 PLC Side Setting

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

5.2.7 Checking for normal monitoring

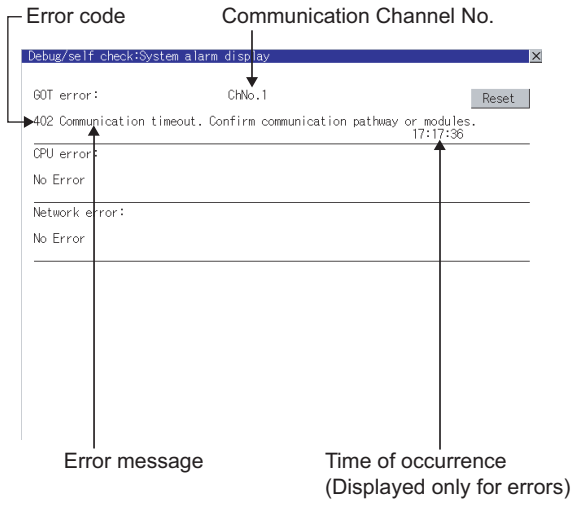
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

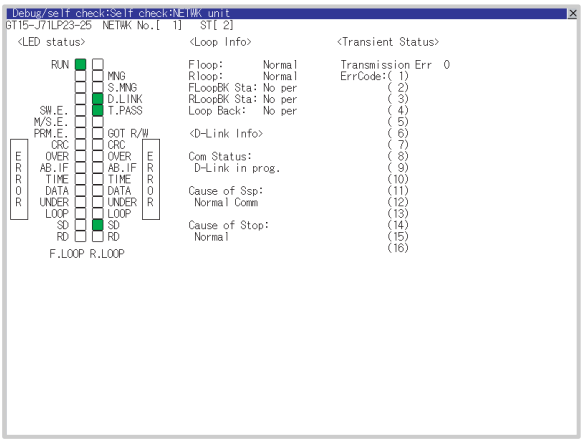
GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication status with network unit by GOT

The communication status between the GOT and the MELSECNET/H network system can be confirmed by the Utility screen of the GOT.

For details on the operation method of the GOT Utility screen, refer to the following manual.

GT16 User's Manual (Basic Utility)
GT15 User's Manual



3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 5.3 PLC Side Setting

4 Checking the wiring state (for optical loop system only)

Check if the optical fiber cable is connected correctly in [Loop test] of GX Developer.

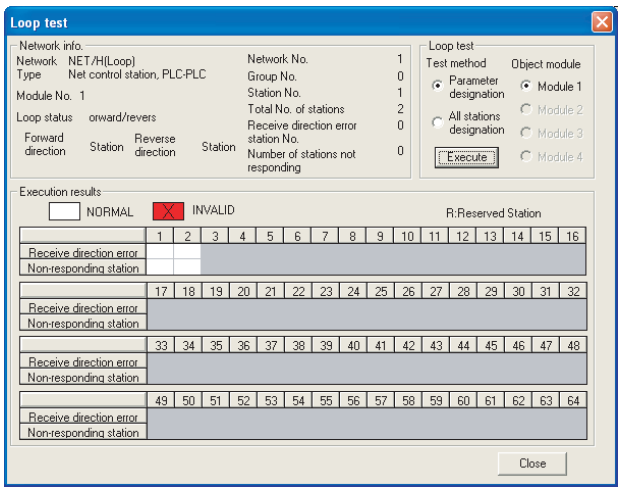
For the GX Developer operation method, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(1) Check the [Receive direction error]. (The display example on GX Developer Version 8)

Startup procedure

GX Developer → [Diagnostics] → [MELSECNET (II)/ 10/H diagnostics] → Loop test



5 Checking if the GOT is performed the data link correctly

Check if the GOT is performed the data link correctly in [Other station info.].

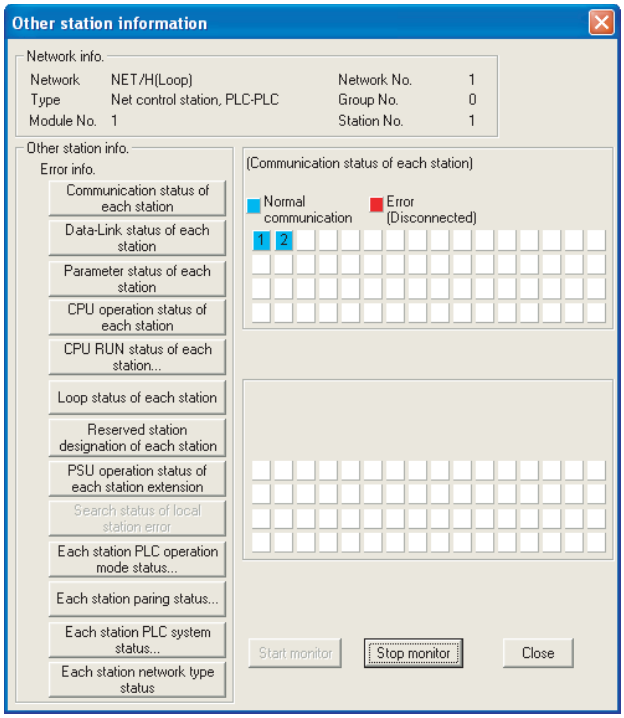
For the GX Developer operation method, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(1) Check [Communication status of each station] and [Data-Link status of each station]. (The display example on GX Developer Version 8)

Startup procedure

GX Developer → [Diagnostics] → [MELSECNET (II)/ 10/H diagnostics] → Other station info.



All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

5.3 PLC Side Setting

This section describes the settings of the GOT and MELSECNET/H network module in the case of system configuration shown as 1.

When connecting the MELSECNET/H network module to the MELSECNET/H network system, specify the MELSECNET/H Mode or the MELSECNET/H Extended Mode as a network type.

Point

MELSECNET/H network module

For details of the MELSECNET/H network module, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

1 System configuration

☞ · 4 [Communication settings] of GT Designer2

<GOT>
(Use the default value for settings other than the following.)

Network type : MNET/H Mode
Network No. : 1
Station No. : 2
Made Setting : Online (auto,reconnection)
Network range assignment *2: LB0100H to LB01FFH
LW0100H to LW01FFH
Transmission speed : 10Mbps

MELSECNET/H (PLC to PLC network)

<MELSECNET/H network module> *1
(Use the default value for settings other than the following.)

Station No. : 1
Mode : Online (10Mbps)
Network type : MNET/H mode (Control station)
Network No. : 1
Total stations : 2
Network range assignment *2: LB0000H to LB00FFH
LW0000H to LW00FFH

☞ · 2 Switch setting of MELSECNET/H network module
· 3 [Network parameter] of GX Developer

*1 The MELSECNET/H network module is mounted at slot 0 of the base unit.
The start I/O No. of the MELSECNET/H network module is set at "0".

*2 The network type must be set according to the number of assignment of send points for each station.
When the number of assignment is 2000 bytes or less:
MELSECNET/H Mode
When the number of assignment is 2000 bytes or more:
MELSECNET/H Extended Mode

Point

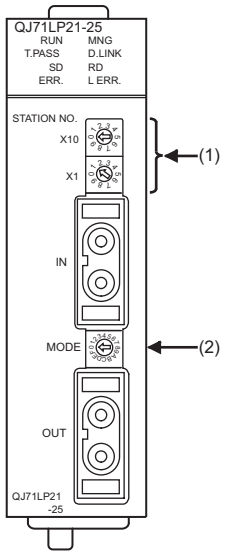
When connecting to Q170MCPU

When connected to Q170MCPU, the start I/O No. of the MELSECNET/H network module is set to "70".

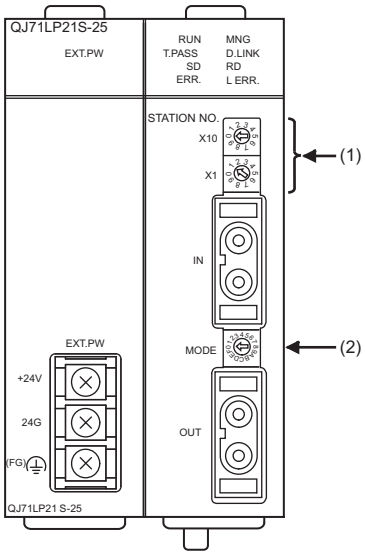
2 Switch setting of MELSECNET/H network module

Set the station number setting switch and mode setting switch.

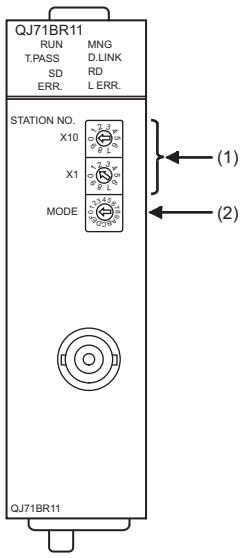
QJ71LP21, QJ71LP21-25



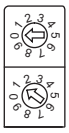
QJ71LP21S-25



QJ71BR11



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION NO. X10 X1 	Station number setting (Station number)*1	1	○

○ : Necessary △ : As necessary × : Not necessary

*1 Set to not duplicate with the station No. of the GOT.

(2) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
MODE 	Mode setting (Online: 10Mbps)*2	0	○

○ : Necessary △ : As necessary × : Not necessary

*2 Set the same mode setting and transmission speed as those of the GOT.

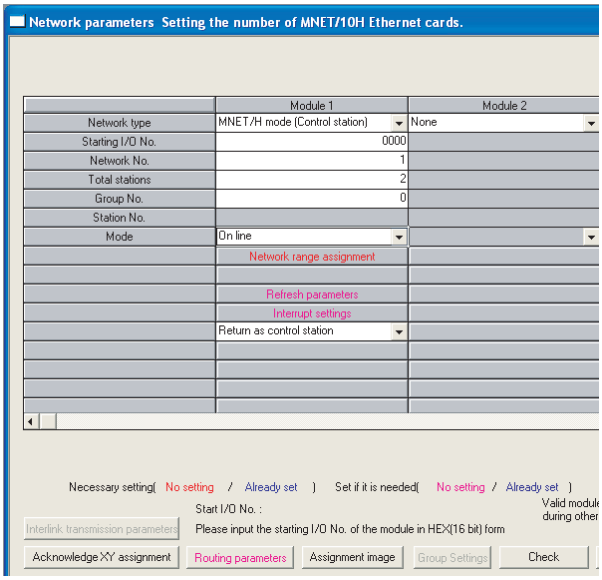
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

(1) Network parameter



Item	Setting	Setting necessity at GOT connection
Network type	MNET/H mode (Control station) (fixed)	○
Starting I/O No.*1	0000H	○
Network No.*2	1	○
Total stations	2	○
Group No.	0 (fixed)	○
Mode*3	Online	○
Network range assignment	Refer to (2)	△
Refresh parameters	(Use default value)	△
Interrupt settings		×
Control station return setting		△
Redundant settings*4		△
Interlink transmission parameters		×
Routing parameters	Refer to (3)	△

○ : Necessary △ : As necessary × : Not necessary

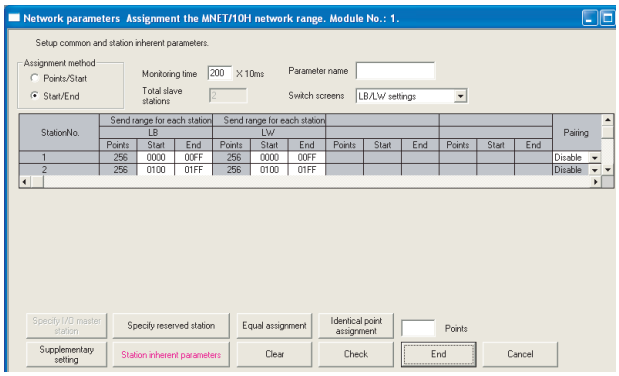
*1 When using Q170MCPU, set it according to the system configuration.

*2 Set the same network No. as that of the GOT.

*3 Set the same mode setting as that of the GOT.

*4 Set it when the MELSECNET/H network module is used in the redundant QnPRHCPU system.

(2) Network range assignment



Item				Setting	Setting necessity at GOT connection
Monitoring time				200	△
LB/LW setting*1	Send range for station (LB)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
	Send range for station (LW)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
	Pairing setting*2			Disable	△
LX/LY setting*1				No setting	△
Specify I/O master station*1				No setting	△
Specify reserved station				No setting	△
Supplementary setting				(Use default value)	△
Station inherent parameters					△

○: Necessary △: As necessary ×: Not necessary

*1 Be sure to set it to perform the cyclic transmission.

*2 Set it when the MELSECNET/H network module is used in the redundant QnPRHCPU system.

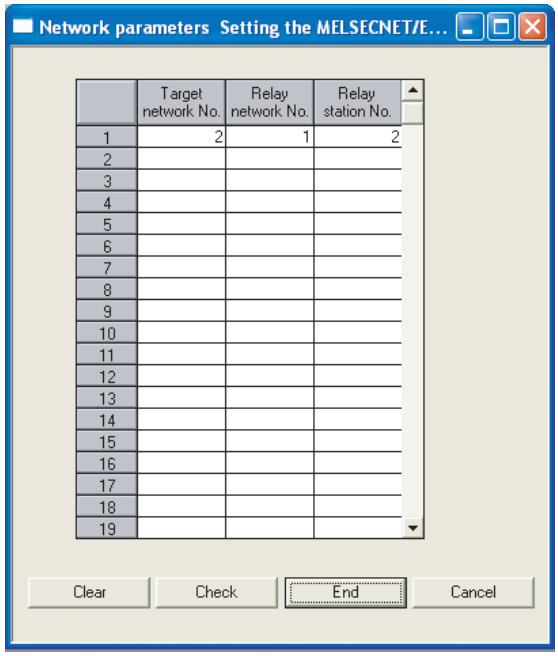
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(3) Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.
However, the same transfer network number cannot be set twice or more (multiple times).
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.



Item	Range
Target network No.	1 to 239
Relay network No.	1 to 239
Relay station No.	1 to 64

Point

Routing parameter setting of request source

Routing parameter setting is also necessary for the request source GOT.
For the setting, refer to the following.

☞ Section 5.2.3 3 Routing parameter setting

4 [Communication settings] of GT Designer2

Item	Setting
Network type	MNET/H mode
Network No.	1: Network No.1
Station No.	2: Station No.2
Mode Setting	Online (auto. reconnection)
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0 ms (Use default value.)
Refresh Interval	1 Times (Use default value.)
Monitor Speed	10Mbs

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

Section 5.2.3

5.4 Precautions

1 Network configuration

Use MELSECNET/H (PLC to PLC network) to configure a network including the GOT.
The following networks including the GOT cannot be configured.

- MELSECNET/H (Remote I/O network)

2 Network type setting

(1) Specify all the network modules on the same network as the same network type.
(MELSECNET/H Mode and MELSECNET/H Extended Mode cannot be mixed.)
(2) When connecting to MELSECNET/H in the QCPU redundant system, [MELSECNET/H Extended Mode] cannot be specified as the network type.

3 Monitoring range

Only PLC CPU of the same networks No. can be monitored in GOT.
For details, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

4 GOT startup in the MELSECNET/H connection

In the MELSECNET/H connection, the data link is started approximately 10 seconds after the GOT startup.

5 When a network error occurs in the system alarm

In the MELSECNET/H connection, when a network error occurs in the system alarm, the system alarm message cannot be canceled even though the causes are removed.
To cancel the system alarm display, restart the GOT.

6 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.
QCPU (Q mode), motion controller (Q series): 10 seconds or more
MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs.
Adjust the opening screen time in the GOT setup so that no system alarm occurs.

☞ GT Designer2 Version □ Screen Design Manual

7 MELSECNET/H network module version

For version restrictions of the MELSECNET/H network module, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

8 When using the QSCPU

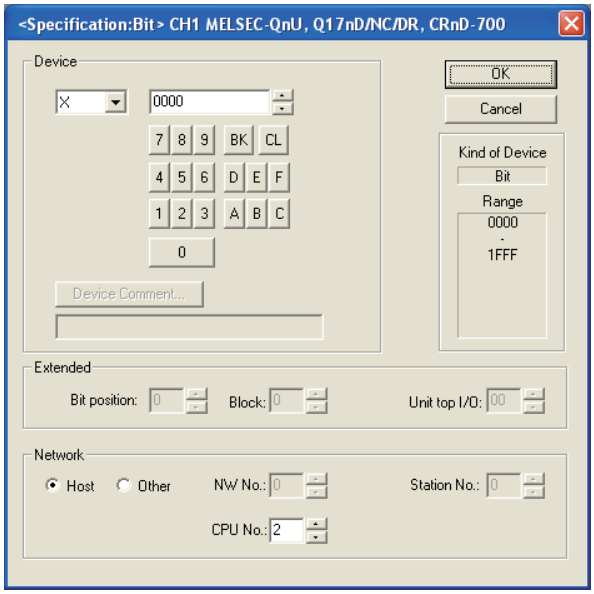
The GOT can only read device data and sequence programs by the ladder monitor function in the QSCPU.
The GOT cannot write any data to the QSCPU.

9 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



5.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
MELSECNET/H connection (PLC to PLC network)	Supporting the MELSECNET/H connection (PLC to PLC network)	2.32J	Communication driver MELSECNET/H [03.00.**]
	Supporting the routing parameter setting by GT Designer2	2.43V	Communication driver MELSECNET/H [03.01.**]
Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q172DCPU, Q173DCPU, Q173NCCPU	2.63R	Communication driver MELSECNET/H [03.07.**]
Robot controller connection	Supporting the connection to CRnQ-700	2.73B	Communication driver MELSECNET/H [03.09.**]
Applicable CPU	Supporting the connection to the following CPUs Q13UDHCPU, Q26UDHCPU	2.77F	Communication driver MELSECNET/H [03.12.**]
Applicable CPU	Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q02PHCPU, Q06PHCPU, QS001CPU	2.82L	Communication driver MELSECNET/H [03.13.**]
MELSECNET/H connection (PLC to PLC network)	Supporting the connection to GT16	2.90U	Communication driver MELSECNET/H [04.02.**]
Applicable CPU	Supporting the connection to the following CPUs Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU	2.91V	Communication driver MELSECNET/H [04.03.**]
Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver MELSECNET/H [04.04.**]

MEMO

6

MELSECNET/10 CONNECTION (PLC TO PLC NETWORK)



6.1 System Configuration . . . . . page 6-2

This section describes the equipment and cables needed when connecting to MELSECNET/10 (PLC to PLC network). Select a system suitable for your application.

6.2 Preparatory Procedures for Monitoring . . . . . page 6-8

This section describes the procedures to be followed before monitoring in MELSECNET/10 connection (PLC to PLC network).
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

6.3 PLC Side Setting . . . . . page 6-19

The PLC side settings for GOT connection are explained. When checking the PLC side settings, refer to this section.

6.4 Precautions . . . . . page 6-31

This section describes the precautions on MELSECNET/10 connection (PLC to PLC network).
Be sure to read this when establishing a MELSECNET/10 connection (PLC to PLC network).

6.5 List of Functions Added by Version Upgrade . . . . . page 6-33

This section describes the functions added by version upgrade of GT Designer2 or OS.

6.1 System Configuration

Select a system configuration suitable for your application.

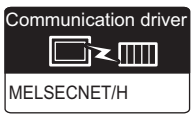
Point

(1) Connectable network
Connect the GOT to the following network systems as an ordinary station.
• MELSECNET/10 network system (PLC to PLC network) optical loop system
• MELSECNET/10 network system (PLC to PLC network) coaxial bus system

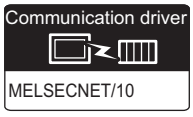
(2) MELSECNET/H network module
When connecting the MELSECNET/H network module to the MELSECNET/10 network system, specify the MELSECNET/10 Mode as a network type.

(3) Conventions used in this section
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

6.1.1 Connecting to optical loop system

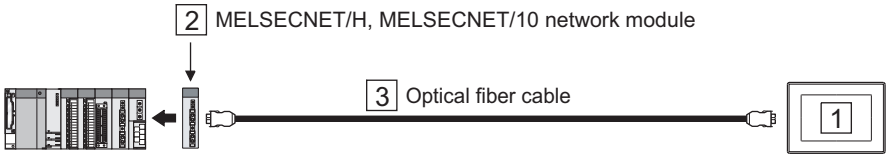


(When MELSECNET/H communication unit is used)



(When MELSECNET/10 communication unit is used)

1 System configuration and connection conditions

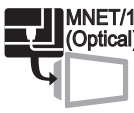
Connection conditions		System configuration
Number of GOTs	Distance	
63 (max.)	*1	

*1 The overall extension cable length and the length between stations vary depending on the cable type to be used and the total number of stations.
For details, refer to the following manuals.

• Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
• For QnA/Q4AR MELSECNET/10 Network System Reference Manual
• Type MELSECNET/10 Network System (PLC to PLC network) Reference Manual

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MELSECNET/H*1 communication unit • For optical loop system	GT15-J71LP23-25	GT16 GT15
		MELSECNET/10 communication unit • For optical loop system	GT15-75J71LP23-Z*2 *3	GT15

*1 Specify the MELSECNET/10 Mode as the Communication Settings.
For details of the settings, refer to the following.

Section 6.2.3 Setting communication interface (Communication settings)

*2 Not available for the GT155□.

*3 The GT15-75J71LP23-Z cannot use functions added in the GT Designer2 Version 2.30G or later.
When using functions added in the GT Designer2 Version 2.30G or later, use the GT15-J71LP23-25.
For details of functions added in the GT Designer2 version 2.30G or later, refer to the following.

Section 6.5 List of Functions Added by Version Upgrade

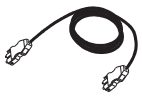
(2) PLC

Image	No.	Name	Model name
	2	MELSECNET/H, MELSECNET/10 network module*4	QJ71LP21, QJ71LP21-25, QJ71LP21S-25
			AJ71QLP21, AJ71QLP21S, A1SJ71QLP21, A1SJ71QLP21S
			AJ71LP21, A1SJ71LP21

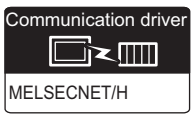
*4 For the system configuration of the MELSECNET/H and MELSECNET/10 network module, refer to the following manuals.

☞
- Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
- For QnA/Q4AR MELSECNET/10 Network System Reference Manual
- Type MELSECNET/10 Network System (PLC to PLC network) Reference Manual

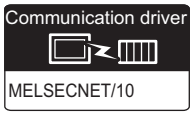
(3) Cable

Image	No.	Name	Model name
	3	Optical fiber cable	For the optical fiber cable, refer to the following manuals. ☞ • Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network) • For QnA/Q4AR MELSECNET/10 Network System Reference Manual • Type MELSECNET/10 Network System (PLC to PLC network) Reference Manual

6.1.2 Connecting to the coaxial bus system

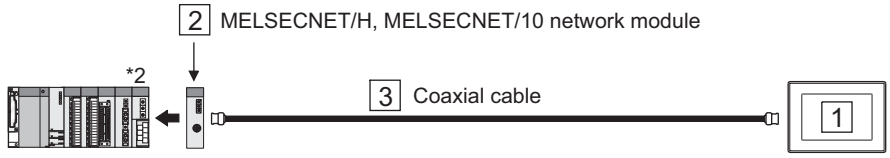


(When MELSECNET/H communication unit is used)



(When MELSECNET/10 communication unit is used)

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
31 (max.)	*1	

*1 The overall extension cable length and the length between stations vary depending on the cable type to be used and the total number of stations.
For details, refer to the following manuals.



• Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
• For QnA/Q4AR MELSECNET/10 Network System Reference Manual
• Type MELSECNET/10 Network System (PLC to PLC network) Reference Manual

*2 Use a PLC CPU of function version B or a later version.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MELSECNET/H communication unit*1 • For coaxial bus system	GT15-J71BR13	GT16 GT15
		MELSECNET/10 communication unit • For coaxial bus system	GT15-75J71BR13-Z*2 *3	GT15

*1 Specify the MELSECNET/10 mode as the Communication Settings to use.
For the detailed settings, refer to the following.



Section 6.2.3 Setting communication interface (Communication settings)

*2 Not available for the GT155□.

*3 The GT15-75J71LP23-Z cannot use functions added in the GT Designer2 Version 2.30G or later.
When using functions added in the GT Designer2 Version 2.30G or later, use the GT15-J71BR13.
For details of functions added in the GT Designer2 version 2.30G or later, refer to the following.



Section 6.5 List of Functions Added by Version Upgrade

(2) PLC

Image	No.	Name	Model name
	2	MELSECNET/H, MELSECNET/10 network module*4	QJ71BR11*5
			AJ71QBR11, A1SJ71QBR11
			AJ71BR11, A1SJ71BR11

*4 For the system configuration of the MELSECNET/H and MELSECNET/10 network modules, refer to the following manuals.

☞
- Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
- For QnA/Q4AR MELSECNET/10 Network System Reference Manual
- Type MELSECNET/10 Network System (PLC to PLC network) Reference Manual

*5 Use a MELSECNET/H network module of function version B or a later version.

(3) Cable

Image	No.	Name	Model name
	3	Coaxial cable	For the coaxial cable, refer to the following manuals. ☞ • Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network) • For QnA/Q4AR MELSECNET/10 Network System Reference Manual • Type MELSECNET/10 Network System (PLC to PLC network) Reference Manual

6.1.3 Connecting to the motion controller CPU (Q170MCPU)

Communication driver

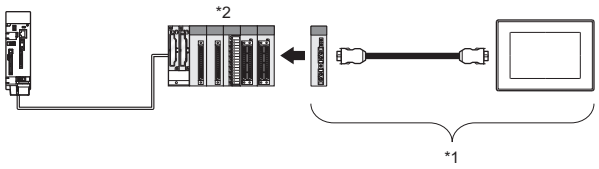
MELSECNET/H

The following shows the system configuration and connection conditions between Q170MCPU and the GOT. The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for the QCPU.

(☞ Section 6.1.1 Connecting to optical loop system)

(☞ Section 6.1.2 Connecting to the coaxial bus system)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
*1	*1		GT16 GT15

*1 The system configuration and connection conditions are same as those for connecting a GOT to the QCPU (Q mode).

*2 Only the first step can be used on the extension base unit (Q52B/Q55B).

6.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS on the GOT.

Section 6.2.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 6.2.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 6.2.3
Setting communication interface (Communication settings)

Download the project data.

Section 6.2.4
Downloading project data

Attach the communication unit and connect the cable.

Section 6.2.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 6.2.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 6.2.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

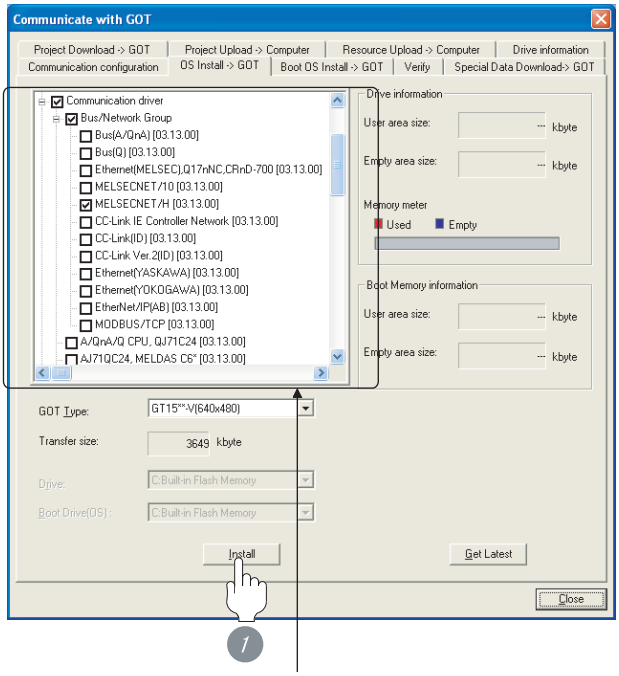
Section 6.3 PLC Side Setting

6.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

- When using the MELSECNET/10 communication unit
  : MELSECNET/10
- When using the MELSECNET/H communication unit
  : MELSECNET/H

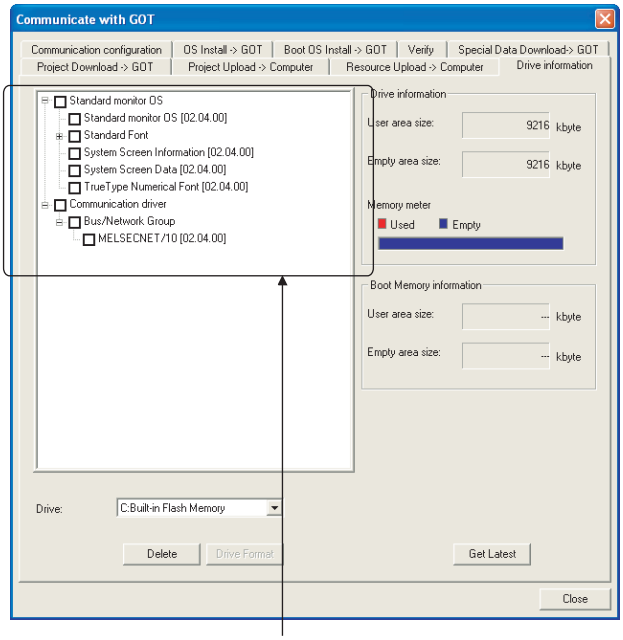
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

6.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver

- When using the MELSECNET/10 communication unit : MELSECNET/H
- When using the MELSECNET/H communication unit : MELSECNET/10

6.2.3 Setting communication interface (Communication settings)

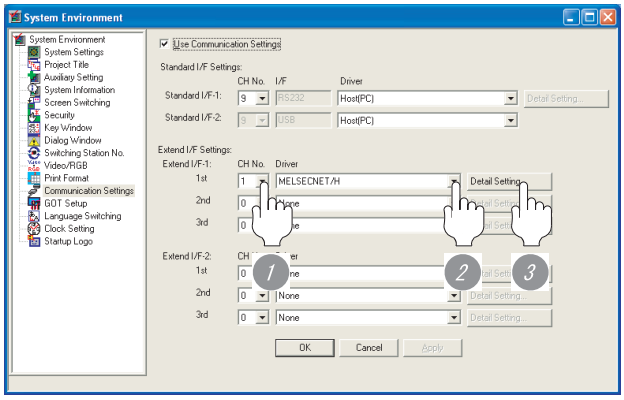
To configure the communication interface of the GOT, use the [Communication settings] of GT Designer2 and the switches of the communication unit.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver

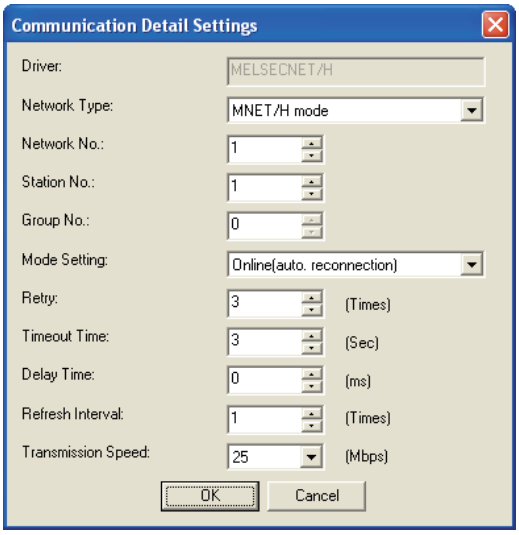
- When using the MELSECNET/H communication unit : "MELSELCNET/H"
- When using the MELSECNET/10 communication unit : "MELSELCNET/10"

3 Perform the detailed settings for the driver.

(2 Communication detail settings)

2 Communication detail settings

(1) MELSECNET/H

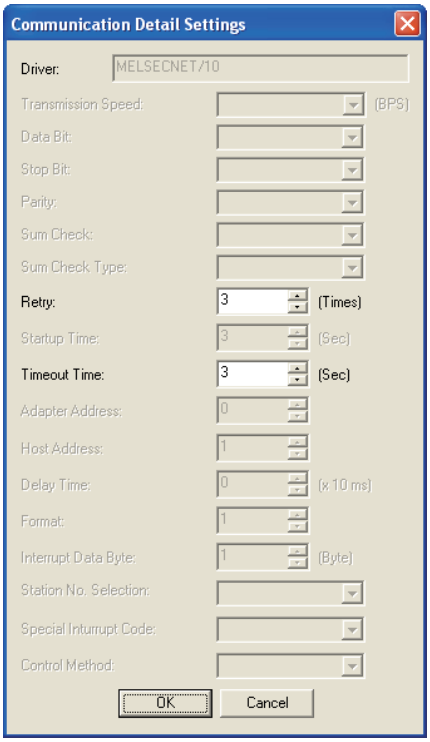


Item	Description	Range
Network Type	Set the network type. <Default: MNET/H mode>	• MNET/H mode • MNET/10 mode • MNET/H EXT mode
Network No.	Set the network No. <Default: 1>	• 1 to 239
Station No.	Set the station No. of the GOT. <Default: 1>	• 1 to 64
Mode Setting	Set the operation mode of the GOT. <Default: Online (auto.reconnection)>	• Online (auto. reconnection) • Offline • Test between slave station*1 • Self-loopback test *1 • Internal self-loopback test*1 • H/W test*1
Retry	Set the number of retries to be performed when a communication time out. When no response is received after retries, a communication times out. <Default: 3 Times>	0 to 5 Times
Timeout time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/destination PLC. <Default: 0ms>	0 to 300ms
Refresh Interval	Set the number of refreshes to secure the send/receive data in station units during communication. <Default: 1 Time> Valid when "Secured data send/ Secured data receive" is marked by the control station side network parameters of the MELSECNET/H network system.	1 to 1000 Times
Transmis-sion Speed	Set the communication transmission speed. <Default: 25Mbps>	10Mbps/25Mbps

*1 For details, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(2) MELSECNET/10



Item	Description	Range
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec

Point

(1) When MELSECNET/H communication unit is used

When connecting to the MELSECNET/10 network, specify "MELSECNET/10 Mode" as "Network Type".

(2) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.

For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility)
GT15 User's Manual

(3) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

3 Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.

However, the same transfer network number cannot be set twice or more (multiple times).

Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.

Point

(1) Routing parameter setting

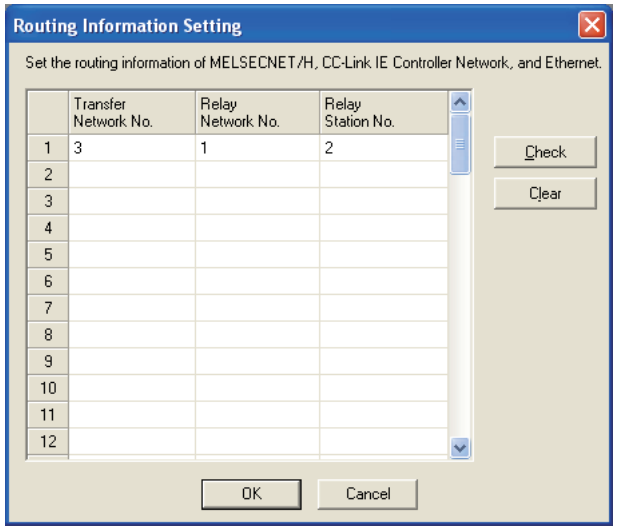
When communicating within the host network, routing parameter setting is unnecessary.

(2) Selection of communication unit

Routing parameters cannot be set in the GT15-75J71LP23-Z and the GT15-75J71BR13-Z.
When setting routing parameters, use the GT15-J71LP23-25 or the GT15-J71BR13 according to the connection type to be used.

For details of routing parameters, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)



Item	Range
Transfer Network No.	1 to 239
Relay Network No.	1 to 239
Relay Station No.	1 to 64

Point

Routing parameter setting of relay station

Routing parameter setting is also necessary for the relay station.
For the setting, refer to the following.

☞ Section 6.3 PLC Side Setting

4 Switch setting (Only when MELSECNET/10 communication unit is used)

Point

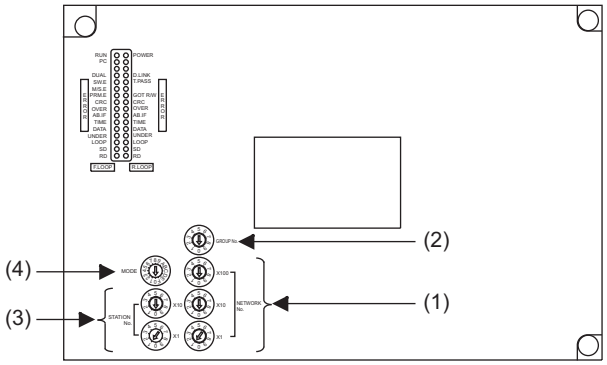
Switch setting of the communication unit

When the MELSECNET/H communication unit is used, the switch setting is not needed.

For details of each setting switch and LED, refer to the following manual.

GT15 MELSECNET/10 communication unit User's Manual

GT15-75J71LP23-Z, GT15-75J71BR13-Z



(1) Network number setting switch

Network number setting switch	Description	Setting
X100 X10 X1 NETWORK No.	Set the network No. of the MELSECNET/10 communication unit. <Default: 001>	1 to 239

(2) Group number setting switch

Group number setting switch	Description	Setting
GROUP No.	Set the group No. of the MELSECNET/10 communication unit. <Default: 0>	0: No group setting (fixed)*1

*1 The GOT does not use the group number. Specify "0".

(3) Station number setting switch

Station number setting switch	Description	Setting
STATION No. X10 X1	Set the station No. of the MELSECNET/10 communication unit. Set to not duplicate other stations in the network. <Default: 01>	1 to 64: GT15-75J71LP23-Z 1 to 32: GT15-75J71BR13-Z

(4) Mode setting switch

Mode setting switch	Description	Setting
MODE	On-line <Default: 0>	0

Point

(1) Switch setting example

For the switch setting example, refer to the following.

Section 6.3 PLC Side Setting

(2) When the switch setting is changed

When changing the switch setting after mounting the MELSECNET/10 communication unit to the GOT, reset the GOT.

(3) Self check test

Select "3" to "9" as the mode setting switch to provide a self check test of the MELSECNET/10 communication unit.

For details, refer to the following manual.

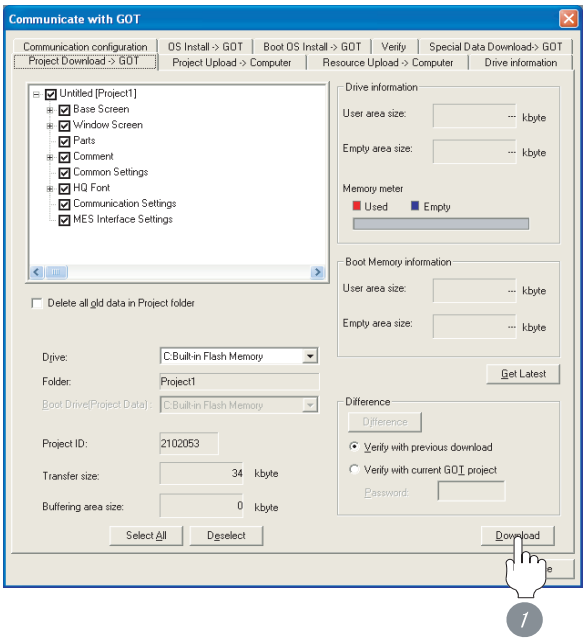
GT15 MELSECNET/10 communication unit User's Manual

6.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

6.2.5 Attaching communication unit and connecting cable

Point

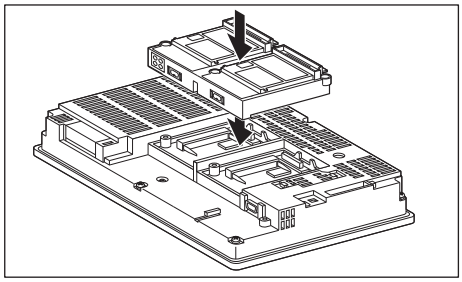
Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

(1) When MELSECNET/H communication unit is used

1 Mount the MELSECNET/H communication unit on the extension unit connector of the GOT.



Point

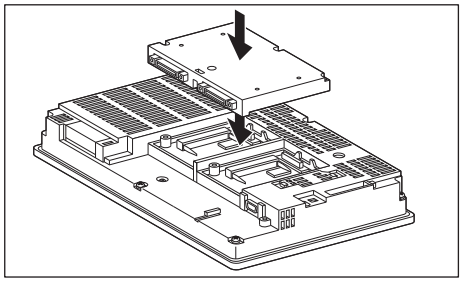
MELSECNET/H communication unit

For the details of mounting the MELSECNET/H communication unit, refer to the following manual.

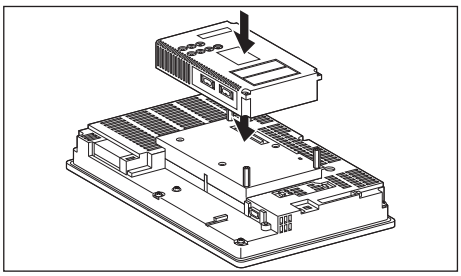
☞ GT15 MELSECNET/H communication unit User's Manual

(2) When MELSECNET/10 communication unit is used

1 Mount the interface converter unit to the extension unit connector of the GOT.



2 Mount the MELSECNET/10 communication unit to the interface converter unit.



Point

MELSECNET/10 communication unit

For details of the MELSECNET/10 communication unit, refer to the following manual.

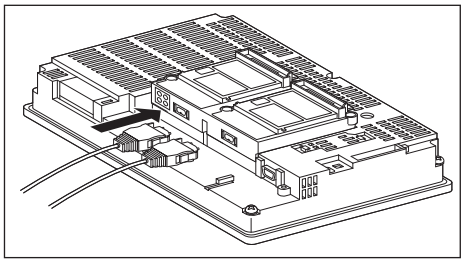
☞ GT15 MELSECNET/10 communication unit User's Manual

2 Connecting the cable

(1) Optical fiber cable

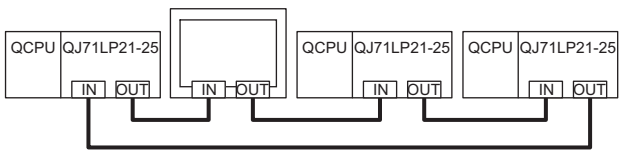
(a) Optical fiber cable connection method

1 Mount the optical fiber cable to the MELSECNET/H communication unit or the MELSECNET/10 communication unit.



(b) Wiring diagram

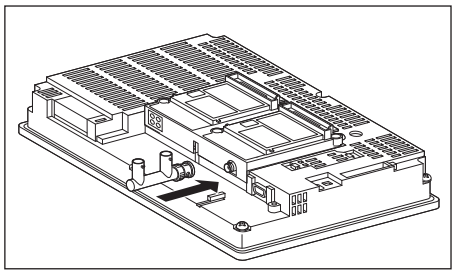
When connecting the adjacent stations, connect the IN with the adjacent OUT as follows.



(2) Coaxial cable

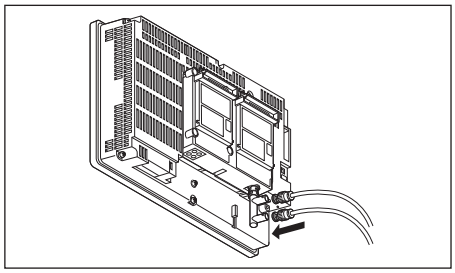
(a) Coaxial cable connection method

1 Mount the F-type connector to the MELSECNET/H communication unit or the MELSECNET/10 communication unit.



2 Mount the coaxial cable to the F-type connector.

If the MELSECNET/H communication unit or the MELSECNET/10 communication unit is a terminal station of the network, be sure to connect a terminating resistor (sold separately: A6RCON-R75) to the F-type connector.



Point

Precautions for connection of coaxial cable

Before connecting or disconnecting the coaxial connector, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may result in a MELSECNET/H or MELSECNET/10 communication unit malfunction.

(b) Coaxial cable connector connection method
The following describes the method for connecting the BNC connector (connector plug for coaxial cable) and the cable.

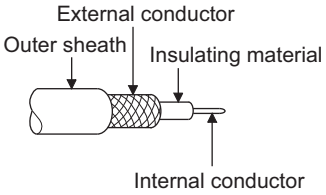
⚠ CAUTION

● Solder the coaxial cable connectors properly.
Insufficient soldering may result in malfunctions.

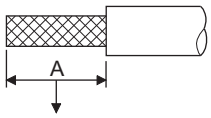
Components of the BNC connector



Structure of the coaxial cable



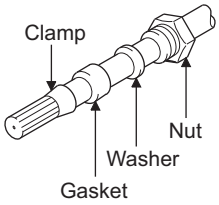
1 Remove the external sheath of the coaxial cable with dimensions as shown on the left.



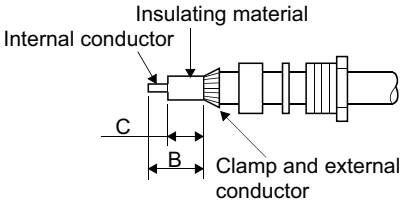
Cut this portion of the outer sheath

Cable in use	A
3C-2V	15mm
5C-2V, 5C-2V-CCY	10mm

2 Pass the nut, washer, gasket, and clamp through the coaxial cable as shown on the left and loosen the external conductor.

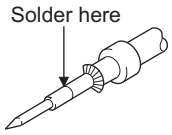


3 Cut the external conductor, insulting material, and internal conductor with the dimensions as shown on the left.
Note that the external conductor should be cut to the same dimension as the tapered section of the clamp and smoothed down to the clamp.

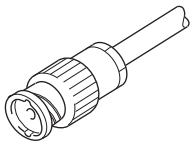


Cable in use	B	C
3C-2V	6mm	3mm
5C-2V, 5C-2V-CCY	7mm	5mm

4 Solder the contact to the internal conductor.



5 Insert the connector assembly shown in 4 into the plug shell and screw the nut into the plug shell.



Point

Precautions for soldering

Note the following precautions when soldering the internal conductor and contact.
- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

6.2.6 Verifying GOT recognizes controllers

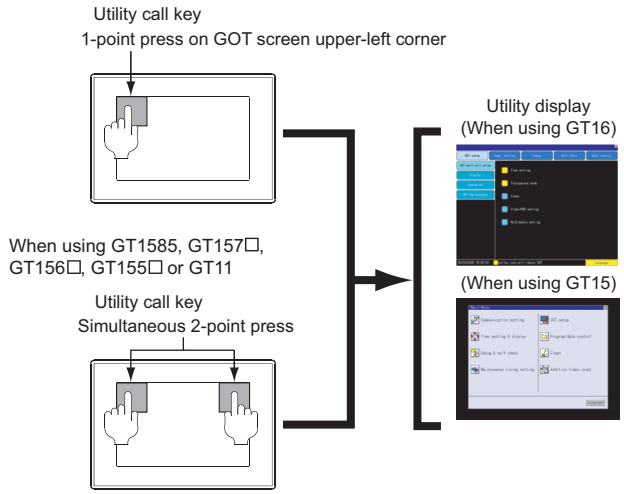
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

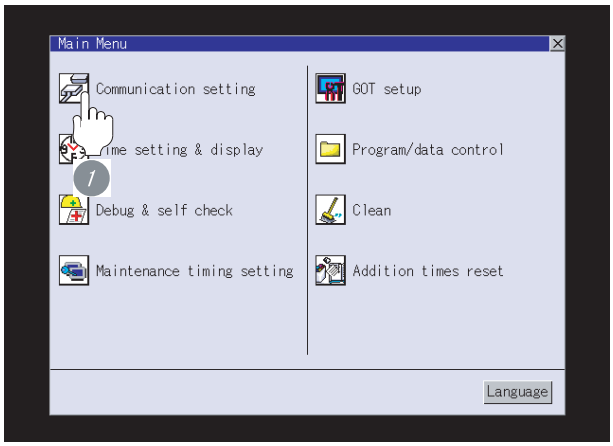


Point

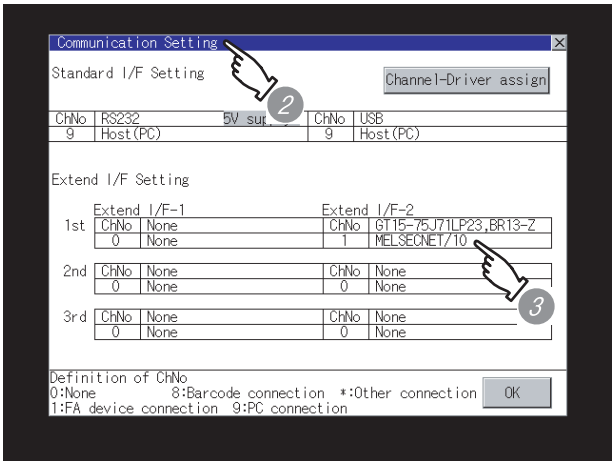
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication Settings] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver
  (When using the MELSCNET/H communication unit : MELSECNET/H)
  (When using the MELSCNET/10 Communication unit : MELSECNET/10)

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 6.3 PLC Side Setting

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

6.2.7 Checking for normal monitoring

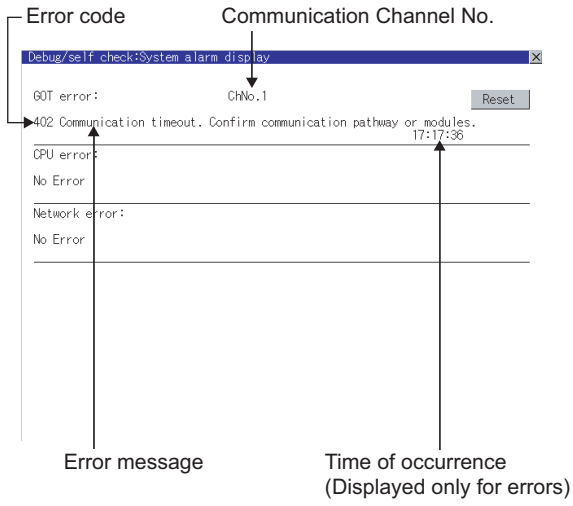
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

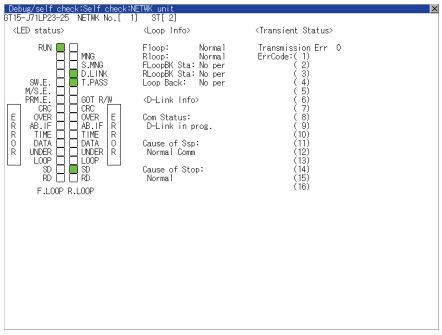
GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication status with network unit by GOT

The communication status between the GOT and the MELSECNET/10 network system can be confirmed by the Utility screen of the GOT.

For details on the operation method of the GOT Utility screen, refer to the following manual.

GT16 User's Manual (Basic Utility)
GT15 User's Manual



Point

Communication unit for displaying network module status

For displaying the network module status on the GOT, use the MELSECNET/H communication unit.
With the MELSECNET/10 communication unit, the GOT cannot display the network module status.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 6.3 PLC Side Setting

4 Checking the wiring state (for optical loop system only)

Check if the optical fiber cable is connected correctly in [Loop test] of GX Developer.

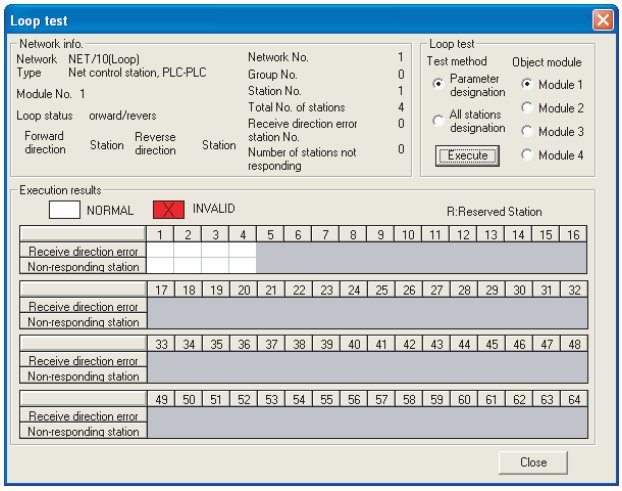
For the GX Developer operation method, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(1) Check the [Receive direction error]. (The display example on GX Developer Version 8)

Startup procedure

GX Developer → [Diagnostics] → [MELSECNET (II)/ 10/H diagnostics] → Loop test



5 Checking if the GOT is performed the data link correctly

Check if the GOT is performed the data link correctly in [Other station info.].

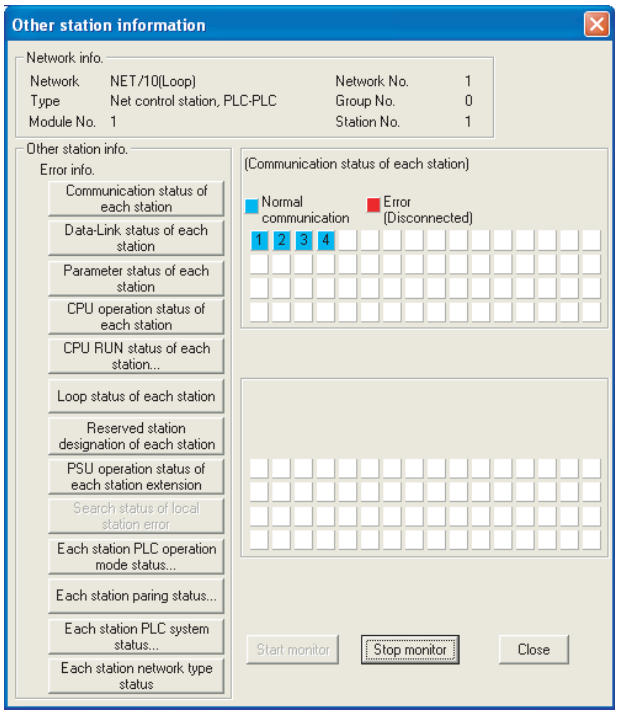
For the GX Developer operation method, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

(1) Check [Communication status of each station] and [Data-Link status of each station]. (The display example on GX Developer Version 8)

Startup procedure

GX Developer → [Diagnostics] → [MELSECNET (II)/ 10/H diagnostics] → Other station info.



All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

6.3 PLC Side Setting

Model name		Reference
MELSECNET/H network module	QJ71LP21, QJ71LP21-25, QJ71LP21S-25, QJ71BR11	Section 6.3.1
MELSECNET/10 network module (QnA Series)	AJ71QLP21, AJ71QLP21S, AJ71QBR11, A1SJ71QLP21, A1SJ71QLP21S, A1SJ71QBR11	Section 6.3.2
MELSECNET/10 network module (A Series)	AJ71LP21, AJ71BR11, A1SJ71LP21, A1SJ71BR11	Section 6.3.3

6.3.1 Connecting to MELSECNET/H network module

This section describes the settings of the GOT and MELSECNET/H network module in the case of system configuration shown as 1.

To connect the MELSECNET/H network module to the MELSECNET/10 network system, specify the MELSECNET/10 Mode as a network type.

Point

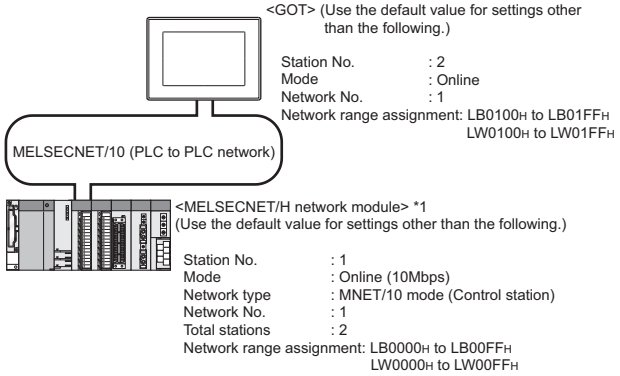
MELSECNET/H network module

For details of the MELSECNET/H network module, refer to the following manual.

☞ Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)

1 System configuration

☞ · 4 [Communication settings] of GT Designer2
· 5 Setting of the MELSECNET/10 communication unit



☞ · 2 Switch setting of MELSECNET/H network module
· 3 [Network parameter] of GX Developer

*1 The MELSECNET/H network module is mounted at slot 0 of the base unit.
The start I/O No. of the MELSECNET/H network module is set at "0".

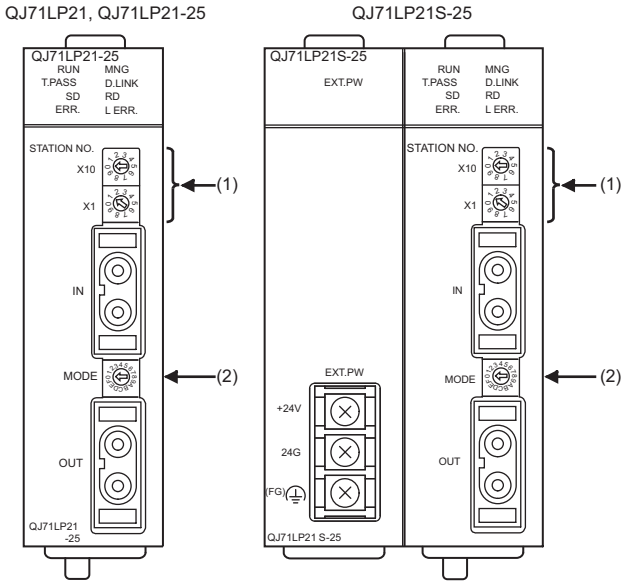
Point

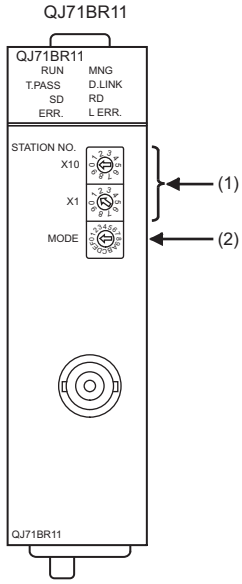
When connecting to Q170MCPU

When connected to Q170MCPU, the start I/O No. of the MELSECNET/H network module is set to "70".

2 Switch setting of MELSECNET/H network module

Set the station number setting switch and mode setting switch.





(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION NO. X10 X1	Station number setting (Station number)*1	1	○

○ : Necessary △ : As necessary × : Not necessary

*1 Set to not duplicate with the station No. of the GOT.

(2) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
MODE	Mode setting (Online:10Mbps)	0 (fixed)	○

○ : Necessary △ : As necessary × : Not necessary

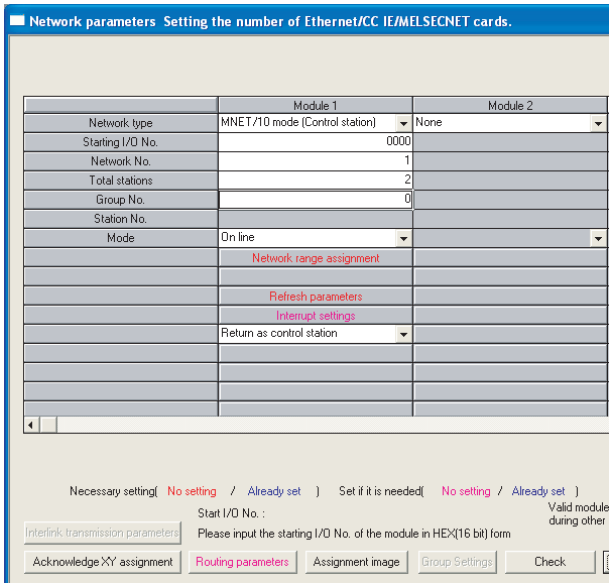
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

(1) Network parameter



Item	Setting	Setting necessity at GOT connection
Network type	MNET/10 mode (Control station) (fixed)	○
Starting I/O No.*1	0000H	○
Network No.*2	1	○
Total stations	2	○
Group No.	0 (fixed)	○
Mode	Online (fixed)	○
Network range assignment	Refer to (2)	△
Refresh parameters	(Use default value)	△
Interrupt settings		×
Control station return setting		△
Redundant settings*3		△
Interlink transmission parameters		×
Routing parameters	Refer to (3)	△

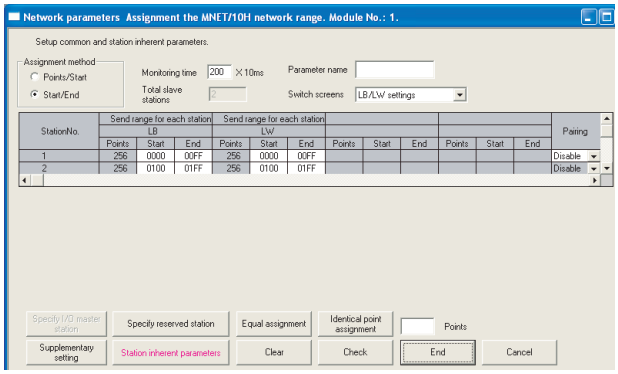
○ : Necessary △ : As necessary × : Not necessary

*1 When using Q170MCPU, set it according to the system configuration.

*2 Set the same network No. as that of the GOT.

*3 Set it when the MELSECNET/H network module is used in the redundant QnPRHCPU system.

(2) Network range assignment



Item				Setting	Setting necessity at GOT connection
Monitoring time				200	△
LB/LW setting*1	Send range for station (LB)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
	Send range for station (LW)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
	Pairing setting*2			Disable	△
LX/LY setting*1				No setting	△
Specify I/O master station*1				No setting	△
Specify reserved station				No setting	△
Supplementary setting				(Use default value)	△
Station inherent parameters					△

○: Necessary △: As necessary ×: Not necessary

*1 Be sure to set it to perform the cyclic transmission.

*2 Set it when the MELSECNET/H network module is used in the redundant QnPRHCPU system.

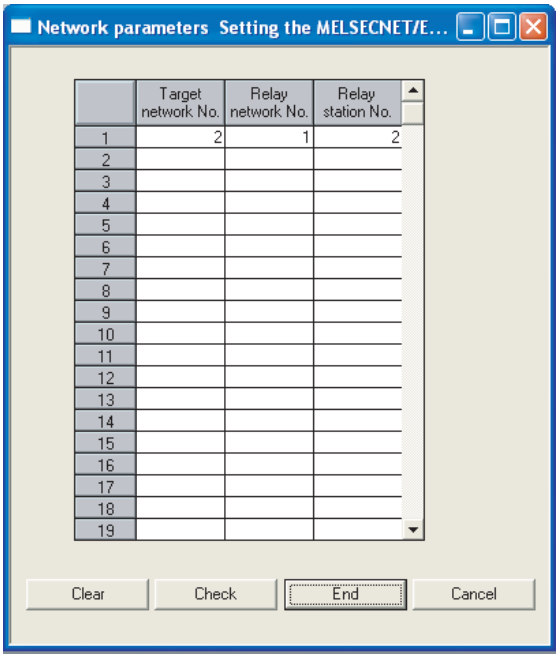
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(3) Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.
However, the same transfer network number cannot be set twice or more (multiple times).
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.



Item	Range
Target network No.	1 to 239
Relay network No.	1 to 239
Relay station No.	1 to 64

Point

Routing parameter setting of request source

Routing parameter setting is also necessary for the request source GOT.
For the setting, refer to the following.

☞ Section 6.2.3 3 Routing parameter setting

4 [Communication settings] of GT Designer2

Item	Setting (Use default)
Retry	3 Times
Timeout Time	3 Sec

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

☞ Section 6.2.3 Setting communication interface (Communication settings)

5 Setting of the MELSECNET/10 communication unit

Item	Setting
Network number setting switch	1: Network No.1
Group number setting switch	0: No group setting (fixed)
Station number setting switch	2: Station number 2
Mode setting switch	0: On-line (fixed)

Point

Setting of the MELSECNET/10 communication unit

For the setting method of the MELSECNET/10 communication unit, refer to the following.

☞ Section 6.2.3 Setting communication interface (Communication settings)

6.3.2 Connecting to MELSECNET/10 network module (QnA Series)

This section describes the settings of the GOT and MELSECNET/10 network module (QnA series) in the case of system configuration shown as 1 .

In this section, the network parameter (common parameter) of GX Developer is taken as an example to provide explanations.

Point

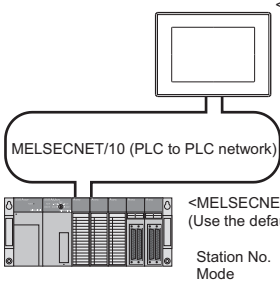
MELSECNET/10 network module (QnA Series)

For details of the MELSECNET/10 network module (QnA Series), refer to the following manual.

☞ For QnA/Q4AR MELSECET/10 Network Svstem Reference Manual

1 System configuration

☞ · 4 [Communication settings] of GT Designer2
· 5 Setting of the MELSECNET/10 communication unit



<GOT>
(Use the default value for settings other than the following.)

Station No. : 2
Mode : Online
Network No. : 1
Network range assignment: B0100H to B01FFH
W0100H to W01FFH

<MELSECNET/10 network module> *1
(Use the default value for settings other than the following.)

Station No. : 1
Mode : Online
Network type : MNET/10 (Controlling station)
Network No. : 1
Total stations : 2
Network range assignment: B0000H to B00FFH
W0000H to W00FFH

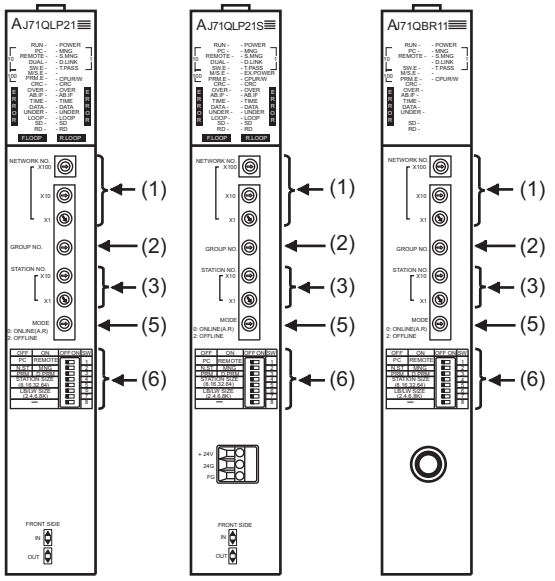
☞ · 2 Switch setting of MELSECNET/10 network module
· 3 [Network parameter] of GX Developer

*1 The MELSECNET/10 network module is mounted at slot 0 of the base unit.
The start I/O No. of the MELSECNET/10 network module is set at "0".

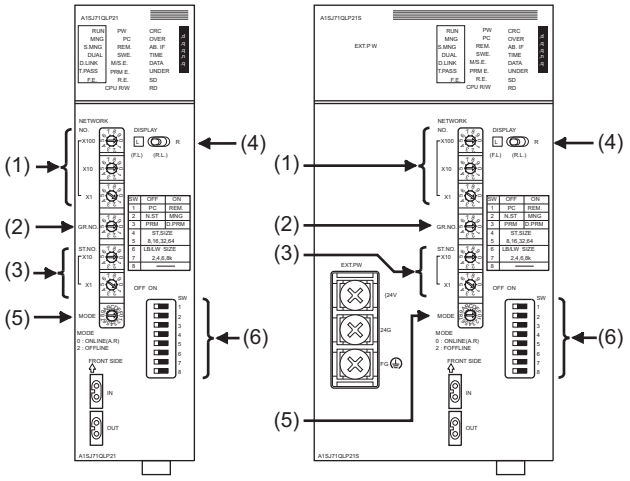
2 Switch setting of MELSECNET/10 network module

Set for each setting switch.

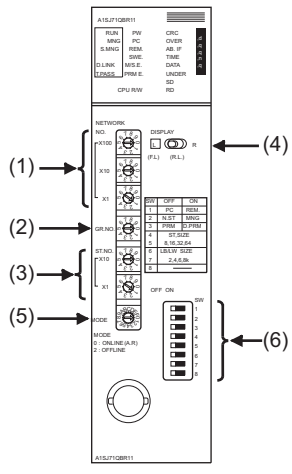
AJ71QLP21 AJ71QLP21S AJ71QBR11



A1SJ71QLP21 A1SJ71QLP21S



A1SJ71QBR11



(1) Network number setting switch

Network number setting switch	Description	Setting	Setting necessity at GOT connection
NETWORK NO. X100 / X10 / X1	Network No. setting (Network No.1)*1	1	○

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same network number as that of the GOT.

(2) Group number setting switch

Group number setting switch	Description	Setting	Setting necessity at GOT connection
GROUP.NO.	Group No. setting (No group setting)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(3) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION.NO. X10 / X1	Station No. setting (Station No. 1)*2	1	○

○: Necessary △: As necessary ×: Not necessary

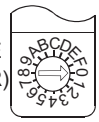
*2 Set to not duplicate with the station No. of the GOT.

(4) LED indication select switch

LED indication select switch	Description	Setting	Setting necessity at GOT connection
DISPLAY L (F.L) R (R.L.)	LED indication select	L (F.L.)	△

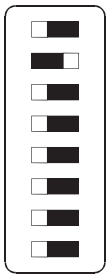
○: Necessary △: As necessary ×: Not necessary

(5) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
MODE 0 : ONLINE(A.R) 2 : OFFLINE 	Mode setting (Online)	0 (fixed)	○

○ : Necessary △ : As necessary × : Not necessary

(6) Condition setting switches

Condition setting switches	Setting switch	Description	Setting	Setting necessity at GOT connection
OFF ON SW 1 2 3 4 5 6 7 8 	SW1	Network type (PLC to PLC network (PC))	OFF (fixed)	○
	SW2	Station type (Control station (MNG))	ON (fixed)	○
	SW3	Parameter for using*1 (common parameter (PRM))	OFF (fixed)	○
	SW4 SW5	No. of stations*1	OFF (fixed)	×
	SW6 SW7	Total B/W points*1	OFF (fixed)	×
	SW8	Not used	OFF (fixed)	×

○ : Necessary △ : As necessary × : Not necessary

*1 The MELSECNET/10 network module can be communicated by default parameters.
For details, refer to the following manual.

☞ For QnA/Q4AR MELSECNET/10 Network System Reference Manual

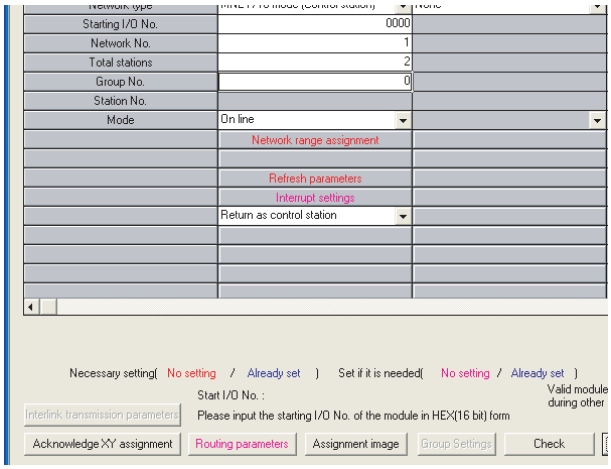
Point

When the switch setting (other than the LED indication select switch) is changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

(1) Network parameter

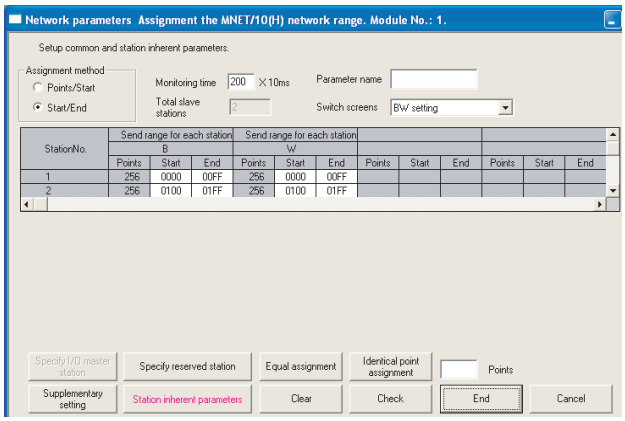


Item	Setting	Setting necessity at GOT connection
Network type	MNET/10 (Controlling station) (fixed)	○
Start I/O No.	0000H	○
Network No.*1	1	○
Total stations	2	○
Network range assignment	Refer to (2)	△
Refresh parameters	(Use default value)	△
Interlink transmission parameters		×
Routing parameters	Refer to (3)	△

○ : Necessary △ : As necessary × : Not necessary

*1 Specify the same network No. as that of the network number setting switch of the MELSECNET/10 network module.

(2) Network range assignment



Item				Setting	Setting necessity at GOT connection
Monitoring time				200	△
BW setting *1	Send range for station (B)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
	Send range for station (W)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
XY setting*1				No setting	△
Specify I/O master station*1				No setting	△
Specify reserved station				No setting	△
Supplementary setting				(Use default value)	△
Station inherent parameters					△

○: Necessary △: As necessary ×: Not necessary

*1 Be sure to set the setting to perform the cyclic transmission.

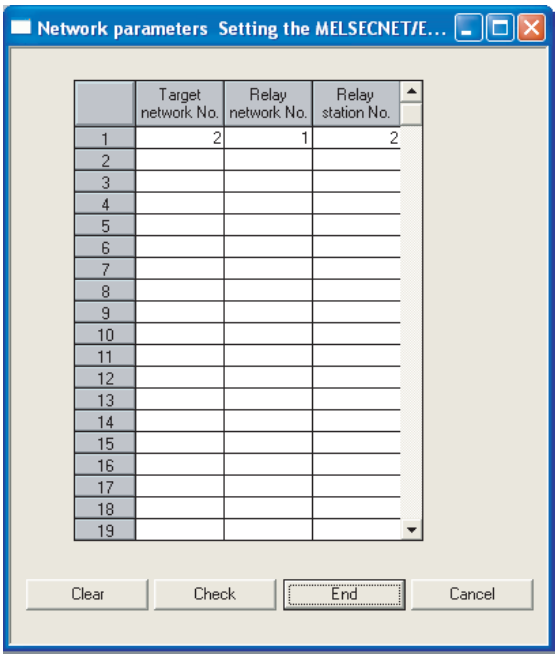
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(3) Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.
However, the same transfer network number cannot be set twice or more (multiple times).
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.



Item	Range
Target network No.	1 to 239
Relay network No.	1 to 239
Relay station No.	1 to 64

Point

Routing parameter setting of request source

Routing parameter setting is also necessary for the request source GOT.
For the setting, refer to the following.

☞ Section 6.2.3 3 Routing parameter setting

4 [Communication settings] of GT Designer2

Item	Setting (Use default)
Retry	3 Times
Timeout Time	3 Sec

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

☞ Section 6.2.3 Setting communication interface (Communication settings)

5 Setting of the MELSECNET/10 communication unit

Item	Setting
Network number setting switch	1: Network No.1
Group number setting switch	0: No group setting (fixed)
Station number setting switch	2: Station number 2
Mode setting switch	0: On-line (fixed)

Point

Setting of the MELSECNET/10 communication unit

For the setting method of the MELSECNET/10 communication unit, refer to the following.

☞ Section 6.2.3 Setting communication interface (Communication settings)

6.3.3 Connecting to MELSECNET/10 network module (A Series)

This section describes the settings of the GOT and MELSECNET/10 network module (A Series) in the case of system configuration shown as 1 .

In this section, the network parameter (common parameter) of GX Developer is taken as an exmaple to provide explanations.

Point

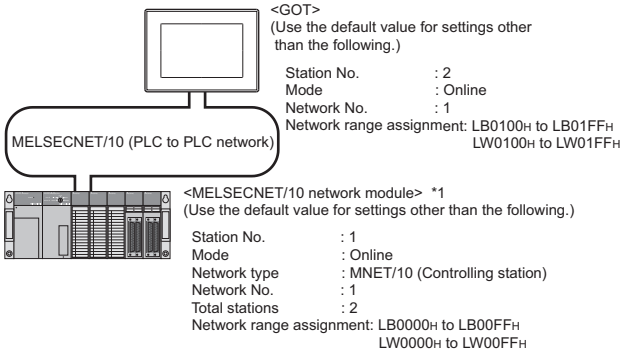
MELSECNET/10 network module (A Series)

For details of the MELSECNET/10 network module (A Series), refer to the following manual.

☞ Type MELSECNET/10 Network system (PLC to PLC network) Reference Manual

1 System configuration

☞ · 4 [Communication settings] of GT Designer2
· 5 Setting of the MELSECNET/10 communication unit



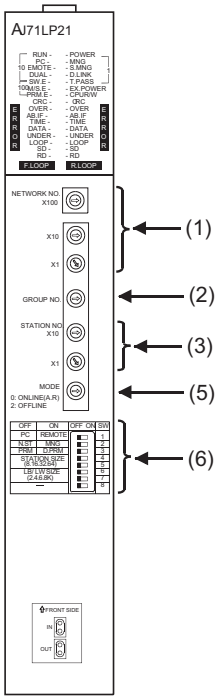
☞ · 2 Switch setting of MELSECNET/10 network module
· 3 [Network parameter] of GX Developer

*1 The MELSECNET/10 network module is mounted at slot 0 of the base unit.
The start I/O No. of the MELSECNET/10 network module is set at "0".

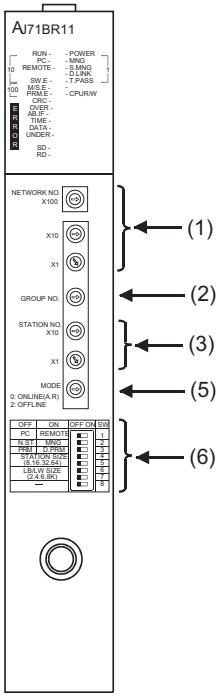
2 Switch setting of MELSECNET/10 network module

Set for each setting switch.

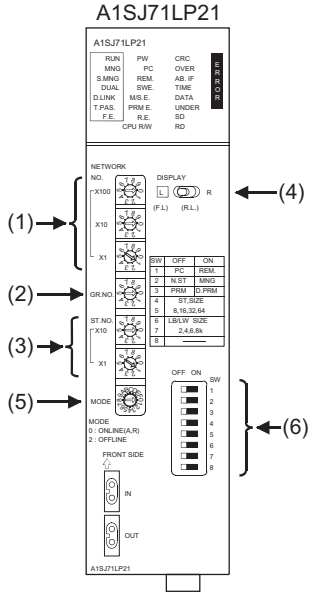
AJ71LP21



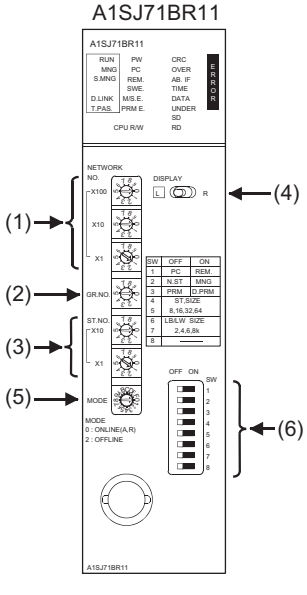
AJ71BR11



A1SJ71LP21



A1SJ71BR11



(1) Network number setting switch

Network number setting switch	Description	Setting	Setting necessity at GOT connection
NETWORK NO. X100 X10 X1	Network No. setting (Network No.1)*1 *2	1	○

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same network No. as that of the GOT.

*2 Do not specify a number between 240 and 255.

(2) Group number setting switch

Group number setting switch	Description	Setting	Setting necessity at GOT connection
GROUP.NO.	Group No. setting (No group setting)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(3) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION.NO. X10 X1	Station No. setting (Station number 1)*3	1	○

○: Necessary △: As necessary ×: Not necessary

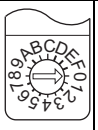
*3 Set to not duplicate with the station No. of the GOT.

(4) LED indication select switch

LED indication select switch	Description	Setting	Setting necessity at GOT connection
DISPLAY L R (F.L) (R.L.)	LED indication select	L (F.L.)	△

○: Necessary △: As necessary ×: Not necessary

(5) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
MODE 0:ONLINE(A.R) 2:OFFLINE 	Mode setting (Online)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(6) Condition setting switches

Condition setting switches	Setting switch	Description	Setting	Setting necessity at GOT connection
OFF ON SW  1 2 3 4 5 6 7 8	SW1	Network type (PLC to PLC network (PC))	OFF (fixed)	○
	SW2	Station type (Control station (MNG))	ON (fixed)	○
	SW3	Parameter for using*1 (common parameter (PRM))	OFF (fixed)	○
	SW4	No. of stations*1	OFF (fixed)	×
	SW5			
	SW6	Total B/W points*1	OFF (fixed)	×
	SW7			
	SW8	Not used	OFF (fixed)	×

○: Necessary △: As necessary ×: Not necessary

*1 The MELSECNET/10 network module can be communicated by default parameters.
For details, refer to the following manual.

Type MELSECNET/10 Network system (PLC to PLC network) Reference Manual

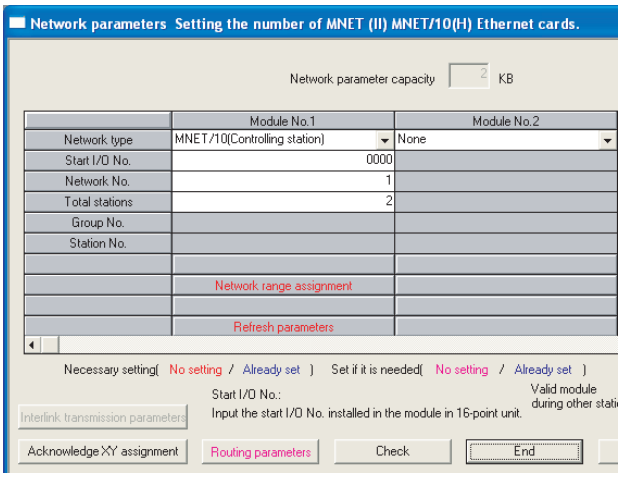
Point

When the switch setting (other than the LED indication select switch) is changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

(1) Network parameter

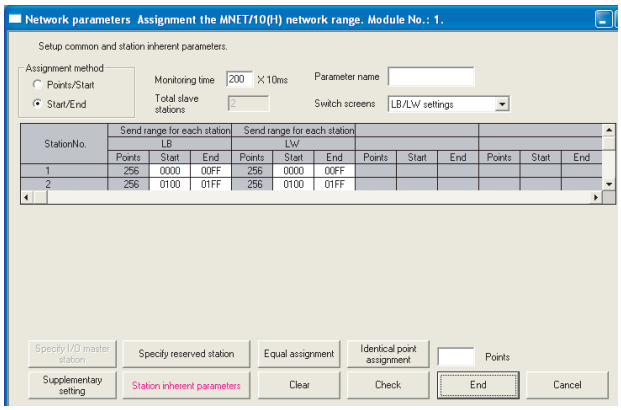


Item	Setting	Setting necessity at GOT connection
Network type	MNET/10 (Controlling station) (fixed)	○
Start I/O No.	0000H	○
Network No.*1	1	○
Total stations	2	○
Network range assignment	Refer to (2)	△
Refresh parameters	(Use default value)	△
Interlink transmission parameters		×
Routing parameters	Refer to (3)	△

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same network No. as that of the network number setting switch of the MELSECNET/10 network module.

(2) Network range assignment



Item				Setting	Setting necessity at GOT connection
Monitoring time				200	△
LB/LW settings *1	Send range for each station (LB)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
	Send range for each station (LW)	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
LX/LY settings*1				No setting	△
Specify I/O master station*1				No setting	△
Specify reserved station				No setting	△
Supplementary setting				(Use default value)	△
Station inherent parameters					△

○: Necessary △: As necessary ×: Not necessary
*1 Be sure to set to perform the cyclic transmission.

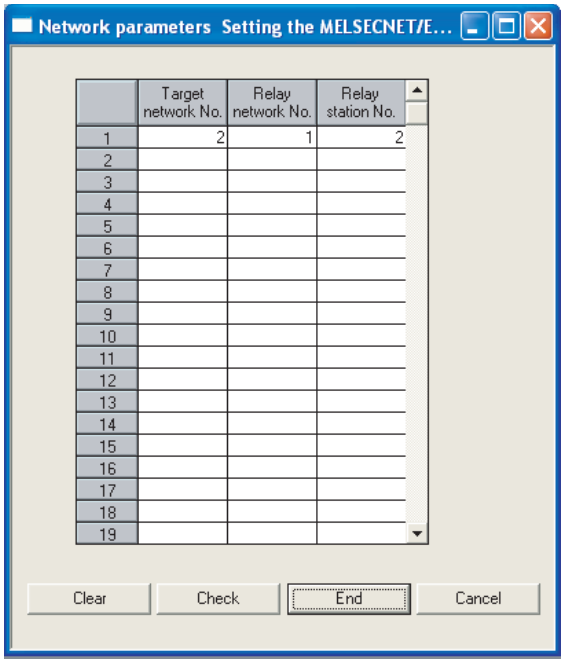
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(3) Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.
However, the same transfer network number cannot be set twice or more (multiple times).
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.



Item	Range
Target network No.	1 to 239
Relay network No.	1 to 239
Relay station No.	1 to 64

Point

Routing parameter setting of request source

Routing parameter setting is also necessary for the request source GOT.
For the setting, refer to the following.

☞ Section 6.2.3 3 Routing parameter setting

4 [Communication settings] of GT Designer2

Item	Setting (Use default)
Retry	3 Times
Timeout Time	3 Sec

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

☞ Section 6.2.3 Setting communication interface (Communication settings)

5 Setting of the MELSECNET/10 communication unit

Item	Setting
Network number setting switch	1: Network No.1
Group number setting switch	0: No group setting (fixed)
Station number setting switch	2: Station number 2
Mode setting switch	0: On-line (fixed)

Point

Setting of the MELSECNET/10 communication unit

For the setting method of the MELSECNET/10 communication unit, refer to the following.

☞ Section 6.2.3 Setting communication interface (Communication settings)

6.4 Precautions

1 Network configuration

Use the MELSECNET/10 mode of MELSECNET/H (PLC to PLC network) or MELSECNET/10 (PLC to PLC network) to configure a network including the GOT.

(1) The following networks including the GOT cannot be configured.
- MELSECNET/10 (Remote I/O network)
- MELSECNET/H (Remote I/O network)

(2) When configuring the network (MELSECNET/H (PLC to PLC network) including the GOT, refer to the following.

☞ Chapter 5 MELSECNET/H CONNECTION (PLC TO PLC NETWORK)

2 Monitoring range

Only PLC CPU of the same networks No. can be monitored in GOT.
For details, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

3 Starting GOT with MELSECNET/10 connection

With the MESLSECNET/10 connection, the data link starts approximately 10 seconds after the GOT starts.

4 When system alarm regarding network error occurs

When a system alarm regarding a network error occurs with the MELSECNET/10 connection, the system alarm is kept displaying on the GOT even though the error factor is removed.
For clearing the displayed system alarm, restart the GOT.

5 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.
QCPU (Q mode), motion controller (Q series): 10 seconds or more
MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs. Adjust the opening screen time in the GOT setup so that no system alarm occurs.

☞ GT Designer2 Version □ Screen Design Manual

6 Connecting to QCPU (Q mode)

Use function version B or later of the MELSECNET/H network module and QCPU (Q mode).

7 With Q17nDCPU, Q170MCPU, CNC C70, CRnQ-700

The Q17nDCPU, Q170MCPU, CNC C70 and CRnQ-700 are applicable to the MELSECNET/H connection (PLC to PLC network) only.
For connecting the GOT to the MELSECNET/10 network system (PLC to PLC network), set the MELSECNET/H network system (PLC to PLC network) to the MELSECNET/10 mode.

8 When using the QSCPU

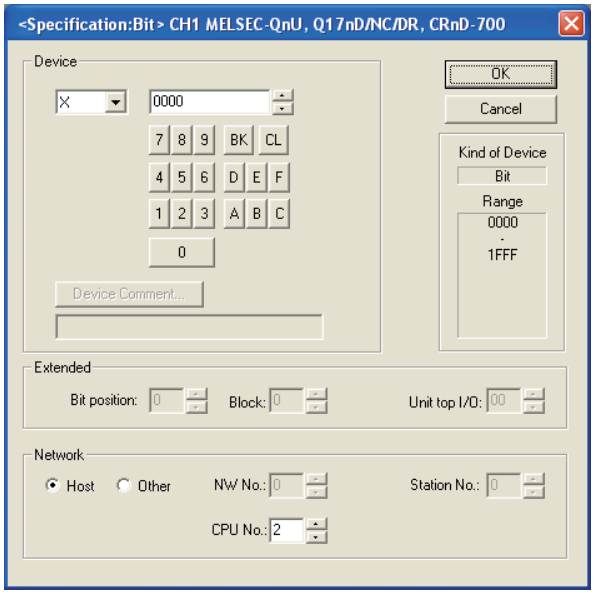
The GOT can only read device data and sequence programs by the ladder monitor function in the QSCPU.
The GOT cannot write any data to the QSCPU.

9 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



6.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
MELSECNET/10 connection (PLC to PLC network)	Supporting the MELSECNET/10 connection (PLC to PLC network)	2.09K	Communication driver MELSECNET/10 [01.02.**]
	Supporting the MELSECNET/10 mode of the communication unit for the MELSECNET/H (The communication unit uses the GT15-J71LP23-25 and the GT15-J71BR13, and the communication driver uses the MELSECNET/H.)	2.43V	Communication driver MELSECNET/H [03.01.**]
	Supporting the routing parameter setting by GT Designer2	2.43V	Communication driver MELSECNET/H [03.01.**]
Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q172DCPU, Q173DCPU, Q173NCCPU	2.63R	Communication driver MELSECNET/H [03.06.**]
Robot controller connection	Supporting the connection to CRnQ-700	2.73B	Communication driver MELSECNET/H [03.09.**]
Applicable CPU	Supporting the connection to the following CPUs Q13UDHCPU, Q26UDHCPU	2.77F	Communication driver MELSECNET/H [03.12.**]
Applicable CPU	Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q02PHCPU, Q06PHCPU, QS001CPU	2.82L	Communication driver MELSECNET/H [03.13.**]
MELSECNET/10 connection (PLC to PLC network)	Supporting the connection to GT16	2.90U	Communication driver MELSECNET/H [04.02.**]
Applicable CPU	Supporting the connection to the following CPUs Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU	2.91V	Communication driver MELSECNET/H [04.03.**]
Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver MELSECNET/H [04.04.**]

MEMO

7

CC-Link IE CONTROLLER NETWORK CONNECTION



7.1 System Configuration . . . . . page 7-2
This section describes the equipment and cables needed for CC-Link IE controller network connection.
Select a system suitable for your application.

7.2 Preparatory Procedures for Monitoring . . . . . page 7-5
This section describes the procedures to be followed before monitoring in CC-Link IE controller network connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

7.3 PLC Side Setting . . . . . page 7-13
The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

7.4 Precautions . . . . . page 7-15
This section describes the precautions on CC-Link IE controller network connection.
Be sure to read this when establishing CC-Link IE controller network connection.

7.5 List of Functions Added by Version Upgrade . . . . . page 7-17
This section describes the functions added by version upgrade of GT Designer2 or OS.

7.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

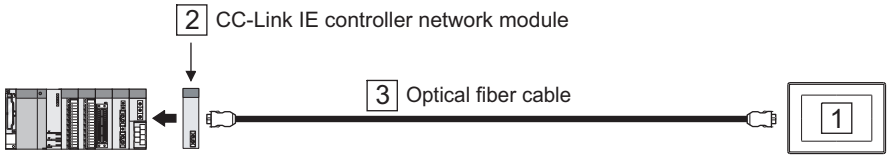
Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.

7.1.1 Connecting to optical loop system

Communication driver

CC-Link IE Controller Network

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
119*1 (max.)	*2	

*1 When Universal model QCPUs is a control station.
When a QCPU other than Universal model QCPU is a control station, the number of connectable GOTs is 63 units (at most).
Basic model QCPU and the QSCPU cannot be used as the control station.

*2 The overall extension cable length and the length between stations vary depending on the cable type to be used and the total number of stations.
For details, refer to the following manual.
CC-Link IE Controller Network Reference Manual

2 System equipment

(1) GOT

Image	No	Name	Model name	Model
	1	CC-Link IE controller network communication unit • For optical loop system	GT15-J71GP23-SX	GT16 GT15

(2) PLC

Image	No	Name	Model name
	2	CC-Link IE controller network module*3	QJ71GP21-SX, QJ71GP21S-SX

*3 For the system configuration on the CC-Link IE controller network module side, refer to the following manual.
CC-Link IE Controller Network Reference Manual

(3) Cable

Image	No	Name	Model name
	3	Optical fiber cable	For the optical fiber cable, refer to the following manual. CC-Link IE Controller Network Reference Manual

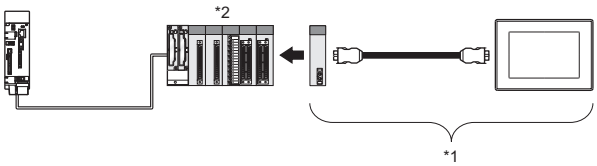
7.1.2 Connecting to the motion controller CPU (Q170MCPU)

Communication driver

CC-Link IE Controller Network

The following shows the system configuration and connection conditions between Q170MCPU and the GOT. The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for the QCPU.
(☞ Section 7.1.1 Connecting to optical loop system)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
*1	*1		GT16 GT15

*1 The system configuration and connection conditions are same as those for connecting a GOT to the QCPU (Q mode).

*2 Only the first step can be used on the extension base unit (Q52B/Q55B).

7.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS on the GOT.

☞ Section 7.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 7.2.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 7.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 7.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 7.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 7.2.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 7.2.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

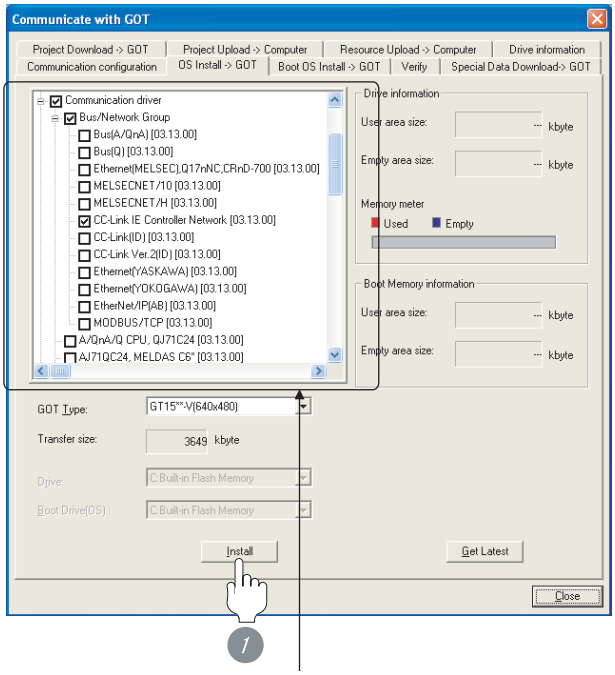
☞ Section 7.3 PLC Side Setting

7.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• CC-Link IE Controller Network

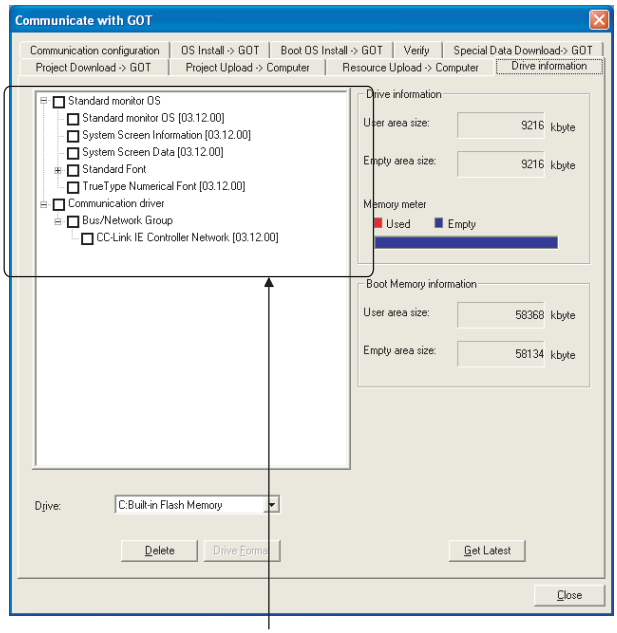
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

7.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: CC-Link IE Controller Network

7.2.3 Setting communication interface (Communication settings)

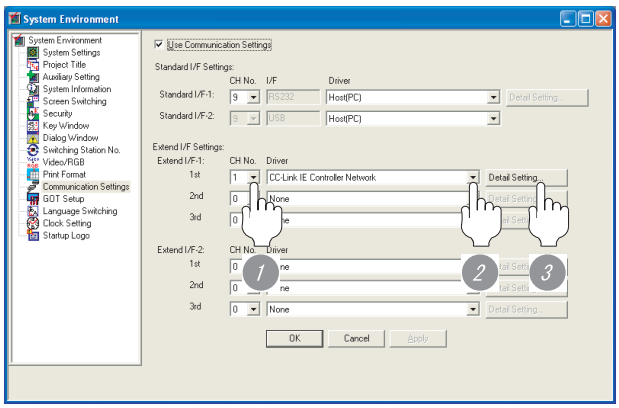
Make the GOT communication interface settings on [Communication Setting] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



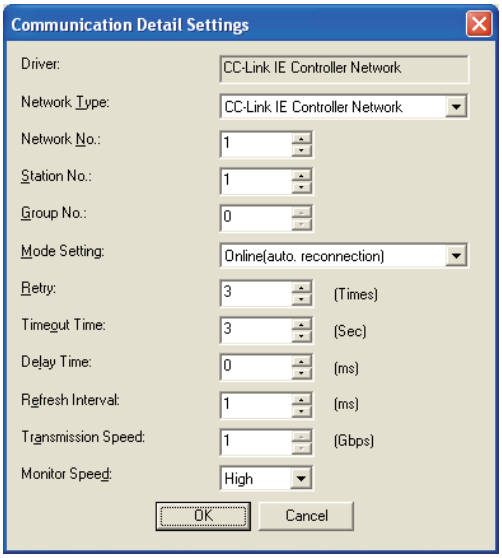
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to [CC-Link IE Controller Network].

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Network No.	Set the network No. <Default: 1>	1 to 239
Station No.	Set the station No. of the GOT. <Default: 1>	1 to 120
Mode Setting	Set the operation mode of the GOT. <Default: Online (auto. reconnection)>	• Online (auto. reconnection) • Offline • Test station *1 • Self-loopback test *1 • Line test *1 • H/W test *1
Retry	Set the number of retries to be performed when a communication times out. When no response is received after retries, a communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/destination PLC. <Default: 0ms>	0 to 300 ms
Refresh Interval	Set the number of refreshes to secure the send/receive data in station units during communication. <Default: 1 ms> Valid when [Block data assurance per station is available.] is checked by the control station side network parameters of the CC-Link IE controller network.	1 to 1000 ms
Monitor Speed	Set the monitor speed for the CC-Link IE controller network. <Default: High>	High/Normal/Low

*1 For details, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual

Point

(1) Switch setting example
For the switch setting example, refer to the following.
☞ Section 7.3 PLC Side Setting

(2) Communication interface setting by Utility
The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
☞ GT ☐ User's Manual

(3) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

3 Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.

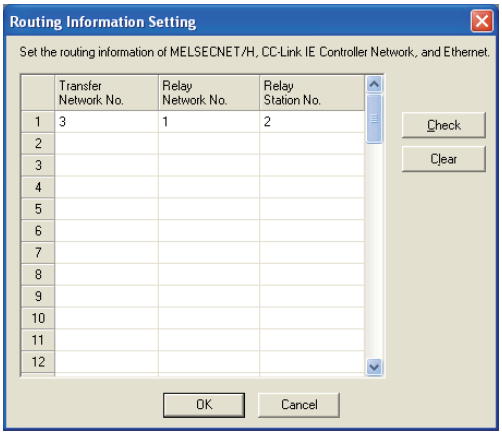
However, the same transfer network number cannot be set twice or more (multiple times).

Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.

Point

Routing parameter setting

When communicating within the host network, routing parameter setting is unnecessary.
For details of routing parameters, refer to the following manual.
☞ CC-Link IE Controller Network Reference Manual



Item		Range
Transfer Network No.		1 to 239
Relay Network No.		1 to 239
Relay Station No.	Universal model QCPU	1 to 120
	QCPU other than Universal model QCPU *1	1 to 64

*1 Basic model QCPU and the QSCPU are not included.

Point

Routing parameter setting of relay station

Routing parameter setting is also necessary for the relay station.
For the setting, refer to the following.

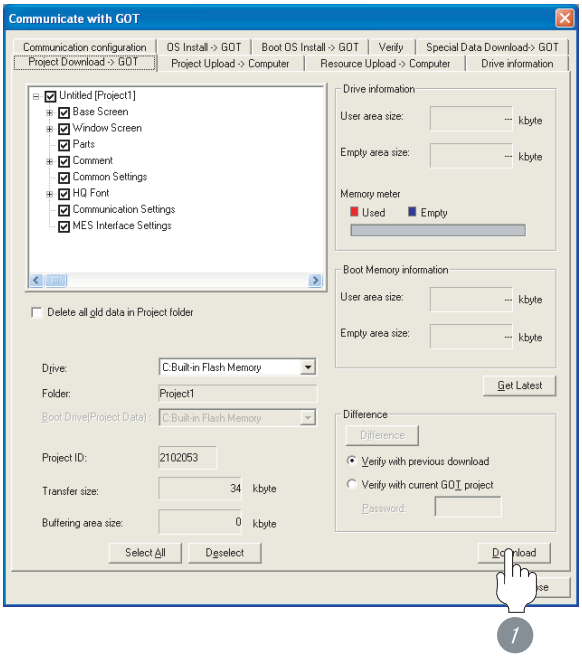
☞ Section 7.3 PLC Side Setting

7.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

7.2.5 Attaching communication unit and connecting cable

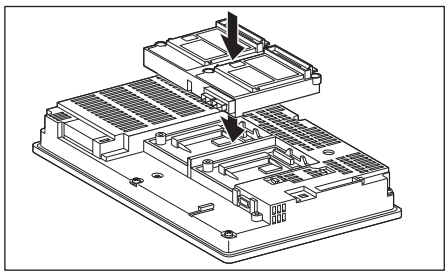
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Mount the CC-Link IE controller network communication unit on the extension unit connector of the GOT.



Point

CC-Link IE controller network communication unit

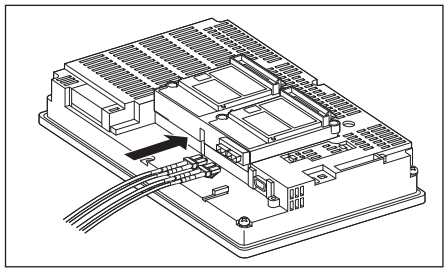
For details of mounting the CC-Link IE controller network communication unit, refer to the following manual.

☞ GT15 CC-Link IE CONTROLLER NETWORK COMMUNICATION UNIT

2 Connecting the cable

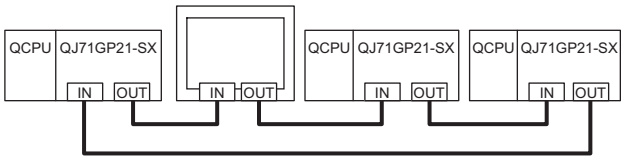
(1) Optical fiber cable connection method

1 Mount the optical fiber cable to the CC-Link IE controller network communication unit.



(2) Wiring diagram

When connecting the adjacent stations, connect the IN with the adjacent OUT as follows.



7.2.6 Verifying GOT recognizes controllers

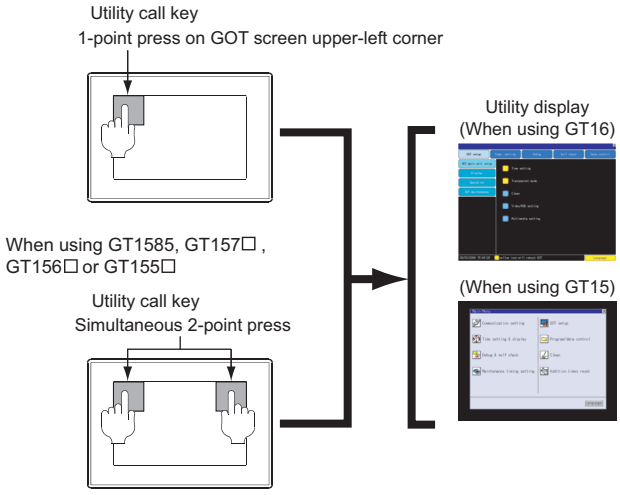
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

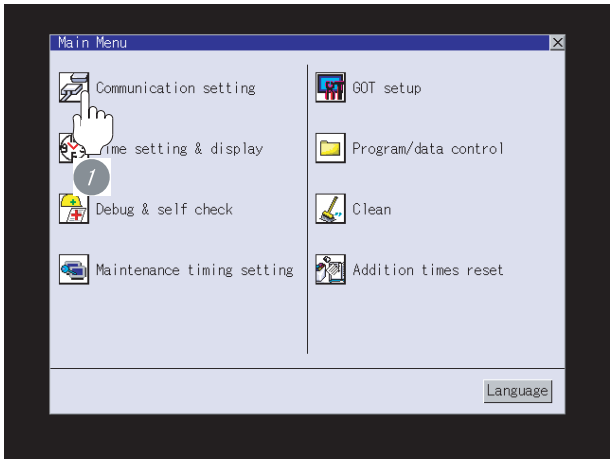


Point

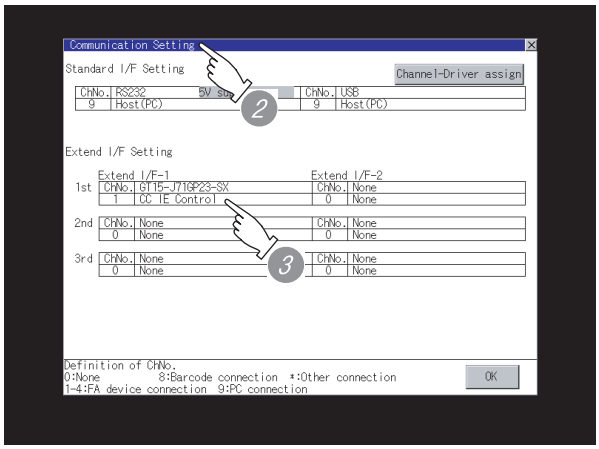
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: CC IE Control

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 7.3 PLC Side Setting

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

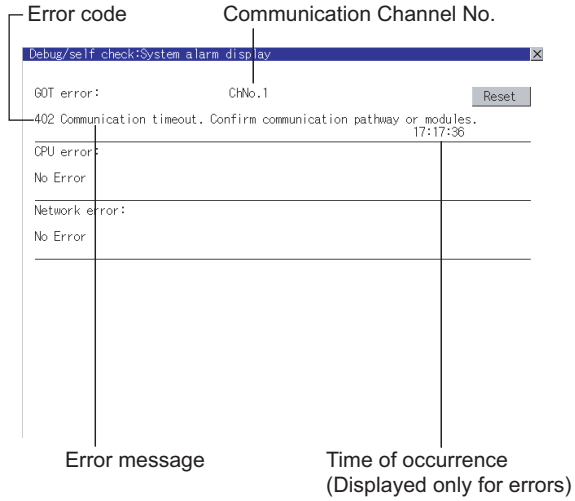
7.2.7 Checking for normal monitoring

1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

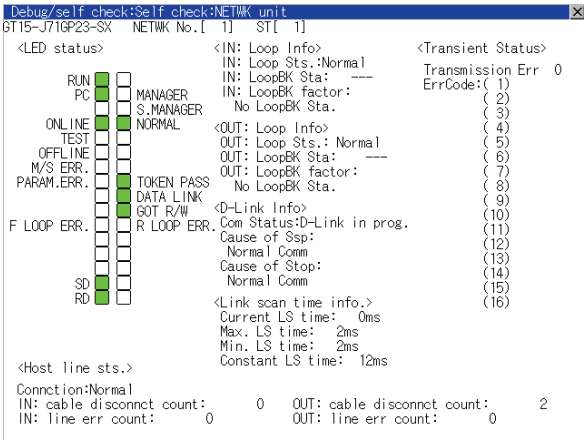
GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication status with network unit by GOT

The communication status between the GOT and CC-Link IE controller network can be confirmed by the utility screen of the GOT.

For details on the operation method of the GOT Utility screen, refer to the following manual.

GT16 User's Manual (Basic Utility)
GT15 User's Manual



3 Checking the wiring state of the fiber-optic cable

Check if the fiber-optic cable is connected correctly to all the modules in the CC-Link IE controller network.

Perform the line test from the control station of the CC-Link IE controller network to check the wiring state of the fiber-optic cable.

For the line testing method, refer to the following manual.

CC-Link IE Controller Network Reference Manual

4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 7.3 PLC Side Setting

5 Checking the wiring state (for optical loop system only)

Use the diagnostics function of GX Developer to check if the GOT is correctly performed the data link.

For the GX Developer operation method, refer to the following manual.

☞ CC-Link IE Controller Network Reference Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

7.3 PLC Side Setting

This section describes the settings of the GOT and CC-Link IE controller network module in the case of system configuration shown as 1.

Point

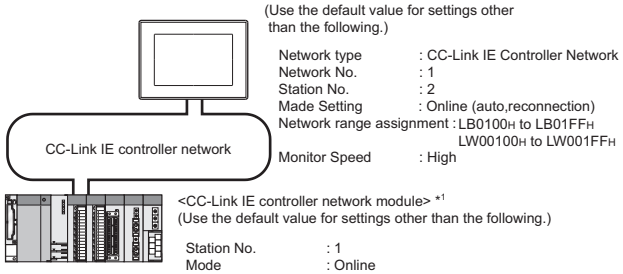
CC-Link IE controller network module

For details of the CC-Link IE controller network module, refer to the following manual.

☞ CC-Link IE Controller Network Reference Manual

1 System configuration

☞ · 4 [Communication settings] of GT Designer2



☞ · 2 [Network parameter] of GX Developer

*1 The CC-Link IE controller network module is mounted on slot 0 of the base unit.
The start I/O No. of the CC-Link IE controller network module is set at [0].

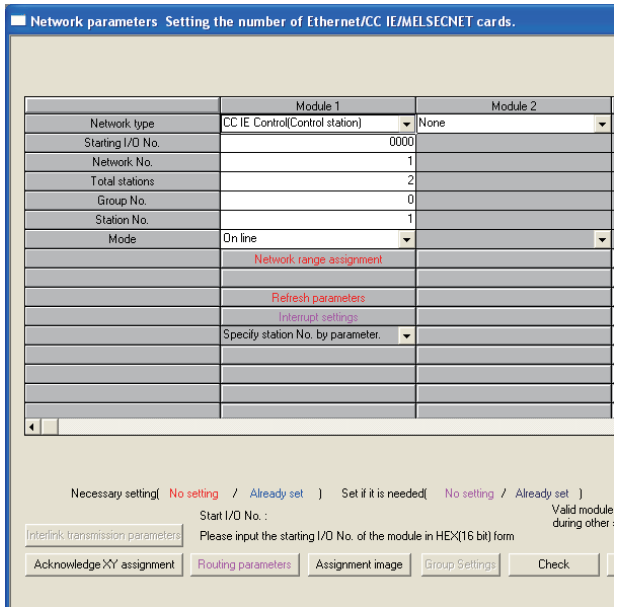
Point

When connecting to Q170MCPU

When connected to Q170MCPU, the start I/O No. of the CC-Link IE controller network module is set to "70".

2 [Network parameter] of GX Developer

(1) Network parameter



Item	Setting	Setting necessity at GOT connection
Network type	CC IE Control (Control station) (fixed)	○
Starting I/O No.*1	0000H	○
Network No.*2	1	○
Total stations	2	○
Group No.	0 (fixed)	○
Station No.	1	○
Mode*3	Online	○
Network range assignment	Refer to (2)	△
Refresh parameters	(Use default value)	△
Interrupt settings		×
Interlink transmission parameters		×
Routing parameters	Refer to (3)	△

○: Necessary △: As necessary ×: Not necessary

*1 When using Q170MCPU, set it according to the system configuration.
*2 Set the same network No. as that of the GOT.
*3 Set the same mode setting as that of the GOT.

(2) Network range assignment

Item				Setting	Setting necessity at GOT connection
Monitoring time				2000	△
LB/LW setting(1) *1	LB	Station No.1	Start	0000H	△
			End	00FFH	△
		Station No.2	Start	0100H	△
			End	01FFH	△
	LW	Station No.1	Start	00000H	△
			End	000FFH	△
		Station No.2	Start	00100H	△
			End	001FFH	△
LX/LY setting*1				No setting	△
Specify I/O master station*1				No setting	△
Specify reserved station				No setting	△
Supplementary setting				(Use default value)	△

○: Necessary △: As necessary ×: Not necessary

*1 Be sure to set it to perform the cyclic transmission.

Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(3) Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.
However, the same transfer network number cannot be set twice or more (multiple times).
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.

Item	Range
Target network No.	1 to 239
Relay network No.	1 to 239
Relay station No.	1 to 120

Point

Routing parameter setting of request source

Routing parameter setting is also necessary for the request source GOT.
For the setting, refer to the following.

☞ Section 7.2.3 3 Routing parameter setting

3 [Communication settings] of GT Designer2

Item	Setting
Network No.	1: Network No.1
Station No.	2: Station No.2
Mode Setting	Online (auto. reconnection)
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0 ms(Use default value.)
Refresh Interval	1 ms(Use default value.)
Monitor Speed	High(Use default value.)

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

☞ Section 7.2.3 Setting communication interface (Communication settings)

7.4 Precautions

1 Monitoring range

Only PLC CPU of the same networks No. can be monitored in GOT.
For details, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

2 GOT startup in CC-Link IE controller network connection

For the CC-Link IE controller network connection, the data link is started approximately 13 seconds after the GOT startup.

3 When a network error occurs in the system alarm

In the CC-Link IE controller network connection, when a network error occurs in the system alarm, the system alarm display cannot be canceled even though the causes are removed.
To cancel the system alarm display, restart the GOT.

4 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.
QCPU (Q mode), motion controller (Q series): 10 seconds or more
MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs.
Adjust the opening screen time in the GOT setup so that no system alarm occurs.

☞ GT Designer2 Version □ Screen Design Manual

5 CC-Link IE controller network module version

For version restrictions of the CC-Link IE controller network module, refer to the following manual.

☞ CC-Link IE Controller Network Reference Manual

6 When using the QSCPU

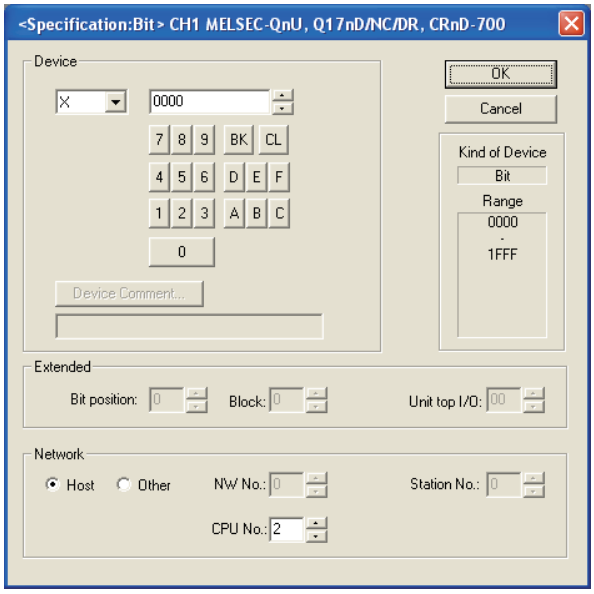
The GOT can only read device data and sequence programs by the ladder monitor function in the QSCPU.
The GOT cannot write any data to the QSCPU.

7 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



7.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
CC-Link IE controller network connection	Supporting the CC-Link IE controller network connection	2.77F	Communication driver CC-Link IE Controller Network [03.12.**]
Applicable CPU	Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q00JCPU, Q00CPU, Q01CPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, QS001CPU	2.82L	Communication driver CC-Link IE Controller Network [03.13.**]
CC-Link IE controller network connection	Supporting the connection to GT16	2.90U	Communication driver CC-Link IE Controller Network [04.02.**]
Applicable CPU	Supporting the connection to the following devices Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU	2.91V	Communication driver CC-Link IE Controller Network [04.03.**]
Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver CC-Link IE controller network [04.04.**]

MEMO

8

CC-Link CONNECTION (INTELLIGENT DEVICE STATION)



8.1 System Configuration . . . . . page 8-2

This section describes the equipment and cables needed for CC-Link connection (intelligent device station).
Select a system suitable for your application.

8.2 Preparatory Procedures for Monitoring . . . . . page 8-8

This section describes the procedures to be followed before monitoring in CC-Link connection (intelligent device station).
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

8.3 PLC Side Setting . . . . . page 8-18

The PLC side settings for GOT connection are explained.

When checking the PLC side settings, refer to this section.

8.4 Precautions . . . . . page 8-39

This section describes precautions for CC-Link connection (intelligent device station).
Be sure to read this when establishing CC-Link connection (intelligent device station).

8.5 List of Functions Added by Version Upgrade . . . . . page 8-41

This section describes the functions added by version upgrade of GT Designer2 or OS.

8.1 System Configuration

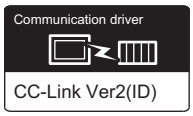
Select a system configuration suitable for your application.

Point

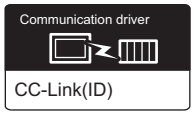
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

8.1.1 Connecting with CC-Link Ver.1 compatible

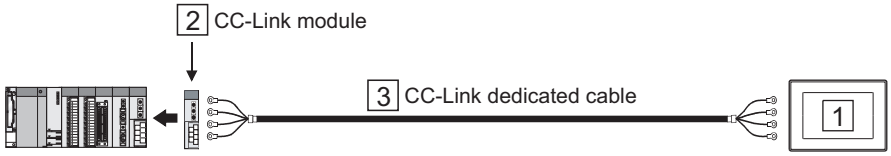


(When MODEL GT15-J61BT13
CC-Link communication unit is used)



(When MODEL GT15-75J61BT13-Z
CC-Link communication unit is used)

1 System configuration and connection conditions

Connection condition		System configuration
Number of GOTs	Distance	
26 (max.)	*1	

*1 The maximum overall extension cable length and the length between stations vary depending on the cable type to be used and the transmission speed.
For details, refer to the following manuals.

- CC-Link System Master/Local Module User's Manual QJ61BT11N
- Control & Communication Link System Master/Local Module type AJ61QBT11/A1SJ61QBT11 User's Manual
- Control & Communication Link System Master/Local Module type AJ61BT11/A1SJ61BT11 User's Manual

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MODEL GT15-J61BT13 CC-Link communication unit *2 • Intelligent device station	GT15-J61BT13	GT16 GT15
		MODEL GT15-75J61BT13-Z CC-Link communication unit • Intelligent device station	GT15-75J61BT13-Z	GT15

*2 Specify Ver.1 as the mode setting in the Communication Settings.
For details of the settings, refer to the following the manual.
Section 8.2.3 Setting communication interface (Communication settings)

(2) PLC

Image	No.	Name	Model name
	2	CC-Link module*3	QJ61BT11, QJ61BT11N
			AJ61QBT11*4, A1SJ61QBT11*4
			AJ61BT11*4, A1SJ61BT11*4

*3 For the system configuration of the CC-Link module, refer to the following manuals.
- CC-Link System Master/Local Module User's Manual QJ61BT11N
- Control & Communication Link System Master/Local Module type AJ61QBT11/A1SJ61QBT11 User's Manual
- Control & Communication Link System Master/Local Module type AJ61BT11/A1SJ61BT11 User's Manual

*4 The GOT can be performed transient transmission to only CC-Link modules of function version B or later and software version J or later.
Section 8.4 2 For transient transmission

(3) Cable

Image	No.	Name	Model name
	3	CC-Link dedicated cable	For the specifications and inquiries of the CC-Link dedicated cable, refer to the following. CC-Link Partner Association's home page: http://www.cc-link.org/

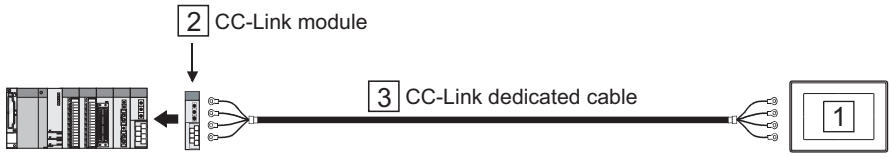
8.1.2 Connecting with CC-Link Ver.2 compatible

Communication driver

CC-Link Ver2(ID)

(When MODEL GT15-J61BT13
CC-Link communication unit is used)

1 System configuration and connection conditions

Connection condition		System configuration
Number of GOTs	Distance	
26 (max.)	*1	

*1 The maximum overall extension cable length and the cable length between stations vary depending on the cable type to be used and the transmission speed.
For details, refer to the following manual.
CC-Link System Master/Local Module User's Manual QJ61BT11N

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MODEL GT15-J61BT13 CC-Link communication unit *2 • Intelligent device station	GT15-J61BT13	GT16 GT15

*2 Specify Ver.2 as the mode setting in the Communication Settings.
For details of the settings, refer to the following the manual.
Section 8.2.3 Setting communication interface (Communication settings)

(2) PLC

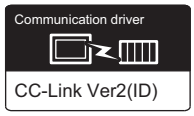
Image	No.	Name	Model name
	2	CC-Link module*3	QJ61BT11N

*3 For the system configuration of the CC-Link module, refer to the following manual.
CC-Link System Master/Local Module User's Manual QJ61BT11N

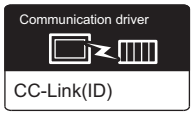
(3) Cable

Image	No.	Name	Model name
	3	CC-Link dedicated cable	For the specifications and inquiries of the CC-Link dedicated cable, refer to the following. CC-Link Partner Association's home page: http://www.cc-link.org/

8.1.3 Connecting with CC-Link Ver.1/Ver.2 compatibles mixed

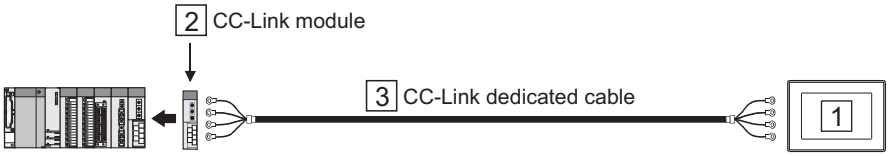


(When MODEL GT15-J61BT13 CC-Link communication unit is used)



(When MODEL GT15-75J61BT13-Z CC-Link communication unit is used)

1 System configuration and connection conditions

Connection condition		System configuration
Number of GOTs	Distance	
26 (max.)	*1	

*1 The maximum overall extension cable length and the length between stations vary depending on the cable type to be used and the transmission speed.
For details, refer to the following manual.
CC-Link System Master/Local Module User's Manual QJ61BT11N

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MODEL GT15-J61BT13 CC-Link communication unit *2 • Intelligent device station	GT15-J61BT13	GT16 GT15
	1	MODEL GT15-J61BT13 CC-Link communication unit *3 • Intelligent device station	GT15-J61BT13	GT16 GT15
	1	MODEL GT15-75J61BT13-Z CC-Link communication unit • Intelligent device station	GT15-75J61BT13-Z	GT15

*2 Specify Ver.2 as the mode setting in the Communication Settings to use it.
For details of the settings, refer to the following manual.
Section 8.2.3 Setting communication interface (Communication settings)

*3 Specify Ver.1 as the mode setting in the Communication Settings to use it.
For details of the settings, refer to the following manual.
Section 8.2.3 Setting communication interface (Communication settings)

(2) PLC

Image	No.	Name	Model name
	2	CC-Link module*4	QJ61BT11N

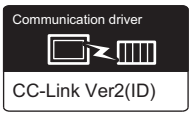
*4 For the system configuration of the CC-Link module, refer to the following manual.

☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

(3) Cable

Image	No.	Name	Model name
	3	CC-Link dedicated cable	For the specifications and inquiries of the CC-Link dedicated cable, refer to the following. ☞ CC-Link Partner Association's home page: http://www.cc-link.org/

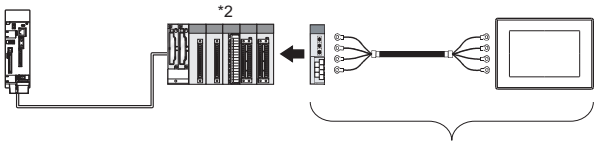
8.1.4 Connecting to the motion controller CPU (Q170MCPU)



(When MODEL GT15-J61BT13
CC-Link communication unit is used)

The following shows the system configuration and connection conditions between Q170MCPU and the GOT. The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for connecting with CC-link Ver.2 compatible.
(☞ Section 8.1.2 Connecting with CC-Link Ver.2 compatible)
(☞ Section 8.1.3 Connecting with CC-Link Ver.1/Ver.2 compatibles mixed)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
*1	*1		GT16 GT15

*1 The system configuration and connection conditions are same as those for connecting with CC-Link Ver.2 compatible.

*2 Only the first step can be used on the extension base unit (Q52B/Q55B).

8.2 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 8.2.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 8.2.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 8.2.3
Setting communication interface (Communication settings)

Download the project data.

Section 8.2.4
Downloading project data

Attach the communication unit and connect the cable.

Section 8.2.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 8.2.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 8.2.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

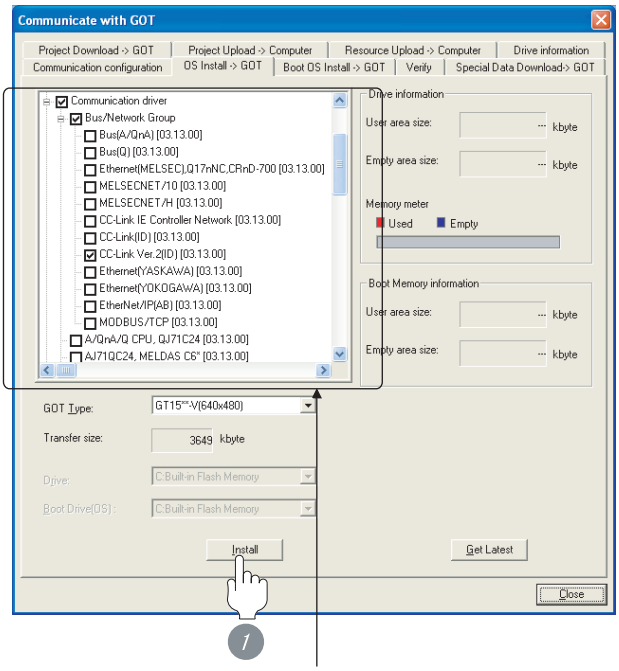
Section 8.3 PLC Side Setting

8.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following communication drivers as necessary.

- When MODEL GT15-J61BT13 CC-Link communication unit is used : CC-Link Ver2(ID)
- When MODEL GT15-75J61BT13-Z CC-Link communication unit is used : CC-Link Ver(ID)

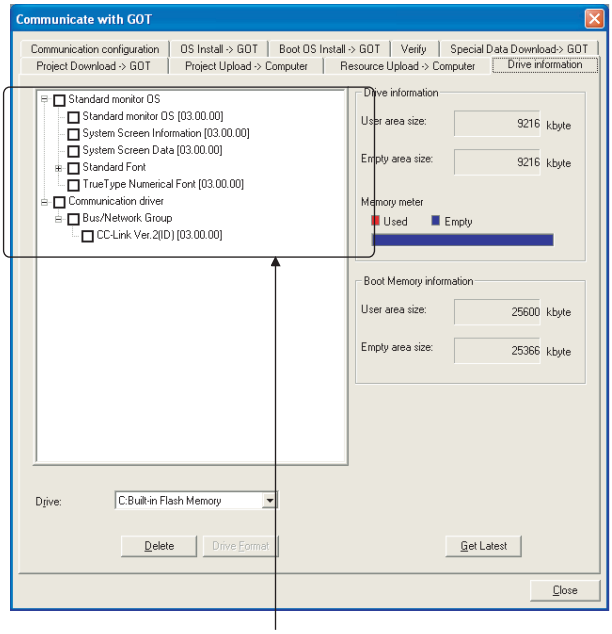
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

8.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (any of the following)

- When MODEL GT15-J61BT13 CC-Link communication unit is used : CC-Link Ver2(ID)
- When MODEL GT15-75J61BT13-Z CC-Link communication unit is used : CC-Link(ID)

8.2.3 Setting communication interface (Communication settings)

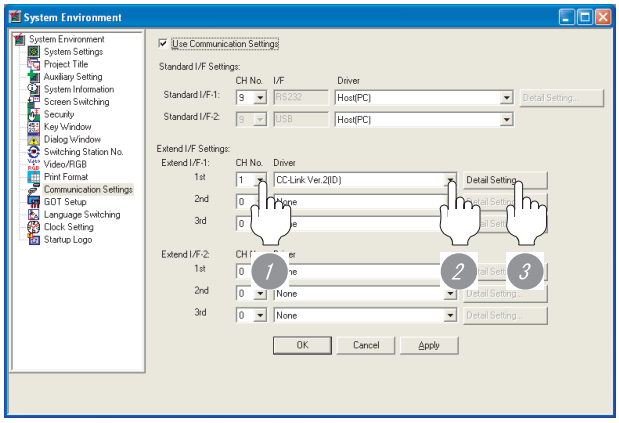
To set the communication interface of the GOT, use the [Communication settings] of GT Designer2 and the switches of the communication unit.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication Settings



(When using GT15)

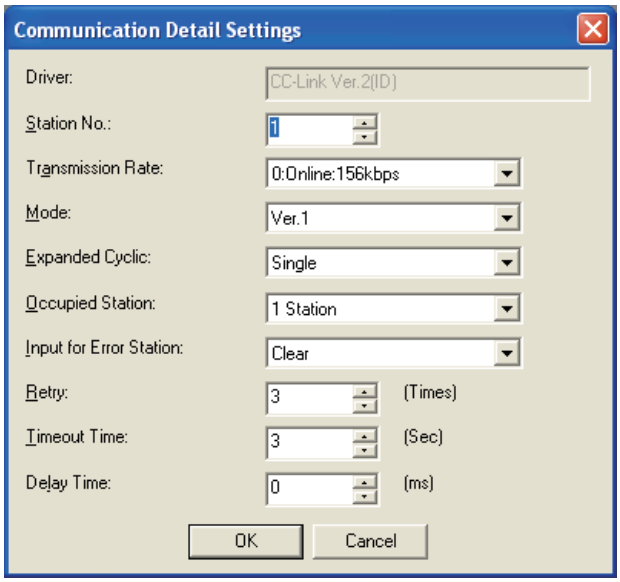
1 Set [1] to the channel No. used.

2 Set the driver as follows:
When MODEL GT15-J61BT13 CC-Link communication unit is used: CC-Link Ver2 (ID)
When MODEL GT15-75J61BT13-Z CC-Link communication unit is used: CC-Link (ID)

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings

(1) CC-Link Ver.2 (ID)



Item	Description	Range
Station No.	Set the station No. of the GOT. <Default: 1>	1 to 64
Transmission Rate*1	Set the transmission speed and the mode of the GOT. <Default: 0>	0 to E
Mode	Set the mode of CC-Link. <Default: Ver.1>	Ver.1/Ver.2/ Additional/ Offline
Expanded Cyclic	Set the cyclic point expansion. <Default: Single>	Single/ Double/ Quadruple/ Octuple
Occupied Station	Set the number of stations occupied by the GOT. <Default: 1 Station>	1 Station/ 4 Stations
Input for Error Station	Set Clear/Hold at an error occurrence. <Default: Clear>	Clear/Hold
Retry	Set the number of retries to be performed when a communication times out. When no response is received after retries, a communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/destination PLC. <Default: 0ms>	0 to 300 (ms)

For details of *1, refer to the next page.

*1 Transmission speed settings

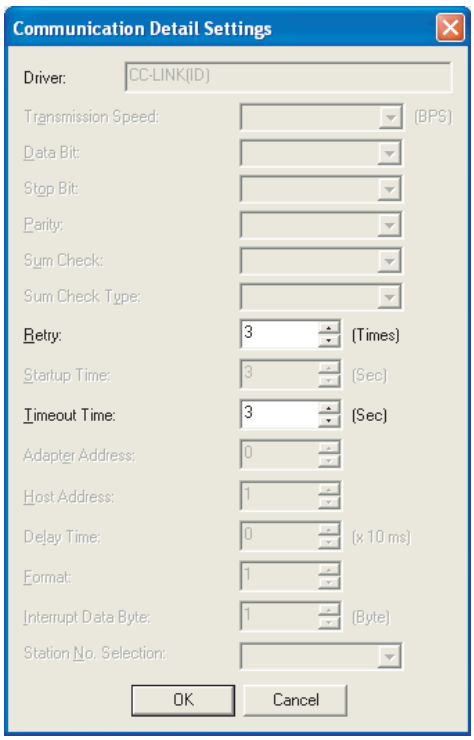
The following lists the transmission speed settings of the CC-Link communication.

Setting	Description
0	Online : 156kbps
1	Online : 625kbps
2	Online : 2.5Mbps
3	Online : 5Mbps
4	Online : 10Mbps
A	Hardware test : 156kbps
B	Hardware test : 625kbps
C	Hardware test : 2.5Mbps
D	Hardware test : 5Mbps
E	Hardware test : 10Mbps

For details of the hardware test, refer to the following manual.

CC-Link System Master/Local Module User's Manual for CC- Link module to be used

(2) CC-Link(ID)



Item	Description	Range
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

3 Switch setting (Only when MODEL GT15-75J61BT13-Z CC-Link communication unit is used)

Point

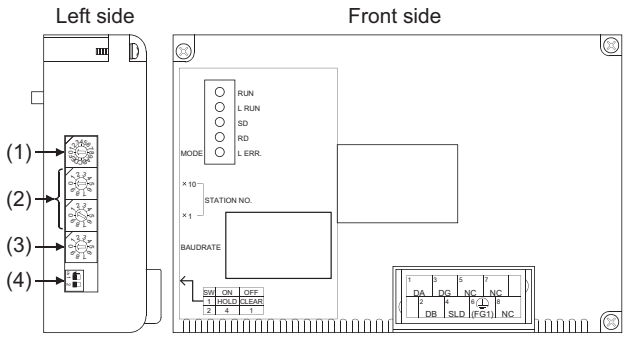
Switch setting of the communication unit

When the MODEL GT15-J61BT13 CC-Link communication unit is used, the switch setting is not needed.

For details of each setting switch and LED, refer to the following manual.

☞ GT15 CC-Link communication unit User's Manual

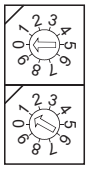
GT15-75J61BT13-Z



(1) Mode setting switch

Mode setting switch	Description	Setting
	Select the online mode. <Default: 0>	0 (fixed)

(2) Station number setting switch

Station number setting switch	Description	Setting
	Specify the station No. of the CC-Link communication unit. <Default: 01>	1 to 64

(3) Transmission baudrate setting switch

Transmission baudrate setting switch	Description	Setting
	Specify the transmission speed. <Default: 0>	0: 156kbps 1: 625kbps 2: 2.5Mbps 3: 5Mbps 4: 10Mbps

(4) Condition setting switches

Condition setting switches	Setting switch	Description	Setting
	SW1	Specify input data status of the data link error station. <Default: OFF>	OFF: Cleared ON: Held
	SW2	Specify the number of stations occupied. <Default: OFF>	OFF: 1 station ON: 4 stations

Point

(1) Switch setting example

For the switch setting example, refer to the following.

Section 8.3 PLC Side Setting

(2) When the switch setting is changed

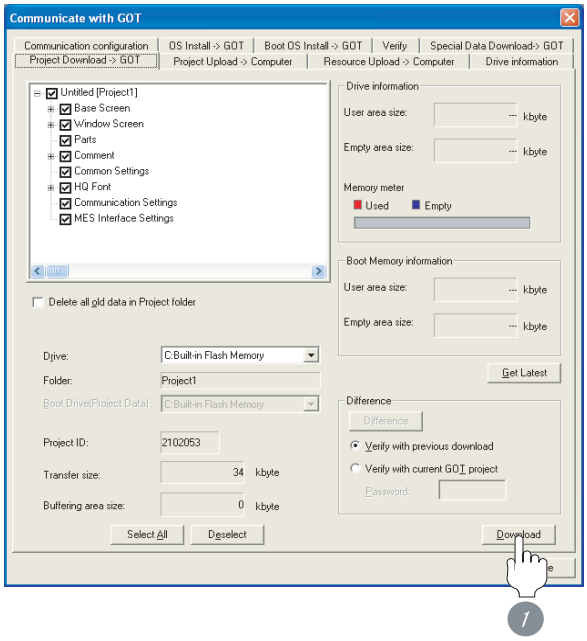
When changing the switch setting after mounting the MODEL GT15-75J61BT13-Z CC-Link communication unit on the GOT, reset the GOT.

8.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

8.2.5 Attaching communication unit and connecting cable

Point

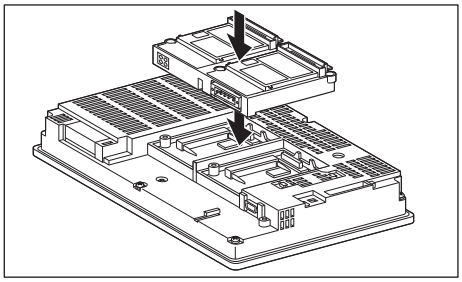
Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

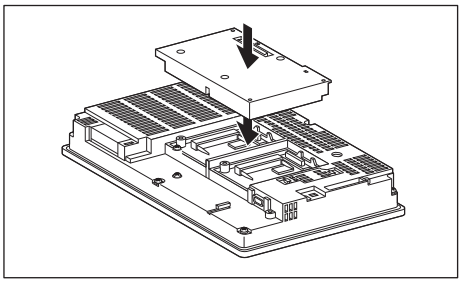
(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

1 Mount the CC-Link communication unit on the extension unit connector of the GOT.

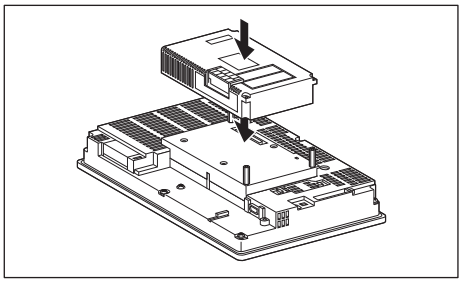


(2) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

1 Mount the interface converter unit to the extension unit connector of the GOT.



2 Mount the CC-Link communication unit to the interface converter unit.



Point

CC-Link communication unit

For the details of mounting the CC-Link communication unit, refer to the following manuals.

- MODEL GT15-J61BT13 CC-Link communication unit User's Manual
- GT15 CC-Link communication unit User's Manual

2 Connecting the cable

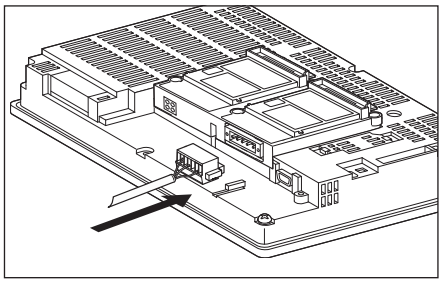
(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

⚠CAUTION

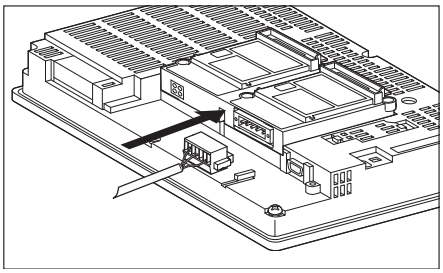
- Always ground the FG terminal of the GOT power supply and that of this unit separately by applying Class D Grounding (Class 3 Grounding) or higher. Failure to do so may cause an electric shock or malfunction.

(a) CC-Link dedicated cable connection method

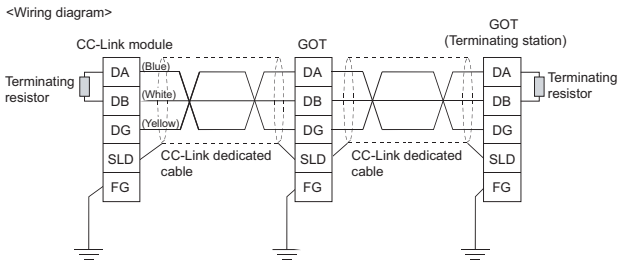
1 Connect the CC-Link cable to the terminal block socket (packed together) of the CC-Link communication unit.
If the communication unit is a terminal station of the network, be sure to connect a terminating resistor (packed together with the CC-Link communication unit) to the terminal block socket.



2 Mount the terminal block socket on the CC-Link communication unit connector of the GOT.



(b) Wiring diagram



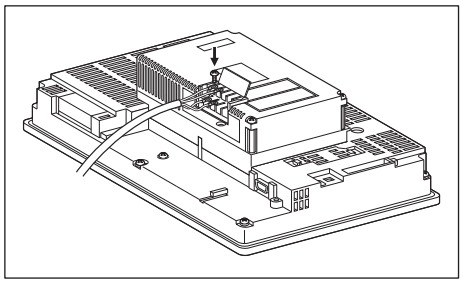
(2) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

⚠CAUTION

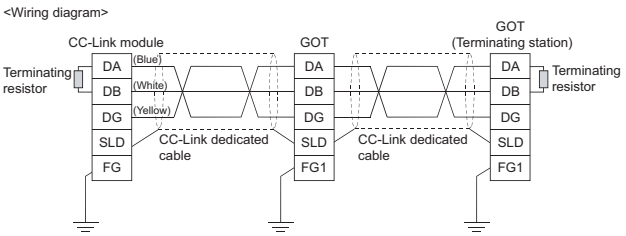
- Always ground the FG terminal of the GOT power supply and the FG1 terminal of this unit to the protective ground conductor.
  Be sure to ground the GOT and this unit separately.
  Failure to do so may cause an electric shock or malfunctions.
- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Be sure to tighten any unused terminal screws with a torque of 0.36 to 0.48N•m.
  Failure to do so may cause a short circuit due to contact with a solderless terminal.

(a) CC-Link dedicated cable connection method

1 Connect the CC-Link cable to the terminal block of the CC-Link communication unit.
If the CC-Link communication unit is terminal station of the network, be sure to connect a terminating resistor (packed together with the CC-Link module) to the terminal block.



(b) Wiring diagram



8.2.6 Verifying GOT recognizes controllers

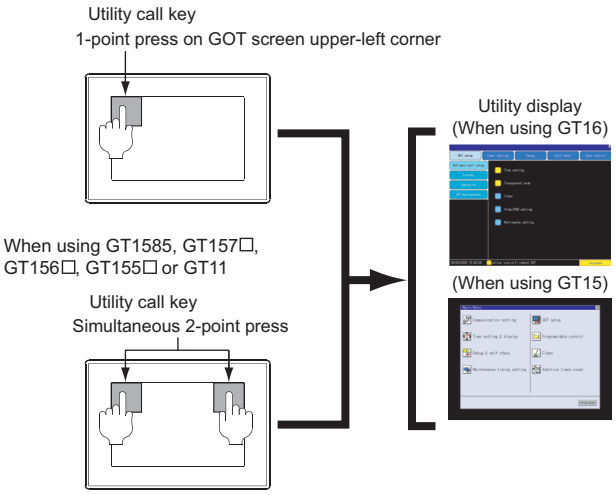
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

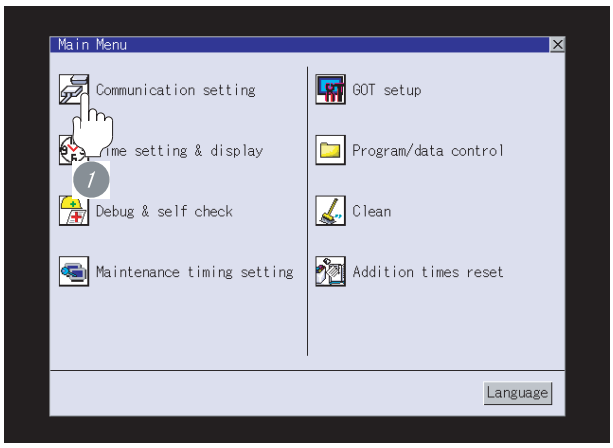


Point

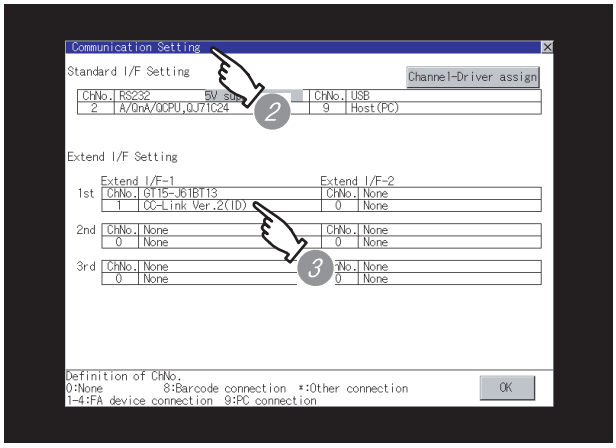
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver (any of the following)
  When MODEL GT15-J61BT13
  CC-Link communication unit is used
  : CC-Link Ver.2(ID)
  When MODEL GT15-75J61BT13-Z
  CC-Link communication unit is used
  : CC-Link (ID)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 8.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

8.2.7 Checking for normal monitoring

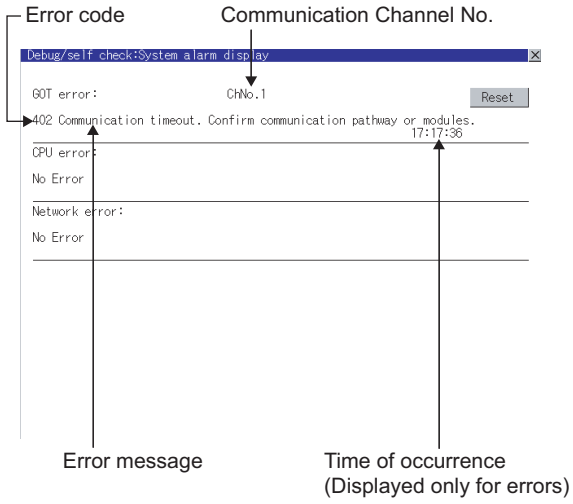
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

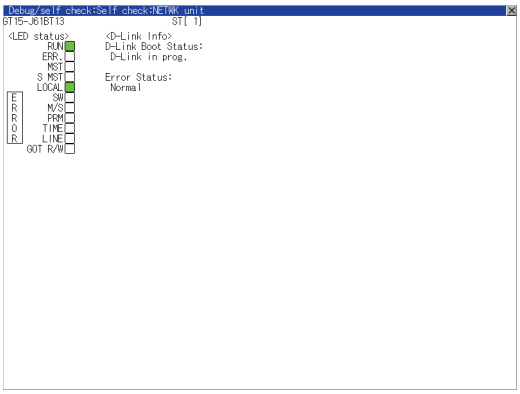
GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication status with network unit by GOT

The communication status between the GOT and the CC-Link system can be confirmed by the Utility screen of the GOT.

For details on the operation method of the GOT Utility screen, refer to the following manual.

GT16 User's Manual (Basic Utility)
GT15 User's Manual



Point

CC-Link communication unit when network module status is displayed

When displaying the network module status, use the CC-Link communication unit of MODEL GT15-J61BT13.
For the MODEL GT15-75J61BT13-Z, the network module status cannot be displayed.

3 Checking the wiring state of the CC-Link dedicated cable

Check if the CC-Link dedicated cable is connected correctly to all the modules in the CC-Link system.

Perform the line test from the master station of the CC-Link System to check the wiring state of the CC-Link dedicated cable.

For the line testing method, refer to the following manuals.

- CC-Link System Master/Local Module User's Manual QJ61BT11N
- Control & Communication Link System Master/Local Module Type AJ61QBT11/ A1SJ61QBT11 User's Manual
- Control & Communication Link System Master/Local Module Type AJ61BT11/ A1SJ61BT11 User's Manual

4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 8.3 PLC Side Setting

5 Checking if the GOT is correctly performed the data link

Use [Monitoring other station] of the GX Developer to check if the GOT is correctly performed the data link.

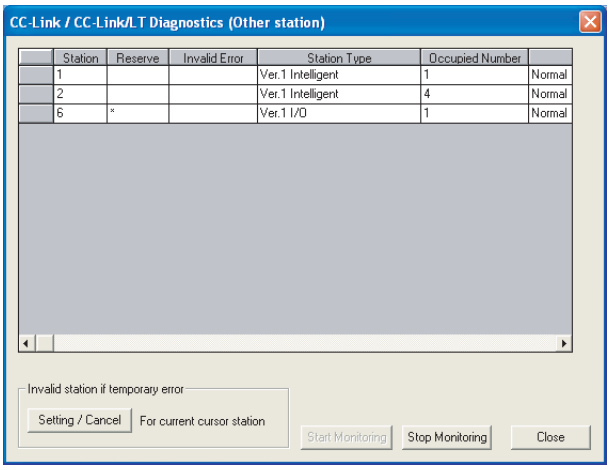
For the GX Developer operation method, refer to the following manual.

☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

(1) Checking the [Status] (The display example on the GX Developer Version 8)

Startup procedure

GX Developer → [Diagnostics] → [CC-Link / CC-Link/LT diagnostics] → Monitoring other station



All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

8.3 PLC Side Setting

The GOT operates as the stations of which are shown below in the CC-Link system.

Station data	Description
Station type	Intelligent device station, Ver.1 intelligent device station or Ver.2 intelligent device station
Number of stations occupied	Station 1 or Station 4

The switch settings and parameter settings of the PLC side (CC-Link module) are described in Section 8.3.1 to Section 8.3.5.

Model name			Refer to
CC-Link module (Q Series)	Connecting with Ver.1 compatible	QJ61BT11, QJ61BT11N	Section 8.3.1
	Connecting with Ver.2 compatible	QJ61BT11N	Section 8.3.2
	Connecting with Ver.1/Ver.2 compatibles mixed	QJ61BT11N	Section 8.3.3
CC-Link module (QnA Series)		AJ61QBT11, A1SJ61QBT11	Section 8.3.4
CC-Link module (A Series)		AJ61BT11, A1SJ61BT11	Section 8.3.5

Hint!

Number of stations occupied

The number of stations occupied is setting for determining number of link device points (RX/RY/RWw/RWr) used by the GOT.
To use multiple numbers of link device points in the case of cyclic transmission between the GOT and CC-Link module, set the number of stations occupied as the exclusive station 4.
The number of link device points at the exclusive station 1 and 4 is shown below.

CC-Link Ver.2

Link device	Expanded cyclic setting							
	Single		Double		Quadruple		Octuple	
	Exclusive station 1	Exclusive station 4	Exclusive station 1	Exclusive station 4	Exclusive station 1	Exclusive station 4	Exclusive station 1	Exclusive station 4
Remote input (RX)	32 points	128 points	32 points	224 points	64 points	448 points	128 points	896 points
Remote output (RY)	32 points	128 points	32 points	224 points	64 points	448 points	128 points	896 points
Remote register (RWw)	4 points	16 points	8 points	32 points	16 points	64 points	32 points	128 points
Remote register (RWr)	4 points	16 points	8 points	32 points	16 points	64 points	32 points	128 points

CC-Link Ver.1

Link device	Number of stations occupied	
	Exclusive station	Exclusive of station 4
Remote input (RX)	32 points	128 points
Remote output (RY)	32 points	128 points
Remote registor (RWw)	4 points	16 points
Remote registor (RWr)	4 points	16 points

8.3.1 Connecting to CC-Link module (Q Series) with Ver.1 compatible

This section describes the settings of the GOT and the CC-Link module (Q Series) with Ver.1 compatible in the system configuration shown as 1.

Point

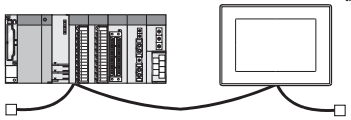
CC-Link module (Q Series)

For details of the CC-Link module (Q Series), refer to the following manual.

☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

1 System configuration

☞ · 4 [Communication settings] of GT Designer 2
· 5 Settings of CC-Link communication unit



<GOT>
(Use the default value for settings other than the following.)

Station type	: Intelligent device station
Station No.	: Station No.1
Number of stations occupied	: Exclusive station 1
Transmission speed	: 156kbps

<CC-Link module> *1
(Use the default value for the settings other than the following.)

Type	: Master station
Station No.	: Station No.0
Mode	: Remote net (Ver.1 mode)
All connect count	: 1
Transmission speed	: 156kbps

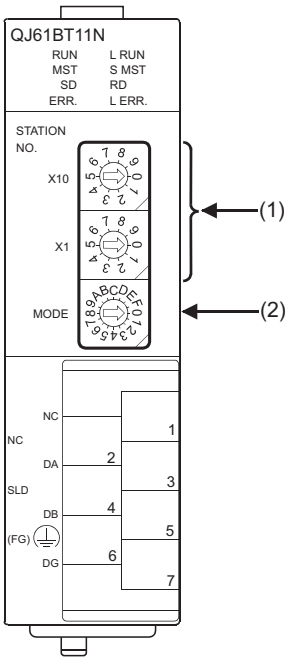
☞ · 2 Switch setting of CC-Link module (Q Series)
· 3 [Network parameter] of GX Developer

*1 The CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"

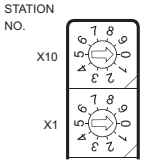
2 Switch setting of CC-Link module (Q Series)

Set the station number setting switch, transmission speed / mode setting switch.

QJ61BT11, QJ61BT11N



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
	Station number setting (master station)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(2) Transmission rate/mode setting switch

Transmission rate/ mode setting switch	Description	Setting	Setting necessity at GOT connection
	Transmission rate/ mode setting (Online: 156kbps) *1	0	○

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same transmission speed as that of GOT.

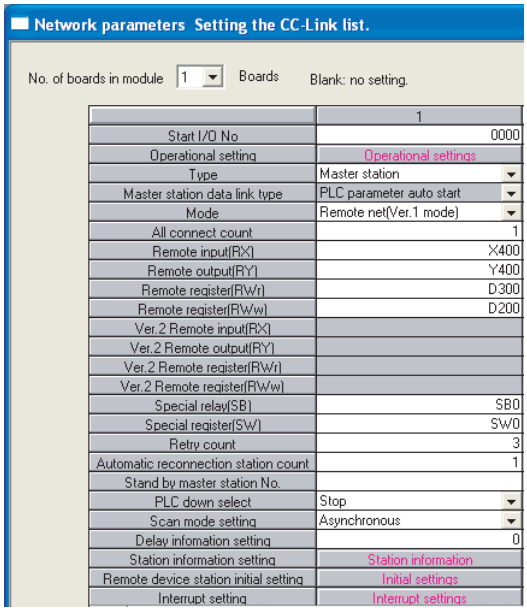
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

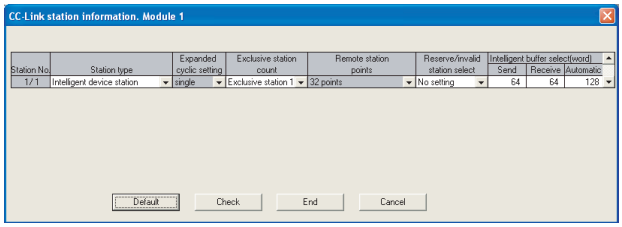
(1) Network parameter



Item	Setting	Setting necessity at GOT connection
No. of boards in module	1	○
Start I/O No.	0000H	○
Operational setting	(Use default value.)	△
Type	Master station (fixed)	○
Mode	Remote net (Ver.1 mode)	○
All connect count	1	○
Remote input (RX)	X400	△
Remote output (RY)	Y400	△
Remote register (RWr)	D300	△
Remote register (RWw)	D200	△
Special relay (SB)	SB0	△
Special register (SW)	SW0	△
Retry count	(Use default value.)	△
Automatic reconnection station count		△
Stand by master station No.		×
PLC down select		△
Scan mode setting		△
Delay information setting		△
Station information setting	Refer to (2).	○
Remote device station initial setting	(Use default value.)	×
Interrupt setting		×

○: Necessary △: As necessary ×: Not necessary

(2) Station information setting



Item*1	Setting	Setting necessity at GOT connection
Station type	Intelligent device station (fixed)	○
Exclusive station count *2	Exclusive station 1	○
Reserve/invalid station select	No setting	○
Intelligent buffer select (word)	(Use default value.)	×

○: Necessary △: As necessary ×: Not necessary

*1 When the [Mode] of the CC-Link module is set at [Remote net - (Ver. 1 mode)], [Remote station points] cannot be set.

*2 Set the same number of occupied stations as that on the GOT.

Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

4 [Communication Settings] of GT Designer2

(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

Item	Setting
Station No.	1: Station No.1
Transmission Rate	0: Online: 156kbps
Mode	Ver.1: Remote net (Ver.1 mode)
Expanded Cyclic	Single (Use default value.)
Occupied Station	1 Station
Input for Error Station	Clear
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0ms (Use default value.)

(2) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

Item	Setting (Use default value.)
Retry	3 Times
Timeout Time	3 Sec

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

Section 8.2.3 Setting communication interface (Communication settings)

5 Setting of the CC-Link communication unit (Only when MODEL GT15-75J61BT13-Z CC-Link communication unit is used)

Item		Setting
Mode setting switch		0: Online (fixed)
Station number setting switch		1: Station No.1
Transmission baudrate setting switch		0: 156kbps
Condition setting switches	SW1 (Input data status of the data link error station)	OFF: Cleared
	SW2 (Number of occupied stations)	OFF: 1 station

Point

Setting of the CC-Link communication unit

For the setting method of the CC-Link communication unit, refer to the following.

Section 8.2.3 Setting communication interface (Communication settings)

8.3.2 Connecting to CC-Link module (Q Series) with Ver.2 compatible

This section describes the settings of the GOT and CC-Link module (Q Series) in the case of system configuration shown as 1.

Point

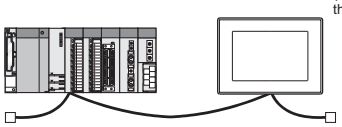
CC-Link module (Q Series)

For details of the CC-Link module (Q Series), refer to the following manual.

Control & Communication Link System Master/ Local Module Type AJ61QBT11/A1SJ61QBT11 User's Manual

1 System configuration

・4 [Communication settings] of GT Designer 2
・5 Settings of CC-Link communication unit



<GOT>
(Use the default value for settings other than the following.)

Station type	: Intelligent device station
Station No.	: Station No.1
Expanded cyclic setting	: Single
Number of stations occupied	: Exclusive station 1
Transmission speed	: 156kbps

<CC-Link module> *1
(Use the default value for the settings other than the following.)

Type	: Master station
Station No.	: Station No.0
Mode	: Remote net (Ver.2 mode)
All connect count	: 1
Transmission speed	: 156kbps

・2 Switch setting of CC-Link module (Q Series)
・3 [Network parameter] of GX Developer

*1 The CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"

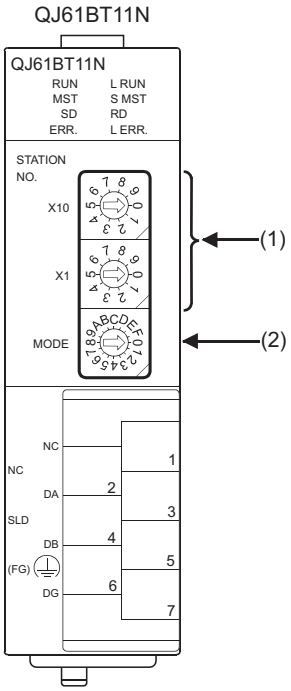
Point

When connecting to Q170MCPU

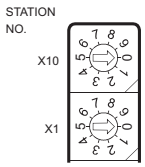
When connected to Q170MCPU, the start I/O No. of the CC-Link module is set to "70".

2 Switch setting of CC-Link module (Q Series)

Set the station number setting switch, transmission speed / mode setting switch.



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
	Station number setting (master station)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(2) Transmission rate/mode setting switch

Transmission rate/ mode setting switch	Description	Setting	Setting necessity at GOT connection
	Transmission rate/ mode setting (Online: 156kbps) *1	0	○

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same transmission speed as that of GOT.

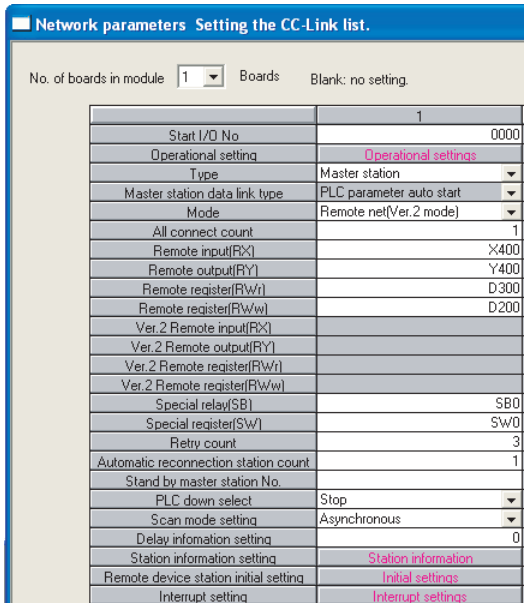
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

(1) Network parameter

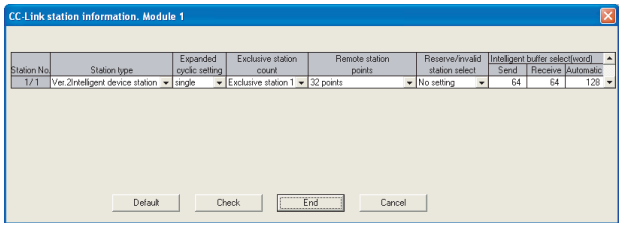


Item	Setting	Setting necessity at GOT connection
No. of boards in module	1	○
Start I/O No.*1	0000H	○
Operational setting	(Use default value.)	△
Type	Master station (fixed)	○
Mode	Remote net (Ver.2 mode)	○
All connect count	1	○
Remote input (RX)	X400	△
Remote output (RY)	Y400	△
Remote register (RWr)	D300	△
Remote register (RWw)	D200	△
Special relay (SB)	SB0	△
Special register (SW)	SW0	△
Retry count	(Use default value.)	△
Automatic reconnection station count		△
Stand by master station No.		×
PLC down select		△
Scan mode setting		△
Delay information setting		△
Station information setting	Refer to (2).	○
Remote device station initial setting	(Use default value.)	×
Interrupt setting		×

○: Necessary △: As necessary ×: Not necessary

*1 When using Q170MCPU, set it according to the system configuration.

(2) Station information setting



Item*1	Setting	Setting necessity at GOT connection
Station type	Ver.2 intelligent device station (fixed)	○
Expanded cyclic setting*2	Single	○
Exclusive station count	Exclusive station 1	○
Remote station points	32 points (fixed)	○
Reserve/invalid station select	No setting	○
Intelligent buffer select (word)	(Use default value.)	×

○: Necessary △: As necessary ×: Not necessary

*1 When the [Mode] of the CC-Link module is set at [Remote net - (Ver. 2 mode)], [Remote station points] can be set.
[Remote station points] is a setting for the remote I/O station.
The default value (32 points) must be used on the GOT.

*2 Set the same setting as that of the GOT.

Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

4 [Communication Settings] of GT Designer2

(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

Item	Setting
Station No.	1: Station No.1
Transmission Rate	0: Online 156kbps
Mode	Ver.2: Remote net (Ver.2 mode)
Expanded Cyclic	Single
Occupied Station	1 Station
Input for Error Station	Clear
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0ms (Use default value.)

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

Section 8.2.3 Setting communication interface (Communication settings)

8.3.3 Connecting to CC-Link module (Q Series) with Ver.1/ Ver.2 compatibles mixed

This section describes the setting of the GOT and CC-Link module (Q Series) with Ver.1/Ver.2 compatibles mixed in the system configuration shown as 1 .

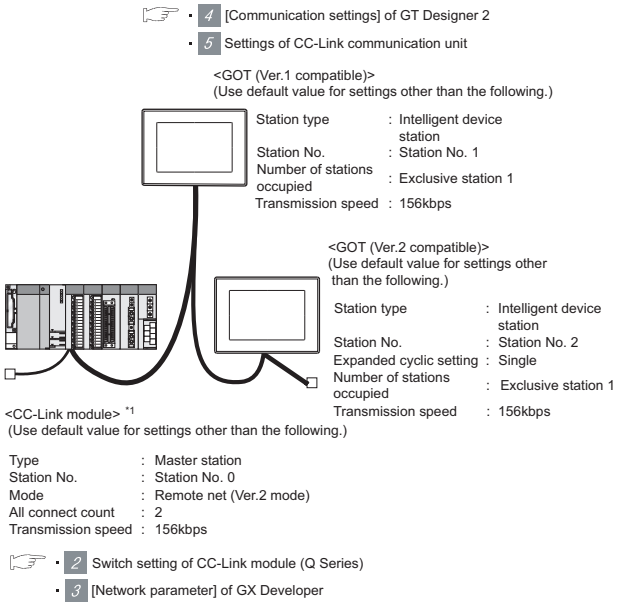
Point

CC-Link module (Q Series)

For details of the CC-Link module (Q Series), refer to the following manual.

CC-Link System Master/Local Module User's Manual QJ61BT11N

1 System configuration



*1 The CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"

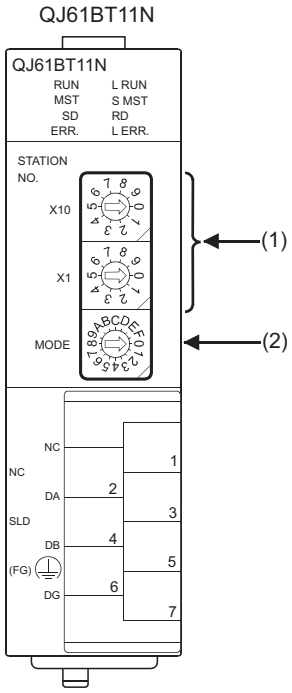
Point

When connecting to Q170MCPU

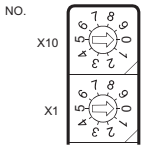
When connected to Q170MCPU, the start I/O No. of the CC-Link module is set to "70".

2 Switch setting of CC-Link module (Q Series)

Set the station number setting switch, transmission speed / mode setting switch.



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
	Station number setting (master station)	0 (fixed)	○

○ : Necessary △ : As necessary × : Not necessary

(2) Transmission rate/mode setting switch

Transmission rate/ mode setting switch	Description	Setting	Setting necessity at GOT connection
	Transmission rate/ mode setting (Online: 156kbps) *1	0	○

○ : Necessary △ : As necessary × : Not necessary

*1 Specify the same transmission speed as that of GOT.

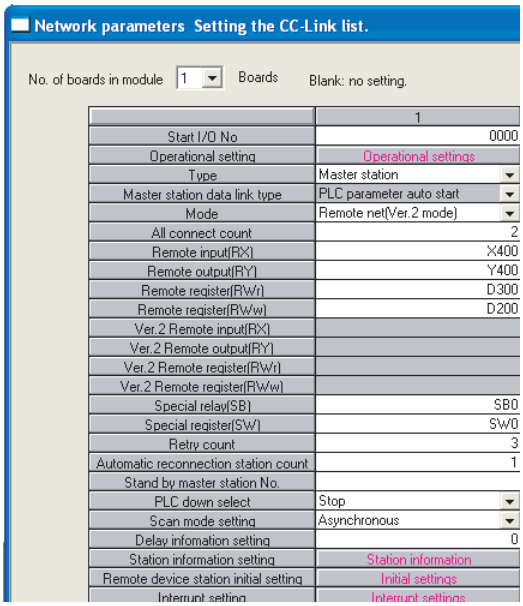
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

(1) Network parameter

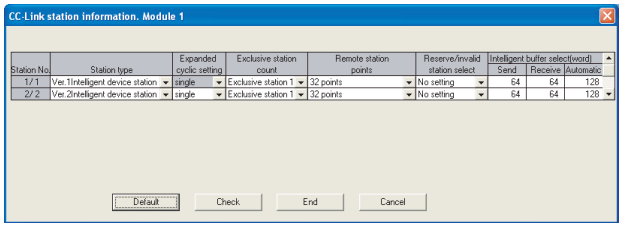


Item	Setting	Setting necessity at GOT connection
No. of boards in module	1	○
Start I/O No.*1	0000H	○
Operational setting	(Use default value.)	△
Type	Master station (fixed)	○
Mode	Remote net (Ver.2 mode)	○
All connect count	2	○
Remote input (RX)	X400	△
Remote output (RY)	Y400	△
Remote register (RWr)	D300	△
Remote register (RWw)	D200	△
Special relay (SB)	SB0	△
Special register (SW)	SW0	△
Retry count	(Use default value.)	△
Automatic reconnection station count		△
Stand by master station No.		×
PLC down select		△
Scan mode setting		△
Delay information setting		△
Station information setting	Refer to (2).	○
Remote device station initial setting	(Use default value.)	×
Interrupt setting		×

○: Necessary △: As necessary ×: Not necessary

*1 When using Q170MCPU, set it according to the system configuration.

(2) Station information setting



(a) Station information setting of station No.1 (GOT)

Item	Setting	Setting necessity at GOT connection
Station type	Ver.1 intelligent device station (fixed)	○
Exclusive station count	Exclusive station 1	○
Reserve/invalid station select	No setting	○
Intelligent buffer select (word)	(Use default value.)	×

○: Necessary △: As necessary ×: Not necessary

(b) Station information setting of station No.2 (GOT)

Item*1	Setting	Setting necessity at GOT connection
Station type	Ver.2 intelligent device station (fixed)	○
Expanded cyclic setting*2	Single	○
Exclusive station count*2	Exclusive station 1	○
Reserve/invalid station select	No setting	○
Intelligent buffer select (word)	(Use default value.)	×

○: Necessary △: As necessary ×: Not necessary

*1 When the [Mode] of the CC-Link module is set at [Remote net - (Ver. 2 mode)], [Remote station points] can be set.
[Remote station points] is a setting for the remote I/O station.
The default value (32 points) must be used on the GOT.

*2 Set the same setting as that of the GOT.

Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

4 [Communication Settings] of GT Designer2

(1) Communication Settings of station No.1 (GOT)

(a) When MODEL GT15-J61BT13 CC-Link communication unit is used

Item	Setting
Station No.	1: Station No.1
Transmission Rate	0: Online 156kbps
Mode	Ver.1: Remote net (Ver.1 mode)
Expanded Cyclic	Single (Use default value.)
Occupied Station	1 Station
Input for Error Station	0: Clear
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0ms (Use default value.)

(b) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

Item	Setting (Use default value.)
Retry	3 Times
Timeout Time	3 Sec

(2) Communication Settings of station No.2 (GOT)

Item	Setting (Use default value.)
Station No.	2: Station No.2
Transmission Rate	0: Online 156kbps
Mode	Ver.2: Remote net (Ver.2 mode)
Expanded Cyclic	Single
Occupied Station	1 Station
Input for Error Station	0: Clear
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0ms (Use default value.)

5 Setting of the CC-Link communication unit (Only when MODEL GT15-75J61BT13-Z CC-Link communication unit is used)

Item		Setting
Mode setting switch		0: Online (fixed)
Station number setting switch		1: Station No.1
Transmission baudrate setting switch		0: 156kbps
Condition setting switches	SW1 (Input data status of the data link error station)	OFF: Cleared
	SW2 (Number of occupied stations)	OFF: 1 station

Point

Setting of the CC-Link communication unit

For the setting method of the CC-Link communication unit, refer to the following.

☞ Section 8.2.3 Setting communication interface (Communication settings)

8.3.4 Connecting to CC-Link module (QnA Series)

This section describes the settings of the GOT and CC-Link module (QnA Series) in the case of system configuration shown as 1.

Point

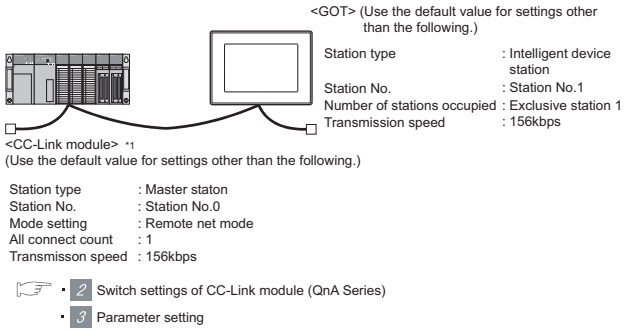
CC-Link module (QnA Series)

For details of the CC-Link module (QnA Series), refer to the following manual.

☞ Control & Communication Link System Master/ Local Module Type AJ61QBT11/A1SJ61QBT11 User's Manual

1 System configuration

☞ · 4 [Communication settings] of GT Designer2
· 5 Setting of the CC-Link communication unit

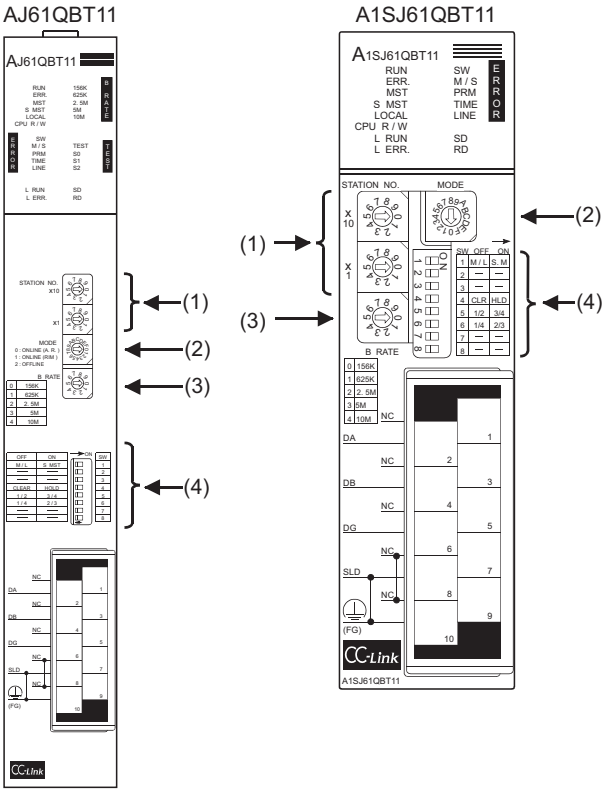


☞ · 2 Switch settings of CC-Link module (QnA Series)
· 3 Parameter setting

*1 The CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"

2 Switch settings of CC-Link module (QnA Series)

Set for each setting switch.



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION NO. x10 x1	Station number setting (master station)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(2) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
MODE	Mode setting (Online: Remote net mode)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(3) Transmission speed setting

Transmission speed setting	Description	Setting	Setting necessity at GOT connection
B RATE 0 156K 1 625K 2 2. 5M 3 5M 4 10M	Transmission speed setting (156kbps)*1	0	○

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same transmission speed as that of the GOT.

(4) Condition setting switches

Condition setting switches	Setting switch	Description	Setting	Setting necessity at GOT connection
SW OFF ON 1 M/L S.M 2 3 4 CLR HLD 5 1/2 3/4 6 1/4 2/3 7 8	SW1	Station type (Master station / Local station)	OFF (fixed)	○
	SW2	Not used	OFF (fixed)	×
	SW3			
	SW4	Input data status of the data link error station (clear)	OFF	△
	SW5	Number of stations occupied*2	OFF (fixed)	×
	SW6			
	SW7	Not used	OFF (fixed)	×
	SW8			

○: Necessary △: As necessary ×: Not necessary

*2 Will be valid when the CC-Link module is the local station.
In the case of the master station, turn off it.

Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

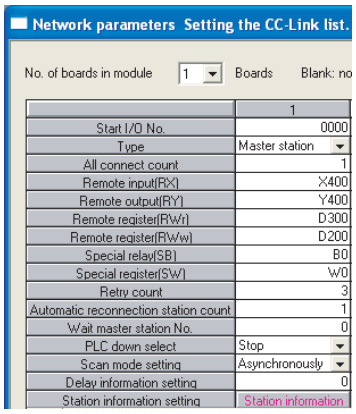
3 Parameter setting

There are two methods for the parameter setting: perform the setting from [Network parameter] of GX Developer and the sequence program.

Performing it from the [Network parameter] of the GX Developer can be set only when the PLC CPU and the CC-Link module use the function version B or later.

(1) Setting from [Network parameter] of GX Developer

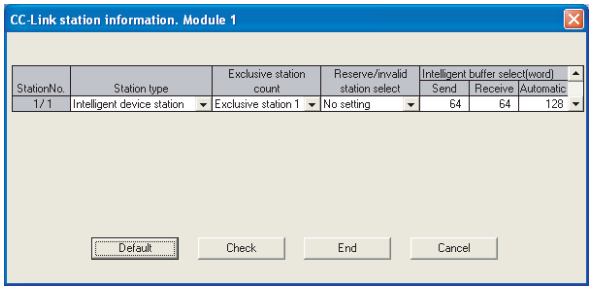
(a) Network parameter



Item	Setting	Setting necessity at GOT connection
No. of boards in module	1	○
Start I/O No.	0000H	○
Type	Master station (fixed)	○
All connect count	1	○
Remote input (RX)	X400	△
Remote output (RY)	Y400	△
Remote register (RWr)	D300	△
Remote register (RWw)	D200	△
Special relay (SB)	B0	△
Special register (SW)	W0	△
Retry count	(Use default value.)	△
Automatic reconnection station count		△
Wait master station No.		×
PLC down select		△
Scan mode setting		△
Delay information setting		△
Station information setting	Refer to (2).	○

○: Necessary △: As necessary ×: Not necessary

(b) Station information setting



Item	Setting	Setting necessity at GOT connection
Station type	Intelligent device station (fixed)	○
Exclusive station count *1	Exclusive station 1	○
Reserve/invalid station select	No setting	○
Intelligent buffer select (word)	(Use default value.)	×

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same number of occupied stations as that of the GOT.

Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(2) Setting from sequence program

The parameter is written to the buffer memory, and the data link is automatically started when PLC CPU status changes from STOP to RUN.

(a) CC-Link module I/O signal

☞ Control & Communication Link System Master/Local Module Type AJ61QBT11/ A1SJ61QBT11 User's Manual

(b) Device used by user

Device	Application
M100, M101	Flag for parameter setting
M102, M103	Flag for data link startup
D0	Number of connected modules
D1	Number of retry
D2	No. of automatic return stations
D3	Operation specification in the case of CPU failure
D4	Reserved station specification (Station No. 1 to Station No. 16)
D5	Error invalid station specification (Station No. 1 to Station No. 16)
D6	Station data (first module)
D400	Error code in the case of data link startup failure

(c) Buffer memory settings used in the present example

Buffer memory address Decimal (Hexadecimal)	Item	Setting
1 (1H)	Number of connected modules	1 (1 module)
2 (2H)	Number of retry	3 (3 times)
3 (3H)	Number of automatic return stations	1 (1 station)
6 (6H)	Operation specification in the case of CPU failure	0 (stop)
16 (10H)	Reserved station specification (Station No. 1 to Station No. 16)	0 (No specification)
20 (14H)	Error invalid station specification (Station No. 1 to Station No. 16)	0 (No specification)
32 (20H)	Station data (first module)*1	2101H

*1 Details for the station data are shown below.
For 1) and 2), set the same station No. and number of station occupied as those of the GOT.
For 3), the setting is fixed.

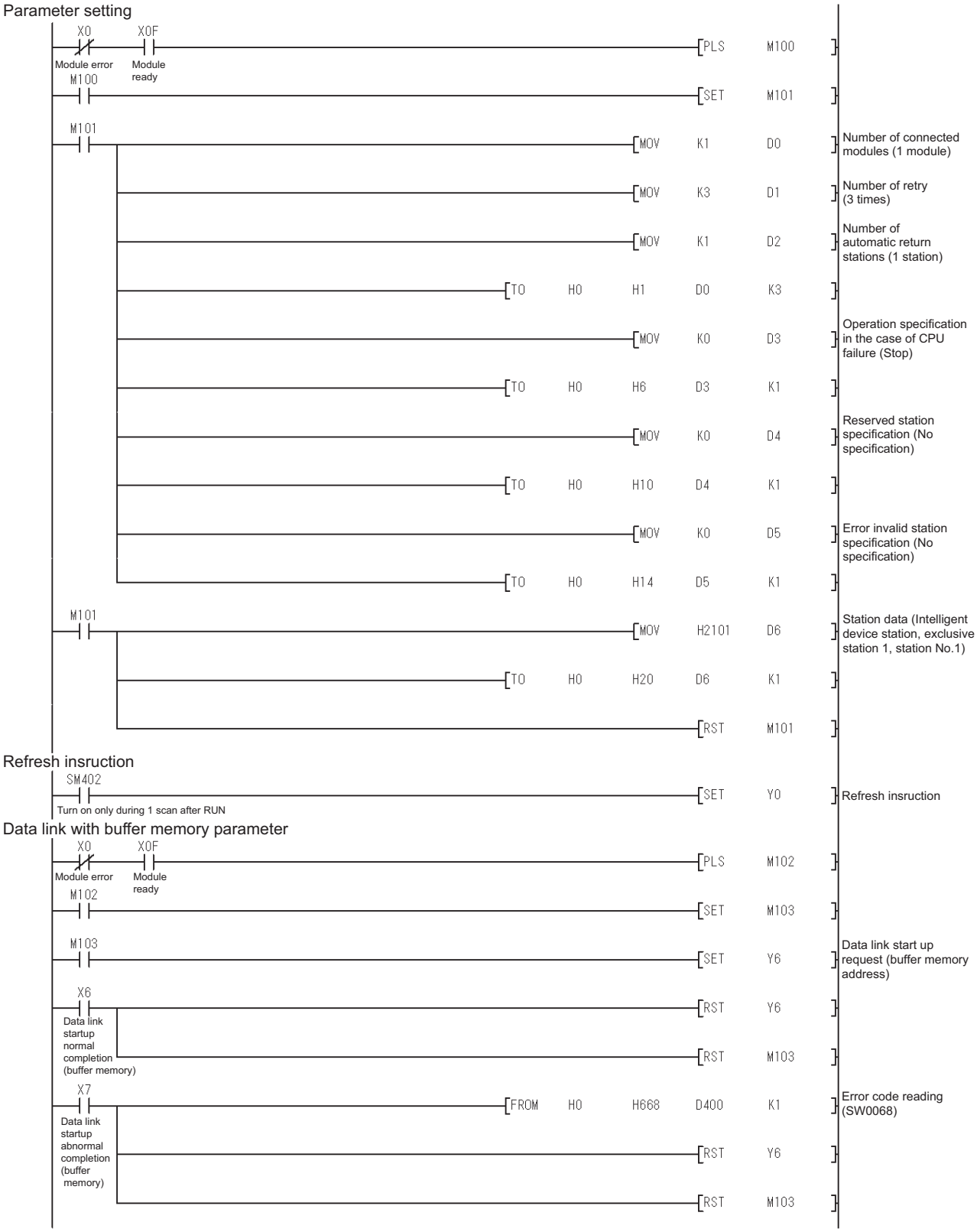


1) Station No. (Set the same station No. as that of the GOT.)
01H to 40H : Station No. 1 to Station No. 64

2) Number of stations occupied (Set the number of station occupied as that of the GOT.)
1H: Exclusive station 1
2H: Exclusive station 2
3H: Exclusive station 3
4H: Exclusive station 4

3) Station type (2H: Set it to intelligent device station.)
0H: Remote I/O station
1H: Remote device station
2H: Intelligent device station (Incl. local station)

(d) Example of sequence program



Point

When changing the sequence program

After writing the sequence program to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

4 [Communication Settings] of GT Designer2

(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

Item	Setting (Use default value.)
Station No.	1: Station No.1
Transmission Rate	0: Online 156kbps
Mode	Ver.1: Remote net (Ver.1 mode)
Expanded Cyclic	Single (Use default value.)
Occupied Station	1 Station
Input for Error Station	0: Clear
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0ms (Use default value.)

(2) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

Item	Setting (Use default value.)
Retry	3 Times
Timeout Time	3 Sec

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

Section 8.2.3 Setting communication interface (Communication settings)

5 Setting of the CC-Link communication unit (Only when MODEL GT15-75J61BT13-Z CC-Link communication unit is used)

Item		Setting
Mode setting switch		0: Online (fixed)
Station number setting switch		1: Station No.1
Transmission baudrate setting switch		0: 156kbps
Condition setting switches	SW1 (Input data status of the data link error station)	OFF: Cleared
	SW2 (Number of occupied stations)	OFF: 1 station

Point

Setting of the CC-Link communication unit

For the setting method of the CC-Link communication unit, refer to the following.

Section 8.2.3 Setting communication interface (Communication settings)

8.3.5 Connecting to CC-Link module (A Series)

This section describes the settings of the GOT and CC-Link module (A Series) in the case of system configuration shown as 1.

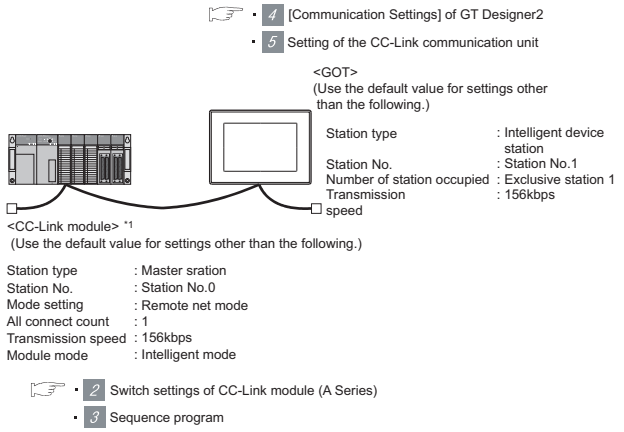
Point

CC-Link module (A Series)

For details of the CC-Link module (A Series), refer to the following manual.

Control & Communication Link System Master/ Local Module Type AJ61BT11/A1SJ61BT11 User's Manual

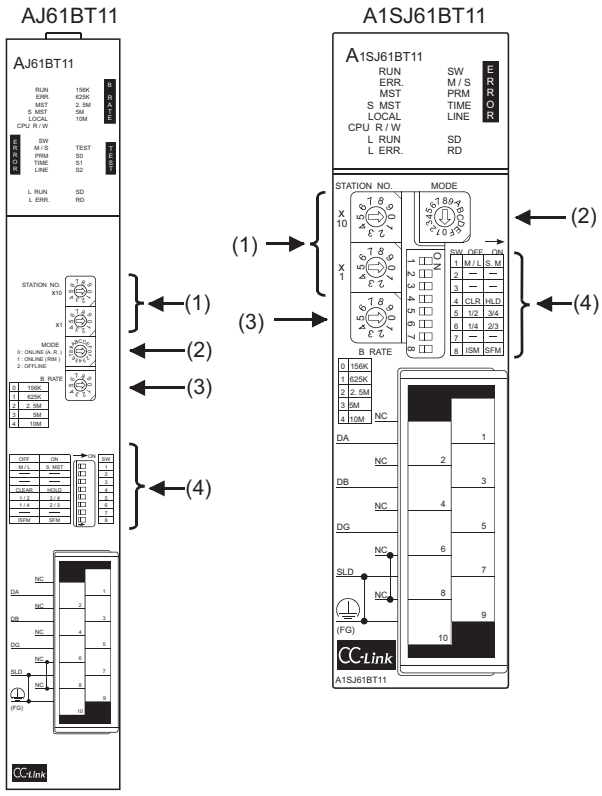
1 System configuration



*1 The CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"

2 Settings of CC-Link module (A Series)

Set for each setting switch.



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION NO. x10 x1	Station number setting (master station)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(2) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
MODE	Mode setting (Online: Remote net mode)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(3) Transmission speed setting switch

Transmission speed setting switch	Description	Setting	Setting necessity at GOT connection
B RATE 0 156K 1 625K 2 2. 5M 3 5M 4 10M	Transmission speed setting (156kbps)*1	0	○

○: Necessary △: As necessary ×: Not necessary

*1 Specify the same transmission speed as that of the GOT.

(4) Condition setting switches

Condition setting switches	Setting switch	Description	Setting	Setting necessity at GOT connection
ON SW OFF ON 1 M / L S. M 2 — — 3 — — 4 CLR HLD 5 1/2 3/4 6 1/4 2/3 7 — — 8 ISM SFM	SW1	Station type (Master station / Local station)	OFF (fixed)	○
	SW2	Not used	OFF (fixed)	×
	SW3			
	SW4	Input data status of the data link error station (clear)	OFF	△
	SW5	Number of station setting *2	OFF (fixed)	×
	SW6			
	SW7	Not used	OFF (fixed)	×
	SW8	Module mode (Intelligent mode)	OFF (fixed)	○

○: Necessary △: As necessary ×: Not necessary

*2 Will be valid when the CC-Link module is a local station.
In the case of the master station, turn off it.

Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 Sequence program

The parameter setting and the sequence program of the data link startup request is required.

(1) Programming condition (with CC-Link dedicated instructions)

The program sets the network parameter and automatic refresh parameter when PLC CPU status changes from STOP to RUN, and automatically starts the data link with CC-Link dedicated instructions.

(a) I/O signal of CC-Link module

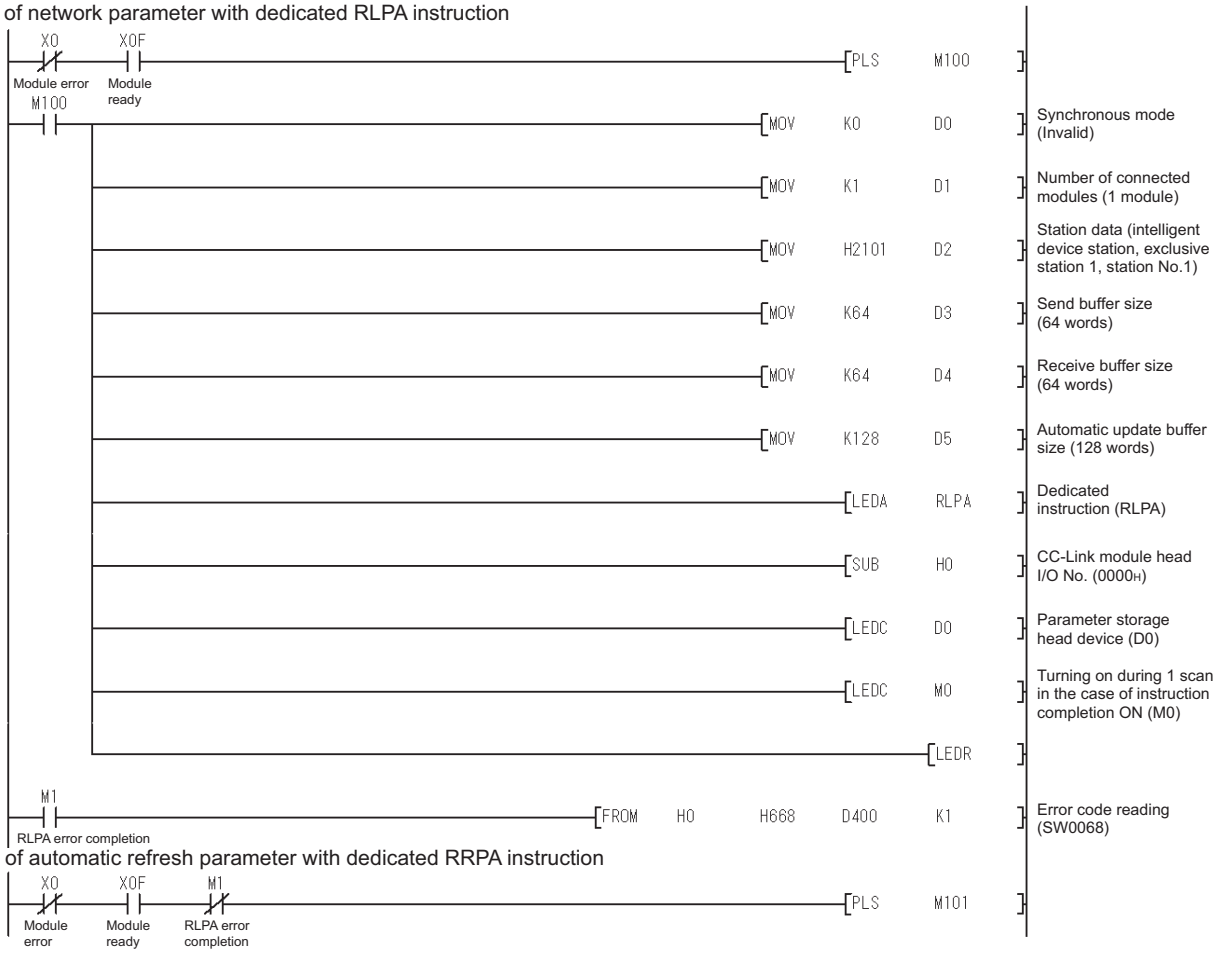
☞ Control & Communication Link System Master/ Local Module Type AJ61BT11/A1SJ61BT11 User's Manual

(b) Devices used by user

Device	Application
M0	RLPA instruction normal completion flag
M1	RLPA instruction error completion flag
M100	Network parameter setting flag
M101	Automatic refresh parameter setting flag
D0	Synchronous mode valid/invalid
D1	Number of connected modules
D2	Station data
D3	Send buffer size
D4	Receive buffer size
D5	Automatic update buffer size
D400	Error code in the case of error completion of RLPA instruction
D100 to D103	Automatic refresh setting (RX)
D104 to D107	Automatic refresh setting (RY)
D108 to D111	Automatic refresh setting (RW)
D112 to D115	Automatic refresh setting (SB)
D116 to D119	Automatic refresh setting (SW)

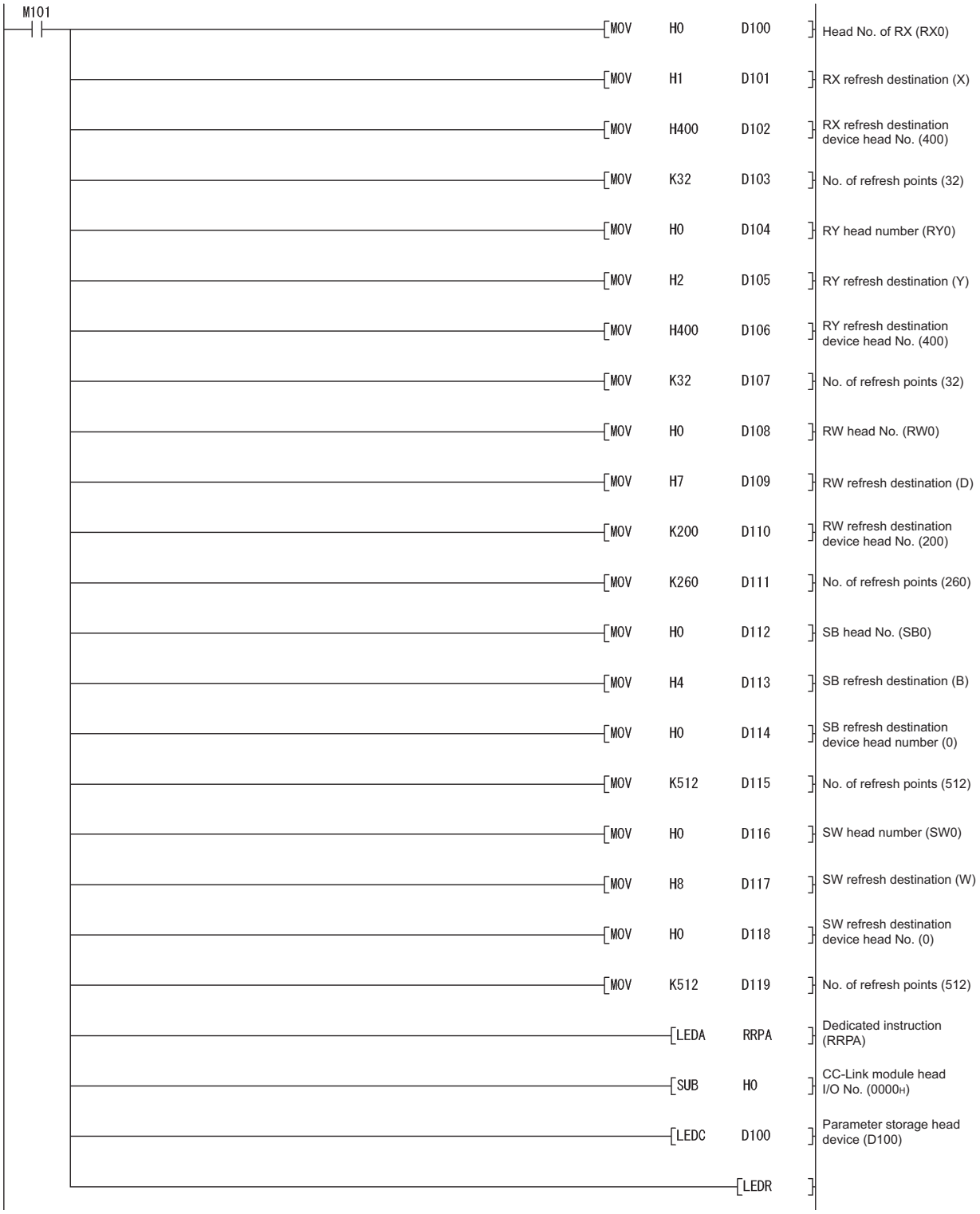
(c) Example of sequence program (CC-Link dedicated instruction)

* Setting of network parameter with dedicated RLPA instruction



* Setting of automatic refresh parameter with dedicated RRPA instruction

(Continued to next page)



Point

When changing the sequence program

After writing the sequence program to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(2) Program condition (for FROM/TO instruction)

This program writes parameters to the buffer memory when PLC CPU status changes from STOP to RUN and automatically starts the data link with FROM/TO instruction.

(a) I/O signal of CC-Link module

☞ Control & Communication Link System Master/Local Module Type AJ61BT11/ A1SJ61BT11 User's Manual

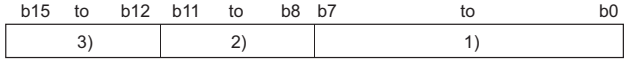
(b) Devices used by user

Device	Application
M100, M101	Flag for parameter setting
M102, M103	Flag for data link startup
D0	Number of connected modules
D1	Number of retry
D2	No. of automatic return stations
D3	Operation specification in the case of CPU failure
D4	Reserved station specification (Station No. 1 to Station No. 16)
D5	Error invalid station specification (Station No. 1 to Station No. 16)
D6	Station data (first module)
D400	Error code in the case of data link startup failure

(c) Buffer memory settings used in the present example

Buffer memory address Decimal (Hexadecimal)	Item	Setting
1 (1H)	Number of connected modules	1 (1 module)
2 (2H)	Number of retry	3 (3 times)
3 (3H)	Number of automatic return stations	1 (1 station)
6 (6H)	Operation specification in the case of CPU failure	0 (stop)
16 (10H)	Reserved station specification (Station No. 1 to Station No. 16)	0 (No specification)
20 (14H)	Error invalid station specification (Station No. 1 to Station No. 16)	0 (No specification)
32 (20H)	Station data (first module)*1	2101H

*1 Details for the station data are shown below.
For 1) and 2), set the same station No. and number of station occupied settings as those of the GOT.
For 3), the setting is fixed.



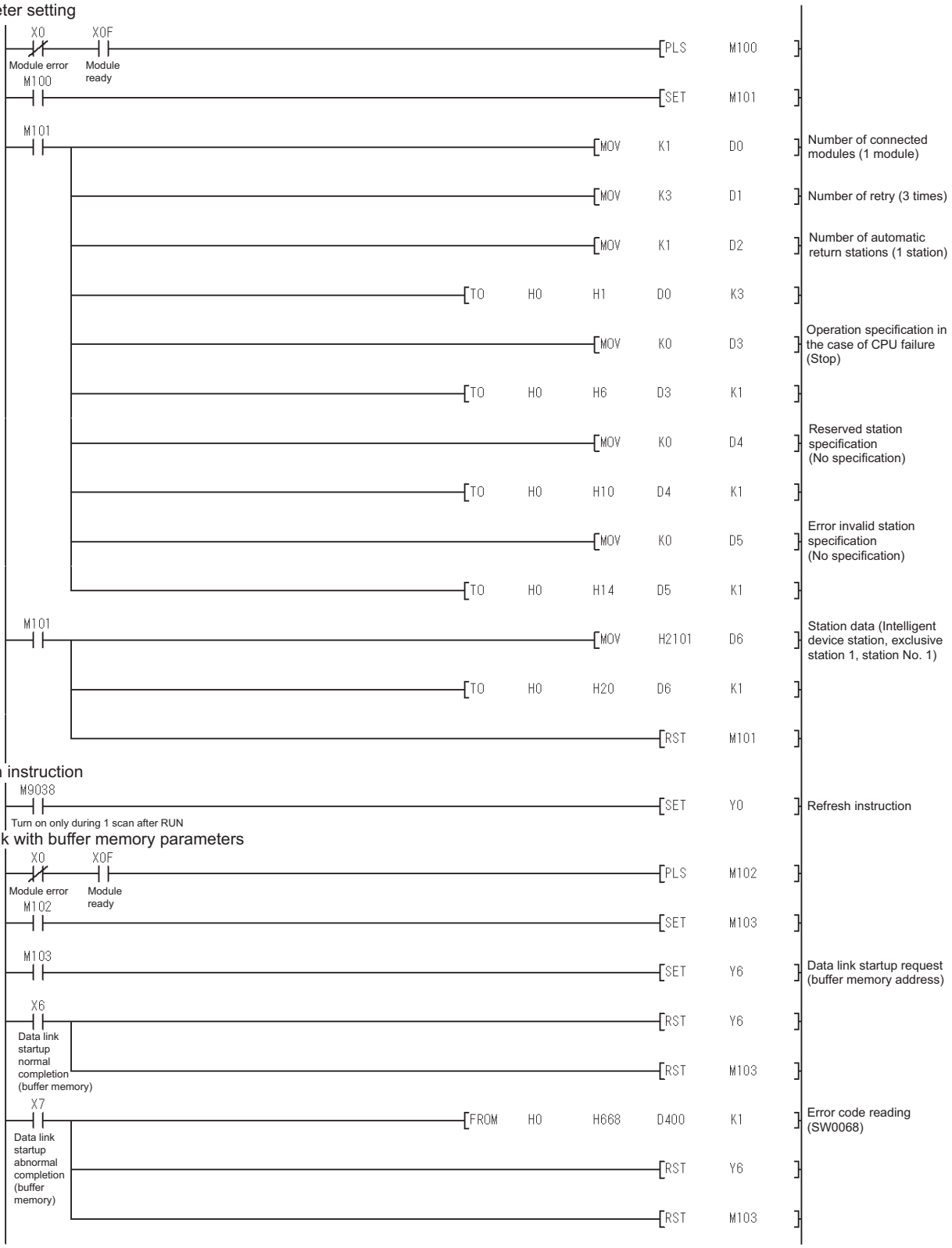
1) Station No. (Set the same station No. setting as that of the GOT.)
01H to 40H: Station No. 1 to Station No. 64

2) Number of stations occupied (Set the same setting of the number of station occupied as that of the GOT.)
1H : Exclusive station 1
2H : Exclusive station 2
3H : Exclusive station 3
4H : Exclusive station 4

3) Station type (2H : Set it to intelligent device station.)
0H : Remote I/O station
1H : Remote device station
2H : Intelligent device station (Incl. local station)

(d) Example of sequence program (FROM/TO instruction)

* Parameter setting



* Refresh instruction

* Data link with buffer memory parameters

Point

When changing the sequence program

After writing the sequence program to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

4 [Communication Settings] of GT Designer2

(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

Item	Setting
Station No.	1: Station No.1
Transmission Rate	0: Online 156kbps
Mode	Ver.1: Remote net (Ver.1 mode)
Expanded Cyclic	Single (Use default value.)
Occupied Station	1 Station
Input for Error Station	0: Clear
Retry	3 Times (Use default value.)
Timeout Time	3 Sec (Use default value.)
Delay Time	0ms (Use default value.)

(2) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

Item	Setting (Use default value.)
Retry	3 Times
Timeout Time	3 Sec

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

☞ Section 8.2.3 Setting communication interface (Communication settings)

5 Setting of the CC-Link communication unit (Only when MODEL GT15-75J61BT13-Z CC-Link communication unit is used)

Item		Setting
Mode setting switch		0: Online (fixed)
Station number setting switch		1: Station No.1
Transmission baudrate setting switch		0: 156kbps
Condition setting switches	SW1 (Input data status of the data link error station)	OFF: Cleared
	SW2 (Number of occupied stations)	OFF: 1 station

Point

Setting of the CC-Link communication unit

For the setting method of the CC-Link communication unit, refer to the following.

☞ Section 8.2.3 Setting communication interface (Communication settings)

8.4 Precautions

1 Using cyclic transmission

(1) I/O signal for master station

Do not turn on the reserved output signals in the output signals (remote output: RY) to the GOT from the master station.

When the reserved output signal is turned on, the PLC system may be malfunctioned.

For the assignment of I/O signals in the GOT, refer to the following manual.

☞ • MODEL GT15-J61BT13 CC-Link communication unit User's Manual
• GT15 CC-Link communication unit User's Manual

(2) Access range that can be monitored

The monitoring range of remote I/O (RX and RY) and that of the remote registers (RWr and RWw) vary according to the mode in the master station of the CC-Link system.

Mode of master station	Applicable of monitoring	
	Data for each station compatible with CC-Link ver.1	Data for each station compatible with CC-Link ver.2
Remote net mode	○	-
Remote net ver.1 mode	○	-
Remote net ver.2 mode	○	○*1
Remote net additional mode	○	○*1

○: Applicable ×: N/A(All "0") -: N/A of system configuration

*1 Monitoring is applicable only when MODEL GT15-J61BT13 CC-Link communication unit is used.

(3) When an error occurs on the GOT, the cyclic output status holds the status before the occurrence.

2 For transient transmission

(1) CC-Link module of target station

Mount the CC-Link module of function version B or later and software version J or later to the PLC CPU when performing the following CC-Link modules and transient transmission.

Only cyclic transmission can be communicated with the CC-Link module of function version A or before and software version I or before.

- AJ61BT11
- A1SJ61BT11
- AJ61QBT11
- A1SJ61QBT11

(2) Access range that can be monitored

The GOT can access to the PLC CPU mounting the master and local station of the CC-Link System. It cannot access another network via the CC-Link module.

3 GOT startup in the CC-Link connection (intelligent device station)

For CC-Link connection (intelligent device station), the data link is started approximately 10 seconds after the GOT startup.

4 When an error for the network occurs in the system alarm

In the CC-Link connection (intelligent device station), when a network error occurs in the system alarm, the system alarm display cannot be canceled even though the causes are removed.

To cancel the system alarm display, restart the GOT

5 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.
QCPU (Q mode), motion controller (Q series): 10 seconds or more
MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs. Adjust the opening screen time in the GOT setup so that no system alarm occurs.

☞ GT Designer2 Version □ Screen Design Manual

6 With Q17nDCPU, Q170MCPU, CNC C70, CRnQ-700

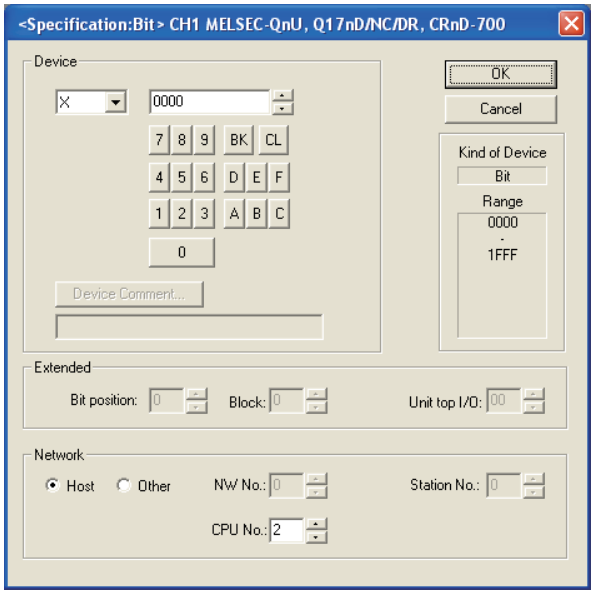
The Q17nDCPU, Q170MCPU, CNC C70 and CRnQ-700 are applicable to the CC-Link network system Ver.2 only.
For connecting to the CC-Link (ID) network system, set the CC-Link (ID) network system to the CC-Link Ver.2 mode.

7 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



8.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
CC-Link connection (Intelligent device station)	Supporting the CC-Link connection (intelligent device station).	2.09K	Communication driver CC-Link(ID) [01.02.**]
	Supporting CC-Link Ver.2	2.32J	Communication driver CC-Link Ver.2(ID) [03.00.**]
Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q172DCPU, Q173DCPU, Q173NCCPU	2.63R	Communication driver CC-Link Ver.2 (ID) [03.07.**]
Robot controller connection	Supporting the connection to CRnQ-700	2.73B	Communication driver CC-Link Ver.2 (ID) [03.09.**]
Applicable CPU	Supporting the connection to the following CPUs Q13UDHCPU, Q26UDHCPU	2.77F	Communication driver CC-Link Ver.2 (ID) [03.12.**]
Applicable CPU	Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q02PHCPU, Q06PHCPU	2.82L	Communication driver CC-Link Ver.2 (ID) [03.13.**]
CC-Link connection (Intelligent device station)	Supporting the connection to GT16	2.90U	Communication driver CC-Link Ver.2 (ID) [04.02.**]
Applicable CPU	Supporting the connection to the following CPUs Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU	2.91V	Communication driver CC-Link Ver.2 (ID) [04.03.**]
Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver CC-Link Ver.2 (ID) [04.04.**]

MEMO

9

CC-Link CONNECTION (Via G4)



9.1 System Configuration . . . . . page 9-2

This section describes the equipment and cables needed for CC-Link connection (via G4).
Select a system suitable for your application.

9.2 Connection Cable . . . . . page 9-8

This section describes the specifications of the cables needed for CC-Link connection (via G4).
Check the specifications of the connection cables.

9.3 Preparatory Procedures for Monitoring . . . . . page 9-13

This section describes the procedures to be followed before monitoring in CC-Link connection (via G4).
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

9.4 PLC Side Settings . . . . . page 9-23

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

9.5 Precautions . . . . . page 9-28

This section describes precautions for CC-Link connection (Via G4).
Be sure to read this when establishing CC-Link connection (Via G4).

9.6 List of Functions Added by Version Upgrade . . . . . page 9-29

This section describes the functions added by version upgrade of GT Designer2 or OS.

9.1 System Configuration

Select a system configuration suitable for your application.

Point

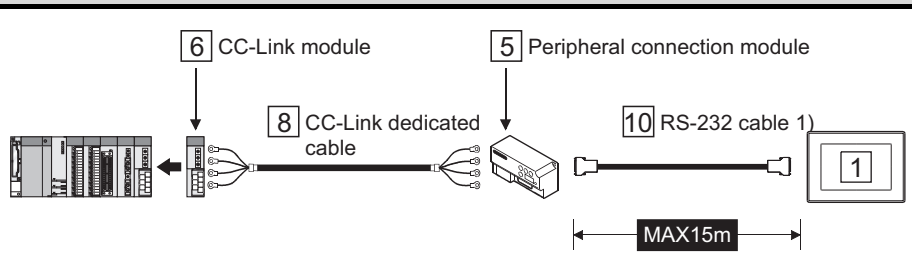
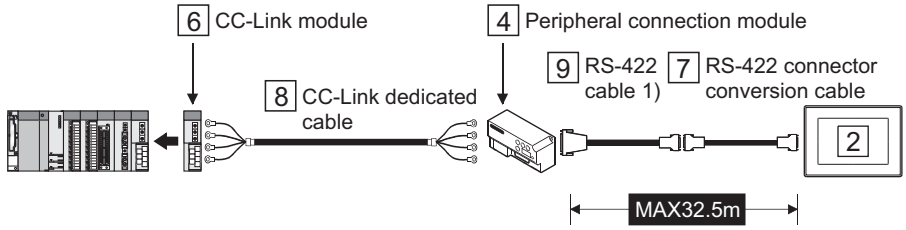
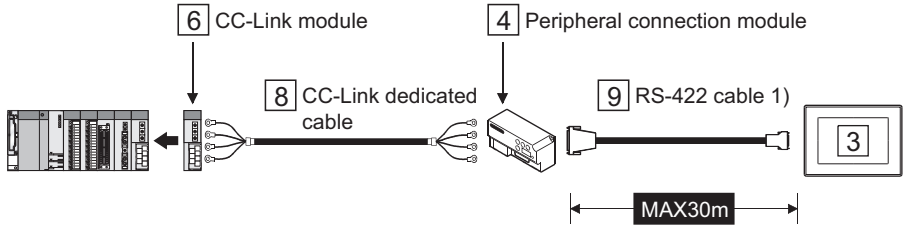
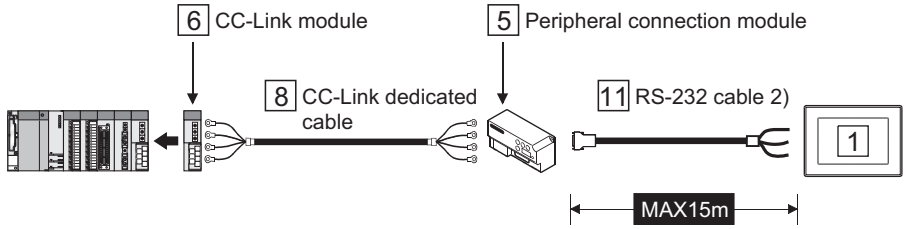
(1) PLC CPU QCPU (Q mode) that can be monitored in CC-Link (via G4) can be monitored.
QnACPU, ACPU or QCPU (A mode) cannot be monitored.

(2) Conventions used in this section
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

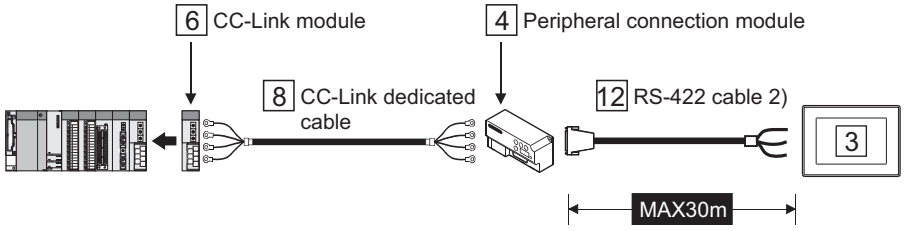
9.1.1 Connecting to QCPU (Q mode)

Communication driver
CC-Link (G4)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	*1		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT 24V 10 20 30 (RS-232)

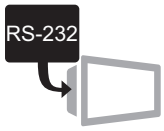
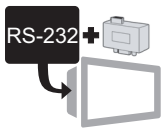
(Continued to next page)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	*1		GT 24V 10 20 30 (RS-422)

*1 Max. overall extension cable length and the cable length between stations vary depending on the cable type to be used and the transmission speed.
For details, refer to the following manual.
CC-Link System Master/Local Module User's Manual QJ61BT11N\

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT 16 GT 15 GT 11 Serial GT 10 5□ 4□ GT 24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT 16 GT 15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT 16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT 16 GT 15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT 11 Serial GT 10 5□ 4□ GT 24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT 16 GT 15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

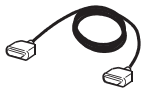
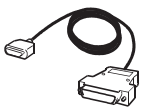
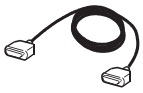
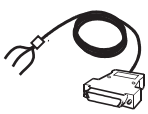
Image	No.	Name	Model name
	4	Peripheral connection module*2	AJ65BT-G4-S3
	5	Peripheral connection module	AJ65BT-R2N
	6	CC-Link module*3	QJ61BT11, QJ61BT11N

*2 AJ65BT-G4 cannot be connected to the GOT.

*3 For the system configuration of the CC-Link module, refer to the following manual.

☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

(3) Cable

Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	CC-Link dedicated cable • Between CC-Link module and peripheral connection module	For the specifications and inquiries of the CC-Link dedicated cable, refer to the following. ☞ CC-Link Partner Association's home page: http://www.cc-link.org/	GT16 GT15 GT11 Serial GT105□4□ GT24V 10 20 30
	9	RS-422 cable 1) • Between peripheral connection module and GOT • Between peripheral connection module and RS-422 connector conversion cable	GT01-C30R4-25P(3m), GT01-C100R4-25P(10m) GT01-C200R4-25P(20m), GT01-C300R4-25P(30m)	GT16 GT15 GT11 Serial GT105□4□
	10	RS-232 cable 1)*1 • Between peripheral connection module and GOT	GT09-C30R2-9P(3m)	
	11	RS-232 cable 2) • Between peripheral connection module and GOT	(To be prepared by the user. ☞ Section 9.2 Connection Cable)	GT24V 10 20 30 (RS-232)
	12	RS-422 cable 2)*2 • Between peripheral connection module and GOT	GT10-C30R4-25P(3m), GT10-C100R4-25P(10m), GT10-C200R4-25P(20m), GT10-C300R4-25P(30m)	GT24V 10 20 30 (RS-422)

*1 The RS-232 cable can be prepared by the user. (☞ Section 9.2 Connection Cable)

*2 Refer to the following for connecting RS-422 cable 2) and the connector terminal block on GT10.

☞ Section 9.2 Connection Cable

9.1.2 Connecting to the motion controller CPU (Q Series)

Communication driver
CC-Link (G4)

1 When connecting to a CPU other than Q170MCPU

A motion controller CPU (Q Series) mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

The system configuration, connection conditions, and system equipment for connecting a GOT to a motion controller CPU (Q Series) are the same as those for connecting to the QCPU (Q mode).

(☞ Section 9.1.1 Connecting to QCPU (Q mode))

GT16 GT15 GT11 Serial

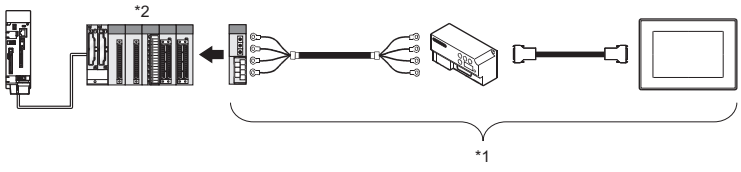
2 Connecting to Q170MCPU

The following shows the system configuration and connection conditions between Q170MCPU and the GOT.

The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for the QCPU (Q mode).

(☞ Section 9.1.1 Connecting to QCPU (Q mode))

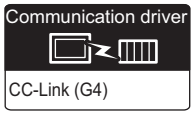
(1) System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
*1	*1		GT16 GT15 GT11 Serial

*1 The system configuration and connection conditions are same as those for connecting a GOT to the QCPU (Q mode).

*2 Only the first step can be used on the extension base unit (Q52B/Q55B).

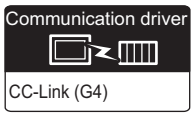
9.1.3 Connecting to CNC C70



The GOT can monitor the CNC C70 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CNC C70 are the same as those for connecting to the QCPU (Q mode).
(☞ 9.1.1Connecting to QCPU (Q mode))

GT16 GT15 GT11 Serial

9.1.4 Connecting to CRnQ-700



The GOT can monitor the CRnQ-700 in the multiple CPU system with the QCPU (Q mode).
The system configuration, connection conditions, system equipment for connecting to the CNC CRnQ-700 are the same as those for connecting to the QCPU (Q mode).
(☞ 9.1.1Connecting to QCPU (Q mode))

GT16 GT15 GT11 Serial

9.2 Connection Cable

- The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user.
- For wiring the RS-422 cable connecting GT1030 or GT1020 to the peripheral connection module, refer to the connection diagram for the cable.

The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞Section 9.2.1)

Model		Connection cable		
		GT16	GT15, GT11, GT105□, GT104□	GT1030, GT1020
Peripheral connection module	AJ65BT-R2N	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 2)

2 RS-422 cable (☞Section 9.2.2)

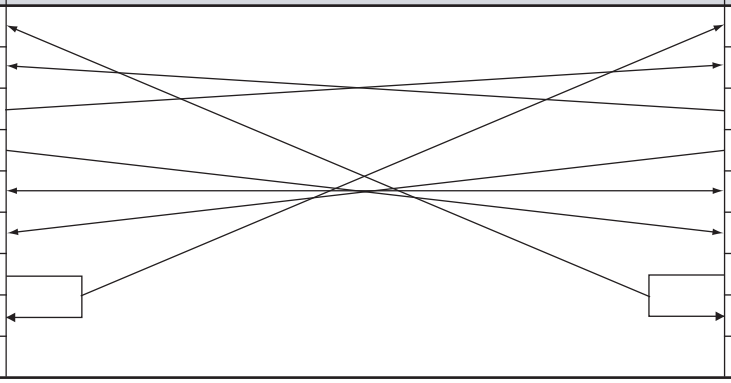
Model		Connection cable		
		GT16	GT15, GT11, GT105□, GT104□	GT1030, GT1020
Peripheral connection module	AJ65BT-G4-S3	—	—	RS-422 cable 2)

9.2.1 RS-232 cable

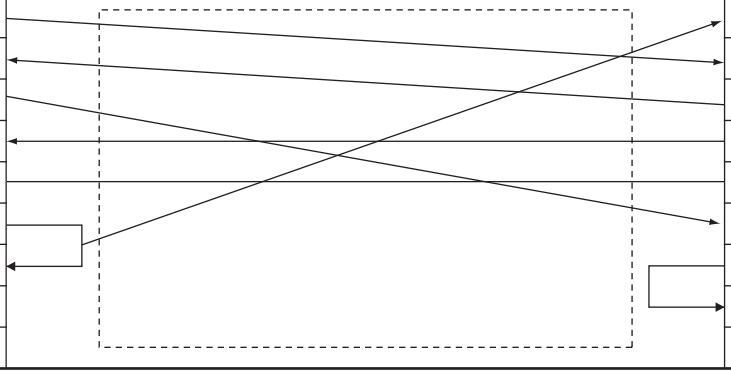
The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a PLC.

1 Connection diagram

(1) RS-232 cable 1) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side (D-sub 9pin)		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	CD
RD(RXD)	2		2	RD(RXD)
SD(TXD)	3		3	SD(TXD)
ER(DTR)	4		4	ER(DTR)
SG	5		5	SG
DR(DSR)	6		6	DR(DSR)
RS(RTS)	7		7	RS(RTS)
CS(CTS)	8		8	CS(CTS)
—	9		9	—

(2) RS-232 cable 2) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PLC side	
Signal name		Pin No.	Signal name
SD		1	CD
RD		2	RD(RXD)
ER		3	SD(TXD)
DR		4	ER(DTR)
SG		5	SG
RS		6	DR(DSR)
CS		7	RS(RTS)
NC		8	CS(CTS)
NC		9	NC

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

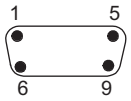
☞ GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

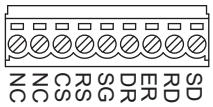
GOT main part connector
see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a
GOT main part



9-pin terminal block

(2) PLC side connector

Use the connector compatible with the PLC side module.

For details, refer to the following manual.

☞ User's Manual for the Peripheral connection module.

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

9.2.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Connection diagram

(1) RS-422 cable 2) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	Untied wire color of GT10-C☐☐☐R4-25P
SDA		Brown
SDB		Red
RDA		Orange
RDB		Yellow
SG		Green
RSA		Blue
RSB		Purple
CSA		Black
CSB		White

2 Connector specifications

(1) GOT side connector
Use the following as the RS-422 interface connector on the GOT.

(a) Connector type

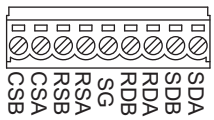
GOT	Connector type	Model	Manufacturer
GT1030, GT1020	9-pin terminal block*1	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.

*1 The terminal block (MC1.5/9-ST-3.5BK or corresponding product)of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) PLC side connector
Use the connector compatible with the PLC side module.
For details, refer to the following manual.

☞ User's Manual for the Peripheral connection module

9.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 9.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 9.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 9.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 9.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 9.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 9.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 9.3.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

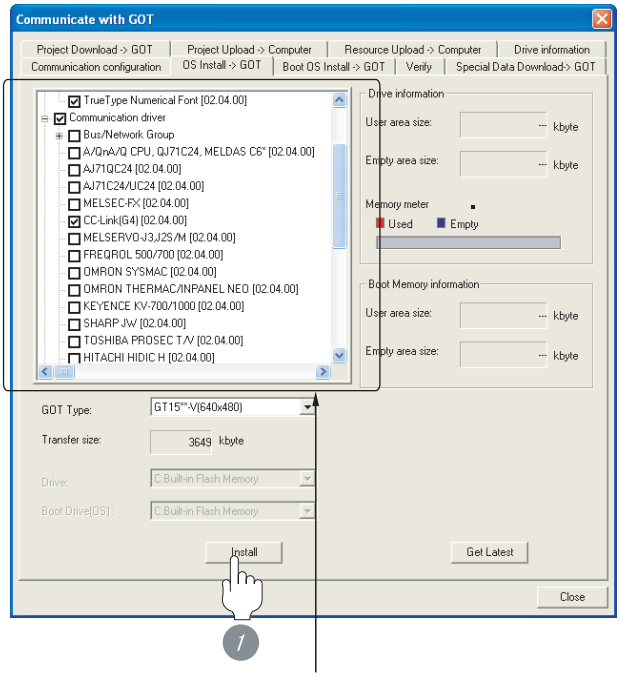
Section 9.4 PLC Side Settings

9.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
CC-Link (G4)

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

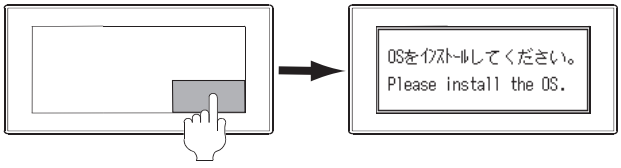
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

GT10 User's Manual

(Operating of transmission mode)



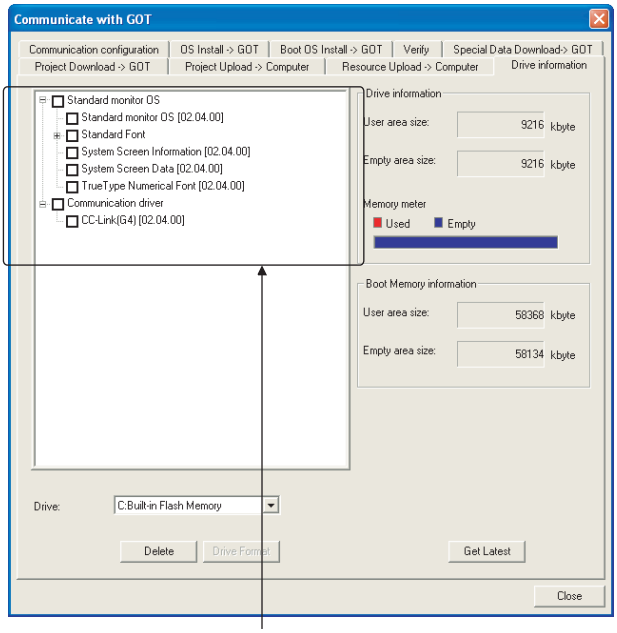
Turn on the GOT while the bottom right corner is touched.

9.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:
1) Standard monitor OS
2) Communication driver: CC-Link (G4)

9.3.3 Setting communication interface (Communication settings)

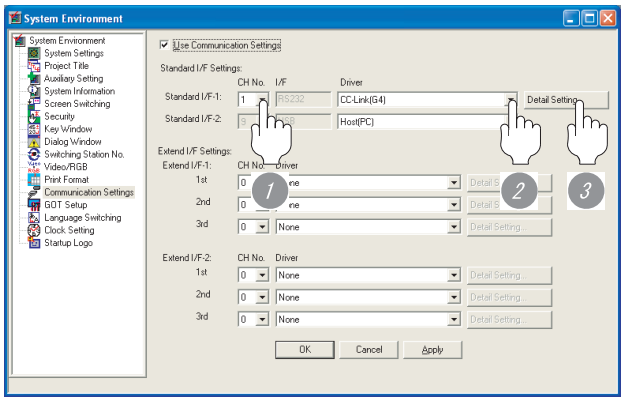
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



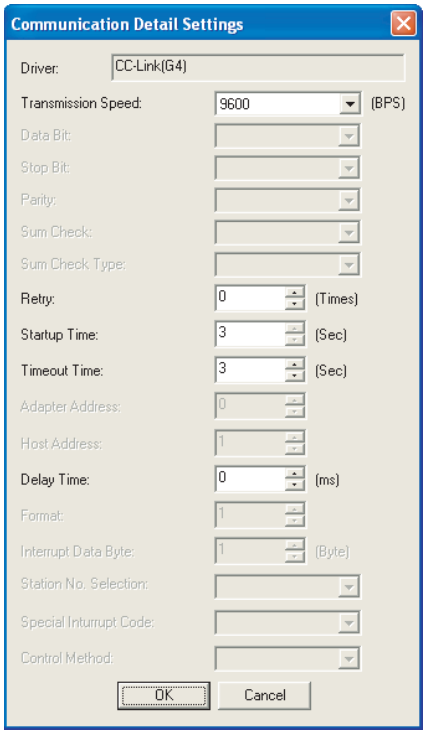
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "CC-Link (G4)".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps 57600bps 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

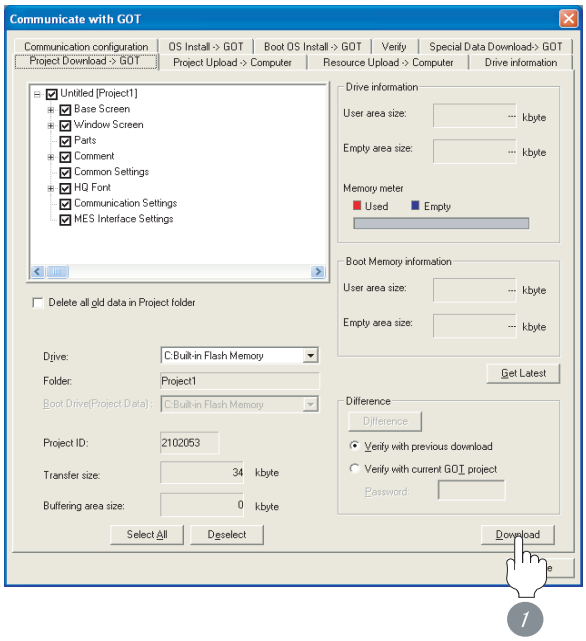
Communication settings can be changed on only GT Designer2.

9.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

9.3.5 Attaching communication unit and connecting cable

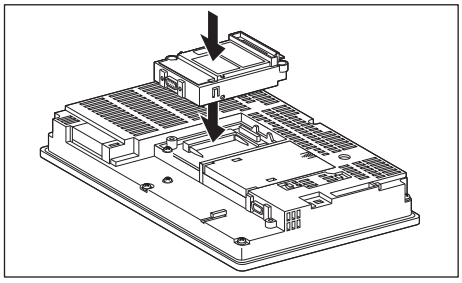
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

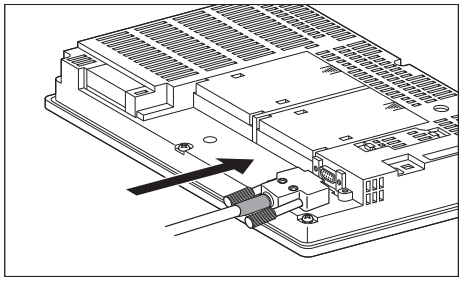
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

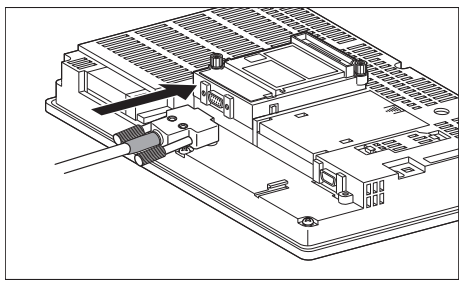
- connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



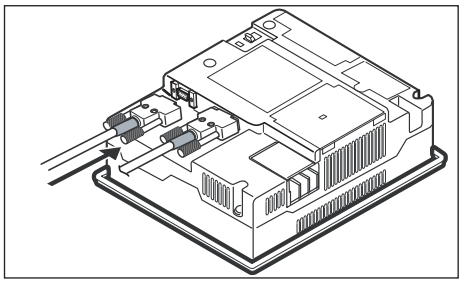
• connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



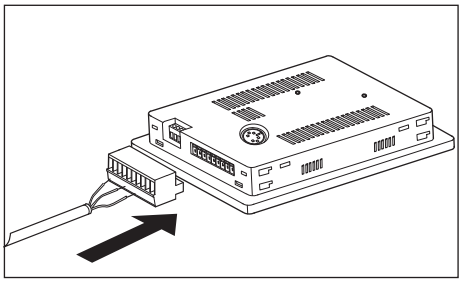
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

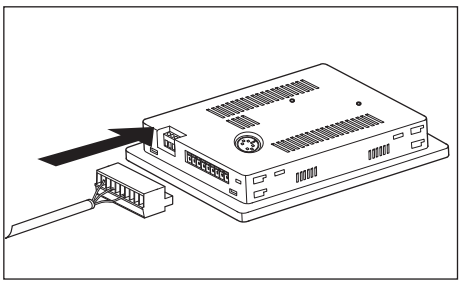


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

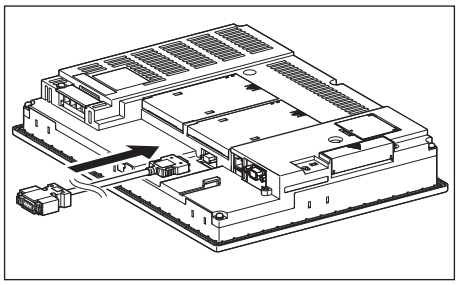


(2) How to connect the RS-422 cable

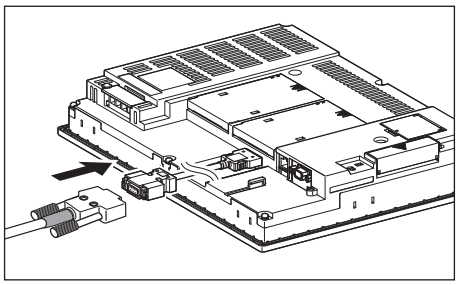
(a) For GT16

• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

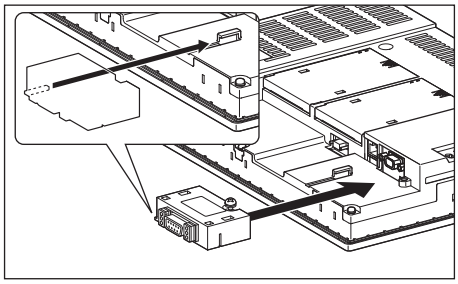


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

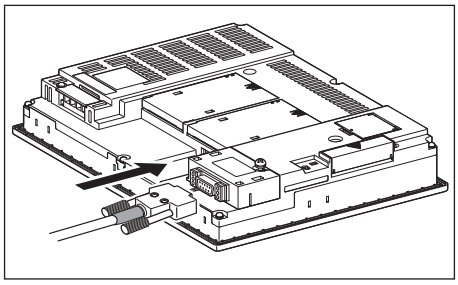


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

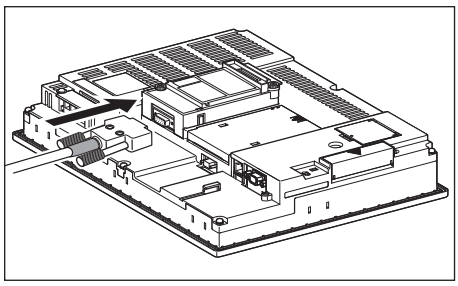


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

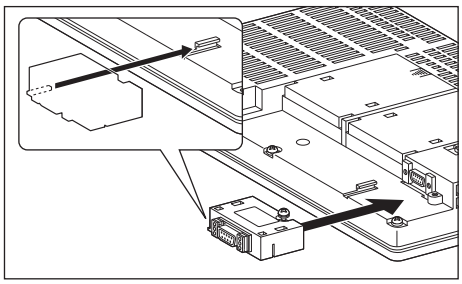
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



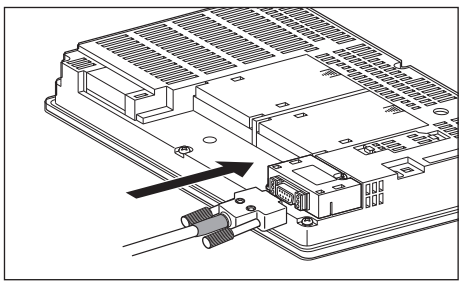
(b) For GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

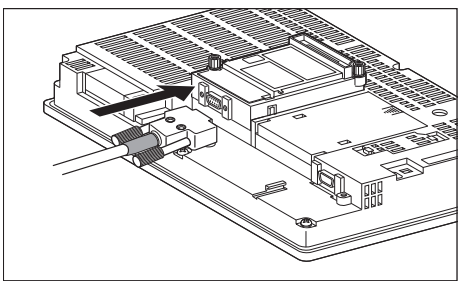


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

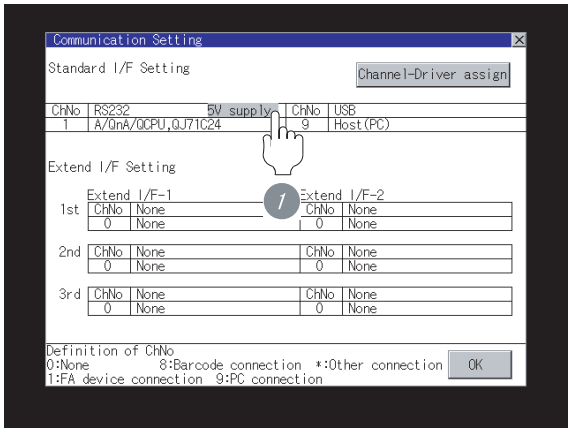
Point

When using the RS-422 conversion unit

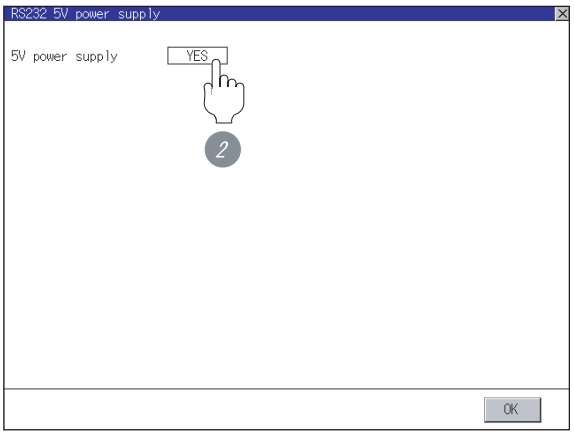
On "Communication Setting" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

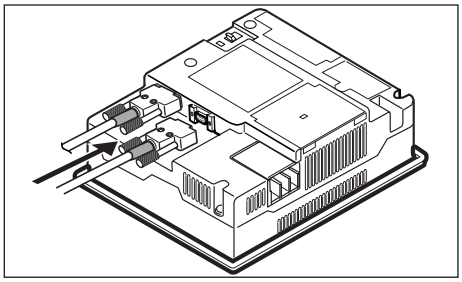


2 Set [5V power supply] to "YES".



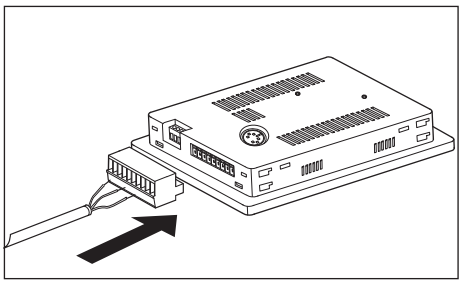
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

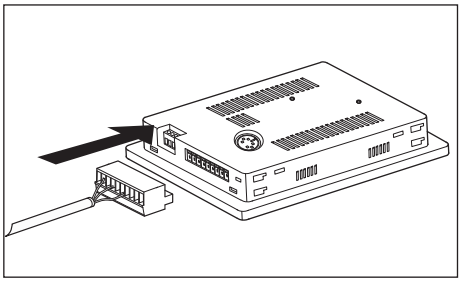


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



9.3.6 Verifying GOT recognizes controllers

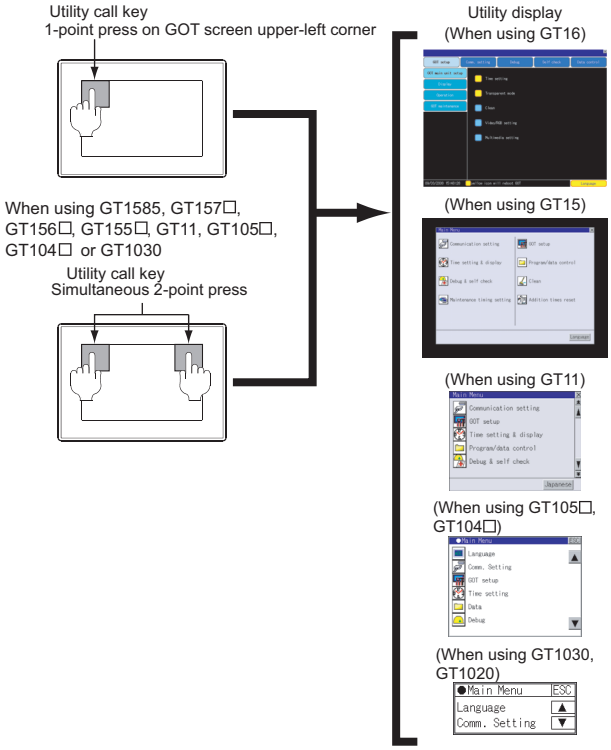
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16, GT1595 or GT1020

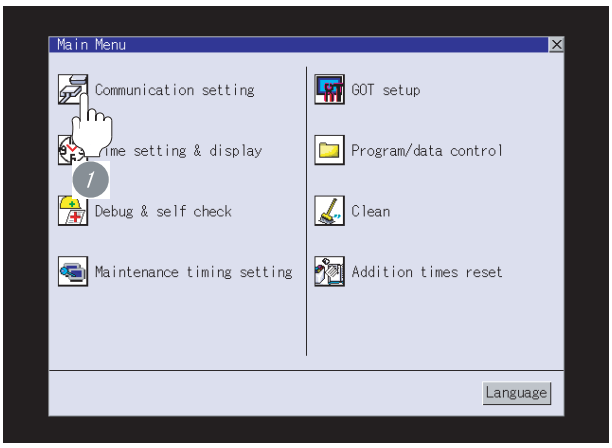


Point

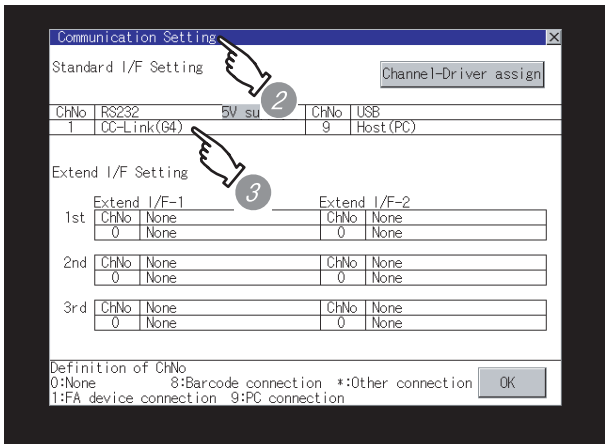
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: CC-Link(G4)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 9.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

Communication settings can be changed on only GT Designer2.

9.3.7 Checking for normal monitoring

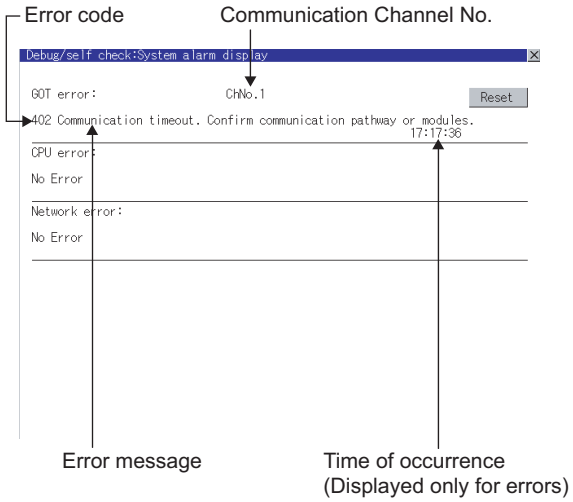
1 Check for errors occurring on the GOT (for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check (for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

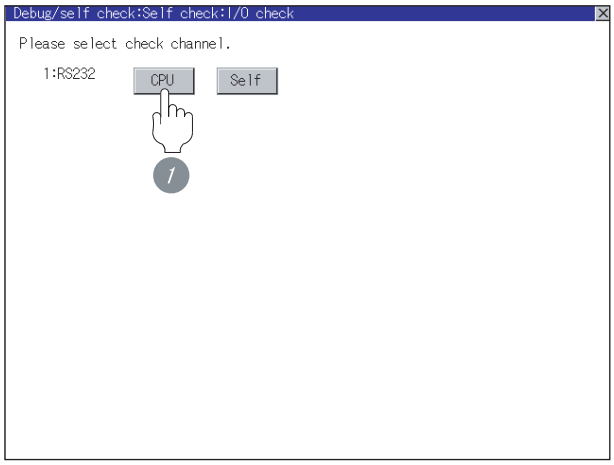
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

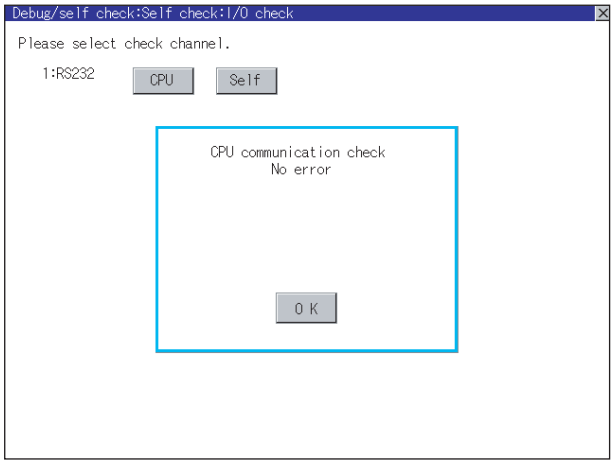
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

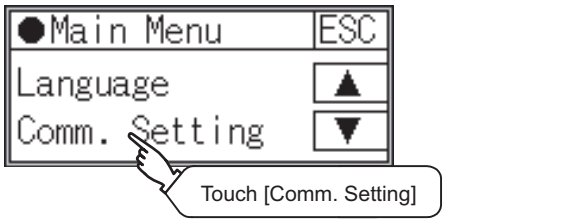
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

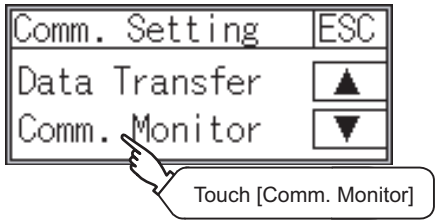
(Operation of communication monitoring function screen)

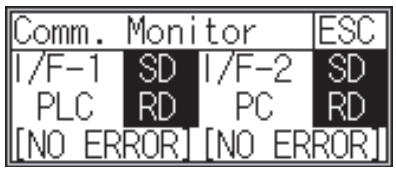
Main Menu





Communication settings





4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 9.4 PLC Side Settings

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

9.4 PLC Side Settings

Model		Reference
Peripheral connection module	AJ65BT-G4-S3	Section 9.4.1
	AJ65BT-R2N	Section 9.4.2

9.4.1 Connecting AJ65BT-G4-S3

This section describes the settings of the GOT and peripheral connection module in the case of the system configuration shown as 1.

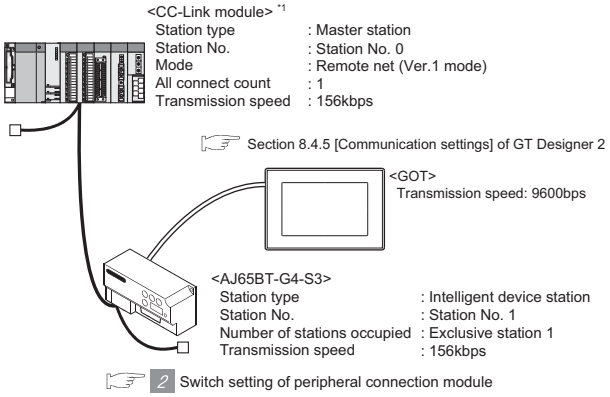
Point

(1) Peripheral connection module
For details of the peripheral connection module, refer to the following manual.
☞ Peripheral Connection Module Type AJ65BT-G4-S3 User's Manual (detail volume)

(2) CC-Link module (Q Series)
For details of the CC-Link module (Q Series), refer to the following manual.
☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

1 System configuration

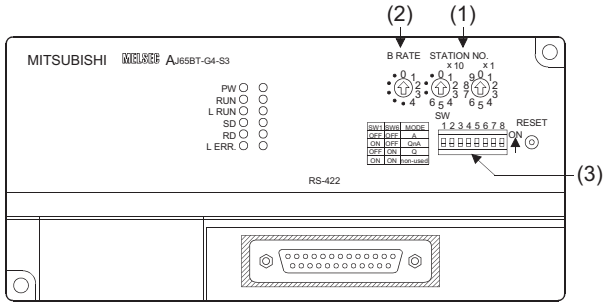
☞ ・Section 8.4.3 Switch settings of CC-Link module (Q Series)
・Section 8.4.4 [Network parameter] of GX Developer



*1 The CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"

2 Switch setting of peripheral connection module

Set the station number setting switch, data link transmission speed setting switch, and operation setting DIP switch.



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION NO. x10 x1	AJ65BT-G4-S3 station number setting	1 to 64	○

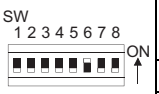
○: Necessary △: As necessary ×: Not necessary

(2) Data link transmission speed setting switch

Data link transmission speed setting switch	Description	Setting	Setting necessity at GOT connection
B RATE	Data link transmission speed setting	0:156kbps 1:625kbps 2.5Mbps 3:5Mbps 4:10Mbps	○

○: Necessary △: As necessary ×: Not necessary

(3) Operation setting DIP switch

Operation setting DIP switch	Setting switch	Description	Setting	Setting necessity at GOT connection
	SW1, SW6	Operation mode	SW1 = OFF SW6= ON (fixed) (Q mode)	○
	SW2	Peripheral transmission speed*1	OFF (fixed)	×
	SW3			
	SW4	Not used	OFF (fixed)	×
	SW5			
	SW7			
	SW8	Test mode	OFF (fixed) (Online mode)	○

○: Necessary △: As necessary ×: Not necessary

*1 The peripheral connection module operates with the baud rate set in the GOT.

Section 9.4.5 [Communication Settings] of GT Designer2

Point

Operation mode of peripheral connection module

Be sure to set the "Q mode" as an operation mode of the peripheral connection module.

9.4.2 Connecting AJ65BT-R2N

This section describes the settings of the GOT and peripheral connection module in the case of the system configuration shown as *1* .

Point

(1) Peripheral connection module

For details of the peripheral connection module, refer to the following manual.

Peripheral Connection Module Type AJ65BT-R2N User's Manual

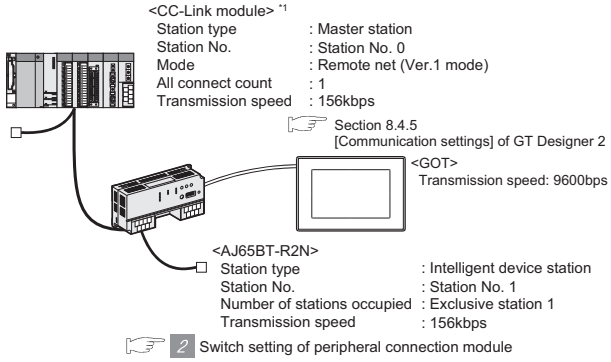
(2) CC-Link module (Q Series)

For details of the CC-Link module (Q Series), refer to the following manual.

CC-Link System Master/Local Module User's Manual QJ61BT11N

1 System configuration

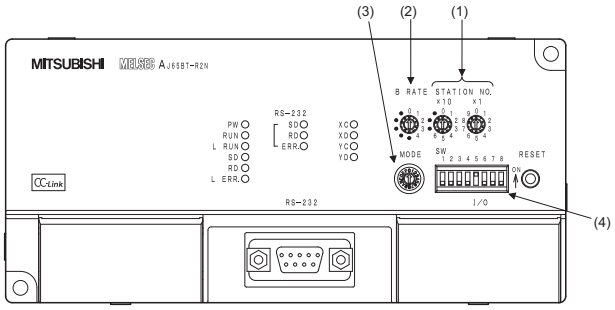
・Section 8.4.3 Switch settings of CC-Link module (Q Series)
・Section 8.4.4 [Network parameter] of GX Developer



*1 The CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"

2 Switch setting of peripheral connection module

Set the station number setting switch, data link transmission speed setting switch, and operation setting DIP switch.



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION NO. x10 x1	AJ65BT-R2N station number setting	1 to 64	○

○: Necessary △: As necessary ×: Not necessary

(2) Data link transmission speed setting switch

Data link transmission speed setting switch	Description	Setting	Setting necessity at GOT connection
B RATE	Data link transmission speed setting	0:156kbps 1:625kbps 2.5Mbps 3:5Mbps 4:10Mbps	○

○: Necessary △: As necessary ×: Not necessary

(3) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
MODE	Mode setting	5 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(4) RS-232 transmission setting switch

RS-232 transmission setting switch	Setting switch	Description	Setting	Setting necessity at GOT connection
SW 1 2 3 4 5 6 7 8 ON	SW1	Peripheral transmission speed*1	OFF (fixed)	○
	SW2			
	SW3			
	SW4			
	SW5	Date bit length	OFF (fixed)	○
	SW6	Parity bit length	OFF (fixed)	○
	SW7			
	SW8	Stop bit length	OFF (fixed)	○

○: Necessary △: As necessary ×: Not necessary

*1 The peripheral connection module operates with the baud rate set in the GOT.

Section 9.4.5 [Communication Settings] of GT Designer2

Point

Precautions when setting peripheral connection module

(1) mode setting switch

Be sure to set the Operation mode setting switch to "5(MELSOFT/connection mode)".

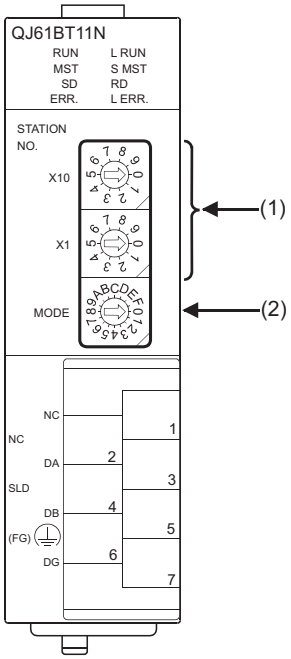
(2) RS-232 transmission setting switch

Turn OFF SW1 through SW8 of the RS-232 transmission setting switch.
If any switch of SW1 through SW8 is ON, setting error will occur (RUN LED turns off).

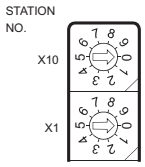
9.4.3 Switch setting of CC-Link module (Q series)

Set the station number setting switch, transmission speed / mode setting switch.

QJ61BT11, QJ61BT11N



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
	Station number setting (master station)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(2) Transmission rate/mode setting switch

Transmission rate/ mode setting switch	Description	Setting	Setting necessity at GOT connection
	Transmission rate/mode setting	0:156kbps 1:625kbps 2:2.5Mbps 3:5Mbps 4:10Mbps	○

○: Necessary △: As necessary ×: Not necessary

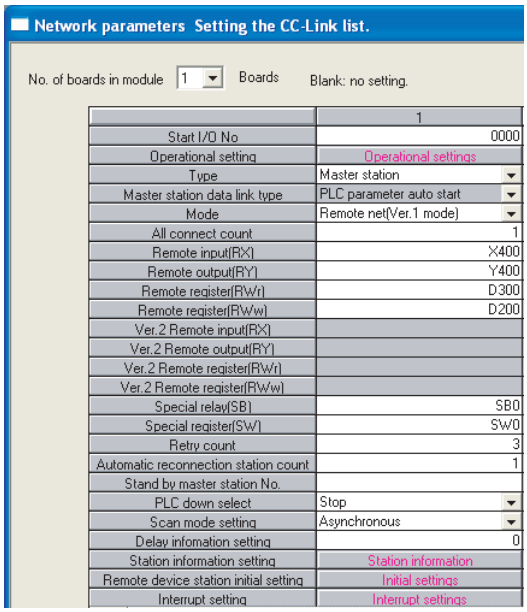
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

9.4.4 [Network parameter] of GX Developer

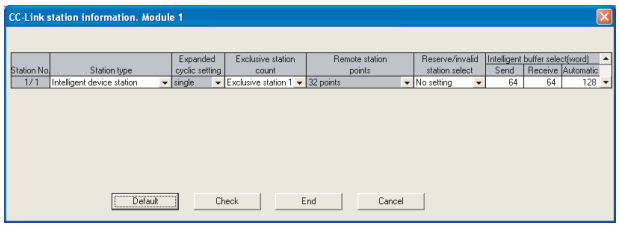
(1) Network parameter



Item	Setting	Setting necessity at GOT connection
No. of boards in module	1	○
Start I/O No.	0000H	○
Operational setting	(Use default value.)	△
Type	Master station (fixed)	○
Mode	Remote net (Ver.1 mode)	○
All connect count	1	○
Remote input (RX)	X400	△
Remote output (RY)	Y400	△
Remote register (RWr)	D300	△
Remote register (RWw)	D200	△
Special relay (SB)	SB0	△
Special register (SW)	SW0	△
Retry count	(Use default value.)	△
Automatic reconnection station count		△
Stand by master station No.		×
PLC down select		△
Scan mode setting		△
Delay information setting		△
Station information setting	Refer to (2).	○
Remote device station initial setting	(Use default value.)	×
Interrupt setting		×

○: Necessary △: As necessary ×: Not necessary

(2) Station information setting



Item*1	Setting	Setting necessity at GOT connection
Station type*2	Intelligent device station (fixed)	○
Exclusive station count	Exclusive station 1 (fixed)	○
Reserve/invalid station select	No setting	○
Intelligent buffer select (word)	(Use default value.)	×

○: Necessary △: As necessary ×: Not necessary

*1 When the [Mode] of the CC-Link module is set at [Remote net - (Ver. 2 mode)], [Remote station points] is available to set.
[Remote station points] is a setting for the remote I/O station.
The default value (32 points) must be used on the GOT.

*2 When the [Mode] of the CC-Link module is set at [Remote net - (Ver. 2 mode)] or [Remote net - Additional mode], set to [Ver. 1 Intelligent device station].

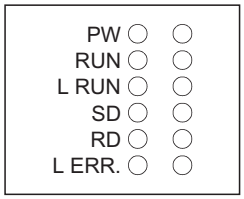
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(3) Completion confirmation

After initial communications of CC-Link are completed, the L RUN LED of AJ65BT-G4-S3 turns on.
The GOT starts to monitor after the L-RUN LED of AJ65BT-G4-S3 turns on.
It does not monitor while the L RUN LED turns off.



9.4.5 [Communication Settings] of GT Designer2

Item	Setting (Use default value.)
Transmission Speed	9600bps 19200bps 38400bps 57600bps 115200bps
Retry	0 to 5 Times
Timeout Time	3 to 30 Sec
Delay Time	0 to 300 ms

Point

[Communication Settings] of GT Designer2

For the setting method of [Communication Settings] of GT Designer2, refer to the following.

☞ Section 9.3.3 Setting communication interface (Communication settings)

9.5 Precautions

1 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.
QCPU (Q mode), motion controller (Q series): 10 seconds or more
MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs. Adjust the opening screen time in the GOT setup so that no system alarm occurs.
☞ GT Designer2 Version □ Screen Design Manual

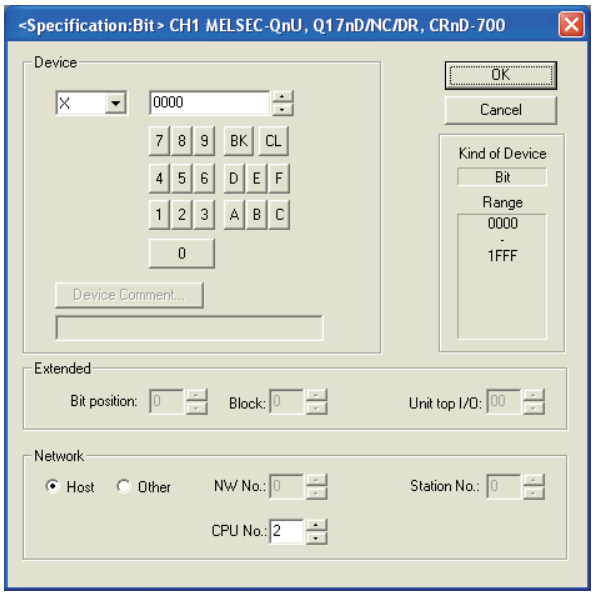
2 With Q17nDCPU, Q170MCPU, CNC C70, CRnQ-700

The Q17nDCPU, Q170MCPU, CNC C70 and CRnQ-700 are applicable to the CC-Link network system Ver.2 only
For connecting to the CC-Link (via G4) network system, set the CC-Link (via G4) network system to the CC-Link Ver.2 mode.

3 When monitoring the Q170MCPU

Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "0" or "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.
☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



9.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT16 GT15 GT11 Serial	CC-Link connection (via G4)	Supporting the CC-Link connection (via G4)	2.09K	Communication driver CC-Link (G4) [01.02.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q172DCPU, Q173DCPU, Q173NCCPU	2.63R	Communication driver CC-Link (G4) [03.07.**]
GT16 GT15 GT11 Serial	CC-Link connection (via G4)	Supporting the connections to AJ65BT-R2N	2.73B	Communication driver CC-Link (G4) [03.09.**]
GT24V10 20 30				Standard monitor OS [01.07.**] Communication driver CC-Link (G4) [01.00.**]
GT16 GT15 GT11 Serial	CC-Link connection (via G4)	Supporting the retry, the timeout time and the delay time	2.73B	Communication driver CC-Link (G4) [03.09.**]
GT16 GT15 GT11 Serial	Robot controller connection	Supporting the connection to CRnQ-700	2.73B	Communication driver CC-Link (G4) [03.09.**]
GT24V10 20 30	CC-Link connection (via G4)	Supporting the connections to GT10	2.73B	Standard monitor OS [01.07.**] Communication driver CC-Link (G4) [01.00.**]
GT24V10 20 30	Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q13UDHCPU, and Q26UDHCPU	2.77F	Standard monitor OS [01.08.**] Communication driver CC-Link (G4) [01.03.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q13UDHCPU, Q26UDHCPU	2.77F	Communication driver CC-Link (G4) [03.12.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q02PHCPU, Q06PHCPU	2.82L	Communication driver CC-Link (G4) [03.13.**]

(Continued to next page)

Model	Item	Description	Version of GT Designer2	Version of OS
GT24V10 GT20 GT30	Applicable CPU	Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU,	2.82L	Standard monitor OS [01.09.**] Communication driver CC-Link (G4) [01.05.**]
GT16	CC-Link connection (via G4)	Supporting the connections to GT16	2.90U	Communication driver CC-Link (G4) [04.02.**]
GT105□ GT104□	CC-Link connection (via G4)	Supporting the connections to GT105□ Supporting the connections to GT104□		Standard monitor OS [01.10.**] Communication driver CC-Link (G4) [01.05.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to the following CPUs Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU	2.91V	Communication driver CC-Link (G4) [04.03.**]
GT105□ GT104□ GT24V10 GT20 GT30				Standard monitor OS [01.11.**] Communication driver CC-Link (G4) [01.05.**]
GT16 GT15 GT11 Serial	Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver CC-Link (G4) [04.04.**]

10

ETHERNET CONNECTION



10.1 System Configuration . . . . . page 10-2

This section describes the equipment and cables needed when connecting to Ethernet.
Select a system suitable for your application.

10.2 Preparatory Procedures for Monitoring . . . . . page 10-11

This section describes the procedures to be followed before monitoring in Ethernet connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

10.3 PLC Side Setting . . . . . page 10-23

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

10.4 Precautions . . . . . page 10-47

This section describes the precautions on Ethernet connection.
Be sure to read this when establishing a Ethernet connection.

10.5 List of Functions Added by Version Upgrade . . . . . page 10-49

This section describes the functions added by version upgrade of GT Designer2 or OS.

10.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

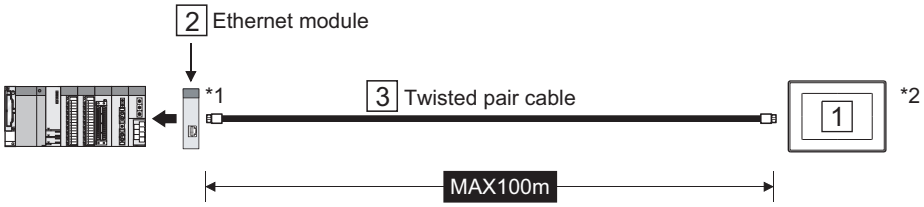
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

Communication driver

Ethernet(MELSEC),Q17nNC,CRnD-700

10.1.1 Connecting to Ethernet module

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	distance	
128 (recommended to 16 units or less)	100m or less*3	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.
A cross cable is available for connecting the GOT to the Ethernet module.

*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
GT16 User's Manual (Hardware)

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model name		
	2	Ethernet module (Q Series) *1 *2	QJ71E71-100, QJ71E71	QJ71E71-B5,	QJ71E71-B2,
		Ethernet module (QnA Series) *1 *2	AJ71QE71N3-T, AJ71QE71N-T, AJ71QE71, A1SJ71QE71N3-T, A1SJ71QE71N-T, A1SJ71QE71-B5,	AJ71QE71N-B5, AJ71QE71N-B5T, AJ71QE71-B5, A1SJ71QE71N-B5, A1SJ71QE71N-B5T, A1SJ71QE71-B2	AJ71QE71N-B2, A1SJ71QE71N-B2,
		Ethernet module (A Series) *1 *2	AJ71E71N3-T, AJ71E71N-T, A1SJ71E71N3-T, A1SJ71E71N-T, A1SJ71E71-B5-S3,	AJ71E71N-B5, AJ71E71N-B5T, A1SJ71E71N-B5, A1SJ71E71N-B5T, A1SJ71E71-B2-S3	AJ71E71N-B2, AJ71E71-S3, A1SJ71E71N-B2,

*1 For the system configuration of the Ethernet module, refer to the following manuals.

• Q Corresponding Ethernet Interface Module User's Manual (Basic)
• For QnA Ethernet Interface Module User's Manual
• For A Ethernet Interface Module User's Manual

*2 Select one of the following [Type] in [Ethernet setting] of GT Designer2.

• Ethernet module (Q Series) : QJ71E71
• Ethernet module (QnA Series) : AJ71QE71
• Ethernet module (QnA Series) : AJ71E71

For [Ethernet setting] of GT Designer2, refer to the following.

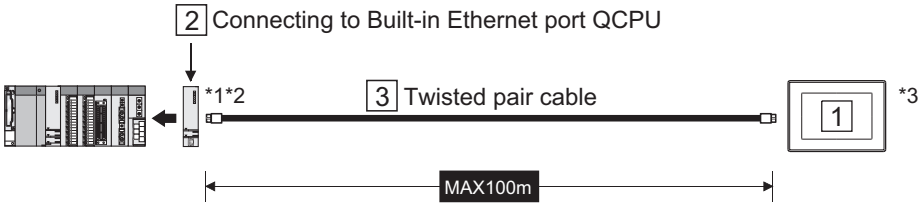
Section 10.2.3 Setting communication interface (Communication settings)

(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

10.1.2 Connecting to Built-in Ethernet port QCPU (QnUDE(H)CPU)

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	distance	
16	100m or less*4	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

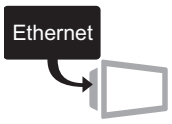
*2 A straight cable is available.
When connecting QnUDE(H) and GOT directly with Ethernet cable, a cross cable is also available.

*3 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
☞ GT16 User's Manual (Hardware)

*4 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interfaceT • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model name
	2	Built-in Ethernet port QCPU *1 *2	Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU

*1 For the system configuration of Built-in Ethernet port QCPU, refer to the following manual.
☞ QCPU User's Manual (Hardware Design, Maintenance and Inspection)

*2 Select [QnUDE(H)] for [Type] in [Ethernet] of GT Designer2.
For [Ethernet setting] of GT Designer2, refer to the following.
☞ Section 10.2.3 Setting communication interface (Communication settings)

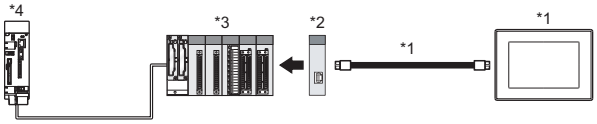
(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

10.1.3 Connecting to the motion controller CPU (Q170MCPU)

The following shows the system configuration and connection conditions between Q170MCPU and the GOT. The system configuration, connection conditions, and system equipment between the base unit and the GOT are the same as those for connecting to the Ethernet module. (☞ Section 10.1.1 Connecting to Ethernet module)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
*1	*1		GT16 GT15

*1 The system configuration and connection conditions are same as those for connecting to the Ethernet module.

*2 The following Ethernet modules are available.

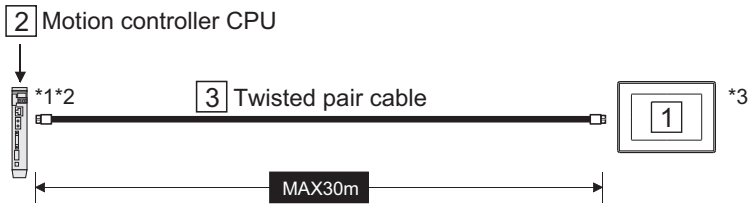
- QJ71E71-100, QJ71E71-B5, QJ71E71-B2, QJ71E71

*3 Only the first step can be used on the extension base unit (Q52B/Q55B).

*4 The PERIPHERAL I/F cannot be used.

10.1.4 Connecting to motion controller CPU (MR-MQ100)

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	distance	
16	30m or less	

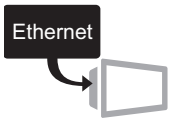
*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the hub or other system equipment corresponding to the applicable Ethernet network system.
Even when the hub or other system equipment is used, the maximum overall extension cable length must be 30m.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
GT16 User's Manual (Hardware)

*3 When connecting GT16 to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in an environment where 10Mbps and 100Mbps can be mixed.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model name
	2	Motion controller CPU *1 *2	MR-MQ100

*1 For the system configuration of motion controller CPU, refer to the following manual.
MR-MQ100 User's Manual (Details)

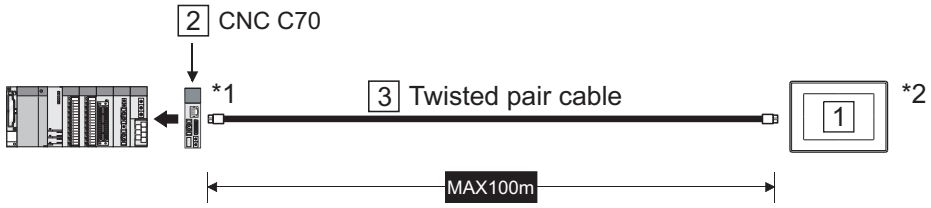
*2 Select [QnUDE(H)] for [Type] in [Ethernet] of GT Designer2.
For [Ethernet setting] of GT Designer2, refer to the following.
Section 10.2.3 Setting communication interface (Communication settings)

(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

10.1.5 Connecting to Display I/F

1 System configuration

Connection conditions		System configuration
Number of GOTs	Distance	
8	100m or less*3	

*1 The connection target of the twisted pair cable differs depending on the configuration of the Ethernet network system to be used.
Connect the cable to system equipment, including an Ethernet module, a hub, and a transceiver, applicable to the Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

*2 When connecting GT16 to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in an environment where 10Mbps and 100Mbps can be mixed.

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model name
	2	CNC C70*1*2	Q173NCCPU

*1 For the system configuration of the CNC C70, refer to the following manual.
C70 Series SET UP MANUAL

*2 Select [Q17nNC] for [Type] in [Ethernet] of GT Designer2.
For [Ethernet] of GT Designer2, refer to the following.
10.2.3Setting communication interface (Communication settings)

(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable	Category 3, 4, and 5 of shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP)

10.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 10.2.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 10.2.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 10.2.3
Setting communication interface (Communication settings)

Download the project data.

Section 10.2.4
Downloading project data

Attach the communication unit and connect the cable.

Section 10.2.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 10.2.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 10.2.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

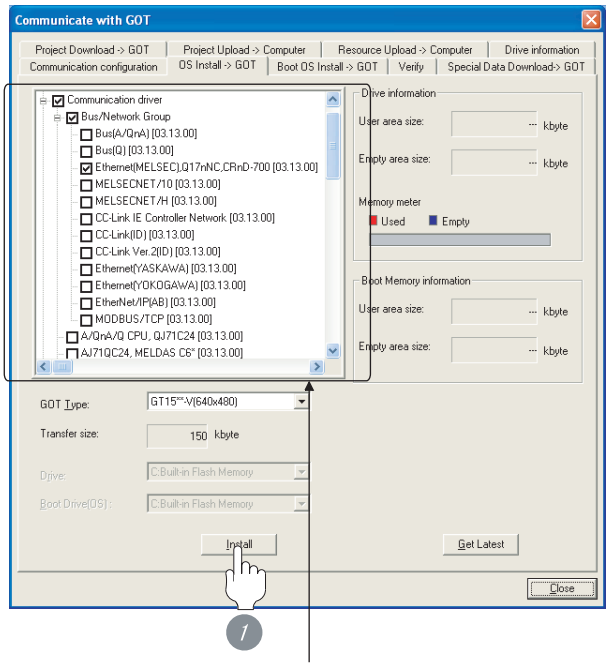
Section 10.3 PLC Side Setting

10.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• Ethernet(MELSEC),Q17nNC,CRnD-700

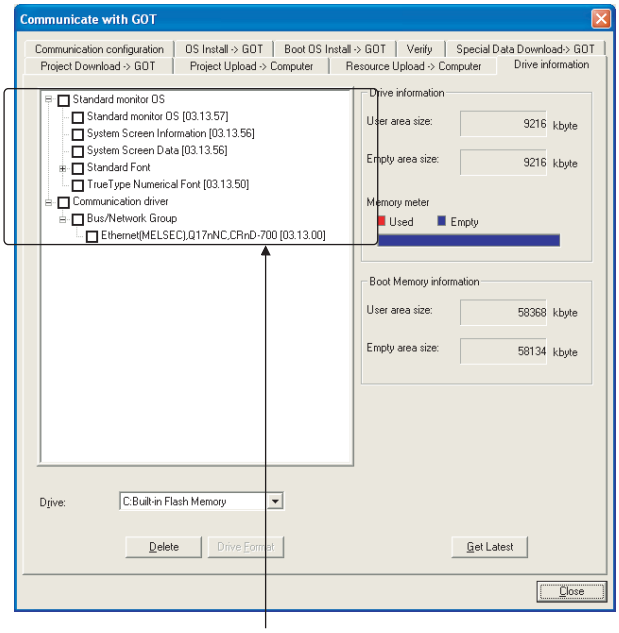
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

10.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: Ethernet(MELSEC),Q17nNC, CRnD-700

10.2.3 Setting communication interface (Communication settings)

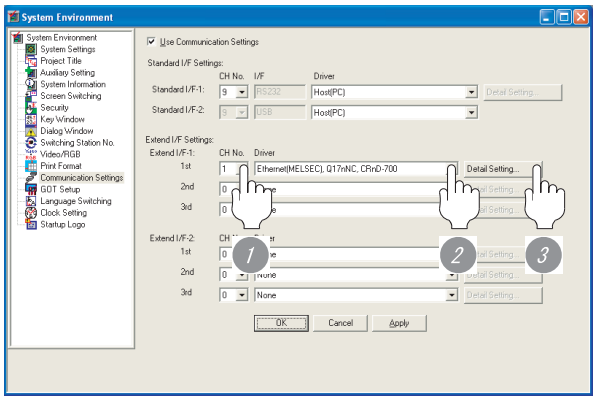
Make the GOT communication interface settings on [Communication setting] and [Ethernet] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication setting] and [Ethernet] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

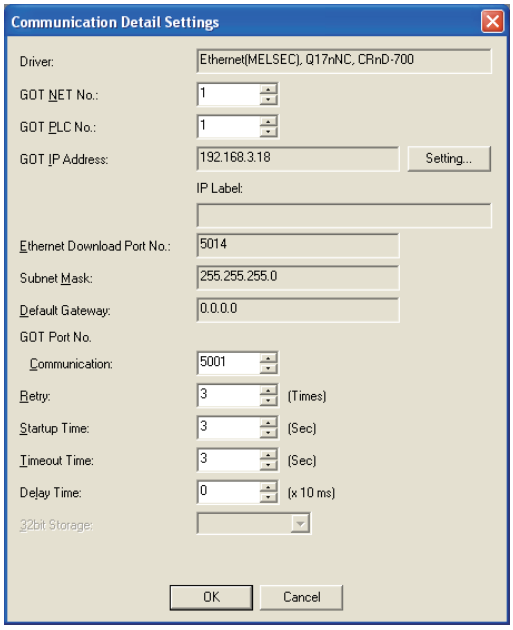


(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to [Ethernet(MELSEC),Q17nNC, CRnD-700].
3. Perform the detailed settings for the driver. (☞ 2 Communication detail settings)

2 Communication detail settings

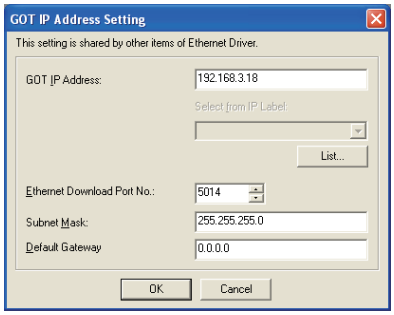
(1) GT16



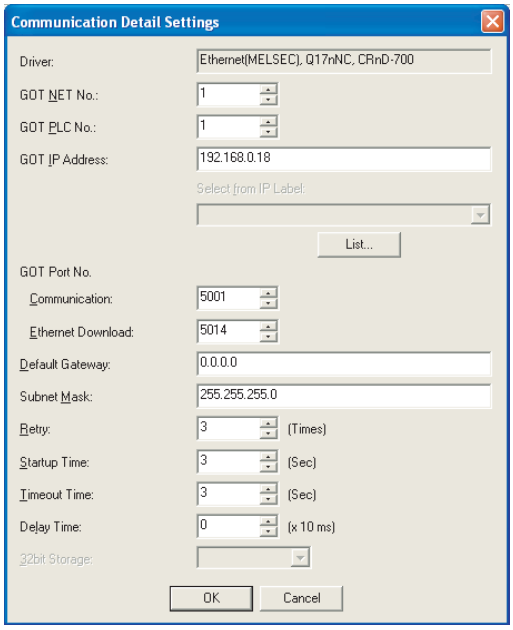
Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address*2	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.*2	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*2	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*2	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5001>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time*1	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)

*1 To connect the GOT with the Ethernet module (Q Series) in the one-on-one relationship using a cross cable, set [Timeout Time] to 6 sec. or longer.

*2 Click the Setting button and perform the setting in the [GOT IP Address Setting] screen.



(2) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5001>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No. (Ethernet Download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time*1	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)

Point

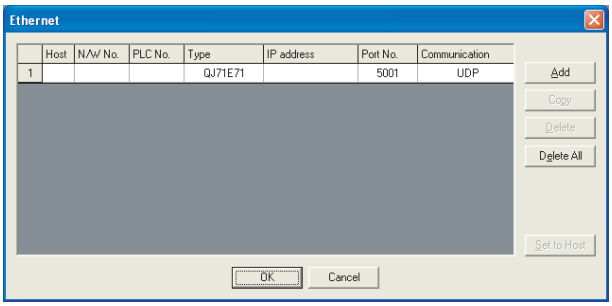
Example of communication detail settings

For examples of communication detail settings, refer to the following.

☞ Section 10.3 PLC Side Setting

3 Ethernet setting

(1) Ethernet setting



Item	Description	Setting
Host	The host is displayed. (The host is indicated with an asterisk (*).)	-
N/W No.	Set the network No. of the connected Ethernet module. <Default: blank>	1 to 239
PLC No.	Set the station No. of the connected Ethernet module. <Default: blank>	1 to 64
Type*1	Set the type of the connected Ethernet module. <Default: QJ71E71>	QnUDE(H), Q17nNC, QJ71E71, AJ71QE71, AJ71E71
IP address	Set the IP address of the connected Ethernet module. <Default: blank>	0.0.0.0 to 255.255.255.255
Port No.*2	Set the port No. of the connected Ethernet module. <Default: 5001>	1024 to 65534
Communication	UDP (fixed)	UDP (fixed)

*1 Select one of the following [Type].

- Connecting to Built-in Ethernet port QCPU, motion controller CPU :QnUDE(H)
- Built-in Ethernet port (hereafter CPU) : QnUDE(H) Q170MCPU, Q173D(S)CPU/ Q172D(S)CPU
- Ethernet module (Q Series) : QJ71E71
- Ethernet module (QnA Series) : AJ71QE71
- Ethernet module (A Series) : AJ71E71
- Q17nNCCPU : Q17nNC

For the applicable Ethernet module, refer to the following.

☞ Section 10.1 System Configuration

*2 Set only when selecting "AJ71E71" in [Type].

Point

Example of Ethernet setting

For examples of Ethernet setting, refer to the following.

☞ Section 10.3 PLC Side Setting

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

4 Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.

However, the same transfer network number cannot be set twice or more (multiple times).

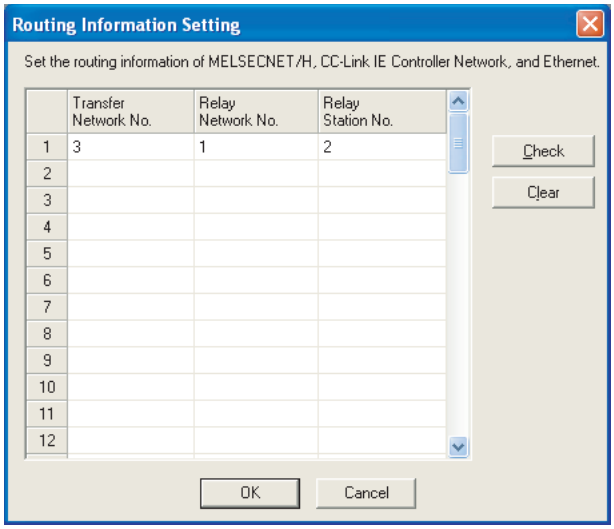
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.

Point

Routing parameter setting

When communicating within the host network, routing parameter setting is unnecessary.
For details of routing parameters, refer to the following manual.

☞ Q Corresponding Ethernet Interface Module User's Manual (Application)



Item	Range
Transfer Network No.	1 to 239
Relay Network No.	1 to 239
Relay Station No.	1 to 64

Point

Routing parameter setting of relay station

Routing parameter setting is also necessary for the relay station.
For the setting, refer to the following.

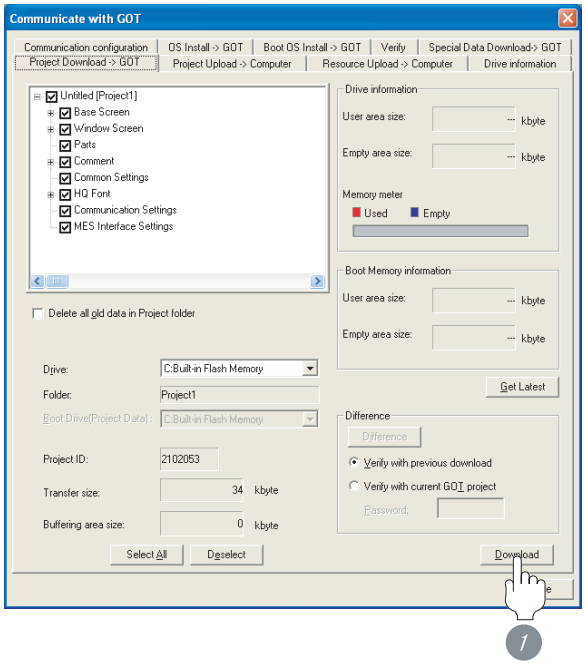
☞ Section 10.3 PLC Side Setting

10.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

10.2.5 Attaching communication unit and connecting cable

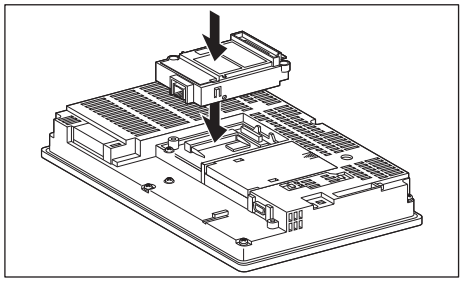
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

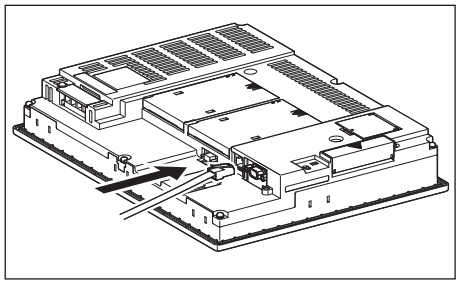
For details on the Ethernet communication unit, refer to the following manual:

GT15 Ethernet Communication Unit User's Manual

2 Connecting the cable

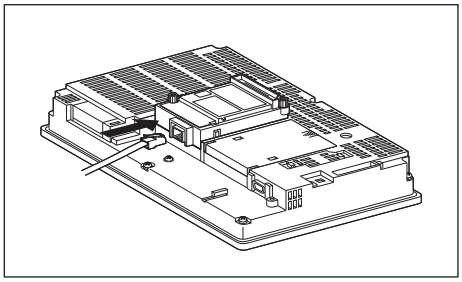
(1) For GT16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) GT15

1 Connect the twisted pair cable to the Ethernet communication unit.



10.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

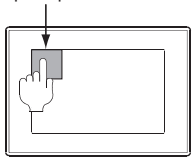
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

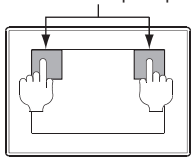
When using GT16 or GT1595

Utility call key
1-point press on GOT screen upper-left corner

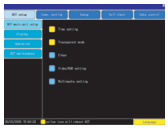


When using GT1585, GT157☐, GT156☐ or GT155☐

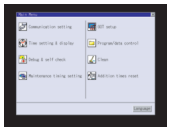
Utility call key
Simultaneous 2-point press



Utility display
(When using GT16)



(When using GT15)



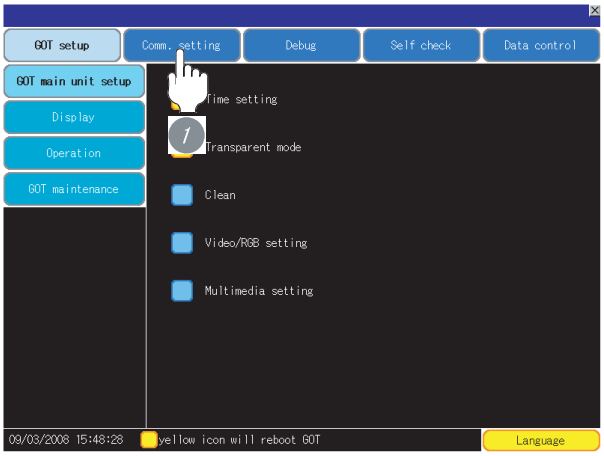
Point

When setting the utility call key to 1-point

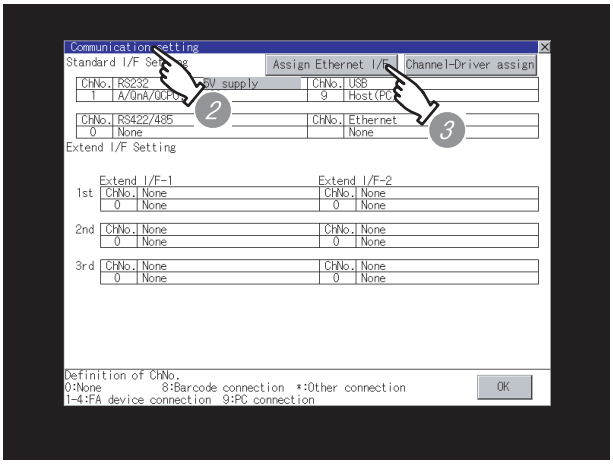
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT☐ User's Manual

(1) GT16

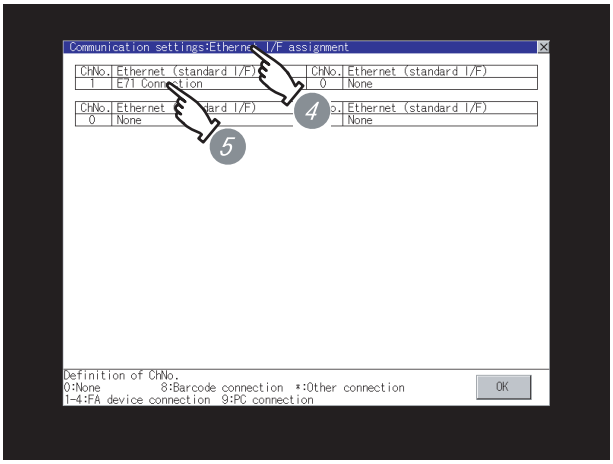


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet I/F].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver : E71 Connection

6 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 10.2 Preparatory Procedures for Monitoring

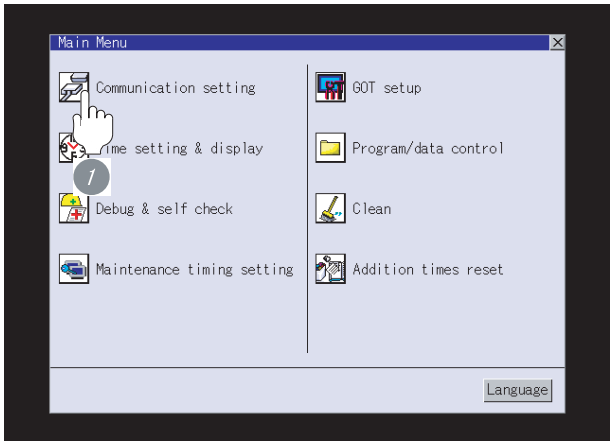
Point

When changing communication interface setting by Utility

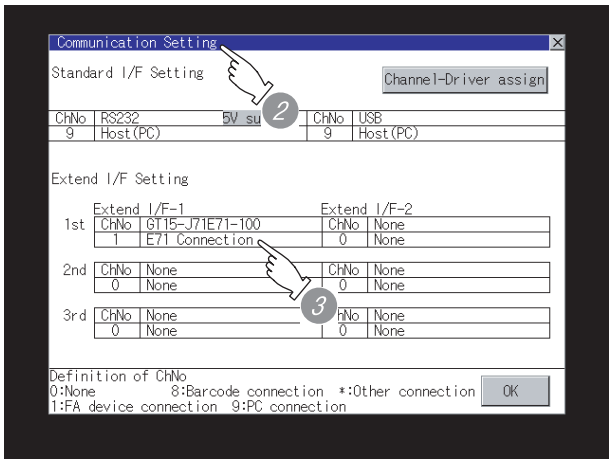
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility)

(2) GT15



7 After powering up the GOT, touch [Main Menu] → [Communication Setting] from the Utility.



8 The [Communication Setting] appears.

9 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver : E71 Connection

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 10.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

10.2.7 Checking for normal monitoring

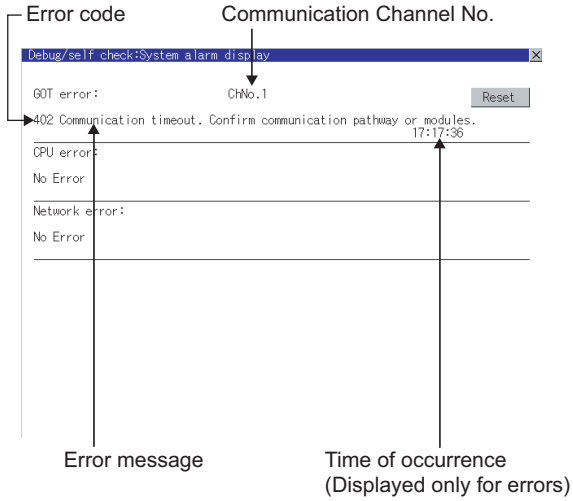
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

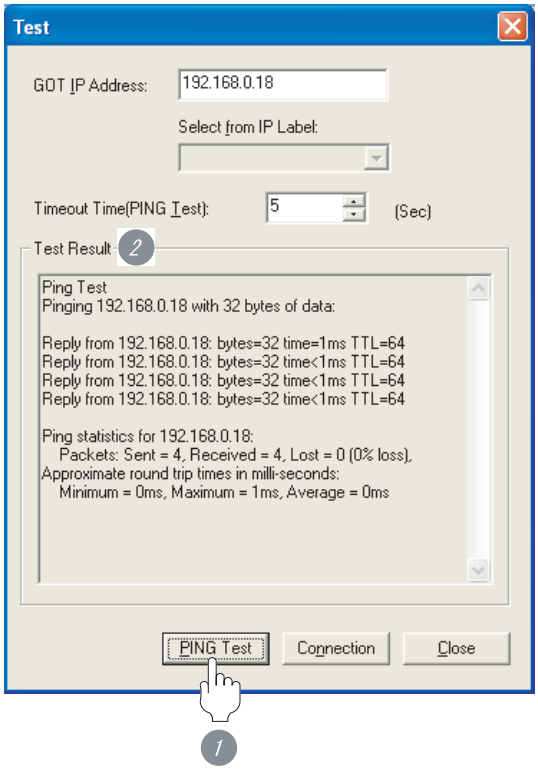
Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication
C:\>Ping 192.168.0.18
Request timed out.

(2) When using the "PING Test" of GT Designer2

Select [Communication] → [Communication configuration] → "Ethernet" and Test to display "PING Test".



1 Specify the "GOT IP address" of the "PING Test" and click on the PING Test button.

2 The "Test Result" is displayed after the "PING Test" is finished.

(3) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of "Communication settings"
- IP address of GOT specified by Ping command

Point

Ethernet diagnostics of GX Developer

Ethernet diagnostics of GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Developer, refer to the following manual.

☞ User's Manual of the Ethernet module

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 10.3 PLC Side Setting

4 Confirming the communication state to each station (station monitoring function)

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT.

When detecting the abnormal state, it is confirming the response by executing a Ping command to the faulty station.

The station monitoring state can be confirmed by using GOT internal device.

(1) Station monitoring state

(a) No. of faulty station (GS230)
Total No. of the faulty CPU are stored.
The station No. of faulty stations are stored to GS231 through GS238. (☞ (b)Faulty station information (GS231 to GS238))

Device	b15 to b8	b7 to b0
GS230	(00H fixed)	No. of faulty stations

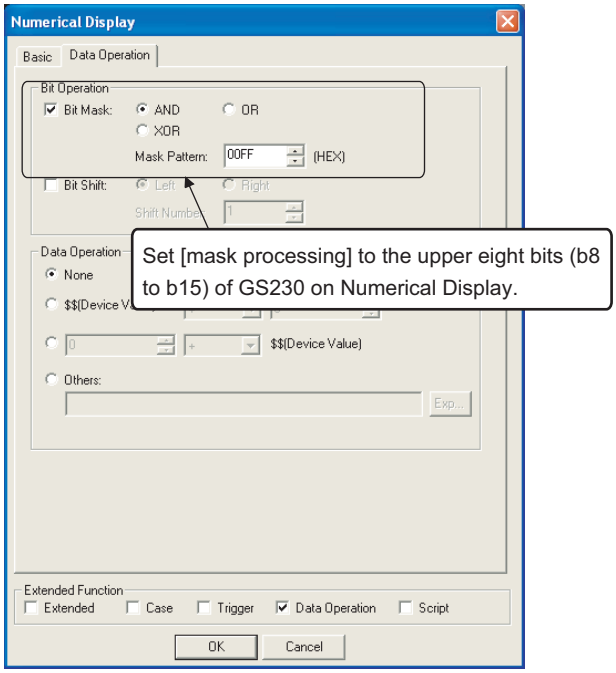
Point

When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.
For the data operation, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

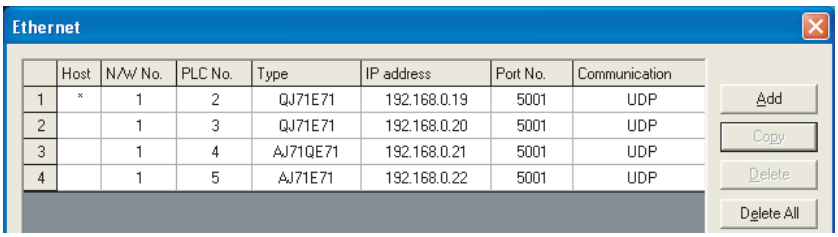
<Numerical Display (Data Operation tab) >



(b) Faulty station information (GS231 to GS238)

• The bit of the Ethernet setting No. corresponding to the faulty station is set.
  0: Normal
  1: Abnormal
• The bit is reset after the fault is recovered.

GS231 bit 0 · · ·
GS231 bit 1 · · ·
GS231 bit 2 · · ·
GS231 bit 3 · · ·



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

(2) Precautions of station monitoring function

This function is not applicable to the multiple CPU system in which the CPU No. is assigned at the device setting of GT Designer2.

For details of GT Designer2, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

10.3 PLC Side Setting

Model		Reference
Connecting to Built-in Ethernet port QCPU	Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU	Section 10.3.1 Section 10.3.2
Motion controller CPU	MR-MQ100	Section 10.3.3 Section 10.3.4
Ethernet module (Q Series)	QJ71E71-100, QJ71E71-B5, QJ71E71-B2, QJ71E71	Section 10.3.5
Ethernet module (QnA Series)	AJ71QE71N3-T, AJ71QE71N-B5, AJ71QE71N-B2, AJ71QE71N-T, AJ71QE71N-B5T, AJ71QE71, AJ71QE71-B5, A1SJ71QE71N3-T, A1SJ71QE71N-B5, A1SJ71QE71N-B2, A1SJ71QE71N-T, A1SJ71QE71N-B5T, A1SJ71QE71-B5, A1SJ71QE71-B2	Section 10.3.6
Ethernet module (A Series)	AJ71E71N3-T, AJ71E71N-B5, AJ71E71N-B2, AJ71E71N-T, AJ71E71N-B5T, AJ71E71-S3, A1SJ71E71N3-T, A1SJ71E71N-B5, A1SJ71E71N-B2, A1SJ71E71N-T, A1SJ71E71N-B5T, A1SJ71E71-B5-S3, A1SJ71E71-B2-S3	Section 10.3.7
CNC C70	Q173NCCPU	Section 10.3.8

10.3.1 Connecting to Built-in Ethernet port QCPU (one-to-one connection)

This section describes the settings of the GOT and Built-in Ethernet port QCPU shown as *1*.

Point

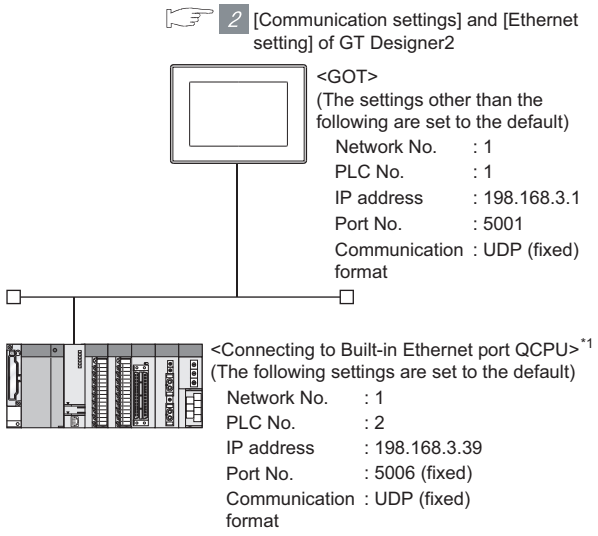
Connecting to Built-in Ethernet port QCPU

For details of Built-in Ethernet port QCPU, refer to the following manual.

☞ QnUCPU User's Manual (Communication via Built-in Ethernet Port)

1 System configuration

For connecting one Built-in Ethernet port QCPU to one GOT, the PLC side settings are not required. Set [Ethernet] for [Communication Settings] on GT Designer2, and then connect Built-in Ethernet port QCPU to the GOT.



*1 For the settings when using system devices including a hub and a transceiver, refer to the following.

☞ Section 10.3.2 Connecting to Built-in Ethernet port QCPU (multiple connection)

2 [Communication settings] and [Ethernet setting] of GT Designer2

Point

Ethernet setting

When connecting Built-in Ethernet port QCPU to a GOT, the settings for a network No. and a station No. on the PLC side are not required.
The GOT is required to specify the network No. and the station No.. Set the network No. that is not existed on the network system and any station No..

(1) Communication settings

Item	Setting(Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.3.1
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0ms

(2) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1
	PLC No.	2
	Type	QnUDE(H)
	IP address	192.168.3.39
	Port No.	5006 (fixed)
	Communication	UDP (fixed)

Point

[Communication Settings], [Ethernet] of GT Designer2
For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ Section 10.2.3 Setting communication interface (Communication settings)

3 Checking communication state of Connecting to Built-in Ethernet port QCPU

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.3.39
Reply from 192.168.3.2: bytes=32 time<10ms TTL=32

(b) When abnormal communication
C:\>Ping 192.168.3.39
Request timed out.

(2) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Cable connecting condition
- Confirmation of switch and network parameter setting
- Operation state of PLC CPU (faulty or not)
- The IP address of Built-in Ethernet port QCPU specified in the ping command

Point

Ethernet diagnostics of GX Developer

Ethernet diagnostics of GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Developer, refer to the following manual.

☞ QCPU User's Manual (Hardware Design, Maintenance and Inspection)

10.3.2 Connecting to Built-in Ethernet port QCPU (multiple connection)

This section describes the settings of the GOT and Built-in Ethernet port QCPU shown as 1.

Point

Connecting to Built-in Ethernet port QCPU

For details of Built-in Ethernet port QCPU, refer to the following manual.

☞ QnUCPU User's Manual (Communication via Built-in Ethernet Port)

1 System configuration

☞ 3 [Communication settings] and [Ethernet setting] of GT Designer2

<GOT>
(The settings other than the following are set to the default)
Network No. : 1
PLC No. : 1
IP address : 192.168.0.18
Port No. : 5001
Communication format : UDP(fixed)

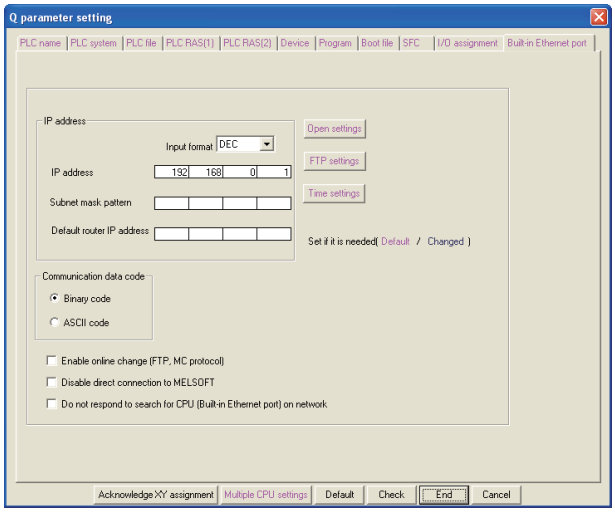
1 <Connecting to Built-in Ethernet port QCPU>
(The settings other than the following are set to the default)
Network No. : 1
PLC No. : 2 (virtual)
IP address : 192.168.0.1
Port No. : 5006(fixed)
Communication format : UDP(fixed)

2 <Connecting to Built-in Ethernet port QCPU>
(The settings other than the following are set to the default)
Network No. : 1
PLC No. : 3 (virtual)
IP address : 192.168.0.2
Port No. : 5006(fixed)
Communication format : UDP(fixed)

☞ 2 [Q parameter setting] for GX Developer

2 [Q parameter setting] for GX Developer

(1) Built-in Ethernet port

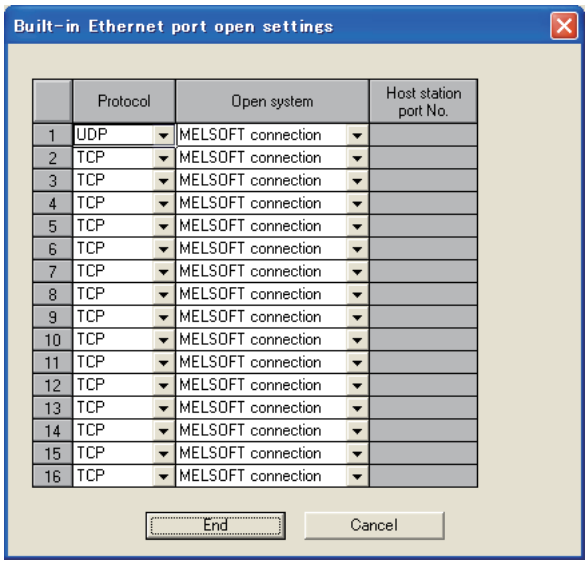


Item	Setting	Setting necessity at GOT connection
IP address	192.168.0.1	○
Subnet mask pattern	-	×
Default router IP address	-	×
Communication data code	(Use default value.)	△
Enable online change (FTP, MC protocol)		△
Disable direct connection to MELSOFT		△
Do not respond to search for CPU (Built-in Ethernet port) on network		△
Open settings	Refer to (2)	○
FTP settings	(Use default value.)	△
Time settings		△

○ : Necessary △ : As necessary × : Not necessary

(2) Open settings

The setting is required for all the connected GOTs.



Item	Setting
Protocol	UDP (fixed)
Open system	MELSOFT connection (fixed)
Host station port No.	(Use default value.)

3 [Communication settings] and [Ethernet setting] of GT Designer2

Point

Ethernet setting

When connecting Built-in Ethernet port QCPU to a GOT, the settings for a network No. and a station No. on the PLC side are not required.
The GOT is required to specify the network No. and the station No.. Set the network No. that is not existed on the network system and any station No..

(1) Communication settings

Item	Setting(Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0ms

(2) Ethernet setting

Item		Setting	
		1	2
Ethernet setting No.1	Host	*	-
	N/W No.	1	1
	PLC No.	2	3
	Type	QnUDE(H)	QnUDE(H)
	IP address	192.168.0.1	192.168.0.2
	Port No.	5006 (fixed)	5006 (fixed)
	Communication	UDP (fixed)	UDP (fixed)

Point

[Communication Settings], [Ethernet] ofGT Designer2
For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

Section 10.2.3 Setting communication interface (Communication settings)

4 Checking communication state of Connecting to Built-in Ethernet port QCPU

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication

```
C:\>Ping 192.168.0.1
Reply from 192.168.0.1: bytes=32 time<10ms
TTL=32
```

(b) When abnormal communication

```
C:\>Ping 192.168.0.1
Request timed out.
```

(2) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Cable connecting condition
- Confirmation of switch and network parameter setting
- Operation state of PLC CPU (faulty or not)
- The IP address of Built-in Ethernet port QCPU specified in the ping command

Point

Ethernet diagnostics of GX Developer

Ethernet diagnostics of GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Developer, refer to the following manual.

QCPU User's Manual (Hardware Design, Maintenance and Inspection)

10.3.3 Connecting to motion controller CPU (MR-MQ100) (one-to-one connection)

This section describes the settings of the GOT and motion controller CPU (MR-MQ100) shown as 1.

Point

Motion controller CPU (MR-MQ100)

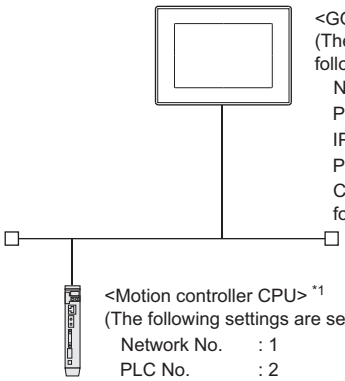
For details of motion controller CPU (MR-MQ100), refer to the following manual.

MR-MQ100 User's Manual (Details)

1 System configuration

For connecting one motion controller to one GOT, the motion controller side settings are not required. Set [Ethernet] for [Communication Settings] on GT Designer2, and then connect the motion controller CPU (MR-MQ100) to the GOT.

2 [Communication settings] and [Ethernet setting] of GT Designer2



<GOT>
(The settings other than the following are set to the default)
Network No. : 1
PLC No. : 1
IP address : 198.168.3.1
Port No. : 5001
Communication format : UDP (fixed)

<Motion controller CPU> *1
(The following settings are set to the default)
Network No. : 1
PLC No. : 2
IP address : 198.168.3.39
Port No. : 5006 (fixed)
Communication format : UDP (fixed)

*1 For the settings when using system devices including a hub, refer to the following.

Section 10.3.4 Connecting to motion controller CPU (MR-MQ100) (multiple connection)

2 [Communication settings] and [Ethernet setting] of GT Designer2

Point

Ethernet setting

When connecting motion controller CPU (MR-MQ100) to a GOT, the settings for a network No. and a station No. on the motion controller CPU (MR-MQ100) side are not required.

The GOT is required to specify the network No. and the station No.. Set the network No. that is not existed on the network system and any station No..

(1) Communication settings

Item	Setting(Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.3.1
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0ms

(2) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1
	PLC No.	2
	Type	QnUDE(H)
	IP address	192.168.3.39
	Port No.	5006 (fixed)
	Communication	UDP (fixed)

Point

[Communication Settings], [Ethernet] of GT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ Section 10.2.3 Setting communication interface (Communication settings)

3 Checking communication state of Connecting to motion controller CPU

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.3.39
Reply from 192.168.3.2: bytes=32 time<10ms TTL=32

(b) When abnormal communication
C:\>Ping 192.168.3.39
Request timed out.

(2) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Cable connecting condition
- Confirmation of switch and network parameter setting
- Operation state of motion controller CPU (faulty or not)
- The IP address of motion controller CPU (MR-MQ100) specified in the ping command

10.3.4 Connecting to motion controller CPU (MR-MQ100) (multiple connection)

This section describes the settings of the GOT and motion controller CPU (MR-MQ100) shown as 1.

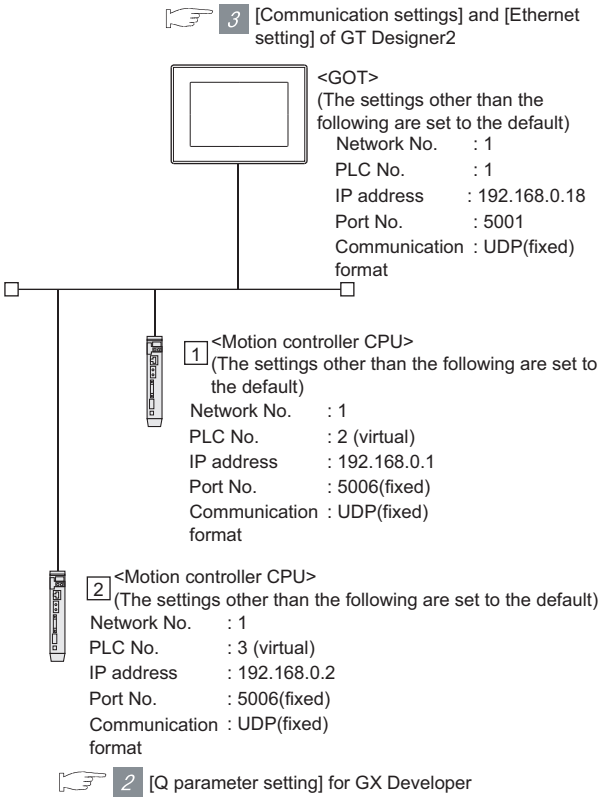
Point

Motion controller CPU (MR-MQ100)

For details of the motion controller CPU (MR-MQ100), refer to the following manual.

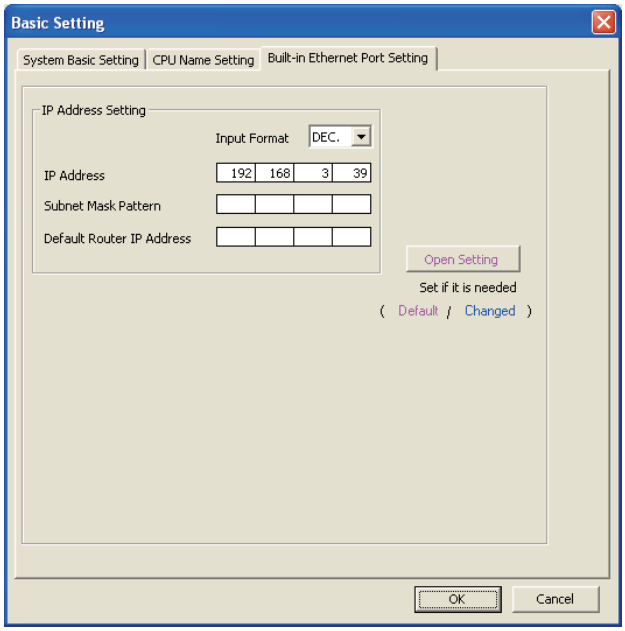
MR-MQ100 User's Manual (Details)

1 System configuration



2 MT Developer2 setting

(1) Built-in Ethernet port

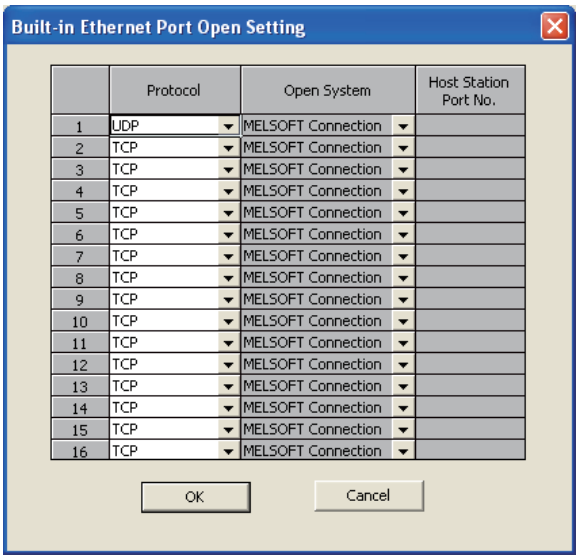


Item	Setting	Setting necessity at GOT connection
IP address	192.168.0.1	○
Subnet mask pattern	255.255.255.0	○
Default router IP address	0.0.0.0	○
Open settings	Refer to (2)	○

○ : Necessary △ : As necessary × : Not necessary

(2) Open settings

The setting is required for all the connected GOTs.



Item	Setting
Protocol	UDP (fixed)
Open system	MELSOFT connection (fixed)
Host station port No.	(Use default value.)

3 [Communication settings] and [Ethernet setting] of GT Designer2

Point

Ethernet setting

When connecting motion controller CPU (MR-MQ100) to a GOT, the settings for a network No. and a station No. on the motion controller side are not required. The GOT is required to specify the network No. and the station No.. Set the network No. that is not existed on the network system and any station No..

(1) Communication settings

Item	Setting(Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0ms

(2) Ethernet setting

Item		Setting	
		1	2
Ethernet setting No.1	Host	*	-
	N/W No.	1	1
	PLC No.	2	3
	Type	QnUDE(H)	QnUDE(H)
	IP address	192.168.0.1	192.168.0.2
	Port No.	5006 (fixed)	5006 (fixed)
	Communication	UDP (fixed)	UDP (fixed)

Point

[Communication Settings], [Ethernet] ofGT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ Section 10.2.3 Setting communication interface (Communication settings)

4 Checking communication state of Connecting to motion controller CPU

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication

C:\>Ping 192.168.0.1

Reply from 192.168.0.1: bytes=32 time<10ms TTL=32

(b) When abnormal communication

C:\>Ping 192.168.0.1

Request timed out.

(2) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Cable connecting condition
- Confirmation of switch and network parameter setting
- Operation state of motion controller CPU (faulty or not)
- The IP address of motion controller CPU (MR-MQ100) specified in the ping command

10.3.5 Connecting to Ethernet module (Q Series)

This section describes the settings of the GOT and Ethernet module (Q Series) given for the system configuration shown at 1.

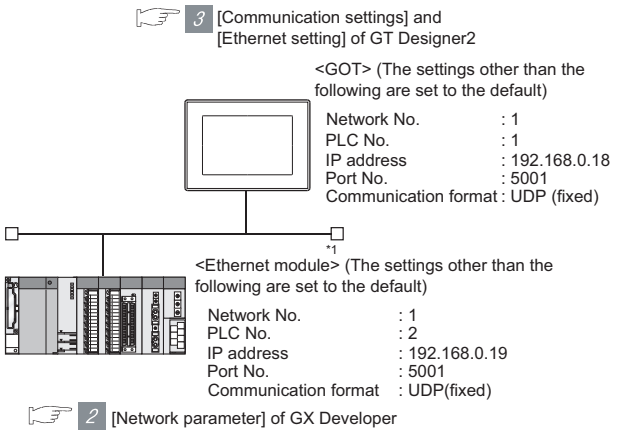
Point

Ethernet module (Q Series)

For details of the Ethernet module (Q Series), refer to the following manual.

☞ Q Corresponding Ethernet Interface Module User's Manual (Basic)

1 System configuration



*1 The Ethernet module is mounted on the base unit slot 0.
The Start I/O No. of the Ethernet module is set to "0".

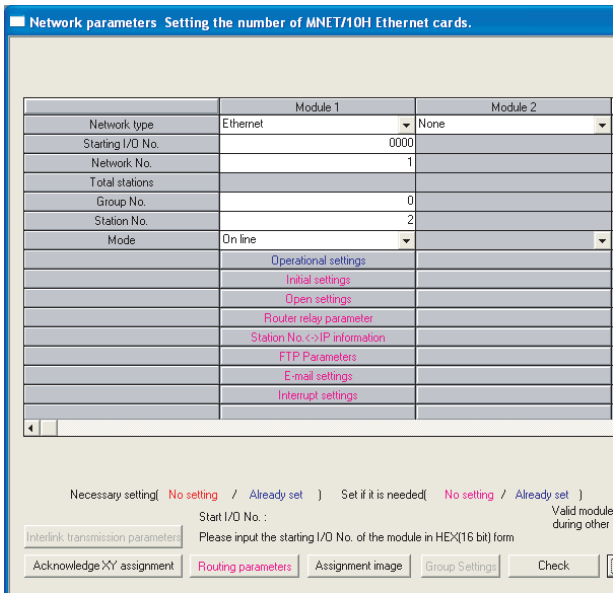
Point

When connecting to Q170MCPU

When connected to Q170MCPU, the start I/O No. of the Ethernet module is set to "70".

2 [Network parameter] of GX Developer

(1) Network parameter



Item	Setting	Setting necessity at GOT connection
Network type	Ethernet (fixed)	○
Starting I/O No.*1	0000H	○
Network No.*2	1	○
Group No.	0 (fixed)	○
Station No.*3	2	○
Mode	Online (fixed)	○
Operational settings	Refer to (2)	○
Initial settings	(Use default value.)	△
Open settings		×
Router relay parameter		×
Station No. <-> IP information		×
FTP Parameters		×
E-mail settings		×
Interrupt settings		×
Redundant settings*4		△
Routing parameters	Refer to (3)	△

○ : Necessary △ : As necessary × : Not necessary

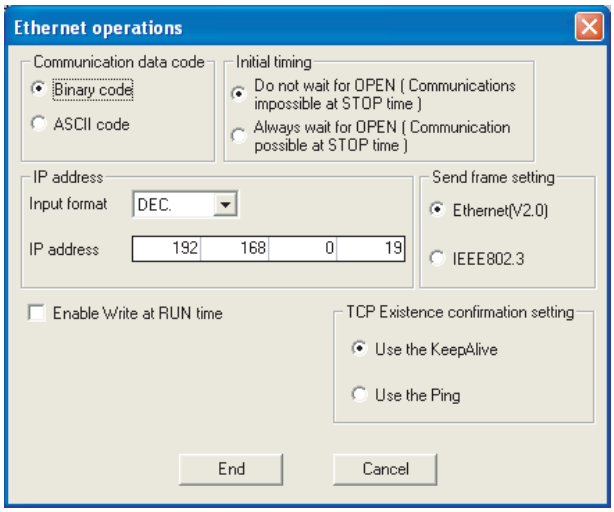
*1 When using the Q170MCPU, set the starting I/O No. to 0070H.

*2 Set the same network No. as that of the GOT.

*3 Do not set the same station No. as that of the GOT.

*4 Set when using Ethernet module in a redundant QnPRHCPU system.

(2) Operational settings



Item	Setting	Setting necessity at GOT connection
Communication date code*1	(Use default value.)	×
IP address	192.168.0.19	○
Initial timing*1	(Use default value.)	×
Send frame setting		×
Enable Write at RUN time*1		×
TCP Existence confirmation setting		×

○ : Necessary △ : As necessary × : Not necessary

*1 Because port No. 5001 is fixed, these items operate at the following setting without relations to the setting given here.

- Communication date code: "Binary code"
- Initial timing: "Always wait for OPEN" (Communication is applicable while stopping the PLC CPU.)
- Enable Write at RUN time: "Enable Write at RUN time" (Writing Data is applicable while running the PLC CPU.)

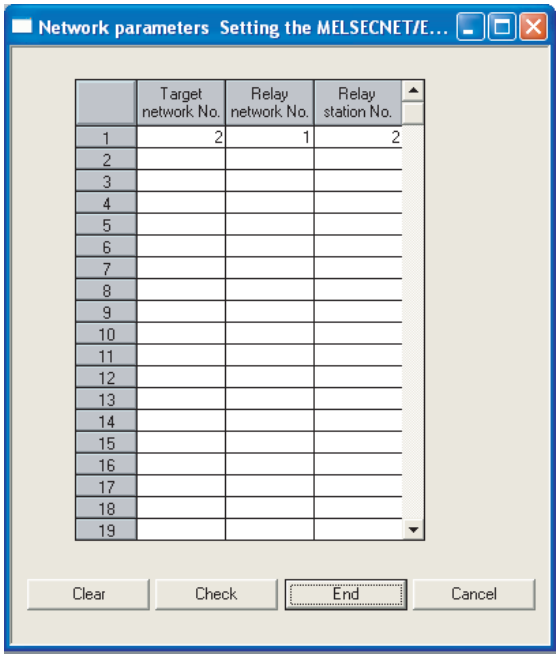
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(3) Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.
However, the same transfer network number cannot be set twice or more (multiple times).
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.



Item	Range
Target network No.	1 to 239
Relay network No.	1 to 239
Relay station No.	1 to 64

Point

Routing parameter setting of request source

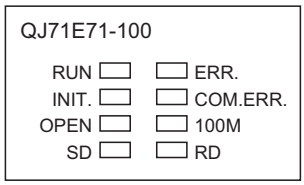
Routing parameter setting is also necessary for the request source GOT.
For the setting, refer to the following.

☞ Section 10.2.3 4 Routing parameter setting

(4) Communication confirmation

The INIT. LED on the Ethernet module turns on when the module is ready to communicate.
For confirming the communication state, refer to the following.

☞ 4 Confirming the communication state of Ethernet module



*2

*2 The LEDs layout of QJ71E71-100.

3 [Communication settings] and [Ethernet setting] of GT Designer2

(1) Communication settings

Item	Setting(Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0 ms

(2) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1
	PLC No.	2
	Type	QJ71E71
	IP address	192.168.0.19
	Port No.	5001 (fixed)
	Communication	UDP (fixed)

Point

[Communication Settings], [Ethernet] of GT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ Section 10.2.3 Setting communication interface (Communication settings)

4 Confirming the communication state of Ethernet module

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication

```
C:\>Ping 192.168.0.19
Reply from 192.168.0.19: bytes=32 time<1ms
TTL=64
```

(b) When abnormal communication

```
C:\>Ping 192.168.0.19
Request timed out.
```

(2) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of switch and network parameter setting
- Operation state of PLC CPU (faulty or not)
- IP address of GOT specified by Ping command

Point

Ethernet diagnostics of GX Developer

Ethernet diagnostics of GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Developer, refer to the following manual.

☞ User's manual of the Ethernet module

10.3.6 Connecting to Ethernet module (QnA Series)

This section describes the settings of the GOT and Ethernet module (Q Series) given for the system configuration shown at 1.

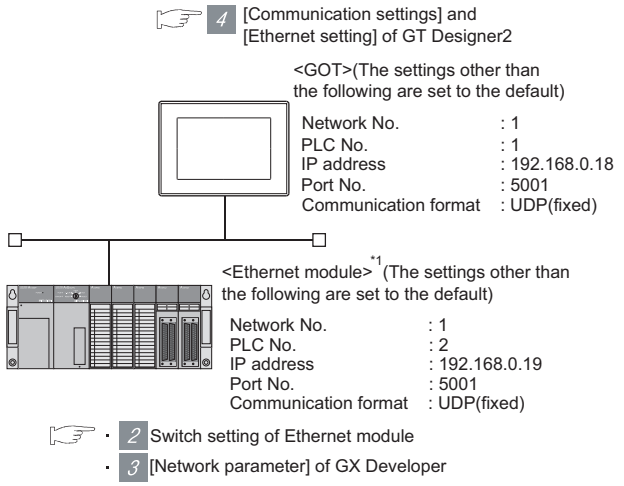
Point

Ethernet module (QnA Series)

For details of the Ethernet module (QnA Series), refer to the following manual.

☞ For QnA Ethernet Interface Module User's Manual

1 System configuration



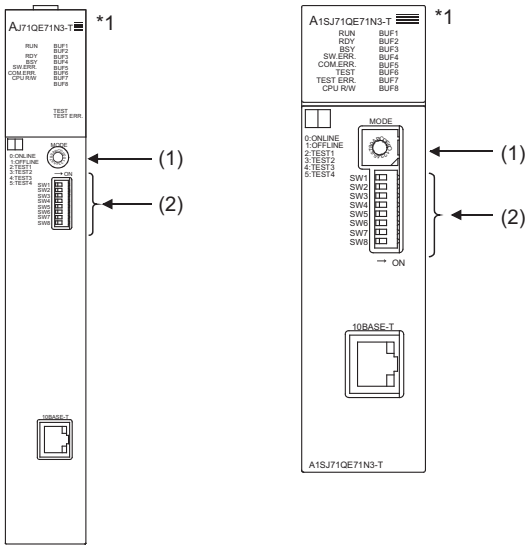
*1 The Ethernet module is mounted on the base unit slot 0.
The Start I/O No. of the Ethernet module is set to "0".

2 Switch settings of Ethernet module

Set the operation mode setting switch and exchange condition setting switch.

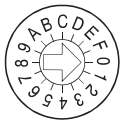
AJ71QE71N3-T, AJ71QE71N-B5, AJ71QE71N-B2, AJ71QE71N-T, AJ71QE71N-B5T, AJ71QE71, AJ71QE71-B5

A1SJ71QE71N3-T, A1SJ71QE71N-B5, A1SJ71QE71N-B2, A1SJ71QE71N-T, A1SJ71QE71N-B5T, A1SJ71QE71-B5, A1SJ71QE71-B2



*1 The figure of AJ71QE71N3-T and A1SJ71QE71N3-T.

(1) Operation mode setting switch

Operation mode setting switch	Description	Setting	Setting necessity at GOT connection
	Online	0 (fixes)	○

○ : Necessary △ : As necessary × : Not necessary

(2) Exchange condition setting switch

Exchange condition setting switch	Setting switch	Description	Setting	Setting necessity at GOT connection
	SW1	Selection of line processing at TCP timeout error	OFF	△
	SW2	Data code setting *2	OFF (fixed)	×
	SW3	Self start mode setting *3	ON	○
	SW4	(Must not to be used)	OFF (fixed)	×
	SW5			
	SW6			
	SW7	CPU exchange timing setting *2	OFF (fixed)	×
	SW8	Initial timing setting	OFF	△

○ : Necessary △ : As necessary × : Not necessary

*2 Because port No. 5001 is fixed, these items operate at the following setting without relations to the setting given here.
- Data code setting: [Binary code]
- Enable Write at RUN time: [Enable Write at RUN time] (Writing Data is applicable while running the PLC CPU.)

*3 In addition, communication is applicable while stopping the PLC CPU.
For the initial processing by using the initial request signal (Y19), refer to the following manual.

For QnA Ethernet Interface Module User's Manual

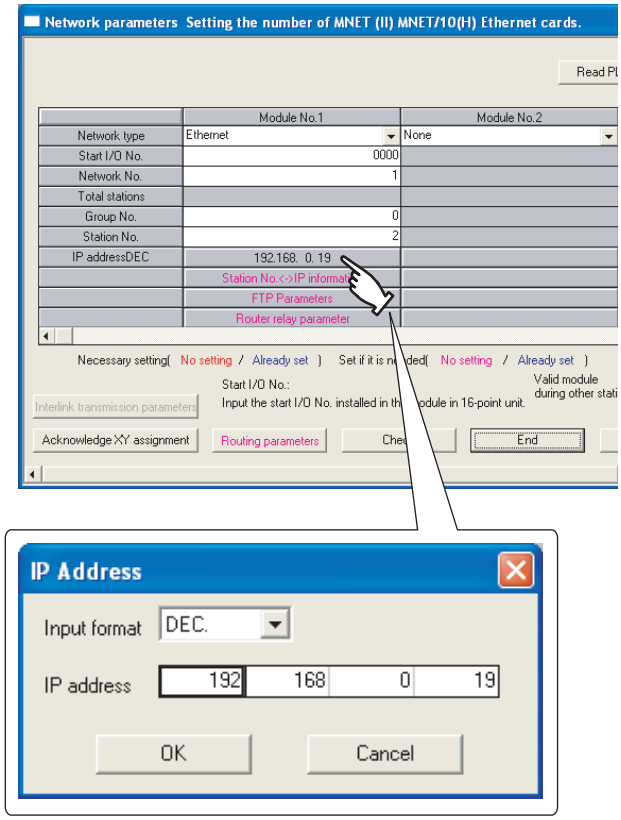
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 [Network parameter] of GX Developer

(1) Network parameter



Item	Setting	Setting necessity at GOT connection
Network type	Ethernet (fixed)	○
Start I/O No.	0000H	○
Network No.*1	1	○
Group No.	0 (fixed)	○
Station No.*2	2	○
IP address	192.168.0.19	○
Station No. <->IP information	(Use default value.)	×
FTP Parameters		×
Router relay parameter		×
Routing parameters	Refer to (2)	△

○ : Necessary △ : As necessary × : Not necessary

*1 Set the same network No. as that of the GOT.

*2 Do not set the same station No. as that of the GOT.

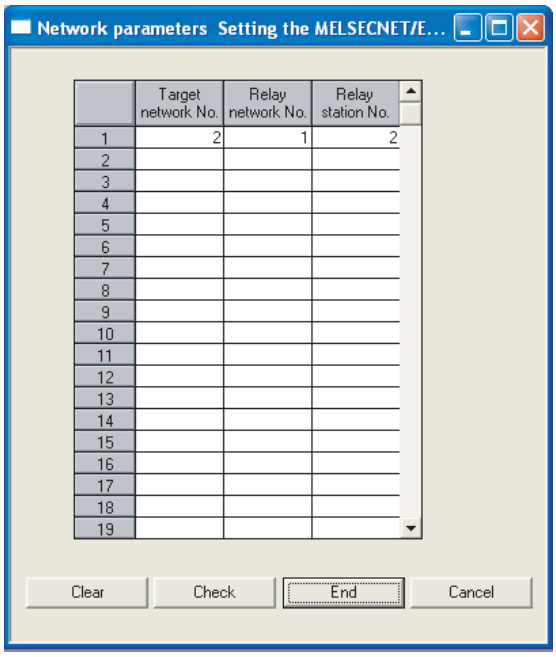
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

(2) Routing parameter setting

Up to 64 [Transfer Network No.]s can be set.
However, the same transfer network number cannot be set twice or more (multiple times).
Therefore, the one that can access to other station from the request source host GOT is 64 kinds of [Transfer Network No.]s.



Item	Range
Target network No.	1 to 239
Relay network No.	1 to 239
Relay station No.	1 to 64

Point

Routing parameter setting of request source

Routing parameter setting is also necessary for the request source GOT.
For the setting, refer to the following.

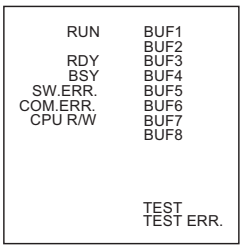
☞ Section 10.2.3 4 Routing parameter setting

(3) Communication confirmation

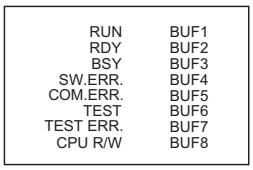
The RDY LED on the Ethernet module turn on when the module is ready to communicate.
For confirming the communication state, refer to the following.

☞ Section 10.3.5 4 Confirming the communication state of Ethernet module

AJ71QE71N3-T, AJ71QE71N-B5, AJ71QE71N-B2, AJ71QE71N-T, AJ71QE71N-B5T, AJ71QE71, AJ71QE71-B5



A1SJ71QE71N3-T, A1SJ71QE71N-B5, A1SJ71QE71N-B2, A1SJ71QE71N-T, A1SJ71QE71N-B5T,A1SJ71QE71-B5, A1SJ71QE71-B2



4 [Communication settings] and [Ethernet setting] of GT Designer2

(1) Communication settings

Item	Setting(Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0 ms

(2) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1
	PLC No.	2
	Type	AJ71QE71
	IP address	192.168.0.19
	Port No.	5001(fixed)
	Communication	UDP(fixed)

Point

[Communication Settings], [Ethernet] of GT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ Section 10.2.3 Setting communication interface (Communication settings)

10.3.7 Connecting to Ethernet module (A Series)

This section describes the settings of the GOT and Ethernet module (A Series) given for the system configuration shown at 1.

Point

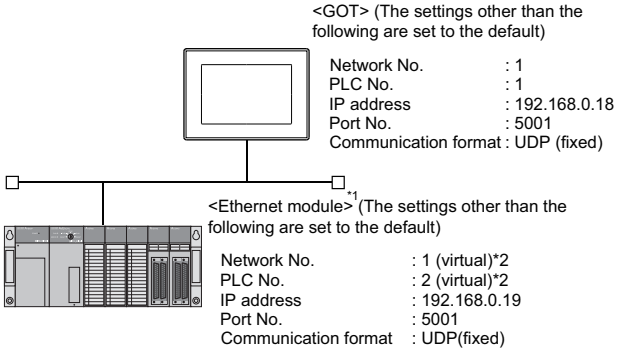
Ethernet module (A Series)

For details of the Ethernet module (A Series), refer to the following manual.

☞ For A Ethernet Interface Module User's Manual

1 System configuration

☞ 4 [Communication settings] and [Ethernet setting] of GT Designer2



☞ · 2 Switch setting of Ethernet module
· 3 Sequence program

*1 The Ethernet module is mounted on the base unit slot 0.
The Start I/O No. of the Ethernet module is set to "0".

*2 These setting items do not exist at the PLC side. However, the virtual values must be set on the GOT side.

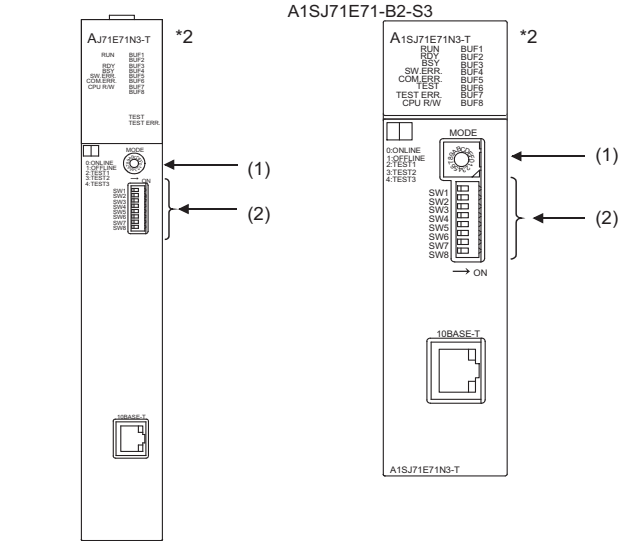
☞ 4 [Communication settings] and [Ethernet setting] of GT Designer2

2 Switch settings of Ethernet module

Set the operation mode setting switch and exchange condition setting switch.

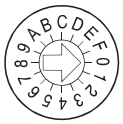
AJ71E71N3-T, AJ71E71N-B5, AJ71E71N-B2, AJ71E71N-T, AJ71E71N-B5T, AJ71E71-S3

A1SJ71E71N3-T, A1SJ71E71N-B5, A1SJ71E71N-B2, A1SJ71E71N-T, A1SJ71E71N-B5T, A1SJ71E71-B5-S3, A1SJ71E71-B2-S3



*2 The figure of AJ71E71N3-T and A1SJ71E71N3-T.

(1) Operation mode setting switch

Operation mode setting switch	Description	Setting	Setting necessity at GOT connection
	Online	0 (fixed)	○

○ : Necessary △ : As necessary × : Not necessary

(2) Exchange condition setting switch *1

Exchange condition setting switch	Setting switch	Description	Setting	Setting necessity at GOT connection
	SW1	Selection of line processing at TCP timeout error	OFF	△
	SW2	Data code setting (binary code)	OFF (fixed)	○
	SW3	Must not to be used	OFF (fixed)	×
	SW4			
	SW5			
	SW6			
	SW7	CPU exchange timing setting (Enable write at RUN time)	ON (fixed)	○
	SW8	Initial timing setting	OFF	△

○ : Necessary △ : As necessary × : Not necessary

*1 The exchange condition setting switches of A1SJ71E71-B5-S3 and A1SJ71E71-B2-S3 are specified as the below.

Exchange condition setting switch	Setting switch	Description	Setting	Setting necessity at GOT connection
	SW1	Selection of line processing at TCP timeout error	OFF	△
	SW2	Data code setting (binary code)	OFF (fixed)	○
	SW3	CPU exchange timing setting (Enable write at RUN time)	ON (fixed)	○
	SW4	Initial timing setting	OFF	△

○ : Necessary △ : As necessary × : Not necessary

Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 Sequence program

The sequence program for initial processing and communication line opening processing are required.

(1) Programming condition

This program performs the initial processing of the Ethernet module and the opening processing of connection No. 1 when the stopping PLC CPU starts running.

(a) I/O signal of Ethernet module

☞ For A Ethernet Interface Module User's Manual

(b) Device used by user

Device	Application
M102	COM.ERR turned off command
D100	IP address of Ethernet module
D110	Application setting
D111	Port No. of Ethernet module
D112 to D113	IP address of GOT
D114	Port No. of GOT
D200	Initial fault code

(c) Settings of buffer memory used in the following example

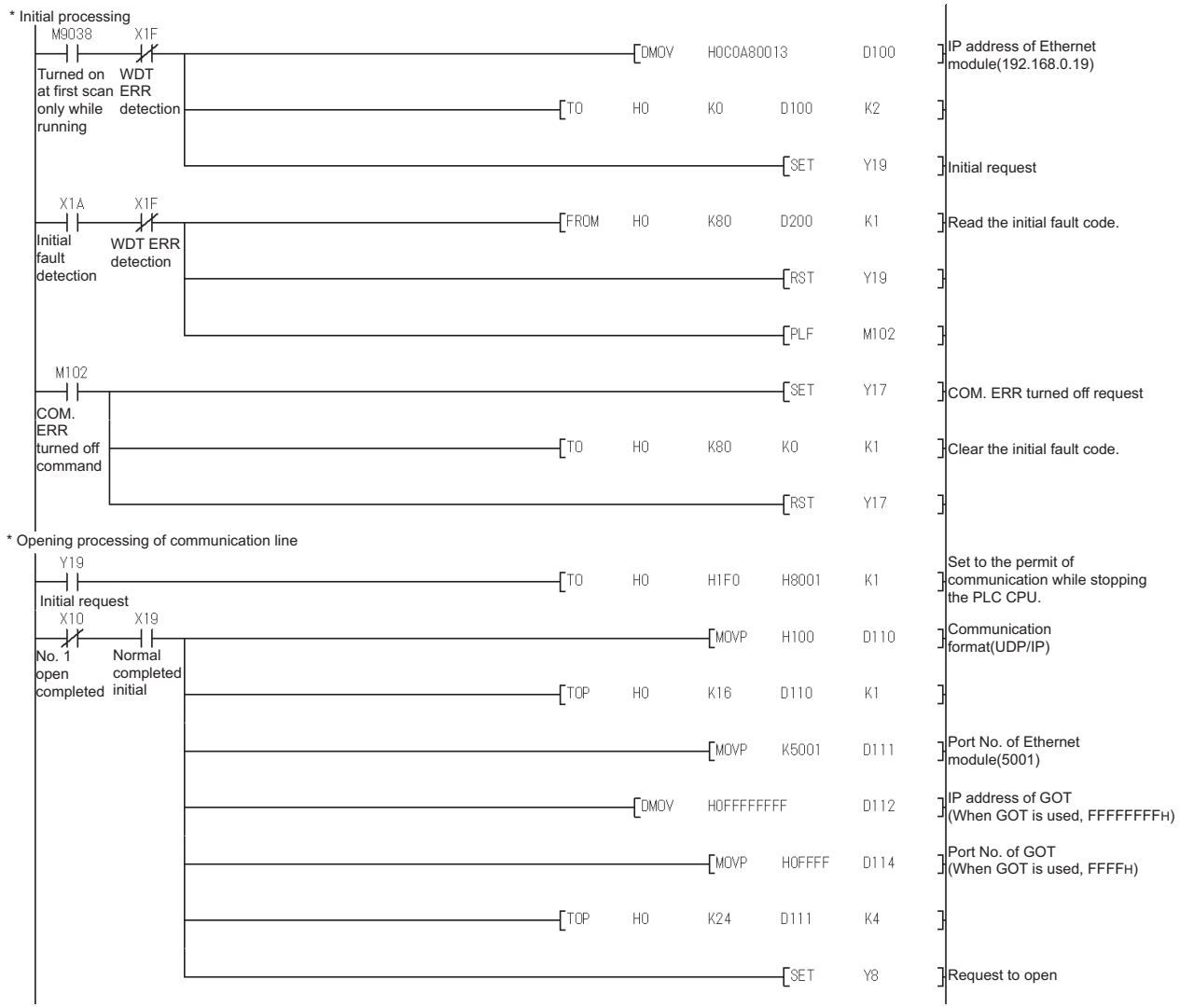
Buffer memory address Dec (Hex)	Item	Setting
0 to 1 (0 to 1H)	IP address of Ethernet module	C0A80013H (192.168.0.19)
16 (10H)	Application setting*1	100H
24 (18H)	Port No. of Ethernet module	5001
25 to 26 (19 to 1AH)	IP address of GOT	FFFFFFFFH
27 (1BH)	Port No. of GOT	FFFFH (fixed)
80 (50H)	Initial fault code	-

*1 The details of the application setting are shown below.
Settings 1), 2) and 3) can be changed by the user.
4), 5) and 6) are fixed.

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
6)						5)	4)	3)						2)	1)

1) Fixed buffer application
0: For sending; no exchange
1: For receiving
2) Existence check
0: No
1: Yes
3) Pairing open
0: No
1: Yes
4) Communication format (Set to "1" (UDP/IP).)
0: TCP/IP
1: UDP/IP
5) Fixed buffer exchange (Set to "0" (With procedure).)
0: With procedure
1: Without procedure
6) Open method (Set to "00" (Active, UDP/IP).
00: Active, UDP/IP
10: Unpassive
11: Fullpassive

(2) Example of sequence program



Point

When changing the sequence program

After writing the sequence program to the PLC CPU, operate the PLC CPU ether turning OFF and then ON or resetting.

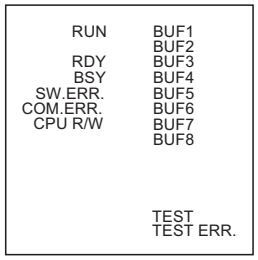
(3) Communication confirmation

The RDY LED on the Ethernet module turn on when the module is ready to communicate.
For confirming the communication state, refer to the following.

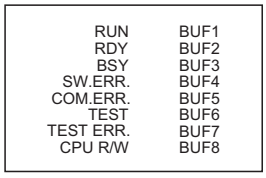
☞ Section 10.3.5 4 Confirming the communication state of Ethernet module

The BUF1 LED turns on when the opening processing of the connection No. 1 is completed in normal at executing of the sequence program example described at (2).

AJ71E71N3-T, AJ71E71N-B5, AJ71E71N-B2, AJ71E71N-T, AJ71E71N-B5T, AJ71E71-S3



A1SJ71E71N3-T, A1SJ71E71N-B5, A1SJ71E71N-B2, A1SJ71E71N-T, A1SJ71E71N-B5T, A1SJ71E71-B5-S3, A1SJ71E71-B2-S3



4 [Communication settings] and [Ethernet setting] of GT Designer2

(1) Communication settings

Item	Setting(Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0 ms

(2) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1
	PLC No.	2
	Type	AJ71E71
	IP address	192.168.0.19
	Port No.	5001
	Communication	UDP(fixed)

Point

[Communication Settings], [Ethernet] of GT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ Section 10.2.3 Setting communication interface (Communication settings)

10.3.8 Connecting to Display I/F (CNC C70)

This section describes the settings of the GOT and Display I/F (CNC C70) given for the system configuration shown at 1.

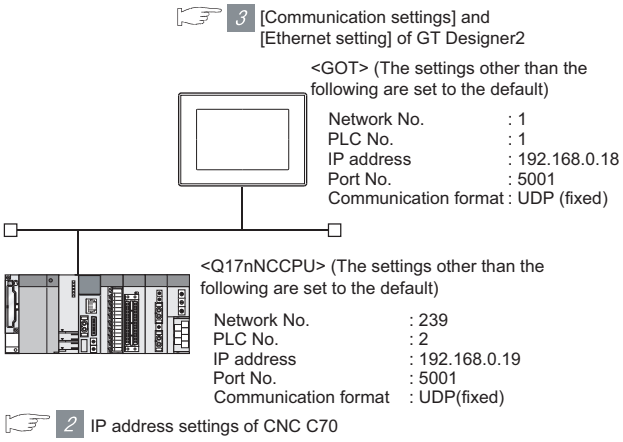
Point

Display I/F (CNC C70)

For details of the Display I/F (CNC C70), refer to the following manual.

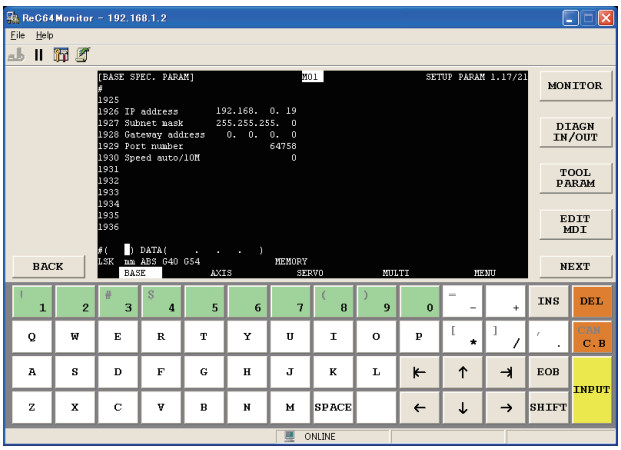
☞ C70 Series SET UP MANUAL

1 System configuration



2 IP address settings of CNC C70

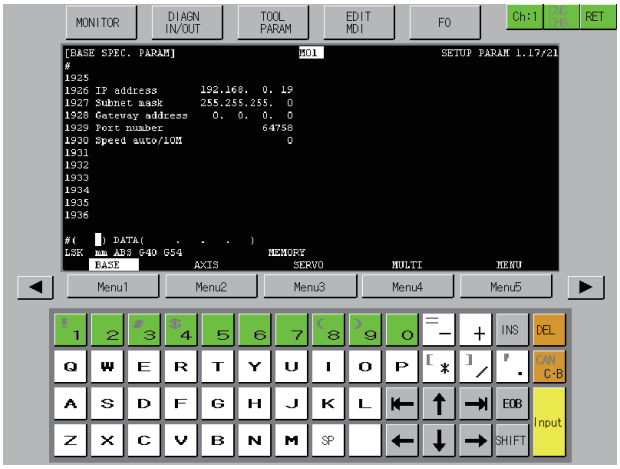
(1) Remote monitor tool



Item	Setting	Setting necessity at GOT connection
IP address	192.168.0.19	○
Subnet mask	255.255.255.0	○
Gateway address	0.0.0.0	○
Port number	64758 (fixed)	○
Speed auto/10M	0 (fixed)	○

○ : Necessary △ : As necessary × : Not necessary

(2) CNC monitor



Item	Setting	Setting necessity at GOT connection
IP address	192.168.0.19	○
Subnet mask	255.255.255.0	○
Gateway address	0.0.0.0	○
Port number	64758 (fixed)	○
Speed auto/10M	0 (fixed)	○

○ : Necessary △ : As necessary × : Not necessary

(3) Communication check

The CNC C70 can communicate with the GOT when INIT.LED of the CNC C70 is lit.
For checking the communication state, refer to the following.

☞ 4 Checking communication state of CNC C70

3 [Communication settings] and [Ethernet setting] of GT Designer2

(1) Communication settings

Item	Setting (Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5012
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0ms

(2) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1
	PLC No.	2
	Type	Q17nNC
	IP address	192.168.0.19
	Port No.	5001 (fixed)
	Communication	UDP (fixed)

Point

[Communication Settings], [Ethernet] of GT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ 10.2.3Setting communication interface (Communication settings)

4 Checking communication state of CNC C70

(1) When using the Command Prompt of Windows®.
Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.0.19
Reply from 192.168.0.19: bytes=32 time<1ms TTL=64

(b) When abnormal communication
C:\>Ping 192.168.0.19
Request timed out.

(2) When abnormal communication
Check the following, and then execute the Ping command again.
- Mounting condition of CNC C70
- Cable connection condition
- Switch settings and network parameter settings
- Operation state of the PLC CPU (Check if no error occurs.)
- IP address of the CNC C70 specified for the Ping command

10.3.9 Connecting to PERIPHERAL I/F (Built-in Ethernet port Motion Controller CPU)

This section describes the settings of the GOT and Built-in Ethernet port Motion Controller CPU in the following case of system configuration.

Point

(1) GOT type setting
For details, refer to the following.
☞10.2.3Setting communication interface (Communication settings)

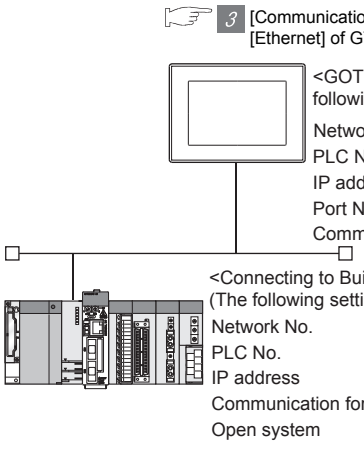
(2) CPU No. specification of Q170MCPU
Set whether to monitor the PLC CPU area or the Motion CPU area of Q170MCPU, in the CPU No. specification. For details, refer to the following.
☞10.4Precautions

(3) PLC type of GX Works2/GX Developer
When creating a program, set the following PLC type:
- For Q173D(S)CPU/Q172D(S)CPU
  QnUD(E)(H)CPU
- For Q170MCPU
  Q03UDCPU

(4) Built-in Ethernet port CPU
For details of Built-in Ethernet port CPU, refer to the following manual.
☞ User's Manual of Q173D(S)CPU/ Q172D(S)CPU and Q170MCPU

1 System configuration

Leave the Built-in Ethernet port Motion Controller CPU settings as default in the following system configuration. Set [Communication Settings] and [Ethernet] for the connection.



*1 For the settings when using system devices including a hub and a transceiver, refer to the following.

10.3.2Connecting to Built-in Ethernet port QCPU (multiple connection)

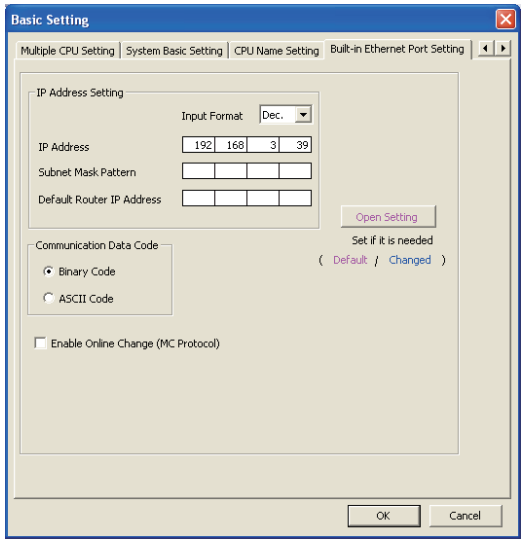
*2 These setting items do not exist at the PLC side. However, the virtual values must be set on the GOT side.

3 [Communication Settings], [Ethernet] of GT Designer2

2 Basic setting of MT Works2

Use the default values of the basic setting for the system configuration above.

(1) Built-in Ethernet port

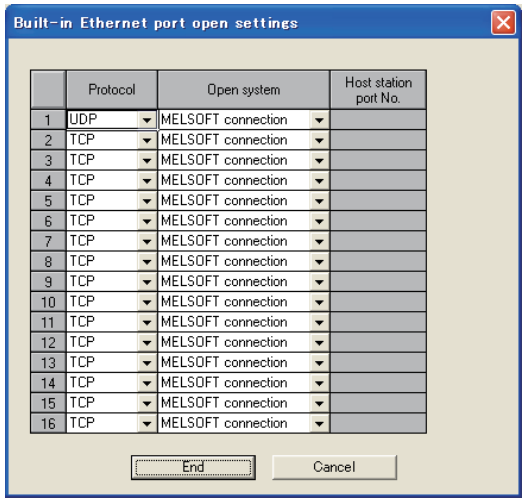


Item	Set value	Setting necessity at GOT connection
IP address	192.168.3.39 (Default)	○
Subnet mask pattern	-	×
Default router IP address	-	×
Communication data code	(Use default value)	△
Enable online change (MC protocol)		△
Open settings	Refer to (2)	○

○:Necessary △:As necessary ×:Not necessary

(2) Open settings

The setting is required for all the connected GOTs.



Item	Set value
Protocol	UDP(fixed)
Open system	MELSOFT connection (fixed)
Host station port No.	-

3 [Communication Settings], [Ethernet] of GT Designer2

Point

(1) [Communication Settings], [Ethernet] of GT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ 10.2.3Setting communication interface (Communication settings)

(2) Ethernet setting

The settings items for the network No. and station No. do not exist at the Built-in Ethernet port Motion Controller CPU side. However, these virtual values must be set on the GOT side. Therefore, set the network No. and station No. on the GOT side. Set the network No. that is not existed on the network system and any station No.

(3) Communication settings

Item	Setting (Use default value.)
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.3.1
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 times
Startup Time	3 sec
Timeout time	3 sec
Delay Time	0ms

(4) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1*1
	PLC No.	2*2
	Type	QnUDE(H)
	IP address	192.168.3.39*3
	Port No.	5006 (fixed)
	Communication	UDP (fixed)

*1 Set the same value as that of GOT N/W No.
*2 Set a value different from that of GOT PLC No.
*3 Set it to the IP address value of the Built-in Ethernet port Motion Controller CPU side.

4 Checking communication state of Connecting to Built-in Ethernet port CPU

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.3.39
Reply from 192.168.3.39: bytes=32 time <10ms TTL=32

(b) When abnormal communication
C:\>Ping 192.168.3.39
Request timed out.

(2) When abnormal communication

At abnormal communication, check the following and execute the Ping command again.

- Cable connecting condition
- Confirmation of switch and network parameter setting
- Operation state of PLC CPU (faulty or not)
- The IP address of Built-in Ethernet port CPU specified in the Ping command

Point

Ethernet diagnostics of GX Works2/GX Developer

Ethernet diagnostics of GX Works2/GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Works2/GX Developer, refer to the following manual.

☞ GX Works2 Version1 Operating Manual (Common)

☞ GX Developer Version8 Operating Manual

10.4 Precautions

1 When connecting to QnA (S) CPU type

Use B or a later function version of Ethernet module (QnA Series) and PLC CPU (QnA/QnASCPU type).

2 When connecting to multiple GOTs

(1) Setting PLC No.
When connecting two or more GOTs in the Ethernet network, set each [PLC No.] to the GOT.

☞ Section 10.2.3 Setting communication interface (Communication settings)

(2) Setting IP address
Do not use the IP address "192.168.0.18" when using multiple GOTs.
A communication error may occur on the GOT with the IP address.

3 When setting IP address

Do not use "0" and "255" at the end of an IP address.
(Numbers of *.*.*.0 and *.*.*.255 are used by the system.)
The GOT may not monitor the controller correctly with the above numbers.
Consult with the administrator of the network before setting an IP address to the GOT and controller.

4 When connecting to the multiple network equipments (including GOT) in a segment

By increasing the network load, the transmission speed between the GOT and PLC may be reduced.
The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

5 Time taken until the PLC runs when connected in the multiple CPU system

The following time is taken until the PLC runs.
QCPU (Q mode), motion controller (Q series): 10 seconds or more
MELDAS C70: 18 seconds or more
When the GOT starts before the PLC runs, a system alarm occurs. Adjust the opening screen time in the GOT setup so that no system alarm occurs.

☞ GT Designer2 Version □ Screen Design Manual

6 When using the QSCPU

The GOT can only read device data and sequence programs by the ladder monitor function in the QSCPU.
The GOT cannot write any data to the QSCPU.

7 When monitoring the Q170MCPU

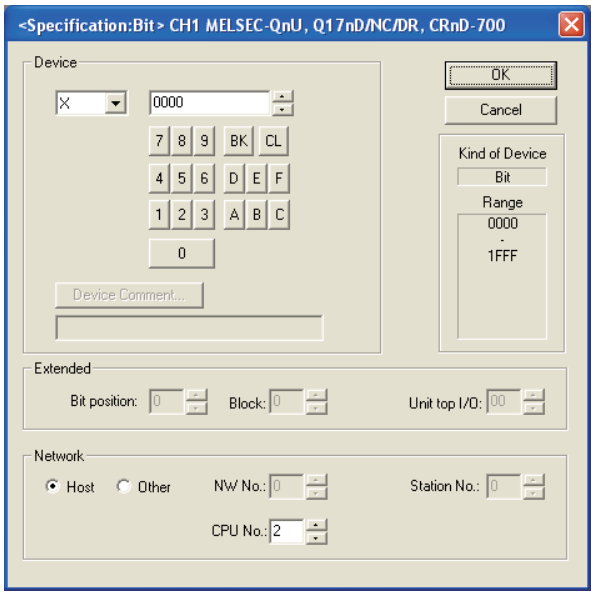
Set [CPU No.] to "2" in the device setting to monitor the device of the Motion CPU area (CPU No.2).
When the CPU No. is set to "1", the device on the PLC CPU area (CPU No.1) is monitored.
When the CPU No. is set to "0", the monitoring target differs depending on the GOT connection destination. Refer to the following.

GOT connection destination	Monitoring target
QJ71E71 module	PLC CPU area (CPU No.1)
PERIPHERAL I/F	Motion CPU area (CPU No.2)

When the CPU No. is set to the number other than "0" to "2", a communication error occurs and the monitoring cannot be executed.
For setting the CPU No., refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

Example) Setting dialog box of the bit device



8 Number of connectable CPUs

QCPU: 128 (10 or less CPUs are recommended)
FXCPU: 128 (10 or less CPUs are recommended)

10.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Ethernet connection	Supporting the Ethernet connection	2.09K	Communication driver QJ71E71/AJ71(Q)E71 [01.02.**]
	Supporting the routing parameter setting by GT Designer2	2.43V	Communication driver MELSECNET/H [03.01.**]
Applicable CPU	Supporting the connection to the following CPUs Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q172DCPU, Q173DCPU, Q173NCCPU	2.63R	Communication driver QJ71E71/AJ71(Q)E71/ Q17nNC [03.07.**]
Applicable CPU	Supporting the connection to the following CPUs Q13UDHCPU, Q26UDHCPU	2.77F	Communication driver QJ71E71/AJ71(Q)E71, Q17nNC, CRnD-700 [03.12.**]
Applicable CPU	Supporting the connection to the following CPUs Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q13UDEHCPU, Q26UDEHCPU, Q02PHCPU, Q06PHCPU, QS001CPU	2.82L	Communication driver Ethernet(MELSEC),Q17nNC, CRnD-700 [03.13.**]
Ethernet connection	Supporting the connection to GT16	2.90U	Communication driver Ethernet(MELSEC),Q17nNC, CRnD-700 [04.02.**]
Applicable CPU	Supporting the connection to the following CPUs Q00UCPU, Q01UCPU, Q00UJCPU, Q10UDHCPU, Q20UDHCPU, Q10UDEHCPU, Q20UDEHCPU,	2.91V	Communication driver Ethernet(MELSEC),Q17nNC, CRnD-700 [04.03.**]
Applicable CPU	Supporting the connection to Q170MCPU	2.96A	Communication driver Ethernet(MELSEC),Q17nNC, CRnD-700 [04.04.**]

MEMO

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expence.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(2) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(3) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
5. Replacing consumable parts such as the battery, backlight and fuses.
6. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
7. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
8. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation equipment for recreation and amusement, and safety devices, shall also be excluded from the graphic operation terminal range of applications.
However, in certain cases, some applications may be possible, providing the user consults the local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at our discretion.
In some of three cases, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required.

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Other company and product names herein are either trademarks or registered trademarks of their respective owners.

GRAPHIC OPERATION TERMINAL

GOT1000

GOT1000 Series Connection Manual 1/3

MODEL	GT1000-U(CON)-E
MODEL CODE	1D7M26
SH(NA)-080532ENG-Q 1/3(1209)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.

Printed in Japan, September 2012.

MITSUBISHI

GRAPHIC OPERATION TERMINAL
GOT

GRAPHIC OPERATION TERMINAL

GOT1000

GOT1000 Series Connection Manual 2/3

MITSUBISHI PLC CONNECTIONS

THIRD PARTY PLC CONNECTIONS

MICROCOMPUTER CONNECTION

MODBUS® CONNECTION

TEMPERATURE CONTROLLER CONNECTIONS

OTHER CONNECTIONS

OTHER FUNCTIONS



● SAFETY PRECAUTIONS ●

(Always read these precautions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product.
In this manual, the safety precautions are ranked as "WARNING" and "CAUTION".

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the ⚠ caution level may lead to a serious accident according to the circumstances.
Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠ WARNING

- Some failures of the GOT, communication unit or cable may keep the outputs on or off.
  An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
  Not doing so can cause an accident due to false output or malfunction.

- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  For bus connection : The CPU becomes faulty and the GOT becomes inoperative.
  For other than bus connection : The GOT becomes inoperative.
  A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur.
  Not doing so can cause an accident due to false output or malfunction.

- Do not use the GOT as the warning device that may cause a serious accident.
  An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.
  Failure to observe this instruction may result in an accident due to incorrect output or malfunction.

[DESIGN PRECAUTIONS]

⚠WARNING

- Incorrect operation of the touch switch(s) may lead to a serious accident if the GOT backlight is gone out.
  When the GOT backlight goes out, the POWER LED flickers (green/orange) and the display section turns black and causes the monitor screen to appear blank, while the input of the touch switch(s) remains active.
  This may confuse an operator in thinking that the GOT is in "screensaver" mode, who then tries to release the GOT from this mode by touching the display section, which may cause a touch switch to operate.
  Note that the following occurs on the GOT when the backlight goes out.
  The POWER LED flickers (green/orange) and the monitor screen appears blank.

- The display section of the GT16 is an analog-resistive type touch panel.
  If you touch the display section simultaneously in 2 points or more, the switch that is located around the center of the touched point, if any, may operate.
  Do not touch the display section in 2 points or more simultaneously.
  Doing so may cause an accident due to incorrect output or malfunction.

- When programs or parameters of the controller (such as a PLC) that is monitored by the GOT are changed, be sure to reset the GOT or shut off the power of the GOT at the same time.
  Not doing so can cause an accident due to false output or malfunction.

⚠CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm apart.
  Not doing so noise can cause a malfunction.

- Do not press the GOT display section with a pointed material as a pen or driver.
  Doing so can result in a damage or failure of the display section.

[MOUNTING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT to/from the panel.
  Not doing so can cause the GOT to fail or malfunction.

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the communication unit, option function board or multi-color display board onto/from the GOT.
  Not doing so can cause the unit to fail or malfunction.

- Before mounting an optional function board or Multi-color display board, wear a static discharge wrist strap to prevent the board from being damaged by static electricity.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Use the GOT in the environment that satisfies the general specifications described in the User's Manual.
  Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT.
- When loading the communication unit or option unit to the GOT (GT16, GT15), fit it to the extension interface of the GOT and tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, failure or malfunction due to the damage of the screws or unit.
- When mounting the multi-color display board onto the GOT (GT15), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
  Loose tightening may cause the unit and/or GOT to malfunction due to poor contact.
  Overtightening may damage the screws, unit and/or GOT; they might malfunction.
- When mounting the option function board onto the GOT (GT16), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
- When mounting an optional function board onto the GOT(GT15), fully connect it to the connector until you hear a click.
- When mounting an optional function board onto the GOT(GT11), fully connect it to the connector.
- When inserting a CF card into the GOT(GT16, GT15, GT11), push it into the CF card interface of GOT until the CF card eject button will pop out.
  Failure to do so may cause a malfunction due to poor contact.
- When inserting/removing a CF card into/from the GOT(GT16, GT15, GT11), turn the CF card access switch off in advance.
  Failure to do so may corrupt data within the CF card.
- When removing a CF card from the GOT, make sure to support the CF card by hand, as it may pop out.
  Failure to do so may cause the CF card to drop from the GOT and break.
- When installing a USB memory to the GOT(GT16), make sure to install the USB memory to the USB interface firmly.
  Failure to do so may cause a malfunction due to poor contact.
- Before removing the USB memory from the GOT(GT16), operate the utility screen for removal.
  After the successful completion dialog box is displayed, remove the memory by hand carefully.
  Failure to do so may cause the USB memory to drop, resulting in a damage or failure of the memory.
- For closing the USB environmental protection cover, fix the cover by pushing the △ mark on the latch firmly to comply with the protective structure.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Remove the protective film of the GOT.
  When the user continues using the GOT with the protective film, the film may not be removed.
- Operate and store the GOT in environments without direct sunlight, high temperature, dust, humidity, and vibrations.
- Use the protective cover for oil when the GOTs (GT16, GT15, GT11 and GT10) are used in the environment with oil or chemicals.
  Not doing so can cause failures or malfunction due to the infiltration of oil or chemicals.

[WIRING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before wiring.
  Failure to do so may result in an electric shock, product damage or malfunctions.

⚠CAUTION

- Please make sure to ground FG terminal and LG terminal and protective ground terminal of the GOT power supply section by applying Class D Grounding (Class 3 Grounding Method) or higher which is used exclusively for the GOT.
  Not doing so may cause an electric shock or malfunction.
- Be sure to tighten any unused terminal screws with a torque of 0.5 to 0.8N•m.
  Failure to do so may cause a short circuit due to contact with a solderless terminal.
- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product.
  Not doing so can cause a fire or failure.
- Tighten the terminal screws of the GOT power supply section in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT. Not doing so can cause a fire, failure or malfunction.
- The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring.
  Do not peel this label during wiring.
  Before starting system operation, be sure to peel this label because of heat dissipation.

[WIRING PRECAUTIONS]

⚠CAUTION

- Plug the bus connection cable by inserting it into the connector of the connected unit until it "clicks". After plugging, check that it has been inserted snugly. Not doing so can cause a malfunction due to a contact fault.
- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.
- Plug the QnA/ACPU/Motion controller (A series) bus connection cable by inserting it into the connector of the connected unit until it "clicks". After plugging, check that it has been inserted snugly. Not doing so can cause a malfunction due to a contact fault.

[TEST OPERATION PRECAUTIONS]

⚠WARNING

- Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method. During test operation, never change the data of the devices which are used to perform significant operation for the system. False output or malfunction can cause an accident.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠WARNING

- When power is on, do not touch the terminals. Doing so can cause an electric shock or malfunction.
- Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Doing so will cause the battery to produce heat, explode, or ignite, resulting in injury and fire.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases. Not switching the power off in all phases can cause a unit failure or malfunction. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- Do not drop or apply strong impact to the unit.
  Doing so may damage the unit.
- Do not drop or give an impact to the battery mounted to the unit.
  Doing so may damage the battery, causing the battery fluid to leak inside the battery.
  If the battery is dropped or given an impact, dispose of it without using.
- Before touching the unit, always touch grounded metal, etc. to discharge static electricity from human body, etc.
  Not doing so can cause the unit to fail or malfunction.
- Replace battery with GT15-BAT(GT16, GT15) or GT11-50BAT(GT11, GT10) by Mitsubishi electric Co. only.
  Use of another battery may present a risk of fire or explosion.
- Dispose of used battery promptly.
  Keep away from children. Do not disassemble and do not dispose of in fire.

[TOUCH PANEL PRECAUTIONS]

⚠CAUTION

- For the analog-resistive film type touch panels, normally the adjustment is not required. However, the difference between a touched position and the object position may occur as the period of use elapses. When any difference between a touched position and the object position occurs, execute the touch panel calibration.
- When any difference between a touched position and the object position occurs, other object may be activated. This may cause an unexpected operation due to incorrect output or malfunction.

[BACKLIGHT REPLACEMENT PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply of the GOT (and the PLC CPU in the case of a bus topology) and remove the GOT from the control panel before replacing the backlight (when using the GOT with the backlight replaceable by the user).
  Not doing so can cause an electric shock.
  Replacing a backlight without removing the GOT from the control panel can cause the backlight or control panel to drop, resulting in an injury.

⚠CAUTION

- Wear gloves for the backlight replacement when using the GOT with the backlight replaceable by the user.
  Not doing so can cause an injury.
- Before replacing a backlight, allow 5 minutes or more after turning off the GOT when using the GOT with the backlight replaceable by the user.
  Not doing so can cause a burn from heat of the backlight.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- When disposing of the product, handle it as industrial waste.
- When disposing of this product, treat it as industrial waste.
  When disposing of batteries, separate them from other wastes according to the local regulations.
  (For details of the battery directive in EU member states, refer to the User's Manual of the GOT to be used.)

[TRANSPORTATION PRECAUTIONS]

⚠CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.
  (For details on models subject to restrictions, refer to the User's Manual for the GOT you are using.)
- Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of the User's Manual, as they are precision devices.
  Failure to do so may cause the unit to fail.
  Check if the unit operates correctly after transportation.

REVISIONS

* The manual number is given on the bottom left of the back cover.

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INTRODUCTION

Thank you for choosing Mitsubishi Graphic Operation Terminal (Mitsubishi GOT).
Read this manual and make sure you understand the functions and performance of the GOT thoroughly in advance to ensure correct use.

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The following manuals are also related to this product.
In necessary, order them by quoting the details in the tables below.
Stored in the GT Works2/GT Designer2 in PDF format.

Related Manuals

Manual Name	Manual Number (Model Code)
GT16 User's Manual (Hardware) - Describes the GT16 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. (Sold separately)	SH-080928ENG (1D7MD3)
GT16 User's Manual (Basic Utility) - Describes the GT16 utility-relevant contents, including the screen settings, operation method settings, program/ data management, and self check function. (Sold separately)	SH-080929ENG (1D7MD4)
GT15 User's Manual - Describes the GT15 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT15 functions, including the utility. (Sold separately)	SH-080528ENG (1D7M23)
GT11 User's Manual - Describes the GT11 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT11 functions, including the utility. (Sold separately)	JY997D17501 (09R815)
GT10 User's Manual - Describes the GT10 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT10 functions, including the utility. (Sold separately)	JY997D24701 (09R819)
GT11 Handy GOT User's Manual - Describes the Handy GOT hardware-relevant contents, including the system configurations, specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the Handy GOT functions, including the utility, and how to make cables. (Sold separately)	JY997D20101 JY997D20102 (09R817)
GT SoftGOT1000 Version2 Operating Manual Describes the screen configuration, functions and using method of GT SoftGOT1000. (Sold separately)	SH-080602ENG (1D7M48)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series) Describes methods of the GT Designer2 installation operation, basic operation for drawing and transmitting data to GOT1000 series (Sold separately)	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) (1/3, 2/3, 3/3) Describes specifications and settings of each object function applicable to GOT1000 series. (Sold separately)	SH-080530ENG (1D7M25)

(Continued to next page)

Manual Name	Manual Number (Model Code)
GOT1000 Series Extended / Option Functions Manual Describes extended functions and option functions applicable to GOT series. (Sold separately)	SH-080544ENG (1D7M32)
GOT1000 Series Gateway Functions Manual Describes specifications, system comfigurations and setting method of the gateway function. (Sold separately)	SH-080545ENG (1D7M33)
GOT1000 Series MES Interface Function Manual Describes the specifications, system configurations, and setting method of GT MES interface function. (Sold separately)	SH-080654ENG (1D7M63)

ABBREVIATIONS AND GENERIC TERMS

Abbreviations and generic terms used in this manual are as follows:

■ GOT

Abbreviations and generic terms			Description
GOT1000 Series	GT SoftGOT1000		Abbreviation of GT SoftGOT1000
	GT1695	GT1695M-X	Abbreviation of GT1695M-XTBA, GT1695M-XTBD
	GT1685	GT1685M-S	Abbreviation of GT1685M-STBA, GT1685M-STBD
	GT1675	GT1675M-S	Abbreviation of GT1675M-STBA, GT1675M-STBD
		GT1675M-V	Abbreviation of GT1675M-VTBA, GT1675M-VTBD
	GT1665	GT1665M-S	Abbreviation of GT1665M-STBA, GT1665M-STBD
		GT1665M-V	Abbreviation of GT1665M-VTBA, GT1665M-VTBD
	GT16□□, GT16		Abbreviation of GT1695,GT1685, GT1675, GT1665
	GT1595	GT1595-X	Abbreviation of GT1595-XTBA, GT1595-XTBD
	GT1585	GT1585V-S	Abbreviation of GT1585V-STBA, GT1585V-STBD
		GT1585-S	Abbreviation of GT1585-STBA, GT1585-STBD
	GT157□	GT1575V-S	Abbreviation of GT1575V-STBA, GT1575V-STBD
		GT1575-S	Abbreviation of GT1575-STBA, GT1575-STBD
		GT1575-V	Abbreviation of GT1575-VTBA, GT1575-VTBD
		GT1575-VN	Abbreviation of GT1575-VNBA, GT1575-VNBD
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD
	GT156□	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD
		GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD
	GT155□	GT1555-V	Abbreviation of GT1555-VTBD
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD
		GT1550-Q	Abbreviation of GT1550-QLBD
	GT15□□, GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
	GT115□	GT1155-Q	Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD
	Handy GOT	GT1155HS-Q	Abbreviation of GT1155HS-QSBD
		GT1150HS-Q	Abbreviation of GT1150HS-QLBD
	GT11□□, GT11		Abbreviation of GT1155-Q, GT1150-Q, GT11 Handy GOT
	GT105□	GT1055-Q	Abbreviation of GT1055-QSBD
		GT1050-Q	Abbreviation of GT1050-QBBD
	GT104□	GT1045-Q	Abbreviation of GT1045-QSBD
		GT1040-Q	Abbreviation of GT1040-QBBD
	GT1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBDW, GT1030-LBDW2
	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW
	GT10□□, GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020
GOT900 Series			Abbreviation of GOT-A900 series, GOT-F900 series
GOT800 Series			Abbreviation of GOT-800 series

■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z*1, GT15-75J71BR13-Z*2
CC-Link IE controller network communication unit	GT15-J71GP23-SX
CC-Link communication unit	GT15-J61BT13, GT15-75J61BT13-Z*3
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S

*1 A9GT-QJ71LP23 + GT15-75IF900 set
*2 A9GT-QJ71BR13 + GT15-75IF900 set
*3 A8GT-J61BT13 + GT15-75IF900 set

■ Option unit

Abbreviations and generic terms		Description
Printer unit		GT15-PRN
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit		GT16M-MMR
CF card unit		GT15-CFCD
CF card extension unit*1		GT15-CFEX-C08SET
External I/O unit		GT15-DIO, GT15-DIOR
Sound output unit		GT15-SOUT
Fingerprint unit		GT15-80FPA

*1 GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

■ Option

Abbreviations and generic terms		Description			
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-256MC	GT05-MEM-32MC, GT05-MEM-512MC,	GT05-MEM-64MC, GT05-MEM-1GC,	GT05-MEM-128MC, GT05-MEM-2GC
Memory card adaptor		GT05-MEM-ADPC			
Option function board		GT16-MESB, GT15-QFNB32M,	GT15-FNB, GT15-QFNB48M,	GT15-QFNB, GT15-MESB48M,	GT15-QFNB16M, GT11-50FNB
Battery		GT15-BAT,	GT11-50BAT		
Protective Sheet	For GT16	GT16-90PSCB, GT16-80PSCB, GT16-70PSCB, GT16-60PSCB,	GT16-90PSGB, GT16-80PSGB, GT16-70PSGB, GT16-60PSGB,	GT16-90PSCW, GT16-80PSCW, GT16-70PSCW, GT16-60PSCW,	GT16-90PSGW, GT16-80PSGW, GT16-70PSGW, GT16-60PSGW
	For GT15	GT15-90PSCB, GT15-80PSCB, GT15-70PSCB, GT15-60PSCB, GT15-50PSCB,	GT15-90PSGB, GT15-80PSGB, GT15-70PSGB, GT15-60PSGB, GT15-50PSGB,	GT15-90PSCW, GT15-80PSCW, GT15-70PSCW, GT15-60PSCW, GT15-50PSCW,	GT15-90PSGW, GT15-80PSGW, GT15-70PSGW, GT15-60PSGW, GT15-50PSGW
	For GT11	GT11-50PSCB, GT11H-50PSC	GT11-50PSGB,	GT11-50PSCW,	GT11-50PSGW,
	For GT10	GT10-50PSCB, GT10-40PSCB, GT10-30PSCB, GT10-20PSCB,	GT10-50PSGB, GT10-40PSGB, GT10-30PSGB, GT10-20PSGB,	GT10-50PSCW, GT10-40PSCW, GT10-30PSCW, GT10-20PSCW,	GT10-50PSGW, GT10-40PSGW, GT10-30PSGW, GT10-20PSGW
Protective cover for oil		GT05-90PCO, GT05-50PCO	GT05-80PCO,	GT05-70PCO,	GT05-60PCO,
USB environmental protection cover		GT16-UCOV,	GT15-UCOV,	GT11-50UCOV	
Stand		GT15-90STAND, GT05-50STAND	GT15-80STAND,	GT15-70STAND,	A9GT-50STAND,
Attachment		GT15-70ATT-98, GT15-60ATT-87,	GT15-70ATT-87, GT15-60ATT-77,	GT15-60ATT-97, GT15-50ATT-95W,	GT15-60ATT-96, GT15-50ATT-85
Backlight		GT16-90XLTT, GT16-70SLTT, GT15-70SLTT, GT15-60VLTN	GT16-80SLTT, GT16-70VLTT, GT15-70VLTT,	GT15-90XLTT, GT16-60SLTT, GT15-70VLTN,	GT15-80SLTT, GT16-60VLTT, GT15-60VLTT,
Multi-color display board		GT15-XHNB,	GT15-VHNB		
Connector conversion box		GT11H-CNB-37S			
Emergency stop sw guard cover		GT11H-50ESCOV			
Memory loader		GT10-LDR			
Memory board		GT10-50FMB			

■ Software

Abbreviations and generic terms	Description
GT Works2 Version□	SW□D5C-GTWK2-E, SW□D5C-GTWK2-EV
GT Designer2 Version□	SW□D5C-GTD2-E, SW□D5C-GTD2-EV
GT Designer2	Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series
GT Converter2	Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series
GT Simulator2	Abbreviation of screen simulator GT Simulator 2 for GOT1000 / GOT900 series
GT SoftGOT1000	Abbreviation of monitoring software GT SoftGOT1000
GT SoftGOT2	Abbreviation of monitoring software GT SoftGOT2
GX Developer	Abbreviation of SW□D5C-GPPW-E(-EV)/SW□D5F-GPPW-E type software package
GX Simulator	Abbreviation of SW□D5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)
Document Converter	Abbreviation of document data conversion software Document Converter for GOT1000 series
PX Developer	Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control

License key (for GT SoftGOT1000)

Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

License key (for GT SoftGOT2)

Abbreviations and generic terms	Description
License key	A9GTSOFT-LKEY-P (For DOS/V PC)
License key FD	SW5D5F-SGLKEY-J (For PC CPU module)

Others

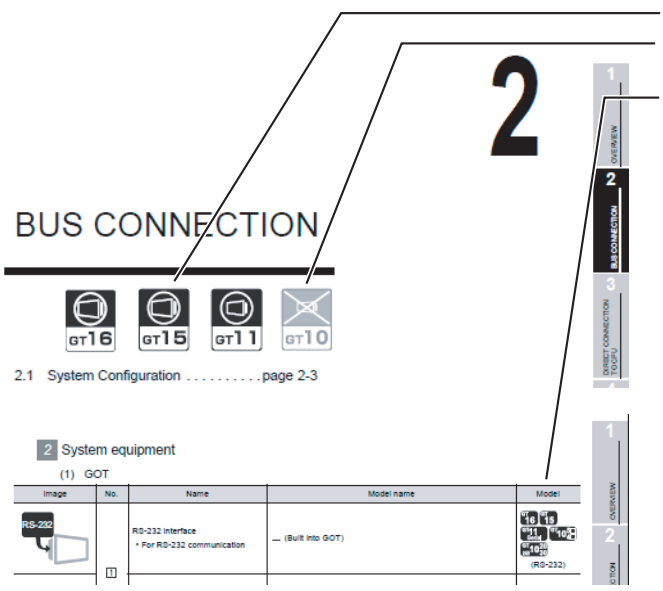
Abbreviations and generic terms		Description
OMRON PLC		Abbreviation of PLC manufactured by OMRON Corporation
KEYENCE PLC		Abbreviation of PLC manufactured by KEYENCE CORPORATION
KOYO EI PLC		Abbreviation of PLC manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.
SHARP PLC		Abbreviation of PLC manufactured by Sharp Manufacturing Systems Corporation
JTEKT PLC		Abbreviation of PLC manufactured by JTEKT Corporation
TOSHIBA PLC		Abbreviation of PLC manufactured by TOSHIBA CORPORATION
TOSHIBA MACHINE PLC		Abbreviation of PLC manufactured by TOSHIBA MACHINE CO., LTD.
HITACHI IES PLC		Abbreviation of PLC manufactured by Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI PLC		Abbreviation of PLC manufactured by Hitachi, Ltd.
FUJI FA PLC		Abbreviation of PLC manufactured by Fuji Electric FA Components & Systems Co., Ltd.
PANASONIC PLC		Abbreviation of PLC manufactured by Panasonic Electric Works Co., Ltd.
YASKAWA PLC		Abbreviation of PLC manufactured by YASKAWA Electric Corporation
YOKOGAWA PLC		Abbreviation of PLC manufactured by Yokogawa Electric Corporation
ALLEN-BRADLEY PLC		Abbreviation of Allen-Bradley PLC manufactured by Rockwell Automation, Inc.
GE FANUC PLC		Abbreviation of PLC manufactured by GE Fanuc Automation Corporation
LS IS PLC		Abbreviation of PLC manufactured by LS Industrial Systems Co., Ltd.
SCHNEIDER PLC		Abbreviation of PLC manufactured by Schneider Electric SA
SIEMENS PLC		Abbreviation of PLC manufactured by Siemens AG
Temperature controller	OMRON temperature controller	Abbreviation of temperature controller manufactured by OMRON Corporation
	SHINKO indicating controller	Abbreviation of temperature controller manufactured by Shinko Technos Co., Ltd.
	CHINO controller	Abbreviation of temperature controller manufactured by CHINO CORPORATION
	FUJI SYS temperature controller	Abbreviation of temperature controller manufactured by Fuji Electric Systems Co., Ltd.
	YAMATAKE temperature controller	Abbreviation of temperature controller manufactured by Yamatake Corporation
	YOKOGAWA temperature controller	Abbreviation of temperature controller manufactured by Yokogawa Electric Corporation
	RKC temperature controller	Abbreviation of temperature controller manufactured by RKC INSTRUMENT INC.
PC CPU module		Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD
GOT (server)		Abbreviation of GOTs that use the server function
GOT (client)		Abbreviation of GOTs that use the client function
Windows® font		Abbreviation of TrueType font and OpenType font available for Windows® (Differs from the True Type fonts settable with GT Designer2)
Intelligent function module		Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit.
MODBUS® /TCP		Generic term for the protocol designed to use MODBUS® protocol messages on a TCP/IP network.

1 About each of functions

This manual includes information of GT Designer2 Version2.96A.
For additional functions of upgraded version, refer to the List of functions added by version upgrade.
In addition, GT Designer2 Version2.98C supports the multimedia function of recording and playing video files with sound, and GT Works3 Version1.14Q supports the multidrop connection on GT16 and GT15.

2 Symbols

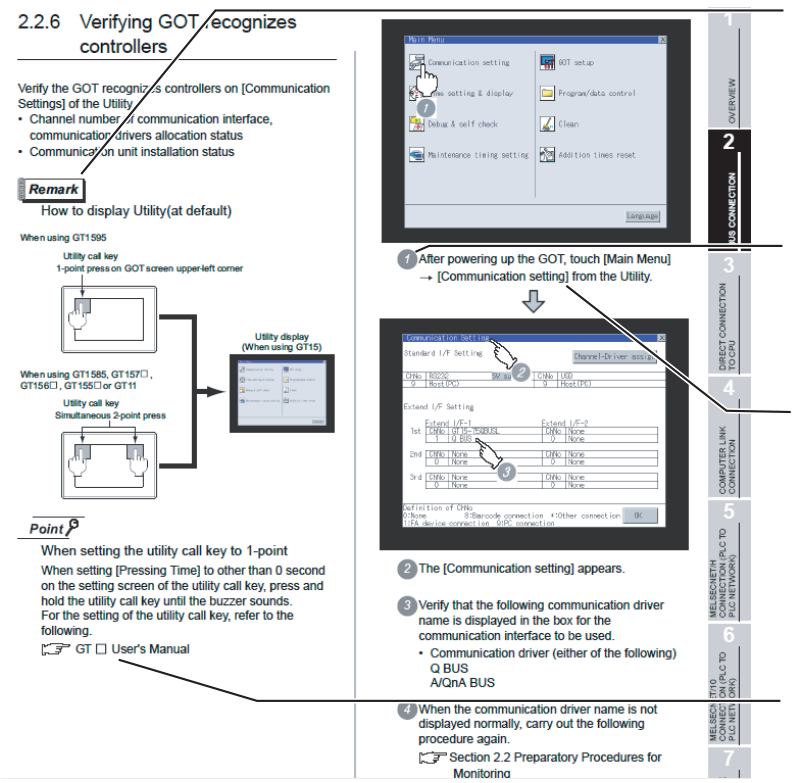
Following symbols are used in this manual.



Connectable model name
Not connectable model name

Applicable model name

GT16	Shows GT16.
GT15	Shows GT15.
GT11 Bus / GT11 Serial	Shows GT11.
GT11 Bus	Shows GT11 (BUS).
GT11 Serial	Shows GT11 (SERIAL).
GT105□ GT104□	Shows GT105□, GT104□.
GT10 24V 10 20 30 / GT10 5V 10 20	Shows GT10.
GT10 24V 10 20 30	Shows GT10(input power supply : 24V).
GT10 5V 10 20	Shows GT10(input power supply : 5V).



Point — Refers to the information required.

Hint! — Refers to information useful for operation.

Remark — Refers to the supplementary explanations for reference.

1 → 2 → 3 · · · · Indicates the operation steps.

Menu and items are differentiated with parentheses.

[ ] : Refers to an item displayed on the computer screen or the GOT screen.

□ : Refers to a button displayed on the computer screen or the GOT screen, or a key of thecomputer keyboard.

Indicates the items in which the detailed explanation is described (manual, chapter, section, item of the manual).

*Since the above page was created for explanation purpose, it differs from the actual page

THIRD PARTY PLC CONNECTIONS

Chapter11 CONNECTION TO OMRON PLC

Chapter12 CONNECTION TO KEYENCE PLC

Chapter13 CONNECTION TO KOYO EI PLC

Chapter14 CONNECTION TO SHARP PLC

Chapter15 CONNECTION TO JTEKT PLC

Chapter16 CONNECTION TO TOSHIBA PLC

(Continued to next page)

Chapter17 CONNECTION TO TOSHIBA MACHINE PLC

Chapter18 CONNECTION TO HITACHI IES PLC

Chapter19 CONNECTION TO HITACHI PLC

Chapter20 CONNECTION TO FUJI FA PLC

Chapter21 CONNECTION TO PANASONIC PLC

(Continued to next page)

Chapter22 CONNECTION TO YASKAWA PLC

Chapter23 CONNECTION TO YOKOGAWA PLC

Chapter24 CONNECTION TO ALLEN-BRADLEY PLC

Chapter25 CONNECTION TO GE FANUC PLC

(Continued to next page)

Chapter26 CONNECTION TO LS INDUSTRIAL SYSTEMS PLC

Chapter27 CONNECTION TO SIEMENS PLC

11

CONNECTION TO OMRON PLC



11.1 System Configuration . . . . . page 11-2

This section describes the equipment and cables needed when connecting a GOT to an OMRON PLC.
Select a system suitable for your application.

11.2 Connection Cable . . . . . page 11-28

This section describes the specifications of the cables needed when connecting to an OMRON PLC.
Check the specifications of the connection cables.

11.3 Preparatory Procedures for Monitoring . . . . . page 11-42

This section provides the procedures to be followed before performing monitoring in connection to an OMRON PLC.
This procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

11.4 PLC Side Setting . . . . . page 11-53

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.
Check the specifications of the connection cables.

11.5 List of Functions Added by Version Upgrade . . . . . page 11-63

This section describes the functions added by version upgrade of GT Designer2 or OS.

11.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

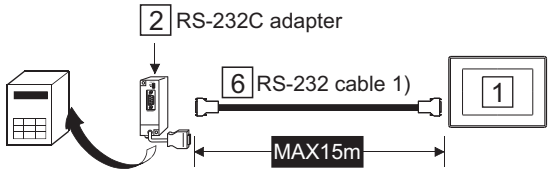
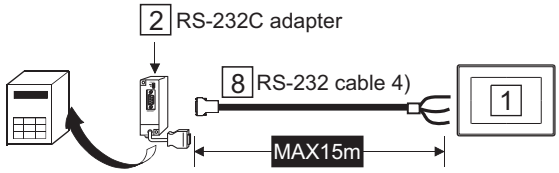
Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.

11.1.1 When connecting to CPM1, CPM1A, CPM2A or CPM2C

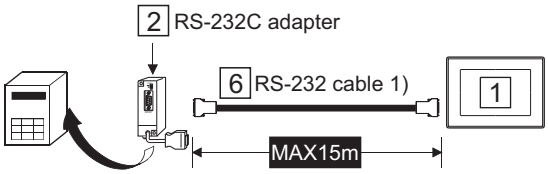
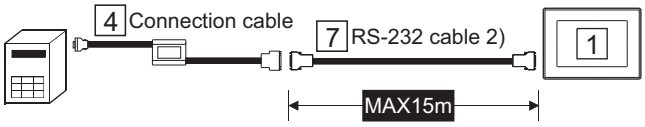
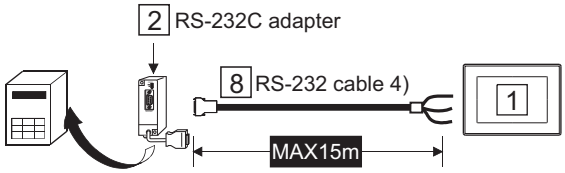
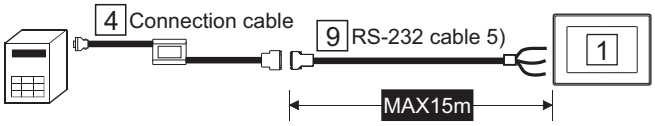
Communication driver
OMRON SYSMAC

1 System configuration and connection conditions

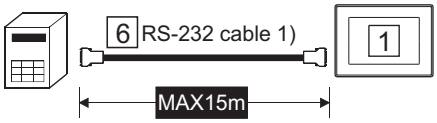
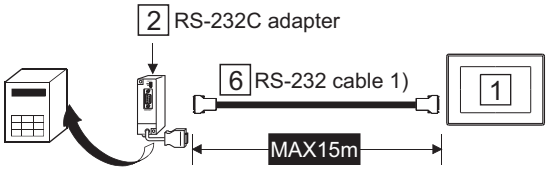
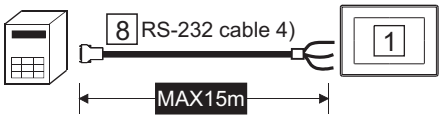
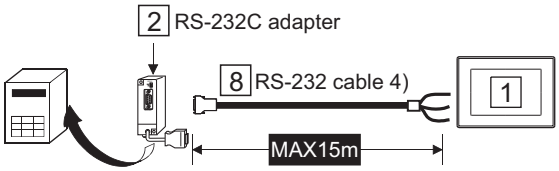
When connecting to CPM1

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT 24V 10 20 30 (RS-232)

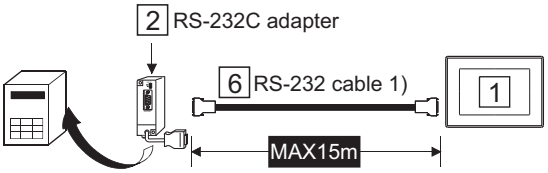
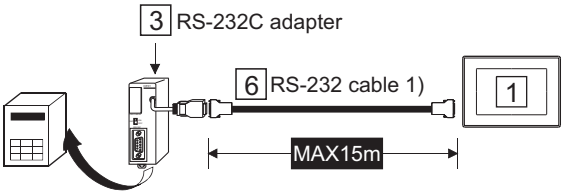
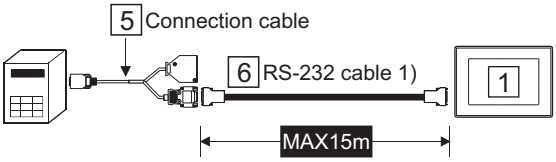
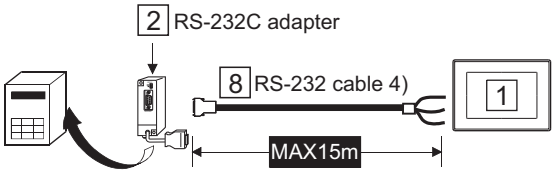
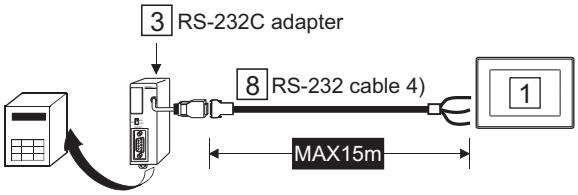
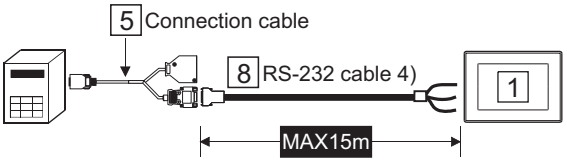
When connecting to CPM1A

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT105□ 4□
			GT16 GT15 GT11 Serial GT105□ 4□
1	15m or less		GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)

When connecting to CPM2A

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT105□ 4□
			GT16 GT15 GT11 Serial GT105□ 4□
1	15m or less		GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)

When connecting to CPM2C

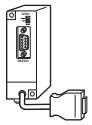
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)

2 System equipment

(1) GOT

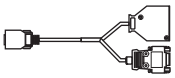
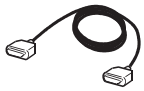
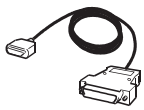
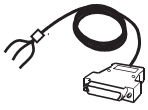
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 1030 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	RS-232C adapter	CPM1-CIF01
	3		CPM2C-CIF01-V1

2 and 3 are products manufactured by OMRON Corporation. For details of these products, contact OMRON Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	4	connection cable • Between CPU and RS-232 cable	CQM1-CIF01	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 1030
	5		CPM2C-CN111	
	6	RS-232 cable 1) *1 • Between CPU, RS-232C adapter and connection cable	GT09-C30R20101-9P(3m)	GT16 GT15 GT11 Serial GT105□4□
	7	RS-232 cable 2) *1 • Between connection cable and GOT	GT09-C30R20102-25S(3m)	GT16 GT15 GT11 Serial GT105□4□
	8	RS-232 cable 4) • Between CPU, RS-232C adapter and connection cable	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT24V1020 1030 (RS-232)
	9	RS-232 cable 5) • Between connection cable and GOT		

*1 The RS-232 cable can be prepared by the user. (☞ Section 11.2 Connection Cable)

4 and 5 are products manufactured by OMRON Corporation. For details of these products, contact OMRON Corporation.

11.1.2 Connecting to CQM1, CQM1H, CJ1H, CJ1G, CJ1M, CP1H or CP1L

Communication driver
OMRON SYSMAC

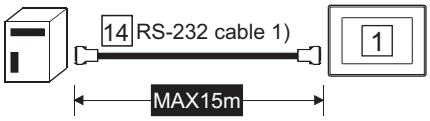
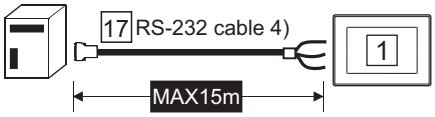
1 System configuration and connection conditions

When connecting to CQM1

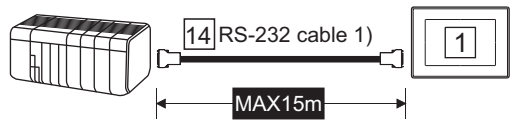
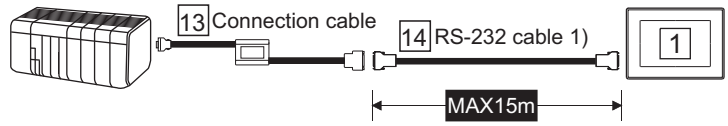
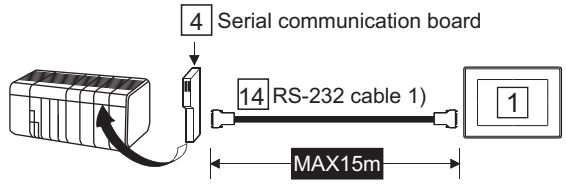
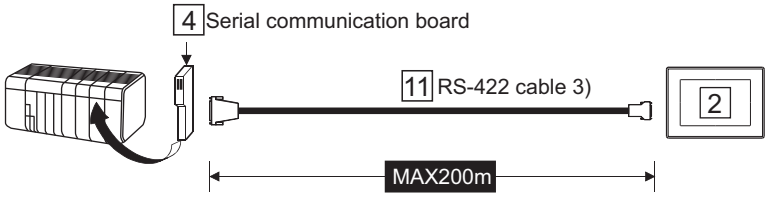
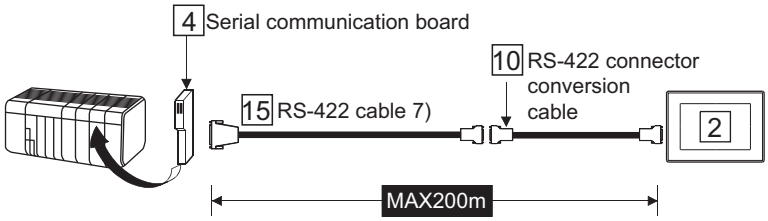
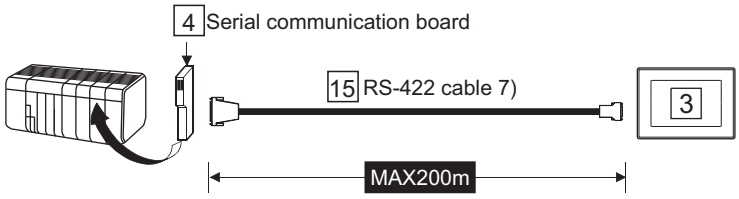
Point

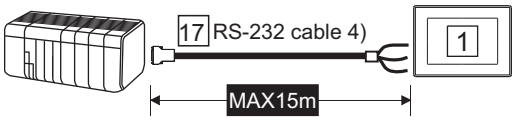
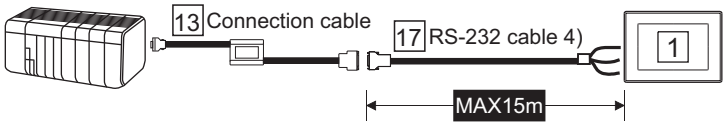
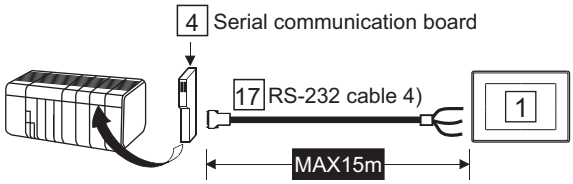
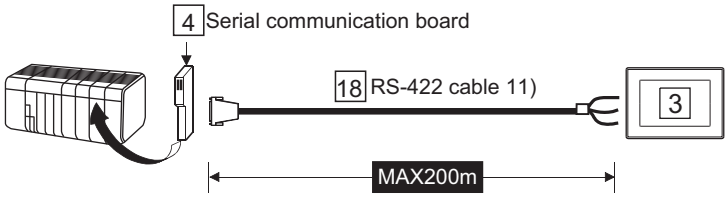
Compact PLCs that cannot be connected

No GOT can be connected to the CQM1-CPU11 since the CQM1-CPU11 has no RS-232C interface.

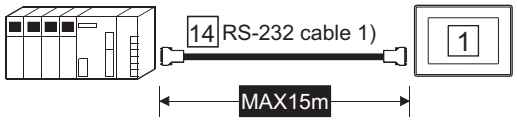
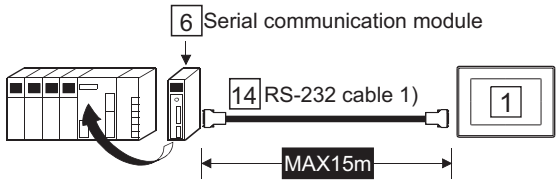
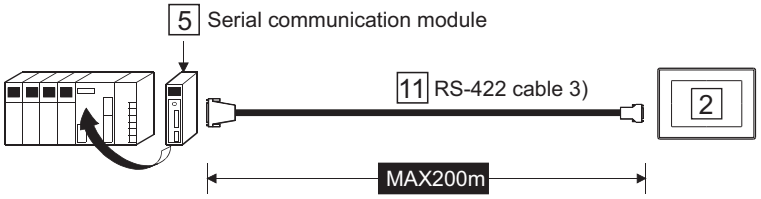
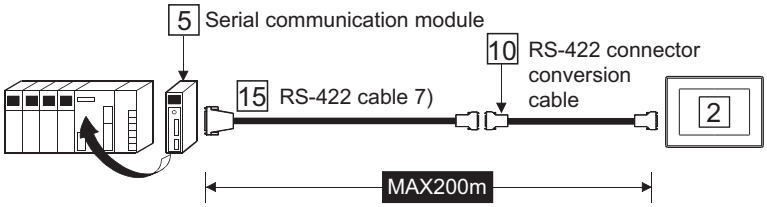
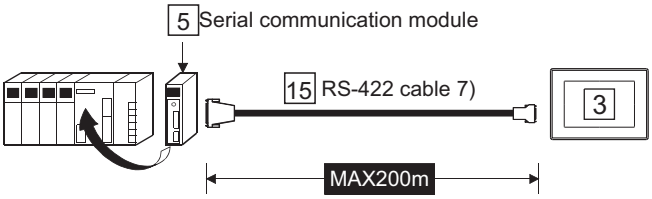
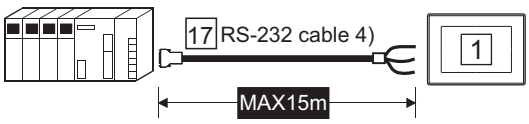
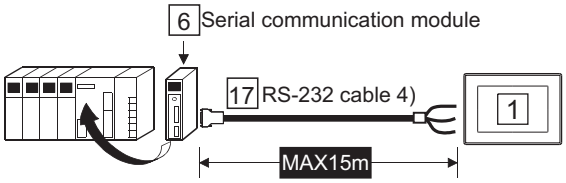
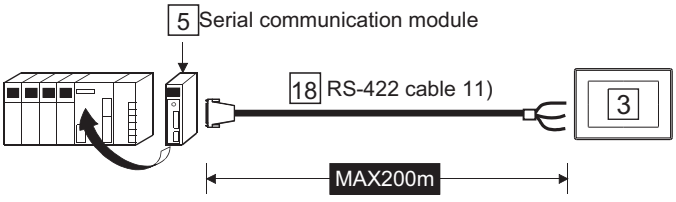
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT 16 GT 15 GT 11 Serial GT 10 5□ 4□
			GT 24V 10 20 30 (RS-232)

When connecting to CQM1H

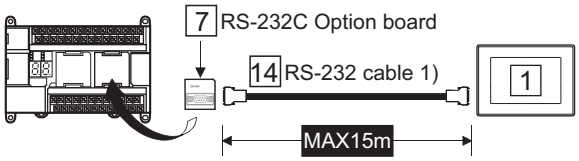
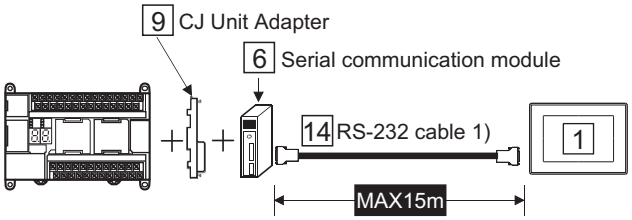
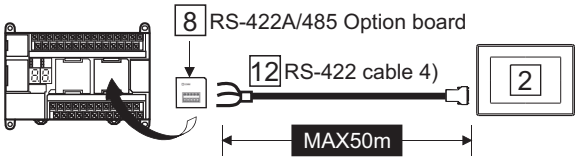
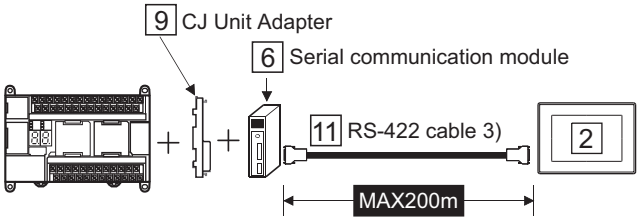
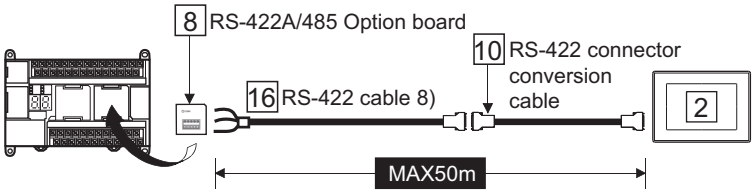
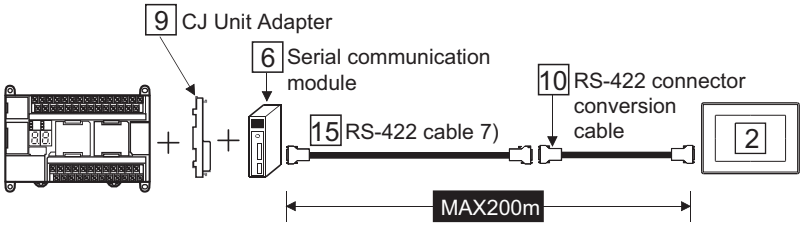
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□

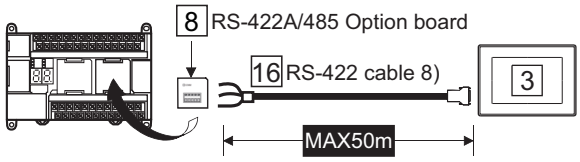
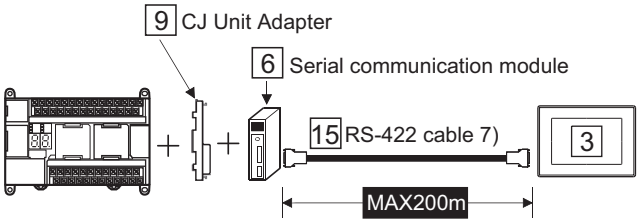
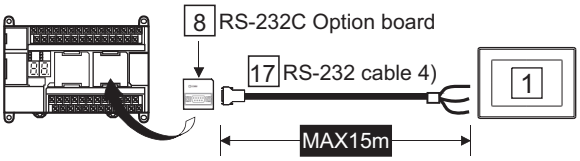
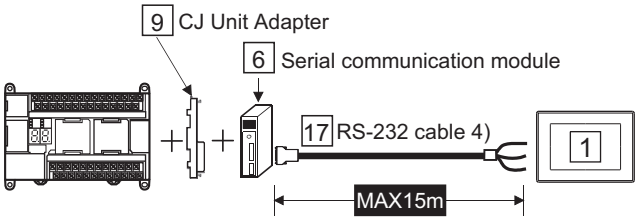
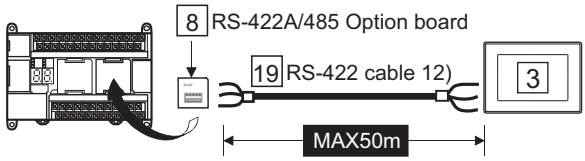
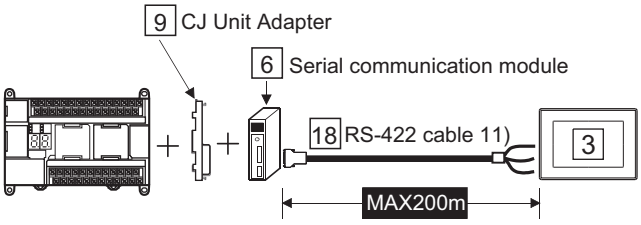
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
	200m or less		GT 24V 10 20 30 (RS-422)

When connecting to CJ1H, CJ1G or CJ1M

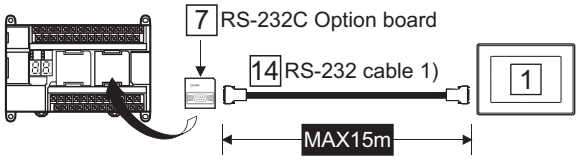
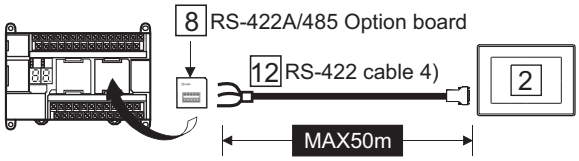
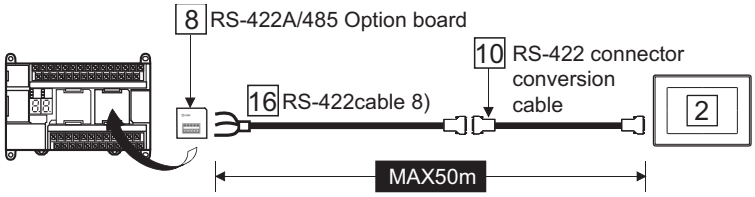
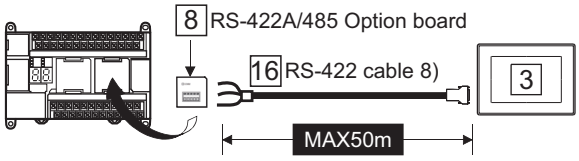
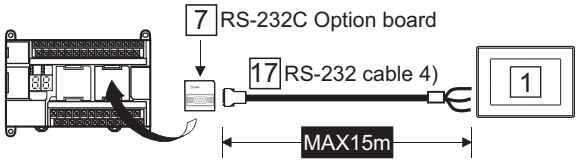
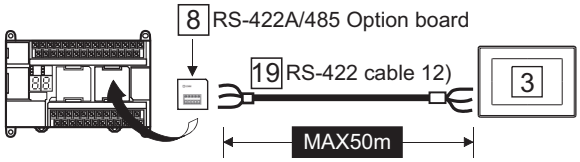
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT24V 10 20 30 (RS-232)
			GT24V 10 20 30 (RS-232)
	200m or less		GT24V 10 20 30 (RS-422)

When connecting to CP1H

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
	50m or less		GT16
	200m or less		GT16
	50m or less		GT16
	200m or less		GT16

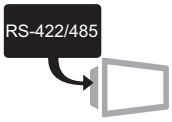
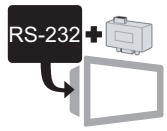
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	50m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)
	50m or less		GT24V10 20 30 (RS-422)
	200m or less		GT24V10 20 30 (RS-422)

When connecting to CP1L

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	50m or less		GT16
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT24V10 20 30 (RS-232)
	50m or less		GT24V10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Serial communication board	CQM1-SCB41
	5	Serial communication module	CJ1W-SCU41
	6		CJ1W-SCU21-V1
	7	RS-232C Option board	CP1W-CIF01
	8	RS-422A/485 Option board	CP1W-CIF11
	9	CJ Unit Adapter	CP1W-EXT01

4 to 9 are products manufactured by OMRON Corporation. For details of these products, contact OMRON Corporation.

(3) Cable

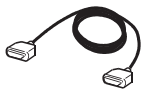
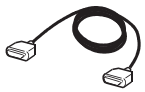
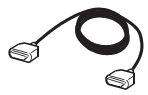
Image	No.	Name	Model name	Model
	10	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	11	RS-422 cable 3) • Between serial communication board, serial communication module and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT16
	12	RS-422 cable 4) • Between RS-422A/485 Option board and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT16
	13	Connection cable	CQM1-CIF02	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-232)

Image	No.	Name	Model name	Model
	14	RS-232 cable 1) *1 • Between CPU, connection cable, serial communication board, and serial communication module, RS-232C Option board and GOT	GT09-C30R20101-9P(3m)	GT16 GT15 GT11 Serial GT105□ 4□
	15	RS-422 cable 7) • Between serial communication board, serial communication module and GOT • Between serial communication board, serial communication module and RS-422 connector conversion cable	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ 4□
	16	RS-422 cable 8) *1 • Between RS-422A/485 Option board and GOT • Between RS-422A/485 Option board and RS-422 connector conversion cable	GT09-C30R40103-5T (3m) GT09-C100R40103-5T (10m) GT09-C200R40103-5T (20m) GT09-C300R40103-5T (30m)	GT16 GT15 GT11 Serial GT105□ 4□
	17	RS-232 cable 4) • Between CPU, connection cable, serial communication board, and serial communication module	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT24V10 20 30 (RS-232)
	18	RS-422 cable 11) • Between serial communication board, serial communication module and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT24V10 20 30 (RS-422)
	19	RS-422 cable 12) • Between serial communication module and GOT		

*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 11.2 Connection Cable)

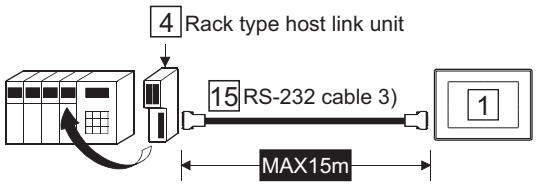
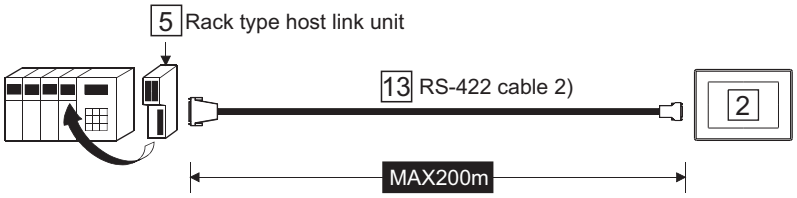
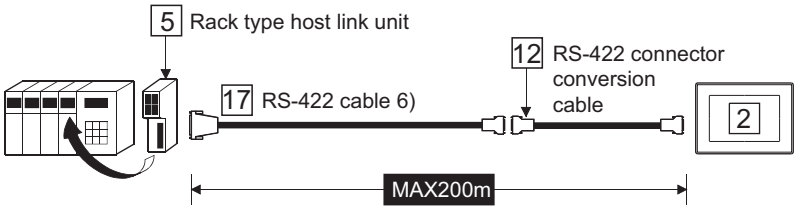
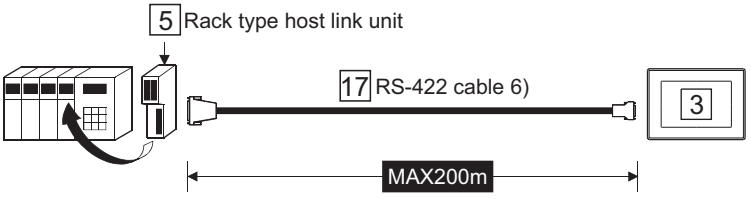
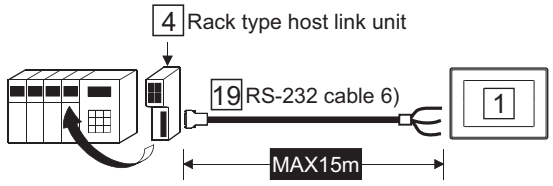
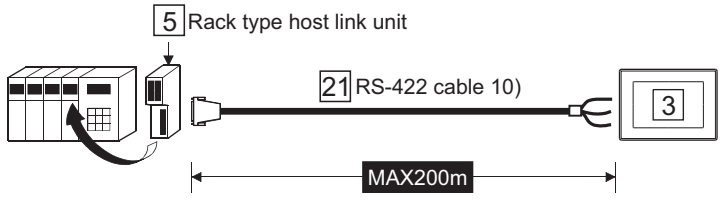
13 is a product manufactured by OMRON Corporation. For details of this product, contact OMRON Corporation.

11.1.3 Connecting to C200HS, C200H, C200HX, C200HG, C200HE, CS1H, CS1G or CS1D

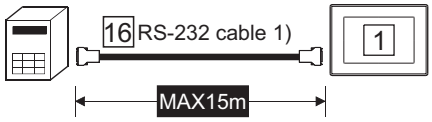
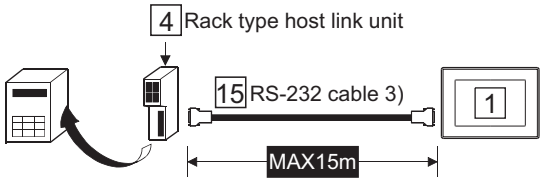
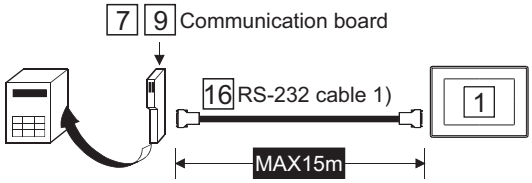
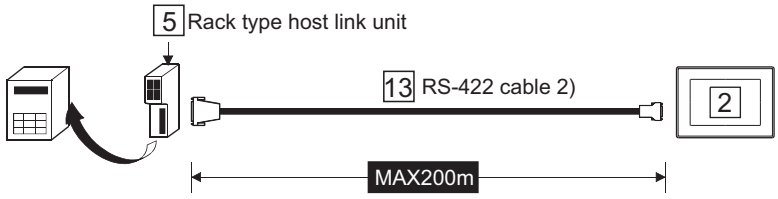
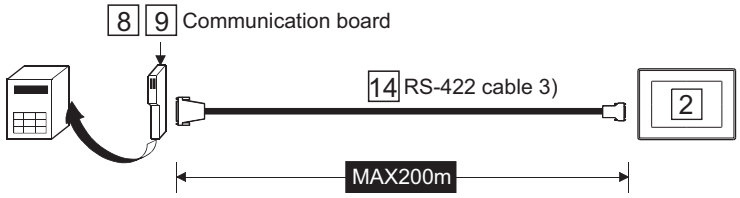
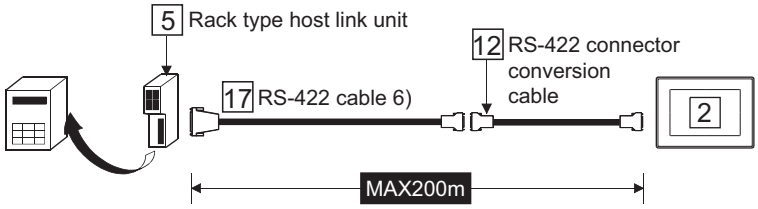
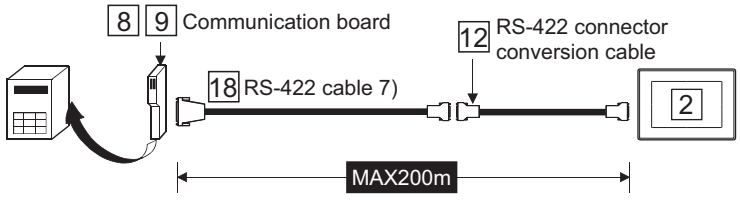
Communication driver
OMRON SYSMAC

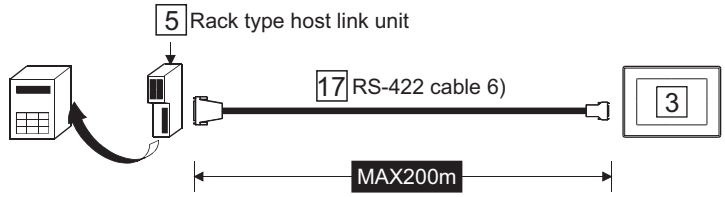
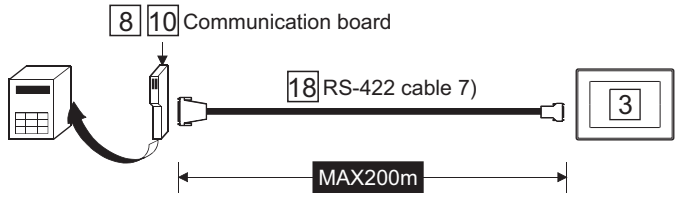
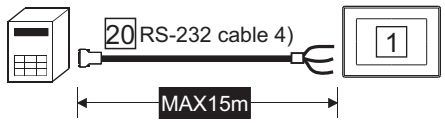
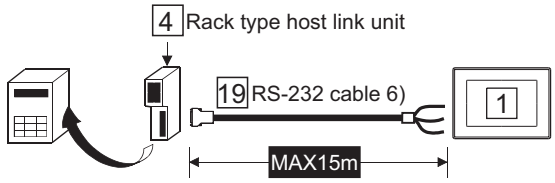
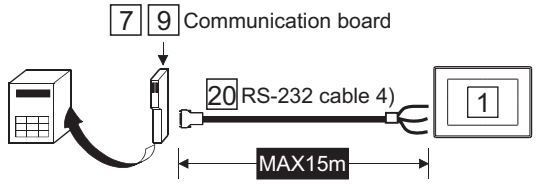
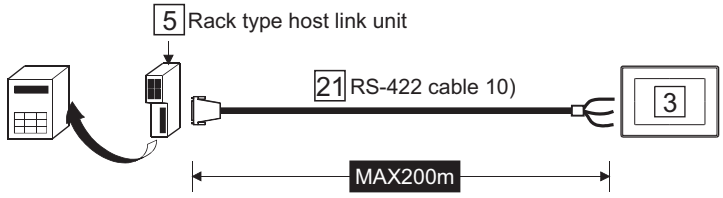
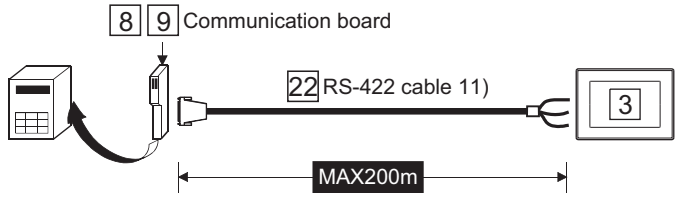
1 System configuration and connection conditions

When connecting to C200HS, C200H

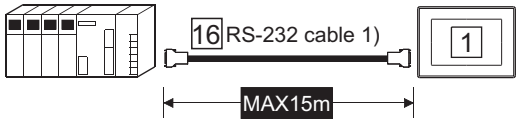
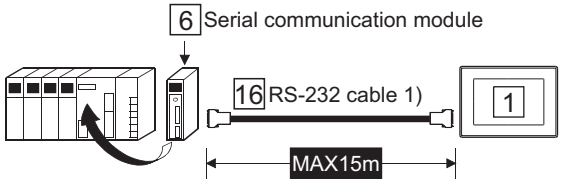
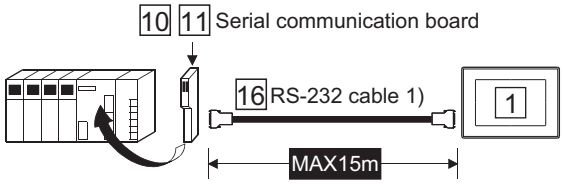
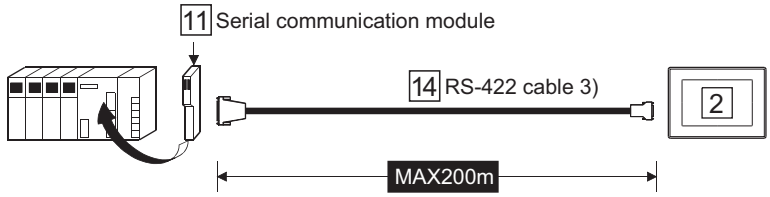
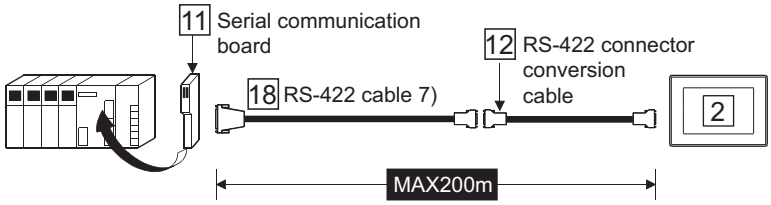
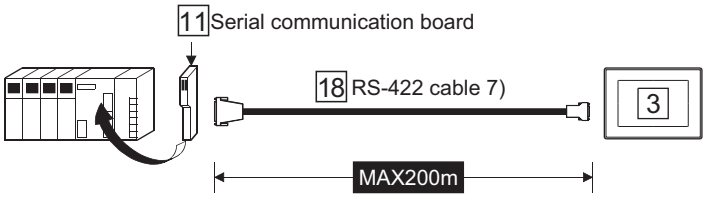
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT24V10 20 30 (RS-232)
	200m or less		GT24V10 20 30 (RS-422)

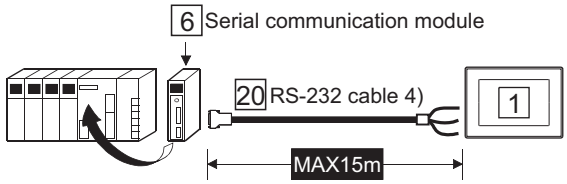
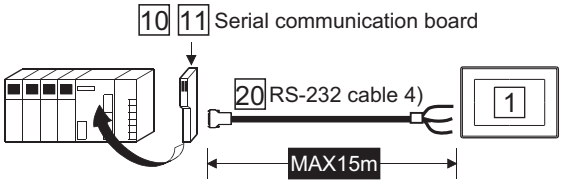
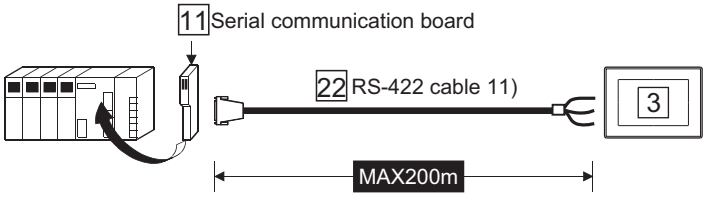
When connecting to C200HX, C200HG or C200HE

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16
			GT16
			GT16
			GT16

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	200m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)
	200m or less		GT24V10 20 30 (RS-422)
			GT24V10 20 30 (RS-422)

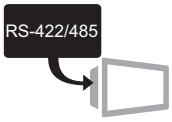
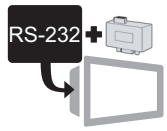
When connecting to CS1H, CS1G or CS1D

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
	200m or less		GT 24V 10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Rack type host link unit	C200H-LK201-V1
	5		C200H-LK202-V1
	6	Serial communication module	CS1W-SCU21
	7	Communication board *2	C200HW-COM02, C200HW-COM05
	8		C200HW-COM03
	9		C200HW-COM06
	10	Serial communication board	CS1W-SCB21
	11		CS1W-SCB41

*2 The communication board cannot be mounted to the C200HE-CPU11.
Use a host Link unit.

4 to 11 are products manufactured by OMRON Corporation. For details of these products, contact OMRON Corporation.

(3) Cable

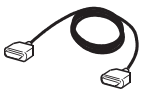
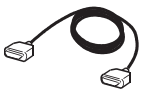
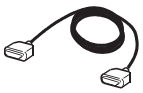
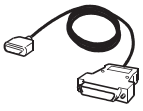
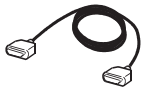
Image	No.	Name	Model name	Model
	12	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	13	RS-422 cable 2) • Between rack type host link unit and GOT	(To be prepared by the user. Section 11.2 Connection Cable)	GT16
	14	RS-422 cable 3) • Between communication board, serial communication board and GOT	(To be prepared by the user. Section 11.2 Connection Cable)	GT16
	15	RS-232 cable 3)*1 • Between rack type host link unit and GOT	GT09-C30R201103-25P(3m)	GT16 GT15 GT11 Serial GT105□ 4□

Image	No.	Name	Model name	Model
	16	RS-232 cable 1)*1 • Between CPU, communication board, serial communication unit, serial communication board and GOT	GT09-C30R20101-9P(3m)	GT16 GT15 GT11 Serial GT105□ 4□
	17	RS-422 cable 6)*1 • Between rack type host link unit and GOT • Between rack type host link unit and RS-422 connector conversion cable	GT09-C30R40102-9P(3m) GT09-C100R40102-9P(10m) GT09-C200R40102-9P(20m) GT09-C300R40102-9P(30m)	GT16 GT15 GT11 Serial GT105□ 4□
	18	RS-422 cable 7) • Between communication board, serial communication board and GOT • Between communication board, serial communication board and RS-422 connector conversion cable	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ 4□
	19	RS-232 cable 6) • Between rack type host link unit and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT24V10 20 30 (RS-232)
	20	RS-232 cable 4) • Between CPU, communication board, serial communication unit, serial communication board and GOT		
	21	RS-422 cable 10) • Between rack type host link unit and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT24V10 20 30 (RS-422)
	22	RS-422 cable 11) • Between communication board, serial communication board and GOT		

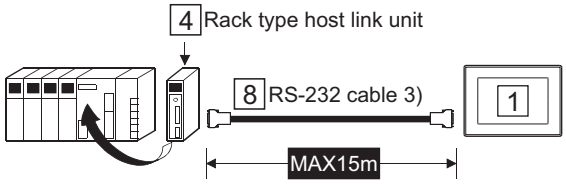
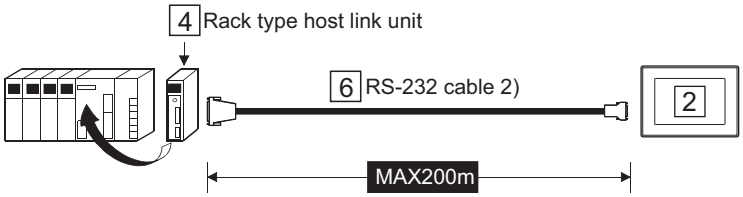
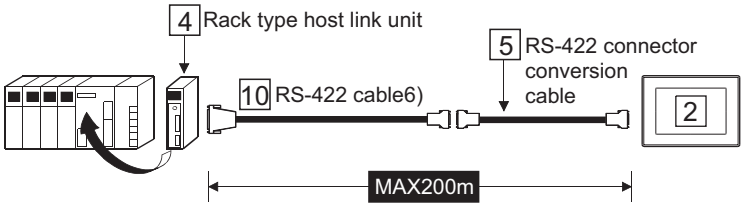
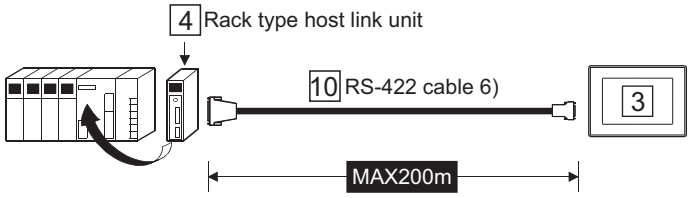
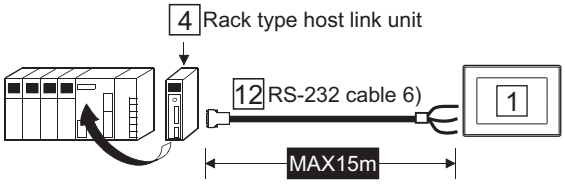
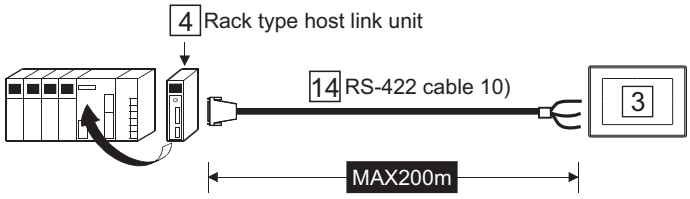
*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 11.2 Connection Cable)

11.1.4 Connecting to C1000H/C2000H, CV500/CV1000/CV2000, CVM1

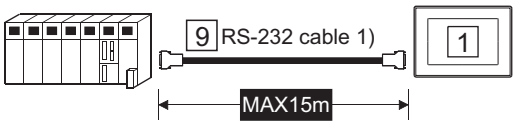
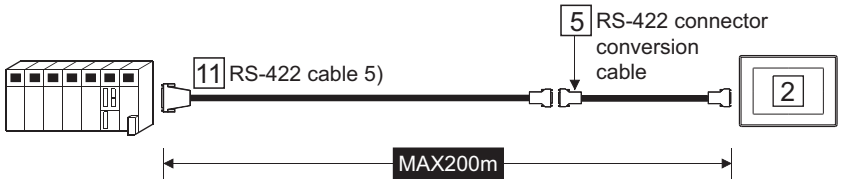
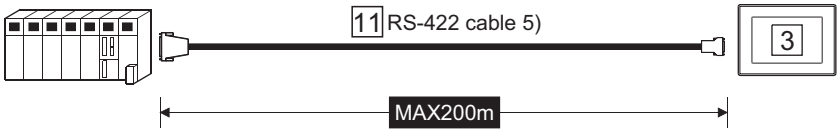
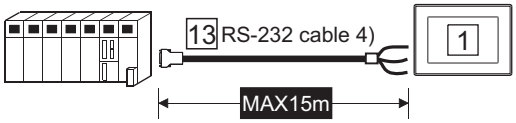
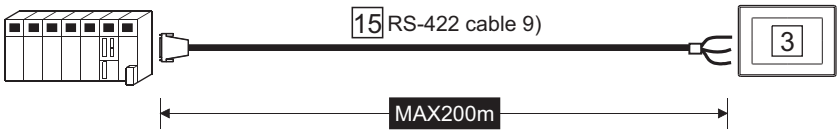
Communication driver
OMRON SYSMAC

1 System configuration and connection conditions

When connecting to C1000H, C2000H

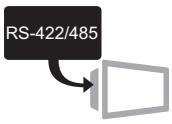
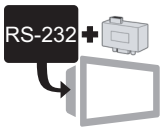
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT24V10 20 30 (RS-232)
	200m or less		GT24V10 20 30 (RS-422)

When connecting to CV500, CV1000, CV2000, CVM1

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT24V10 20 30 (RS-232)
	200m or less		GT24V10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

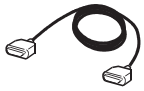
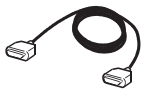
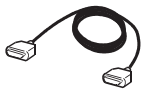
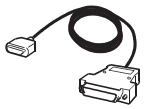
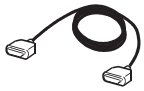
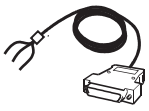
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Rack type host link unit	C500-LK201-V1

4 is a product manufactured by OMRON Corporation. For details of this product, contact OMRON Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-422 cable 2) • Between rack type host link unit and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT16
	7	RS-422 cable 1) • Between CPU and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT16
	8	RS-232 cable 3)*1 • Between rack type host link unit and GOT	GT09-C30R20103-25P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	9	RS-232 cable 1)*1 • Between CPU and GOT	GT09-C30R20101-9P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	10	RS-422 cable6)*1 • Between rack type host link unit and GOT • Between rack type host link unit and RS-422 connector conversion cable	GT09-C30R40102-9P(3m) GT09-C100R40102-9P(10m) GT09-C200R40102-9P(20m) GT09-C300R40102-9P(30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	11	RS-422 cable 5)*1 • Between CPU and GOT • Between CPU and RS-422 connector conversion cable	GT09-C30R40101-9P(3m) GT09-C100R40101-9P(10m) GT09-C200R40101-9P(20m) GT09-C300R40101-9P(30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	12	RS-232 cable 6) • Between rack type host link unit and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT24V10 20 30 (RS-232)
	13	RS-232 cable 4) • Between CPU and GOT		
	14	RS-422 cable 10) • Between rack type host link unit and GOT	(To be prepared by the user. ☞ Section 11.2 Connection Cable)	GT24V10 20 30 (RS-422)
	15	RS-422 cable 9) • Between CPU and GOT		

*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 11.2 Connection Cable)

11.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞Section 11.2.1)

Model		Connection cable		
		GT16	GT15, GT11, GT105□, GT104□	GT1030, GT1020
PLC CPU	CPM2A	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)
	CQM1, CQM1H			
	CJ1H, CJ1G, CJ1M			
	C200HX, C200HG, C200HE			
	CS1H, CS1G, CS1D			
	CV500, CV1000, CV2000, CVM1			
RS-232C adapter	CPM1-CIF01, CPM2C-CIF01-V1	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)
Connection cable	CQM1-CIF01	RS-232 cable 2)	RS-232 cable 2)	RS-232 cable 5)
	CQM1-CIF02	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)
	CPM2C-CN111			
Rack type host link unit	C200H-LK201-V1	RS-232 cable 3)	RS-232 cable 3)	RS-232 cable 6)
	C500-LK201-V1	RS-232 cable 3)	RS-232 cable 3)	RS-232 cable 6)
Serial communication unit	CJ1W-SCU41	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)
	CS1W-SCU21			
	CJ1W-SCU21-V1			
Communication board	C200HW-COM02	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)
	C200HW-COM05	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)
	C200HW-COM06			
Serial communication board	CQM1-SCB41	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)
	CS1W-SCB21			
	CS1W-SCB41			
RS-232C Option board	CP1W-CIF01	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 4)

2 RS-422 cable (☞Section 11.2.2)

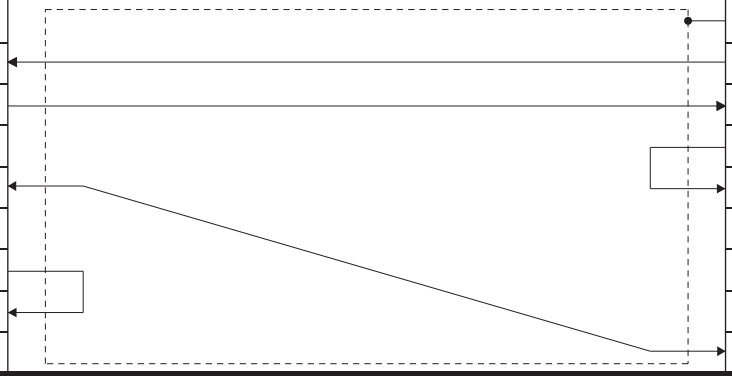
Model		Connection cable		
		GT16	GT15, GT11, GT105□, GT104□	GT1030, GT1020
PLC CPU	CV500, CV1000, CV2000, CVM1	RS-422 cable 1) RS-422 cable 5)	RS-422 cable 5)	RS-422 cable 9)
Rack type host link unit	C200H-LK201-V1	RS-422 cable 2) RS-422 cable 6)	RS-422 cable 6)	RS-422 cable 10)
	C500-LK201-V1			
Serial communication unit	CJ1W-SCU41	RS-422 cable 3) RS-422 cable 7)	RS-422 cable 7)	RS-422 cable 11)
Communication board	C200HW-COM03	RS-422 cable 3) RS-422 cable 7)	RS-422 cable 7)	RS-422 cable 11)
	C200HW-COM06	RS-422 cable 3) RS-422 cable 7)	RS-422 cable 7)	RS-422 cable 11)
Serial communication board	CQM1-SCB41	RS-422 cable 3) RS-422 cable 7)	RS-422 cable 7)	RS-422 cable 11)
	CS1W-SCB41	RS-422 cable 3) RS-422 cable 7)	RS-422 cable 7)	RS-422 cable 11)
RS-422A/485 Option board	CP1W-CIF11	RS-422 cable 4) RS-422 cable 6)	RS-422 cable 8)	RS-422 cable 12)

11.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

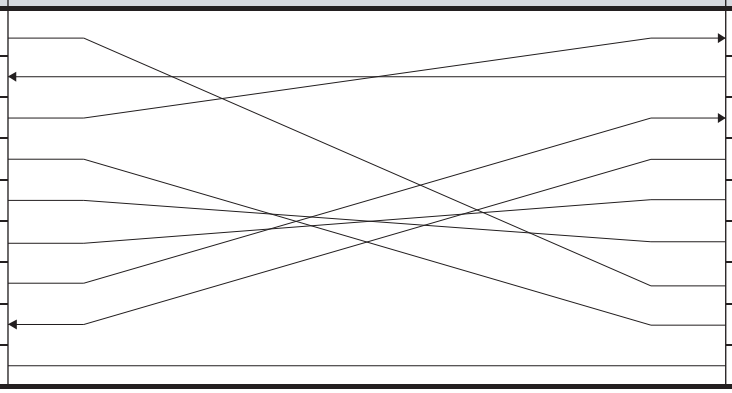
1 Connection diagram

(1) RS-232 cable 1) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	—
RS(RTS)	7		7	FR
CS(CTS)	8		8	ER
—	9		9	SG

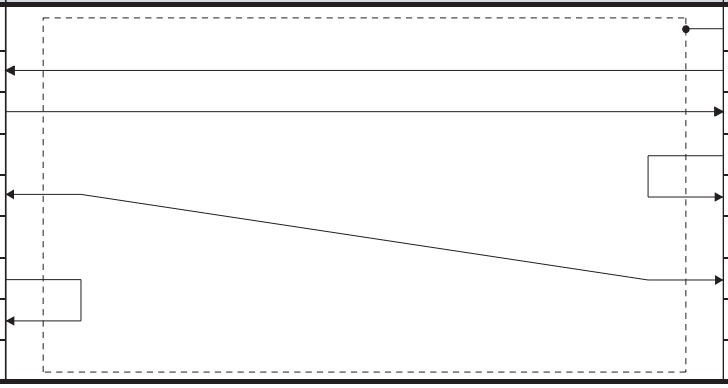
*1 GT16: CD, GT15: CD, GT11: NC, GT105□ : NC, GT104□ : NC

(2) RS-232 cable 2) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		2	SD
RD(RXD)	2		3	RD
SD(TXD)	3		4	RS
ER(DTR)	4		5	CS
SG	5		6	DR
DR(DSR)	6		7	SG
RS(RTS)	7		8	—
CS(CTS)	8		20	ER
—	9		22	—

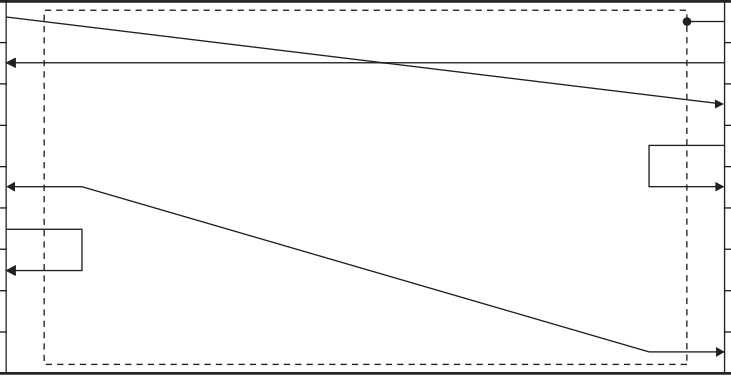
*2 GT16: CD, GT15: CD, GT11: NC, GT105□ : NC, GT104□ : NC

(3) RS-232 cable 3) (For GT16, GT15, GT11, GT105□, GT104□)

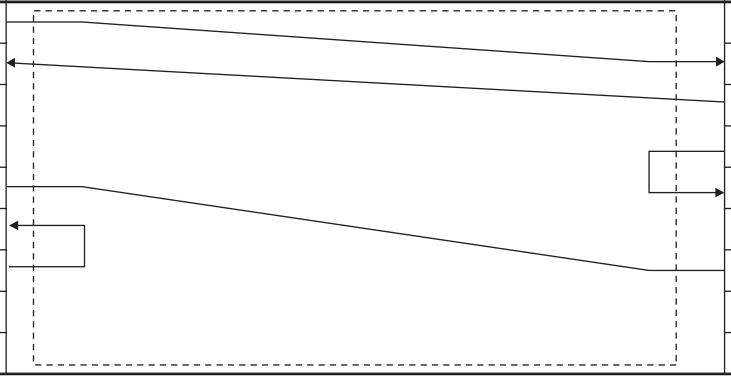
GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	—
RS(RTS)	7		7	SG
CS(CTS)	8		8	—
—	9		20	ER

*1 GT16: CD, GT15: CD, GT11: NC, GT105□ : NC, GT104□ : NC

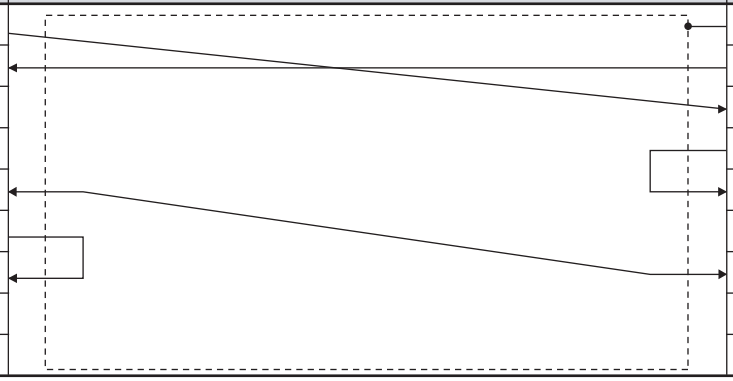
(4) RS-232 cable 4) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PLC side	
Signal name		Pin No.	Signal name
SD		1	FG
RD		2	SD
ER		3	RD
DR		4	RS
SG		5	CS
RS		6	—
CS		7	FR
NC		8	ER
NC		9	SG

(5) RS-232 cable 5) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PLC side	
Signal name		Pin No.	Signal name
SD		1	—
RD		2	SD
ER		3	RD
DR		4	RS
SG		5	CS
RS		6	DR
CS		7	SG
NC		20	ER
NC			

(6) RS-232 cable 6) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PLC side	
Signal name		Pin No.	Signal name
SD		1	FG
RD		2	SD
ER		3	RD
DR		4	RS
SG		5	CS
RS		6	—
CS		7	SG
NC		8	—
NC		20	ER

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

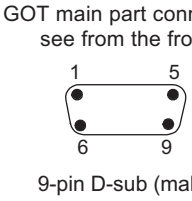
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030 and GT1020.

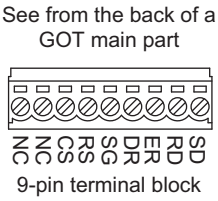
(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□



9-pin D-sub (male)

GT1030, GT1020



9-pin terminal block

(2) OMRON PLC side connector

Use the connector compatible with the OMRON PLC side module.

For details, refer to the following manual.

☞ User's Manual for the OMRON PLC.

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

11.2.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

Point

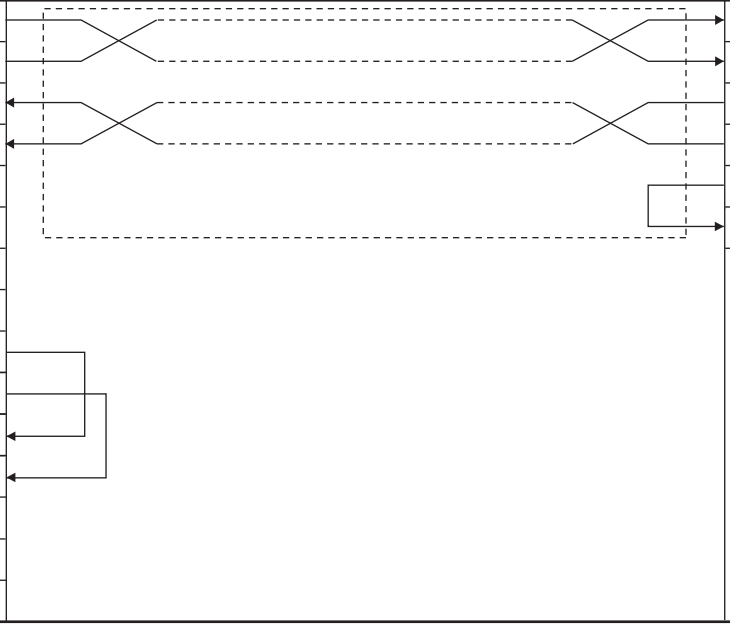
Differences in polarity between GOT and OMRON PLCs

The polarity of poles A and B in signal names is reversed between GOT and OMRON PLCs.
Connect a cable according to the following connection diagrams.

1 Connection diagram

(1) RS-422 cable 1) (For GT16)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		8	RDB
SDB1(TXD1-)	2		6	RDA
RDA1(RXD1+)	3		2	SDB
RDB1(RXD1-)	4		1	SDA
SDA2(TXD2+)	5		4	RS
SDB2(TXD2-)	6		5	CS
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			



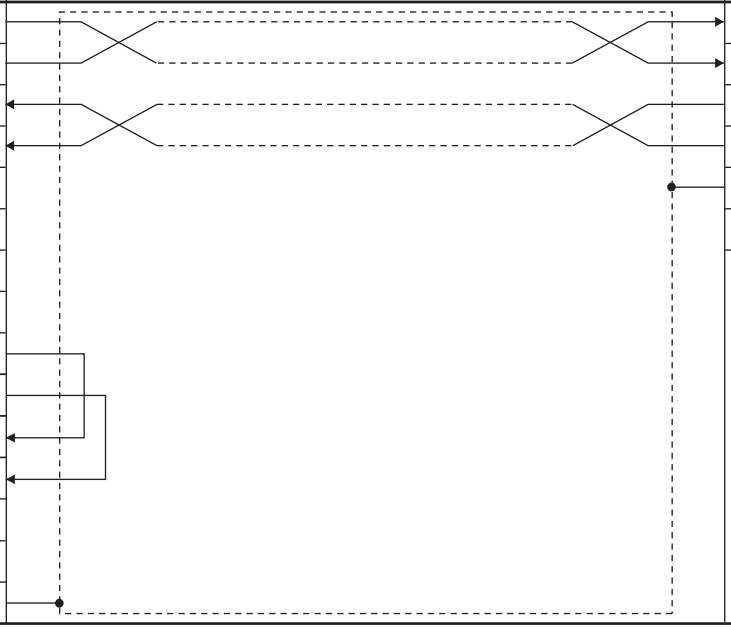
(2) RS-422 cable 2) (For GT16)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	RDB
SDB1(TXD1-)	2		6	RDA
RDA1(RXD1+)	3		5	SDB
RDB1(RXD1-)	4		9	SDA
SDA2(TXD2+)	5		3	SG
SDB2(TXD2-)	6		—	FG
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

(3) RS-422 cable 3) (For GT16)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		8	RDB
SDB1(TXD1-)	2		6	RDA
RDA1(RXD1+)	3		2	SDB
RDB1(RXD1-)	4		1	SDA
SDA2(TXD2+)	5		—	FG
SDB2(TXD2-)	6			
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

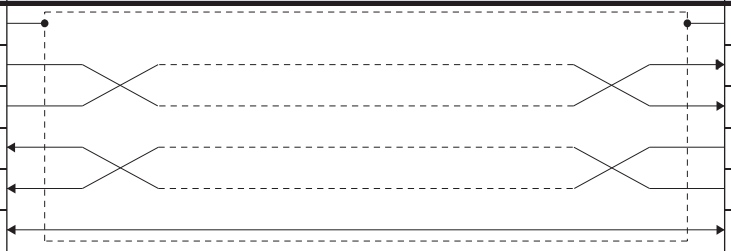
(4) RS-422 cable 4) (For GT16)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		2	RDB
SDB1(TXD1-)	2		1	RDA
RDA1(RXD1+)	3		4	SDB
RDB1(RXD1-)	4		3	SDA
SDA2(TXD2+)	5		5	FG
SDB2(TXD2-)	6			
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

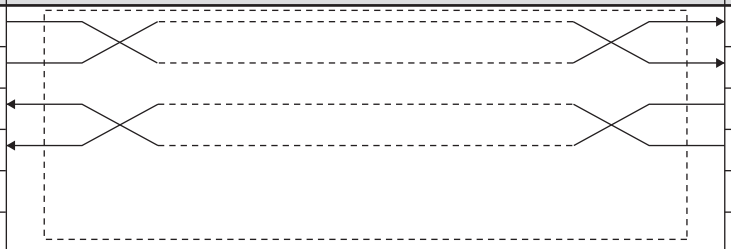
(5) RS-422 cable 5) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA	1		8	RDB
SDB	6		6	RDA
RDA	2		2	SDB
RDB	7		1	SDA
RSA	3		4	RS
CSA	4		5	CS
SG	5			
RSB	8			
CSB	9			
FG	—			

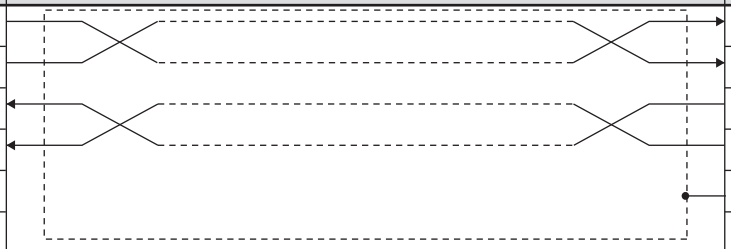
(6) RS-422 cable 6) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
FG	—		—	FG
SDA	1		1	RDB
SDB	6		6	RDA
RDA	2		5	SDB
RDB	7		9	SDA
SG	5		3	SG
RSA	3			
CSA	4			
RSB	8			
CSB	9			

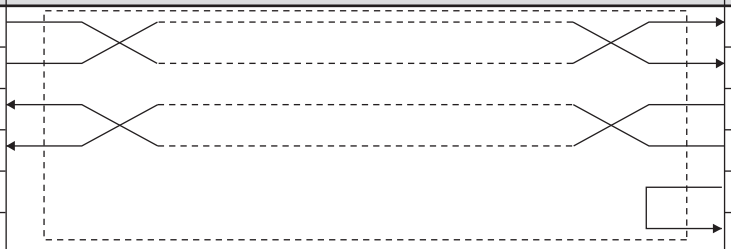
(7) RS-422 cable 7) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA	1		8	RDB
SDB	6		6	RDA
RDA	2		2	SDB
RDB	7		1	SDA
RSA	3		4	RS
CSA	4		5	CS
SG	5			
RSB	8			
CSB	9			
FG	—			

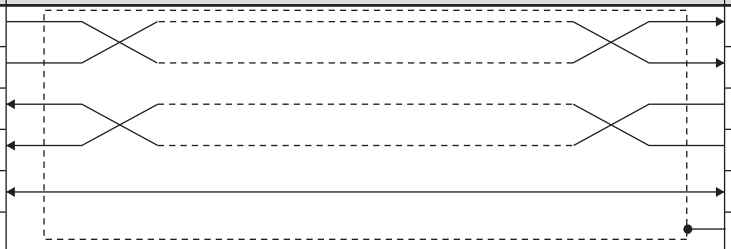
(8) RS-422 cable 8) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	OMRON PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDB	6		1	RDA
SDA	1		2	RDB
RDB	7		3	SDA
RDA	2		4	SDB
RSA	3		5	FG
CSA	4			
SG	5			
RSB	8			
CSB	9			
FG	—			

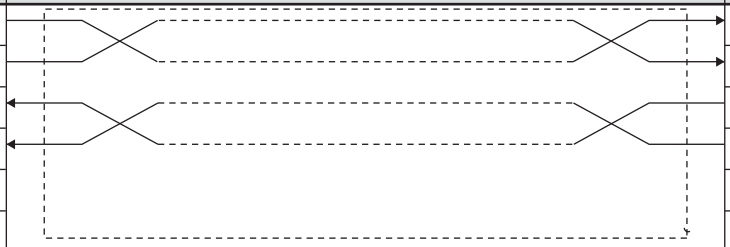
(9) RS-422 cable 9) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	OMRON PLC side	
Signal name		Pin No.	Signal name
SDA		8	RDB
SDB		6	RDA
RDA		2	SDB
RDB		1	SDA
SG		4	RS
RSA		5	CS
RSB			
CSA			
CSB			

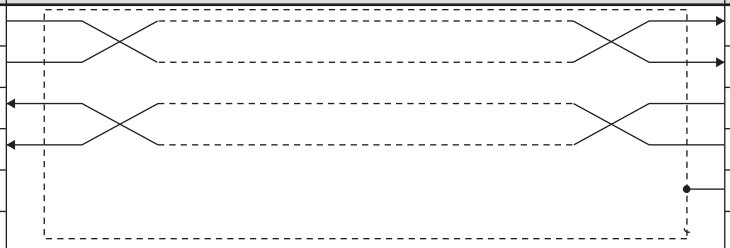
(10) RS-422 cable 10) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	OMRON PLC side	
Signal name		Pin No.	Signal name
SDA		1	RDB
SDB		6	RDA
RDA		5	SDB
RDB		9	SDA
SG		3	SG
RSA		—	FG
RSB			
CSA			
CSB			

(11) RS-422 cable 11) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	OMRON PLC side	
Signal name		Pin No.	Signal name
SDA		8	RDB
SDB		6	RDA
RDA		2	SDB
RDB		1	SDA
SG		4	RS
RSA		5	CS
RSB			
CSA			
CSB			

(12) RS-422 cable 12) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	OMRON PLC side	
Signal name		Pin No.	Signal name
SDA		2	RDB
SDB		1	RDA
RDA		4	SDB
RDB		3	SDA
SG		5	FG
RSA			
RSB			
CSA			
CSB			

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1045-Q, GT1040-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin Terminal block *2	PHOENIX CONTACT Inc
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

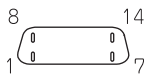
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16

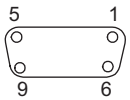
GOT main part connector see from the front



14-pin(female)

GT15, GT11, GT105□, GT104□

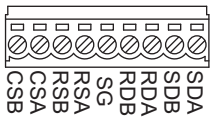
GOT main part connector see from the front



9-pin D-sub(female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) OMRON PLC side connector

Use the connector compatible with the OMRON PLC side module.

For details, refer to the following manual.

☞ User's Manual for the OMRON PLC

3 Precautions when preparing a cable

The length of the RS-422 cable 1), RS-422 cable 2), and RS-422 cable 3) must be 200m or less.
The length of the RS-422 cable 4) must be 50m or less.

4 Connecting the terminator

When connecting an OMRON PLC to a GOT, a terminating resistor must be set to the OMRON PLC.
No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

☞ Section 11.4 PLC Side Setting

11.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 11.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 11.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 11.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 11.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 11.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 11.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 11.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

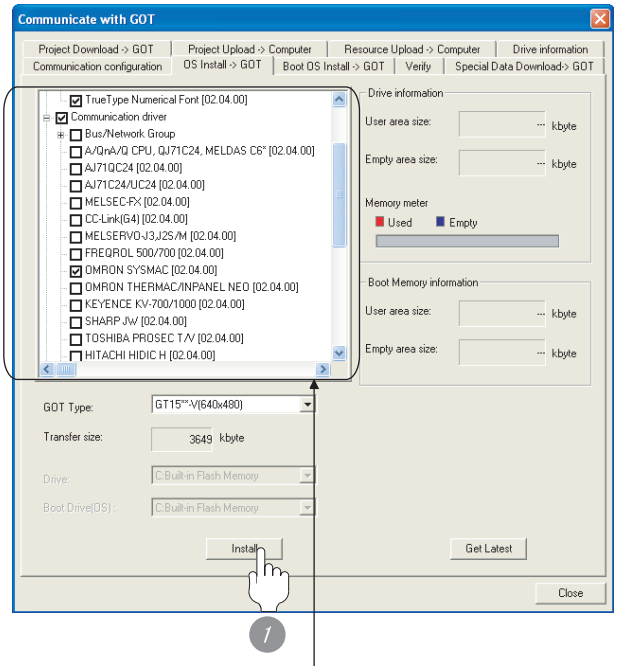
☞ Section 11.4 PLC Side Setting

11.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
OMRON SYSMAC

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

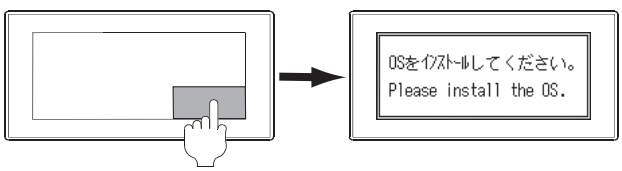
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



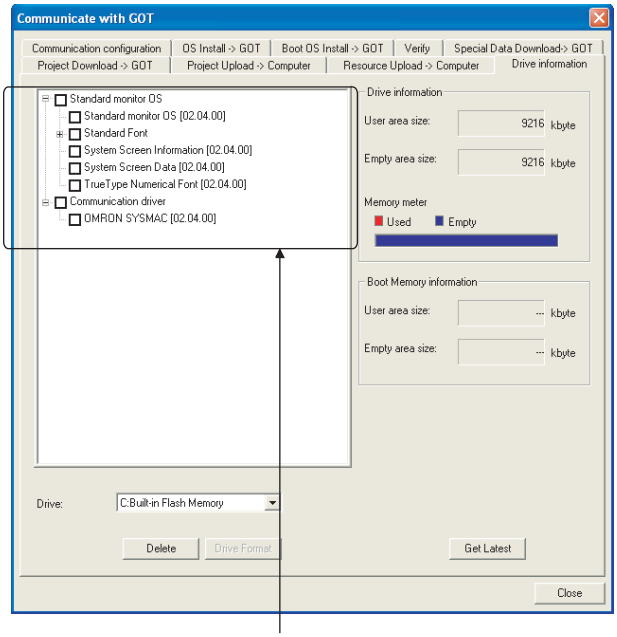
Turn on the GOT while the bottom right corner is touched.

11.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: OMRON SYSMAC

11.3.3 Setting communication interface (Communication settings)

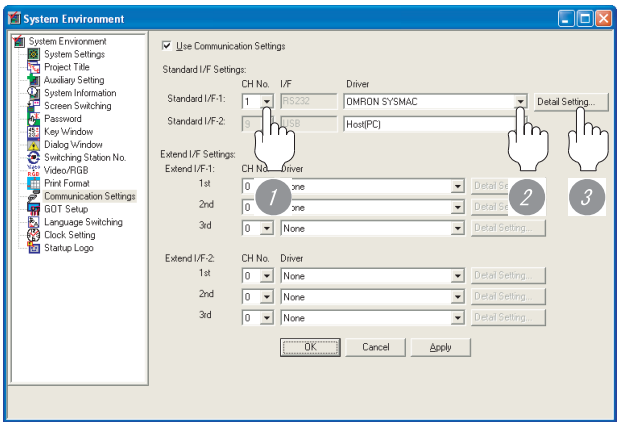
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



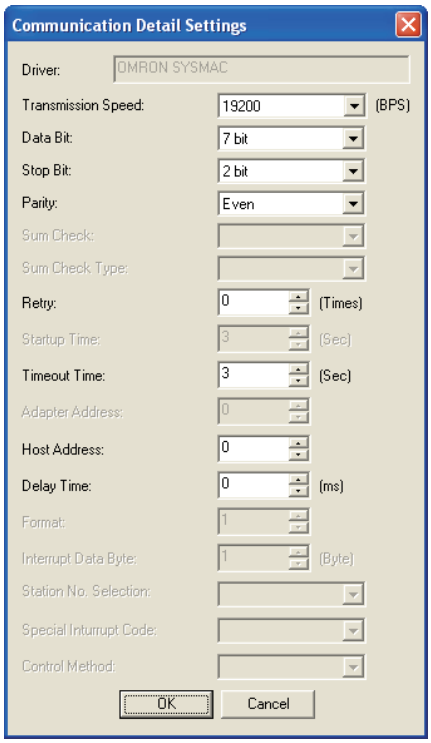
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "OMRON SYSMAC".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 0>	0 to 31
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0>	0 to 300 ms

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

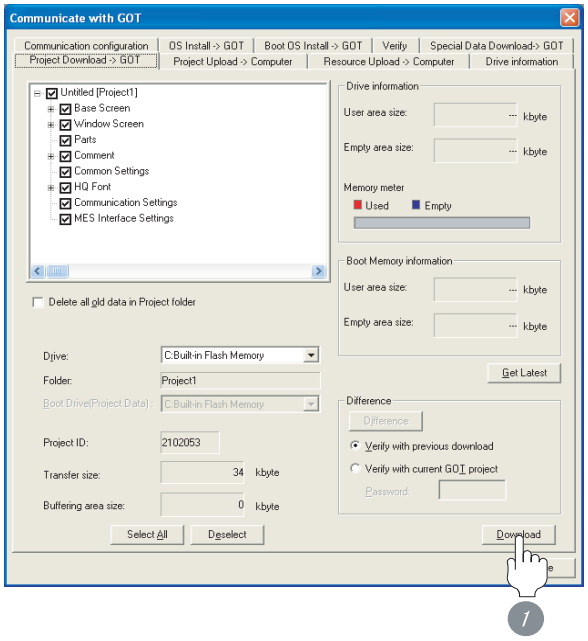
Communication settings can be changed on only GT Designer2.

11.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

11.3.5 Attaching communication unit and connecting cable

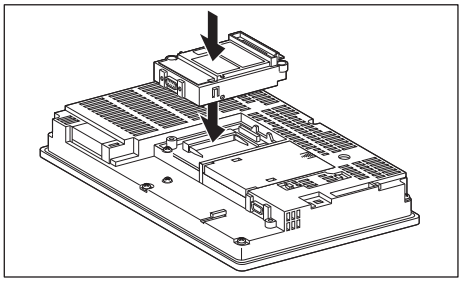
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

GT15 Serial Communication Unit User's Manual

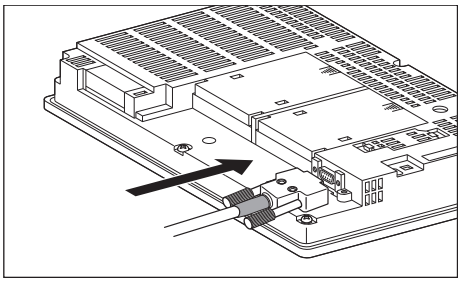
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

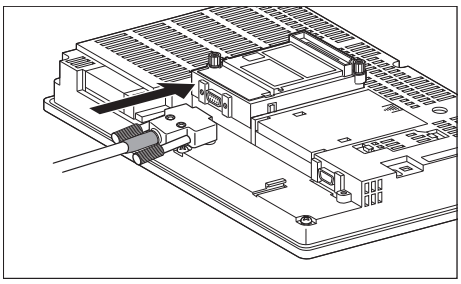
• connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



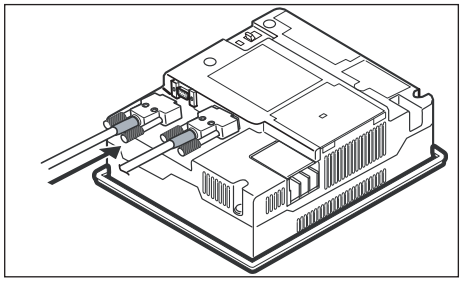
• connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



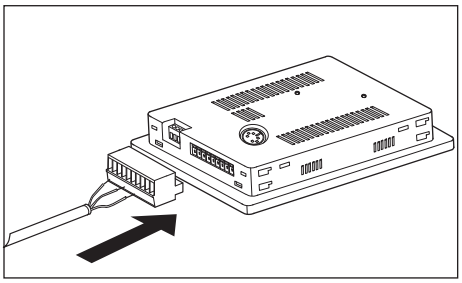
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

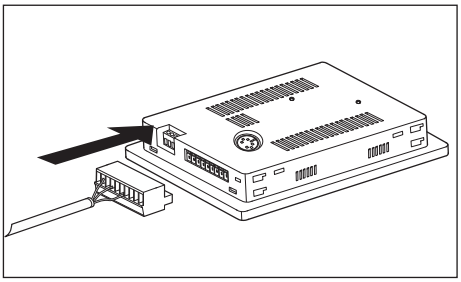


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

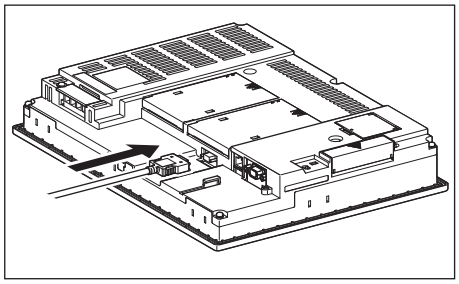


(2) How to connect the RS-422 cable

(a) For the GT16

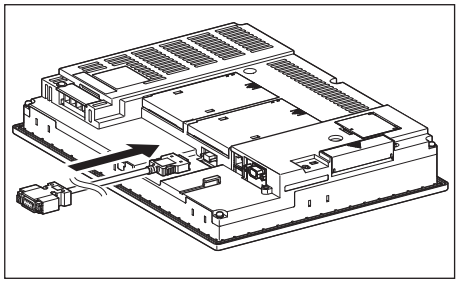
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

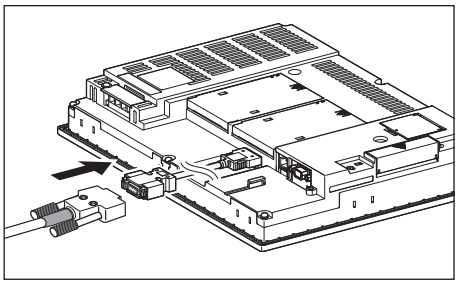


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

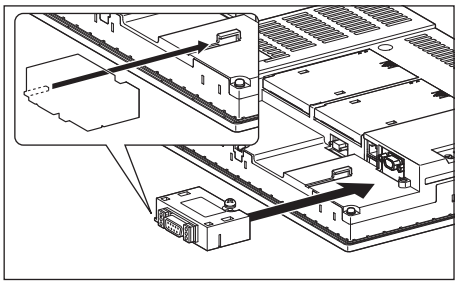


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

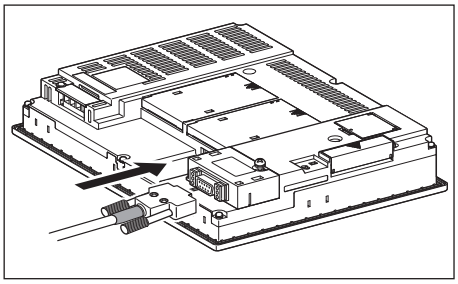


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

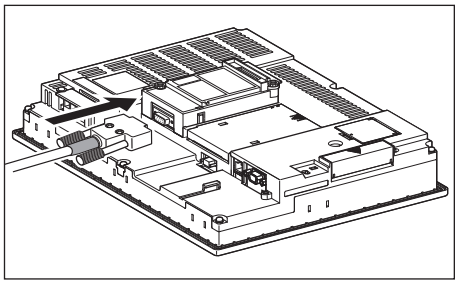


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

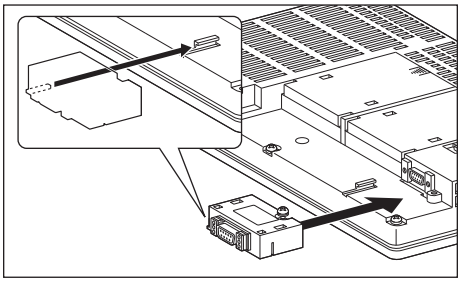
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



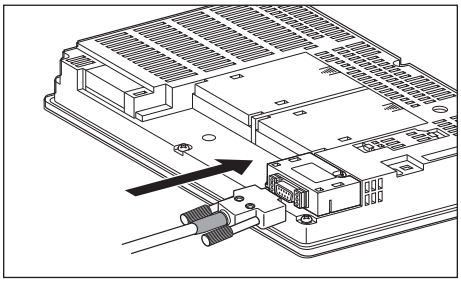
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

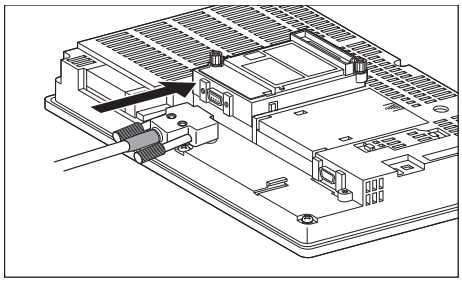


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

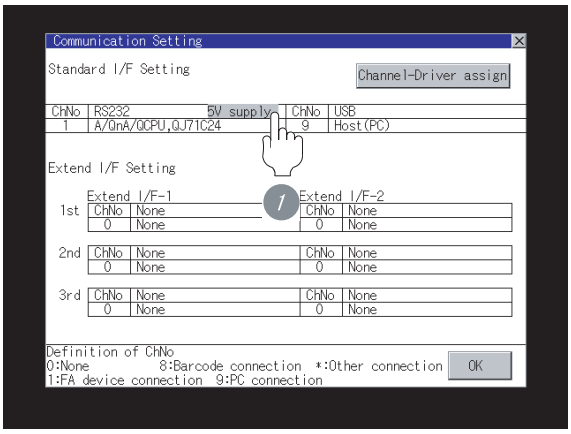
When using the RS-422 conversion unit

On "Communication settings" on the GOT utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the RS-422 conversion unit and the GOT utility, refer to the following manual:

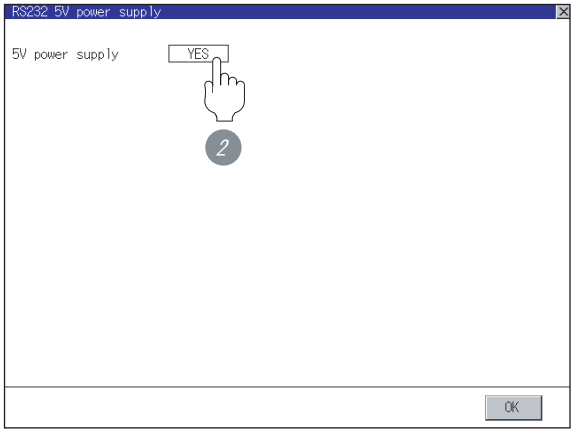
☞ GT15 Serial Communication Unit User's Manual

☞ GT ☐ User's Manual

1 Touch [5V supply].

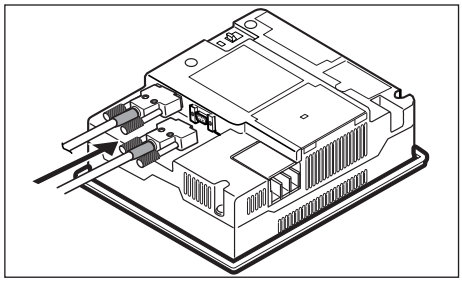


2 Set [5V power supply] to "YES".



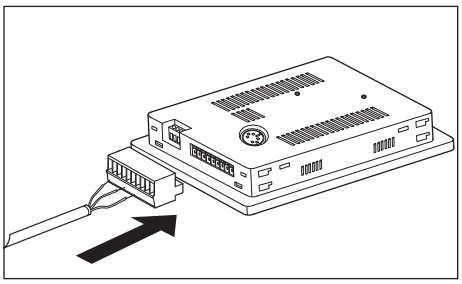
(c) For GT11, GT105□, GT104□

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

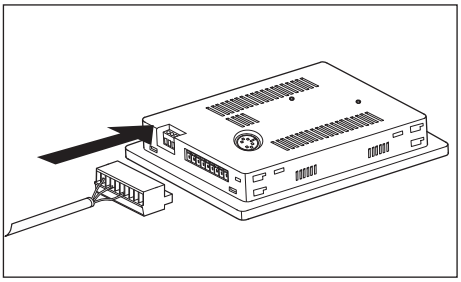


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



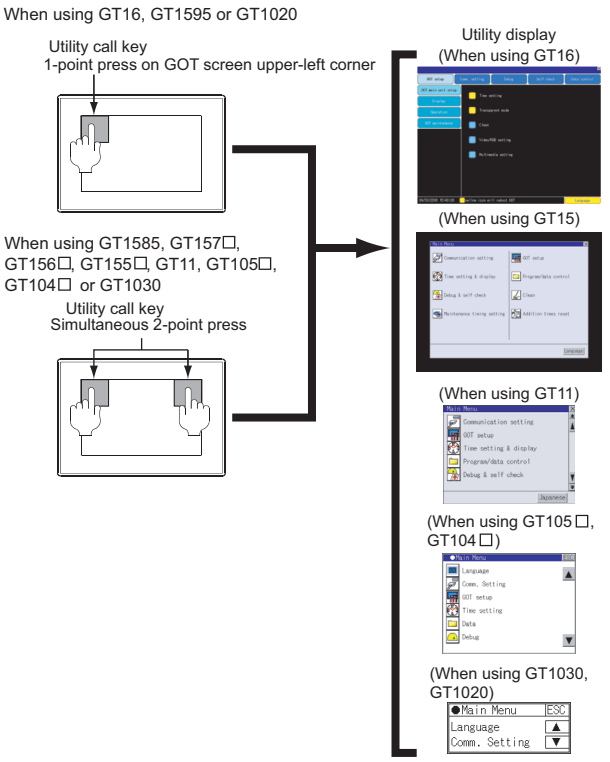
11.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

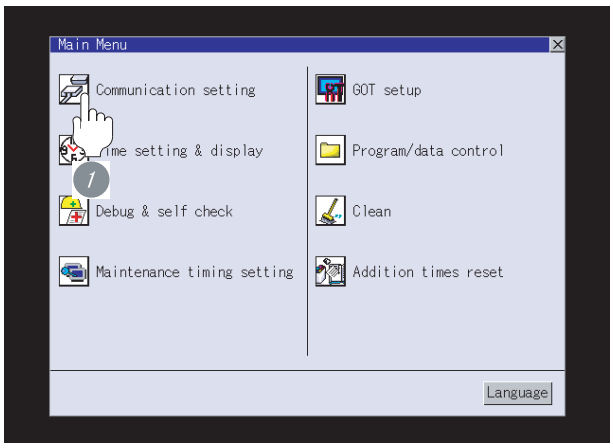


Point

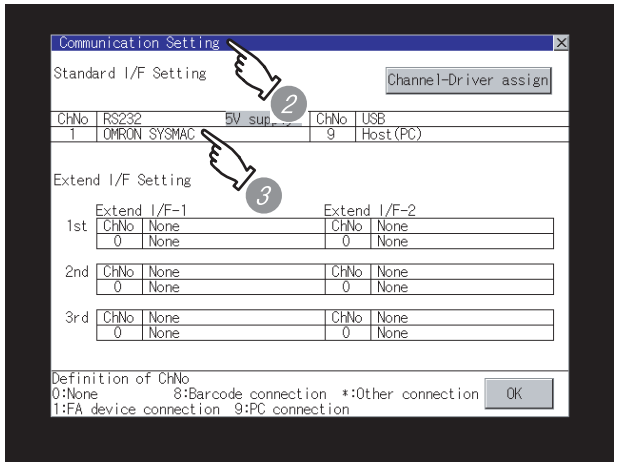
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: OMRON SYSMAC

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 11.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

Communication settings can be changed on only GT Designer2.

11.3.7 Checking for normal monitoring

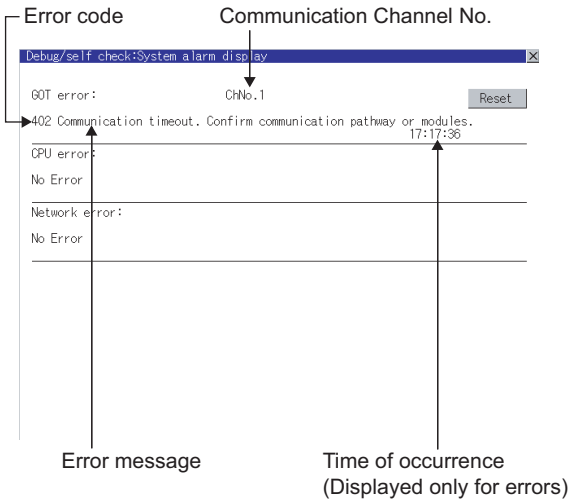
1 Check for errors occurring on the GOT (for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check (for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

• For GT16

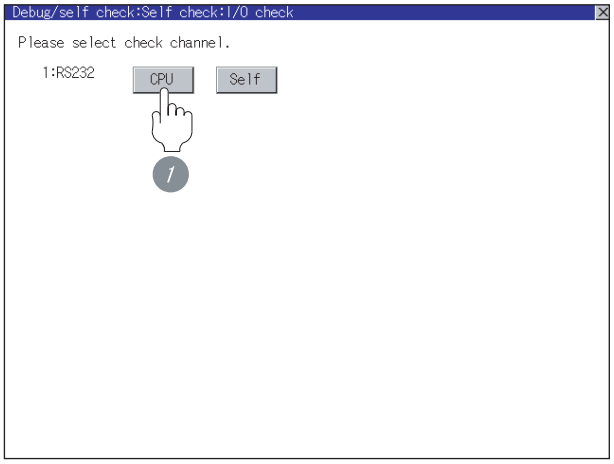
Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

• For GT15, GT11

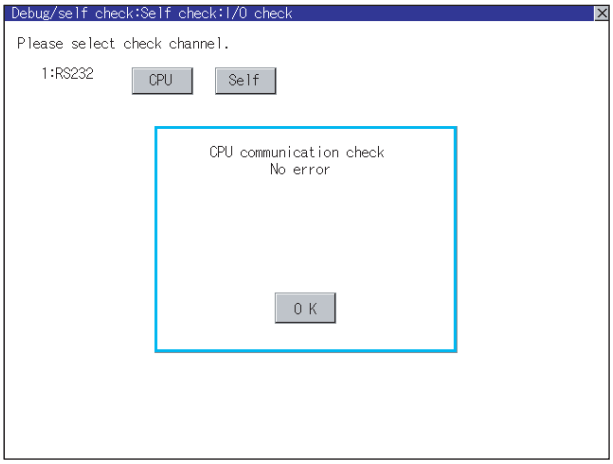
Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

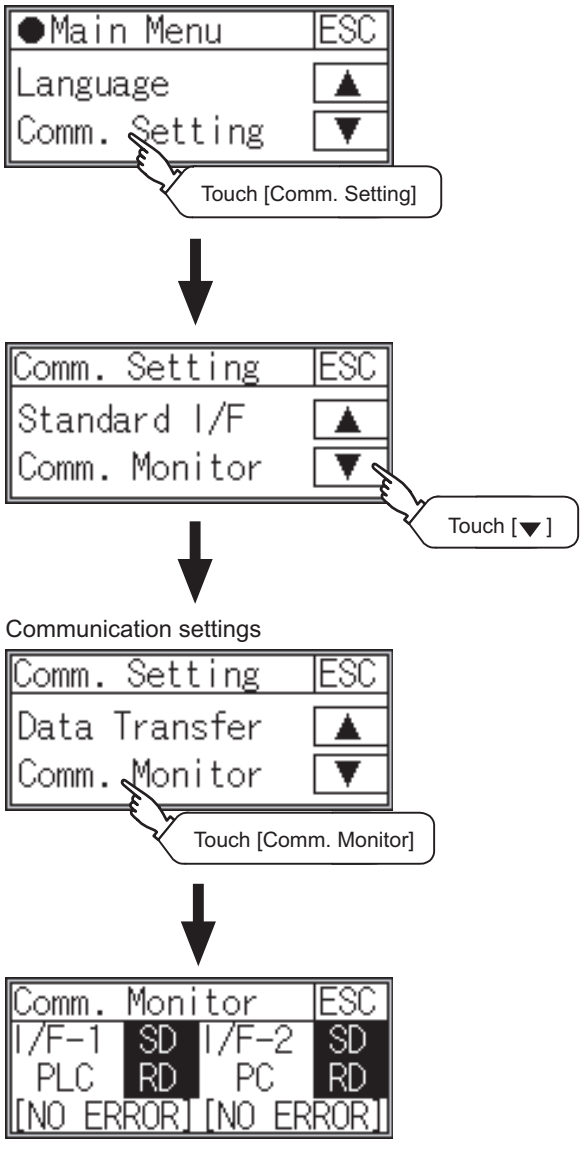
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 11.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

11.4 PLC Side Setting

Point

OMRON PLC

For details of OMRON PLCs, refer to the following manuals.

☞ Manuals for OMRON PLCs

Model		Reference
PLC CPU	CPM2A	Section 11.4.1
	CQM1, CQM1H	
	CJ1	Section 11.4.2
	CP1H, CP1L	Section 11.4.2
	C200Hα	Section 11.4.1
	CS1	Section 11.4.2
	CV500, CV1000, CV2000, CVM1	Section 11.4.3
RS-232C adapter	CPM1-CIF01, CPM2C-CIF01-V1	Section 11.4.1
Connection cable	CQM1-CIF01	Section 11.4.4
	CQM1-CIF02	
	CPM2C-CN111	
Rack type host link unit	C200H-LK201-V1	Section 11.4.5
	C200H-LK202-V1	Section 11.4.5
	C500-LK201-V1	Section 11.4.5
Serial communication unit	CJ1W-SCU41	Section 11.4.6
	CS1W-SCU21	
	CS1W-SCU21-V1	
Communication board	C200HW-COM02	Section 11.4.7
	C200HW-COM03	
	C200HW-COM05	
	C200HW-COM06	
Serial communication board	CQM1-SCB41	Section 11.4.7
	CS1W-SCB21	Section 11.4.8
	CS1W-SCB41	
RS-422A/485 Option board	CP1W-CIF11	Section 11.4.9

11.4.1 Connecting CPM2A, CQM1, CQM1H, C200Hα or RS-232C adapter

1 Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name	Settings
DM6645	0001H (fixed)
DM6646	b15 to b8 | b7 to b0 2) | 1) 1) RS-232C port transmission speed setting *1*2 02H: 4800bps 03H: 9600bps 04H: 19200bps 2) RS-232C port communication frame format 03H (fixed): The settings are: Start bit : 1 bit Data length: 7 bits Stop bit : 2 bits Parity : Even bits
DM6647	0000 (fixed)
DM6648 *3	0000 to 0031
DM6649	0000 (fixed)

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed of the RS-232C port as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the RS-232C port host link station No. according to the Host Address on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

Remark

Precautions for changing device values

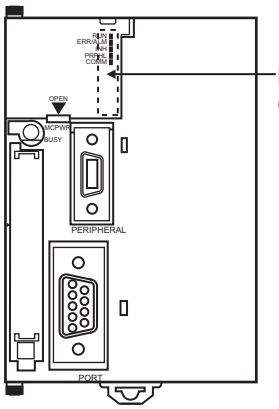
Before changing the device values, make sure that the switch settings have been changed as follows:
CPM2A:
The communication condition switch to "individual"
Other PLC CPU: Front panel DIP switch SW5 to "OFF"

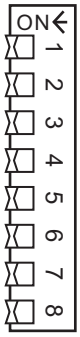
11.4.2 Connecting to CJ1, CS1, CP1H or CP1L

1 Setting DIP switches

Set the DIP switches.

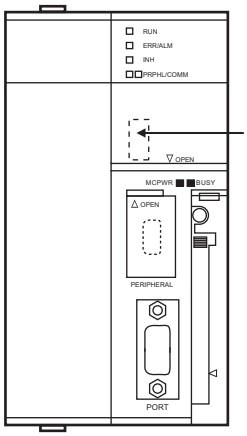
(1) Setting on the CJ1

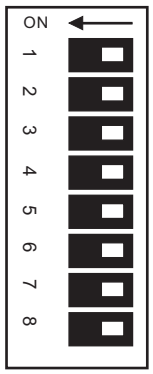




Switch	Description	Setting
SW1	Enable/disable write to user memory (UM)	OFF
SW2	Enable/disable automatic transfer of user program at power ON	OFF
SW3	Free	OFF
SW4	Peripheral port communication condition	OFF
SW5	RS-232C communication condition	OFF
SW6	User customized DIP switch	OFF
SW7	Type specification for simplified backup	OFF
SW8	—	OFF

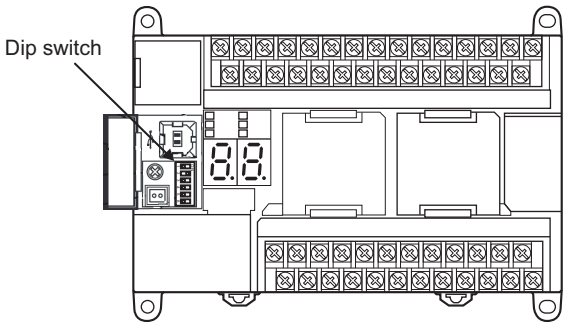
(2) Setting on the CS1

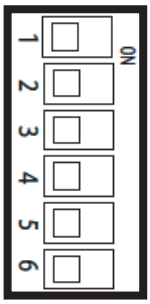




Switch	Description	Setting
SW1	Enable/disable write to user memory (UM)	OFF
SW2	Enable/disable automatic transfer of user program at power ON	OFF
SW3	Programming console message display language (Japanese/ English)	OFF
SW4	Peripheral port communication condition	OFF
SW5	RS-232C communication condition	OFF
SW6	User customized DIP switch	OFF
SW7	Type specification for simplified backup	OFF
SW8	—	OFF

(3) Setting on the CP1H, CP1L





Switch	Description		Setting
SW4	Option Board Slot1	According to PLC Setup.	OFF
SW5	Option Board Slot2		OFF

2 Setting PLC system settings

(1) CJ1 and CS1

Make the PLC system settings.

Channel	Bit	Item	Setting
160	15	Arbitrary settings ON/OFF	1H: Arbitrary settings (fixed)
	8 to 11	Serial communication mode	0H: Upper link (fixed)
	3	Data length	0H: 7 bits (fixed)
	2	Stop bit	0H: 2 bits (fixed)
	0 to 1	Parity	0H: Even (fixed)
161	0 to 7	Port transmission speed *1*2	00H: 9600bps 05H: 4800bps 06H: 9600bps 07H: 19200bps 08H: 38400bps 09H: 57600bps 0AH: 115200bps
163	0 to 7	Host link station No. *3	0H to 1FH: No.00 to 31

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same port transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the host link station No. according to the Host Address on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

Remark

Precautions for changing the PLC system settings

Before changing the PLC system settings, make sure that the switch settings have been changed as follows:
CJ1, CS1: Front panel DIP switch SW5 to "OFF"

(2) CP1H and CP1L

Set the PLC system settings of the option slot connected to the GOT.

Item	Setting
Mode	Host link
Parameter	7, 2, E
Baud rate *1 *2	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Unit number *3	00 to 31

*1 Only Baud rate available on the GOT side are shown.

*2 Set the same port transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the host link station No. according to the Host Address on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

Remark

Precautions for changing the PLC system settings

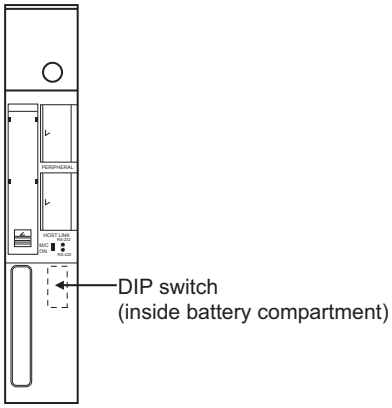
Before changing the PLC system settings, check the setting of the front DIP switch corresponding to the option slot used at the time of communication with GOT.

☞ (3)Setting on the CP1H, CP1L

11.4.3 Connecting CV500/CV1000/CV2000 or CVM1

1 Setting DIP switches

Set the DIP switches.



(1) Host link RS-422/232 switch



Setting	
RS-232 communication	RS-422 communication
RS-232 (up)	RS-422 (down)

(2) DIP switches



Switch No.	Setting	
	RS-232 communication	RS-422 communication
6	OFF (no terminating resistor)	ON (terminating resistor attached)
5	OFF	
4	OFF	
3	OFF	
2	OFF	
1	OFF	

2 PLC system settings

Make the PLC system settings.

Item	Setting
Transmission speed *1*2	4800bps/9600bps/19200bps
Stop bit	2 stop bits (fixed)
Parity	Even (fixed)
Data length	7 bits (fixed)
Station No. *3	00 to 31

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the station No. according to the Host Address on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)

11.4.4 Connecting connection cable

1 Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name	Settings
DM6650	0001H (fixed)
DM6651	b15 to b8: 2) / b7 to b0: 1) 1) RS-232C port transmission speed setting*1*2 02H: 4800bps 03H: 9600bps 04H: 19200bps 2) RS-232C port communication frame format 03H (fixed): The settings are: Start bit : 1 bit Data length: 7 bits Stop bit : 2 bits Parity : Even bits
DM6652	0000 (fixed)
DM6653 *3	0000 to 0031

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed of the peripheral port as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the peripheral port host link station No. according to the Host Address on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)

Remark

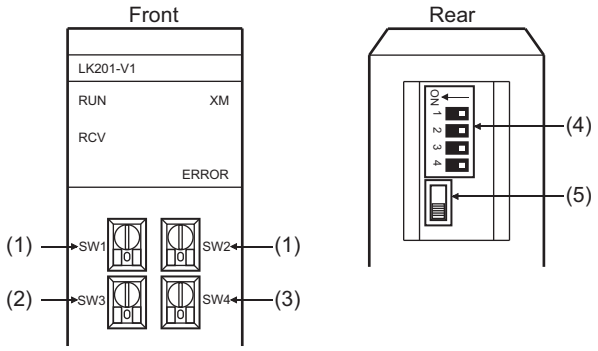
Precautions for changing device values

Before changing the device values, make sure that the switch settings have been changed as follows:
CPM2A:
The communication condition switch to "individual"
CPM2C:
The communication port function switch to "OFF"

11.4.5 Connecting rack type host link unit

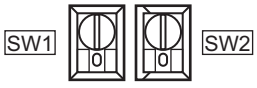
1 Switch setting on C200H-LK201-V1

Set the switches accordingly.



(1) Setting Machine No. (SW1, SW2)

Set the Machine No. within the range of 00 to 31 according to the Host Address setting on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)



Rotary switch	Description	Setting
SW1	Machine No. upper digit ($x10^1$)	0 to 3
SW2	Machine No. lower digit ($x10^0$)	0 to 9

(2) Setting transmission speed (SW3)

Set the same transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)



Setting *1	Setting
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(3) Setting command level/ parity/ transmission code (SW4)



Setting	Setting details		
	Command level	Parity	Transmission code
2 (fixed)	Levels 1, 2 and 3 enabled	Even	ASCII 7 bits 2 stop bits

(4) Setting DIP switches



Switch No.	Setting
1	OFF
2	OFF
3	ON (1:N procedure)
4	OFF (no 5V power supply)

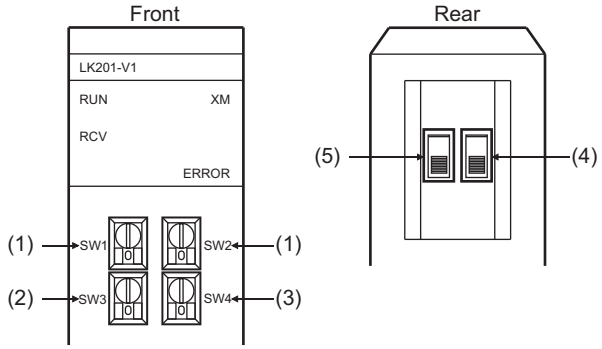
(5) Setting the CTS switch



Setting
0V

2 Switch setting on C200H-LK202-V1

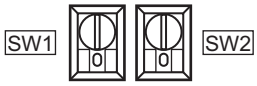
Set the switches accordingly.



(1) Setting Machine No. (SW1, SW2)

Set the Machine No. within the range of 00 to 31.
Set the Machine No. according to the Host Address setting on the GOT side.
For the Host Address setting on the GOT side, refer to the following.

☞ Section 11.3.3 Setting communication interface (Communication settings)



Rotary switch	Description	Setting
SW1	Machine No. upper digit ($x10^1$)	0 to 3
SW2	Machine No. lower digit ($x10^0$)	0 to 9

(2) Setting transmission speed (SW3)

Set the same transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.

☞ Section 11.3.3 Setting communication interface (Communication settings)



Setting *1	Setting
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(3) Setting command level/ parity/ transmission code (SW4)



Setting	Setting details		
	Command level	Parity	Transmission code
2 (fixed)	Levels 1, 2 and 3 enabled	Even	ASCII 7 bits 2 stop bits

(4) Setting the 1:1 / 1:N procedure switch



Setting
OFF (1:N procedure)

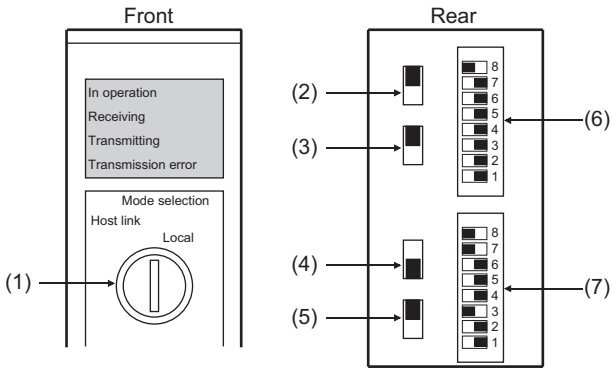
(5) Setting the terminating resistor connection switch



Setting
ON (terminating resistor attached)

3 Switch setting on C500-LK201-V1

Set the switches accordingly.



(1) Setting host link/local



Setting
Host link

(2) RS-232C/RS-422 switch



Setting	
RS-232 communication	RS-422 communication
RS-232 (down)	RS-422 (up)

(3) Internal/external clock switch



Setting
Internal (up)

(4) Terminating resistor connection switch



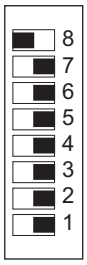
Setting
Attached (down)

(5) CTS switch



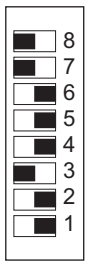
Setting
0V (up)

(6) Setting SW1 (Station No., Run/Stop)



Switch No.	Setting	Description
8	ON	Run
7	OFF	—
6	OFF	—
5	Set the station No. within the range of 00 to 31. Refer to the following manual for details. OMRON PLC manual	
4		
3		
2		
1		

(7) Setting SW2 (Transmission speed, Procedure, Level)



Switch No.	Setting	Description
8	ON	Levels 1, 2 and 3 enabled
7	ON	
6	OFF	1:N procedure
5	OFF	—
4	*1	Transmission speed
3		
2		
1		

*1 Only transmission speeds available on the GOT side are shown.

Transmission speed	Switch No.			
	SW1	SW2	SW3	SW4
4800bps	OFF	ON	ON	OFF
9600bps	ON	OFF	ON	OFF
19200bps	OFF	OFF	ON	OFF

11.4.6 Connecting serial communication unit

1 Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name		Settings
Port 1	Port 2	
DM (m)	DM (m+10)	8000H (fixed): The settings are: Port setting :Arbitrary setting Serial communication mode :Host link Start bit :1 bit Data length :7 bits Stop bit :2 bits Parity :Even
DM (m+1)	DM (m+11)	b15 to b8 / b7 to b0 0H / 1) 1) Transmission speed*1*2 00H: 9600bps 08H: 38400bps 05H: 4800bps 09H: 57600bps 06H: 9600bps 0AH: 115200bps 07H: 19200bps
DM (m+2)	DM (m+12)	8000H (fixed)
DM (m+3) *3	DM (m+13) *3	8000H to 801FH

m = 30000 + (100 x unit No.)

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the host link station No. according to the Host Address setting on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

11.4.7 Connecting communication board, serial communication board (CQM1-SCB41)

1 Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name		Setting
Port B	Port A	
DM6550	DM6555	0001H (fixed)
DM6551	DM6556	b15 to b8 / b7 to b0 2) / 1) 1) Transmission speed*1*2 02H:4800bps 03H:9600bps 04H:19200bps 2) Frame format setting 03H (fixed): The settings are: Start bit :1 bit Data length:7 bits Stop bit :2 bits Parity :Even bits
DM6552	DM6557	0000 (fixed)
DM6553 *3	DM6558 *3	0000 to 0031

*1 Only transmission speeds available on the GOT side are shown.

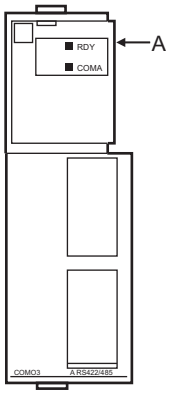
*2 Set the same transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the host link station No. according to the Host Address setting on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
☞ Section 11.3.3 Setting communication interface (Communication settings)

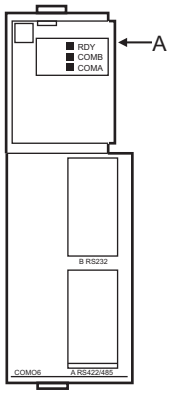
2 Setting DIP switches (C200HW-COM3 and C200HW-COM6 only)

Set the DIP switches when performing the RS-422 communications on the C200HW-COM3 and C200HW-COM6.

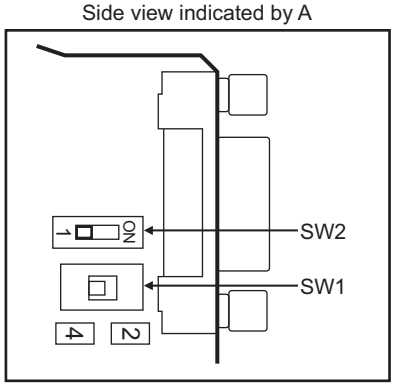
C200HW-COM3



C200HW-COM6



Side view indicated by A



DIP switch		Settings
No.	Item	
SW1	RS-422/485 cable (2-wire/4-wire type) switching	4 (4-wire type)
SW2	Terminator ON/OFF	1 (no terminating resistor attached)

11.4.8 Connecting serial communication board (CS1W-SCB21, CS1W-SCB41)

1 Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name		Setting
Port 1	Port 2	
D32000	D32010	8000H (fixed): The settings are: Port setting :Arbitrary setting Serial communication mode :Host link Start bit :1 bit Data length :7 bits Stop bit :2 bits Parity :Even
D32001	D32011	b15～b8 b7～b0 0H | 1) 1) Transmission speed*1*2 00H: 9600bps 08H: 38400bps 05H: 4800bps 09H: 57600bps 06H: 9600bps 0AH: 115200bps 07H: 19200bps
D32002	D32012	8000H (fixed)
D32003 *3	D32013 *3	0000H to 0001FH

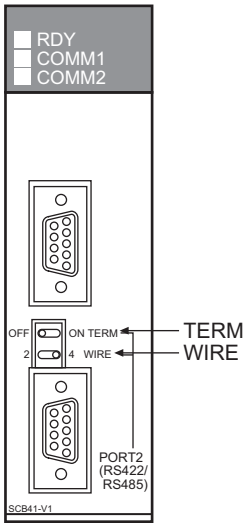
*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)

*3 Set the host link station No. according to the Host Address setting on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
Section 11.3.3 Setting communication interface (Communication settings)

2 Setting the DIP switches (CS1W-SCB41 only)

Set the DIP switches when performing the RS-422 communications on the CS1W-SCB41.



DIP switch		Settings
Name	Description	
WIRE	2-wire/4-wire type switch	4 (4-wire type)
TERM	Terminator ON/OFF switch	1 (no terminating resistor attached)

Remark

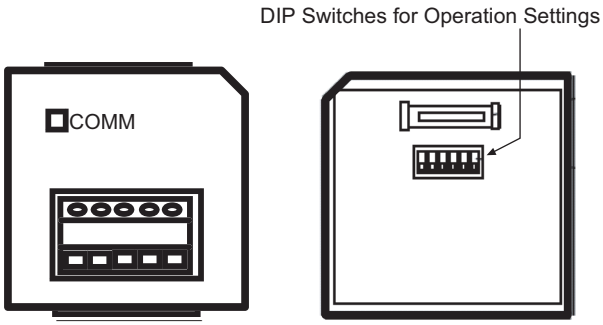
Precautions for changing the DM area

Before changing the DM area, make sure that the switch setting has been changed as follows
CS1: Front panel DIP switch SW5 to "OFF"

11.4.9 Connecting RS-422A/485 Option board

1 Setting the DIP switches

Set the DIP switches





Switch No.	Settings	Description	
1	ON	ON	Terminating resistance selection
2	OFF	4-wire	2-wire or 4-wire selection
3	OFF	4-wire	2-wire or 4-wire selection
5	ON	RS control enabled	RS control selection for RD

11.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	OMRON PLC connection	Supporting the delay time setting	2.27D	Communication driver OMRON SYSMAC [02.04.**]
GT15 GT11 Serial	OMRON PLC connection	Supporting the retry and the timeout time	2.43V	Communication driver OMRON SYSMAC [03.01.**]
GT15 GT11 Serial	OMRON PLC connection	Supporting the connections to GT1020	2.47Z	Communication driver OMRON SYSMAC [01.00.**]
GT24V1020 30 GT5V1020	OMRON PLC connection	Supporting the connections to GT1030	2.58L	Standard monitor OS [01.03.**] Communication driver OMRON SYSMAC [01.00.**]
GT15 GT11 Serial	OMRON PLC connection	Supporting the connection to OMRON PLC CP1L	2.82L	Communication driver OMRON SYSMAC [03.13.**]
GT24V1020 30				Standard monitor OS [01.09.**] Communication driver OMRON SYSMAC [01.05.**]
GT16	OMRON PLC connection	Supporting the connections to GT16	2.90U	Communication driver OMRON SYSMAC [04.02.**]
GT1055 4	OMRON PLC connection	Supporting the connections to GT105□ Supporting the connections to GT104□		Standard monitor OS [01.10.**] Communication driver OMRON SYSMAC [01.05.**]

MEMO

12

CONNECTION TO KEYENCE PLC



12.1 System configuration . . . . . page 12-2

This section describes the equipment and cables needed when connecting a GOT to a KEYENCE PLC.
Select a system suitable for your application.

12.2 Connection cable . . . . . page 12-21

This section describes the specifications of the cables needed when connecting a GOT to a KEYENCE PLC.
Check the specifications of the connection cables.

12.3 Preparatory Procedures for Monitoring . . . . . page 12-32

This section provides the procedures to be followed before performing monitoring in connection to a KEYENCE PLC.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

12.4 PLC Side Setting . . . . . page 12-43

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

12.5 List of Functions Added by Version Upgrade . . . . . page 12-45

This section describes the functions added by version upgrade of GT Designer2 or OS.

12.1 System configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

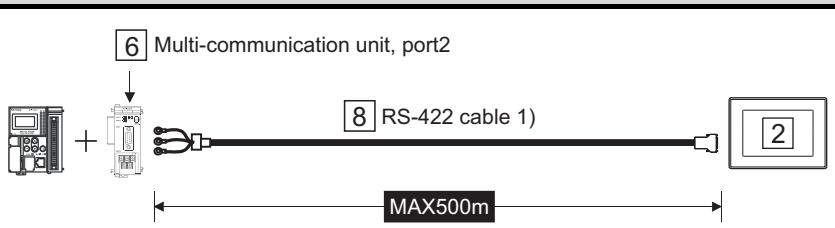
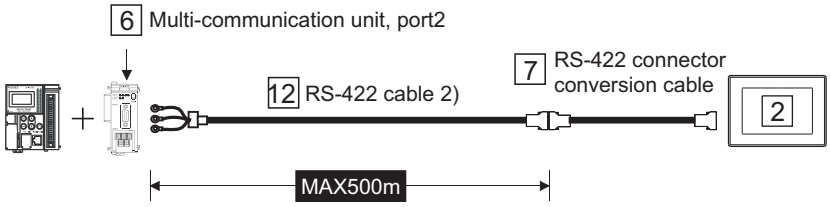
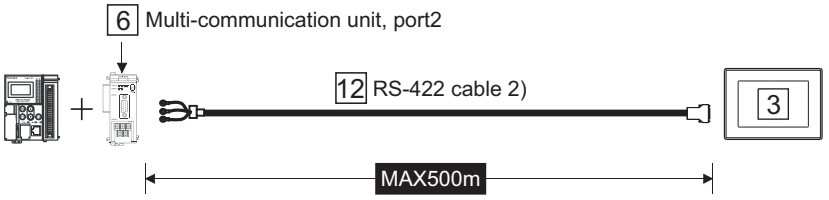
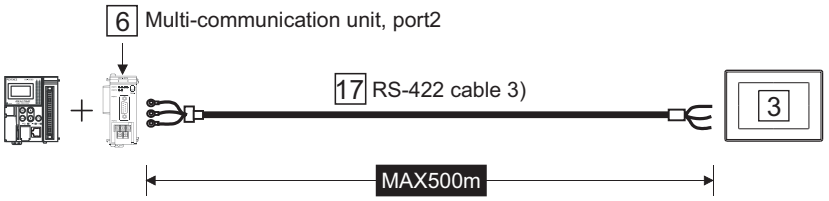
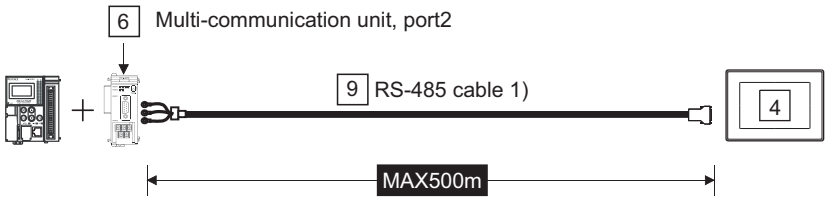
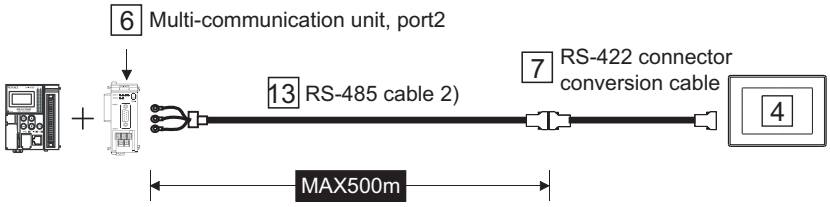
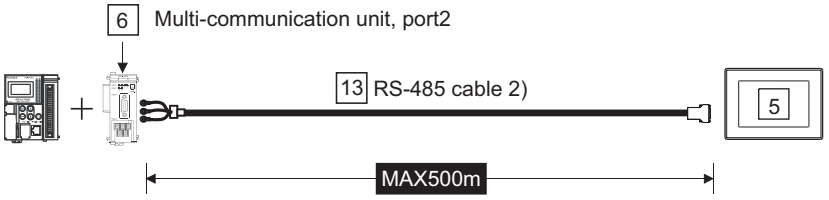
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

12.1.1 Connecting to KV-5000

Communication driver
KEYENCE KV-700/1000

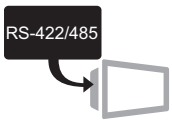
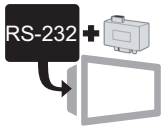
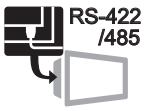
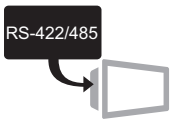
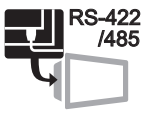
1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less	6 Multi-communication unit, port1 10 RS-232 cable 3) 1 MAX15m	GT16 GT15 GT11 Serial GT105□4□
		6 Multi-communication unit, port1 15 RS-232 cable 6) 1 MAX15m	GT24V10 20 30 (RS-232)
		6 Multi-communication unit, port2 11 RS-232 cable 4) 1 MAX15m	GT16 GT15 GT11 Serial GT105□4□
		6 Multi-communication unit, port2 16 RS-232 cable 7) 1 MAX15m	GT24V10 20 30 (RS-232)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	500m or less		GT16
			
			GT16 GT15 GT11 Serial GT105□ 4□
			GT24V 10 20 30 (RS-422)
			GT16
			
			GT16 GT15 GT11 Serial GT105□ 4□

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
	4	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-485 communication	— (Built into GOT)	GT11 Serial GT105□ 4□

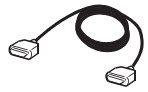
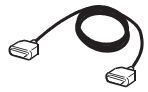
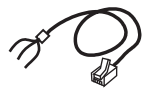
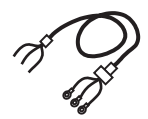
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	6	Multi-communication unit	KV-L20V

6 is product manufactured by KEYENCE CORPORATION. For details of this product, contact KEYENCE CORPORATION.

(3) Cable

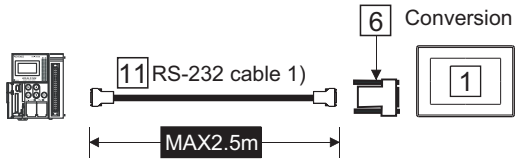
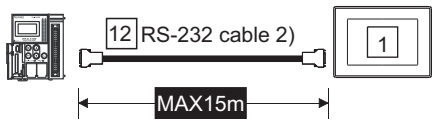
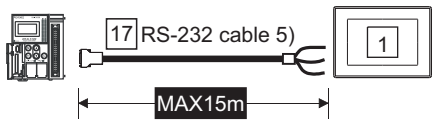
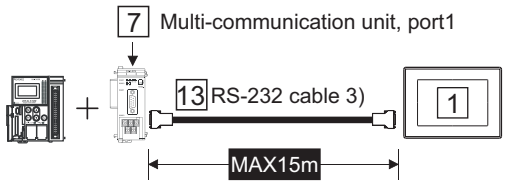
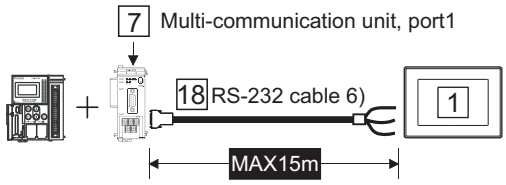
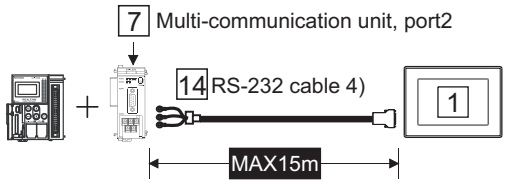
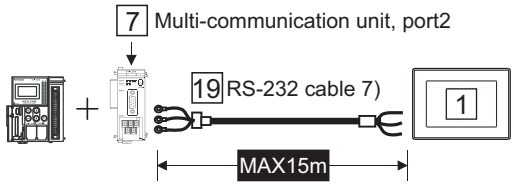
Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-422 cable 1) • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	
	9	RS-485 cable 1) • Between multi-communication unit and GOT		
	10	RS-232 cable 3)*1 • Between multi-communication unit and GOT	GT09-C30R21102-9S(3m)	GT16 GT15 GT11 Serial GT105□4□
	11	RS-232 cable 4)*1 • Between multi-communication unit and GOT	GT09-C30R21103-3T(3m)	
	12	RS-422 cable 2)*1 • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	GT09-C30DR41101-5T(3m) GT09-C100D0R41101-5T(10m) GT09-C200D0R41101-5T(20m) GT09-C300D0R41101-5T(30m)	
	13	RS-485 cable 2) • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	
	14	RS-232 cable 5) • Between PLC and GOT	To be prepared by the user. Section 12.2 Connection cable	GT24V10 20 30 (RS-232)
	15	RS-232 cable 6) • Between multi-communication unit and GOT		
	16	RS-232 cable 7) • Between multi-communication unit and GOT		
	17	RS-422 cable 3) • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	GT24V10 20 30 (RS-422)

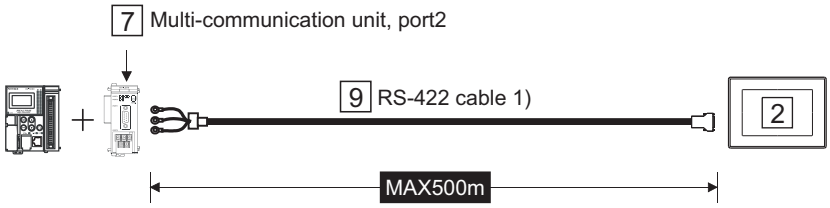
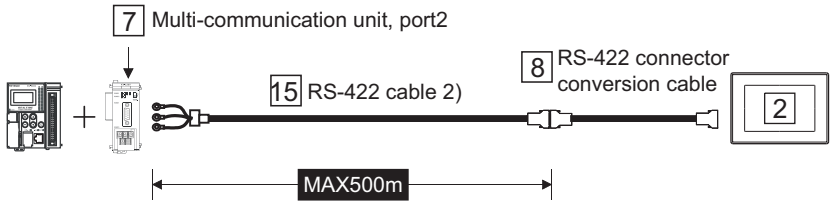
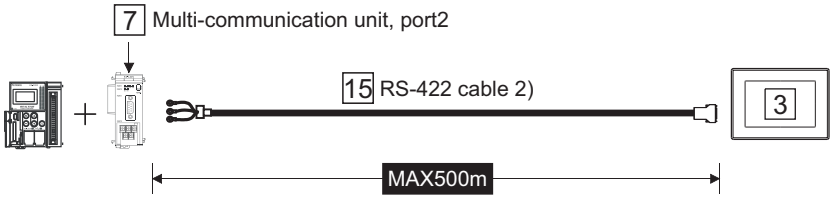
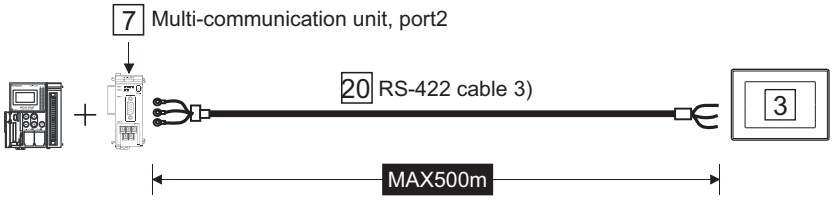
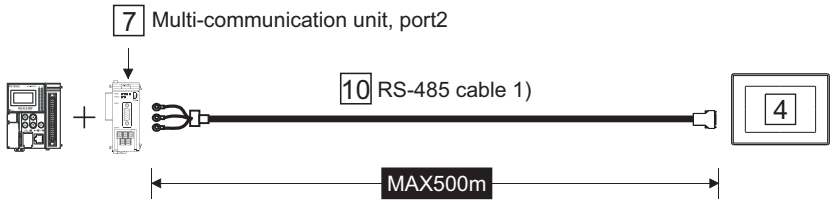
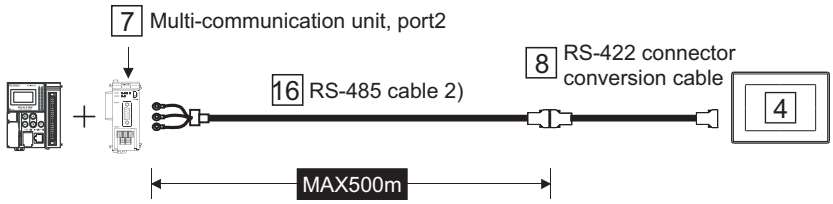
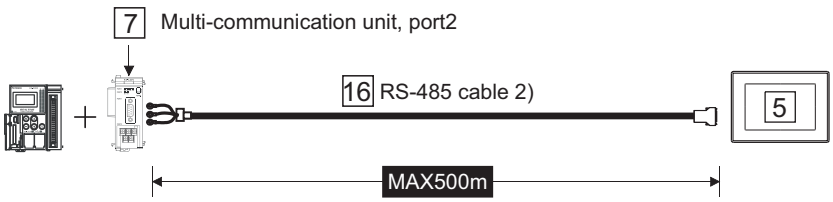
*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 12.2 Connection cable)

12.1.2 Connecting to KV-3000

Communication driver
KEYENCE KV-700/1000

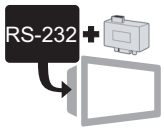
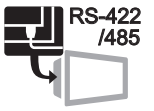
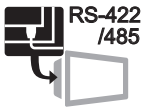
1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	2.5m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT24V 10 20 30 (RS-232)
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT24V 10 20 30 (RS-232)
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT24V 10 20 30 (RS-232)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	500m or less		GT16
			
			GT16 GT15 GT11 Serial GT105□ 4□
			GT24V10 20 30 (RS-422)
			GT16
			
			GT16 GT15 GT11 Serial GT105□ 4□

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
	4	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-485 communication	— (Built into GOT)	GT11 Serial GT105□4□

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	6	Conversion connector	OP-26486
	7	Multi-communication unit	KV-L20V

6, 7 are products manufactured by KEYENCE CORPORATION. For details of these products, contact KEYENCE CORPORATION.

(3) Cable

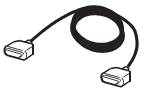
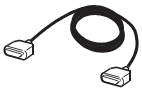
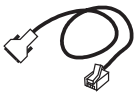
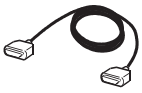
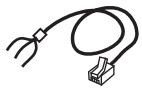
Image	No.	Name	Model name	Model
	8	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	9	RS-422 cable 1) Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	
	10	RS-485 cable 1) Between multi-communication unit and GOT		
	11	RS-232 cable 1) • Between conversion connector and GOT	OP-26487(2.5m)	GT16 GT15 GT11 Serial GT105□ 4□
	12	RS-232 cable 2)*1 • Between PLC and GOT	GT09-C30R21101-6P(3m)	
	13	RS-232 cable 3)*1 • Between multi-communication unit and GOT	GT09-C30R21102-9S(3m)	
	14	RS-232 cable 4)*1 • Between multi-communication unit and GOT	GT09-C30R21103-3T(3m)	
	15	RS-422 cable 2)*1 • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	GT09-C30DR41101-5T(3m) GT09-C100D0R41101-5T(10m) GT09-C200D0R41101-5T(20m) GT09-C300D0R41101-5T(30m)	
	16	RS-485 cable 2) • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	

Image	No.	Name	Model name	Model
	17	RS-232 cable 5) • Between PLC and GOT	To be prepared by the user. ☞ Section 12.2 Connection cable	GT 24V 10 20 30 (RS-232)
	18	RS-232 cable 6) • Between multi-communication unit and GOT		
	19	RS-232 cable 7) • Between multi-communication unit and GOT		
	20	RS-422 cable 3) • Between multi-communication unit and GOT	To be prepared by the user. ☞ Section 12.2 Connection cable	GT 24V 10 20 30 (RS-422)

*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 12.2 Connection cable)

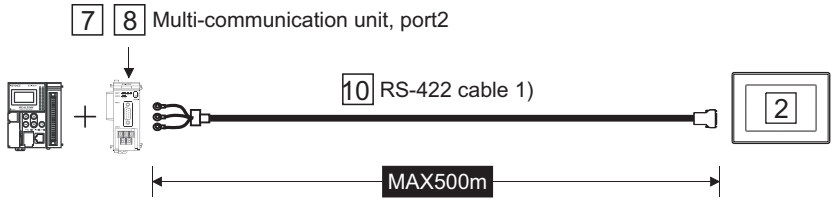
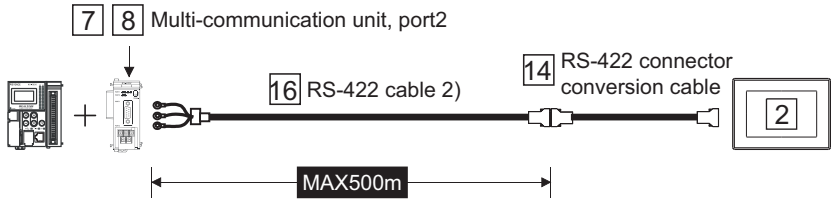
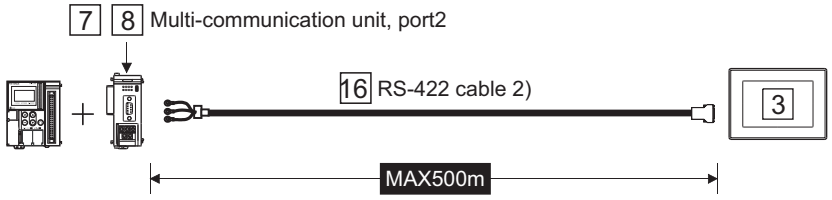
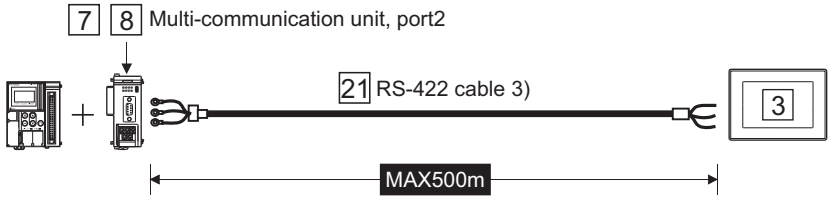
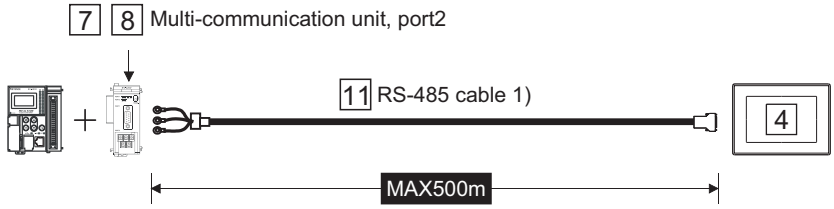
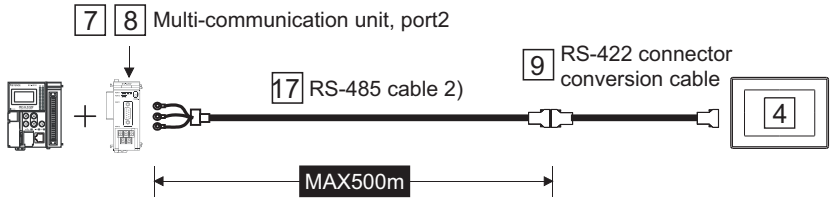
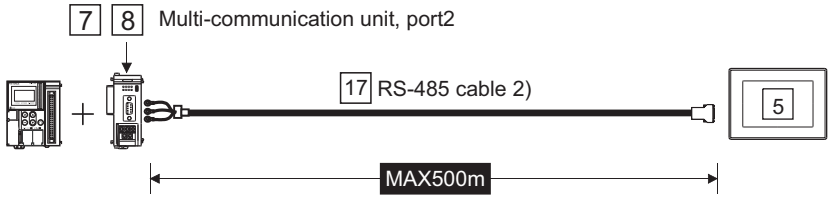
11 is a product manufactured by KEYENCE CORPORATION. For details of this product, contact KEYENCE CORPORATION.

Communication driver

KEYENCE KV-700/1000

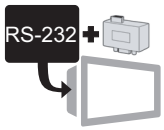
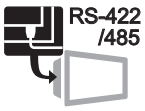
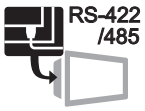
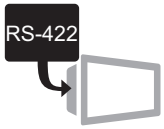
1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	2.5m or less	6 Conversion connector 12 RS-232 cable 1) MAX2.5m	GT16 GT15 GT11 Serial GT105□4□
	15m or less	13 RS-232 cable 2) MAX15m	GT16 GT15 GT11 Serial GT105□4□
		18 RS-232 cable 5) MAX15m	GT24V10 20 30 (RS-232)
		7 8 Multi-communication unit, port1 14 RS-232 cable 3) MAX15m	GT16 GT15 GT11 Serial GT105□4□
		7 8 Multi-communication unit, port1 19 RS-232 cable 6) MAX15m	GT24V10 20 30 (RS-232)
		7 8 Multi-communication unit, port2 15 RS-232 cable 4) MAX15m	GT16 GT15 GT11 Serial GT105□4□
		7 8 Multi-communication unit, port2 20 RS-232 cable 7) MAX15m	GT24V10 20 30 (RS-232)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	500m or less		GT16
			
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT 24V 10 20 30 (RS-422)
			GT16
			
			GT16 GT15 GT11 Serial GT10 5□ 4□

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
	4	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-485 communication	— (Built into GOT)	GT11 Serial GT105□ 4□

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	6	Conversion connector	OP-26486
	7	Multi-communication unit	KV-L20R
	8		KV-L20V

6, 7, 8 are products manufactured by KEYENCE CORPORATION. For details of these products, contact KEYENCE CORPORATION.

(3) Cable

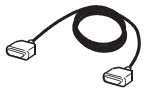
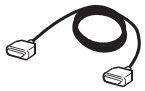
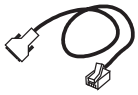
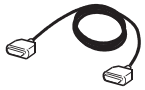
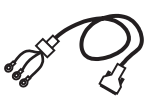
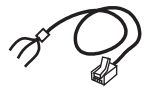
Image	No.	Name	Model name	
	9	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	10	RS-422 cable 1) • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	GT16
	11	RS-485 cable 1) • Between multi-communication unit and GOT		GT16
	12	RS-232 cable 1) • Between conversion connector and GOT	OP-26487(2.5m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	13	RS-232 cable 2)*1 • Between PLC and GOT	GT09-C30R21101-6P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	14	RS-232 cable 3)*1 • Between multi-communication unit and GOT	GT09-C30R21102-9S(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	15	RS-232 cable 4)*1 • Between multi-communication unit and GOT	GT09-C30R21103-3T(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	16	RS-422 cable 2)*1 • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	GT09-C30DR41101-5T(3m) GT09-C100D0R41101-5T(10m) GT09-C200D0R41101-5T(20m) GT09-C300D0R41101-5T(30m)	
	17	RS-485 cable 2) • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	

Image	No.	Name	Model name	
	18	RS-232 cable 5) • Between PLC and GOT	To be prepared by the user. ☞ Section 12.2 Connection cable	GT 24V 10 20 30 (RS-232)
	19	RS-232 cable 6) • Between multi-communication unit and GOT		
	20	RS-232 cable 7) • Between multi-communication unit and GOT		
	21	RS-422 cable 3) • Between multi-communication unit and GOT	To be prepared by the user. ☞ Section 12.2 Connection cable	GT 24V 10 20 30 (RS-422)

*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 12.2 Connection cable)

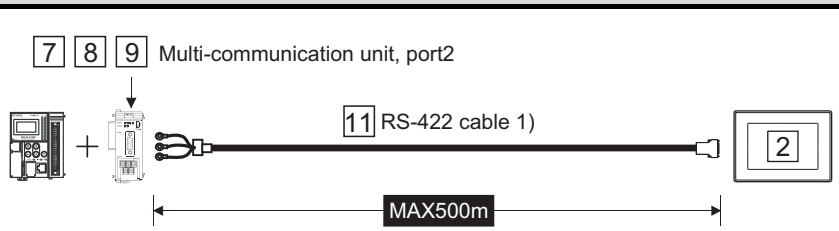
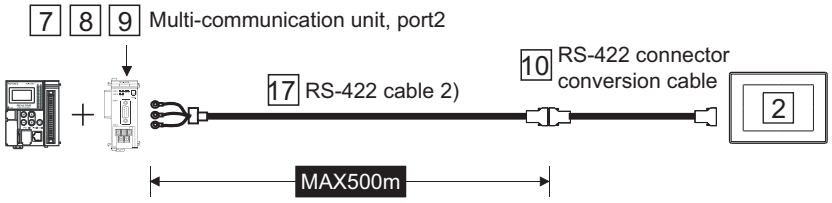
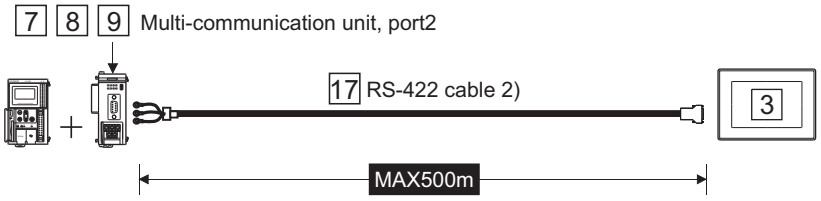
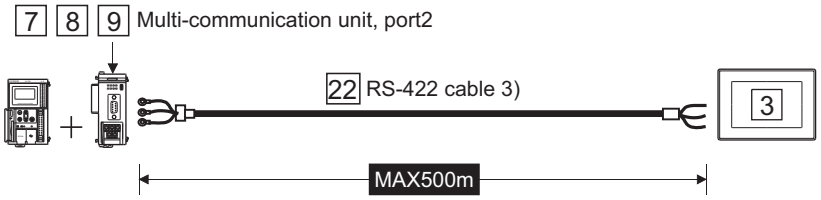
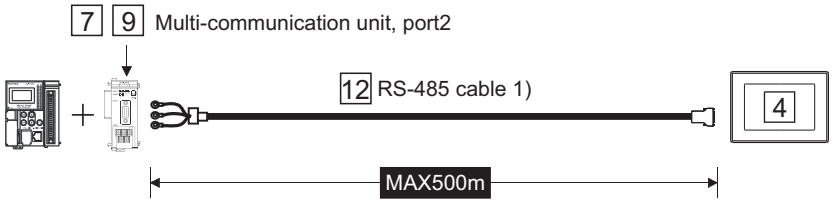
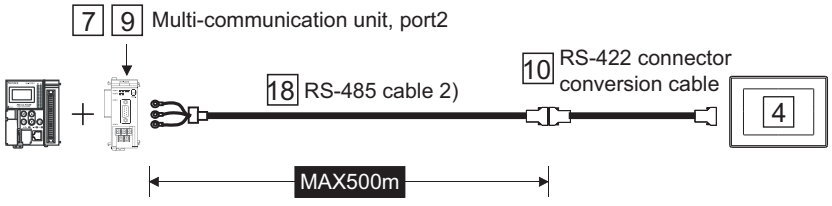
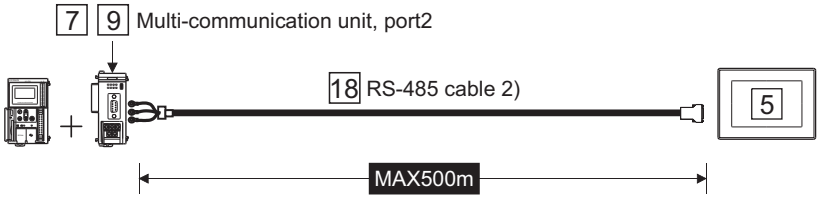
12 is a product manufactured by KEYENCE CORPORATION. For details of this product, contact KEYENCE CORPORATION.

12.1.4 Connecting to KV-700

Communication driver
KEYENCE KV-700/1000

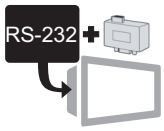
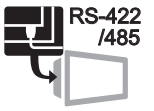
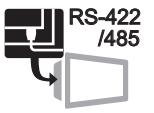
1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	2.5m or less	6 Conversion connector 13 RS-232 cable 1) 1 MAX2.5m	GT16 GT15 GT11 Serial GT10
	15m or less	14 RS-232 cable 2) 1 MAX15m	GT16 GT15 GT11 Serial GT10
		19 RS-232 cable 5) 1 MAX15m	GT24V10 20 30 (RS-232)
		7 8 9 Multi-communication unit, port 1 15 RS-232 cable 3) 1 MAX15m	GT16 GT15 GT11 Serial GT10
		7 8 9 Multi-communication unit, port 1 20 RS-232 cable 6) 1 MAX15m	GT24V10 20 30 (RS-232)
		7 8 9 Multi-communication unit, port2 16 RS-232 cable 4) 1 MAX15m	GT16 GT15 GT11 Serial GT10
		7 8 9 Multi-communication unit, port2 21 RS-232 cable 7) 1 MAX15m	GT24V10 20 30 (RS-232)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	500m or less		GT16
			
			GT16 GT15 GT11 Serial GT10 5/4
			GT24V10 20 30 (RS-422)
			GT16
			
			GT16 GT15 GT11 Serial GT10 5/4

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
	4	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-485 communication	— (Built into GOT)	GT11 Serial GT105□4□

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	6	Conversion connector	OP-26486
	7	Multi-communication unit	KV-L20R
	8		KV-L20
	9		KV-L20V

6, 7, 8, 9 are products manufactured by KEYENCE CORPORATION. For details of these products, contact KEYENCE CORPORATION.

(3) Cable

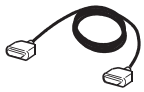
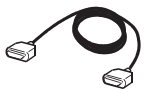
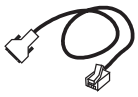
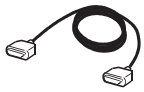
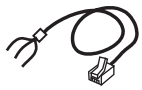
Image	No.	Name	Model name	Model
	10	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	11	RS-422 cable 1) • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	
	12	RS-485 cable 1) • Between multi-communication unit and GOT		
	13	RS-232 cable 1) • Between conversion connector and GOT	OP-26487(2.5m)	GT16 GT15 GT11 Serial GT105□ GT104□
	14	RS-232 cable 2)*1 • Between PLC and GOT	GT09-C30R21101-6P(3m)	
	15	RS-232 cable 3)*1 • Between multi-communication unit and GOT	GT09-C30R21102-9S(3m)	
	16	RS-232 cable 4)*1 • Between multi-communication unit and GOT	GT09-C30R21103-3T(3m)	
	17	RS-422 cable 2)*1 • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	GT09-C30DR41101-5T(3m) GT09-C100D0R41101-5T(10m) GT09-C200D0R41101-5T(20m) GT09-C300D0R41101-5T(30m)	
	18	RS-485 cable 2) • Between multi-communication unit and RS-422 connector conversion cable • Between multi-communication unit and GOT	To be prepared by the user. Section 12.2 Connection cable	

Image	No.	Name	Model name	Model
	19	RS-232 cable 5) • Between PLC and GOT	To be prepared by the user. ☞ Section 12.2 Connection cable	GT 24V 10 20 30 (RS-232)
	20	RS-232 cable 6) • Between multi-communication unit and GOT		
	21	RS-232 cable 7) • Between multi-communication unit and GOT		
	22	RS-422 cable 3) • Between multi-communication unit and GOT	To be prepared by the user. ☞ Section 12.2 Connection cable	GT 24V 10 20 30 (RS-422)

*1 RS-232 and RS-422 cable can be prepared by the user. (☞ Section 12.2 Connection cable)

13 is a product manufactured by KEYENCE CORPORATION. For details of this product, contact KEYENCE CORPORATION.

12.2 Connection cable

The RS-232 cable, RS-422 cable or RS-485 cable used for connecting the GOT to the PLC should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ section 12.2.1)

Model name			Connection cable		
			GT16	GT15, GT11, GT105 □, GT104 □	GT1030, GT1020
PLC CPU	KV-3000		RS-232 cable 2)	RS-232cable 2)	RS-232cable 5)
	KV-1000				
	KV-700				
Multi-communication unit	KV-L20V	(port 1)	RS-232cable 3)	RS-232cable 3)	RS-232cable 6)
		(port 2)	RS-232cable 4)	RS-232cable 4)	RS-232cable 7)
	KV-L20R	(port 1)	RS-232cable 3)	RS-232cable 3)	RS-232cable 6)
		(port 2)	RS-232cable 4)	RS-232cable 4)	RS-232cable 7)
	KV-L20	(port 1)	RS-232cable 3)	RS-232cable 3)	RS-232cable 6)
		(port 2)	RS-232cable 4)	RS-232cable 4)	RS-232cable 7)

2 RS-422 cable (☞ section 12.2.2)

Model name			Connection cable		
			GT16	GT15, GT11, GT105 □, GT104 □	GT1030, GT1020
Multi-communication unit	KV-L20V	(port 2)	RS-422cable 1) RS-422cable 2)	RS-422cable 2)	RS-422cable 3)
	KV-L20R	(port 2)	RS-422cable 1) RS-422cable 2)	RS-422cable 2)	RS-422cable 3)
	KV-L20	(port 2)	RS-422cable 1) RS-422cable 2)	RS-422cable 2)	RS-422cable 3)

3 RS-485 cable (☞ section 12.2.3)

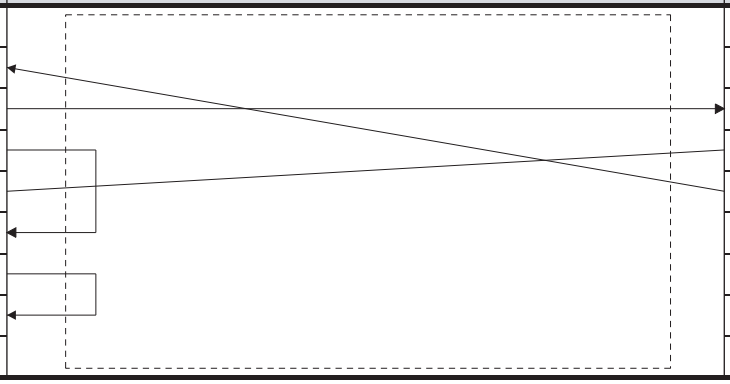
Model name			Connection cable	
			GT16	GT15, GT11, GT105 □, GT104 □
Multi-communication unit	KV-L20V	(port 2)	RS-485cable 1) RS-485cable 2)	RS-485cable 2)
	KV-L20R	(port 2)	RS-485cable 1) RS-485cable 2)	RS-485cable 2)
	KV-L20	(port 2)	RS-485cable 1) RS-485cable 2)	RS-485cable 2)

12.2.1 RS-232 cable

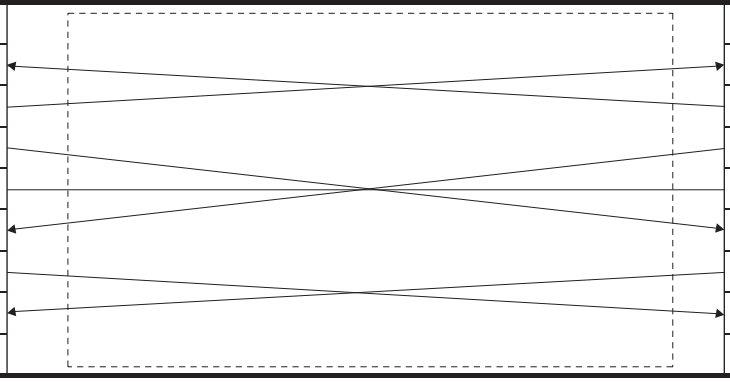
The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

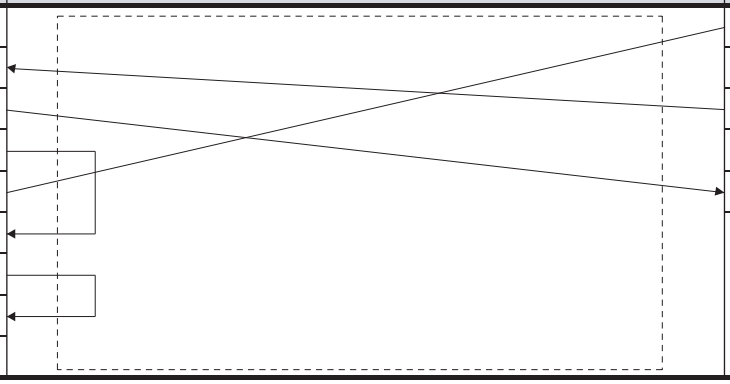
(1) RS-232 cable 2) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	KEYENCE PLC side (Modular 6-pin)	
Signal name	Pin No.		Pin No.	Signal name
—	1		1	+5V
RD(RXD)	2		2	+5V
SD(TXD)	3		3	RD
ER(DTR)	4		4	SG
SG	5		5	SD
DR(DSR)	6		6	SG
RS(RTS)	7			
CS(CTS)	8			
—	9			

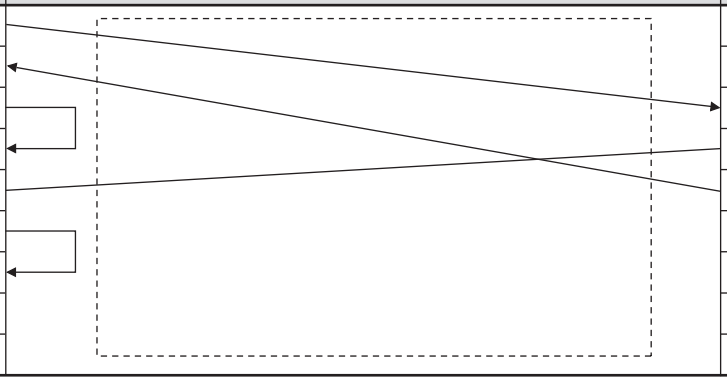
(2) RS-232 cable 3) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	KEYENCE PLC side (D sub 9-pin)	
Signal name	Pin No.		Pin No.	Signal name
—	1		1	CD
RD(RXD)	2		2	RD
SD(TXD)	3		3	SD
ER(DTR)	4		4	ER
SG	5		5	SG
DR(DSR)	6		6	DR
RS(RTS)	7		7	RS
CS(CTS)	8		8	CS
—	9		9	—

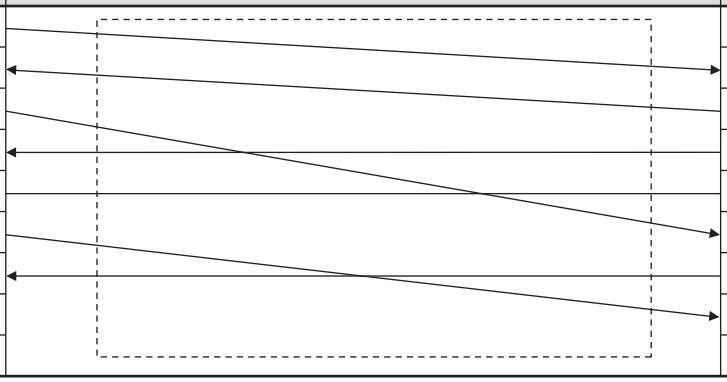
(3) RS-232 cable 4) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	KEYENCE PLC side (Terminal block)	
Signal name	Pin No.		Pin No.	Signal name
—	1		1	SG
RD(RXD)	2		2	—
SD(TXD)	3		3	SD
ER(DTR)	4		4	—
SG	5		5	RD
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
—	9			

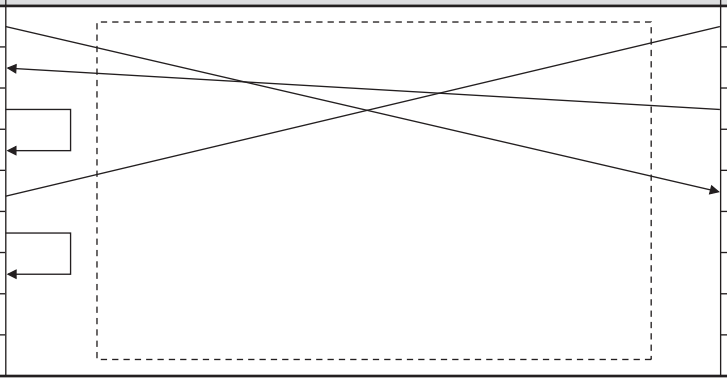
(4) RS-232 cable 5) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	KEYENCE PLC side (Modular 6-pin)	
Signal name		Pin No.	Signal name
SD		1	+5V
RD		2	+5V
ER		3	RD
DR		4	SG
SG		5	SD
RS		6	SG
CS			
NC			
NC			

(5) RS-232 cable 6) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	KEYENCE PLC side (D sub 9-pin)	
Signal name		Pin No.	Signal name
SD		1	CD
RD		2	RD
ER		3	SD
DR		4	ER
SG		5	SG
RS		6	DR
CS		7	RS
NC		8	CS
NC		9	—

(6) RS-232 cable 7) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	KEYENCE PLC side (Terminal block)	
Signal name		Pin No.	Signal name
SD		1	SG
RD		2	—
ER		3	SD
DR		4	—
SG		5	RD
RS			
CS			
NC			
NC			

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C□)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155□	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

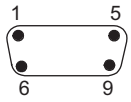
☞ GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

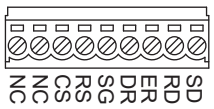
GOT main part connector
see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a
GOT main part



9-pin terminal block

(2) KEYENCE PLC side connector

Use the connector compatible with the KEYENCE PLC side module.
For details, refer to the following manual.

☞ User's Manual for the KEYENCE PLC

3 Precautions when preparing a cable

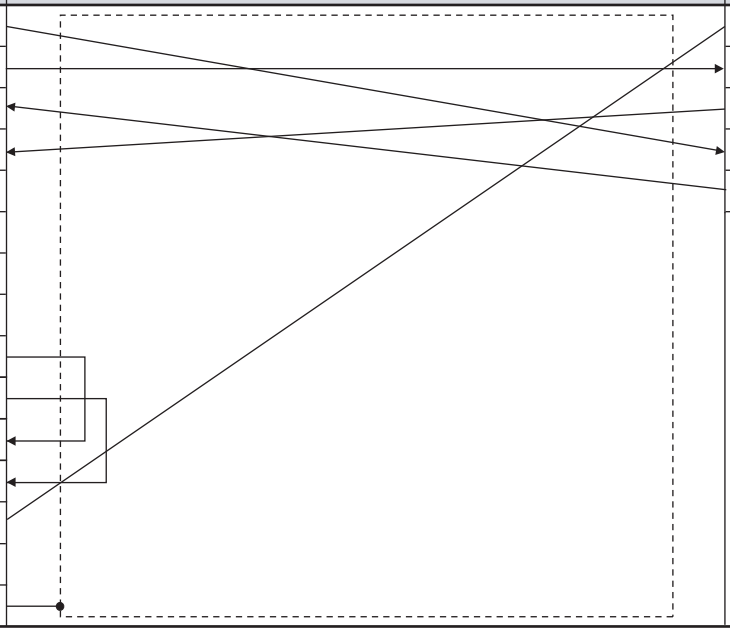
The length of the RS-232 cable must be 15m or less.

12.2.2 RS-422 cable

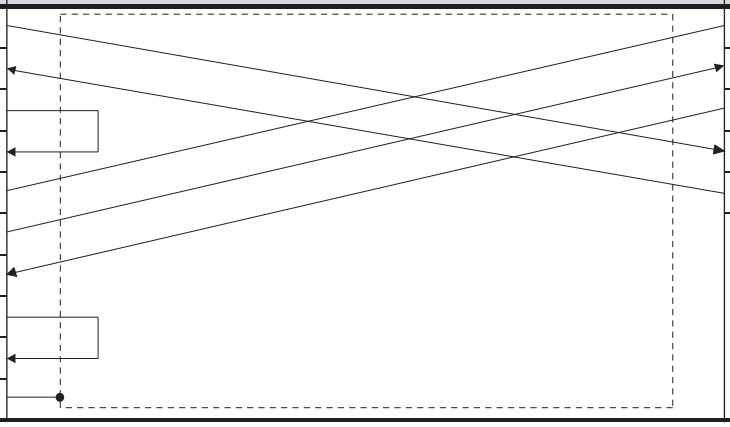
The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Connection diagram

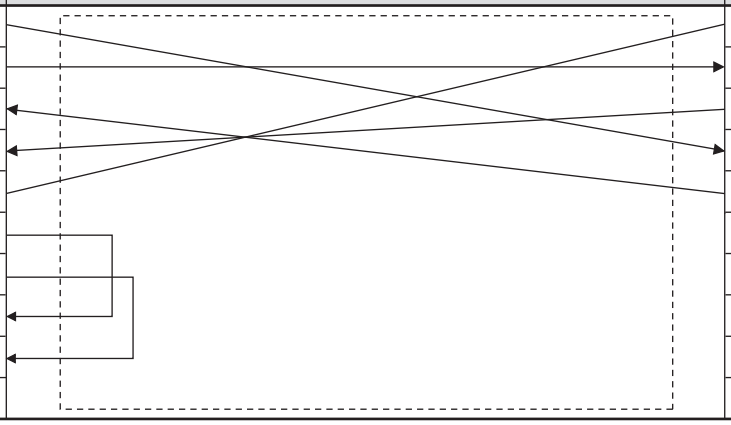
(1) RS-422 cable 1) (For GT16)

GOT side		Cable connection and signal direction	KEYENCE PLC side (Terminal block)	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	SG
SDB1(TXD1-)	2		2	RDA(-)
RDA1(RXD1+)	3		3	SDA(-)
RDB1(RXD1-)	4		4	RDB(+)
SDA2(TXD2+)	5		5	SDB(+)
SDB2(TXD2-)	6			
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

(2) RS-422 cable 2) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	KEYENCE PLC side (Terminal block)	
Signal name	Pin No.		Pin No.	Signal name
SDA	1		1	SG
RDA	2		2	RDA(-)
RSA	3		3	SDA(-)
CSA	4		4	RDB(+)
SG	5		5	SDB(+)
SDB	6			
RDB	7			
RSB	8			
CSB	9			
FG	—			

(3) RS-422 cable 3) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	KEYENCE PLC side (Terminal block)	
Signal name		Pin No.	Signal name
SDA		1	SG
SDB		2	RDA(-)
RDA		3	SDA(-)
RDB		4	RDB(+)
SG		5	SDB(+)
RSA			
RSB			
CSA			
CSB			

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16 *1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin Terminal block *2	PHOENIX CONTACT Inc
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

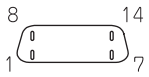
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product)of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16

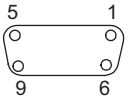
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

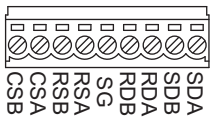
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) KEYENCE PLC side connector

Use the connector compatible with the KEYENCE PLC side module.

For details, refer to the following manual.

☞ User's Manual for the KEYENCE PLC

3 Precautions when preparing a cable.

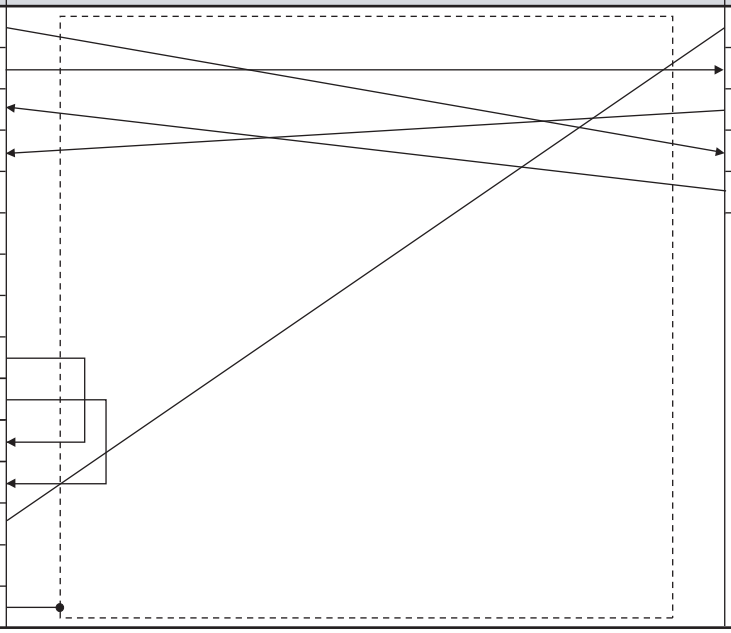
The length of the RS-422 cable must be 500m or less.

12.2.3 RS-485 cable

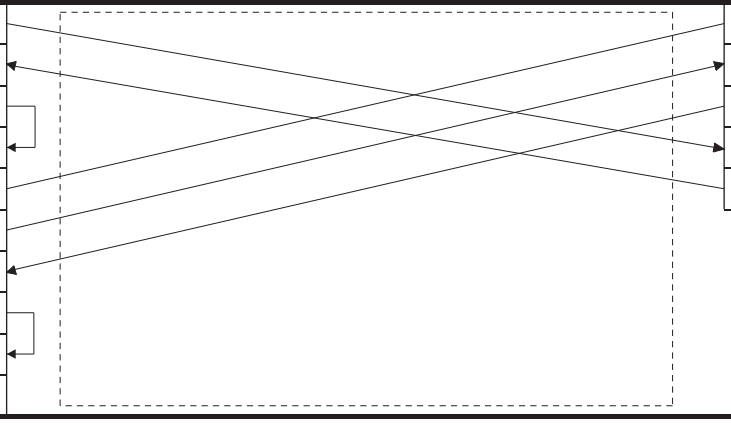
The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a controller.

1 Connection diagram

(1) RS-485 cable 1) (for GT16)

GOT side		Cable connection and signal direction	KEYENCE PLC side (Terminal block)	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	SG
SDB1(TXD1-)	2		2	RDA(-)
RDA1(RXD1+)	3		3	SDA(-)
RDB1(RXD1-)	4		4	RDB(+)
SDA2(TXD2+)	5		5	SDB(+)
SDB2(TXD2-)	6			
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

(2) RS-485 cable 2) (for GT16, GT15, GT11)

GOT side*1		Cable connection and signal direction	KEYENCE PLC side*1 (Terminal block)	
Signal name	Pin No.		Pin No.	Signal name
SDA	1		1	SG
RDA	2		2	RDA(-)
RSA	3		3	SDA(-)
CSA	4		4	RDB(+)
SG	5		5	SDB(+)
SDB	6			
RDB	7			
RSB	8			
CSB	9			
FG				

*1 Set the terminating resistor to “Enable”. (4 Terminating resistor settings)

2 Connector specifications

(1) GOT side connector

Use the following as the RS-485 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

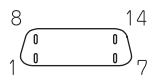
GOT	Connector model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

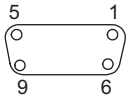
GOT main part connector
see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

GOT main part connector
see from the front



9-pin D-sub (female)

(2) KEYENCE PLC side connector

Use the connector compatible with the KEYENCE PLC side module.

For details, refer to the following manual.

☞ User's Manual for the KEYENCE PLC

3 Precautions when preparing a cable.

The length of the RS-485 cable must be 500m or less.

4 Terminating resistor settings

(1) KEYENCE PLC

Connect the terminating resistor on the KEYENCE PLC side when connecting a GOT to a KEYENCE PLC.

☞ Section 12.4 PLC Side Setting

(2) GOT

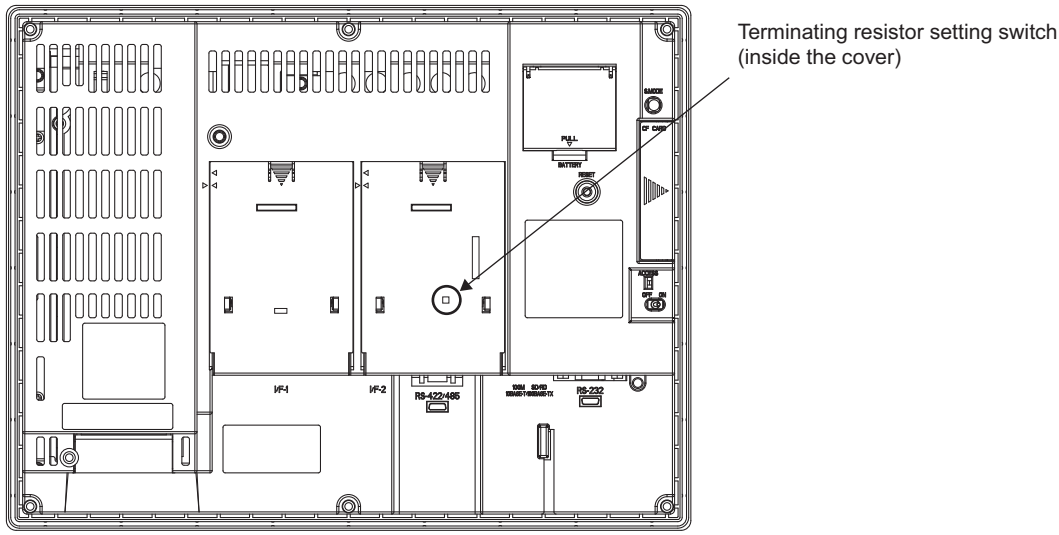
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

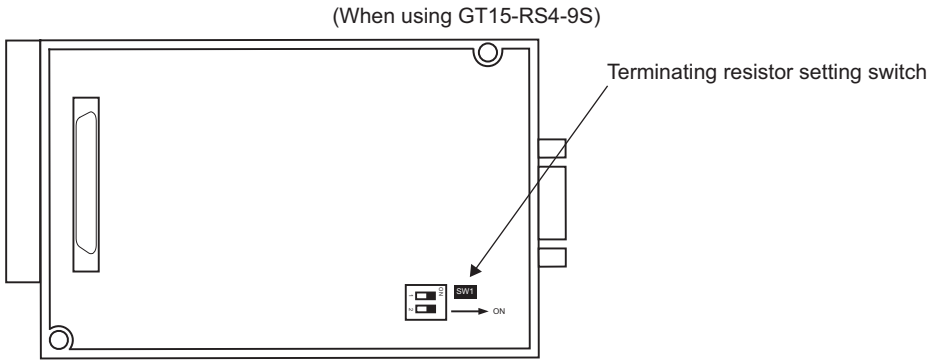
*1 The default setting is “Enable”.



• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear view of RS-422/485 communication unit.

12.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 12.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 12.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 12.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 12.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 12.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 12.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 12.3.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

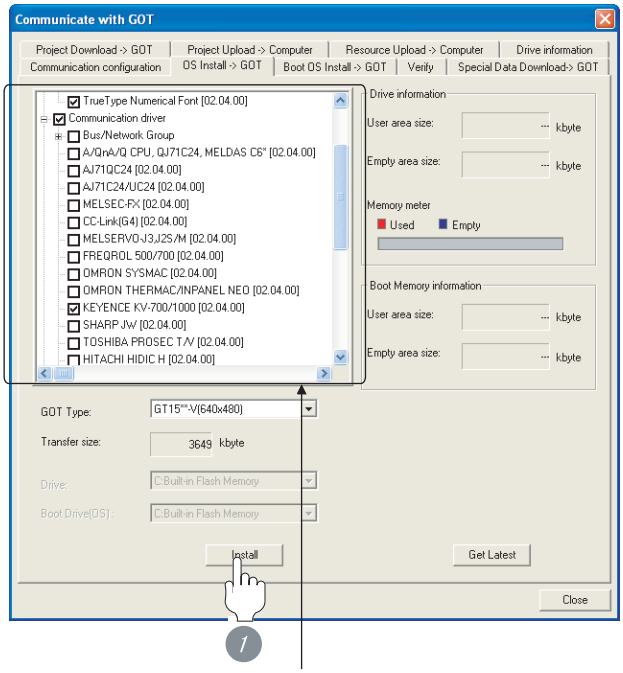
☞ Section 12.4 PLC Side Setting

12.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• KEYENCE KV-700/1000

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

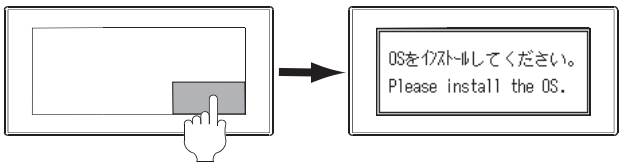
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



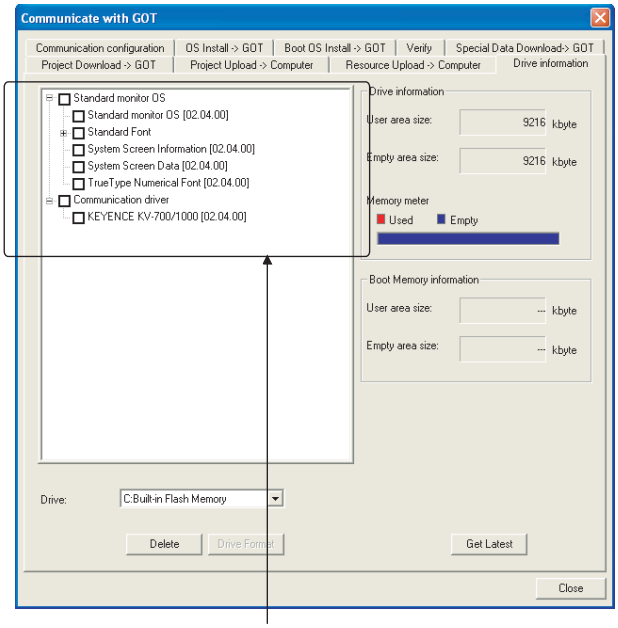
Turn on the GOT while the bottom right corner is touched.

12.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: KEYENCE KV-700/1000

12.3.3 Setting communication interface (Communication settings)

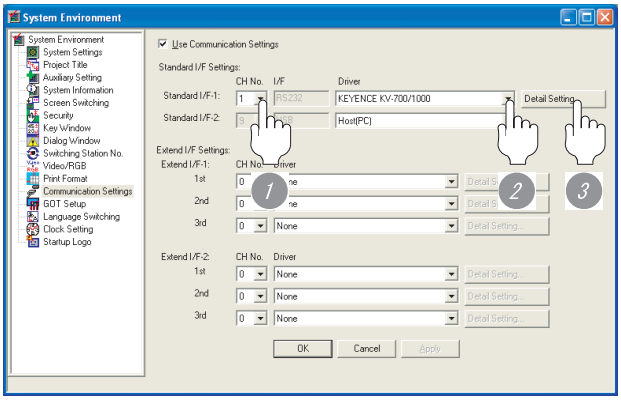
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



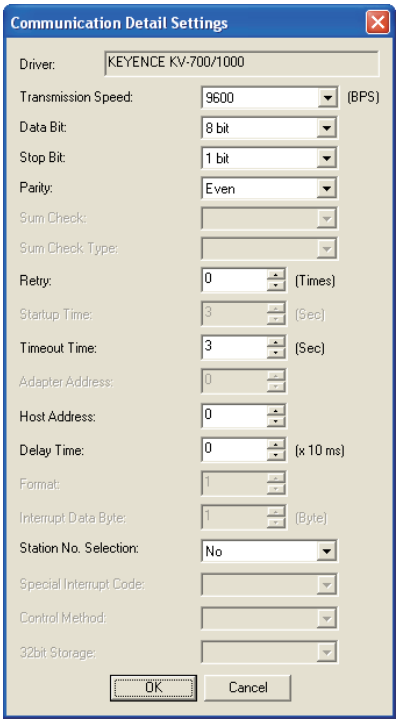
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "KEYENCE KV-700/1000".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 0>	0 to 9
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 30 (× 10 ms)
Station No. Selection	Specify whether to use the station No. during communication. If [Yes] is selected, the station No. is fixed to "0." <Default: No>	Yes or No

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

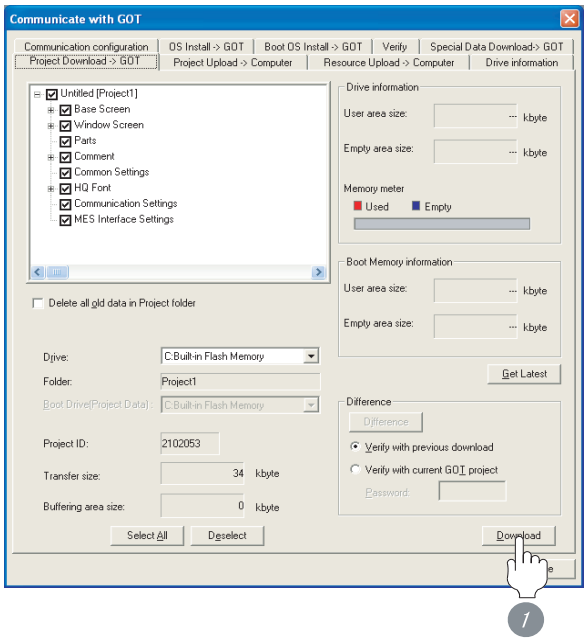
Communication settings can be changed on only GT Designer2.

12.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

12.3.5 Attaching communication unit and connecting cable

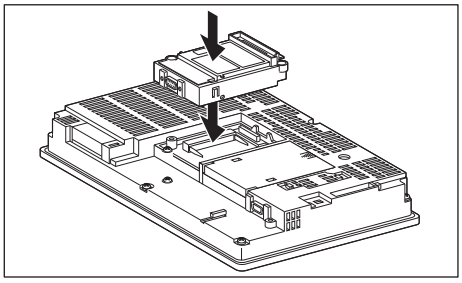
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

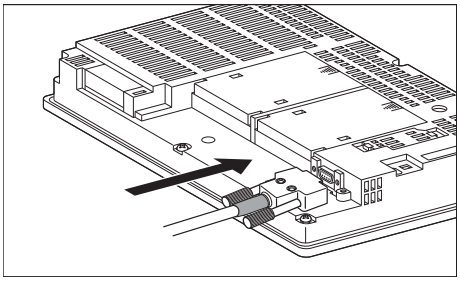
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

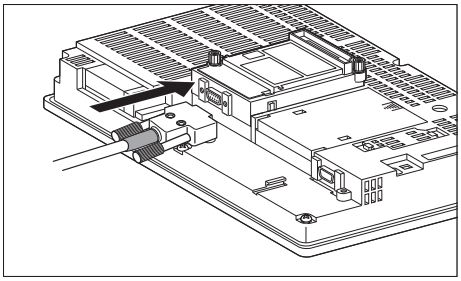
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



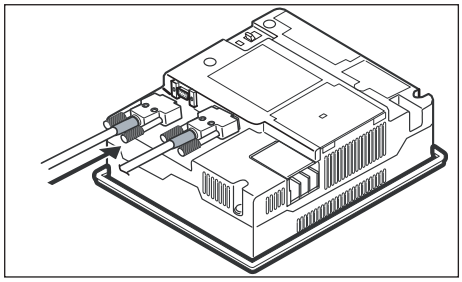
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



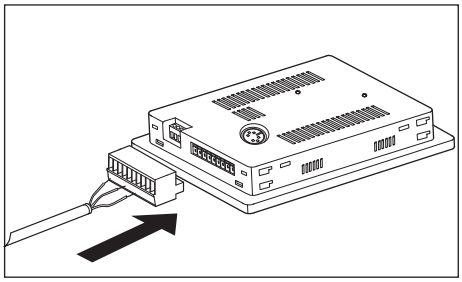
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

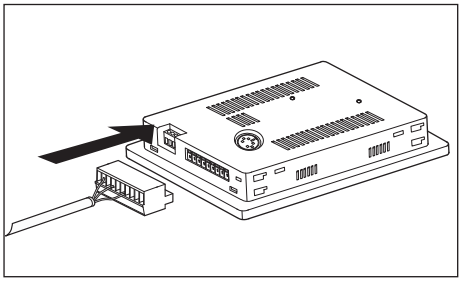


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

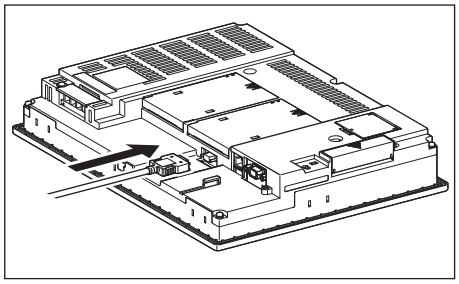


(2) How to connect the RS-422 cable

(a) For GT16

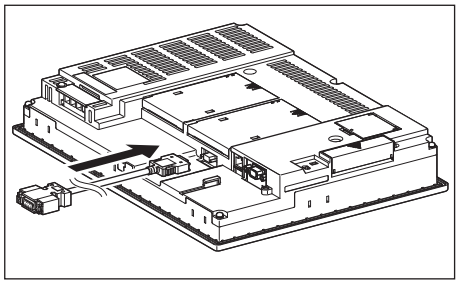
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

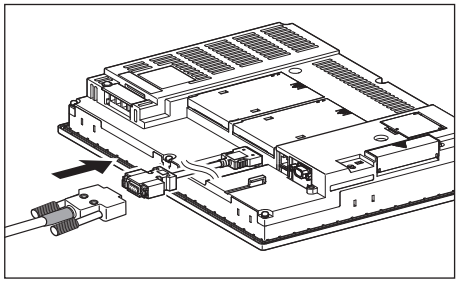


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

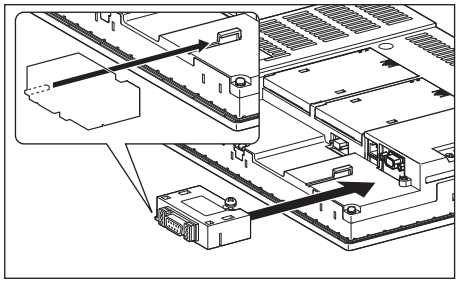


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

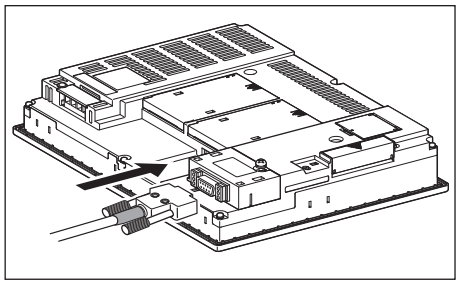


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

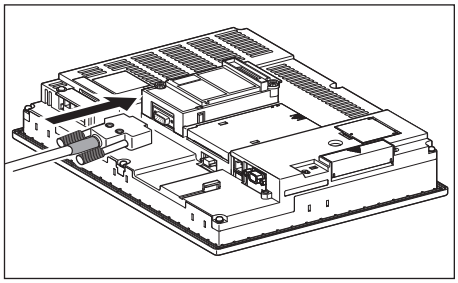


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

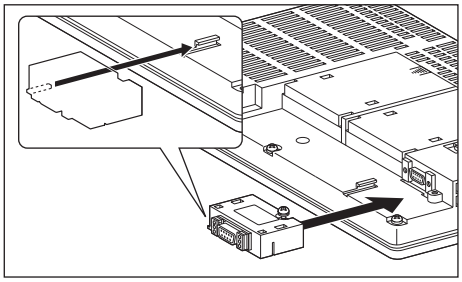
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



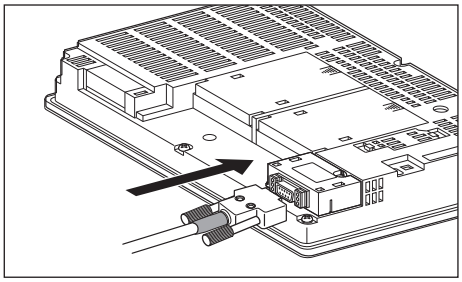
(b) For GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

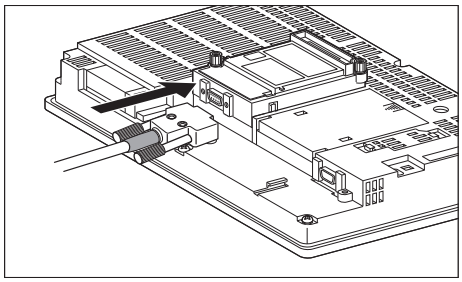


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

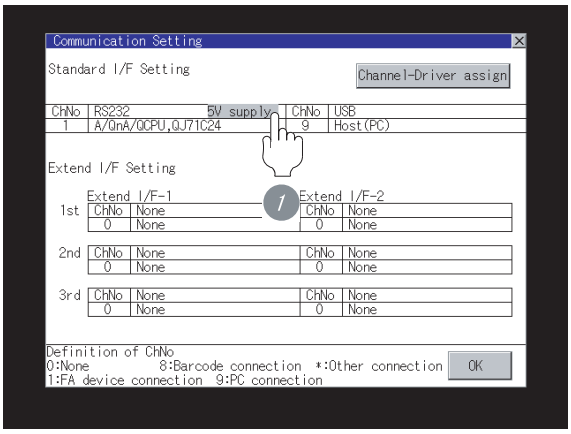
Point

When using the RS-422 conversion unit

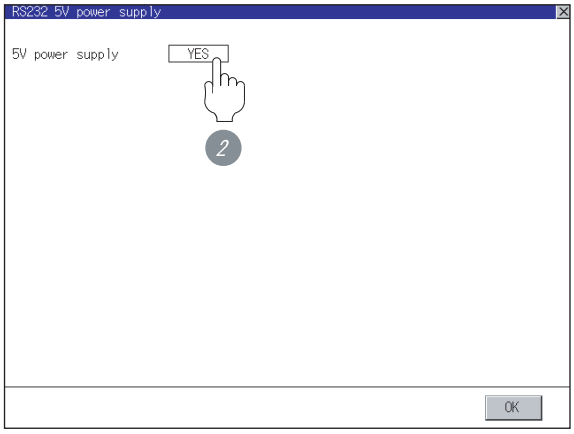
On "Communication Setting" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

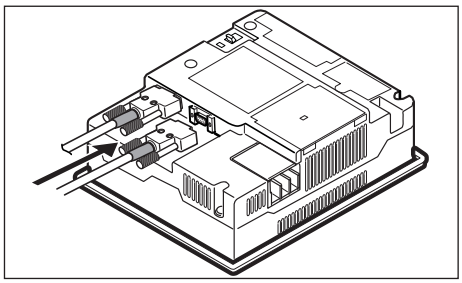


2 Set [5V power supply] to "YES".



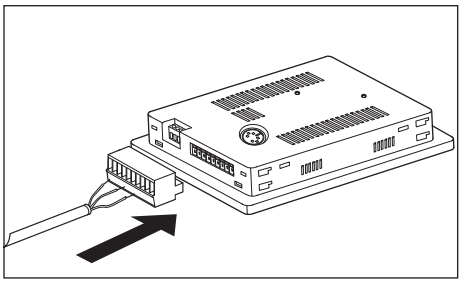
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

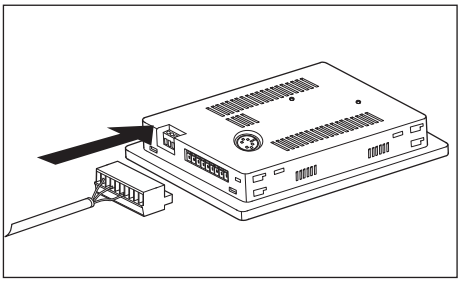


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

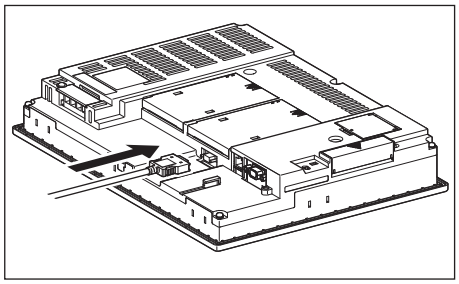


(3) How to connect the RS-485 cable

(a) For GT16

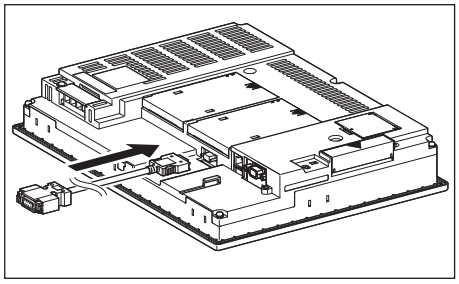
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

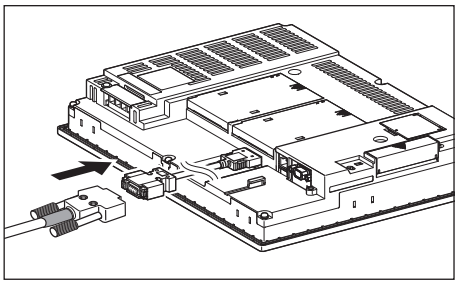


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

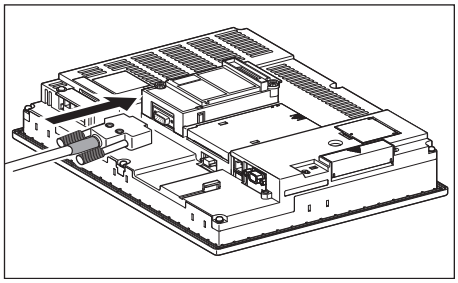


2 Connect the RS-485 cable to the RS-422 connector conversion cable.



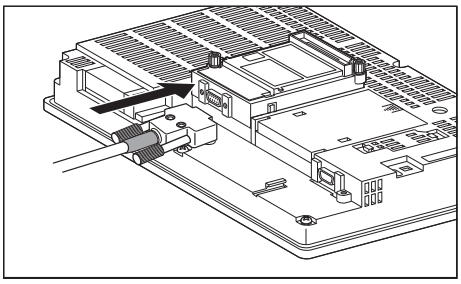
• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the RS-422/485 communication unit on the GOT.



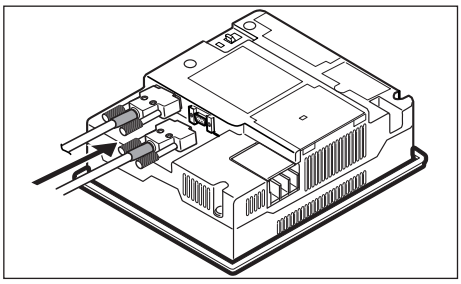
(b) For GT15

1 Connect the RS-485 cable to the RS-422/485 communication unit on the GOT.



(c) For GT11, GT105☐, GT104☐

1 Connect the RS-485 cable to the RS-422 interface on the GOT.



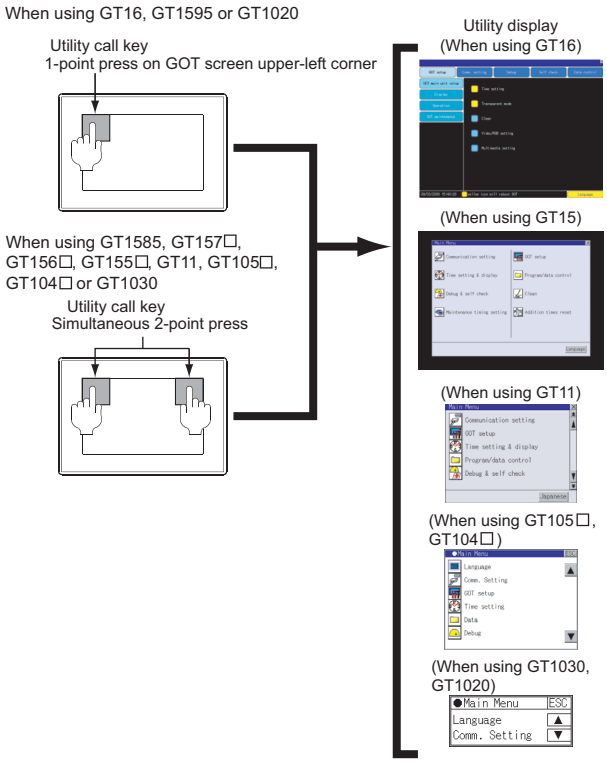
12.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

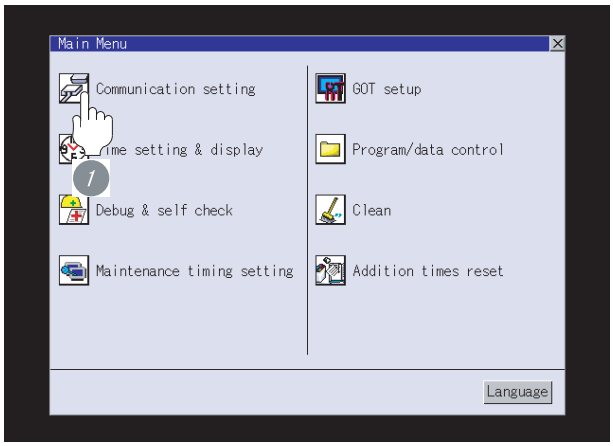


Point

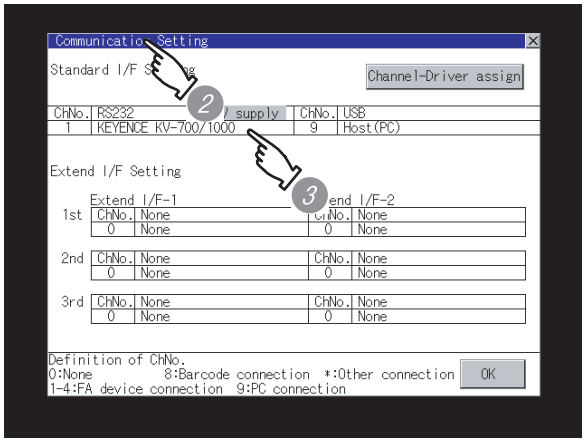
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  KEYENCE KV-700/1000

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 12.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

12.3.7 Checking for normal monitoring

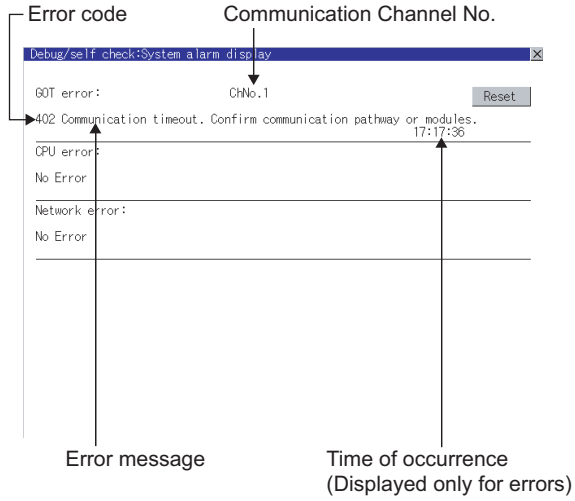
1 Check for errors occurring on the GOT. (GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check (For GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

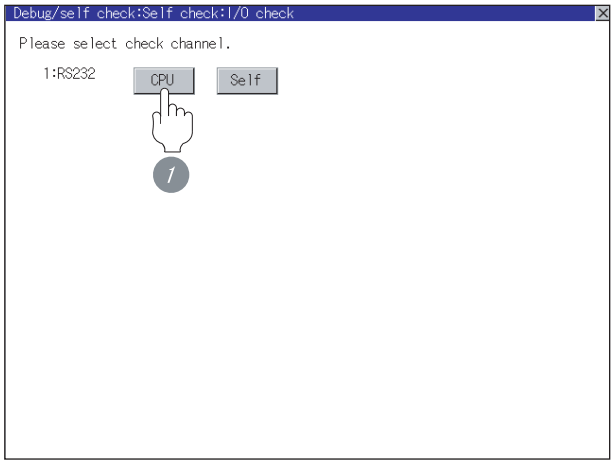
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

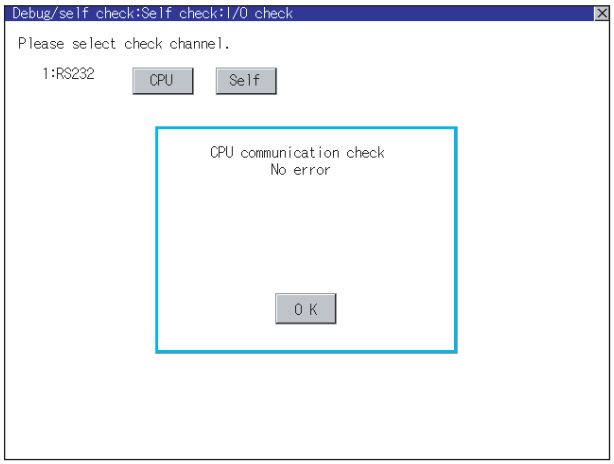
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

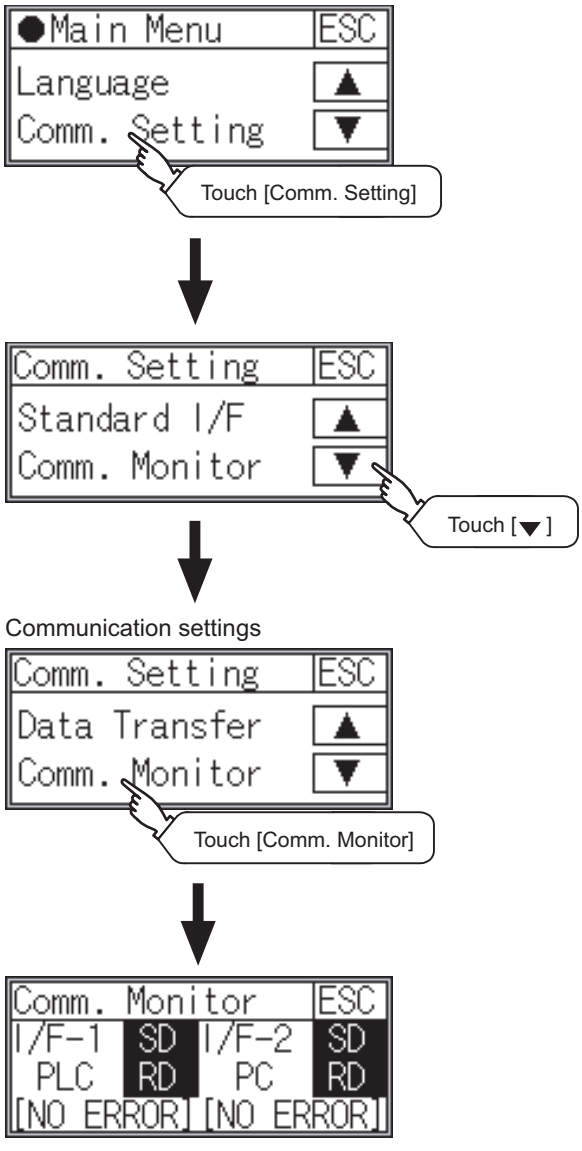
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 12.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

12.4 PLC Side Setting

Point

KEYENCE PLC

For details of KEYENCE PLC, refer to the following manual.

☞ User's Manual for the KEYENCE PLC

Model name		Reference
PLC CPU	KV-3000	Section 12.4.1
	KV-1000	Section 12.4.1
	KV-700	Section 12.4.2
Multi-communication unit	KV-L20R	Section 12.4.3
	KV-L20	
	KV-L20V	

12.4.1 Connecting KV-3000,KV-1000

Setting items	Set value
Transmission speed	9600bps to 115200bps*1
Data length	8 bits
Parity bit	Even
Stop bit	1 bit

*1 There is no transmission speed setting on the PLC side. The transmission speed of the PLC side is automatically adjusted to that of the GOT side.

12.4.2 Connecting KV-700

Setting items	Set value
Transmission speed	9600bps
Data length	8 bits
Parity bit	Even
Stop bit	1 bit

12.4.3 Connecting multi-communication unit (KV-L20R, KV-L20, KV-L20V)

1 Communication settings

Setting items	Set value
Communication mode	KV mode (upper link)
Transmission speed*1*2	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data length	8 bits
Parity bit	Even
Stop bit	1 bit
Station No. ‘*3	0 to 9

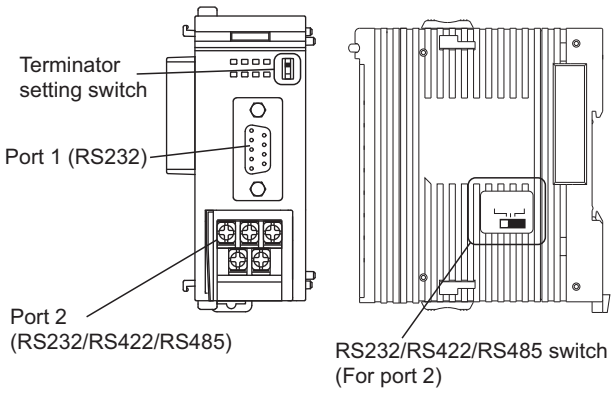
*1 Only the transmission speed that can be set on the GOT side is indicated.

*2 Set the transmission speed according to that of the GOT side
For the setting method of the transmission speed on the GOT side, refer to the following.
☞ Section 12.3.3 Setting communication interface (Communication settings)

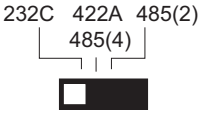
*3 Set the station No. according to the host address on the GOT side.
For the setting method of the host address on the GOT side, refer to the following.
☞ Section 12.3.3 Setting communication interface (Communication settings)

2 Dipswitch settings

(1) When using KV-L20R or KV-L20



(a) RS232/RS422/RS485 switch (For port 2) (When using KV-L20R)



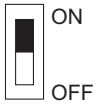
Settings	
When carrying out RS-232 communication	When carrying out RS-422 communication
RS-232C	RS-422A 485(4)

(When using KV-L20)



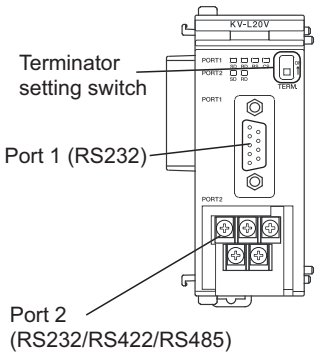
Settings	
When carrying out RS-232 communication	When carrying out RS-422 communication
RS-232C	RS-422A

(b) Terminator setting switch
Set when carrying out RS-422 communication..



Settings	
When multi-communication unit is a terminal	When multi-communication unit is not a terminal
ON	OFF

(2) When using KV-L20V



(a) Terminator setting switch
Set when carrying out RS-422 communication.



Settings	
When multi-communication unit is a terminal	When multi-communication unit is not a terminal
ON	OFF

12.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	KEYENCE PLC connection	Supporting the KEYENCE PLC connection	2.18U	Communication driver KEYENCE KV-700/1000 [02.01.**]
GT24V10 20 30	KEYENCE PLC connection	Supporting the connections to GT10	2.73B	Standard monitor OS [01.07.**] Communication driver KEYENCE KV-700/1000 [01.00.**]
GT15 GT11 Serial	KEYENCE PLC connection	Supporting the KEYENCE PLC KV-3000 and KV-5000 connection	2.77F	Communication driver KEYENCE KV-700/1000 [03.12.**]
GT24V10 20 30				Standard monitor OS [01.08.**] Communication driver KEYENCE KV-700/1000 [01.03.**]
GT16	KEYENCE PLC connection	Supporting the connections to GT16	2.90U	Standard monitor OS [04.00.**] Communication driver KEYENCE KV-700/1000 [04.02.**]
GT105 4	KEYENCE PLC connection	Supporting the connections to GT105 ☐ Supporting the connections to GT104 ☐		Standard monitor OS [01.10.**] Communication driver KEYENCE KV-700/1000 [01.05.**]

MEMO

13

CONNECTION TO KOYO EI PLC



13.1 System Configuration . . . . . page 13-2

This section describes the equipment and cables needed when connecting a GOT to an KOYO EI PLC.
Select a system suitable for your application.

13.2 Connection Cable . . . . . page 13-27

This section describes the specifications of the cables needed when connecting to an KOYO EI PLC.
Check the specifications of the connection cables.

13.3 Preparatory Procedures for Monitoring . . . . . page 13-41

This section provides the procedures to be followed before performing monitoring in connection to an KOYO EI PLC.
This procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

13.4 PLC Side Setting . . . . . page 13-50

The PLC side settings for GOT connection are explained.

When checking the PLC side settings, refer to this section.

13.5 Precautions . . . . . page 13-54

This section describes the precautions about PLC connection.
Refer to this section without fail before starting PLC connection.

13.6 List of Functions Added by Version Upgrade . . . . . page 13-55

This section describes the functions added by version upgrade of GT Designer2 or OS.

13.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

13.1.1 Connecting to KOSTAC SU Series

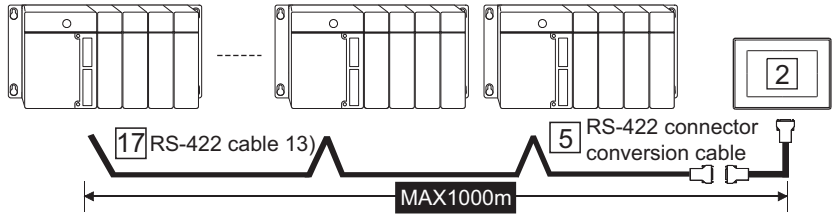
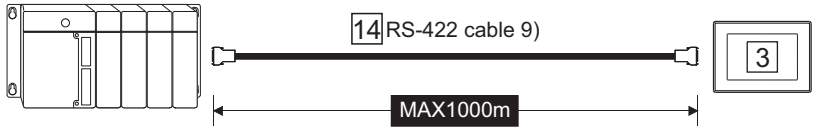
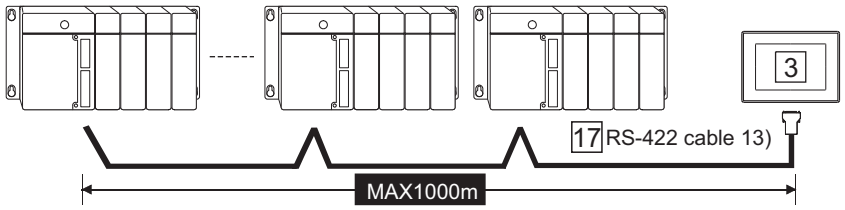
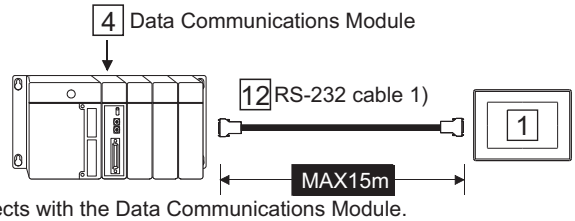
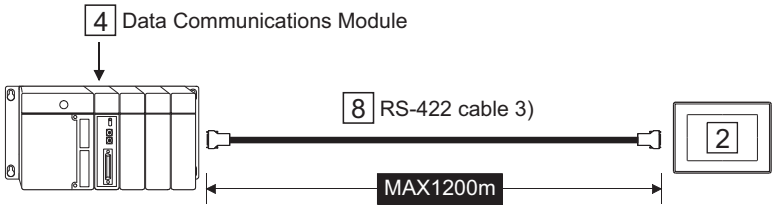
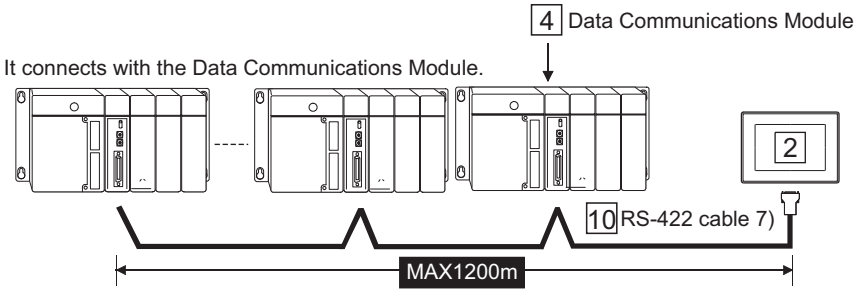
Communication driver

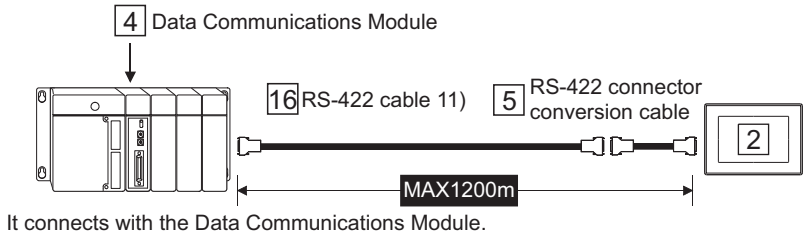
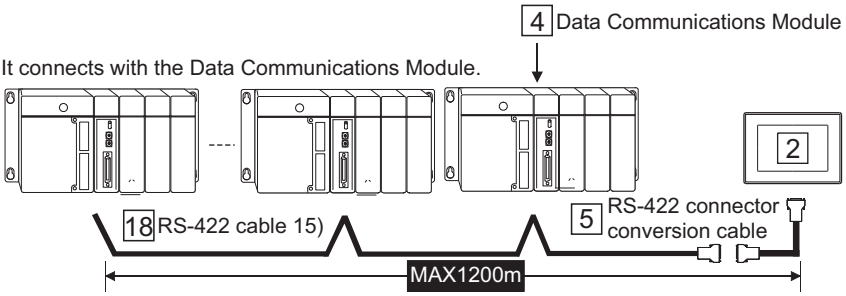
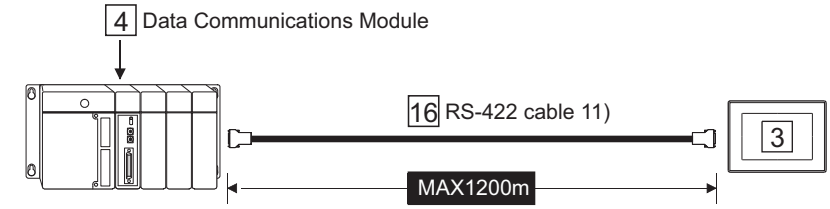
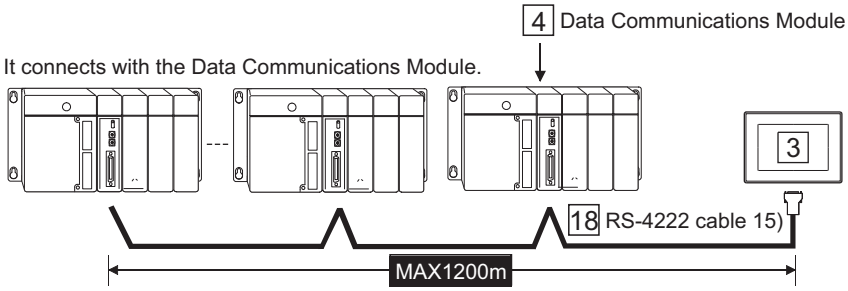
KOYO KOSTAC/DL

1 System configuration and connection conditions

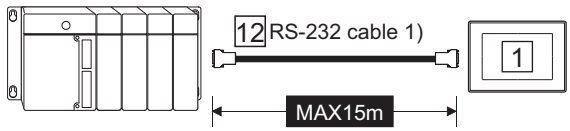
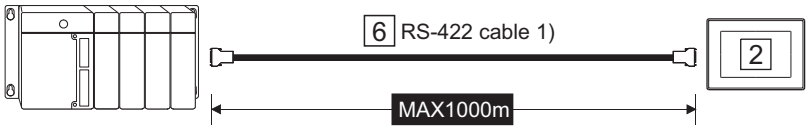
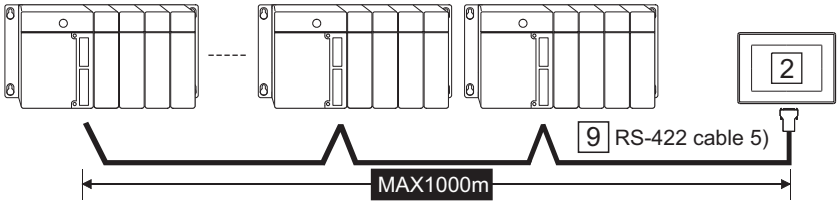
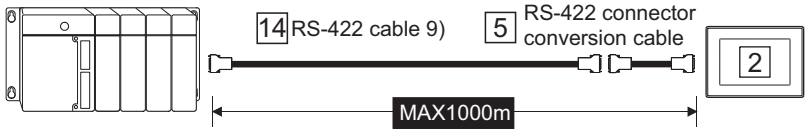
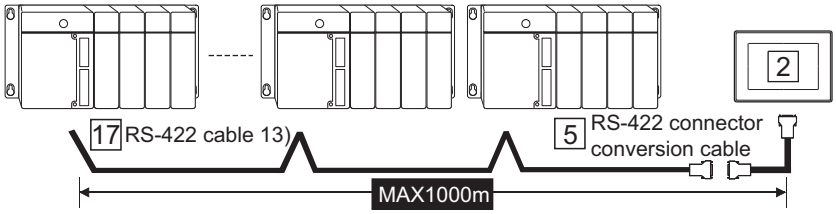
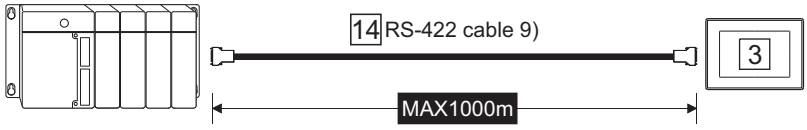
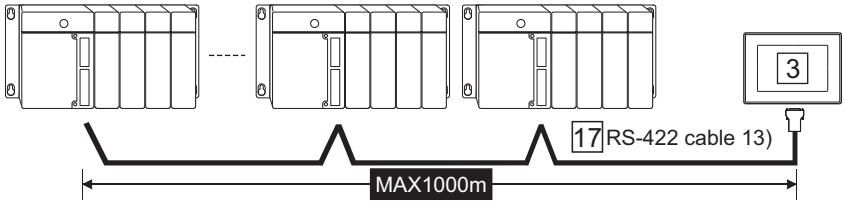
Connecting to SU-5E/6B

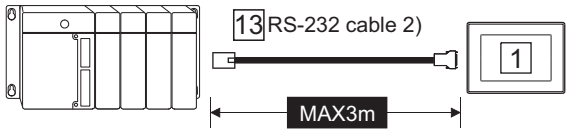
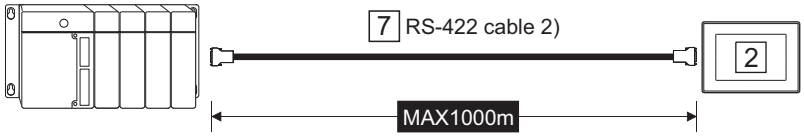
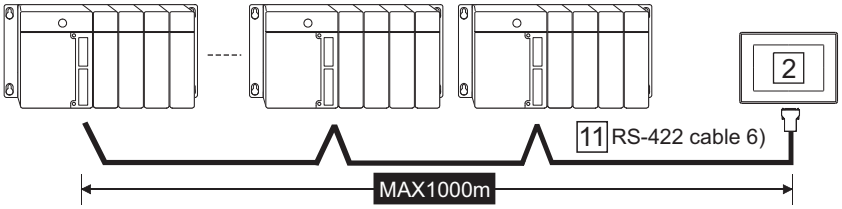
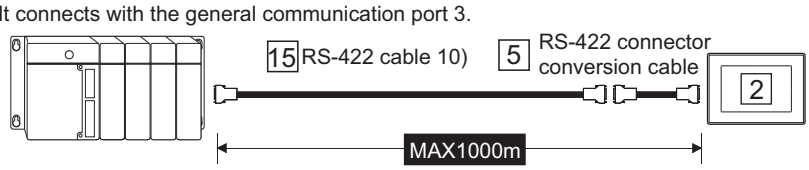
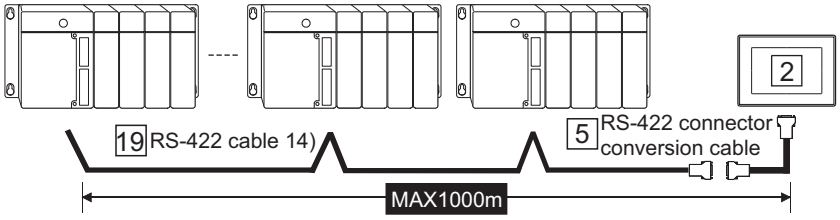
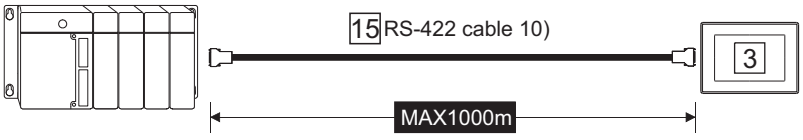
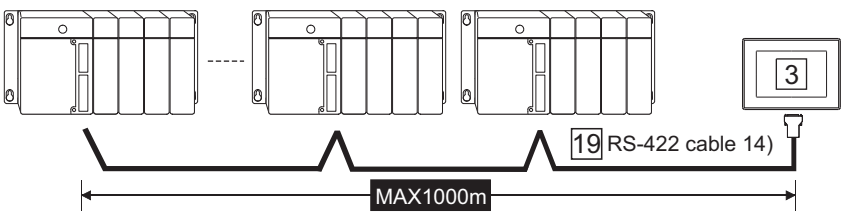
Connection conditions		System configuration	Model
Nunber of GOTs	Distance		
1	15m or less	It connects with the general communication port. 12 RS-232 cable 1) 1 MAX15m	GT16 GT15 GT11 Serial
	1000m or less	It connects with the general communication port. 6 RS-422 cable 1) 2 MAX1000m	GT16
		It connects with the general communication port. 2 9 RS-422 cable 5) MAX1000m	GT16
		It connects with the general communication port. 14 RS-422 cable 9) 5 RS-422 connector conversion cable 2 MAX1000m	GT16

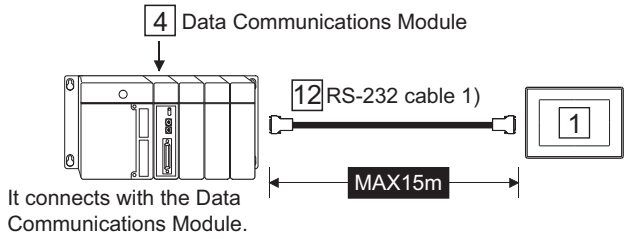
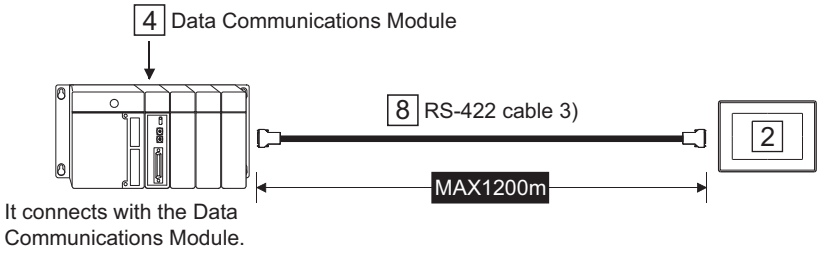
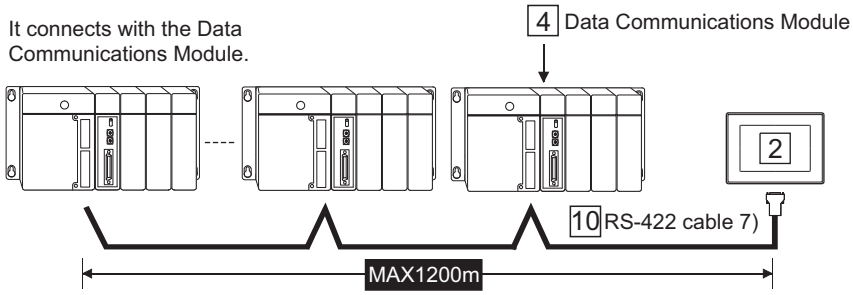
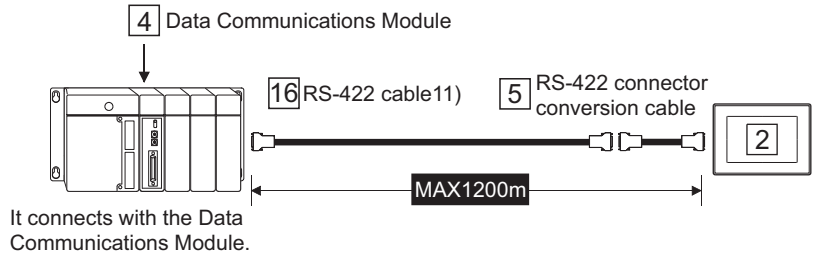
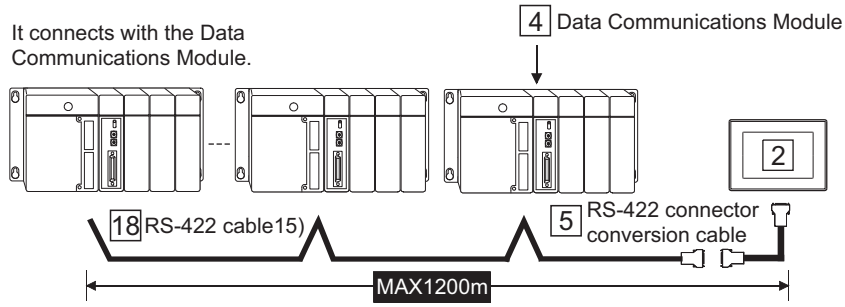
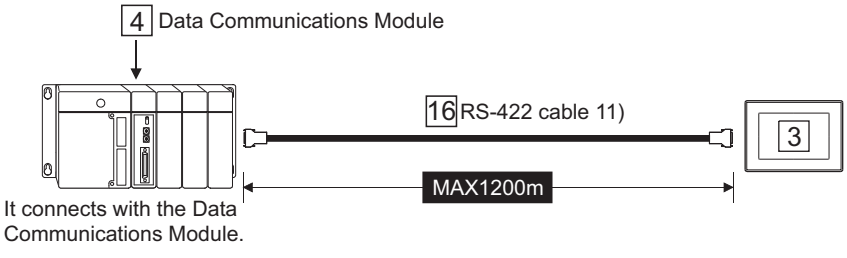
Connection conditions		System configuration	Model
Nunber of GOTs	Distance		
1	1000m or less	It connects with the general communication port.  	GT16
		It connects with the general communication port.  	GT16 GT15 GT11 Serial
		It connects with the general communication port.  	GT16 GT15 GT11 Serial
	15m or less	 It connects with the Data Communications Module.	GT16 GT15 GT11 Serial
	1200m or less	 It connects with the Data Communications Module.	GT16
		 	GT16

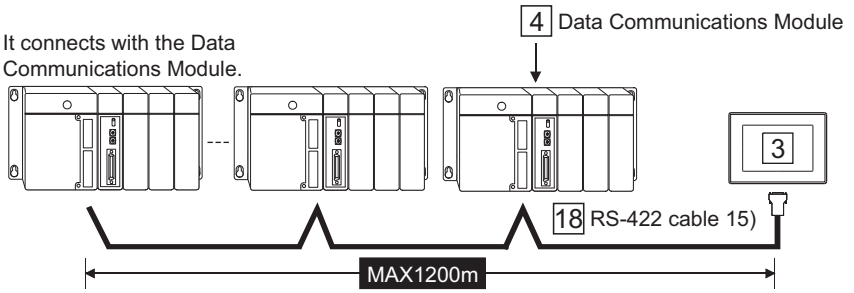
Connection conditions		System configuration	Model
Nunber of GOTs	Distance		
1	1200m or less	 It connects with the Data Communications Module.	GT16
		 It connects with the Data Communications Module.	GT16
		 It connects with the Data Communications Module.	GT16 GT15 GT11 Serial
		 It connects with the Data Communications Module.	GT16 GT15 GT11 Serial

Connecting to SU-5M/6M

Connection conditions		System configuration	Model
Nunber of GOTs	Distance		
1	15m or less	It connects with the general communication port 1. 	GT16 GT15 GT11 Serial
	1000m or less	It connects with the general communication port 1. 	GT16
		It connects with the general communication port 1. 	GT16
		It connects with the general communication port 1. 	GT16
		It connects with the general communication port 1. 	GT16
		It connects with the general communication port 1. 	GT16 GT15 GT11 Serial
		It connects with the general communication port 1. 	GT16 GT15 GT11 Serial

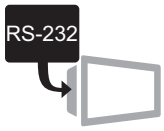
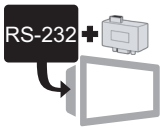
Connection conditions		System configuration	Model
Nunber of GOTs	Distance		
1	3m or less	It connects with the general communication port 2. 	GT16 GT15 GT11 Serial
	1000m or less	It connects with the general communication port 3. 	GT16
		It connects with the general communication port 3. 	GT16
		It connects with the general communication port 3. 	GT16
		It connects with the general communication port 3. 	GT16
		It connects with the general communication port 3. 	GT16 GT15 GT11 Serial
		It connects with the general communication port 3. 	GT16 GT15 GT11 Serial

Connection conditions		System configuration	Model
Nunber of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial
	1200m or less		GT16
			GT16
			GT16
			GT16
			GT16 GT15 GT11 Serial

Connection conditions		System configuration	Model
Nunber of GOTs	Distance		
1	1200m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	NO.	Name	Model name
	4	Data Communications Module	U-01DM

4 is manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.For details of the product, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

(3) Cable

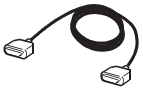
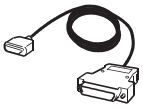
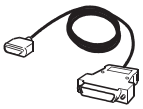
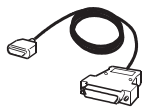
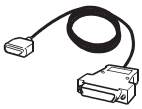
Image	NO.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	6	RS-422 cable 1) • Between CPU and GOT	(To be prepared by the user. Section 13.2 Connection Cable)	GT16
	7	RS-422 cable 2) • Between CPU and GOT		
	8	RS-422 cable 3) • Between Data Communications Module and GOT		
	9	RS-422 cable 5) • Between CPU and GOT		
	10	RS-422 cable 7) • Between Data Communications Module and GOT		
	11	RS-422 cable 6) • Between CPU and GOT		
	12	RS-232 cable 1) • Between CPU and GOT • Between Data Communications Module and GOT	(To be prepared by the user. Section 13.2 Connection Cable)	GT16 GT15 GT11 Serial
	13	RS-232 cable 2) • Between CPU and GOT	Z-20JP(Programmer connecting cable)+S9CNS1(Conversion connector)	GT16 GT15 GT11 Serial

Image	NO.	Name	Model name	Model
	14	RS-422 cable 1) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable	(To be prepared by the user. ☞ Section 13.2 Connection Cable)	GT16 GT15 GT11 Serial
	15	RS-422 cable 2) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable		
	16	RS-422 cable 3) • Between Data Communications Module and GOT • Between Data Communications Module and RS-422 connector conversion cable		
	17	RS-422 cable 5) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable		
	18	RS-422 cable 7) • Between Data Communications Module and GOT • Between Data Communications Module and RS-422 connector conversion cable		
	19	RS-422 cable 6) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable	(To be prepared by the user. ☞ Section 13.2 Connection Cable)	GT16 GT15 GT11 Serial

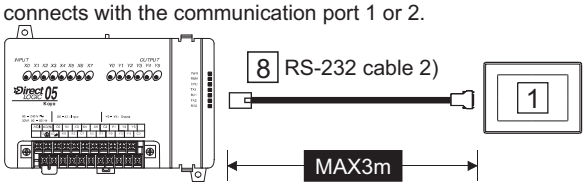
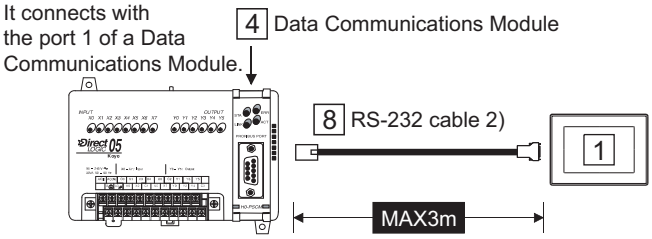
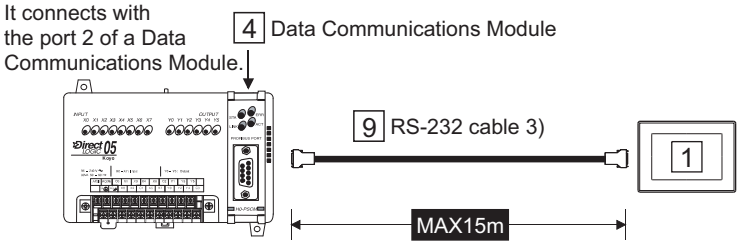
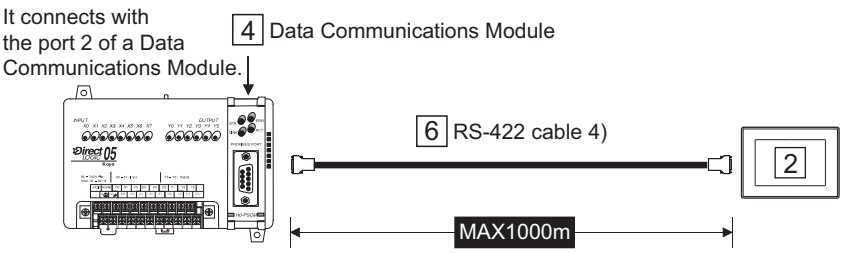
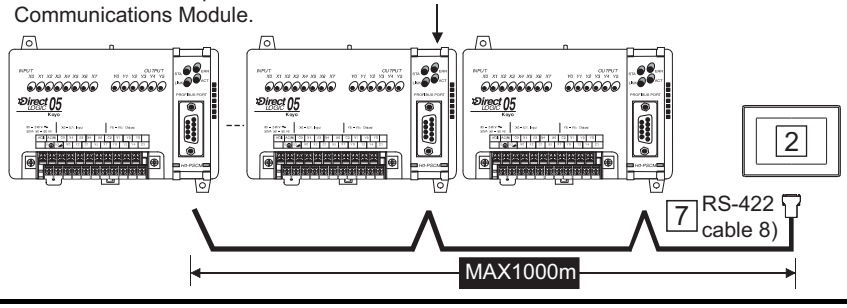
13 is manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.For details of the product, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

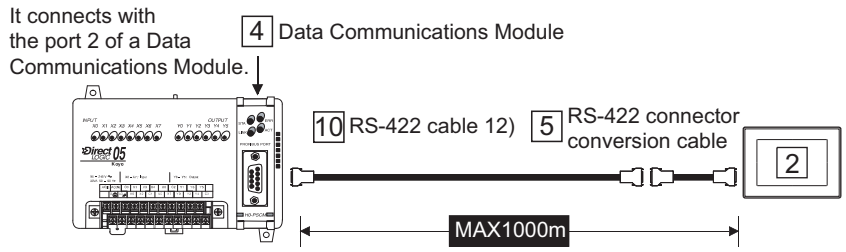
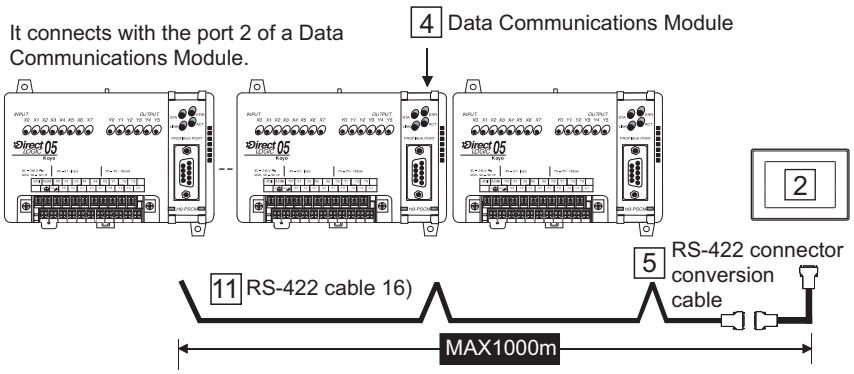
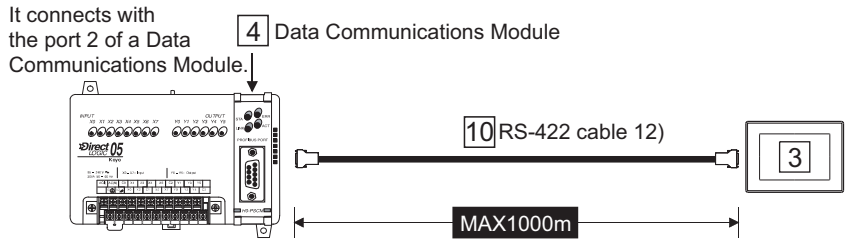
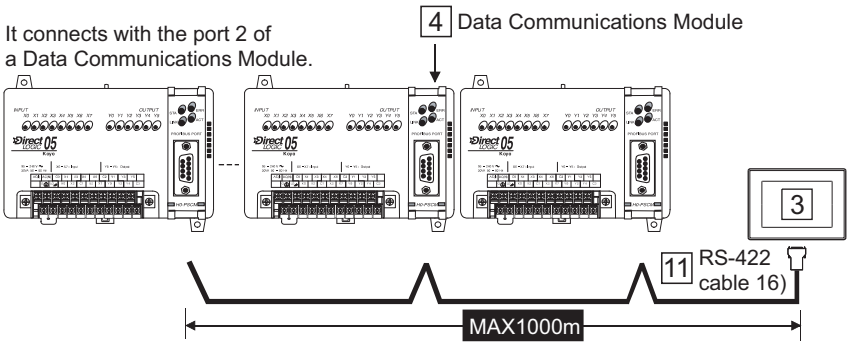
Communication driver

KOYO KOSTAC/DL

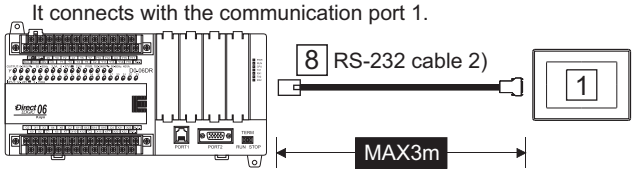
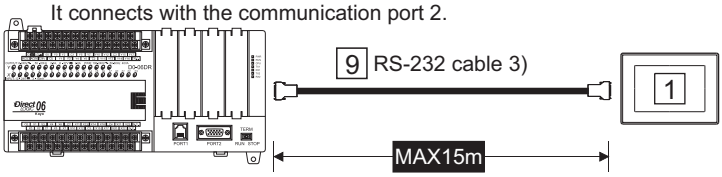
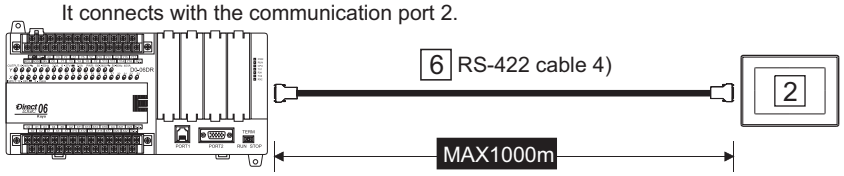
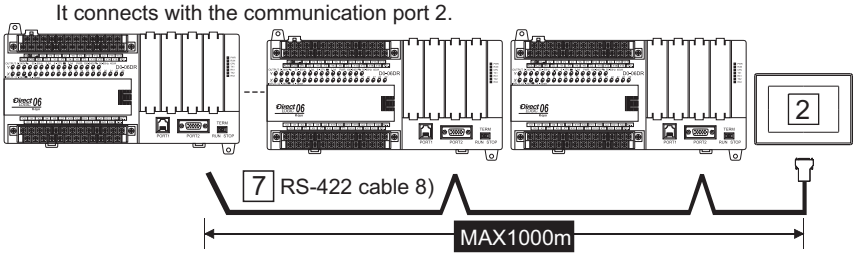
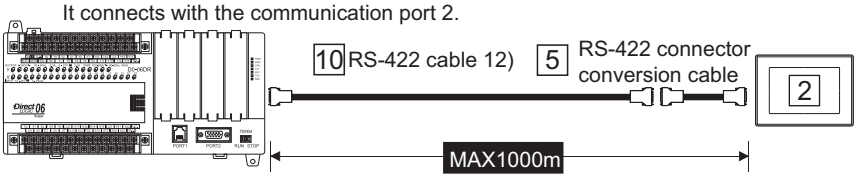
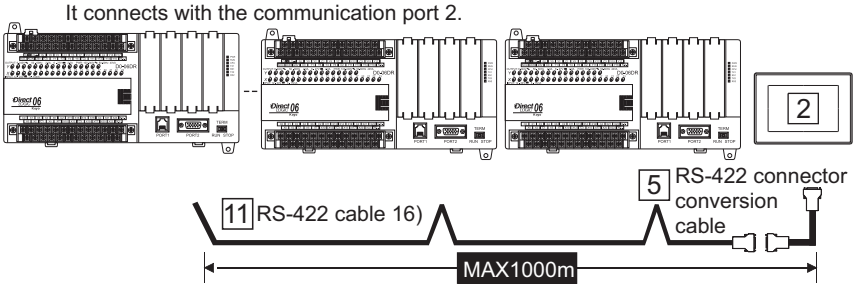
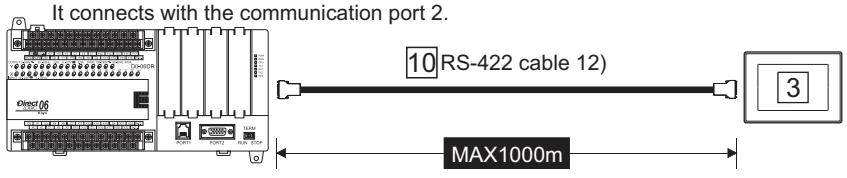
1 System configuration and connection conditions

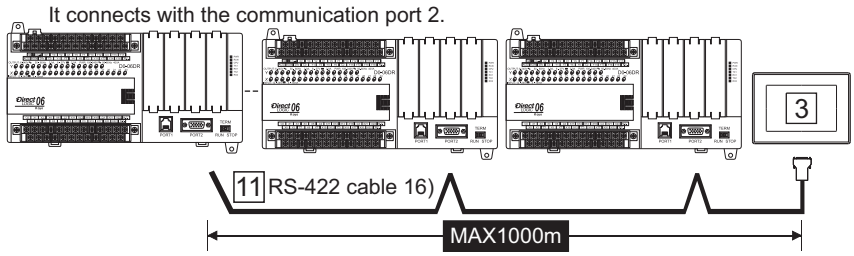
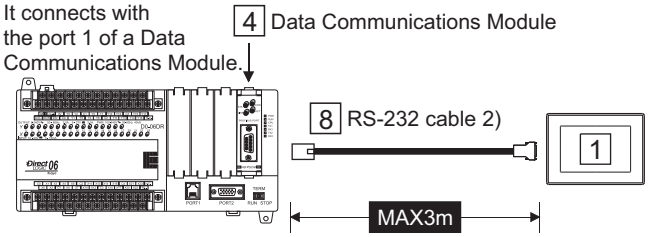
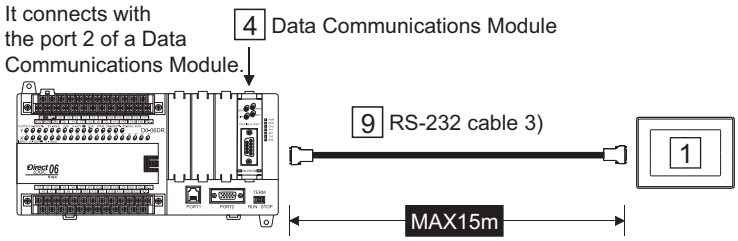
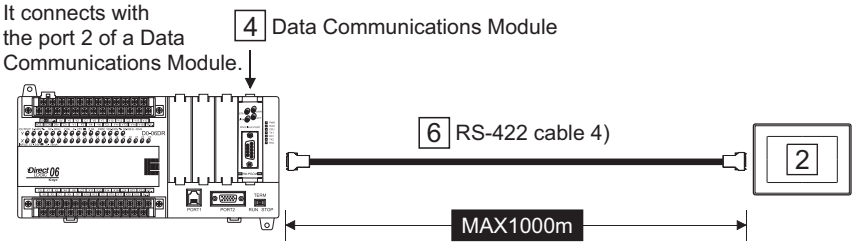
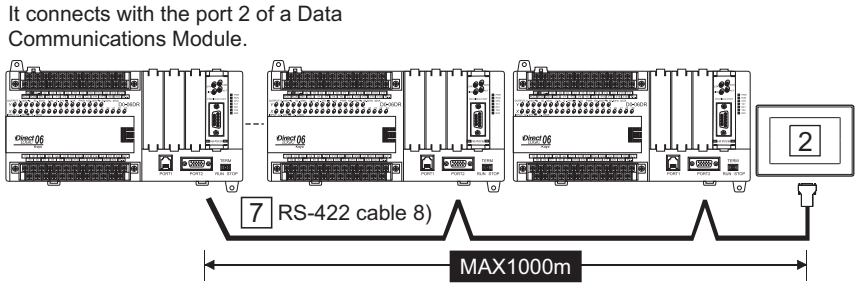
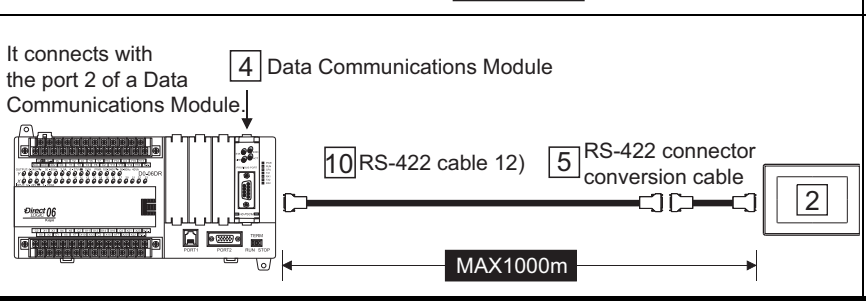
Connecting to DirectLOGIC 05 series

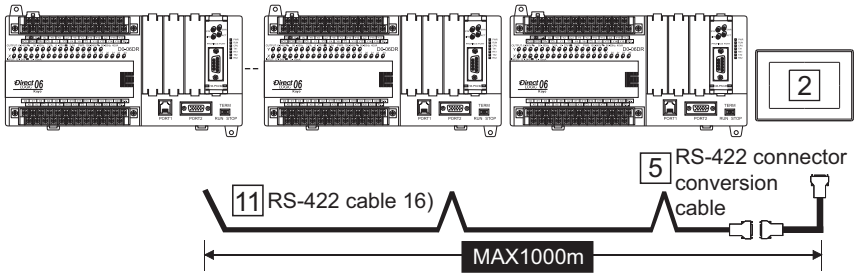
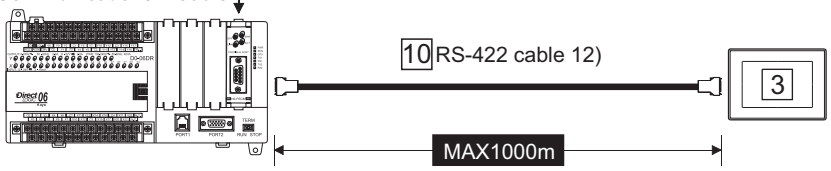
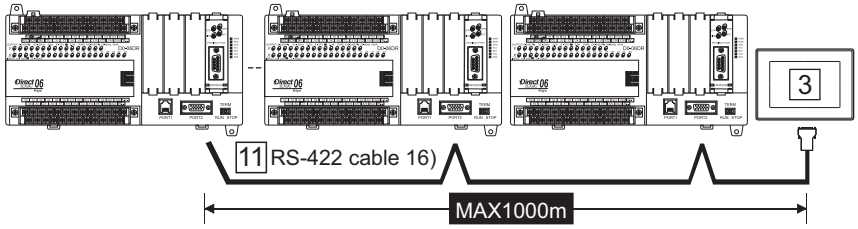
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less	It connects with the communication port 1 or 2. 	GT16 GT15 GT11 Serial
		It connects with the port 1 of a Data Communications Module. 	GT16 GT15 GT11 Serial
	15m or less	It connects with the port 2 of a Data Communications Module. 	GT16 GT15 GT11 Serial
	1000m or less	It connects with the port 2 of a Data Communications Module. 	GT16
		It connects with the port 2 of a Data Communications Module. 	GT16

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1000m or less		GT16
			GT16
			GT16 GT15 GT11 Serial
			GT16 GT15 GT11 Serial

Connecting to DirectLOGIC 06 series

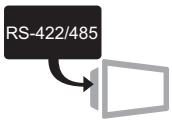
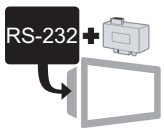
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less	It connects with the communication port 1. 	GT16 GT15 GT11 Serial
	15m or less	It connects with the communication port 2. 	GT16 GT15 GT11 Serial
	1000m or less	It connects with the communication port 2. 	GT16
		It connects with the communication port 2. 	GT16
		It connects with the communication port 2. 	GT16
		It connects with the communication port 2. 	GT16
		It connects with the communication port 2. 	GT16 GT15 GT11 Serial

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1000m or less		GT16 GT15 GT11 Serial
	3m or less		GT16 GT15 GT11 Serial
	15m or less		GT16 GT15 GT11 Serial
	1000m or less		GT16
			GT16
			GT16

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1000m or less	It connects with the port 2 of a Data Communications Module.  	GT16
		It connects with the port 2 of a Data Communications Module. 4 Data Communications Module  	GT16 GT15 GT11 Serial
		It connects with the port 2 of a Data Communications Module.  	GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

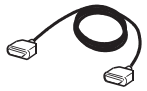
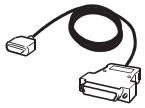
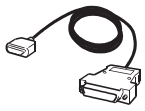
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	NO	Name	Model name
	4	Data Communications Module	D0-DCM

4 is manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.For details of the product, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

(3) Cable

Image	NO	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	6	RS-422 cable 4) • Between CPU and GOT • Between Data Communications Module and GOT	(To be prepared by the user. Section 13.2 Connection Cable)	GT16
	7	RS-422 cable 8) • Between CPU and GOT • Between Data Communications Module and GOT		
	8	RS-232 cable 2) • Between CPU and GOT • Between Data Communications Module and GOT	Z-20P(Programmer connecting cable) + S-9CNS1 (Conversion connector)	GT16 GT15 GT11 Serial
	9	RS-232 cable 3) • Between CPU and GOT • Between Data Communications Module and GOT	(To be prepared by the user. Section 13.2 Connection Cable)	GT16 GT15 GT11 Serial
	10	RS-422 cable 4) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable • Between Data Communications Module and GOT • Between Data Communications Module and RS-422 connector conversion cable		
	11	RS-422 cable 8) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable • Between Data Communications Module and GOT • Between Data Communications Module and RS-422 connector conversion cable		

8 is manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.For details of the product, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

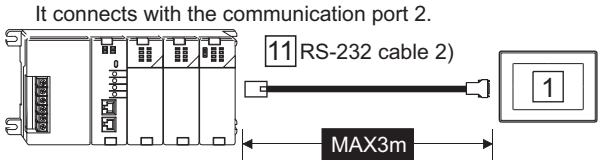
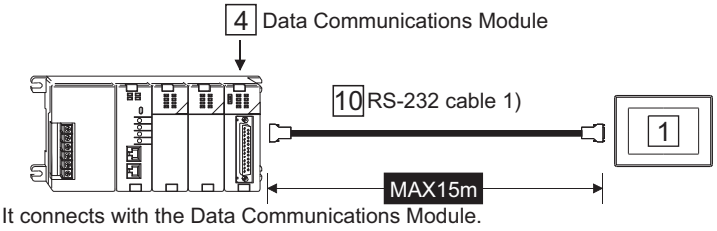
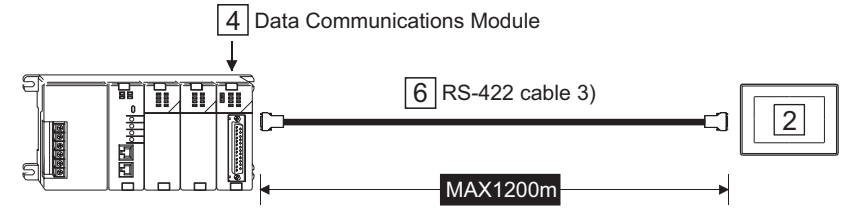
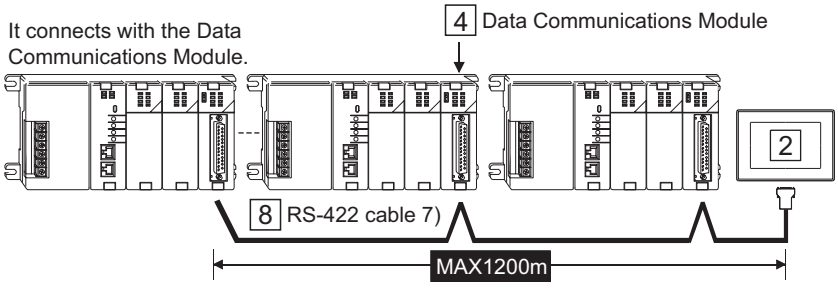
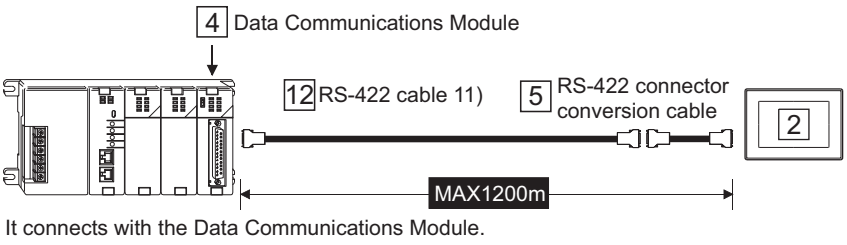
13.1.3 Connecting to DirectLOGIC 205 series

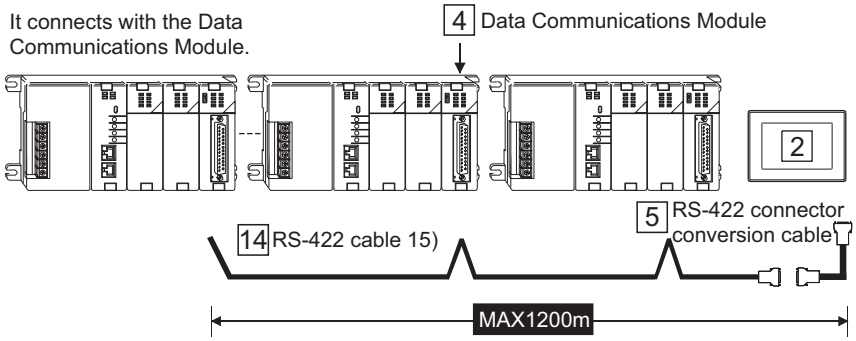
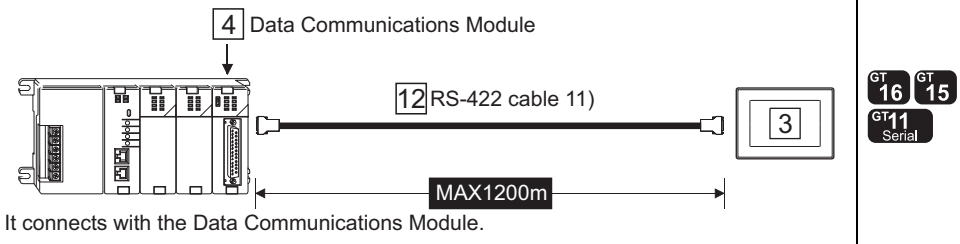
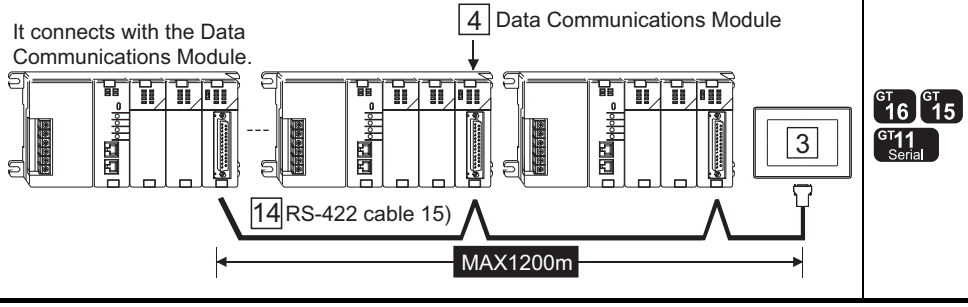
Communication driver

KOYO KOSTAC/DL

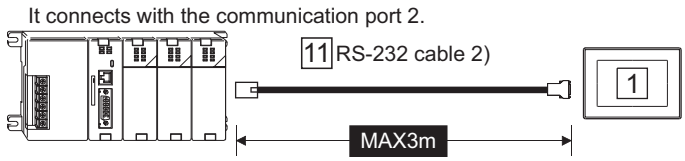
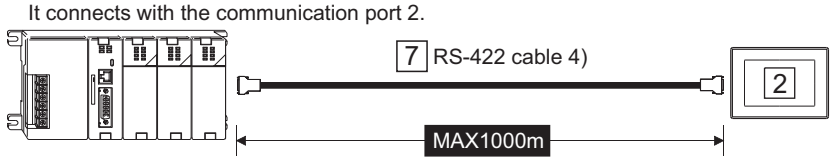
1 System configuration and connection conditions

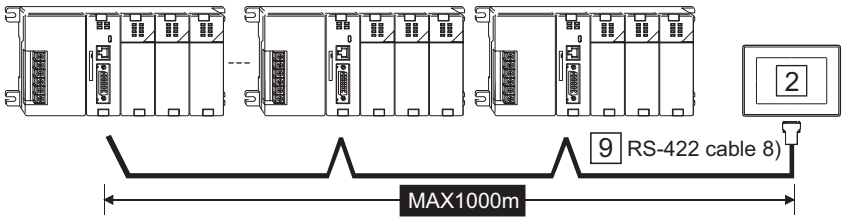
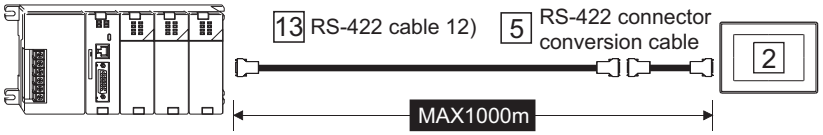
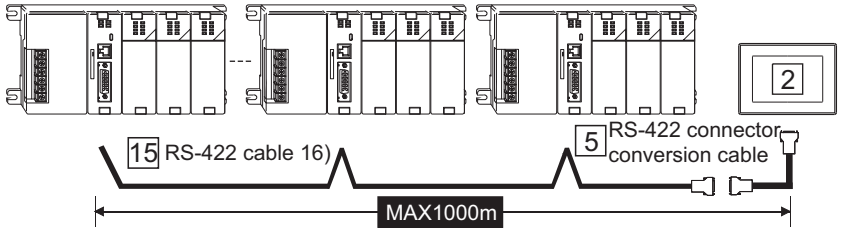
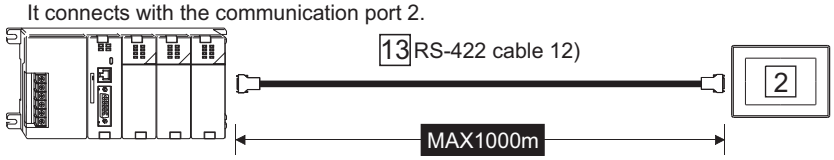
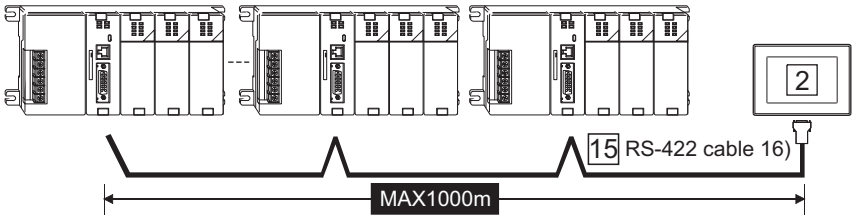
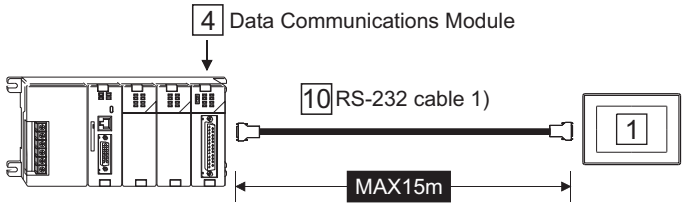
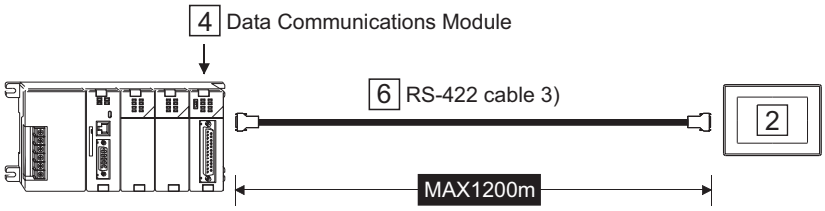
Connecting to D2-240

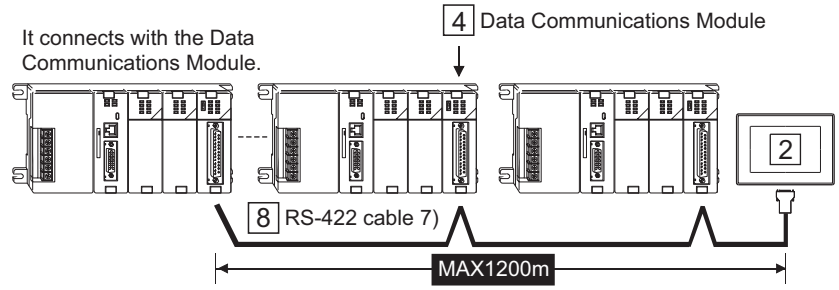
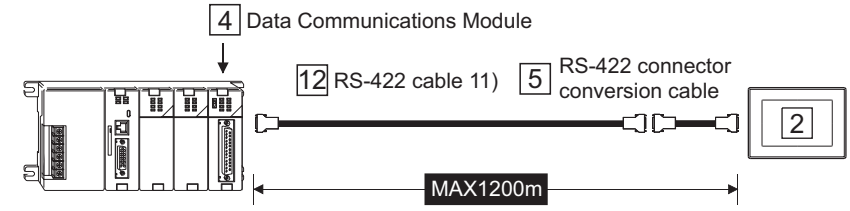
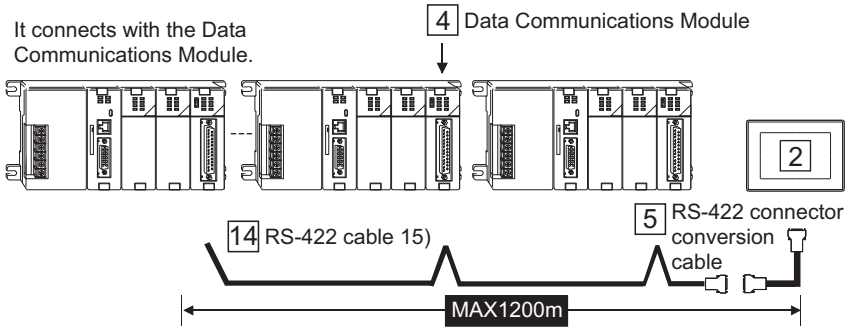
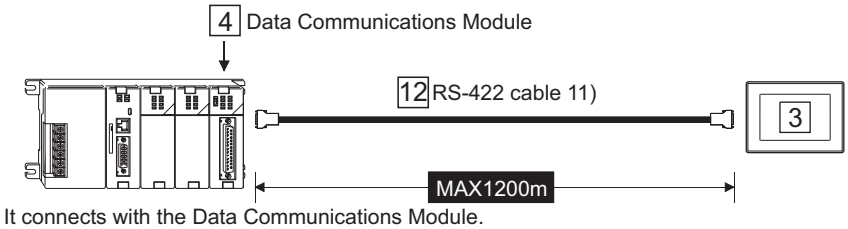
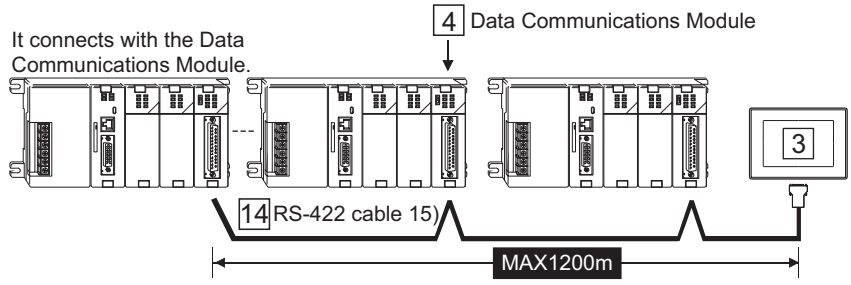
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less		GT16 GT15 GT11 Serial
	15m or less		GT16 GT15 GT11 Serial
	1200m or less		GT16
			GT16
			GT16

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1200m or less		GT16
			GT16 GT15 GT11 Serial
			GT16 GT15 GT11 Serial

Connecting to D2-250-1,DC260

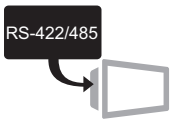
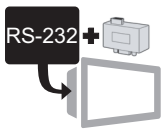
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less		GT16 GT15 GT11 Serial
	1000m or less		GT16

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1000m or less	It connects with the communication port 2. 	GT16
		It connects with the communication port 2. 	GT16
		It connects with the communication port 2. 	GT16
		It connects with the communication port 2. 	GT16 GT15 GT11 Serial
		It connects with the communication port 2. 	GT16 GT15 GT11 Serial
	15m or less	 It connects with the Data Communications Module.	GT16 GT15 GT11 Serial
	1200m or less	 It connects with the Data Communications Module.	GT16

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1200m or less		GT16
			GT16
			GT16
			GT16 GT15 GT11 Serial
			GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

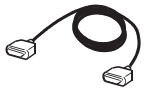
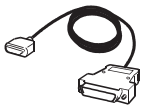
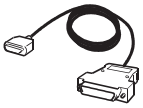
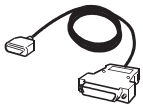
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	NO	Name	Model name
	4	Data Communications Module	D2-DCM

4 is manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.For details of the product, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

(3) Cable

Image	NO	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	6	RS-422 cable 3) • Between Data Communications Module and GOT	(To be prepared by the user. ☞ Section 13.2 Connection Cable)	GT16
	7	RS-422 cable 4) • Between CPU and GOT		
	8	RS-422 cable 7) • Between Data Communications Module and GOT		
	9	RS-422 cable 8) • Between CPU and GOT		
	10	RS-232 cable 1) • Between CPU and GOT • Between Data Communications Module and GOT	(To be prepared by the user. ☞ Section 13.2 Connection Cable)	GT16 GT15 GT11 Serial
	11	RS-232 cable 2) • Between CPU and GOT	Z-20JP(Programmer connecting cable)+S9CNS1(Conversion connector)	GT16 GT15 GT11 Serial
	12	RS-422 cable 11) • Between Data Communications Module and GOT • Between Data Communications Module and RS-422 connector conversion cable	(To be prepared by the user. ☞ Section 13.2 Connection Cable)	GT16 GT15 GT11 Serial
	13	RS-422 cable 12) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable		
	14	RS-422 cable 15) • Between Data Communications Module and GOT • Between Data Communications Module and RS-422 connector conversion cable		
	15	RS-422 cable 16) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable		

11 is manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.For details of the product, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

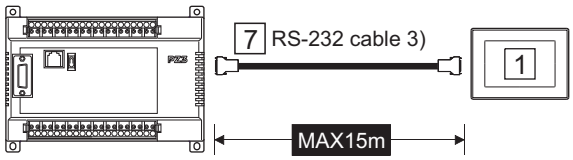
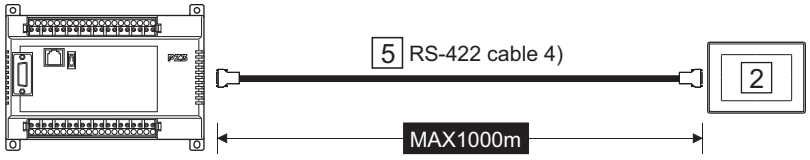
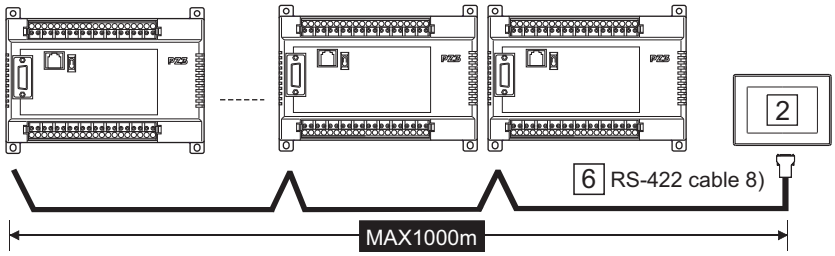
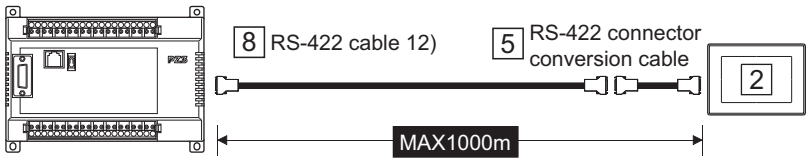
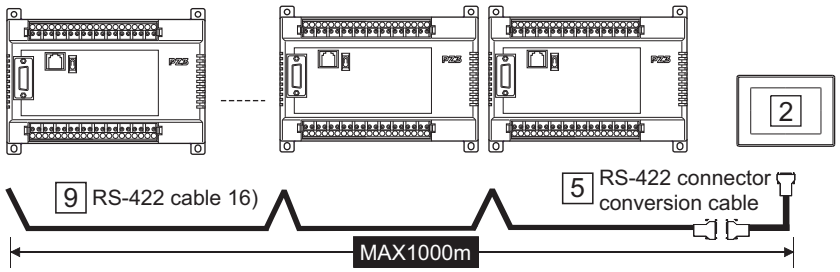
13.1.4 Connecting to PZ Series

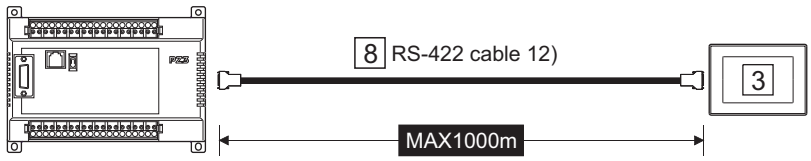
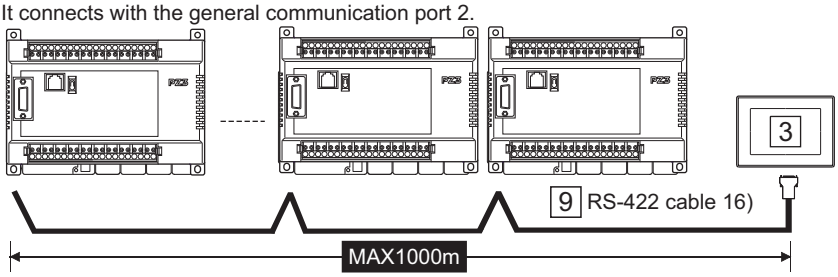
Communication driver

KOYO KOSTAC/DL

1 System configuration and connection conditions

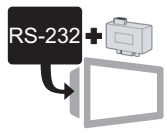
Connecting to PZ3

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less	It connects with the general communication port 2. 	GT16 GT15 GT11 Serial
	1000m or less	It connects with the general communication port 2. 	GT16
		It connects with the general communication port 2. 	GT16
		It connects with the general communication port 2. 	GT16
		It connects with the general communication port 2. 	GT16

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1000m or less	It connects with the general communication port 2. 	GT16 GT15 GT11 Serial
		It connects with the general communication port 2. 	GT16 GT15 GT11 Serial

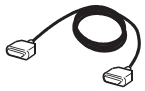
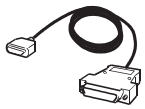
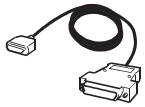
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	NO	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	5	RS-422 cable 4) • Between CPU and GOT	(To be prepared by the user. ☞ Section 13.2 Connection Cable)	GT16
	6	RS-422 cable 8) Between CPU and GOT		
	7	RS-232 cable 3) • Between CPU and GOT	(To be prepared by the user. ☞ Section 13.2 Connection Cable)	GT16 GT15 GT11 Serial
	8	RS-422 cable 12) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable		
	9	RS-422 cable 16) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable		

13.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞Section 13.2.1)

Model name			Connection cable
			GT16/GT15/GT11
PLC CPU (KOSTAC SU series)	SU-5E, SU-6B	general communication port	RS-232 cable 1)
	SU-5M, SU-6M	general communication port 1	
DirectLOGIC06 series		communication port 2	RS-232 cable 3)
PLC CPU (DirectLOGIC205 series)	D2-250-1, D2-260	communication port 2	RS-232 cable 3)
PZ series		communication port 2	
Data Communications Module	U-01DM		RS-232 cable 1)
	D2-DCM		
	D0-DCM	port 2	RS-232 cable 3)

2 RS-422 cable (☞Section 13.2.2)

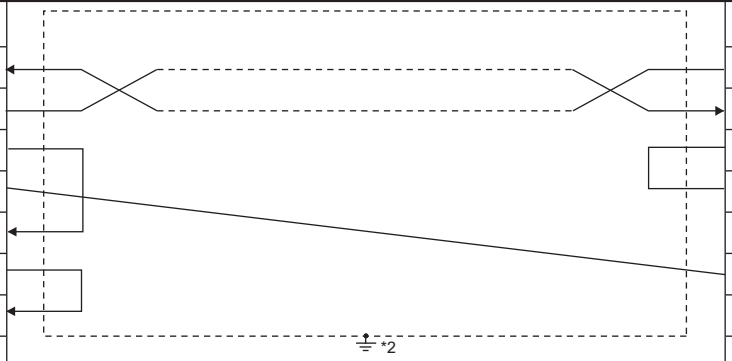
Model name			Connection cable	
			GT16	GT15/GT11
PLC CPU (KOSTAC SU series)	SU-5E, SU-6B	general communication port	RS-422 cable 1) RS-422 cable 5) RS-422 cable 9) RS-422 cable 13)	RS-422 cable 9) RS-422 cable 13)
	SU-5M, SU-6M	general communication port 1		
		general communication port 3	RS-422 cable 2) RS-422 cable 6) RS-422 cable 10) RS-422 cable 14)	RS-422 cable 10) RS-422 cable 14)
DirectLOGIC06 series		communication port 2	RS-422 cable 4) RS-422 cable 8) RS-422 cable 12) RS-422 cable 16)	RS-422 cable 12) RS-422 cable 16)
PLC CPU (DirectLOGIC205 series)	D2-250-1, D2-260	communication port 2		
PZ series		communication port 2		
Data Communications Module	U-01DM		RS-422 cable 3) RS-422 cable 7) RS-422 cable 11) RS-422 cable 15)	RS-422 cable 11) RS-422 cable 15)
	D2-DCM			
	D0-DCM	port 2	RS-422 cable 4) RS-422 cable 8) RS-422 cable 12) RS-422 cable 16)	RS-422 cable 12) RS-422 cable 16)

13.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

(1) RS-232 cable 1)

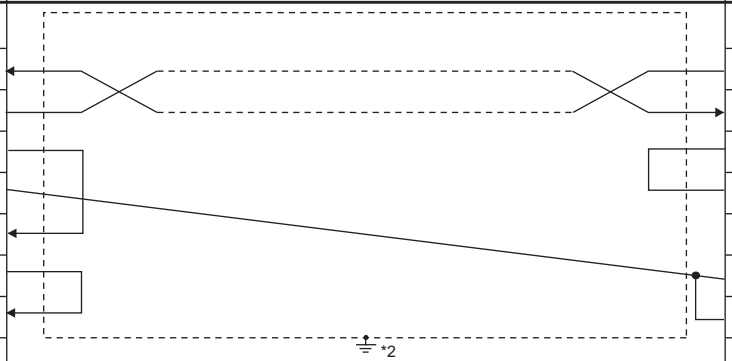
GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	-
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	RTS
SG	5		5	CTS
DR(DSR)	6		6	-*3
RS(RTS)	7		7	0V
CS(CTS)	8		8 to 25	-
-	9			

*1 GT16:CD, GT15:CD, GT11:NC

*2 Connect FG grounding to the appropriate part of a cable shield line.

*3 For U-01DM and D2-DCM, the signal name will be +5V.

(2) RS-232 cable 3)

GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	5V
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	RTS
SG	5		5	CTS
DR(DSR)	6		6	-
RS(RTS)	7		7	0V
CS(CTS)	8		8	0V
-	9		9 to 15	-

*1 GT16:CD, GT15:CD, GT11:NC

*2 Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.
For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

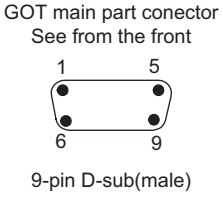
(a) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-			

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(b) Conector pin arrangement



(2) KOYO EI PLC side connector

Use the connector compatible with the KOYO EI PLC side module.
For details, refer to the following manual.

☞ User's Manual for the KOYO EI PLC

3 Precautions when preparing a cable

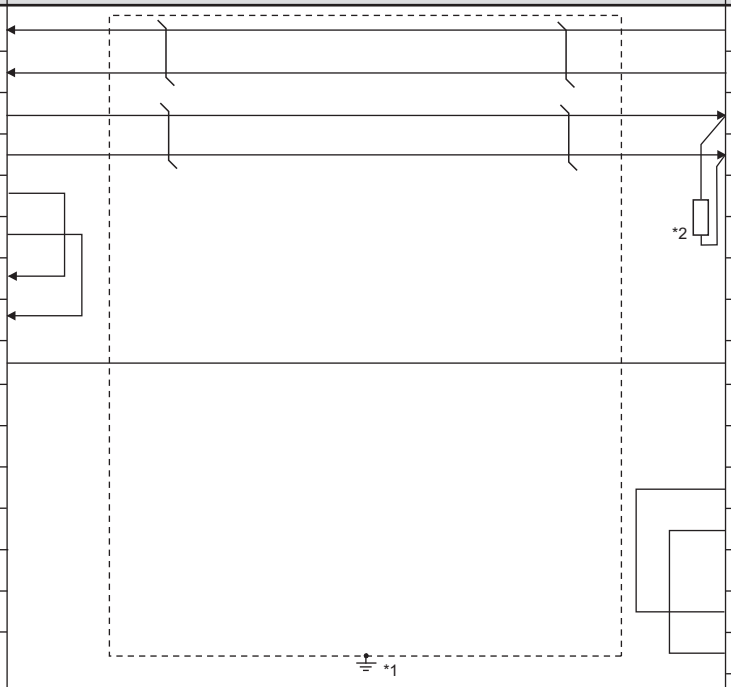
The length of the RS-232 cable must be 15m or less.

13.2.2 RS-422 cable

The following provides the connection diagrams and the connectors of the RS-422 cable connecting the GOT to the PLC.

1 Connection diagram

(1) RS-422 cable 1)

GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
RDA1(RXD1+)	3		14	+TXD
RDB1(RXD1-)	4		16	-TXD
SDA1(TXD1+)	1		9	+RXD
SDB1(TXD1-)	2		10	-RXD
RSA(RTS+)	9		1 to 6	-
RSB(RTS-)	10		8	-
CSA(CTS+)	11		12	-
CSB(CTS-)	12		13	-
SG	13		7	SG
SDA2(TXD2+)	5		15	-
SDB2(TXD2-)	6		17	-
RDA2(RXD2+)	7		18	-RTS
RDB2(RXD2-)	8		19	+RTS
NC	14		20 to 22	-
	Shell		23	-CTS
			11	+CTS
			24, 25	-

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC at a terminal station.

(2) RS-422 cable 2)

GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
RDA1(RXD1+)	3		12	+TXD3
RDB1(RXD1-)	4		13	-TXD3
SDA1(TXD1+)	1		24	+RXD3
SDB1(TXD1-)	2		25	-RXD3
RSA(RTS+)	9		1 to 6	-
RSB(RTS-)	10	*2	8 to 11	-
CSA(CTS+)	11		14 to 23	-
CSB(CTS-)	12		-	-
SG	13	*1	7	SG
SDA2(TXD2+)	5			
SDB2(TXD2-)	6			
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
NC	14			
	Shell			

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC at a terminal station.

(3) RS-422 cable 3)

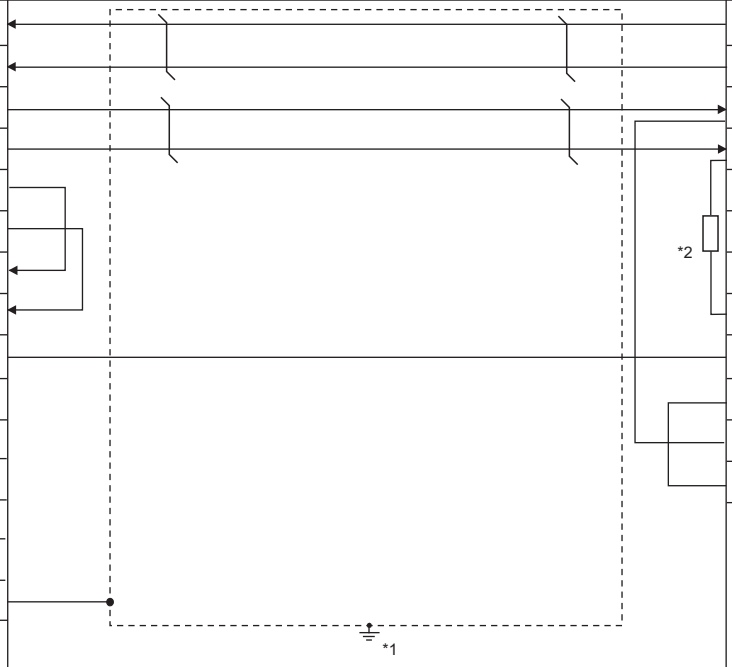
GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
RDA1(RXD1+)	3		14	+TXD
RDB1(RXD1-)	4		15	-TXD
SDA1(TXD1+)	1		17	+RXD
SDB1(TXD1-)	2		16	-RXD
RSA(RTS+)	9		1 to 6	-
RSB(RTS-)	10		8	+RTS
CSA(CTS+)	11		9	-RTS
CSB(CTS-)	12		18 to 21	-
SG	13		7	LG
SDA2(TXD2+)	5		10	+RTS
SDB2(TXD2-)	6		11	-RTS
RDA2(RXD2+)	7		12	+CTS
RDB2(RXD2-)	8		13	-CTS
NC	14		22	+TXD
	Shell		23	-TXD
		*2	24	-RXD
		*1	25	+RXD

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC at a terminal station.

(4) RS-422 cable 4)

GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
RDA1(RXD1+)	3		9	+TXD
RDB1(RXD1-)	4		10	-TXD
SDA1(TXD1+)	1		11	+RTS
SDB1(TXD1-)	2		6	-RXD
RSA(RTS+)	9		1	5V
RSB(RTS-)	10		2 to 5	-
CSA(CTS+)	11		7	0V
CSB(CTS-)	12		13	+RXD
SG	13		8	0V
SDA2(TXD2+)	5		12	-RTS
SDB2(TXD2-)	6		14	+CTS
RDA2(RXD2+)	7		15	-CTS
RDB2(RXD2-)	8			
NC	14			
	Shell			

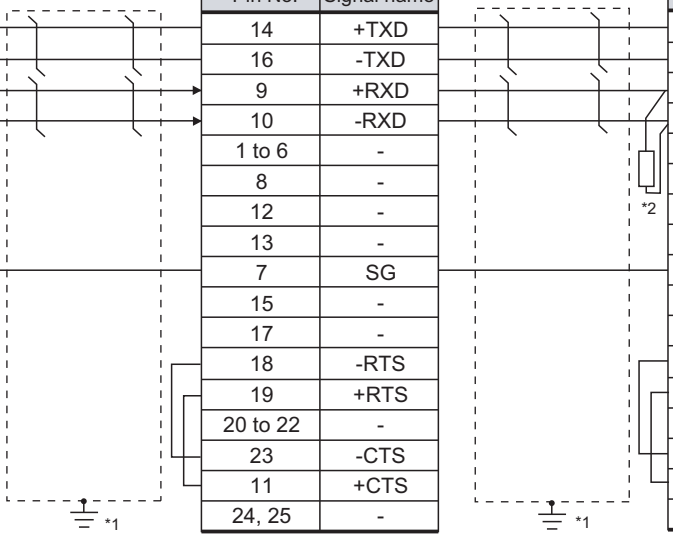


*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC at a terminal station.

(5) RS-422 cable 5)

GOT side		KOYO EI product side		KOYO EI product side	
Signal name	Pin No.	Pin No.	Signal name	Pin No.	Signal name
RDA1(RXD1+)	3	14	+TXD	14	+TXD
RDB1(RXD1-)	4	16	-TXD	16	-TXD
SDA1(TXD1+)	1	9	+RXD	9	+RXD
SDB1(TXD1-)	2	10	-RXD	10	-RXD
RSA(RTS+)	9	1 to 6	-	1 to 6	-
RSB(RTS-)	10	8	-	8	-
CSA(CTS+)	11	12	-	12	-
CSB(CTS-)	12	13	-	13	-
SG	13	7	SG	7	SG
SDA2(TXD2+)	5	15	-	15	-
SDB2(TXD2-)	6	17	-	17	-
RDA2(RXD2+)	7	18	-RTS	18	-RTS
RDB2(RXD2-)	8	19	+RTS	19	+RTS
NC	14	20 to 22	-	20 to 22	-
	Shell	23	-CTS	23	-CTS
		11	+CTS	11	+CTS
		24, 25	-	24, 25	-

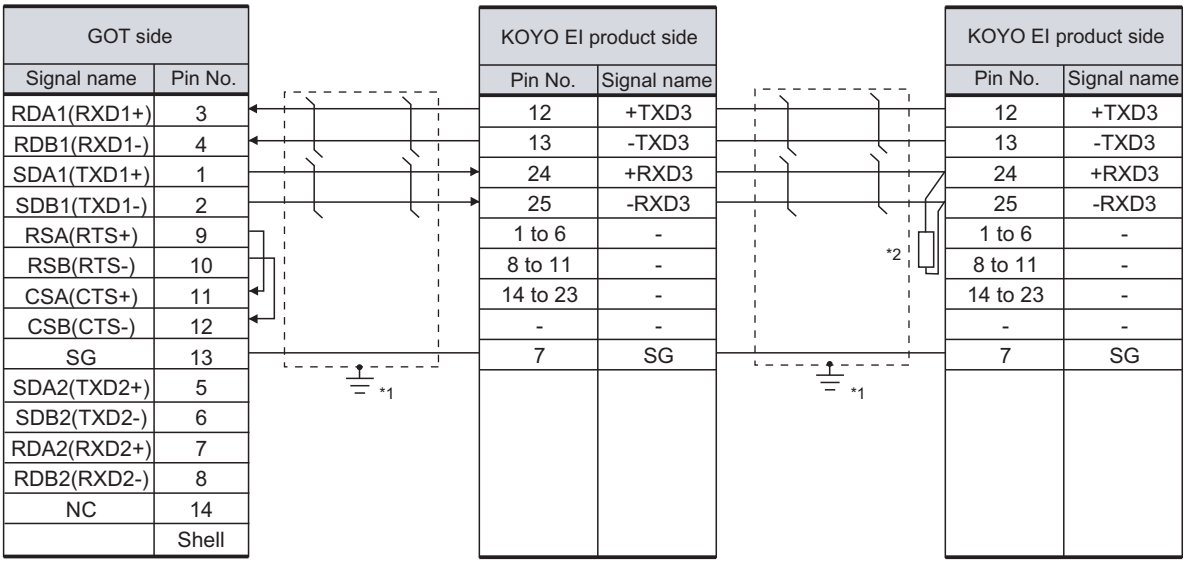


*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.

☞ User's Manual for the KOYO EI PLC

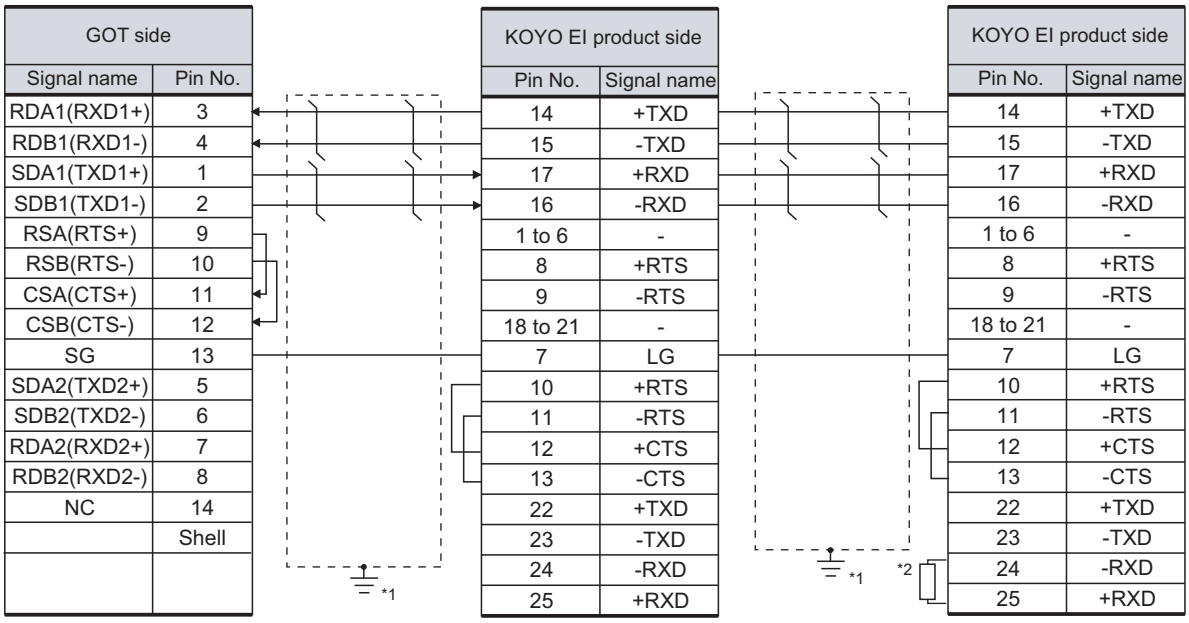
(6) RS-422 cable 6)



*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.
☞ User's Manual for the KOYO EI PLC

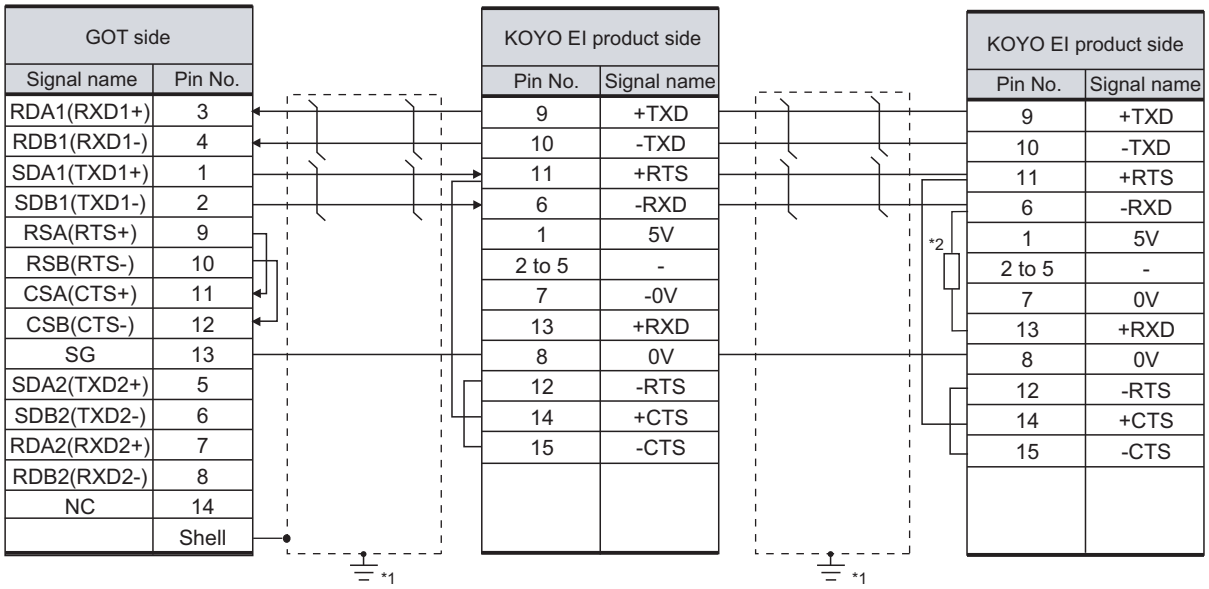
(7) RS-422 cable 7)



*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.
☞ User's Manual for the KOYO EI PLC

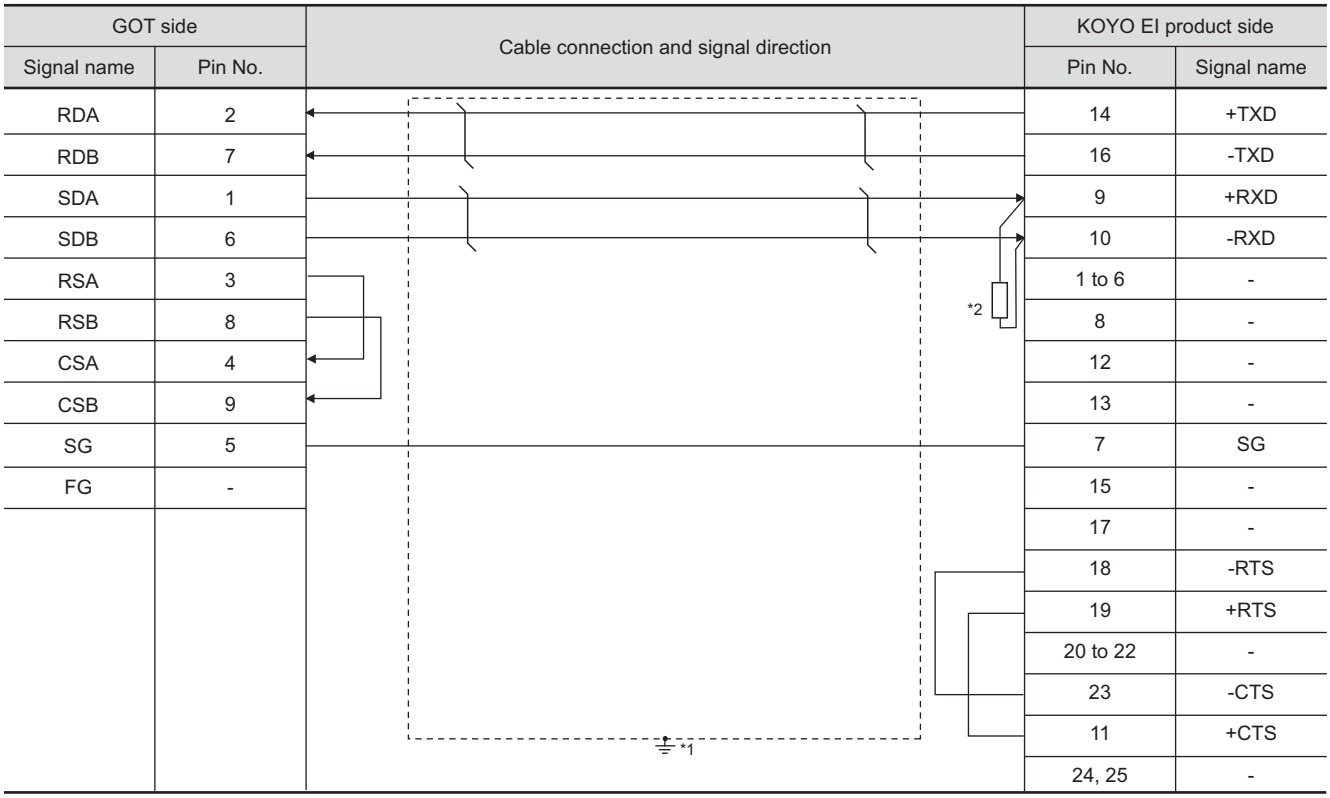
(8) RS-422 cable 8)



*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.
☞ User's Manual for the KOYO EI PLC

(9) RS-422 cable 9)

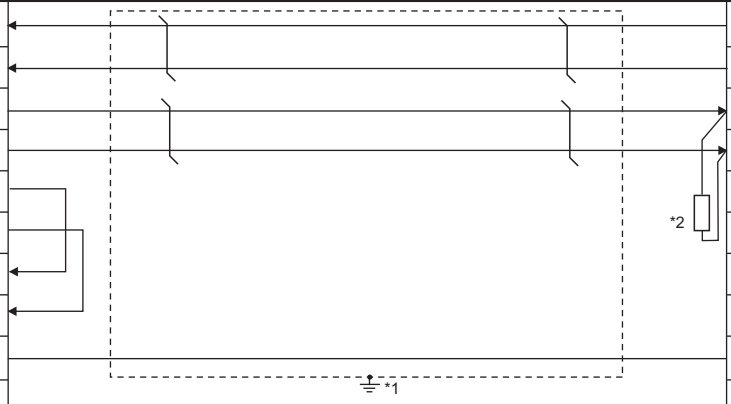


*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC at a terminal station.

(10) RS-422 cable10)

GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		12	+TXD3
RDB	7		13	-TXD3
SDA	1		24	+RXD3
SDB	6		25	-RXD3
RSA	3		1 to 6	-
RSB	8		8 to 11	-
CSA	4		14 to 23	-
CSB	9		-	-
SG	5		7	SG
FG	-			

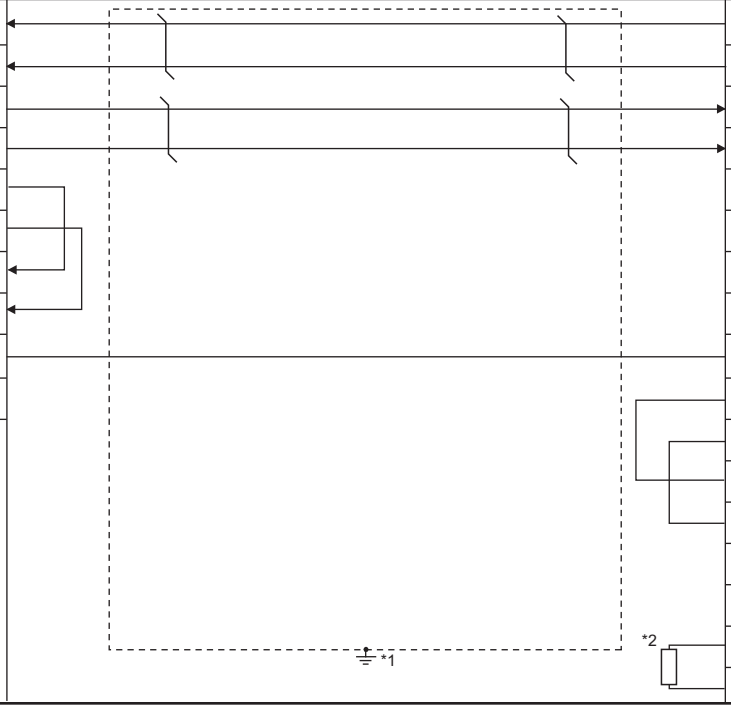


*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC at a terminal station.

(11) RS-422 cable 11)

GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		14	+TXD
RDB	7		15	-TXD
SDA	1		17	+RXD
SDB	6		16	-RXD
RSA	3		1 to 6	-
RSB	8		8	+RTS
CSA	4		9	-RTS
CSB	9		18 to 21	-
SG	5		7	LG
FG	-		10	+RTS
			11	-RTS
			12	+CTS
			13	-CTS
			22	+TXD
			23	-TXD
			24	-RXD
			25	+RXD

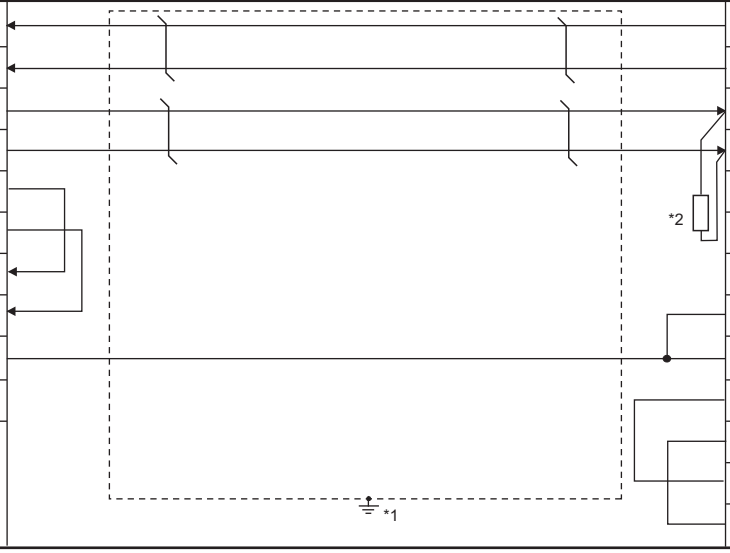


*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

(12) RS-422 cable 12)

GOT side		Cable connection and signal direction	KOYO EI product side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		9	+TXD
RDB	7		10	-TXD
SDA	1		13	+RXD
SDB	6		6	-RXD
RSA	3		1	5V
RSB	8		2 to 5	-
CSA	4			
CSB	9		8	0V
SG	5		7	0V
FG	-		11	+RTS
			12	-RTS
			14	+CTS
			15	-CTS

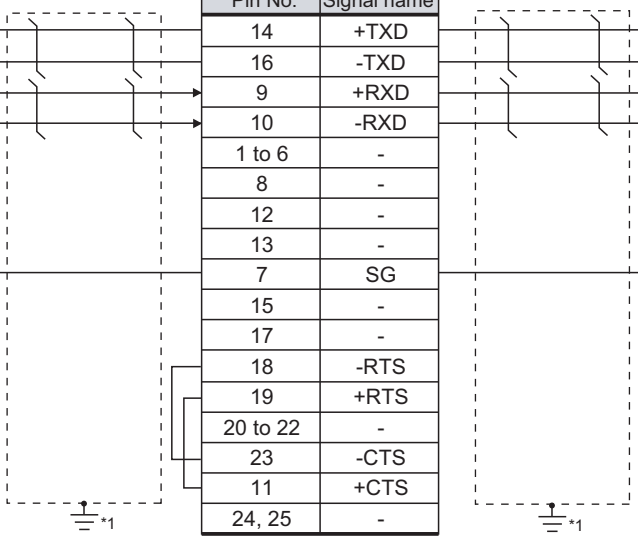


*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately 100 to 500Ω) to the PLC to be a terminal.

(13) RS-422 cable 13)

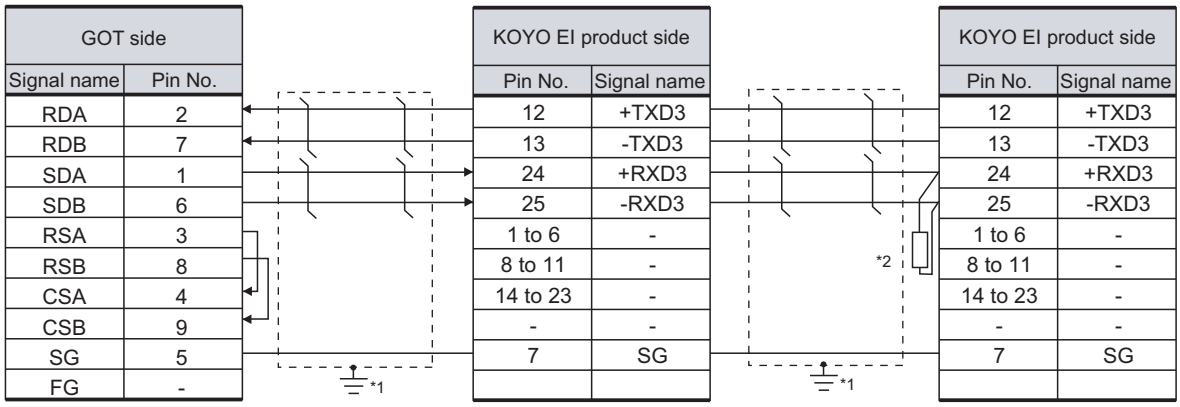
GOT side		KOYO EI product side		KOYO EI product side	
Signal name	Pin No.	Pin No.	Signal name	Pin No.	Signal name
RDA	2	14	+TXD	14	+TXD
RDB	7	16	-TXD	16	-TXD
SDA	1	9	+RXD	9	+RXD
SDB	6	10	-RXD	10	-RXD
RSA	3	1 to 6	-	1 to 6	-
RSB	8	8	-	8	-
CSA	4	12	-	12	-
CSB	9	13	-	13	-
SG	5	7	SG	7	SG
FG	-	15	-	15	-
		17	-	17	-
		18	-RTS	18	-RTS
		19	+RTS	19	+RTS
		20 to 22	-	20 to 22	-
		23	-CTS	23	-CTS
		11	+CTS	11	+CTS
		24, 25	-	24, 25	-



*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.
☞ User's Manual for the KOYO EI PLC

(14) RS-422 cable 14)



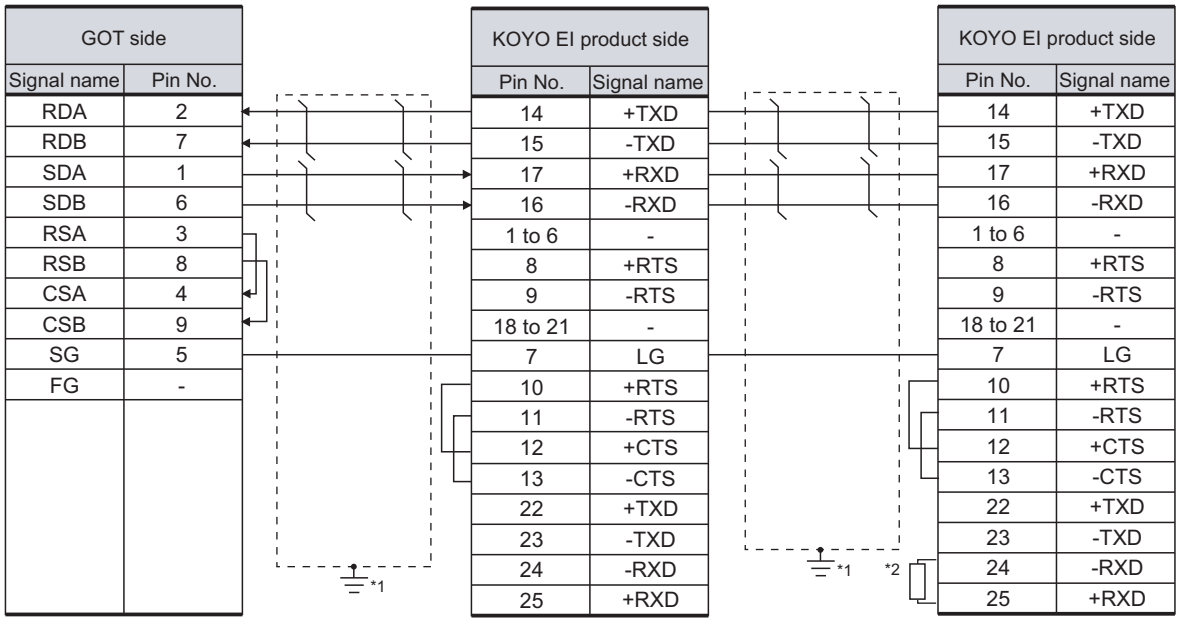
GOT side		KOYO EI product side		KOYO EI product side	
Signal name	Pin No.	Pin No.	Signal name	Pin No.	Signal name
RDA	2	12	+TXD3	12	+TXD3
RDB	7	13	-TXD3	13	-TXD3
SDA	1	24	+RXD3	24	+RXD3
SDB	6	25	-RXD3	25	-RXD3
RSA	3	1 to 6	-	1 to 6	-
RSB	8	8 to 11	-	8 to 11	-
CSA	4	14 to 23	-	14 to 23	-
CSB	9	-	-	-	-
SG	5	7	SG	7	SG
FG	-				

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.

User's Manual for the KOYO EI PLC

(15) RS-422 cable 15)



GOT side		KOYO EI product side		KOYO EI product side	
Signal name	Pin No.	Pin No.	Signal name	Pin No.	Signal name
RDA	2	14	+TXD	14	+TXD
RDB	7	15	-TXD	15	-TXD
SDA	1	17	+RXD	17	+RXD
SDB	6	16	-RXD	16	-RXD
RSA	3	1 to 6	-	1 to 6	-
RSB	8	8	+RTS	8	+RTS
CSA	4	9	-RTS	9	-RTS
CSB	9	18 to 21	-	18 to 21	-
SG	5	7	LG	7	LG
FG	-	10	+RTS	10	+RTS
		11	-RTS	11	-RTS
		12	+CTS	12	+CTS
		13	-CTS	13	-CTS
		22	+TXD	22	+TXD
		23	-TXD	23	-TXD
		24	-RXD	24	-RXD
		25	+RXD	25	+RXD

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.

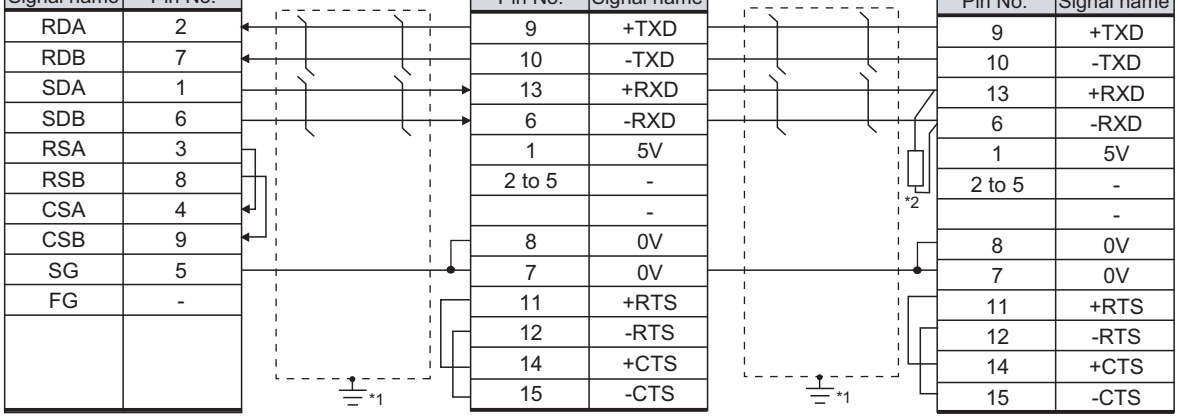
User's Manual for the KOYO EI PLC

(16) RS-422 cable 16)

GOT side	
Signal name	Pin No.
RDA	2
RDB	7
SDA	1
SDB	6
RSA	3
RSB	8
CSA	4
CSB	9
SG	5
FG	-

KOYO EI product side	
Pin No.	Signal name
9	+TXD
10	-TXD
13	+RXD
6	-RXD
1	5V
2 to 5	-
	-
8	0V
7	0V
11	+RTS
12	-RTS
14	+CTS
15	-CTS

KOYO EI product side	
Pin No.	Signal name
9	+TXD
10	-TXD
13	+RXD
6	-RXD
1	5V
2 to 5	-
	-
8	0V
7	0V
11	+RTS
12	-RTS
14	+CTS
15	-CTS



*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately 100 to 500Ω) to the PLC to be a terminal.
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.
For details, refer to the following manual.

☞ User's Manual for the KOYO EI PLC

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

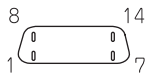
GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Conector pin arrangement

GT16

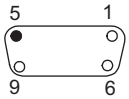
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part conector
See from the front



9-pin D-sub(female)

(2) KOYO EI PLC side connector

Use the connector compatible with the KOYO EI PLC side.

For details, refer to the following manual.

☞ User's Manual for the KOYO EI PLC

3 Precautions when preparing a cable

The maximum length of the RS-422 cable differs according to the specifications of the KOYO EI PLC side module.

For details, refer to the following manual.

☞ User's Manual for the KOYO EI PLC

4 Connecting terminating resistors

(1) KOYO EI PLC

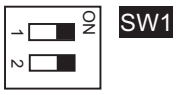
To connect a KOYO EI PLC to a GOT, a terminating resistor must be set to the KOYO EI PLC.

☞ User's Manual for the KOYO EI PLC

(2) GOT

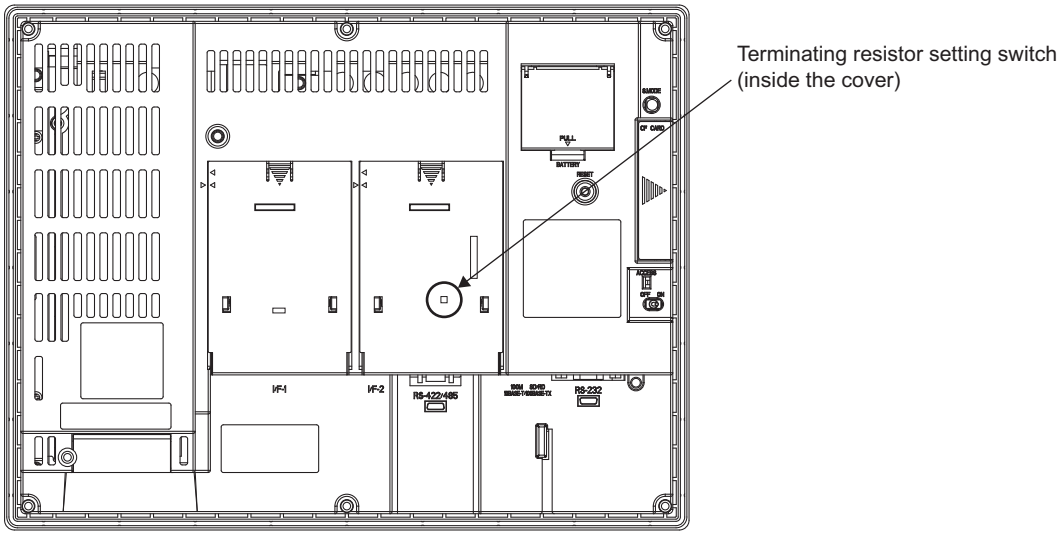
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

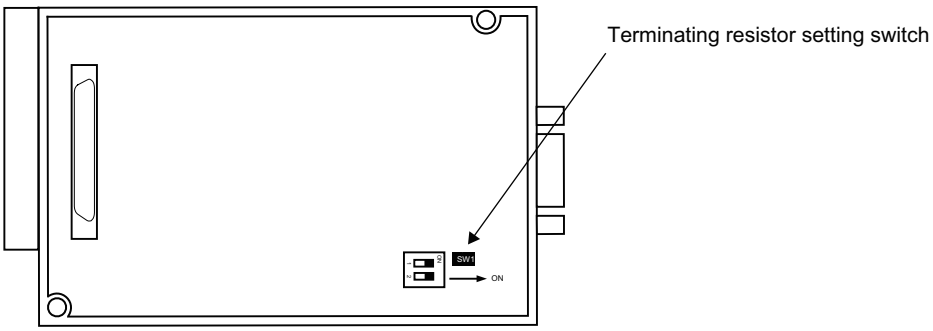


*1 The default setting is "Disable".

• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

13.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 13.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 13.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 13.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 13.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 13.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 13.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 13.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

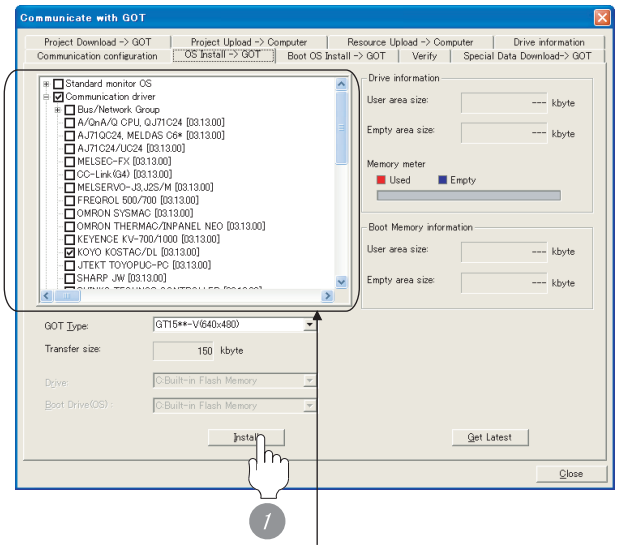
Section 13.4 PLC Side Setting

13.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

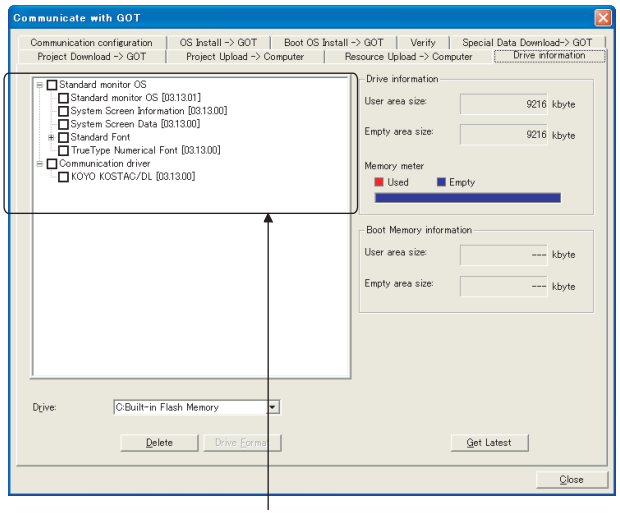
- KOYO KOSTAC/DL

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

13.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: KOYO KOSTAC/DL

13.3.3 Setting communication interface (Communication settings)

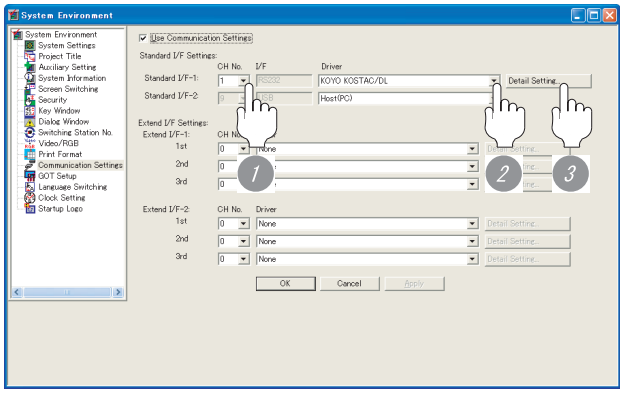
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

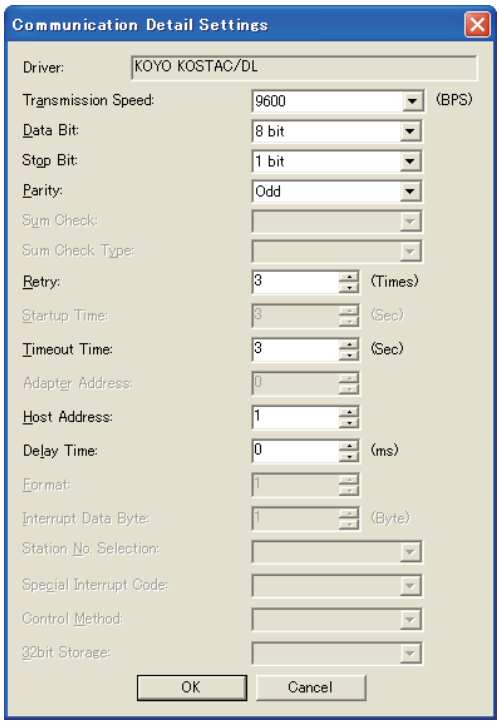
1 Communication settings



(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to "KOYO KOSTAC/DL".
3. Perform the detailed settings for the driver.
   (2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Odd>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 50 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0>	0 to 300 ms
Host Address	Specify the host address (station No. of the GOT to which the PLC is connected) in the connected network. <Default: 1>	1 to 90

Point

(1) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

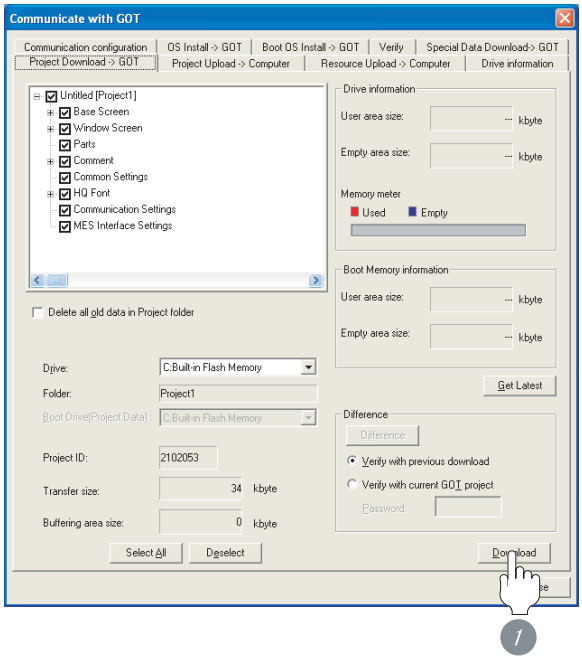
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

13.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

13.3.5 Attaching communication unit and connecting cable

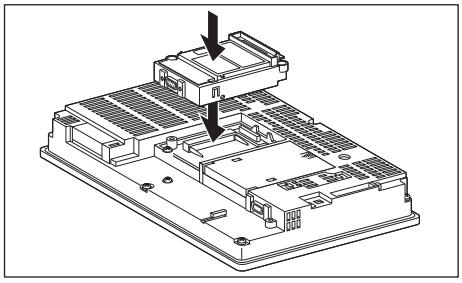
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

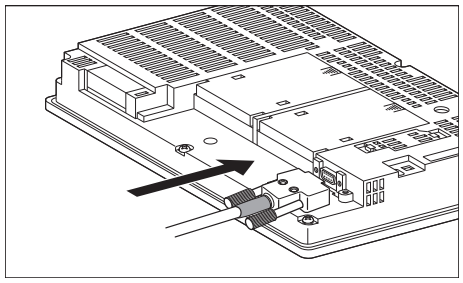
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

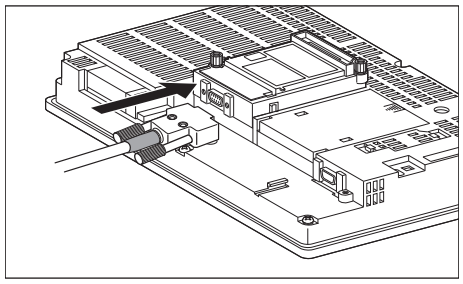
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



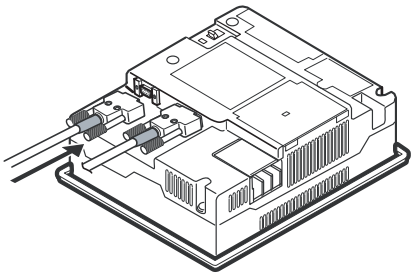
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

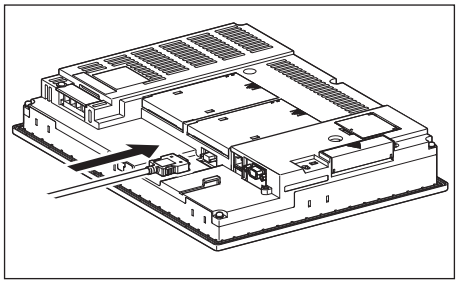


(2) How to connect the RS-422 cable

(a) For the GT16

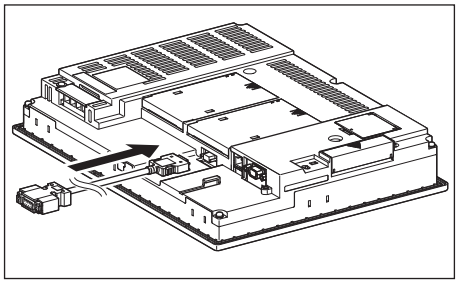
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

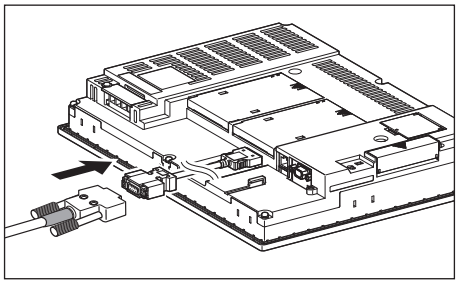


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

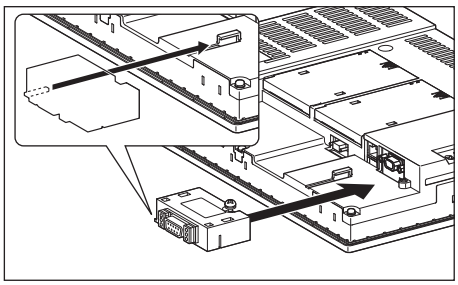


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

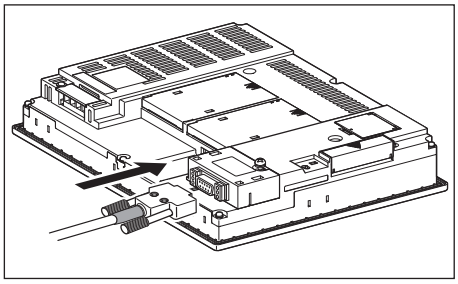


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

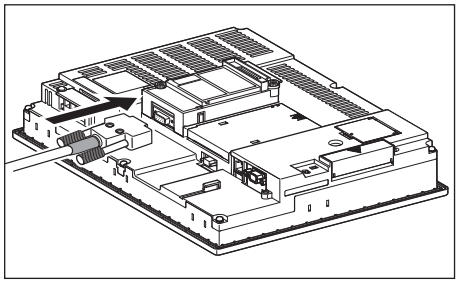


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

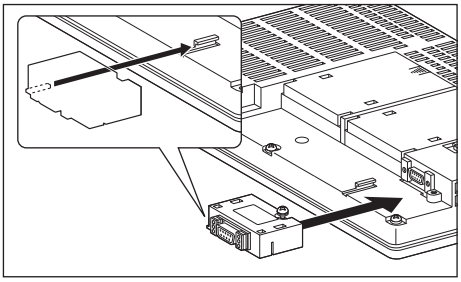
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



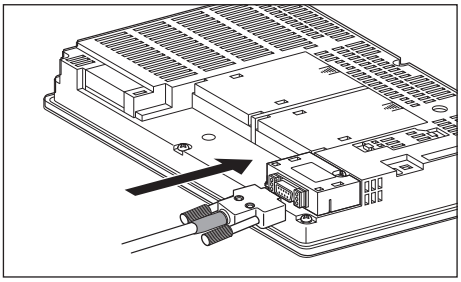
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155□)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

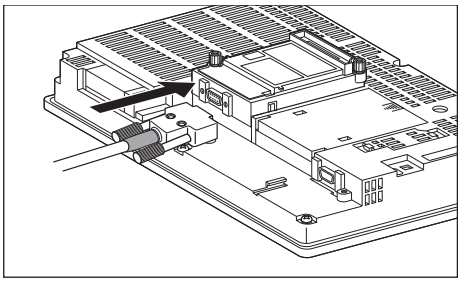


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

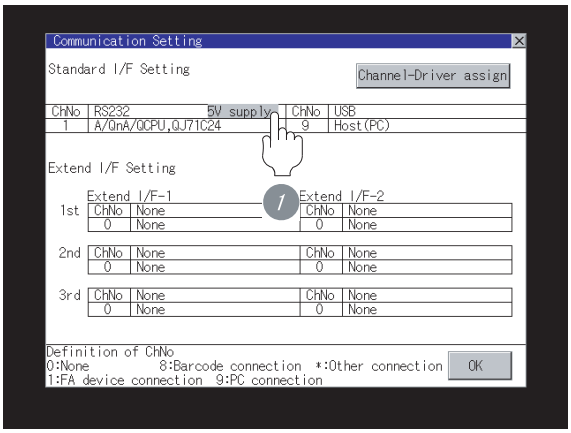
Point

When using the RS-422 conversion unit

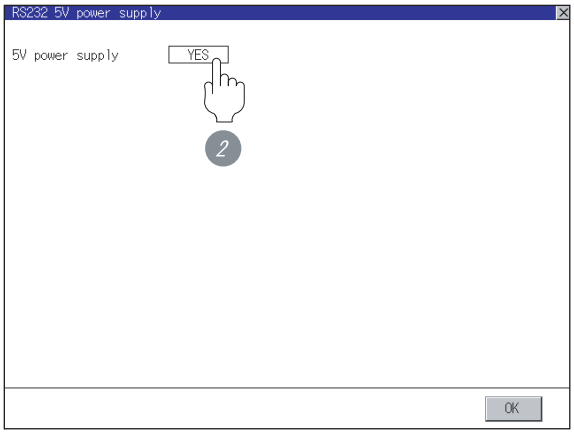
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

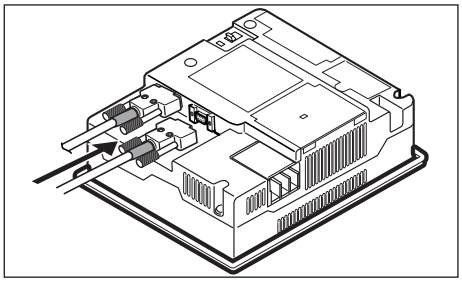


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

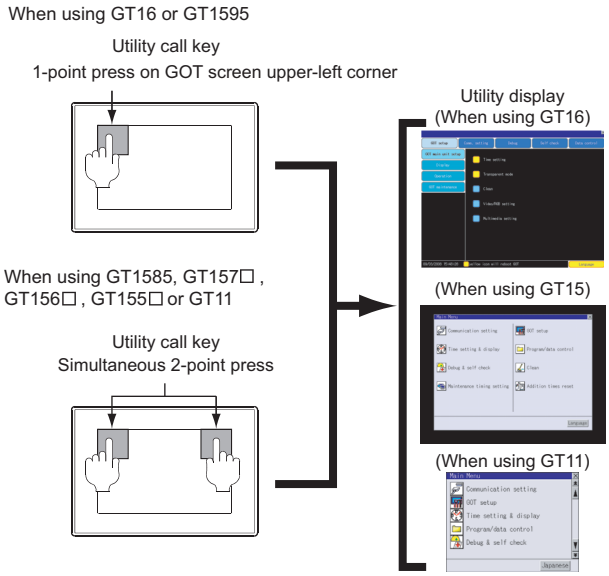


13.3.6 Verifying GOT recognizes controllers

- Verify the GOT recognizes controllers on [Communication Settings] of the Utility.
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

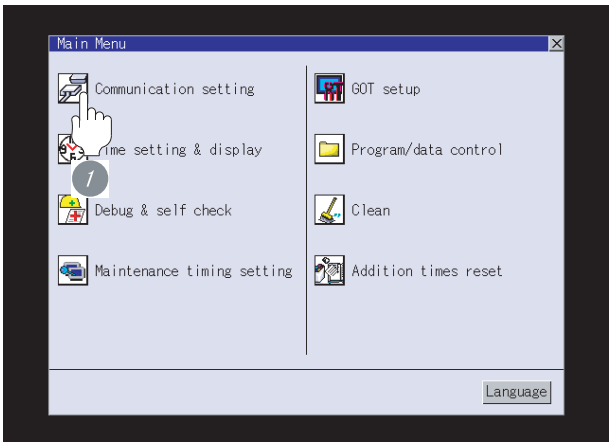


Point

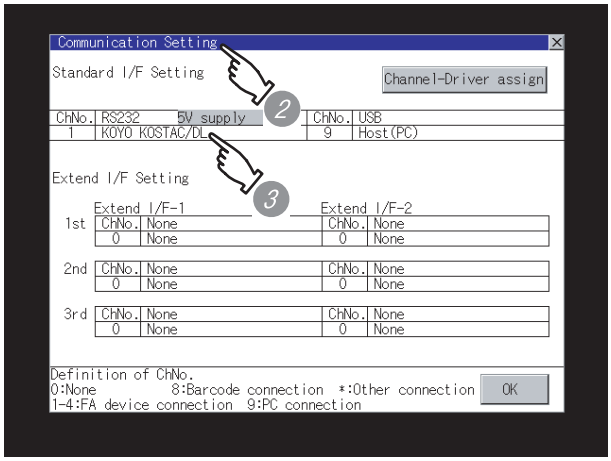
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  KOYO KOSTAC/DL

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 13.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

13.3.7 Checking for normal monitoring

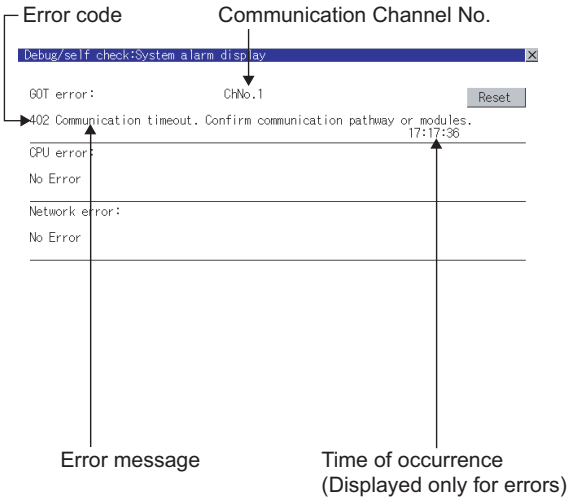
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check.

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

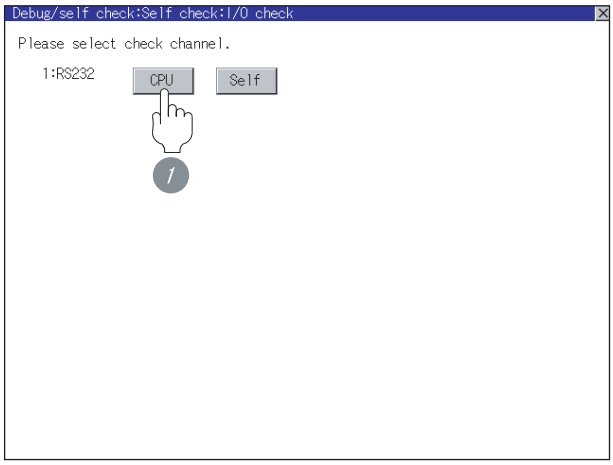
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

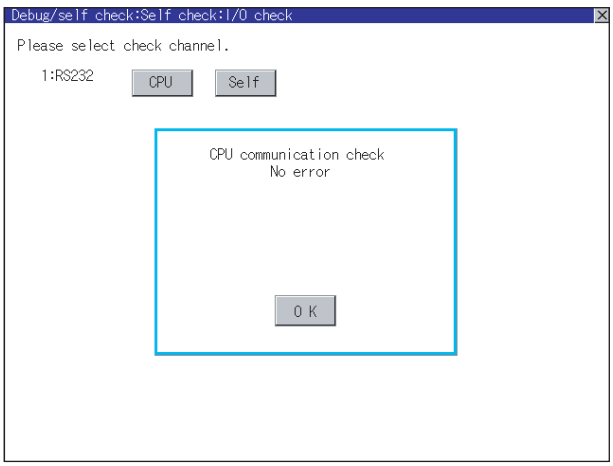
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 13.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

13.4 PLC Side Setting

Point

KOYO EI PLC

For details of KOYO EI PLCs, refer to the following manuals.

☞ Manuals for KOYO EI PLCs

1 PLC CPU

Model		Reference
KOSTAC SU Series	SU-5E/6B	Section 13.4.1
	SU-5M/6M	Section 13.4.2
DirectLOGIC 05 Series DirectLOGIC 06 Series		Section 13.4.3
DirectLOGIC 205 Series		Section 13.4.4
PZ Series		Section 13.4.5

2 Data communication module

Model		Reference
Data communication module	U-01DM	Section 13.4.6
	D0-DCM	Section 13.4.7
	D2-DCM	Section 13.4.8

13.4.1 Connecting to SU-5E/6B

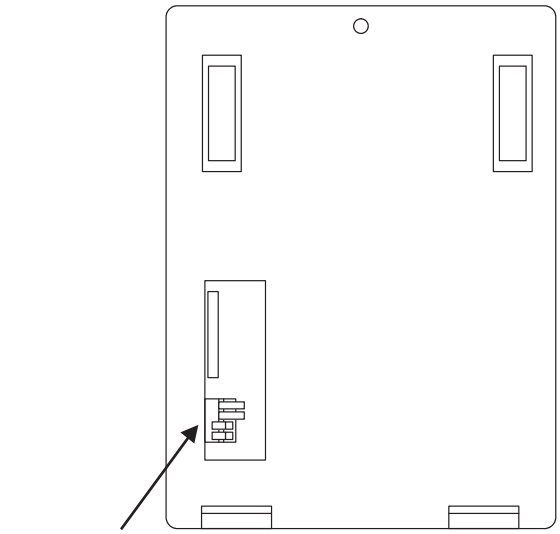
1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Station No.	1 to 90
Transmission mode	HEX
Parity	NONE, ODD
Data length	8 bit (Fixation)
Stop bit	1 bit (Fixation)

2 Setting DIP switches

Set the transmission speed using the CPU DIP switch.



CPU DIP switch



Item	Setting	Switch No.	
		3	4
Transmission speed *1	9600bps	ON	OFF
	19200bps	ON	ON

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 13.3.3 Setting communication interface (Communication settings)

13.4.2 Connecting to SU-5M/6M

1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Protocol	CCM
Response delay time	0ms
Timeout Time	800ms/960ms/1200ms/1600ms/4000ms/ 8000ms/16000ms/40000ms
Station No.	1 to 90
Transmission mode	HEX
Stop bit	1 bit, 2 bit
Data length	8 bit (Fixation)
Parity	NONE, ODD, EVEN
Transmission speed *1	9600bps, 19200bps, 38400bps

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

Section 13.3.3 Setting communication interface (Communication settings)

13.4.3 Connecting to DirectLOGIC 05 series or DirectLOGIC 06 series

1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Protocol	CCM NET (DirectNET)
Timeout	780ms or more
RTS On Delay Time	0ms *1
RTS Off Delay Time	0ms *1
Station No.	1 to 90
Transmission speed *2	9600bps, 19200bps, 38400bps
Stop bit	1 bit, 2 bit
Parity	NONE, ODD, EVEN
Communication format	HEX

*1 To use a PLC with multidrop, set the "RTS on delay time" to 5ms or more and the "RTS off delay time" to 2ms or more.

*2 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

Section 13.3.3 Setting communication interface (Communication settings)

13.4.4 Connecting to DirectLOGIC 205 series

1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Protocol	CCM NET (DirectNET)
Station No.	1 to 90
Transmission speed *1	9600bps, 19200bps, 38400bps
Data length	8 bit (Fixation)
Stop bit	1 bit (Fixation)
Parity	NONE, ODD
Self-diagnostic mode	OFF
Response delay time	0ms
Peer to Peer	OFF
Master/Slave	Slave
Timeout	It is.
Transmission mode	HEX
MODBUS	OFF

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

Section 13.3.3 Setting communication interface (Communication settings)

13.4.5 Connecting to PZ series

1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Protocol	CCM NET
Timeout	800ms/960ms/1200ms/1600ms/4000ms/ 8000ms/16000ms/40000ms
Response delay time	0ms
Station No.	1 to 90
Communication format	HEX
Transmission speed *1	9600bps, 19200bps, 38400bps
Stop bit	1 bit
Parity	NONE, ODD

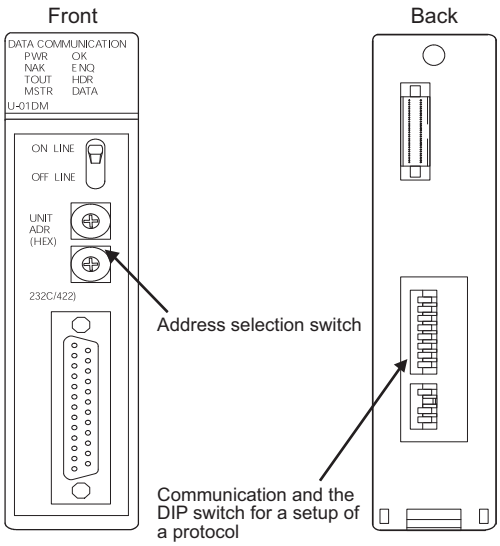
*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

Section 13.3.3 Setting communication interface (Communication settings)

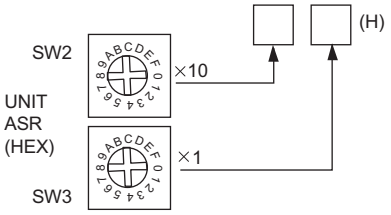
13.4.6 Connecting to U-01DM

1 Setting switches

Make the communication settings using each setting switch.

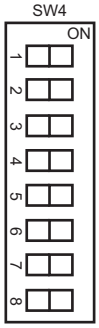


(1) Address selection switch(SW2, SW3)



Switch No.	Setting	Setting details
SW2	Code higher rank(101figures)	01 to 5A
SW3	Code low rank(100figures)	

(2) Communication and the DIP switch for a setup of a protocol(SW4)

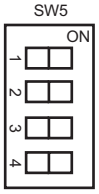


Setting item	Setting	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed *1	9600bps	OFF	ON	ON					
	19200bps	ON	ON	ON					
	38400bps	OFF	OFF	OFF					
Parity	ODD				ON				
	NONE				OFF				
Self-diagnostic	OFF					OFF			
Response delay time	0ms						OFF	OFF	OFF

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

Section 13.3.3 Setting communication interface (Communication settings)

(3) Communication and the DIP switch for a setup of a protocol(SW5)



Item	Setting	Switch No.			
		1	2	3	4
Peer to Peer	OFF	OFF			
M/S	Slave		OFF		
TOUT existence	It is.			OFF	
ASCII/HEX	HEX				OFF

13.4.7 Connecting to D0-DCM

1 Communication settings

Write the following communication settings to the specified register using the programmer.

☞ User's Manual for the KOYO EI PLC.

Item	Setting
Transmission mode	HEX
Protocol	DirectNet
Station No.	1 to 90
Transmission speed*1	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Parity	NONE, ODD, EVEN(Only communication port 2)
RTS On Delay Time	0ms
RTS Off Delay Time	0ms
Timeout(Only communication port 2)	800ms/960ms/1200ms/1600ms/4000ms/8000ms/16000ms/40000ms
485 mode selection (Only communication port 2)	RS232・RS422/485 4 line type
Data bit(Only communication port 2)	8bit, 7bit
Stop bit(Only communication port 2)	1bit, 2bit
The timeout between characters(Only communication port 2)	0 to 9999ms
The completion of a setting	Default use,A preset value is effective
Reset timeout	Invalid,Effective

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 13.3.3 Setting communication interface (Communication settings)

13.4.8 Connecting to D2-DCM

1 Communication settings

Make the following settings using the programmer.

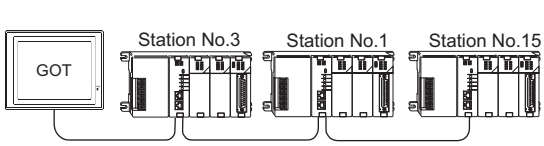
Item	Setting
Station No.	1 to 90
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length	8 bit (Fixation)
Stop bit	1 bit (Fixation)
Parity	NONE, ODD
Self-diagnostic mode	OFF
Response delay time	0ms
Peer to Peer	OFF
Master/Slave	Slave
Timeout	It is.
Transmission mode	HEX
MODBUS	OFF

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 13.3.3 Setting communication interface (Communication settings)

13.4.9 Station No. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



The example of a Station No. setting

(1) Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
1 to 90 (Decinal)

13.5 Precautions

1 GOT clock control

The GOT clock function is available only for the PLC with a calendar function.
Note:Although the "time adjusting" and "time broadcast" functions can be selected on the GOT, the "time broadcast" function is not available. Do not select the "time broadcast" function. If both of the functions are selected, not only the "time broadcast" function but also the "time adjusting" function will be disabled.

13.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	Connection to KOYO EI PLC	Supporting the KOYO EI PLC connection	2.82L	Communication driver KOYO KOSTAC/DL [03.13.**]
GT16	Connection to KOYO EI PLC	Supporting the connections to GT16	2.90U	Communication driver KOYO KOSTAC/DL [04.02.**]

MEMO

14

CONNECTION TO SHARP PLC



14.1 System Configuration . . . . . page 14-2
This section describs the equipment and cables needed when connecting a GOT to a SHARP PLC.
Select a system suitable for your application.

14.2 Connection Cable . . . . . page 14-17
This section describes the specifications of the cables needed when connecting a GOT to a SHARP PLC.
Check the specifications of the connection cables.

14.3 Preparatory Procedures for Monitoring . . . . . page 14-26
This section provides the procedures to be followed before performing monitoring in connection to a SHARP PLC.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

14.4 PLC Side Setting . . . . . page 14-35
The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

14.5 List of Functions Added by Version Upgrade . . . . . page 14-39
This section describes the functions added by version upgrade of GT Designer2 or OS.

14.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

14.1.1 Connecting to JW-21CU or JW-22CU

Communication driver

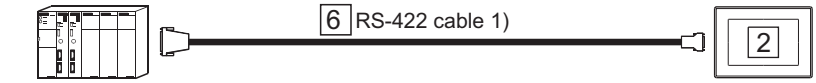
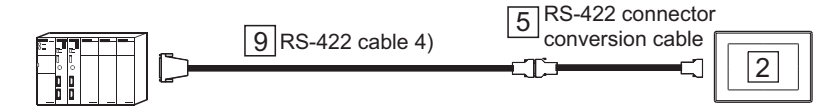
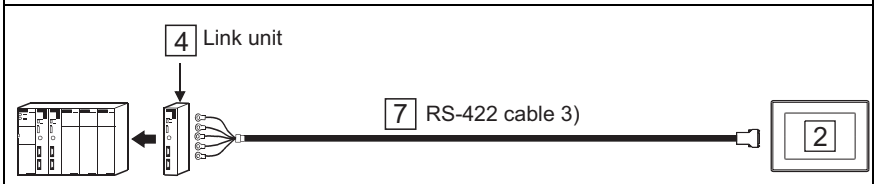
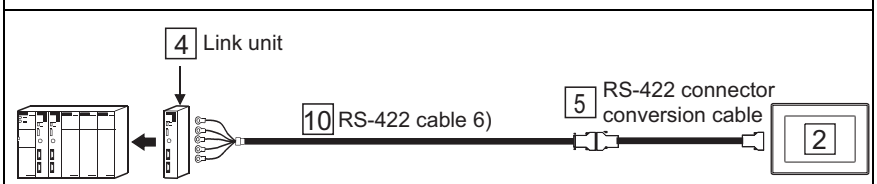
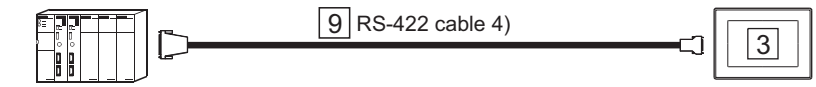
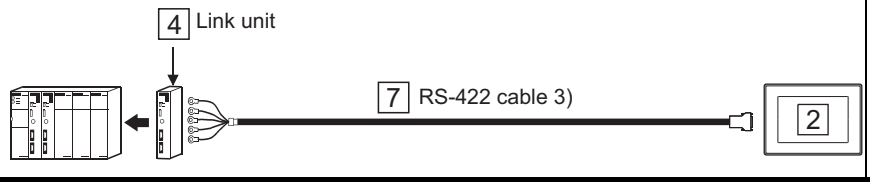
SHARP JW

1 System configuration and connection conditions

When connecting to JW-21CU

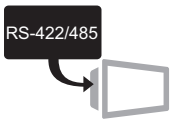
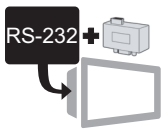
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	Differs according to PLC side specifications.	4 Link unit 7 RS-422 cable 3) 2	GT16
		4 Link unit 10 RS-422 cable 6) 5 RS-422 connector conversion cable 2	
		4 Link unit 10 RS-422 cable 6) 3	GT16 GT15 GT11 Serial

When connecting to JW-22CU

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	Differs according to PLC side specifications.		GT16 GT15 GT11 Serial
			
			
			GT16
			
			
			GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

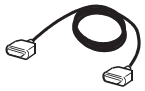
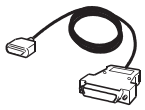
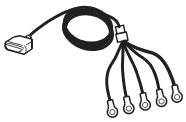
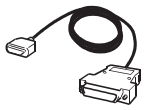
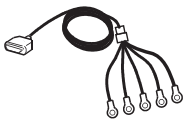
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Link unit	JW-21CM

4 is a product manufactured by Sharp Manufacturing Systems Corporation. For details of this product, contact Sharp Manufacturing Systems Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-422 cable 1) • Between CPU and GOT	To be prepared by the user. Section 14.2 Connection Cable	
	7	RS-422 cable 3) • Between link unit and GOT		
	8	RS-232 cable 1)*1 Between CPU and GOT	GT09-C30R20601-15P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 4)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40601-15P(3m) GT09-C100R40601-15P(10m) GT09-C200R40601-15P(20m) GT09-C300R40601-15P(30m)	
	10	RS-422 cable 6)*1 • Between link unit and RS-422 connector conversion cable • Between link unit and GOT	GT09-C30R40603-6T(3m) GT09-C100R40603-6T(10m) GT09-C200R40603-6T(20m) GT09-C300R40603-6T(30m)	

*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 14.2 Connection Cable)

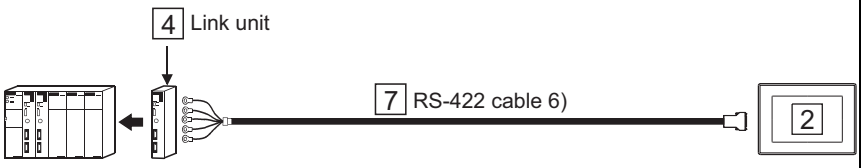
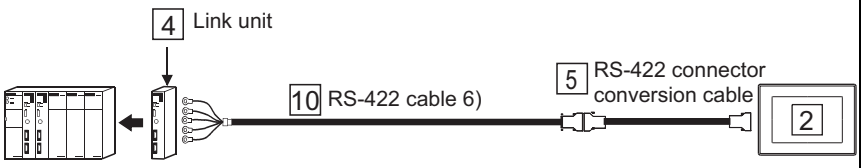
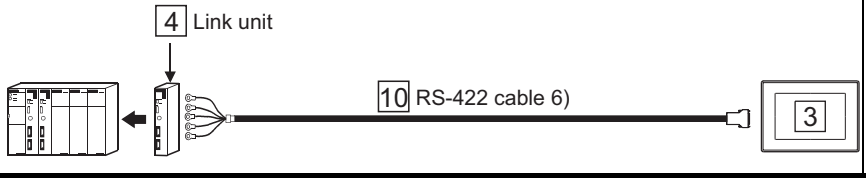
14.1.2 Connecting to JW-31CUH, JW-32CUH or JW-33CUH

Communication driver

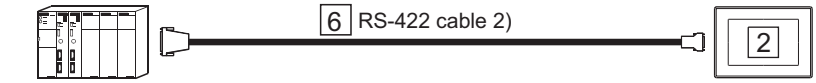
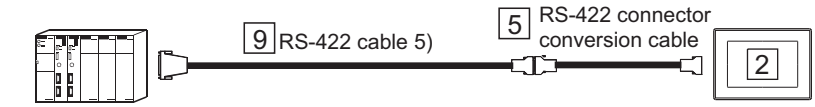
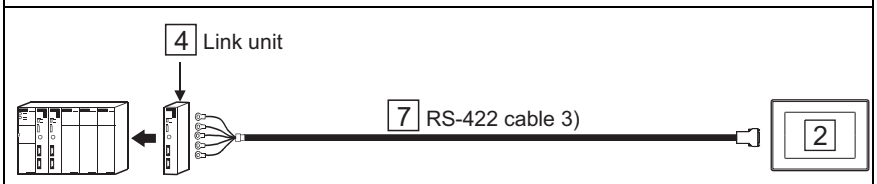
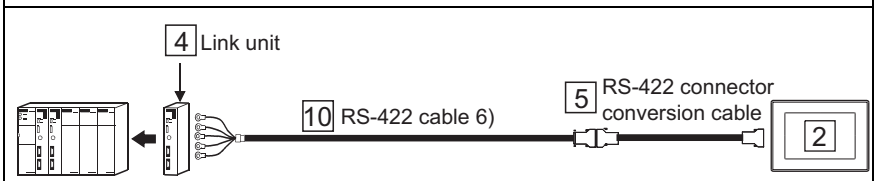
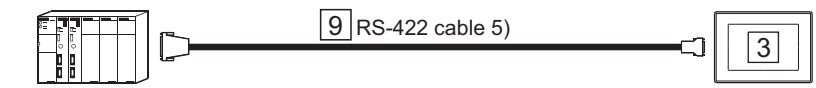
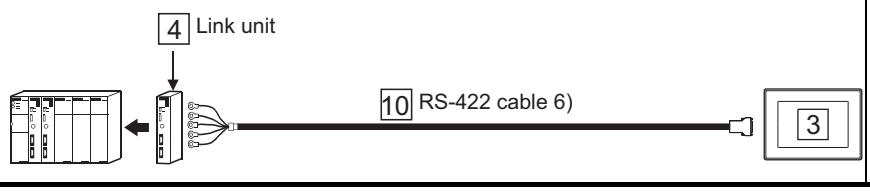
SHARP JW

1 System configuration and connection conditions

When connecting to JW-31CUH

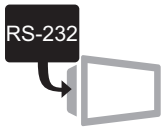
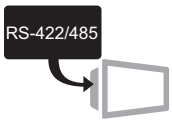
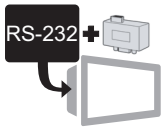
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	Differs according to PLC side specifications.		GT16
			
			GT16 GT15 GT11 Serial

When connecting to JW-32CUH or JW-33CUH

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	Differs according to PLC side specifications.		GT16 GT15 GT11 Serial
			
			
			GT16
			
			
			GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

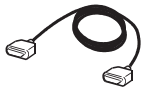
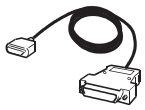
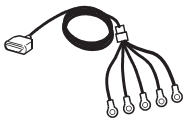
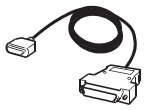
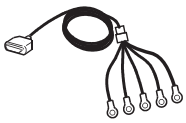
(2) PLC

Image	No.	Name	Model name
	4	Link unit	JW-21CM *2

*2 Use the link unit compatible with JW-31CUH, JW-32CUH or JW-33CUH.

4 is a product manufactured by Sharp Manufacturing Systems Corporation. For details of this product, contact Sharp Manufacturing Systems Corporation.

(3) Cable

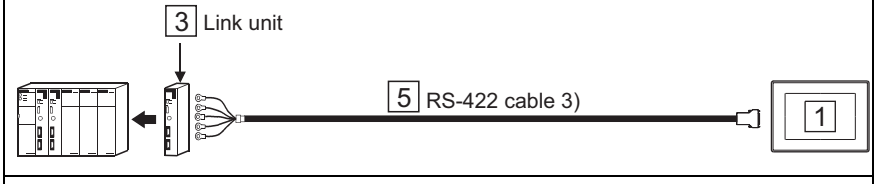
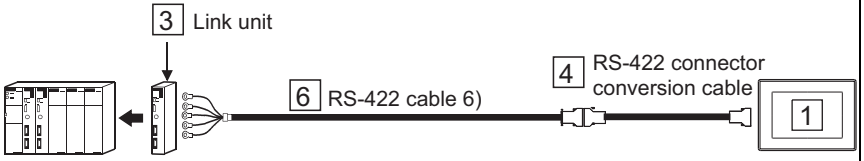
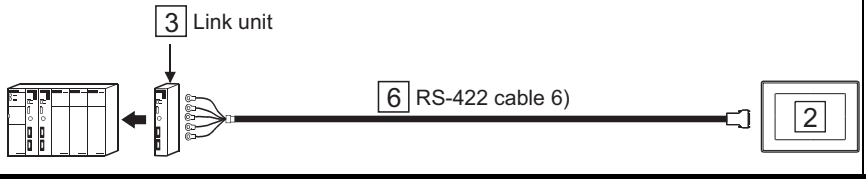
Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-422 cable 2) • Between CPU and GOT	To be prepared by the user. Section 14.2 Connection Cable	
	7	RS-422 cable 3) • Between link unit and GOT		
	8	RS-232 cable 2)*1 • Between CPU and GOT	GT09-C30R20602-15P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 5)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40602-15P(3m) GT09-C100R40602-15P(10m) GT09-C200R40602-15P(20m) GT09-C300R40602-15P(30m)	
	10	RS-422 cable 6)*1 • Between link unit and RS-422 connector conversion cable • Between link unit and GOT	GT09-C30R40603-6T(3m) GT09-C100R40603-6T(10m) GT09-C200R40603-6T(20m) GT09-C300R40603-6T(30m)	

*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 14.2 Connection Cable)

14.1.3 Connecting to JW-50CUH

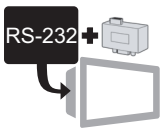
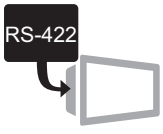
Communication driver
SHARP JW

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	Differs according to PLC side specifications.		GT16
			
			GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial

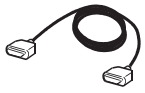
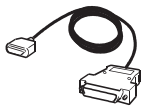
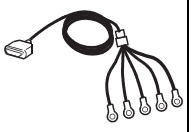
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	3	Link unit	JW-10CM, ZW-10CM

3 is a product manufactured by Sharp Manufacturing Systems Corporation. For details of this product, contact Sharp Manufacturing Systems Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	5	RS-422 cable 3) • Between link unit and GOT	To be prepared by the user. Section 14.2 Connection Cable	
	6	RS-422 cable 6)*1 • Between link unit and RS-422 connector conversion cable • Between link unit and GOT	GT09-C30R40603-6T(3m) GT09-C100R40603-6T(10m) GT09-C200R40603-6T(20m) GT09-C300R40603-6T(30m)	GT16 GT15 GT11 Serial

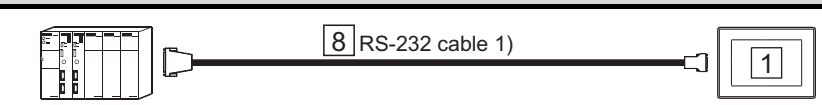
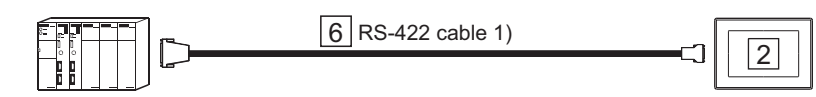
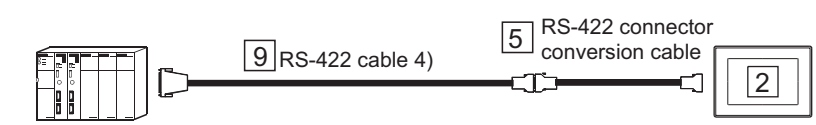
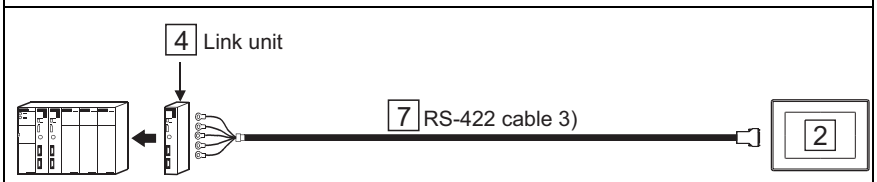
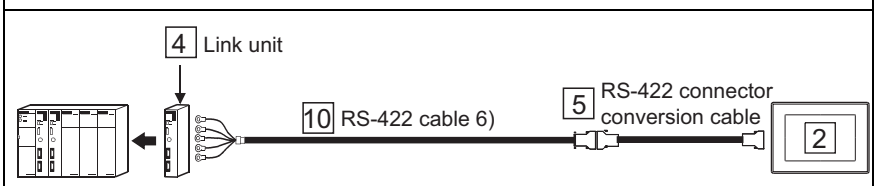
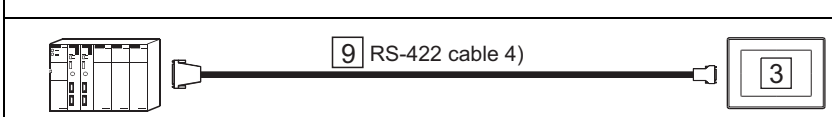
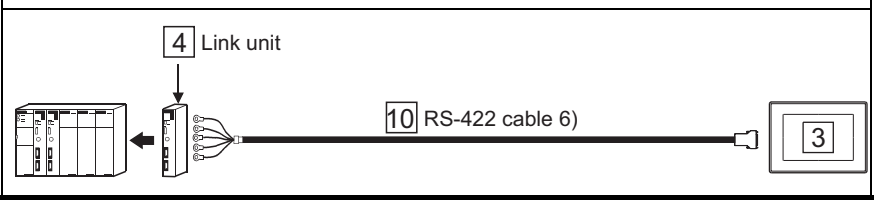
*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 14.2 Connection Cable)

14.1.4 Connecting to JW-70CUH, JW-100CUH or JW-100CU

Communication driver

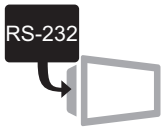
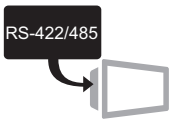
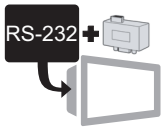
SHARP JW

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	Differs according to PLC side specifications.		GT16 GT15 GT11 Serial
			
			
			GT16
			
			
			GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

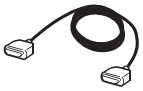
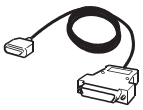
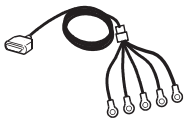
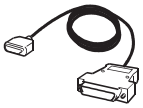
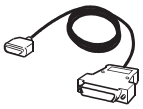
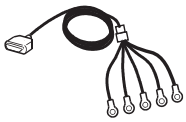
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Link unit	JW-21CM, ZM-10CM

4 is a product manufactured by Sharp Manufacturing Systems Corporation. For details of this product, contact Sharp Manufacturing Systems Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-422 cable 1) • Between CPU and GOT	To be prepared by the user. Section 14.2 Connection Cable	GT16
	7	RS-422 cable 3) • Between link unit and GOT		
	8	RS-232 cable 1)*1 • Between CPU and GOT	GT09-C30R20601-15P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 4)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40601-15P(3m) GT09-C100R40601-15P(10m) GT09-C200R40601-15P(20m) GT09-C300R40601-15P(30m)	
	10	RS-422 cable 6)*1 • Between link unit and RS-422 connector conversion cable • Between link unit and GOT	GT09-C30R40603-6T(3m) GT09-C100R40603-6T(10m) GT09-C200R40603-6T(20m) GT09-C300R40603-6T(30m)	

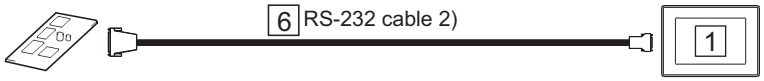
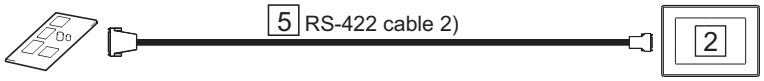
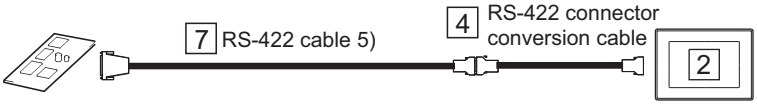
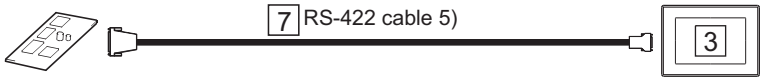
*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 14.2 Connection Cable)

14.1.5 Connecting to Z-512J

Communication driver

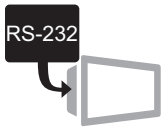
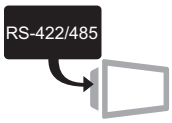
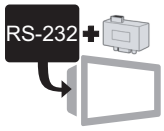
SHARP JW

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	Differs according to PLC side specifications.		GT16 GT15 GT11 Serial
			GT16
			
			GT16 GT15 GT11 Serial

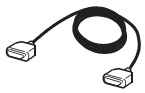
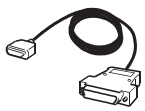
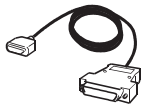
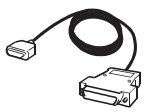
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 conversion cable	GT16-C02R4-9S(0.2m)	GT16
	5	RS-422 cable 2) • Between CPU and GOT	To be prepared by the user. Section 14.2 Connection Cable	
	6	RS-232 cable 2)*1 • Between CPU and GOT	GT09-C30R20602-15P(3m)	GT16 GT15 GT11 Serial
	7	RS-422 cable 5)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40602-15P(3m) GT09-C100R40602-15P(10m) GT09-C200R40602-15P(20m) GT09-C300R40602-15P(30m)	

*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 14.2 Connection Cable)

14.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ Section 14.2.1)

Model name			Connection cable
			GT16, GT15, GT11
PLC CPU	JW-22CU		RS-232 cable 1)
	JW-32CUH, JW-33CUH	Connecting to PG/COMM2 port	RS-232 cable 2)
	JW-70CUH, JW-100CUH, JW-100CU		RS-232 cable 1)
	Z-512J	Connecting to PG/COMM2 port	RS-232 cable 2)

2 RS-422 cable (☞ Section 14.2.2)

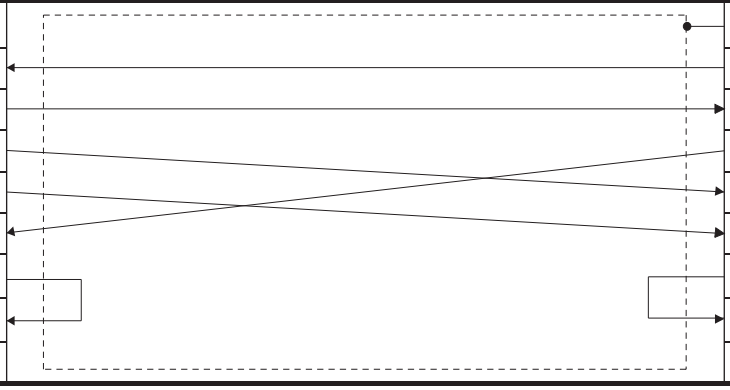
Model name			Connection cable	
			GT16	GT15, GT11
PLC CPU	JW-22CU		RS-422 cable 1) RS-422 cable 4)	RS-422 cable 4)
	JW-32CUH, JW-33CUH	Connecting to PG/COMM1 port	RS-422 cable 2) RS-422 cable 5)	RS-422 cable 5)
		Connecting to PG/COMM2 port		
	JW-70CUH, JW-100CUH, JW-100CU		RS-422 cable 1) RS-422 cable 4)	RS-422 cable 4)
	Z-512J	Connecting to PG/COMM1 port	RS-422 cable 2) RS-422 cable 5)	RS-422 cable 5)
		Connecting to PG/COMM2 port		
Link unit	JW-21CM		RS-422 cable 3) RS-422 cable 6)	RS-422 cable 6)
	JW-10CM, ZW-10CM			

14.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

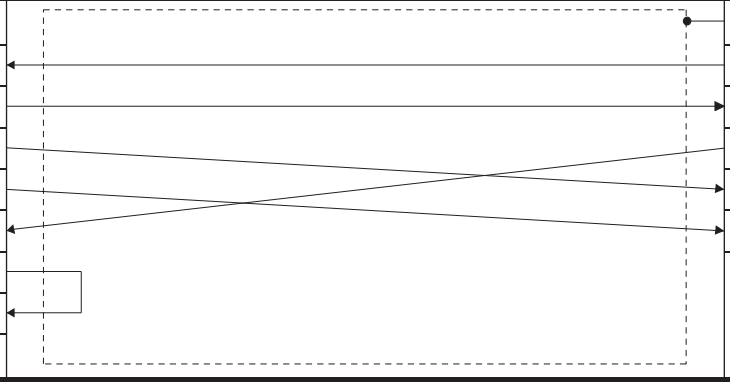
1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC *1	1		1	FG
RD(RXD)	2		2	SD(TXD)
SD(TXD)	3		3	RD(RXD)
ER(DTR)	4		4	RTS
SG	5		5	CTS
DR(DSR)	6		7	SG
RS(RTS)	7		12	—
CS(CTS)	8		14	—
—	9			

*1 GT16: CD, GT15: CD, GT11:NC

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		4	RD
ER(DTR)	4		8	RTS
SG	5		12	CTS
DR(DSR)	6		7	SG
RS(RTS)	7			
CS(CTS)	8			
—	9			

*2 GT16: CD, GT15: CD, GT11:NC

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-			

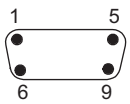
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) SHARP PLC side connector
Use the connector compatible with the SHARP PLC side module.
For details, refer to the following manual.

☞ User's Manual for the SHARP PLC

3 Precautions when preparing a cable

The maximum length of the RS-232 cable differs according to the specifications of the SHARP PLC.
For details, refer to the following manual.

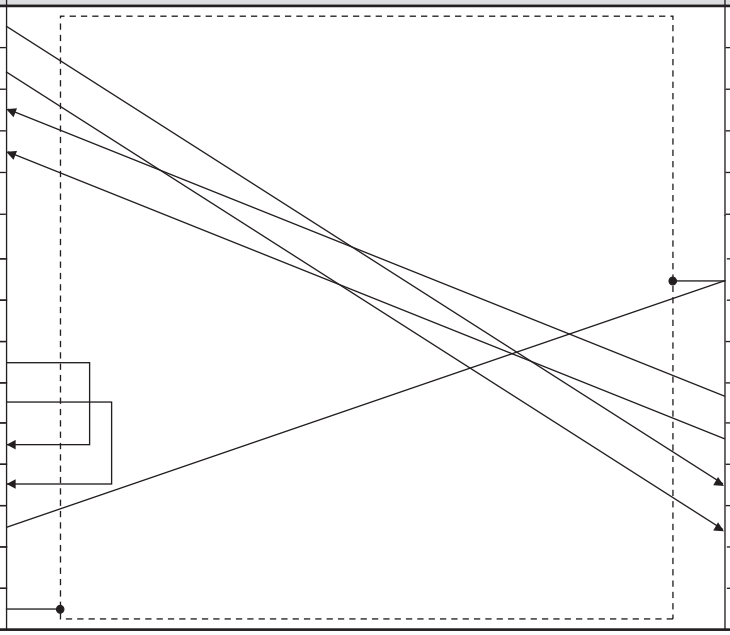
☞ User's Manual for the SHARP PLC

14.2.2 RS-422 cable

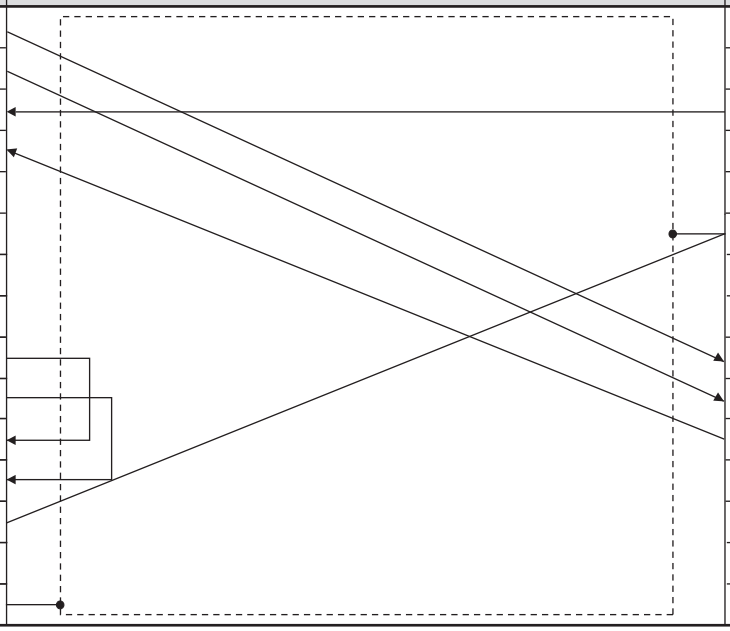
The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Wiring diagram

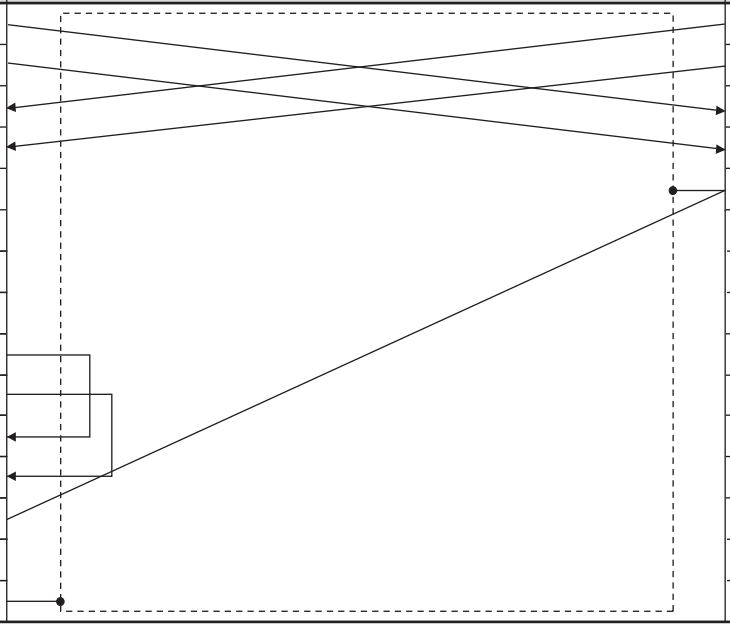
(1) RS-422 cable 1)

GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	
SDB1(TXD1-)	2		2	
RDA1(RXD1+)	3		3	
RDB1(RXD1-)	4		4	
SDA2(TXD2+)	5		5	
SDB2(TXD2-)	6		6	terminating resistor*1
RDA2(RXD2+)	7		7	SG
RDB2(RXD2-)	8		8	
RSA(RTS+)	9		9	
RSB(RTS-)	10		10	TXD(SD (+))
CSA(CTS+)	11		11	$\overline{\text{TXD}}$(SD (-))
CSB(CTS-)	12		12	RXD(RD (+))
SG	13		13	$\overline{\text{RXD}}$(RD (-))
NC	14		14	
	Shell		15	

(2) RS-422 cable 2)

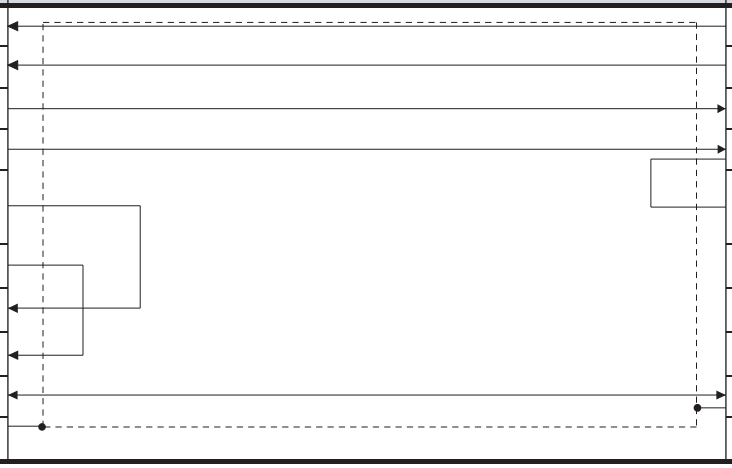
GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	
SDB1(TXD1-)	2		2	
RDA1(RXD1+)	3		3	SD(+)
RDB1(RXD1-)	4		4	
SDA2(TXD2+)	5		5	
SDB2(TXD2-)	6		6	SG
RDA2(RXD2+)	7		7	SG
RDB2(RXD2-)	8		8	
RSA(RTS+)	9		9	RS(+)
RSB(RTS-)	10		10	RD(-)
CSA(CTS+)	11		11	SD(-)
CSB(CTS-)	12		12	
SG	13		13	
NC	14		14	
	Shell		15	

(3) RS-422 cable 3)

GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		L1	SD(+)
SDB1(TXD1-)	2		L2	SD(-)
RDA1(RXD1+)	3		L3	RD(+)
RDB1(RXD1-)	4		L4	RD(-)
SDA2(TXD2+)	5		SHIELD*1	-
SDB2(TXD2-)	6		FG(GND)	-
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

*1 Two SHIELD terminals are provided for JW-10CM and ZW-10CM. Connect to either SHIELD terminal.

(4) RS-422 cable 4)

GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		10	TXD(SD(+))
RDB	7		11	$\overline{\text{TXD}}$(SD(-))
SDA	1		12	RXD(RD(+))
SDB	6		13	$\overline{\text{RXD}}$(RD(-))
RSA	3		6	terminating resistor*1
RSB	8		—	—
CSA	4		—	—
CSB	9		—	—
SG	5		7	SG
FG	—			

*1 Connect the terminating resistor at pin 6 with pin 13 (RXD) only at the terminal station.
(Valid for JW-70CUH and JW-100CUH, The terminating resistor does not exist in JW-22CU and JW-100CU.)

(5) RS-422 cable 5)

GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		3	SD(+)
RDB	7		11	SD(-)
SDA	1		9	RD(+)
SDB	6		10	RD(-)
RSA	3		—	—
RSB	8		—	—
CSA	4		—	—
CSB	9		—	—
SG	5		6	SG
FG	—		7	SG

(6) RS-422 cable 6)

GOT side		Cable connection and signal direction	SHARP PLC side	
Signal name	Pin No.		Terminal block name	Signal name
RDA	2		L1	SD(+)
RDB	7		L2	SD(-)
SDA	1		L3	RD(+)
SDB	6		L4	RD(-)
RSA	3		—	—
RSB	8		—	—
CSA	4		—	—
CSB	9		—	—
SG	5		SHIELD*1	—
FG	—		FG(GND)	—

*1 Two SHIELD terminals are provided for JW-10CM and ZW-10CM. Connect to either SHIELD terminal.

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

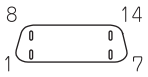
GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd.
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

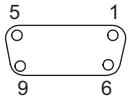
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

(2) SHARP PLC side connector

Use the connector compatible with the SHARP PLC module.

For details, refer to the following manual.

☞ User's Manual for the SHARP PLC

3 Precautions when preparing a cable

The maximum length of the RS-422 cable differs according to the specifications of the SHARP PLC. For details, refer to the following manual.

☞ User's Manual for the SHARP PLC

4 Connecting terminating resistors

Connect the terminating resistor on the SHARP PLC side when connecting a GOT to a SHARP PLC. No terminating resistor needs to be connected on the GOT side as one is already built into the GOT. The PLC CPUs and the modules on the PLC CPU side requiring a terminating resistor are shown below.

(1) JW-22CU
Turn "ON" the terminating resistor setting switch (SW1) on the back of JW-22CU to validate the terminating resistor.

(2) JW-70CUH and JW-100CUH
Connect the pin 6 (terminating resistor) of the communication port connection connector with the pin 13 ($\overline{\text{RXD}}$) only at the terminal station to validate the terminating resistor.

(3) JW-21CM, JW-10CM and ZW-10CM
Turn "ON" the terminator switch (SW7) on the front panel only at the terminal station to validate the terminating resistor.

14.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 14.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 14.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 14.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 14.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 14.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 14.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 14.3.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

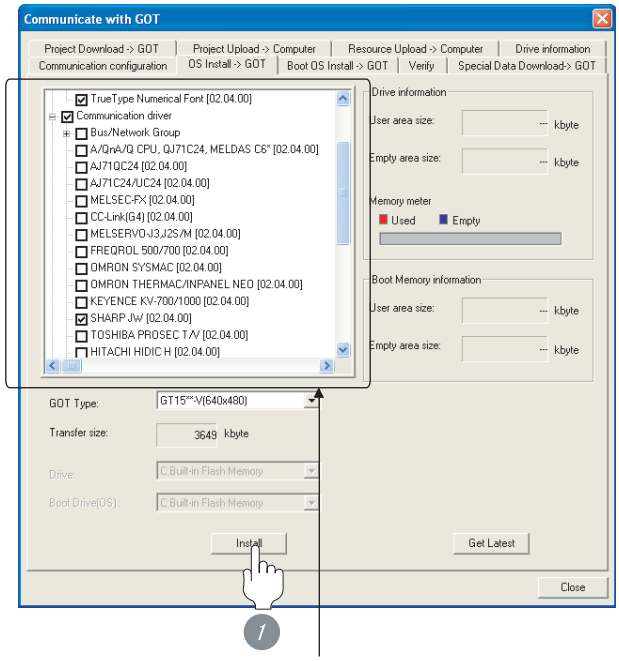
☞ Section 14.4 PLC Side Setting

14.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• KOYO KOSTAC/DL

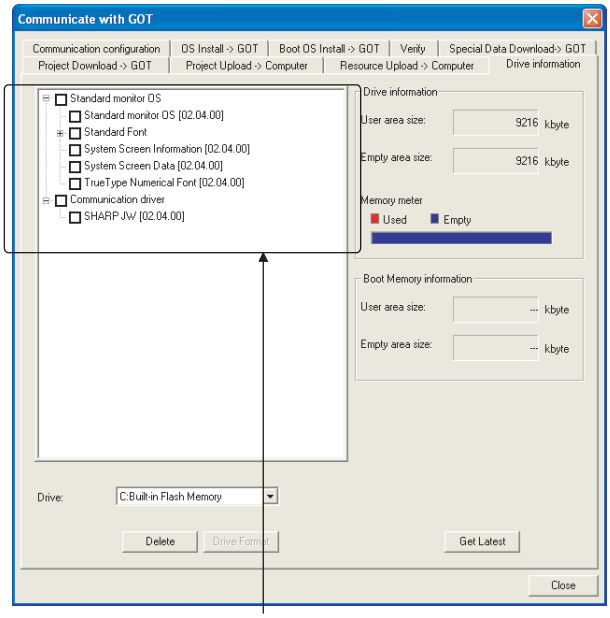
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

14.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: SHARP JW

14.3.3 Setting communication interface (Communication settings)

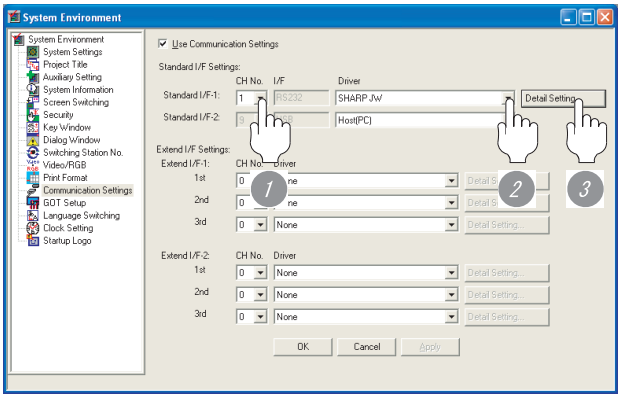
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



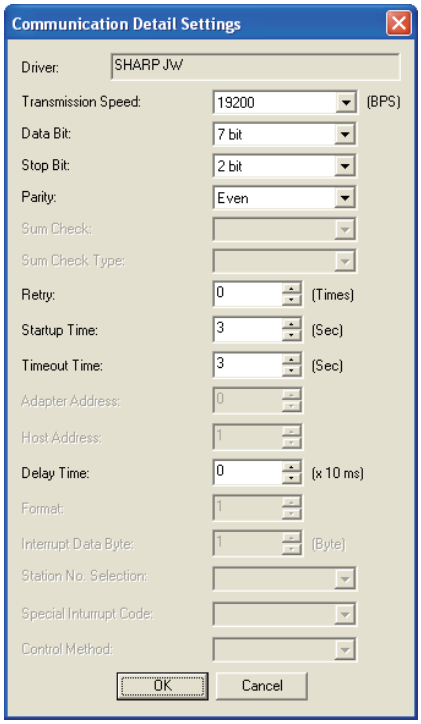
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "SHARP JW".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 30 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 30 (× 10 ms)

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

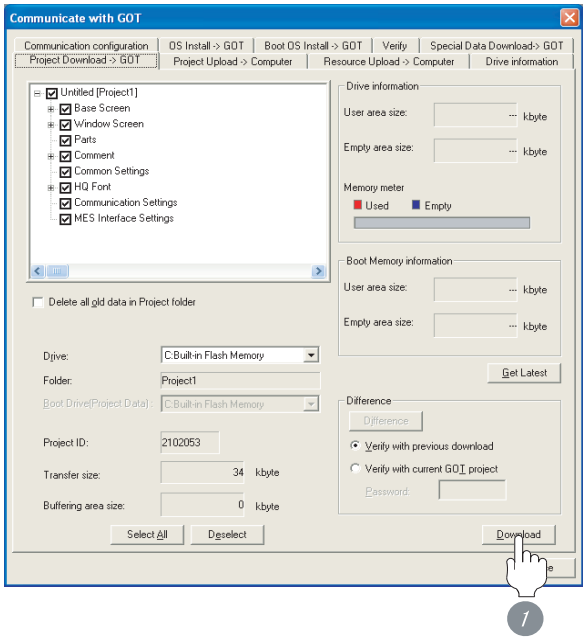
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

14.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

14.3.5 Attaching communication unit and connecting cable

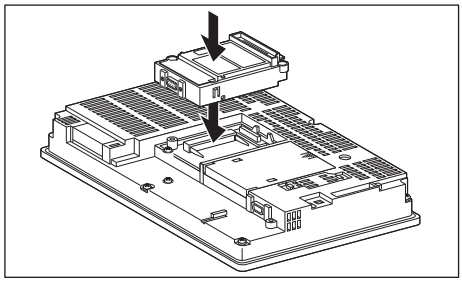
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

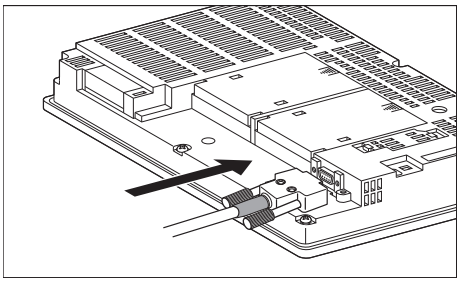
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For the GT16, GT15

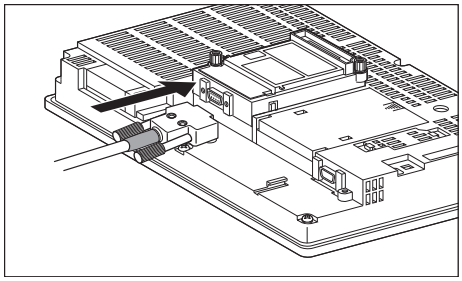
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



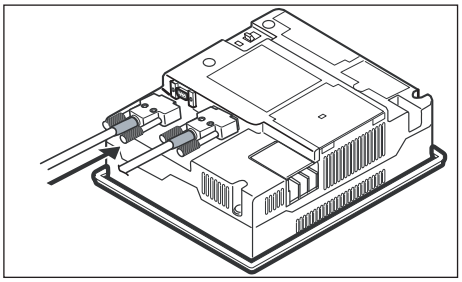
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

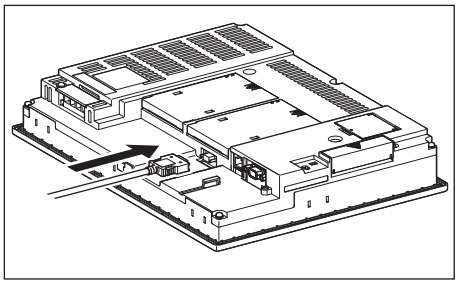


(2) How to connect the RS-422 cable

(a) For the GT16

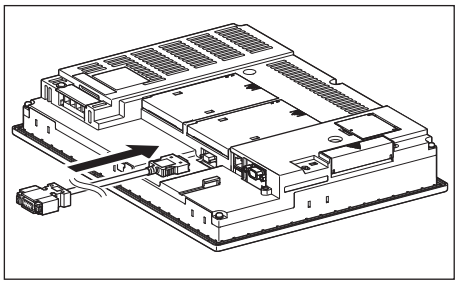
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

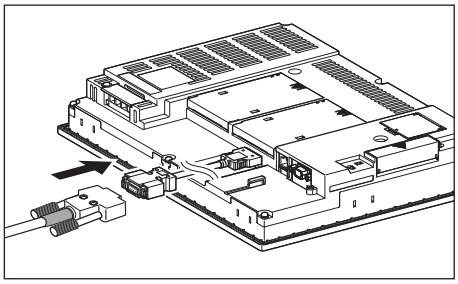


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

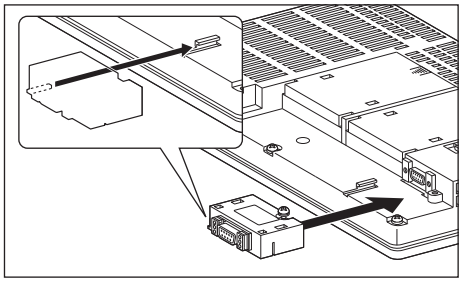


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

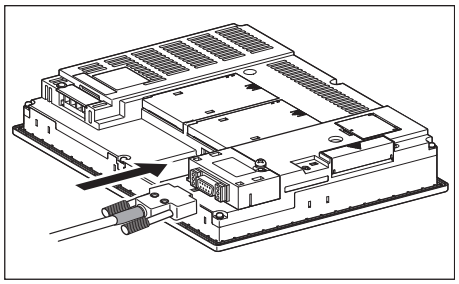


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

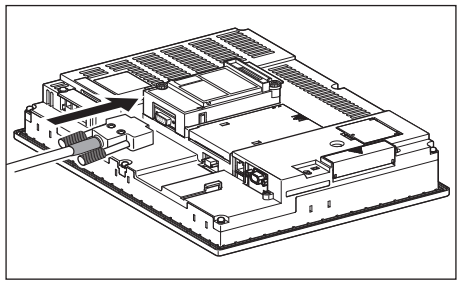


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

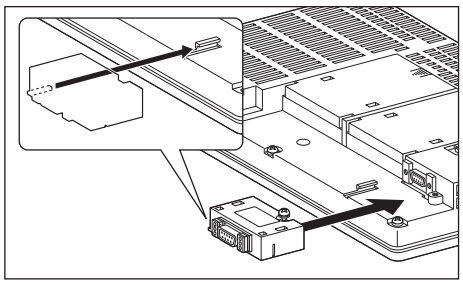
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



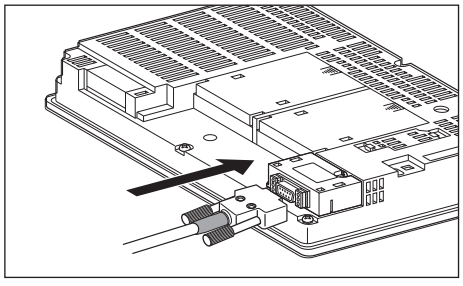
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155 ☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

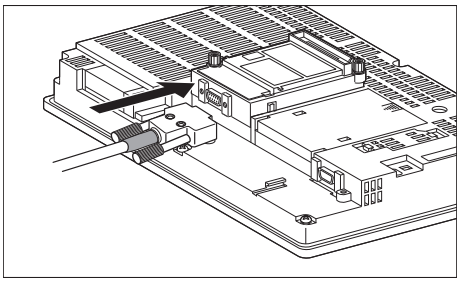


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

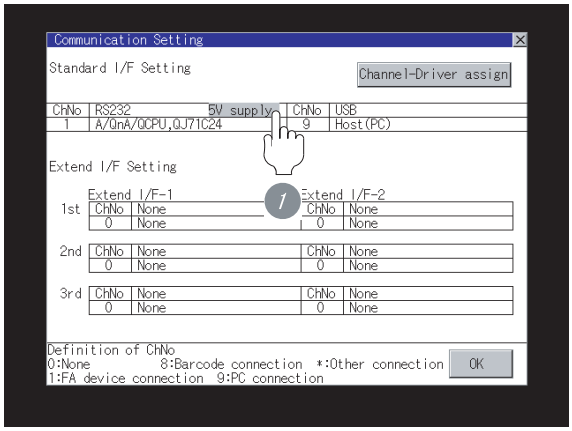
Point

When using the RS-422 conversion unit

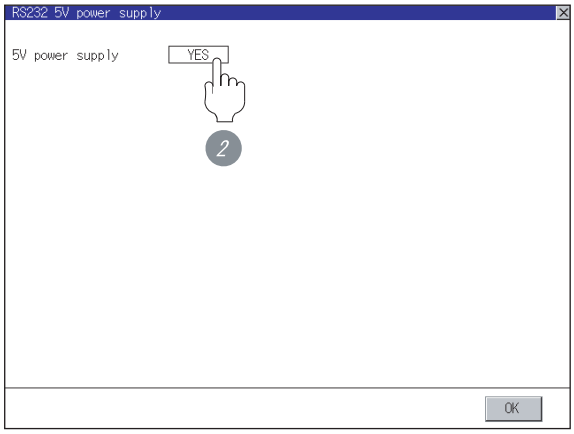
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

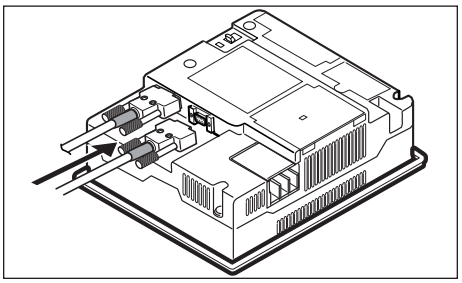


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



14.3.6 Verifying GOT recognizes controllers

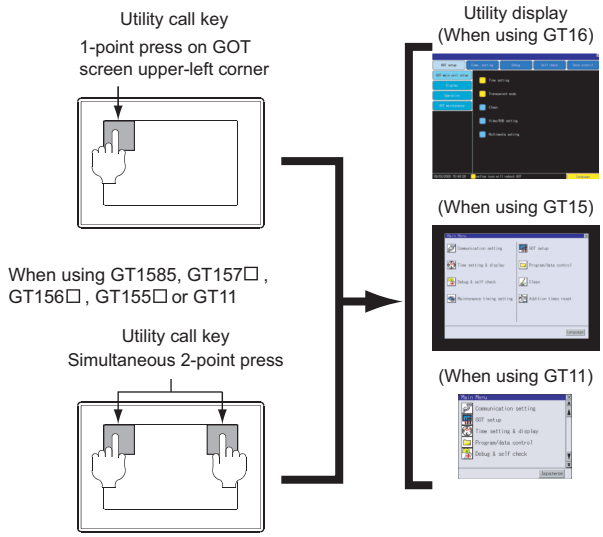
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

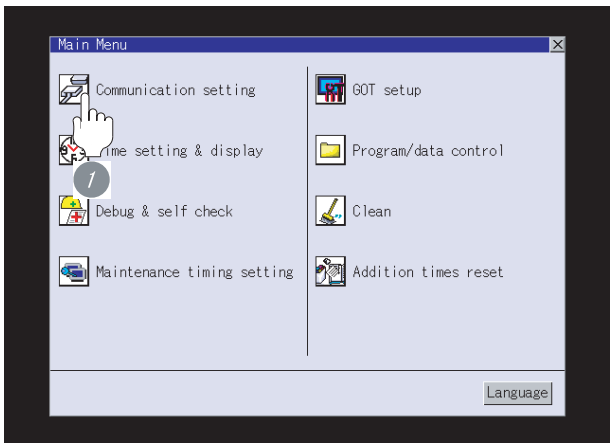


Remark

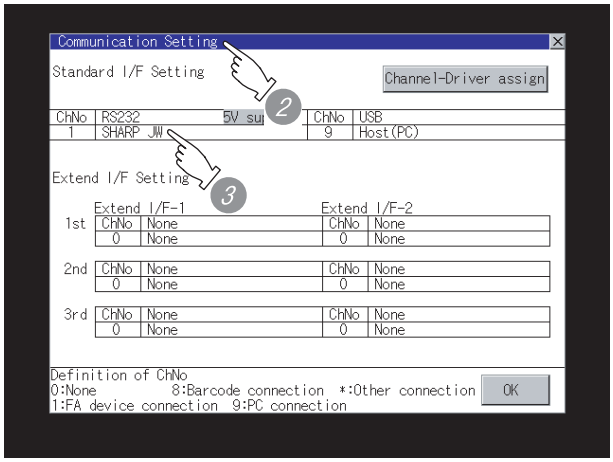
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: SHARP JW

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 14.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

14.3.7 Checking for normal monitoring

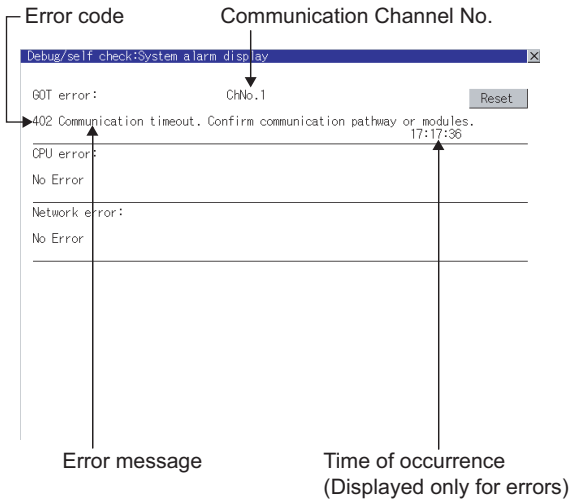
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

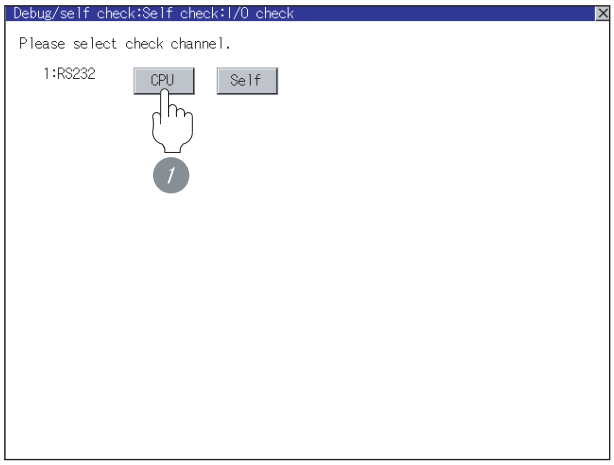
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

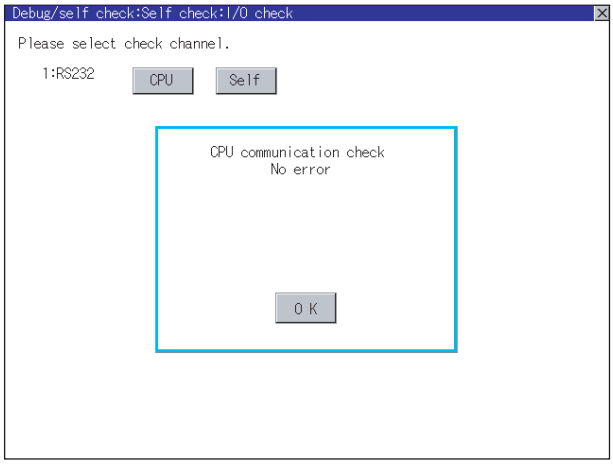
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 14.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

14.4 PLC Side Setting

Point

SHARP PLC

For details of the SHARP PLC, refer to the following manual.

☞ User's Manual for the SHARP PLC

Model name		Reference
PLC CPU	JW-22CU	Section 14.4.1
	JW-32CUH, JW-33CUH	Section 14.4.2
	JW-70CUH, JW-100CUH, JW-100CU	Section 14.4.1
	Z-512J	Section 14.4.2
Link unit	JW-21CM	Section 14.4.3
	JW-10CM, ZW-10CM	Section 14.4.4

14.4.1 Connecting to JW-22CU, JW-70CUH, JW-100CUH or JW-100CU

1 System memory setting

Make the system memory setting.

System memory No.	Item	Setting
#236	Transmission speed, parity and stop bit	D7 D6 D5 D4 D3 D2 ～ D0 0 0 (3) (2) (1) (1) Transmission speed *1 *2 000: 19200bps 001: 9600bps 010: 4800bps (2) Parity 10 (fixed): Even (3) Stop bit 1 (fixed): 2 bits
#237	Station No.	1: Station No. 1 (fixed)

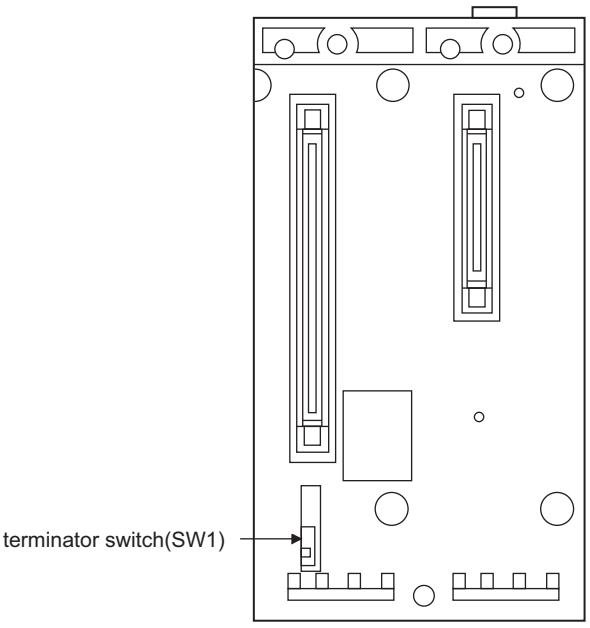
*1 This indicates only the transmission speed that can be specified on the GOT side.

*2 Specify the transmission speed to match the transmission speed of the GOT.
For how to set the transmission speed of the GOT, refer to the following.

☞ Section 14.3.3 Setting communication interface (Communication settings)

2 Terminating resistor setting switch (For JW-22CU only)

Set the terminating resistor setting switch.





Setting	
RS-232 communication	RS-422 communication
OFF (terminating resistor validated)	ON (terminating resistor invalidated)

14.4.2 Connecting to JW-32CUH, JW-33CUH or Z-512J

1 Settings for connecting to communication port 1 (PG/COMM1 port)

Set the system memory.

System memory No.	Item	Setting
#234	Transmission speed, parity and stop bit	D7 D6 D5 D4 D3 D2 ~ D0 0 0 (3) (2) (1) (1) Transmission speed *1 *2 000: 19200bps 001: 9600bps 010: 4800bps (2) Parity 10 (fixed): Even (3) Stop bit 1 (fixed): 2 bits
#235	Station No.	1: Station No. 1 (fixed)

*1 This indicates only the transmission speeds that can be specified on the GOT side.

*2 Specify the transmission speed to match the transmission speed of the GOT.
For how to set the transmission speed of the GOT, refer to the following.

☞ Section 14.3.3 Setting communication interface (Communication settings)

2 Settings for connecting to communication port 2 (PG/COMM2 port)

Set the system memory.

System memory No.	Item	Setting
#236	Transmission speed, parity and stop bit	D7 D6 D5 D4 D3 D2 ~ D0 0 0 (3) (2) (1) (1) Transmission speed *3 *4 000: 19200bps 001: 9600bps 010: 4800bps (2) Parity 10 (fixed): Even (3) Stop bit 1 (fixed): 2 bits
#237	Station No.	1: Station No. 1 (fixed)

*3 This indicates only the transmission speeds that can be specified on the GOT side.

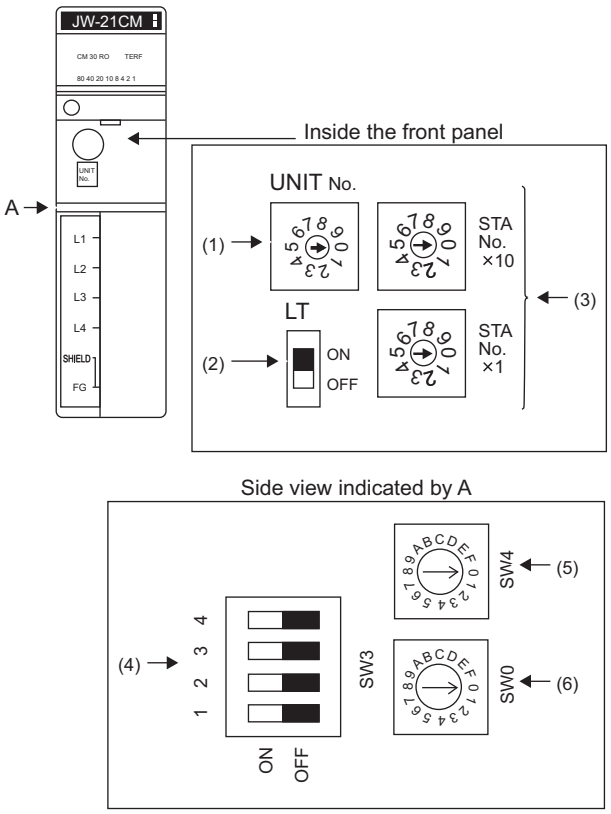
*4 Specify the transmission speed to match the transmission speed of the GOT.
For how to set the transmission speed of the GOT, refer to the following.

☞ Section 14.3.3 Setting communication interface (Communication settings)

14.4.3 Connecting to the link unit (JW-31CM)

1 Switch setting of the link unit (JW-21CM)

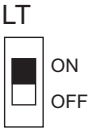
Make setting for each switch.



(1) Module No. switch (SW8)

The module No. switch is not used for communication with the GOT.

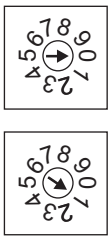
(2) Terminator switch(SW7)



Setting	Description
ON*1	Terminating resistor validated

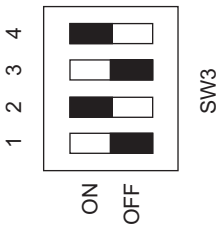
*1 Turn on only for the terminal station.

(3) Station number setting switch(SW1,SW2)



Switch No.	Setting	Description
SW1	Station No. lower digit (10^0 digit)	1 (fixed)
SW2	Station No. upper digit (10^1 digit)	0 (fixed)

(4) Operation mode setting switch(SW3)



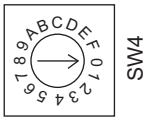
Switch No.	Setting	Description
SW3-1	OFF (fixed)	Invalid
SW3-2	ON (fixed)	4-wire type
SW3-3	OFF (fixed)	Invalid
SW3-4	ON (fixed)	Even

(5) Transmission speed setting switch (SW4)

Specify the transmission speed to match the transmission speed of the GOT.

For how to set the transmission speed of the GOT, refer to the following.

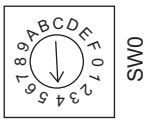
Section 14.3.3 Setting communication interface (Communication settings)



Setting*1	Description
0	19200bps
1	9600bps
2	4800bps

*1 Indicates only the transmission speed that can be specified on the GOT side.

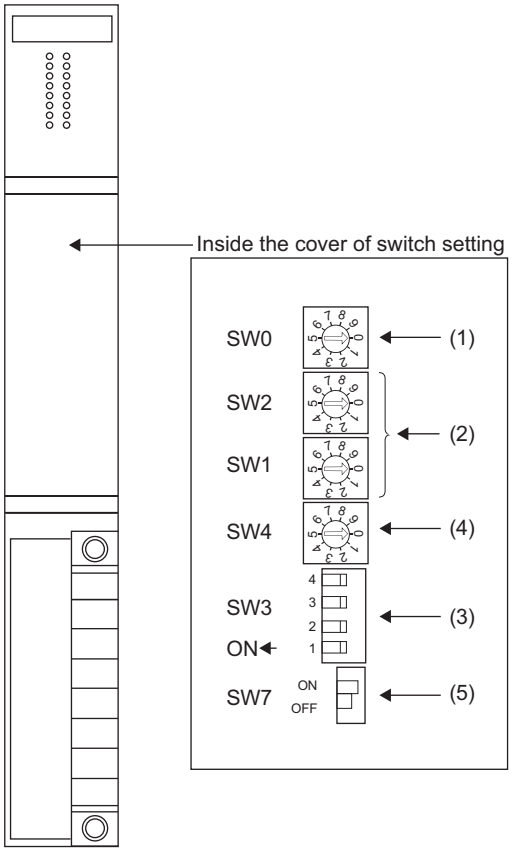
(6) Function setting switch(SW0)



Setting	Description
4 (fixed)	Computer link

14.4.4 Connecting to the link unit (JW-10CM or ZW-10CM)

1 Switch setting of link unit (JW-10CM and ZW-10CM)



(1) Function setting switch(SW0)

SW0

Setting	Description
4 (fixed)	Computer link (command mode)

(2) Station number switch(SW1,SW2)

SW2

SW1

Switch No.	Setting	Description
SW1	Station No. lower digit (10^0 digit)	1 (fixed)
SW2	Station No. upper digit (10^1 digit)	0 (fixed)

(3) Operation mode setting switch(SW3)

SW3

ON

Switch No.	Setting	Description
SW3-1	OFF (fixed)	Invalid
SW3-2	ON (fixed)	4-wire type
SW3-3	OFF (fixed)	Invalid
SW3-4	ON (fixed)	Even

(4) Transmission speed setting switch (SW4)

Specify the transmission speed to match the transmission speed of the GOT.

For how to set the transmission speed of the GOT, refer to the following.

Section 14.3.3 Setting communication interface (Communication settings)

SW4

Setting*1	Description
0	19200bps
1	9600bps
2	4800bps

*1 This indicates only the transmission speed that can be specified on the GOT side.

(5) Terminator switch(SW7)

SW7 ON OFF

Setting	Description
ON*2	Terminating resistor

*2 Set to ON only for the terminal station.

14.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	SHARP PLC connection	Supporting the SHARP PLC connection	2.09K	Communication driver SHARP JW [01.02.**]
GT15 GT11 Serial	SHARP PLC connection	Supporting the retry, the timeout time and the delay time	2.73B	Communication driver SHARP JW [03.09.**]
GT16	SHARP PLC connection	Supporting the connections to GT16	2.90U	Standard monitor OS [04.02.**] Communication driver SHARP JW [04.02.**]

MEMO

15

CONNECTION TO JTEKT PLC



15.1 System Configuration . . . . . page 15-2
This section describes the equipment and cables needed when connecting a GOT to an JTEKT PLC.
Select a system suitable for your application.

15.2 Connection Cable . . . . . page 15-19
This section describes the specifications of the cables needed when connecting to an JTEKT PLC.
Check the specifications of the connection cables.

15.3 Preparatory Procedures for Monitoring . . . . . page 15-28
This section provides the procedures to be followed before performing monitoring in connection to an JTEKT PLC.
This procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

15.4 PLC Side Setting . . . . . page 15-37
The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

15.5 Precautions . . . . . page 15-41
This section describes the precautions about PLC connection.
Refer to this section without fail before starting PLC connection.

15.6 List of Functions Added by Version Upgrade . . . . . page 15-42
This section describes the functions added by version upgrade of GT Designer2 or OS.

15.1 System Configuration

Select a system configuration suitable for your application.

Point

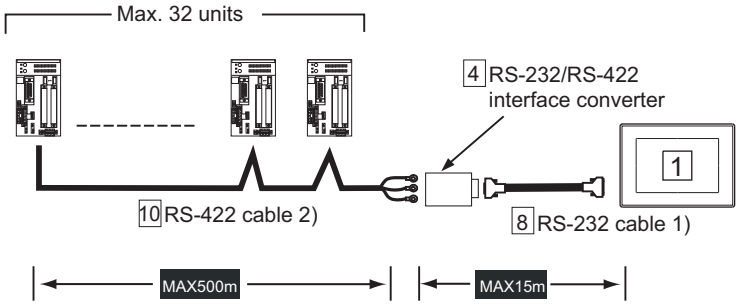
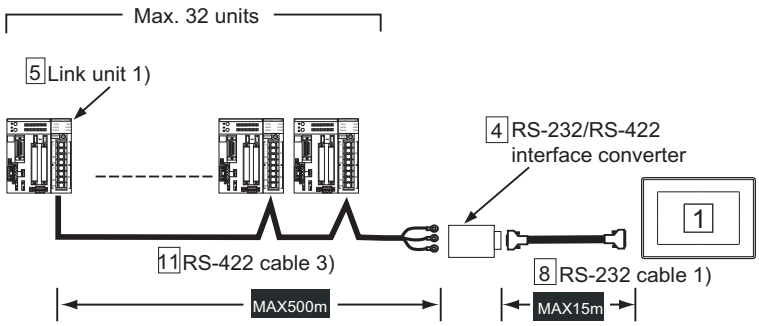
Conventions used in this section

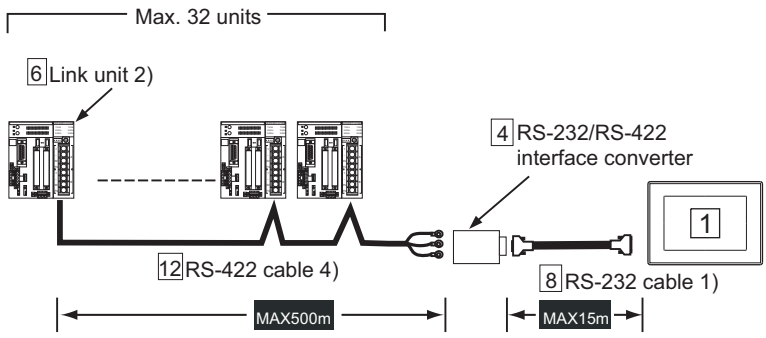
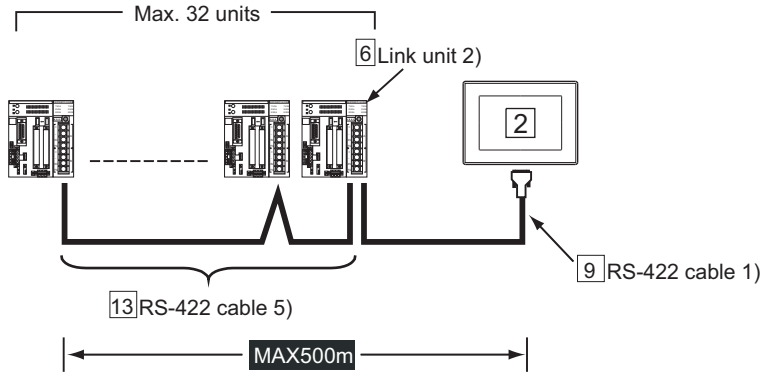
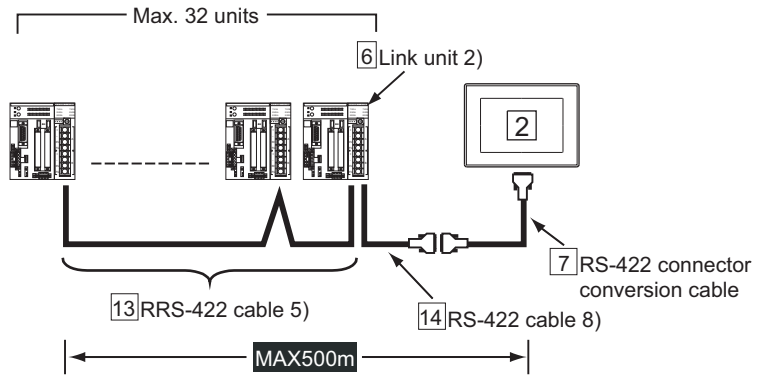
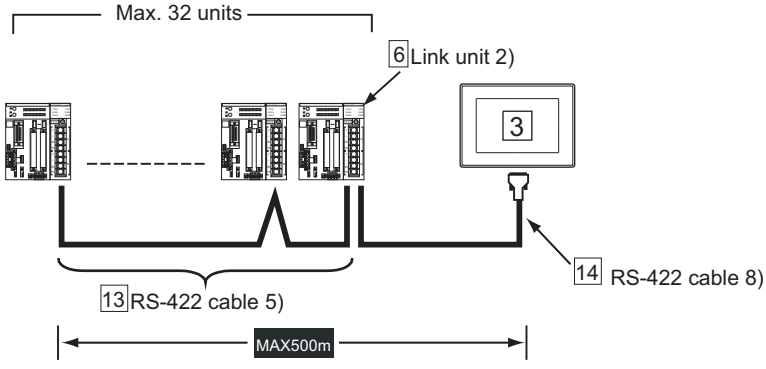
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

15.1.1 Connecting to PC3JG or PC3JG-P

Communication driver
JTEKT TOYOPUC-PC

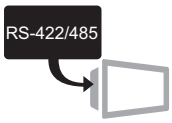
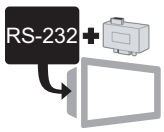
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and PLC 500m or less		GT16
1	Max. 32 units	Between GOT and PLC 500m or less		GT16
1	Max. 32 units	Between GOT and PLC 500m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

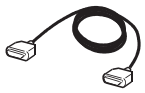
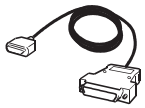
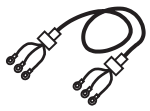
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	RS-232/RS-422 interface converter	TXU-2051
	5	Link unit 1)	THU-2755
			THU-2927
	6	Link unit 2)	THU-5139

4, 5, 6 is manufactured by JTEKT Corporation.For details of the product, contact JTEKT Corporation.

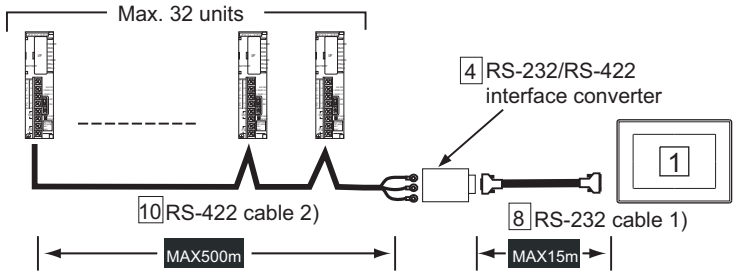
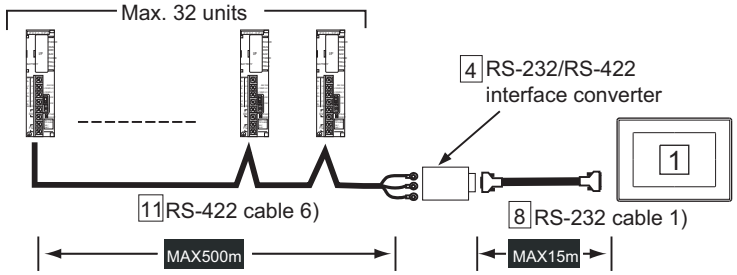
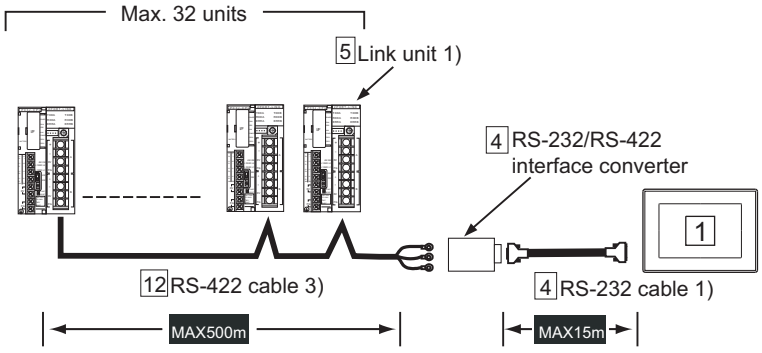
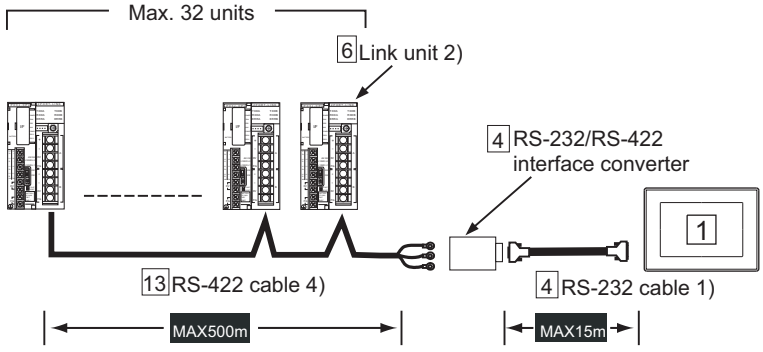
(3) Cable

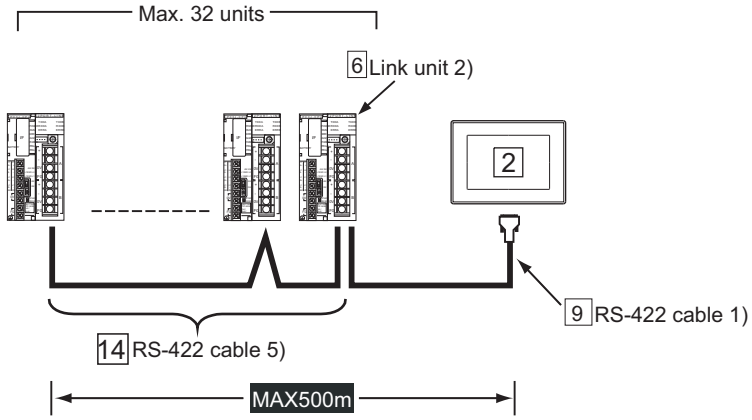
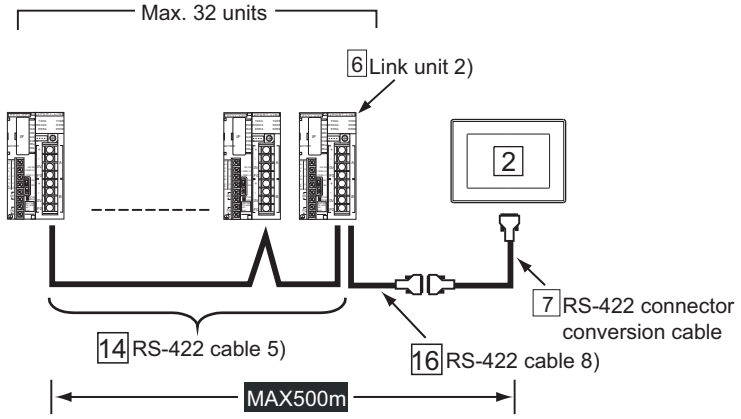
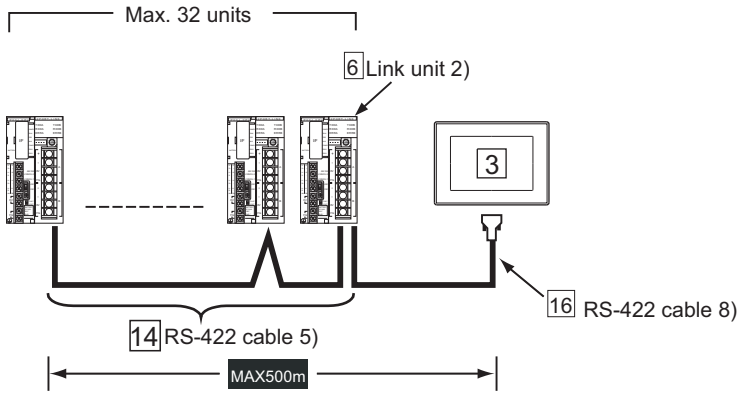
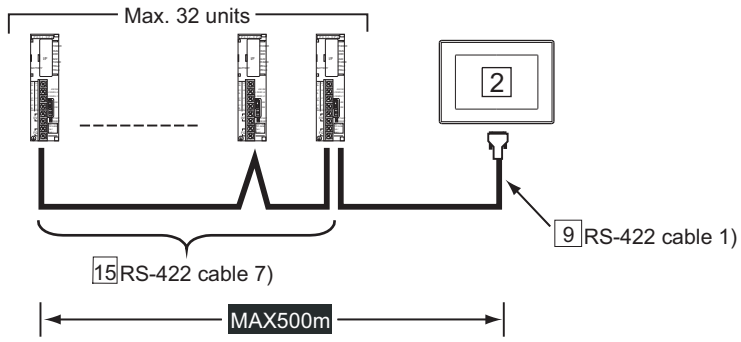
Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-232 cable 1)*1 • Between RS-232/RS-422 interface converter and GOT	GT09-C30R21201-25P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 1) • Between Link unit and GOT	(To be prepared by the user. ☞ Section 15.2 Connection Cable)	GT16
	10	RS-422 cable 2) • Between RS-232/RS-422 interface converter and PLC		GT16 GT15 GT11 Serial
	11	RS-422 cable 3) • Between RS-232/RS-422 interface converter and Link unit		GT16 GT15 GT11 Serial
	12	RS-422 cable 4) • Between RS-232/RS-422 interface converter and Link unit		GT16 GT15 GT11 Serial
	13	RS-422 cable 5) • Between Link unit and Link unit		GT16 GT15 GT11 Serial
	14	RS-422 cable 8)*1 • Between Link unit and RS-422 connector conversion cable • Between Link unit and GOT	GT09-C30R41201-6C(3m) GT09-C100R41201-6C(10m) GT09-C200R41201-6C(20m) GT09-C300R41201-6C(30m)	GT16 GT15 GT11 Serial

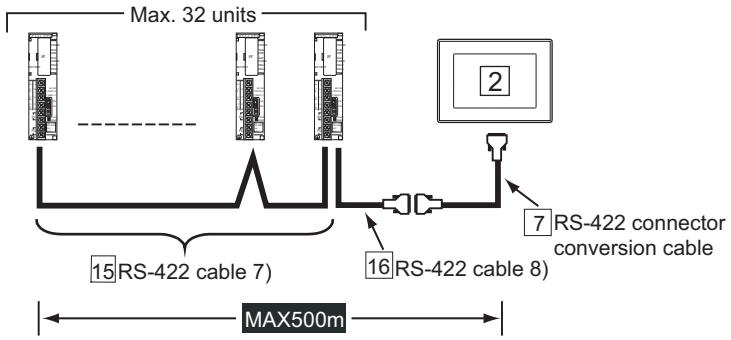
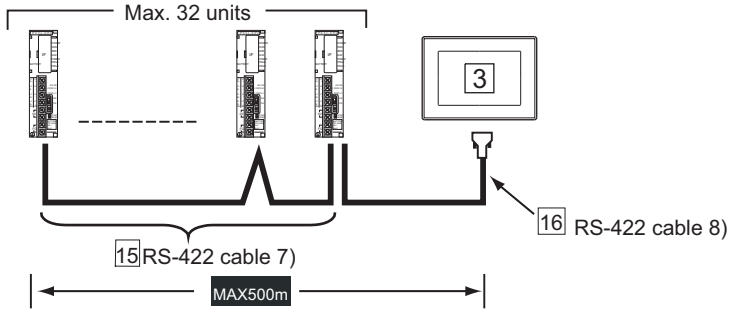
*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 15.2 Connection Cable)

15.1.2 Connecting to PC3J or PC3JL

1 System configuration and connection conditions

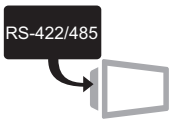
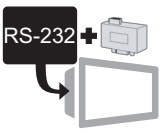
Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and PLC 500m or less		GT16
1	Max. 32 units	Between GOT and PLC 500m or less		GT16
1	Max. 32 units	Between GOT and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and PLC 500m or less		GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and PLC 500m or less		GT16
1	Max. 32 units	Between GOT and PLC 500m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

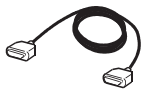
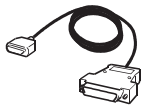
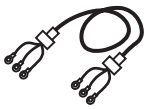
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	RS-232/RS-422 interface converter	TXU-2051
	5	Link unit 1)	THU-2755
			THU-2927
	6	Link unit 2)	THU-5139

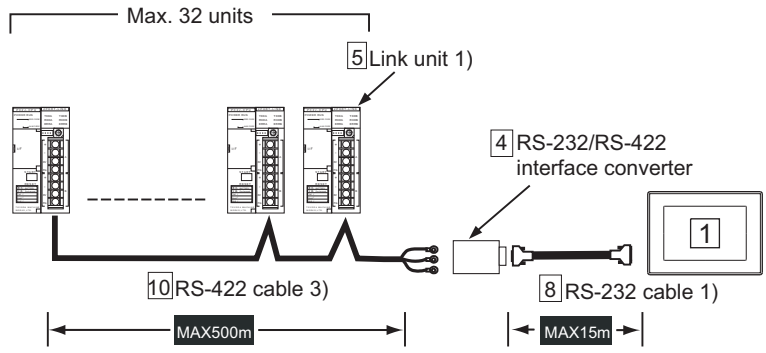
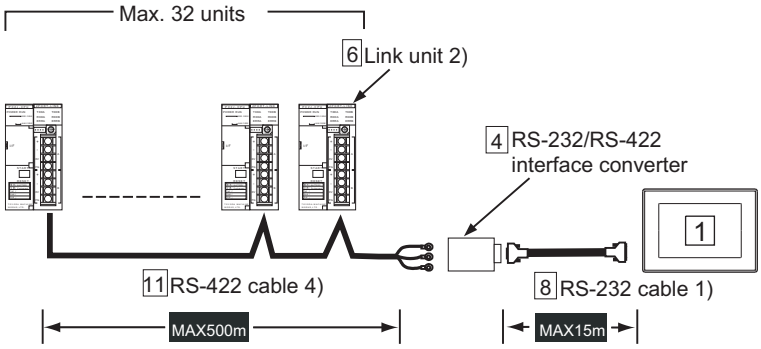
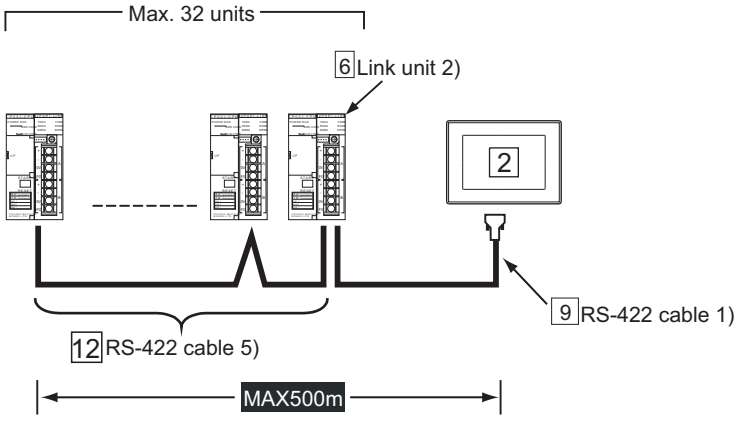
4, 5, 6 is manufactured by JTEKT Corporation.For details of the product, contact JTEKT Corporation.

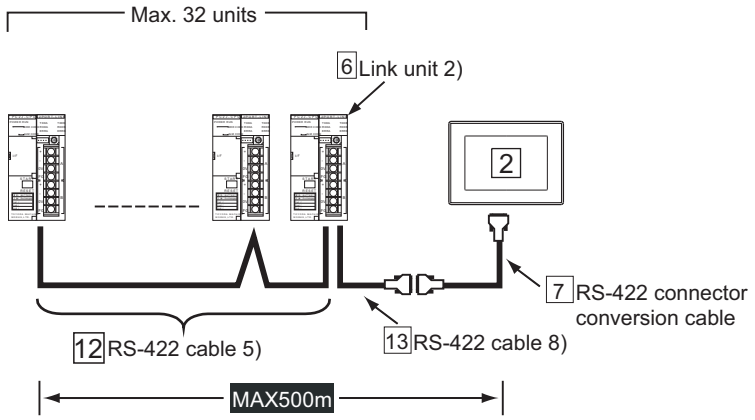
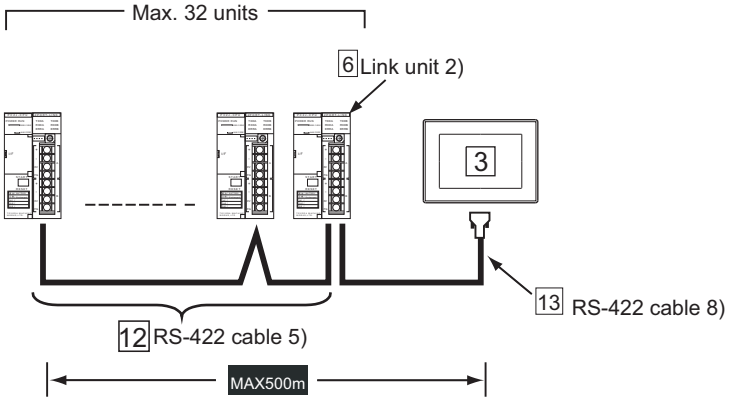
(3) Cable

Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-232 cable 1)*1 • Between RS-232/RS-422 interface converter and GOT	GT09-C30R21201-25P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 1) • Between PLC and GOT	(To be prepared by the user. Section 15.2 Connection Cable)	GT16
	10	RS-422 cable 2) • Between RS-232/RS-422 interface converter and PLC		GT16 GT15 GT11 Serial
	11	RS-422 cable 6) • Between RS-232/RS-422 interface converter and PLC		GT16 GT15 GT11 Serial
	12	RS-422 cable 3) • Between RS-232/RS-422 interface converter and link unit		GT16 GT15 GT11 Serial
	13	RS-422 cable 4) • Between link unit and GOT		GT16 GT15 GT11 Serial
	14	RS-422 cable 5) • Between link unit and link unit		GT16 GT15 GT11 Serial
	15	RS-422 cable 7) • Between PLC and PLC		GT16 GT15 GT11 Serial
	16	RS-422 cable 8)*1 • Between PLC and GOT • Between PLC and RS-422 connector conversion cable • Between link unit and GOT • Between link unit and RS-422 connector conversion cable	GT09-C30R41201-6C(3m) GT09-C100R41201-6C(10m) GT09-C200R41201-6C(20m) GT09-C300R41201-6C(30m)	GT16 GT15 GT11 Serial

*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 15.2 Connection Cable)

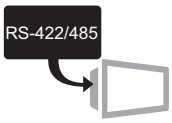
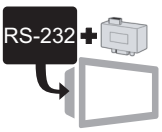
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and PLC 500m or less		GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and PLC 500m or less		GT16
1	Max. 32 units	Between GOT and PLC 500m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

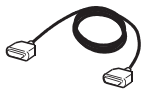
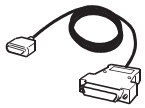
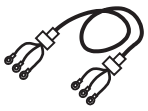
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	RS-232/RS-422 interface converter	TXU-2051
	5	Link unit 1)	THU-2755
			THU-2927
	6	Link unit 2)	THU-5139

4, 5, 6 is manufactured by JTEKT Corporation.For details of the product, contact JTEKT Corporation.

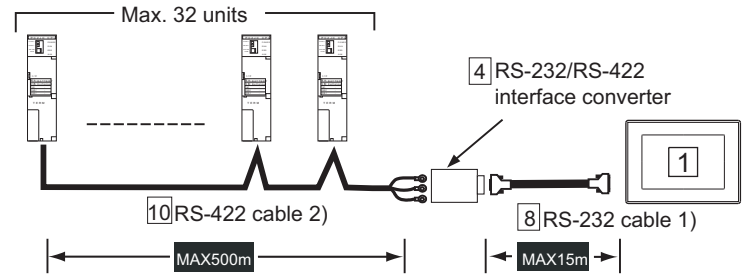
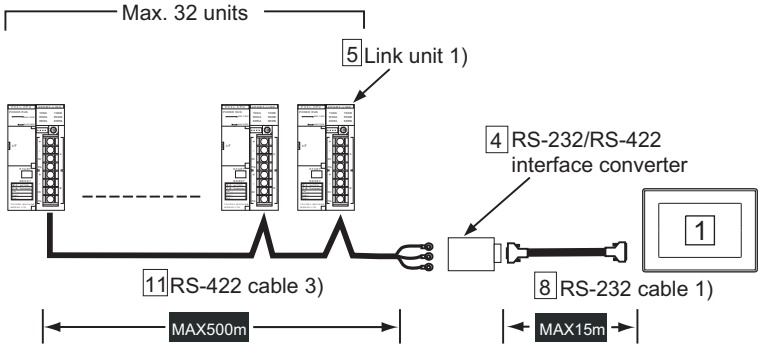
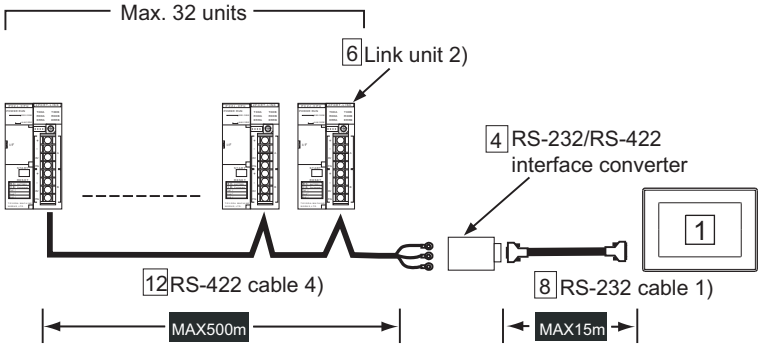
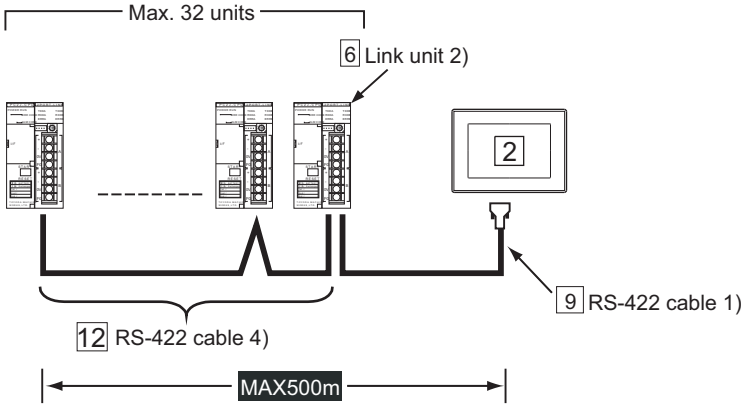
(3) Cable

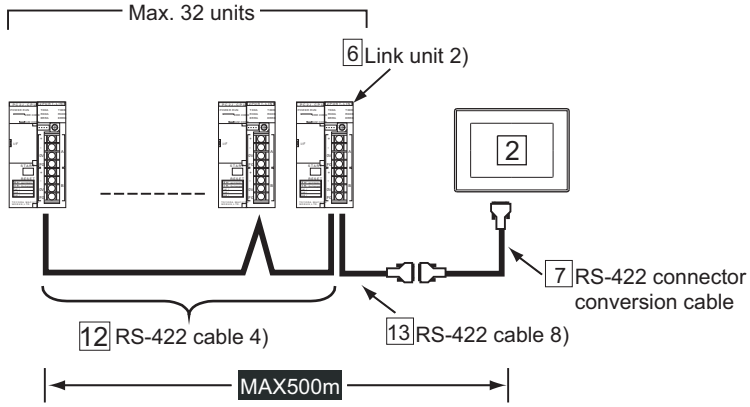
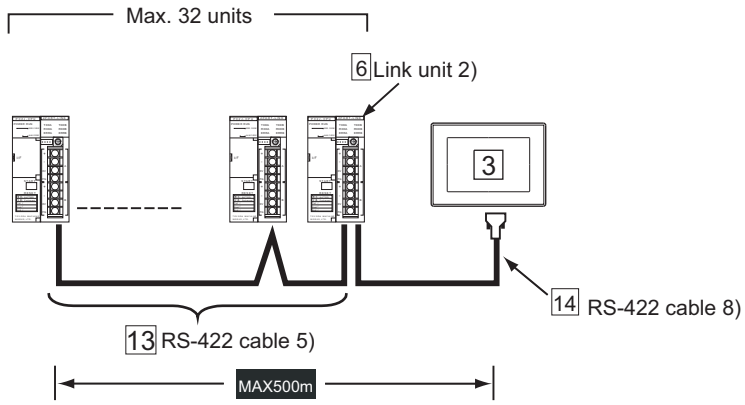
Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-232 cable 1)*1 • Between RS-232/RS-422 interface converter and GOT	GT09-C30R21201-25P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 1) • Between link unit and GOT	(To be prepared by the user. Section 15.2 Connection Cable)	GT16
	10	RS-422 cable 3) • Between RS-232/RS-422 interface converter and link unit		GT16 GT15 GT11 Serial
	11	RS-422 cable 4) • Between RS-232/RS-422 interface converter and link unit		GT16 GT15 GT11 Serial
	12	RS-422 cable 5) • Between link unit and link unit		GT16 GT15 GT11 Serial
	13	RS-422 cable 8)*1 • Between link unit and RS-422 connector conversion cable • Between link unit and GOT	GT09-C30R41201-6C(3m) GT09-C100R41201-6C(10m) GT09-C200R41201-6C(20m) GT09-C300R41201-6C(30m)	GT16 GT15 GT11 Serial

*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 15.2 Connection Cable)

15.1.4 Connecting to PC2JC, PC2J16P or PC2J16PR

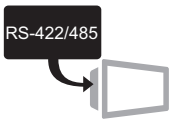
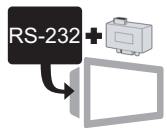
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and interface converter 15m or less Between interface converter and PLC 500m or less		GT16 GT15 GT11 Serial
1	Max. 32 units	Between GOT and PLC 500m or less		GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 32 units	Between GOT and PLC 500m or less		GT16
1	Max. 32 units	Between GOT and PLC 500m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

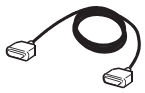
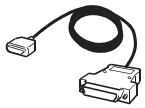
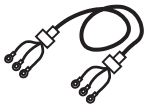
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	RS-232/RS-422 interface converter	TXU-2051
	5	Link unit 1)	THU-2755
			THU-2927
	6	Link unit 2)	THU-5139

4, 5, 6 is manufactured by JTEKT Corporation.For details of the product, contact JTEKT Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-232 cable 1)*1 • Between RS-232/RS-422 interface converter and GOT	GT09-C30R21201-25P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 1) • Between link unit and GOT	(To be prepared by the user. Section 15.2 Connection Cable)	GT16
	10	RS-422 cable 2) • Between RS-232/RS-422 interface converter and PLC		GT16 GT15 GT11 Serial
	11	RS-422 cable 3) • Between RS-232/RS-422 interface converter and link unit		GT16 GT15 GT11 Serial
	12	RS-422 cable 4) • Between Between RS-232/RS-422 interface converte and link unit		GT16 GT15 GT11 Serial
	13	RS-422 cable 5) • Between link unit and link unit		GT16 GT15 GT11 Serial
	14	RS-422 cable 8)*1 • Between link unit and RS-422 connector conversion cable • Between link unit and GOT	GT09-C30R41201-6C(3m) GT09-C100R41201-6C(10m) GT09-C200R41201-6C(20m) GT09-C300R41201-6C(30m)	GT16 GT15 GT11 Serial

*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 15.2 Connection Cable)

15.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable(☞ Section 15.2.1)

Model name		Connection cable
		GT16, GT15, GT11
RS-232/RS-422 interface converter	TXU-2051	RS-232 cable 1)

2 RS-422 cable(☞ Section 15.2.2)

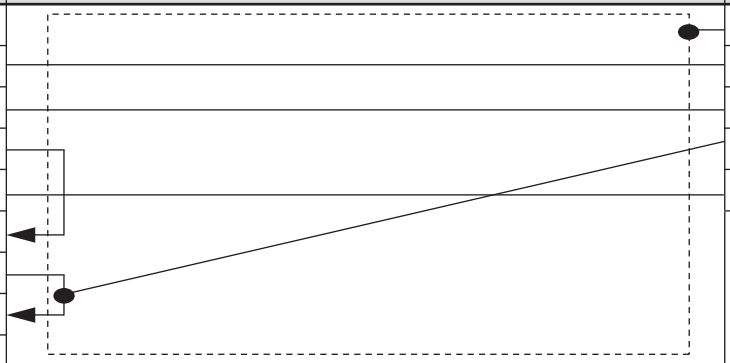
Model name		Connection cable			
		GT16	GT15, GT11	RS-232/RS-422 interface converter	Link unit/PLC CPU
PLC CPU	PC3JG, PC3JG-P	-	-	RS-422 cable 2)	-
	PC3J, PC3JL	RS-422 cable 1) RS-422 cable 8)	RS-422 cable 8)	RS-422 cable 2) RS-422 cable 6)	RS-422 cable 7)
	PC2JC, PC2J16P, PC2J16PR	-	-	RS-422 cable 2)	-
Link unit	THU-2755	-	-	RS-422 cable 3)	-
	THU-2927	-	-		-
	THU-5139	RS-422 cable 1) RS-422 cable 5) RS-422 cable 7) RS-422 cable 8)	RS-422 cable 8)	RS-422 cable 4)	RS-422 cable 5)

15.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	JTEKT PLC side (RS-232/RS-422) Interface converter	
Signal name	Pin No.		Pin No.	Signal name
-	1		1	FG
RD(RXD)	2		3	RD
SD(TXD)	3		2	TD
ER(DTR)	4		4	RS
SG	5		7	OV
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
NC	9			
FG	-			

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-			

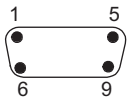
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) JTEKT PLC side connector
Use the connector compatible with the JTEKT PLC side module.
For details, refer to the following manual.

☞ User's Manual for the JTEKT PLC.

3 Precautions when preparing a cable

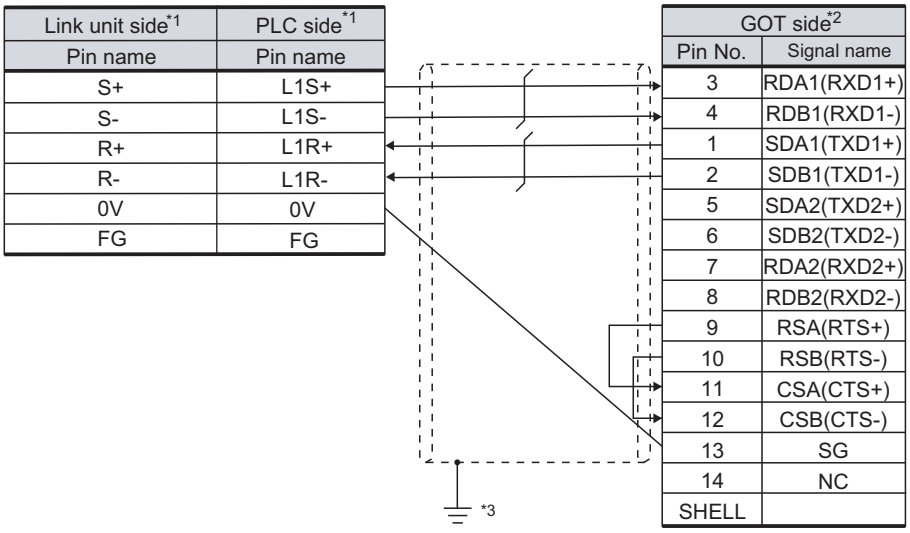
The length of the RS-232 cable must be 15m or less.

15.2.2 RS-422 cable

The following provides the connection diagrams and the connectors of the RS-422 cable connecting the GOT to the PLC.

1 Connection diagram

(1) RS-422 cable 1)



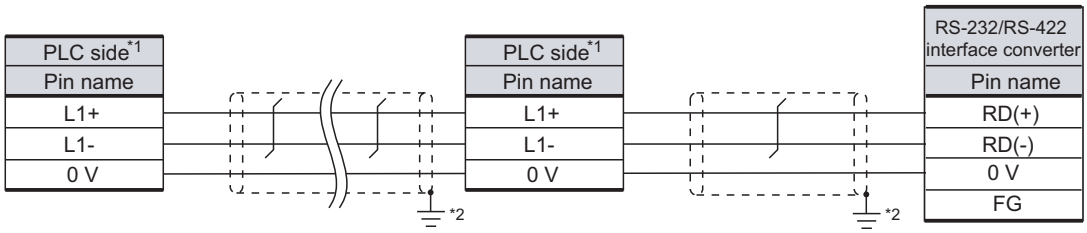
*1 Terminating resistor should be provided for a PLC or Link unit which will be a terminal.

*2 Set the terminating resistor of GOT side to "Disable".

4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

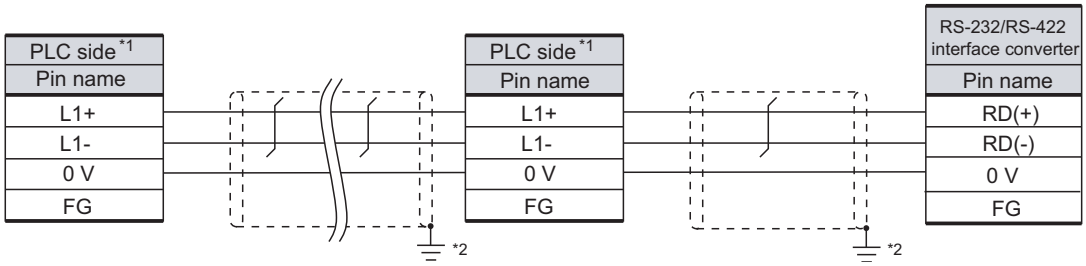
(2) RS-422 cable 2)
(For PC3JG-P/PC3JG)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

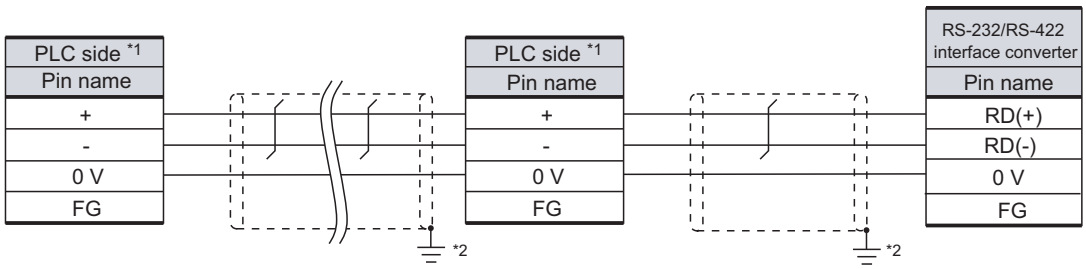
(For PC3J/PC3JL)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

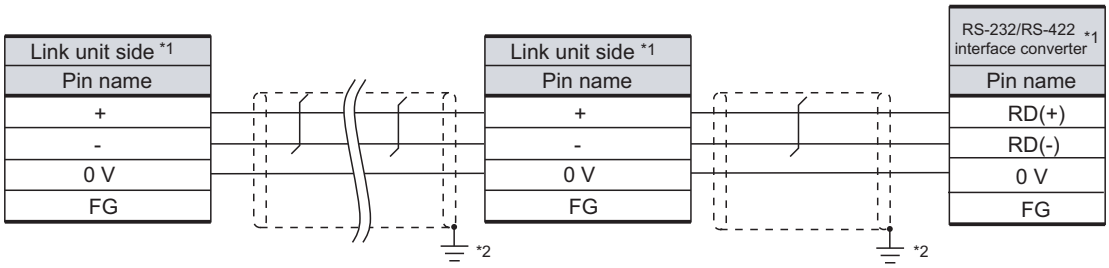
(For PC2JC, PC2J16P, PC2J16PR)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

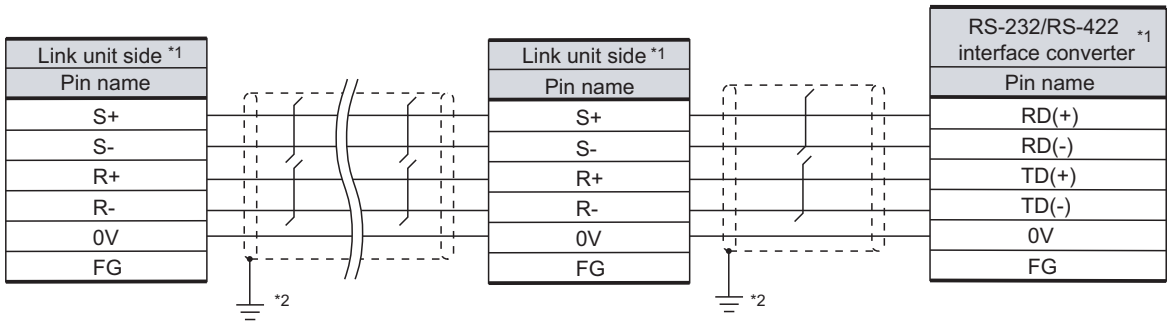
(3) RS-422 cable 3)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

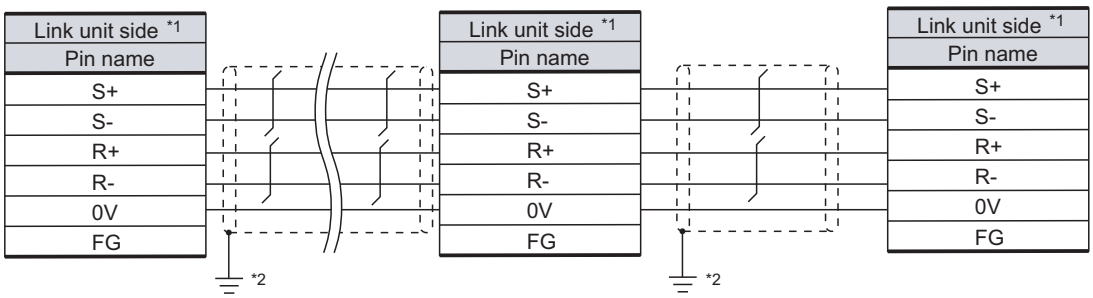
(4) RS-422 cable 4)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

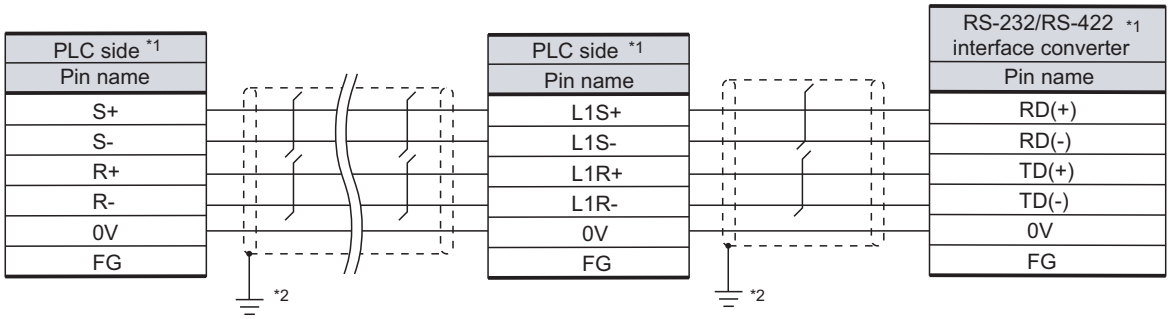
(5) RS-422 cable 5)



*1 Terminating resistor should be provided for a PLC which will be a terminal.

*2 Connect FG grounding to the appropriate part of a cable shield line.

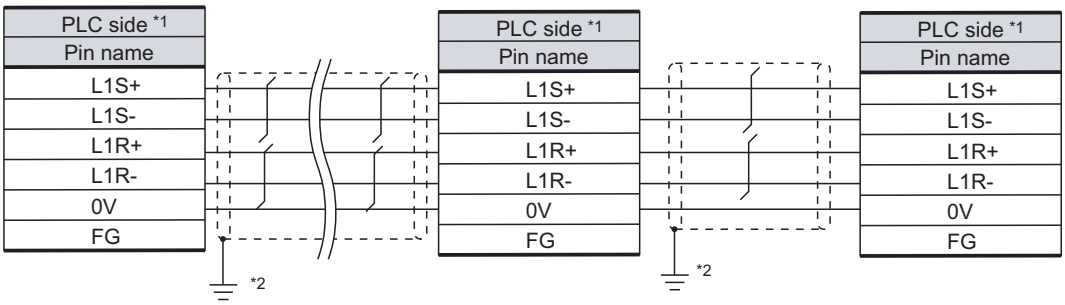
(6) RS-422 cable 6)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

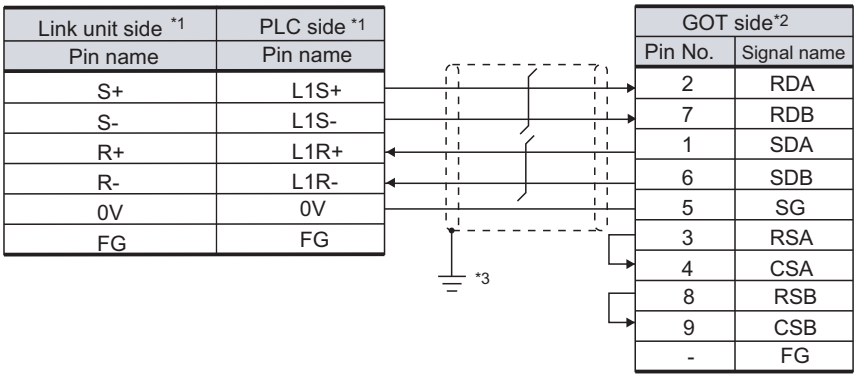
(7) RS-422 cable 7)



*1 Terminating resistor should be provided for a PLC which will be a terminal.

*2 Connect FG grounding to the appropriate part of a cable shield line.

(8) RS-422 cable 8)



*1 Terminating resistor should be provided for a PLC or Link unit which will be a terminal.

*2 Set the terminating resistor of GOT side to "Disable".

4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

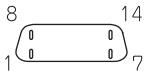
GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

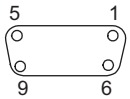
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

3 Precautions when preparing a cable

The length of the RS-422 cable must be 500m or less.

4 Connecting terminating resistors

(1) GOT

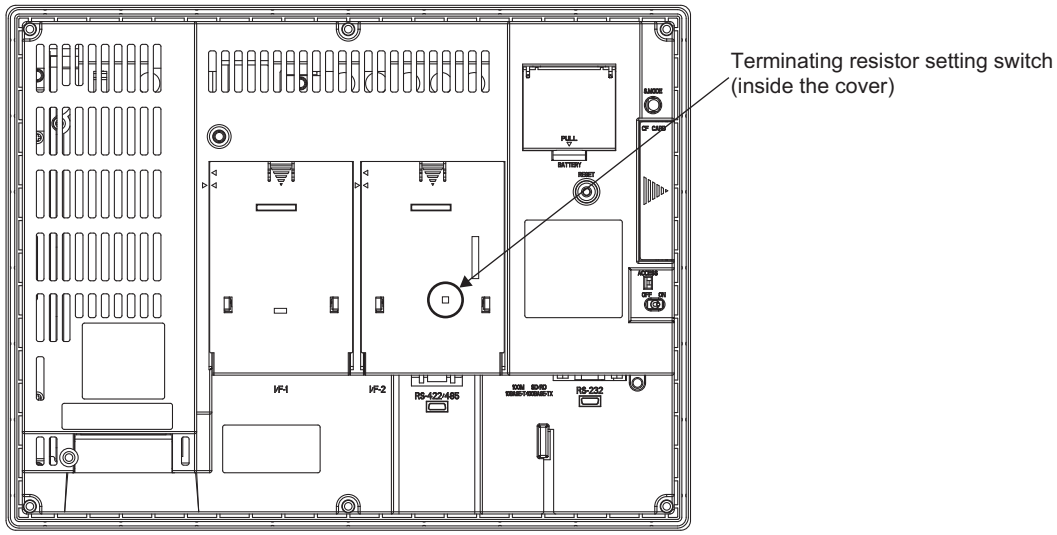
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

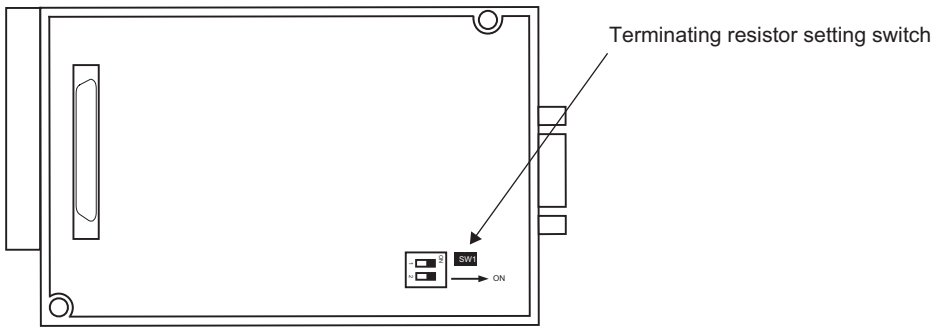
*1 The default setting is "Disable".



• For GT16 (GT1685M-S)



• For RS-422/485 communication unit



Rear View of RS-422/485 communication unit

15.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 15.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 15.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 15.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 15.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 15.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 15.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 15.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

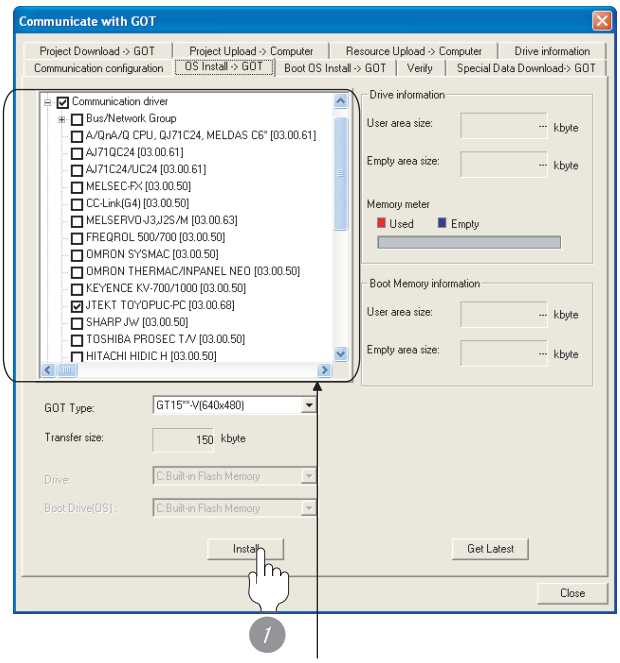
Section 15.4 PLC Side Setting

15.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

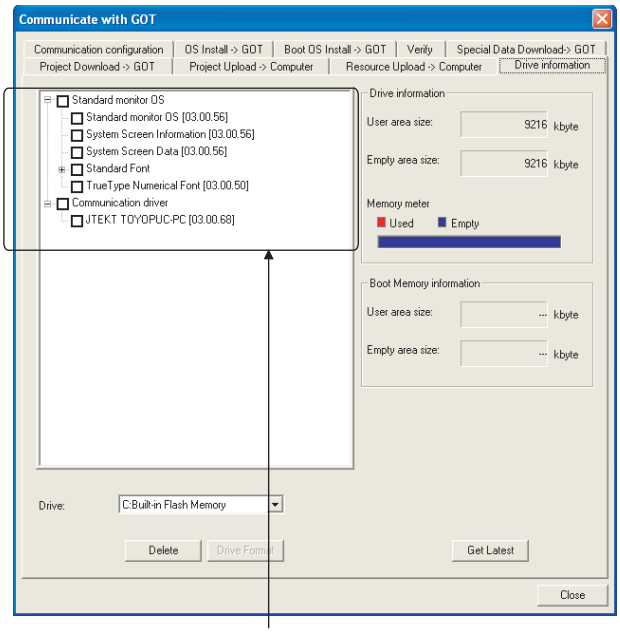
- JTEKT TOYOPUC-PC

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

15.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: JTEKT TOYOPUC-PC

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual

15.3.3 Setting communication interface (Communication settings)

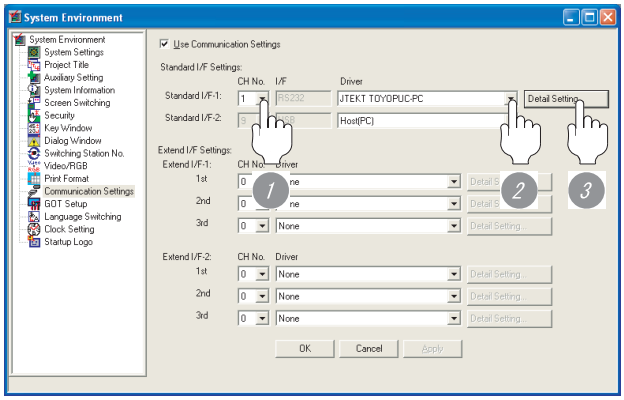
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

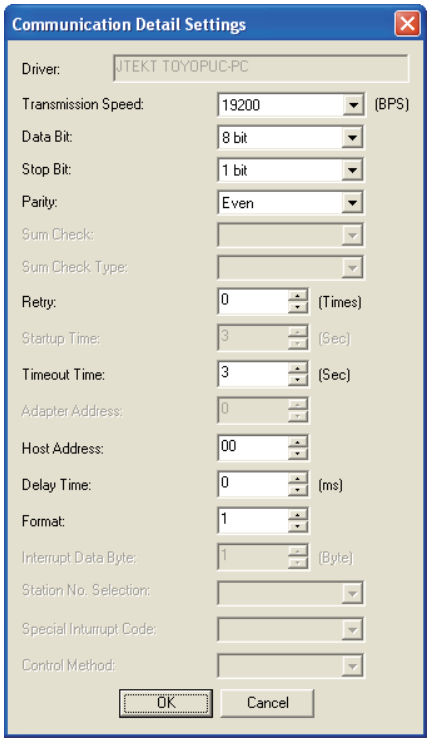
1 Communication settings



(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to "JTEKT TOYOPUC-PC".
3. Perform the detailed settings for the driver. (2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0>	0 to 300 ms
Host Address	Specify the host address (station No. of the GOT to which the PLC is connected) in the connected network. <Default: 0>	0 to 37
Format	Select the communication format. <Default: 1> format 1: PC3J extended function incompliant format 2: PC3J extended function compliant	1 /2

Point

(1) Format setting

The compatible format of PLC differs depending on model.

Model name	Compatible format
PC2J, PC2JS, PC2JR, PC2JC, PC2J16P, PC2J16PR	Format 1 only
PC3JG, PC3JG-P, PC3J, PC3JL	Format 1 or Format 2

For details of PC3J extended function, refer to the following manual.

☞ User's Manual for the JTEKT PLC

(2) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(3) Precedence in communication settings

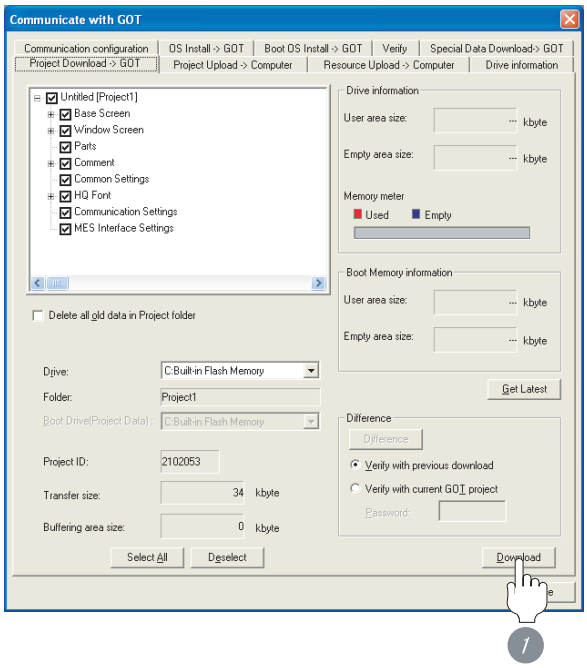
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

15.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

15.3.5 Attaching communication unit and connecting cable

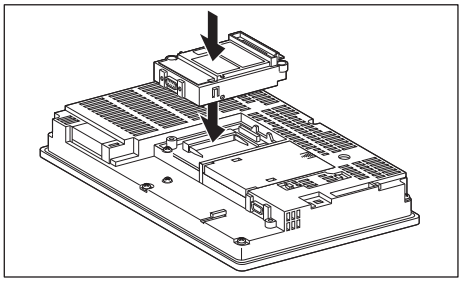
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

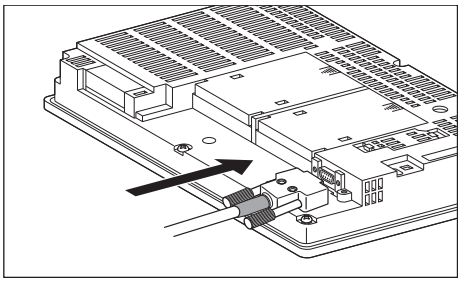
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

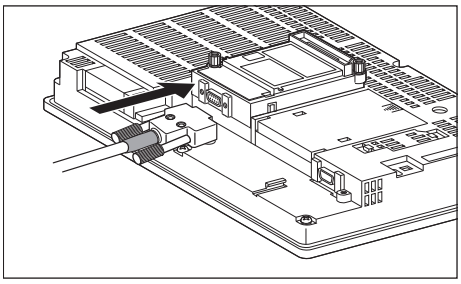
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



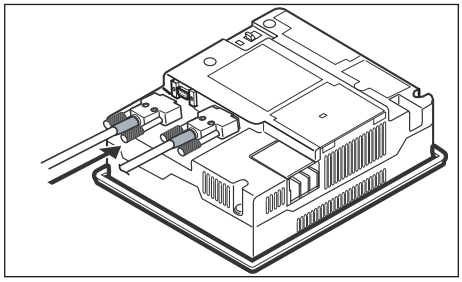
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

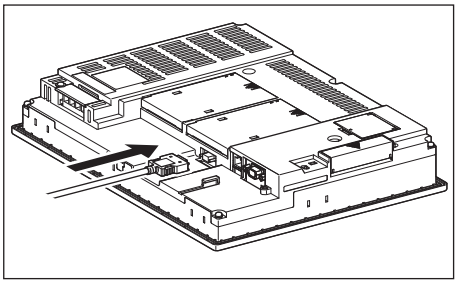


(2) How to connect the RS-422 cable

(a) For the GT16

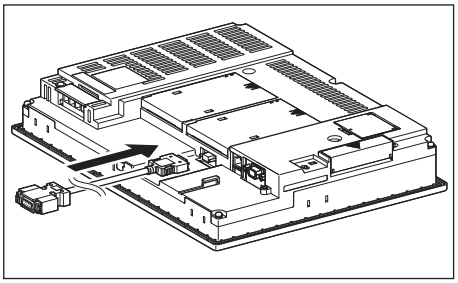
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

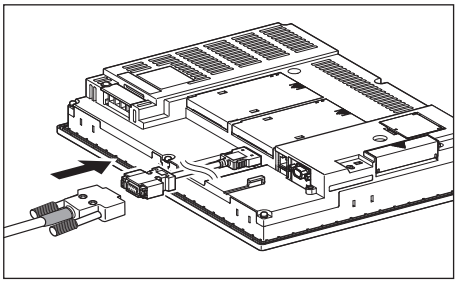


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

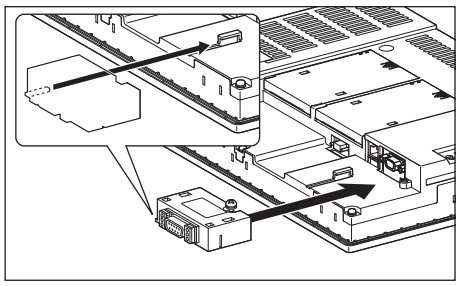


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

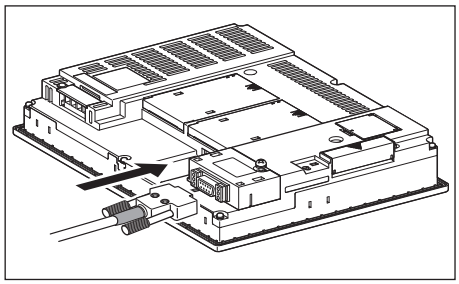


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

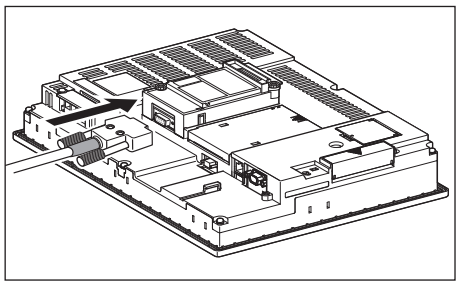


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

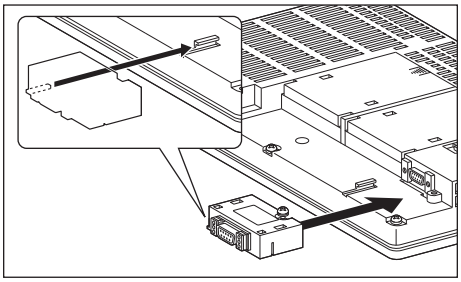
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



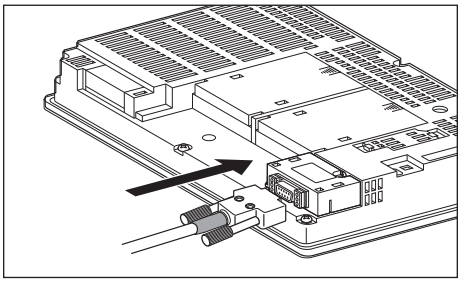
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

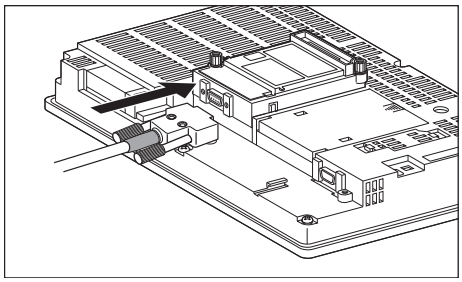


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

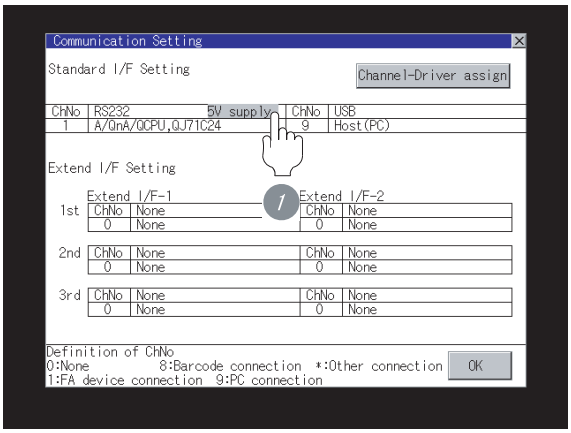
Point

When using the RS-422 conversion unit

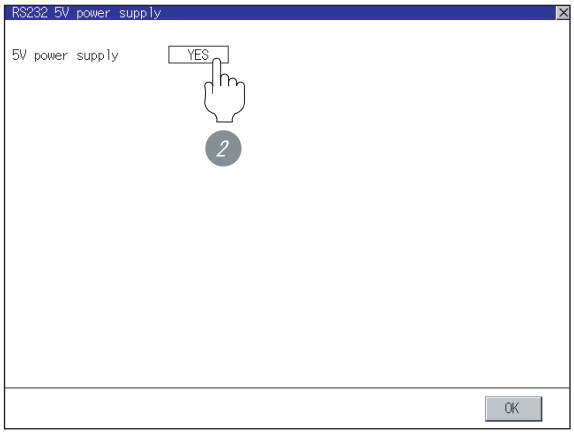
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

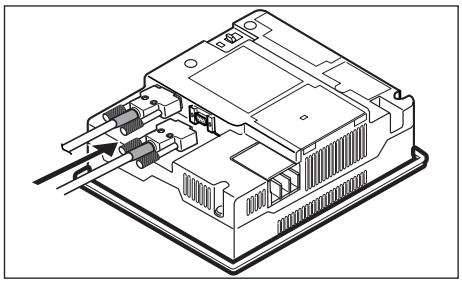


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



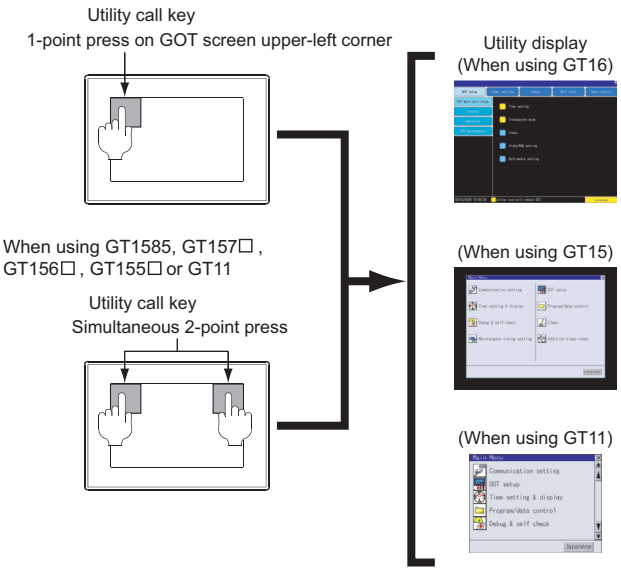
15.3.6 Verifying GOT recognizes controllers

- Verify the GOT recognizes controllers on [Communication Settings] of the Utility.
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

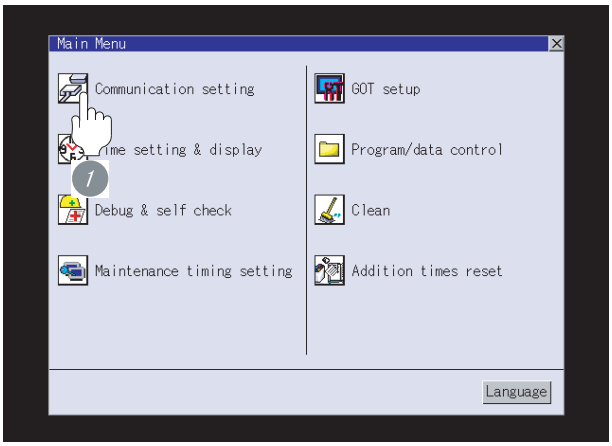


Point

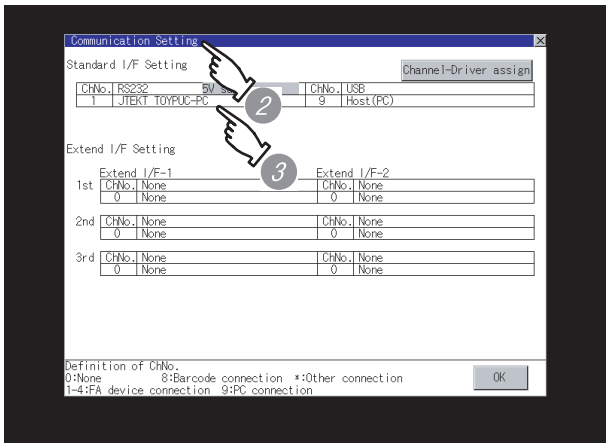
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  JTEKT TOYOPUC-PC

When the communication driver name is not displayed normally, carry out the following procedure again.

Section 15.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

15.3.7 Checking for normal monitoring

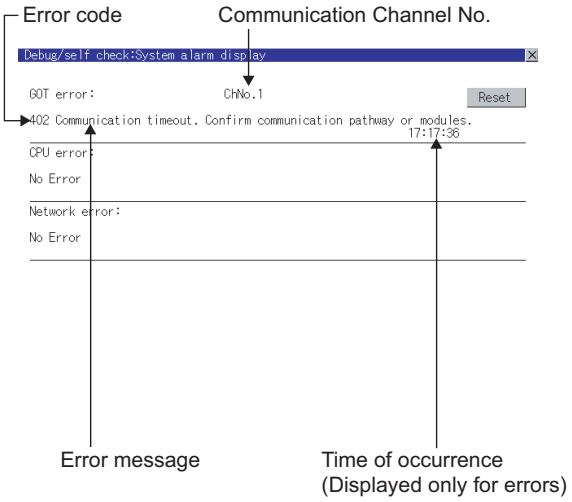
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check.

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

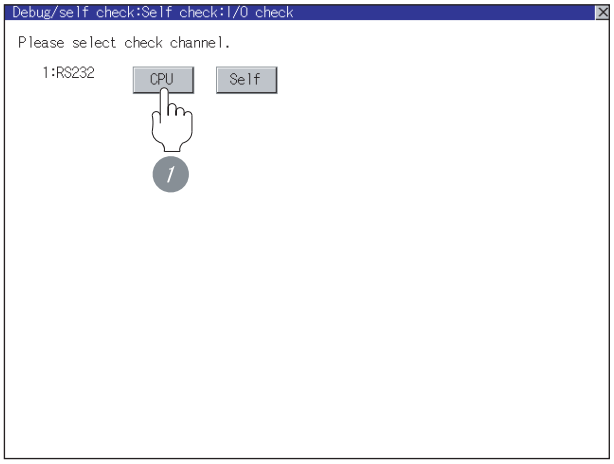
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

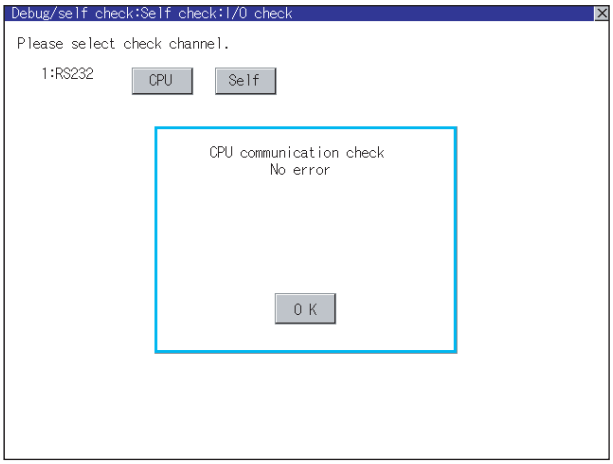
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 15.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

15.4 PLC Side Setting

Point

JTEKT PLC

For details of JTEKT PLCs, refer to the following manuals.

☞ Manuals for JTEKT PLCs

Model name		Reference
PLC CPU	PC3JG, PC3JG-P, PC3J, PC3JL, PC2J, PC2JS, PC2JR	Section 15.4.1
	PC2JC	Section 15.4.2
	PC2J16P, PC2J16RR	Section 15.4.3
RS-232/RS-422 interface converter	TXU-2051	Section 15.4.4
Link unit	THU-2755	Section 15.4.5
	THU-2927	
	THU-5139	

15.4.1 Connecting to PC3JG, PC3JG-P, PC3J, PC3JL, PC2J, PC2JS or PC2JR

1 Communication settings

Make the communication settings using the PLC peripheral device (PCwin).

Item	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length*1	8 bits or 7 bits
Parity bit	Even (fixed)
Stop bit*1	1 bit or 2 bits
Station No.*2	0 to 37 (Octal)
2-wire/4-wire type*3	2-wire type or 4-wire type

*1 Adjust the settings with GOT settings.

*2 Avoid duplication of the station No. with any of the other units.

*3 Make the settings referring to the following connection diagram.

☞ Section 15.2.2 RS-422 cable

15.4.2 Connecting to PC2JC

1 Communication settings

Make the communication settings using each setting switch.

For the detail settings , refer to the following manual.

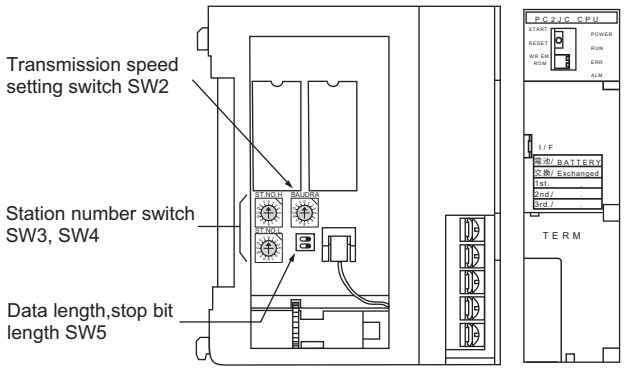
☞ User's Manual for the JTEKT PLC

Item	Set value
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Stop bit*1	1 bit or 2 bits
Station No.*1	0 to 37 (Octal)

*1 Adjust the settings with GOT settings.

2 Settings by switch

Make the communication settings using each setting switch.



(1) Station No. settings

Set the staion No. between 00 and 37 (Octal).

Switch name	Station No. setting
SW3	Upper digit
SW4	Lower digit

(2) Transmission speed settings

Switch name	Switch position	Transmission speed (bps)
SW2	1	19200
	2	9600

(3) Settings of data length and stop bit length

Switch name	Setting item	Set value	Switch No. 2	Switch No. 1
SW5	Data length	8 bits	OFF	
		7 bits	ON	
	Stop bit length	2 bits		OFF
		1 bit		ON

15.4.3 Connecting to PC2J16P or PC2J16PR

1 Communication settings

Make the communication settings using each setting switch.

For the detail settings , refer to the following manual.

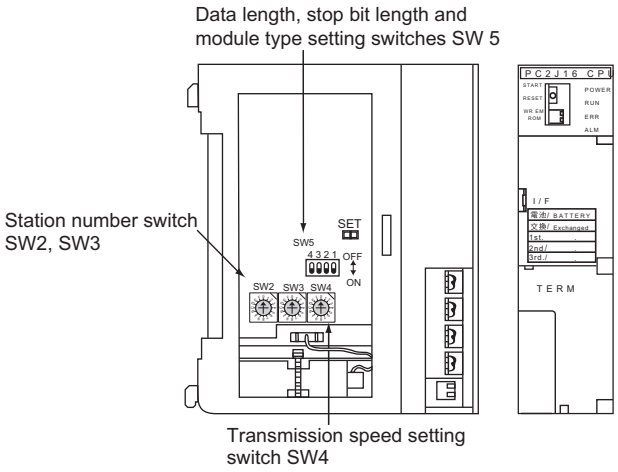
☞ User's Manual for the JTEKT PLC

Item	Set value
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Stop bit*1	1 bit or 2 bits
Station No.*1	0 to 37 (Octal)
Selection of module type	Computer link

*1 Adjust the settings with GOT settings.

2 Settings by switch

Make the communication settings using each setting switch.



(1) Station No. settings

Set the station No. between 00 and 37 (Octal).

Switch name	Station No. setting
SW2	Upper digit
SW3	Lower digit

(2) Transmission speed settings

Switch name	Switch position	Transmission speed (bps)
SW4	1	19200
	2	9600

(3) Settings of data length, stop bit length and module type

Switch name	Setting item	Set value	Switch No.		
			4	3	2
SW5	Data length	8 bits	OFF		
		7 bits	ON		
	Stop bit length	2 bits		OFF	
		1 bit		ON	
	Module type	Computer link			OFF

15.4.4 RS-232/RS-422 interface converter setting

1 Communication settings

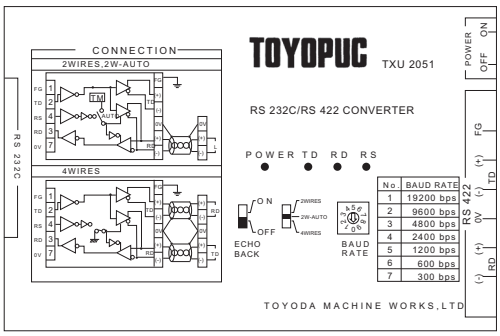
Make the communication settings by the setting switch of the RS-232/RS-422 interface converter.

Item	Set value
Transmission speed*1	9600bps, 19200bps
2-wire/4-wire type*2	2-wire type or 4-wire type
Echoback	OFF

*1 Adjust with GOT settings.
*2 Set referring to the RS-422 connection diagram.For details, refer to the following.
Section 15.2.2 RS-422 cable

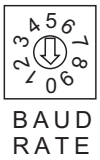
2 Settings by switch

Make the communication settings by each setting switch of the RS-232/RS-422 interface converter.



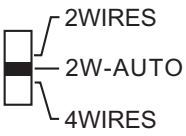
(1) Transmission speed settings

Transmission speed (bps)	Switch position
9600	2
19200	1



(2) Mode setting switch

Mode	Switch position
2-wire type	2W-AUTO
4-wire type	4 WIRES



(3) Echoback setting switch

Setting	Switch position
OFF	OFF



15.4.5 Link unit setting

1 Communication settings

Make the communication settings using each setting switch of the link unit.

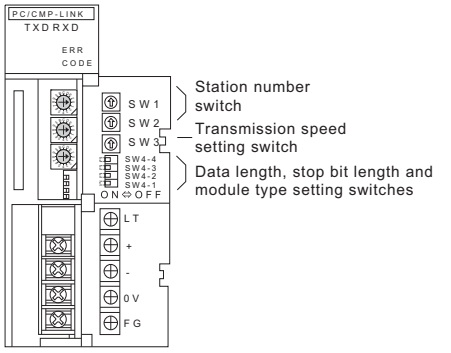
For the detail settings, refer to the following manual.

User's Manual for the JTEKT link unit

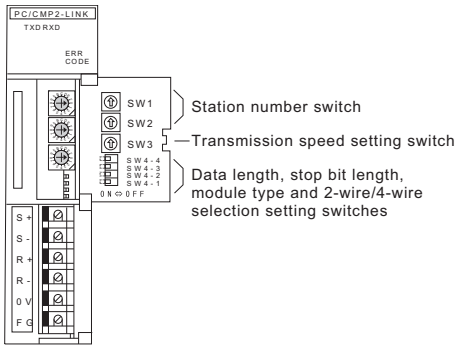
Item	Set value
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Stop bit*1	1 bit or 2 bits
Station No.*1	0 to 37 (Octal)
Selection of module type	Computer link
Selection of 2-wire type or 4-wire type	2-wire type or 4-wire type

*1 Adjust with GOT settings.
*3 Set referring to the RS-422 connection diagram. For details, refer to the following.
Section 15.2.2 RS-422 cable

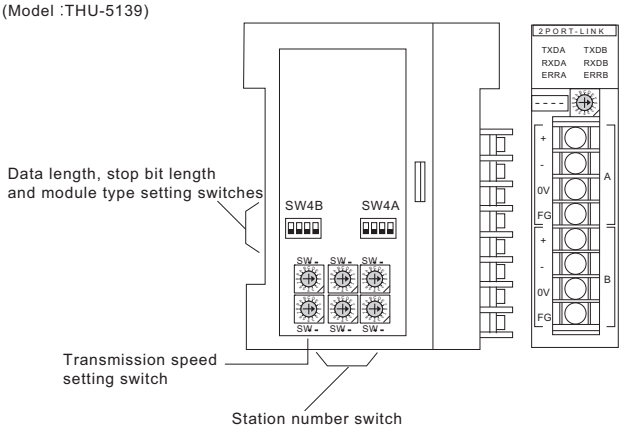
2 Settings by switch



(Model : THU-2755)



(Model : THU-5139)



(Model: THU-2927)

(1) Station No. settings

Set the staion No. between 00 and 37 (Octal).

Switch name	Station No. setting
SW1	Upper digit
SW2	Lower digit

(2) Transmission speed settings

Switch name	Switch position	Transmission speed (bps)
SW3	2	9600
	1	19200

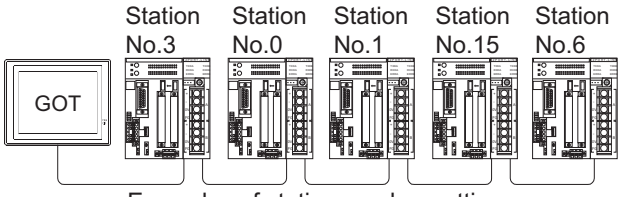
(3) Data length, stop bit length, module type and 2-wire/4-wire type communication selection setting

Switch name	Setting item	Set value	Switch No.			
			4	3	2	1
SW4	Data length	8 bits	OFF			
		7 bits	ON			
	Stop bit length	2 bits		OFF		
		1 bit		ON		
	Module type	PLC link unit			OFF	
		Computer link			ON	
	2-wire type/4-wire type communication selection*1	2-wire type communication				OFF
		4-wire type communication				ON

*1 The setting is available only for the link unit (Model: THU-5139).

15.4.6 Station NO. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
0 to 37 (Octal)

15.5 Precautions

1 Station No. settings of the PLC side

In the system configuration, the PLC with the station number set with the host address must be included.For details of host address setting, refer to the following.

☞ Section 15.3.3 Setting communication interface (Communication settings)

2 GOT clock function

The GOT clock function is available only for the PLC with the station number set with the host address. For details of host address setting, refer to the following.

☞ Section 15.3.3 Setting communication interface (Communication settings)

3 System configuration

If the system is configured by mixing the PC3J extended function compliant PLC with the PC3J extended function incompliant PLC, normal communication may not be performed. Unify the PLCs into PC3J extended function compliant or PC3J extended function incompliant to configure the system.

4 System alarm

The system alarm can be displayed only for the PLC set with a host address. When connected to the PC3J extended function compliant PLC, only the system alarm of program No. 1 can be displayed.

5 Version of PC3J

For PC3J, use version 2.1 or later.

6 Device range

The device range differs depending on the PLC type and the operation mode.
For details, refer to the following manual.

☞ GT Designer2 Version2 Screen Design Manual (For GOT 1000 Series)

15.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	Connection to JTEKT PLC	Supporting the JTEKT PLC connection	2.32J	Communication driver JTEKT TOYOPUC-PC [03.00.**]
GT16	Connection to JTEKT PLC	Supporting the connection to GT16	2.90U	Standard monitor OS [04.02.**] Communication driver JTEKT TOYOPUC-PC [04.02.**]

16

CONNECTION TO TOSHIBA PLC



16.1 System Configuration . . . . . page 16-2

This section describes the equipment and cables needed when connecting a GOT to a TOSHIBA PLC.
Select a system suitable for your application.

16.2 Connection Cable . . . . . page 16-10

This section describes the specifications of the cables needed when connecting a GOT to a TOSHIBA PLC.
Check the specifications of the connection cables.

16.3 Preparatory Procedures for Monitoring . . . . . page 16-18

This section provides the procedures to be followed before performing monitoring in connection to a TOSHIBA PLC.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

16.4 PLC Side Setting . . . . . page 16-27

The PLC side settings for GOT connection are explained.

When checking the PLC side settings, refer to this section.

16.5 List of Functions Added by Version Upgrade . . . . . page 16-29

This section describes the functions added by version upgrade of GT Designer2 or OS.

16.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

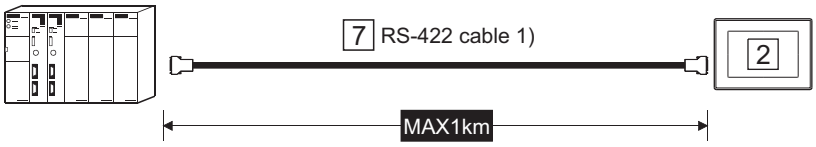
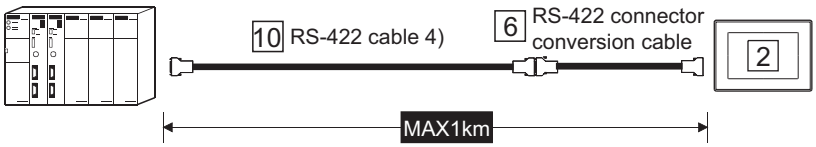
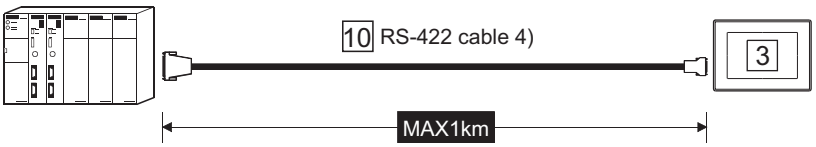
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

16.1.1 Connecting to T2 (PU224), T2E, T2N, T3 or T3H

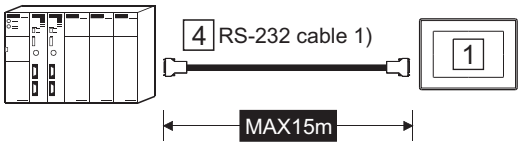
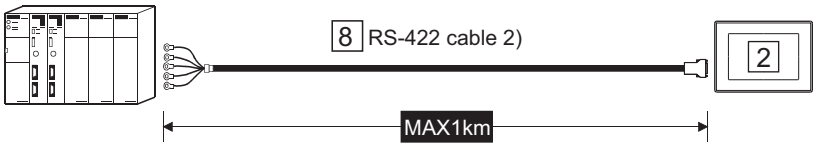
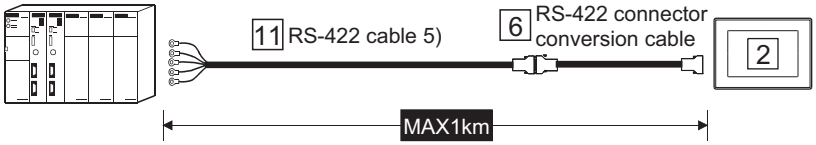
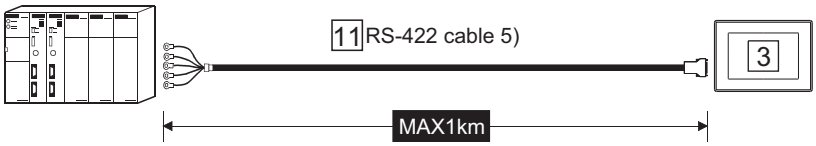
Communication driver
TOSHIBA PROSEC T/V

1 System configuration and connection conditions

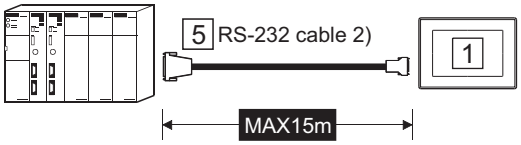
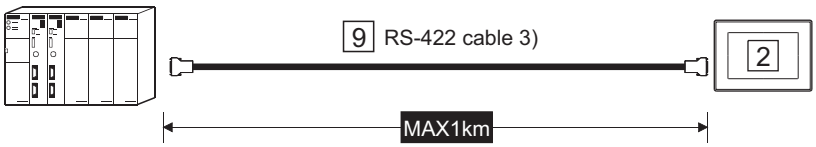
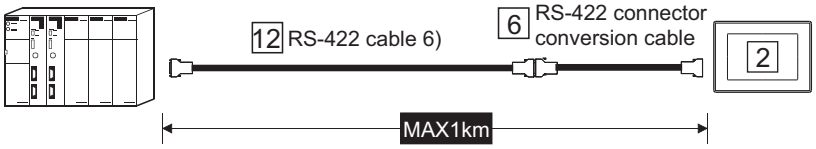
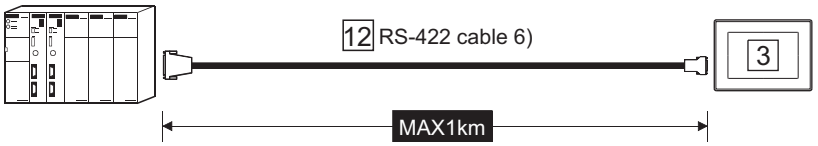
When connecting to T2 (PU224), T3 or T3H

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1km		GT16
			
			GT16 GT15 GT11 Serial

When connecting to T2E

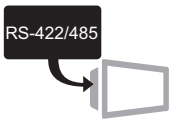
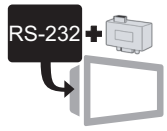
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m		GT16 GT15 GT11 Serial
	1km		GT16
			
			GT16 GT15 GT11 Serial

When connecting to T2N

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m		GT16 GT15 GT11 Serial
	1km		GT16
			
			GT16 GT15 GT11 Serial

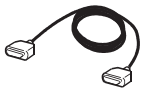
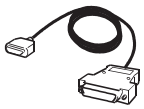
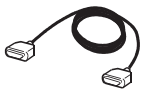
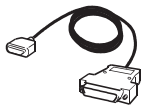
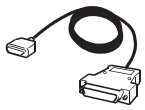
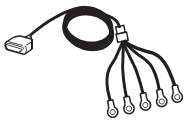
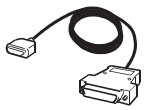
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-232 cable 1)*1 • Between CPU and GOT	GT09-C30R20501-9P (3m)	GT16 GT15 GT11 Serial
	5	RS-232 cable 2)*1 • Between CPU and GOT	GT09-C30R20502-15P(3m)	
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-422 cable 1) • Between CPU and GOT	(To be prepared by the user. Section 16.2 Connection Cable)	
	8	RS-422 cable 2) • Between CPU and GOT		
	9	RS-422 cable 3) • Between CPU and GOT		
	10	RS-422 cable 4)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40501-15P (3m) GT09-C100R40501-15P (10m) GT09-C200R40501-15P (20m) GT09-C300R40501-15P (30m)	GT16 GT15 GT11 Serial
	11	RS-422 cable 5)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40502-6C (3m) GT09-C100R40502-6C (10m) GT09-C200R40502-6C (20m) GT09-C300R40502-6C (30m)	
	12	RS-422 cable 6)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	(To be prepared by the user. Section 16.2 Connection Cable)	

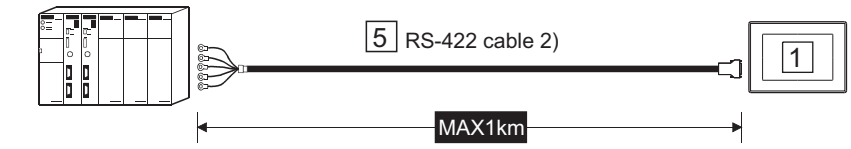
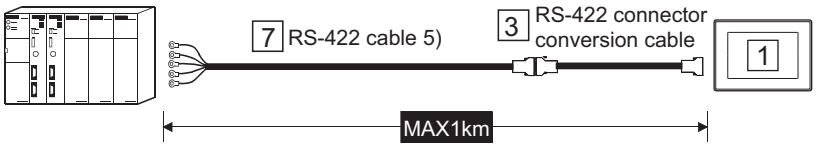
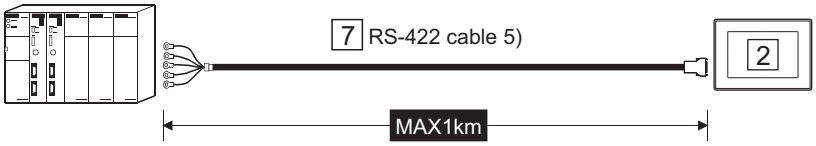
*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 16.2 Connection Cable)

16.1.2 Connecting to model 2000 (S2, S2T), model 3000 (S3)

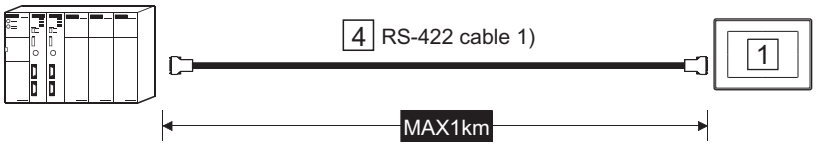
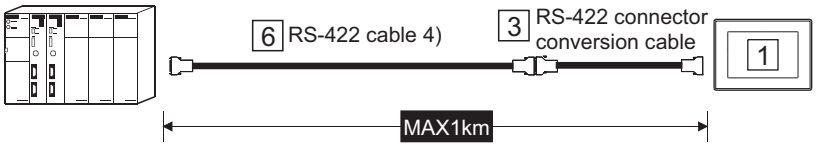
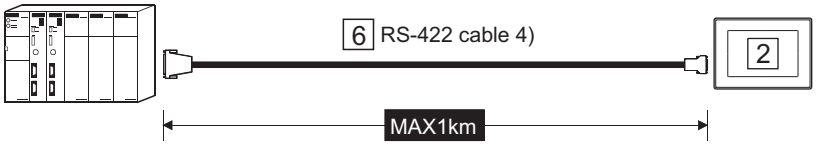
Communication driver
TOSHIBA PROSEC T/V

1 System configuration and connection conditions

When connecting to model 2000 (S2, S2T)

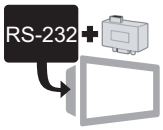
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1km		GT16
			
			GT16 GT15 GT11 Serial

When connecting to model 3000 (S3)

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1km		GT16
			
			GT16 GT15 GT11 Serial

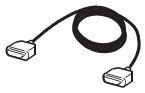
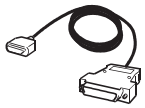
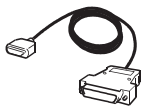
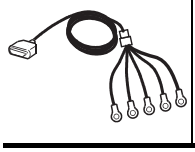
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	3	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	4	RS-422 cable 1) • Between CPU and GOT	(To be prepared by the user. Section 16.2 Connection Cable)	
	5	RS-422 cable 2) • Between CPU and GOT		
	6	RS-422 cable 4)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40502-6C(3m) GT09-C100R40502-6C(10m) GT09-C200R40502-6C(20m) GT09-C300R40502-6C(30m)	GT16 GT15 GT11 Serial
	7	RS-422 cable 5)*1 • Between CPU and RS-422 connector conversion cable • Between CPU and GOT	GT09-C30R40501-15P(3m) GT09-C100R40501-15P(10m) GT09-C200R40501-15P(20m) GT09-C300R40501-15P(30m)	

*1 The RS-232 cable can be prepared by the user. (Section 16.2 Connection Cable)

16.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ Section 16.2.1)

Model name		Connection Cable
		GT16, GT15, GT11
PLC CPU	T2E	RS-232 cable 1)
	T2N	RS-232 cable 2)

2 RS-422 cable (☞ Section 16.2.2)

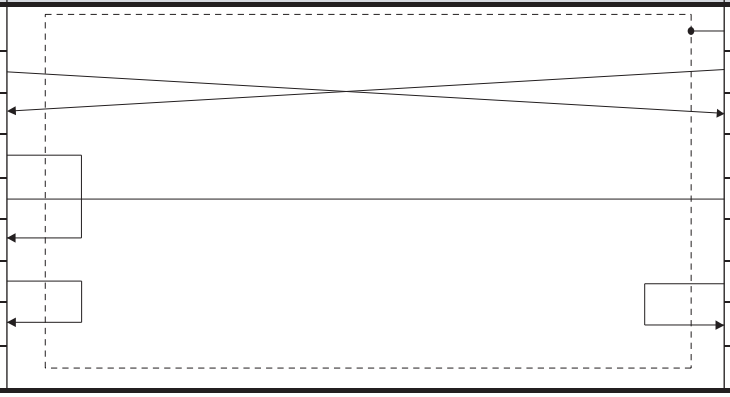
Model name		Connection Cable	
		GT16	GT15, GT11
PLC CPU	T2 (PU224)	RS-422 cable 1) RS-422 cable 4)	RS-422 cable 4)
	T2E	RS-422 cable 2) RS-422 cable 5)	RS-422 cable 5)
	T2N	RS-422 cable 3) RS-422 cable 6)	RS-422 cable 6)
	T3, T3H	RS-422 cable 1) RS-422 cable 4)	RS-422 cable 4)
	model 2000 (S2, S2T)	RS-422 cable 2) RS-422 cable 5)	RS-422 cable 5)
	model 3000 (S3)	RS-422 cable 1) RS-422 cable 4)	RS-422 cable 4)

16.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

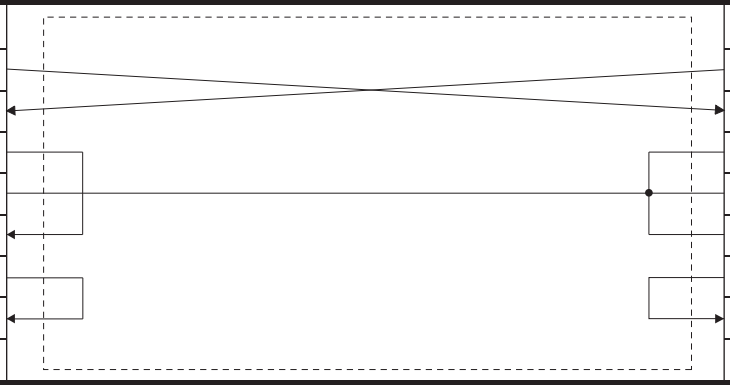
1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	TOSHIBA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC *1	1		1	SG
RD(RXD)	2		2	RXD
SD(TXD)	3		3	TXD
ER(DTR)	4		4	—
SG	5		5	SG
DR(DSR)	6		6	5V
RS(RTS)	7		7	RTS
CS(CTS)	8		8	—
—	9		9	5V

*1 GT16: CD, GT15: CD, GT11:NC

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	TOSHIBA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		1	—
RD(RXD)	2		12	RXD
SD(TXD)	3		5	TXD
ER(DTR)	4		7	SG
SG	5		8	SG
DR(DSR)	6		15	SG
RS(RTS)	7		6	RTS
CS(CTS)	8		14	CTS
—	9		13	—

*2 GT16: CD, GT15: CD,GT11:NC

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-		17LE-23090-27(D3CC)	

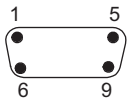
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) TOSHIBA PLC side connector
Use the connector compatible with the TOSHIBA PLC side module.
For details, refer to the following manual.

☞ User's Manual for the TOSHIBA PLC

3 Precautions when preparing a cable

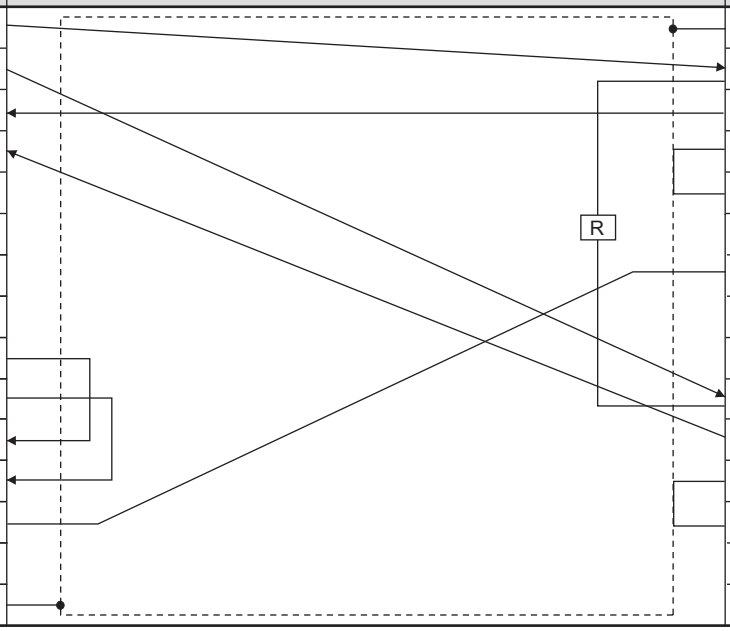
The length of the RS-232 cable must be 15m or less.

16.2.2 RS-422 cable

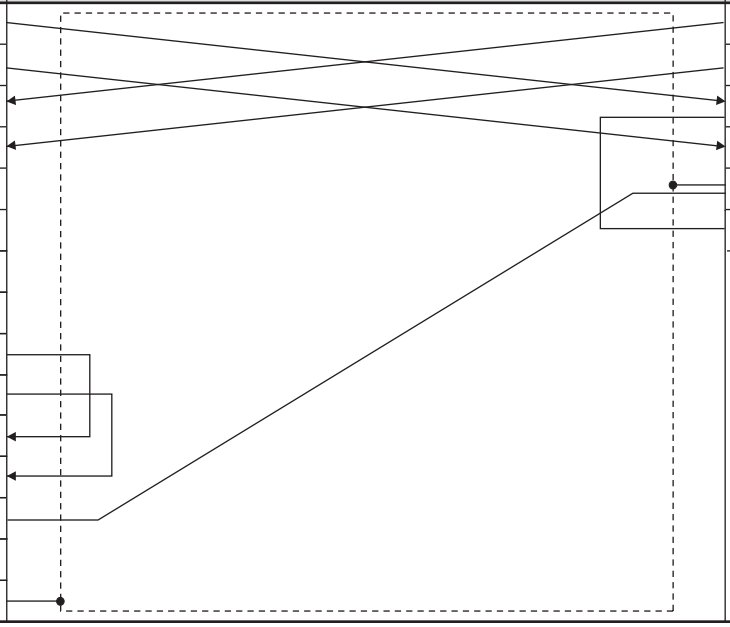
The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Connection diagram

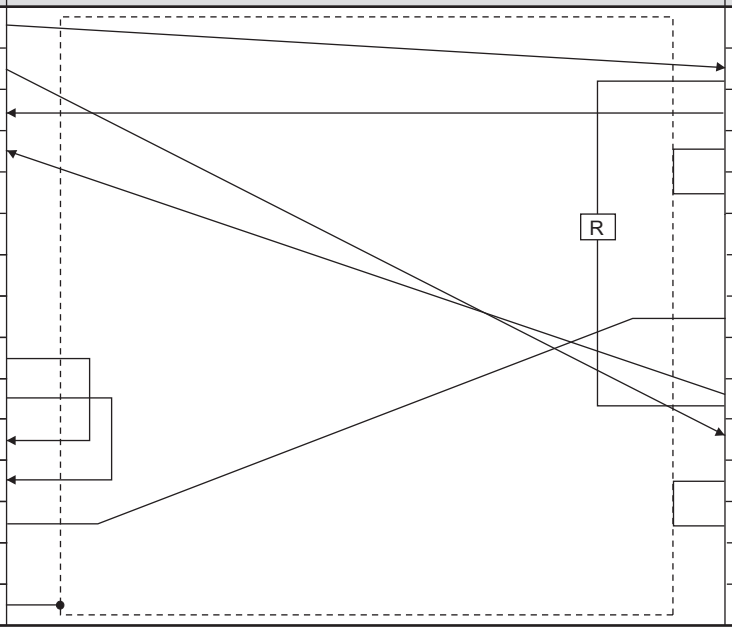
(1) RS-422 cable 1)

GOT side		Cable connection and signal direction	TOSHIBA PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	FG
SDB1(TXD1-)	2		2	RXA
RDA1(RXD1+)	3		3	TXA
RDB1(RXD1-)	4		4	CTSA
SDA2(TXD2+)	5		5	RTSA
SDB2(TXD2-)	6		6	
RDA2(RXD2+)	7		7	SG
RDB2(RXD2-)	8		8	
RSA(RTS+)	9		9	
RSB(RTS-)	10		10	RXB
CSA(CTS+)	11		11	TXB
CSB(CTS-)	12		12	CTSB
SG	13		13	RTSB
NC	14		14	
	Shell		15	

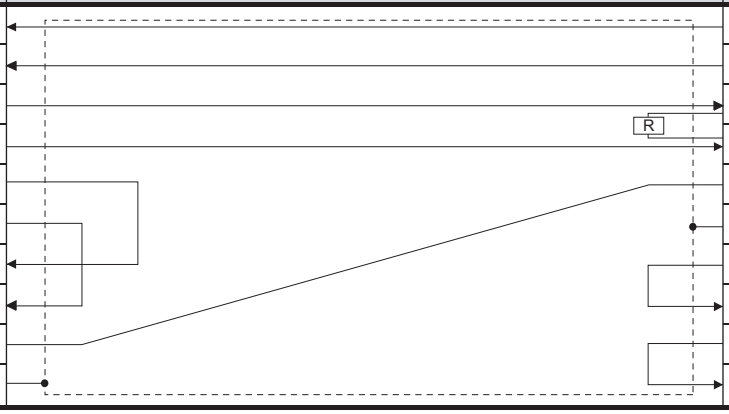
(2) RS-422 cable 2)

GOT side		Cable connection and signal direction	TOSHIBA PLC side
Signal name	Pin No.		Name of terminal block
SDA1(TXD1+)	1		TXA
SDB1(TXD1-)	2		TXB
RDA1(RXD1+)	3		RXA
RDB1(RXD1-)	4		RXB
SDA2(TXD2+)	5		SG
SDB2(TXD2-)	6		TERM
RDA2(RXD2+)	7		
RDB2(RXD2-)	8		
RSA(RTS+)	9		
RSB(RTS-)	10		
CSA(CTS+)	11		
CSB(CTS-)	12		
SG	13		
NC	14		
	Shell		

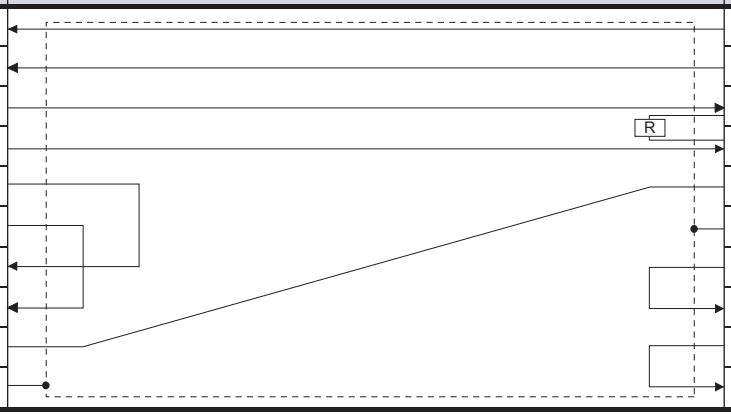
(3) RS-422 cable 3)

GOT side		Cable connection and signal direction	TOSHIBA PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	
SDB1(TXD1-)	2		2	RXA
RDA1(RXD1+)	3		3	TXA
RDB1(RXD1-)	4		4	
SDA2(TXD2+)	5		5	
SDB2(TXD2-)	6		6	
RDA2(RXD2+)	7		7	
RDB2(RXD2-)	8		8	SG
RSA(RTS+)	9		9	
RSB(RTS-)	10		10	RXB
CSA(CTS+)	11		11	TXB
CSB(CTS-)	12		12	
SG	13		13	
NC	14		14	
	Shell		15	

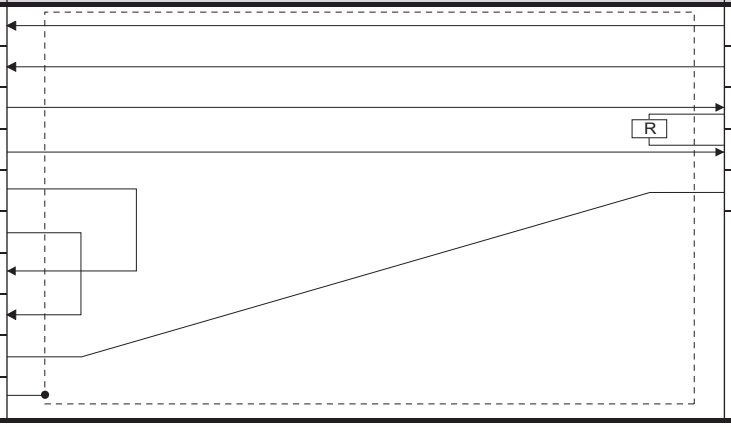
(4) RS-422 cable 4)

GOT side		Cable connection and signal direction	TOSHIBA PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		3	TXA
RDB	7		11	TXB
SDA	1		2	RXA
SDB	6		10	RXB
RSA	3		7	SG
RSB	8		1	FG
CSA	4		5	RTSA
CSB	9		4	CTSA
SG	5		13	RTSB
FG	—		12	CTSB

(5) RS-422 cable 5)

GOT side		Cable connection and signal direction	TOSHIBA PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		3	TXA
RDB	7		11	TXB
SDA	1		2	RXA
SDB	6		10	RXB
RSA	3		7	SG
RSB	8		1	FG
CSA	4		5	RTSA
CSB	9		4	CTSA
SG	5		13	RTSB
FG	—		12	CTSB

(6) RS-422 cable 6)

GOT side		Cable connection and signal direction	TOSHIBA PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		3	TXA
RDB	7		11	TXB
SDA	1		2	RXA
SDB	6		10	RXB
RSA	3		8	SG
RSB	8			
CSA	4			
CSB	9			
SG	5			
FG	—			

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

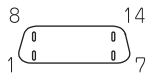
GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd.
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

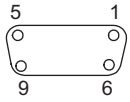
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

(2) TOSHIBA PLC side connector

Use the connector compatible with the TOSHIBA PLC side module.

For details, refer to the following manual.

☞ User's Manual for the TOSHIBA PLC

3 Precautions when preparing a cable

The length of the RS-422 cable must be 1km or less.

4 Connecting terminating resistors

When connecting an TOSHIBA PLC to a GOT, a terminating resistor must be set to the TOSHIBA PLC. No terminating resistor needs to be connected on the GOT side as one is already built into the GOT. For the setting of the terminating resistor, refer to the following manual.

☞ User's Manual for the TOSHIBA PLC

(1) T2 (PU224), T2N, T3, T3H, model 3000 (S3)

Connect the terminating resistor (1/2W-120 Ω) across RXA and RXB.

(2) T2E, model 2000 (S2, S2T)

Short across the RXA and TERM terminals.

16.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 16.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 16.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 16.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 16.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 16.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 16.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 16.3.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

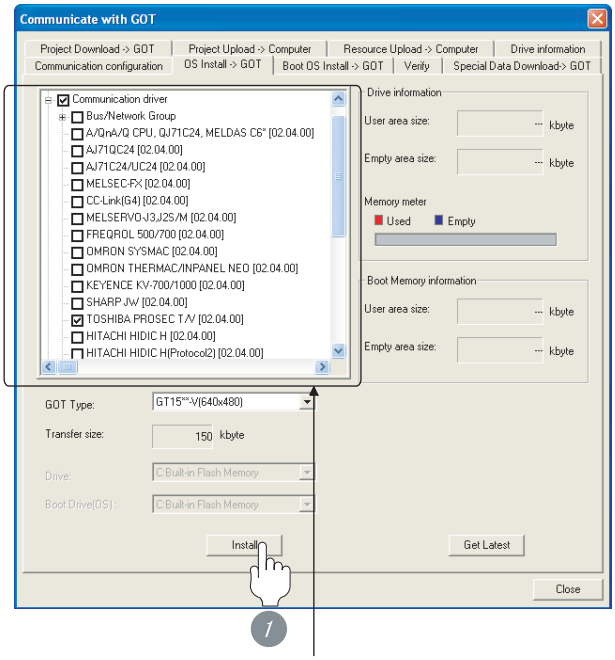
☞ Section 16.4 PLC Side Setting

16.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• TOSHIBA PROSEC T/V

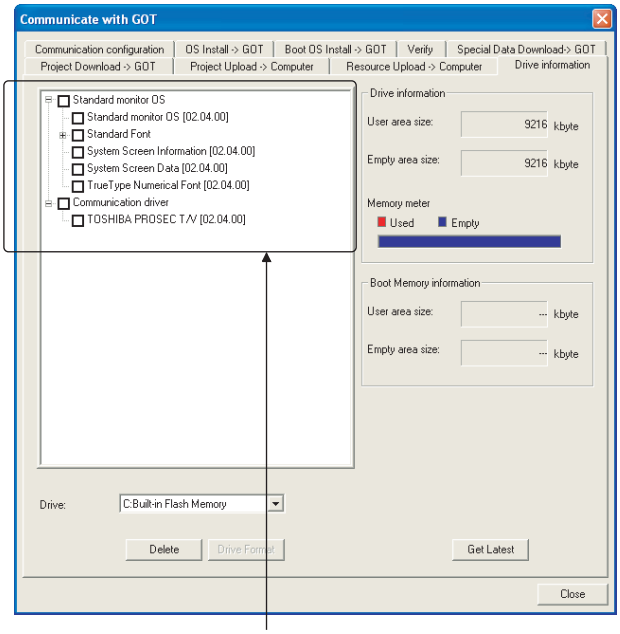
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

16.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: TOSHIBA PROSEC T/V

16.3.3 Setting communication interface (Communication settings)

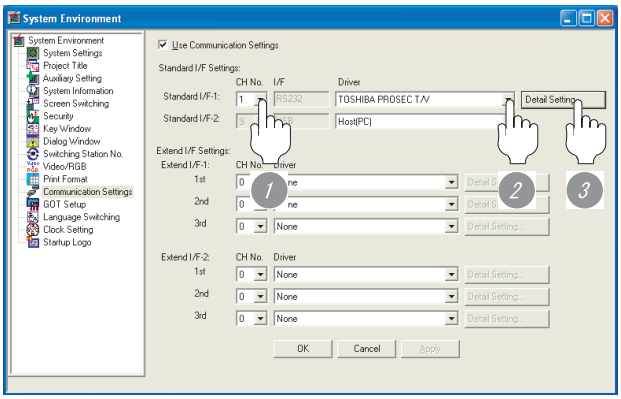
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

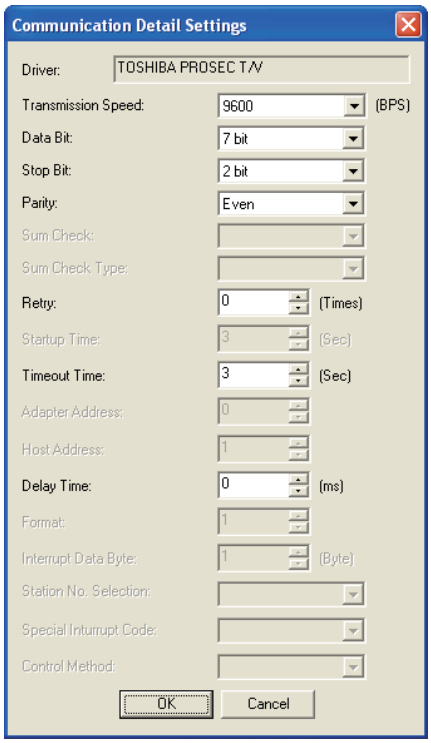
1 Communication settings



(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to "TOSHIBA PROSEC T/V".
3. Perform the detailed settings for the driver.
   (2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	4800bps, 9600bps, 19200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

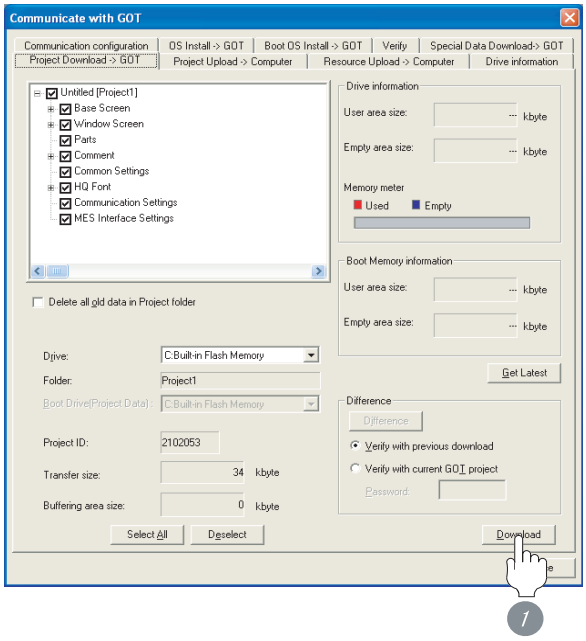
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

16.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

16.3.5 Attaching communication unit and connecting cable

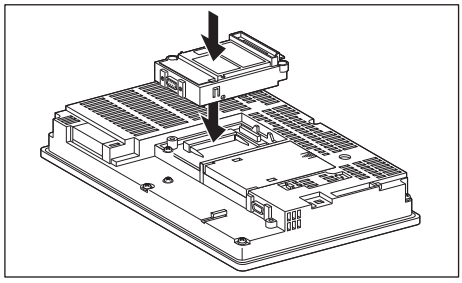
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

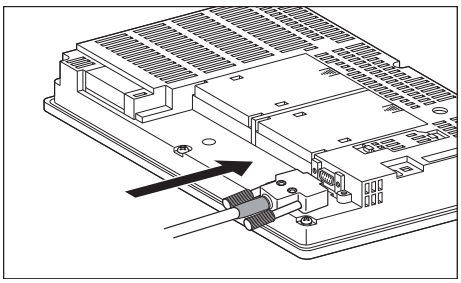
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For the GT16, GT15

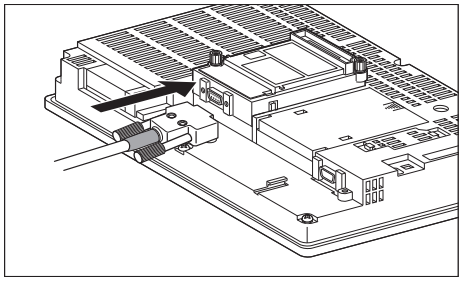
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



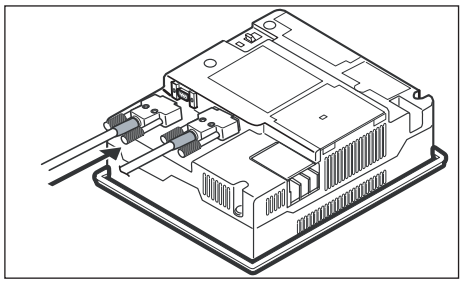
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

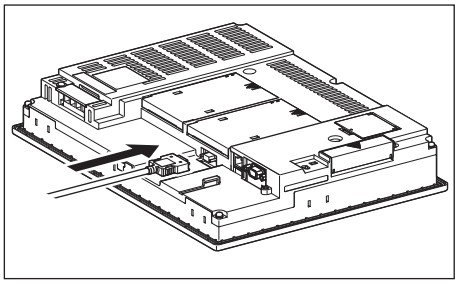


(2) How to connect the RS-422 cable

(a) For the GT16

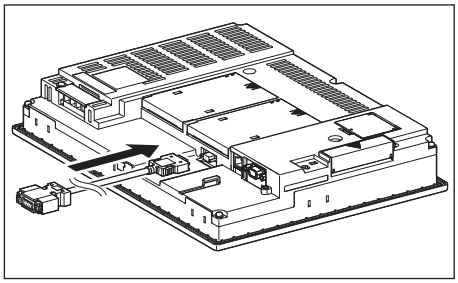
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

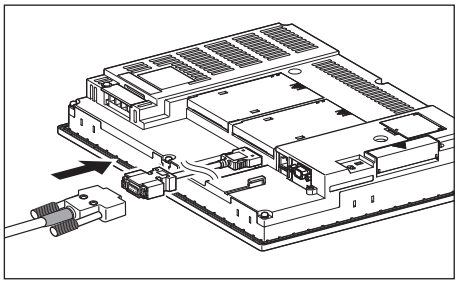


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

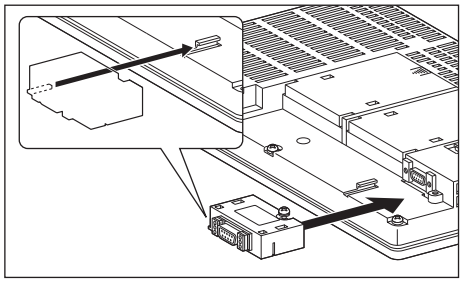


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

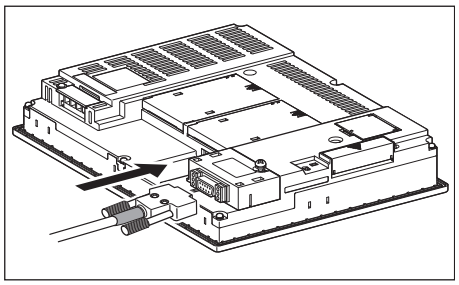


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

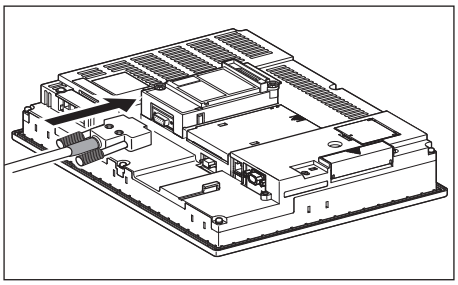


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

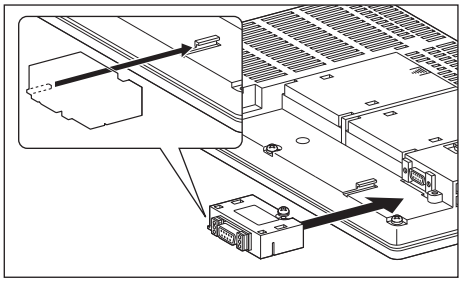
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



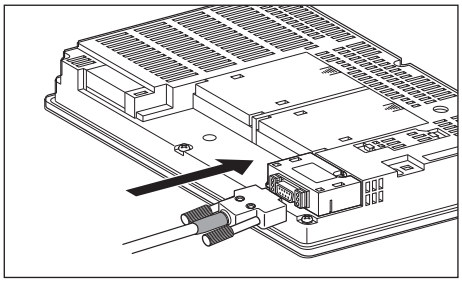
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

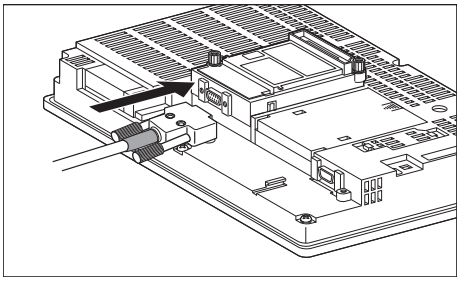


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

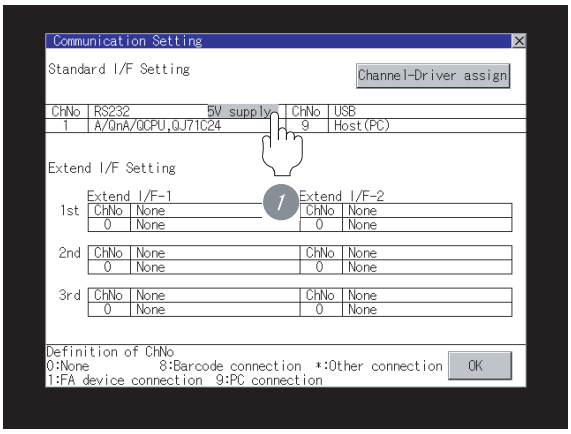
Point

When using the RS-422 conversion unit

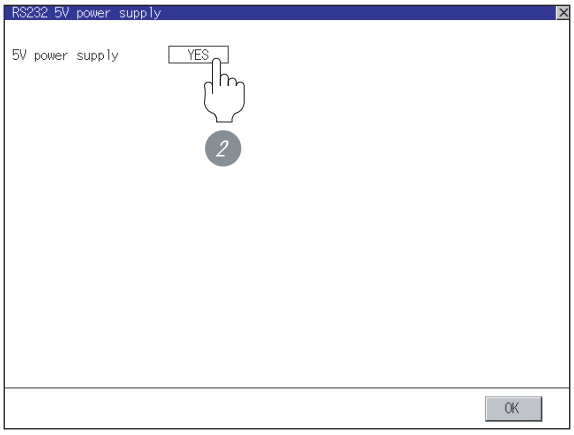
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

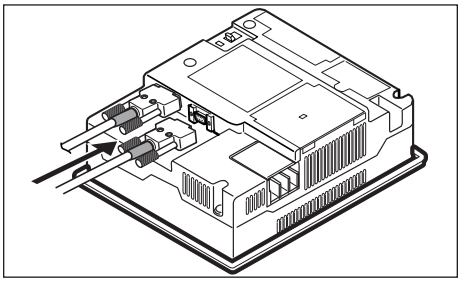


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



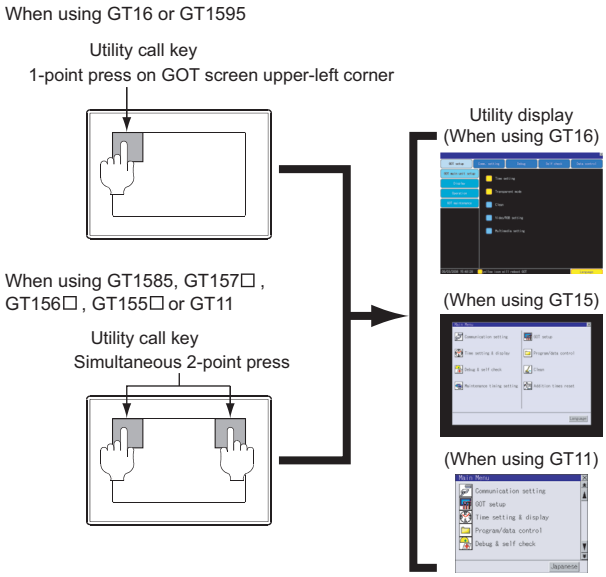
16.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

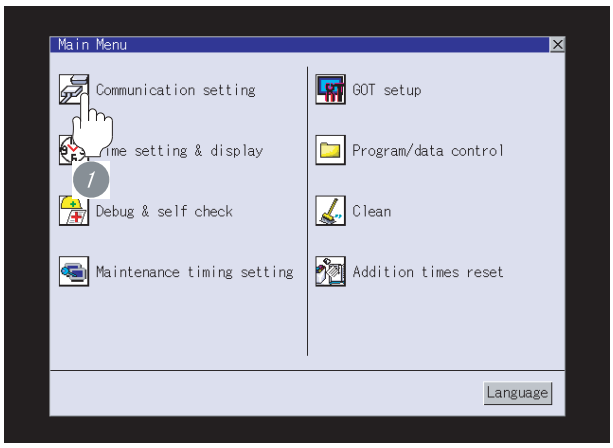


Point

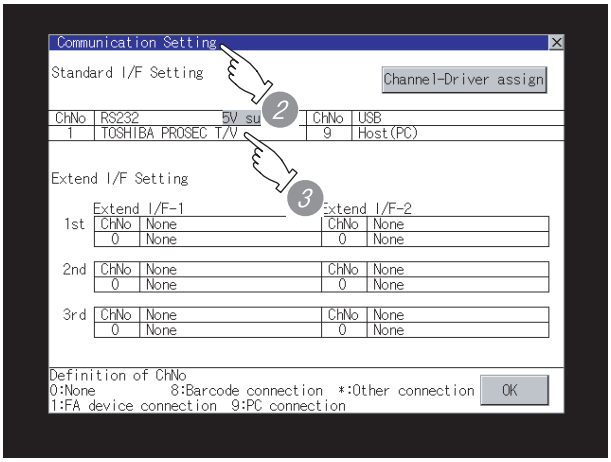
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  TOSHIBA PROSEC T/V

When the communication driver name is not displayed normally, carry out the following procedure again.

Section 16.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

16.3.7 Checking for normal monitoring

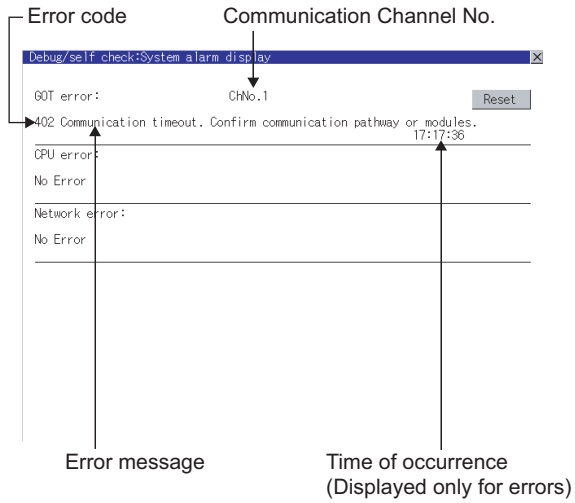
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT 16 GT 15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

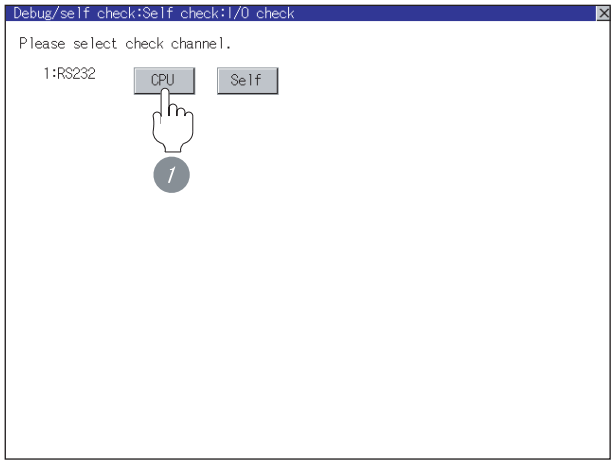
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

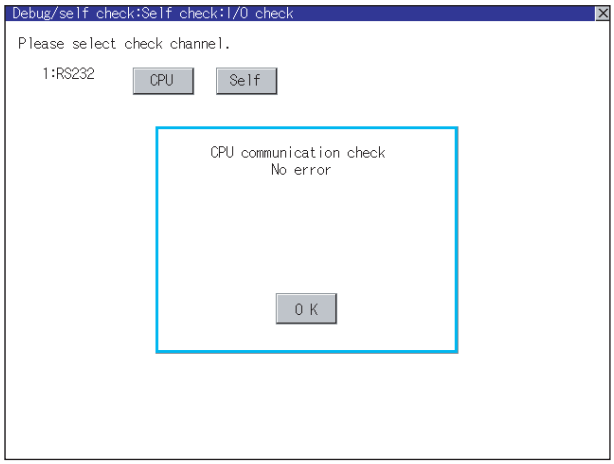
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 16.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

16.4 PLC Side Setting

Point

TOSHIBA PLC

For details of the TOSHIBA PLC, refer to the following manual.

☞ User's Manual for the TOSHIBA PLC

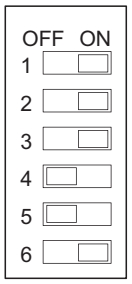
Model name		Refer to
PLC CPU	T2 (PU224), T2E, T2N	Section 16.4.1
	T3, T3H	Section 16.4.2
	model 2000 (S2, S2T), model 3000 (S3)	Section 16.4.3

16.4.1 Connecting to T2 (PU224), T2E or T2N

1 Switch setting

Configure the switches.

(1) Operation mode setting switch



Switch No.	Setting	Set data
4	OFF (fixed)	Computer link
5	OFF (fixed)	

(2) DIP switch on module PCB (T2N only)

Switch No.	Setting	
	For RS-232 communication	For RS-422 communication
DIP switch: No. 1	ON (RS-232C)	OFF (RS-485*1)

*1 Can be used as RS-422.

2 Transmission parameter setting

Enter the transmission parameters.

Item	Setting
Transmission speed*2*3*4	4800bps, 9600bps, 19200bps
Data length	7bit
Stop bit	2bit
Parity bit	Even
Station No.	1

*2 Indicates only the transmission speeds that can be specified on the GOT side.

*3 Fixed to 9600bps for T2E only

*4 Specify the transmission speed to match the baud rate of the GOT.
For how to set the baud rate of the GOT, refer to the following.

☞ Section 16.3.3 Setting communication interface (Communication settings)

16.4.2 Connecting to T3 or T3H

Enter the transmission parameters.

Item	Setting
Transmission speed*1*2	4800bps, 9600bps, 19200bps
Data length	7bit
Stop bit	2bit
Parity bit	Even
Station No.	1

*1 Indicates only the transmission speeds that can be specified on the GOT side.

*2 Specify the transmission speed to match the baud rate of the GOT.
For how to set the baud rate of the GOT, refer to the following.

☞ Section 16.3.3 Setting communication interface (Communication settings)

16.4.3 Connecting to model 2000 (S2, S2T), model 3000 (S3)

Enter the transmission parameters.

Item	Setting
Transmission method	RS485*3
RS485	COM1
Timeout time	5 Sec
Transmission speed*4*5	4800bps, 9600bps, 19200bps
Data length	7bit
Stop bit	2bit
Parity bit	Even
Station No.	1

*3 Can be used as RS-422.

*4 Indicates only the transmission speeds that can be specified on the GOT side.

*5 Specify the transmission speed to match the baud rate of the GOT.
For how to set the baud rate of the GOT, refer to the following.

☞ Section 16.3.3 Setting communication interface (Communication settings)

16.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	TOSHIBA PLC connection	Supporting the TOSHIBA PLC connection	2.09K	Communication driver TOSHIBA PROSEC T/V [01.02.**]
GT15 GT11 Serial	TOSHIBA PLC connection	Supporting the retry, the timeout time and the delay time	2.73B	Communication driver TOSHIBA PROSEC T/V [03.09.**]
GT16	TOSHIBA PLC connection	Supporting the connections to GT16	2.90U	Communication driver TOSHIBA PROSEC T/V [04.02.**]

MEMO

17

CONNECTION TO TOSHIBA MACHINE PLC



17.1 System Configuration . . . . . page 17-2

This section describes the equipment and cables needed when connecting a GOT to a TOSHIBA MACHINE PLC.
Select a system suitable for your application.

17.2 Connection Cable . . . . . page 17-4

This section describes the specifications of the cables needed when connecting a GOT to a TOSHIBA MACHINE PLC.
Check the specifications of the connection cables.

17.3 Preparatory Procedures for Monitoring . . . . . page 17-7

This section provides the procedures to be followed before performing monitoring in connection to a TOSHIBA MACHINE PLC.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

17.4 PLC Side Setting . . . . . page 17-16

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

17.5 List of Functions Added by Version Upgrade . . . . . page 17-17

This section describes the functions added by version upgrade of GT Designer2 or OS.

17.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

17.1.1 Connecting to TC3, TC6, TC8

Communication driver
TOSHIBA MACHINE TCmini

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less	*1 2 RS-232 cable 1) 1	GT16 GT15 GT11 Serial GT105□ 4□
		*1 3 RS-232 cable 2) 1	GT24V 10 20 30 (RS-232)

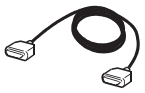
*1 Connectable to the products only, which have RS-232 communication function.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) Cable

Image	No.	Name	Model name	Model
	2	RS-232 cable 1) • Between CPU and GOT	To be prepared by the user. ☞ Section 17.2 Connection Cable	GT16 GT15 GT11 Serial GT105□4□
	3	RS-232 cable 2) • Between CPU and GOT		GT24V 10 20 30 (RS-232)

17.2 Connection Cable

The RS-232 cable used for connecting the GOT to the PLC should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

Model name		Connection Cable	
		GT16, GT15, GT11, GT105□, GT104□ RS-232 cable	GT1030, GT1020 RS-232 cable
PLC CPU	TC3, TC6, TC8	RS-232 cable 1)	RS-232 cable 2)

17.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

(1) RS-232 cable 1) (for GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	TOSHIBA MACHINE PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC *1	1		1	CI
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	DSR
SG	5		5	SG
DR(DSR)	6		6	DTR
RS(RTS)	7		7	CTS
CS(CTS)	8		8	RTS
—	9		9	CD

*1 GT16: CD, GT15: CD, GT11:NC, GT105□:NC, GT104□:NC

(2) RS-232 cable 2) (for GT1030, GT1020)

GOT side (Terminal block)	Cable connection and signal direction	TOSHIBA MACHINE PLC side	
Signal name		Pin No.	Signal name
SD		1	CI
RD		2	TXD
ER		3	RXD
DR		4	DSR
SG		5	SG
RS		6	DTR
CS		7	CTS
NC		8	RTS
NC		9	CD

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

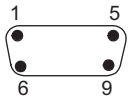
GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

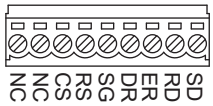
GOT main part connector
see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a
GOT main part



9-pin terminal block

(2) TOSHIBA MACHINE PLC side connector

Use the connector compatible with the TOSHIBA MACHINE PLC side module.
For details, refer to the following manual.

☞ User's Manual for the TOSHIBA MACHINE PLC

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

17.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 17.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 17.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 17.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 17.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 17.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 17.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 17.3.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

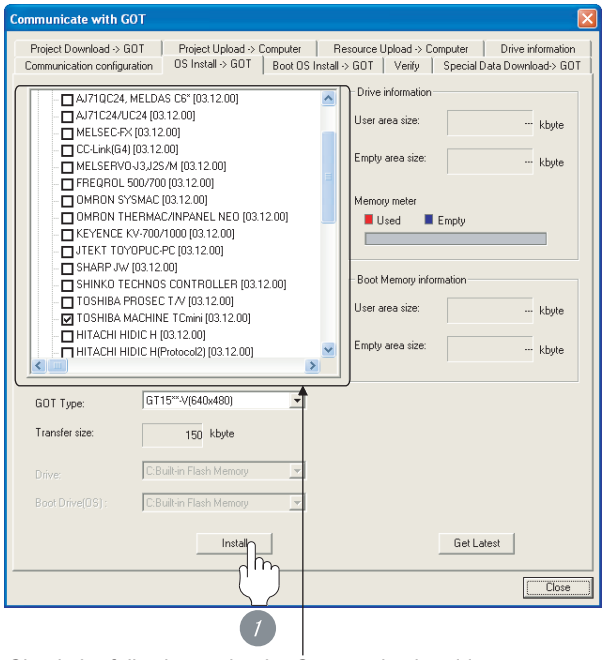
Section 17.4 PLC Side Setting

17.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• TOSHIBA MACHINE TCmini

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

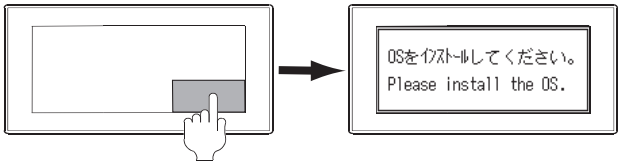
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

GT10 User's Manual

(Operating of transmission mode)



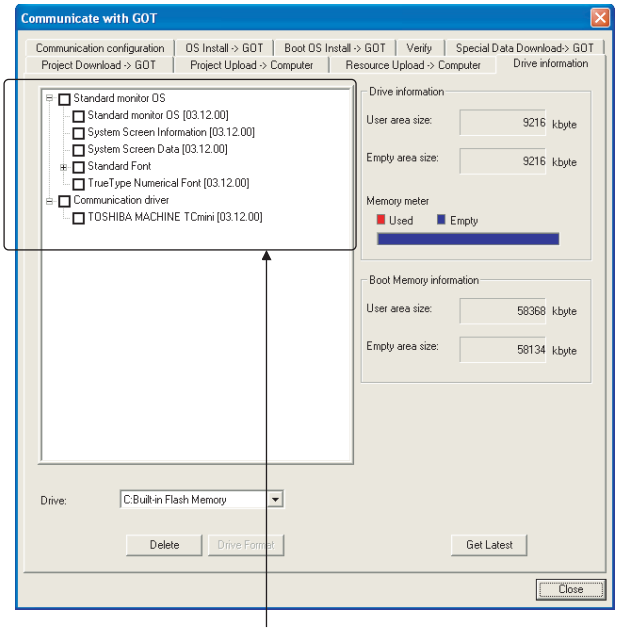
Turn on the GOT while the bottom right corner is touched.

17.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: TOSHIBA MACHINE TCmini

17.3.3 Setting communication interface (Communication settings)

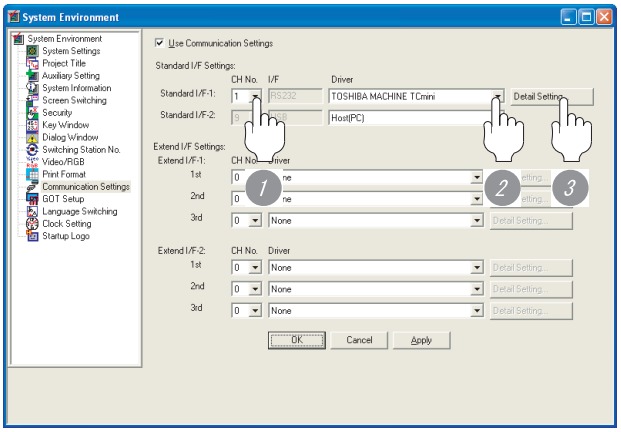
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



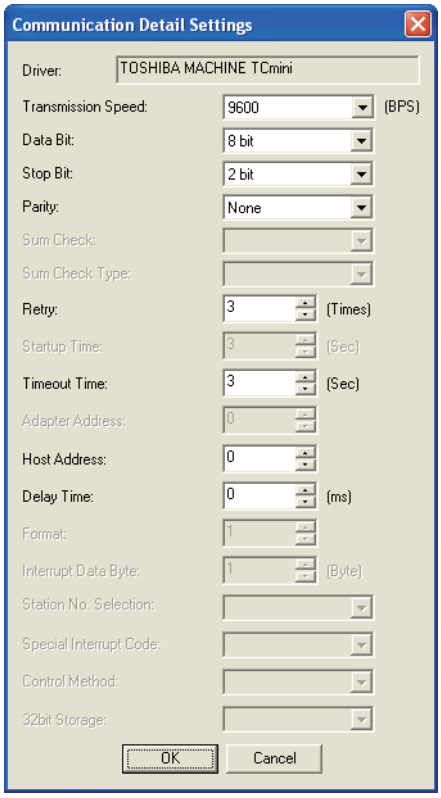
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "TOSHIBA MACHINE TCmini".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 0>	0 to 63
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300ms

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

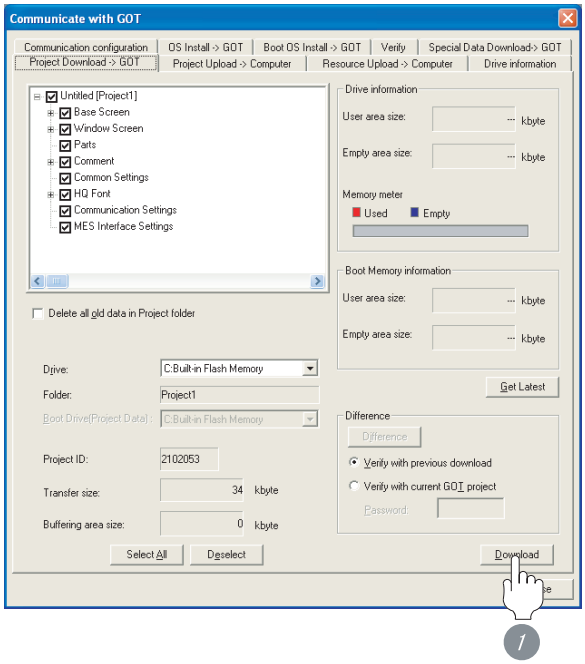
Communication settings can be changed on only GT Designer2.

17.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

17.3.5 Attaching communication unit and connecting cable

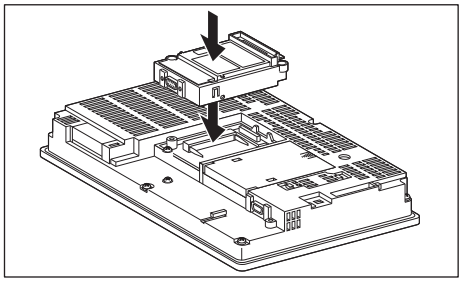
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit , refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

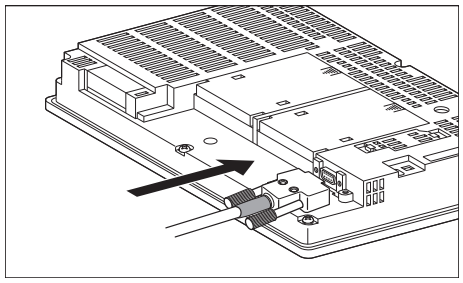
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

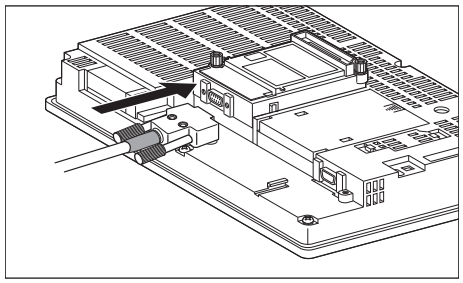
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



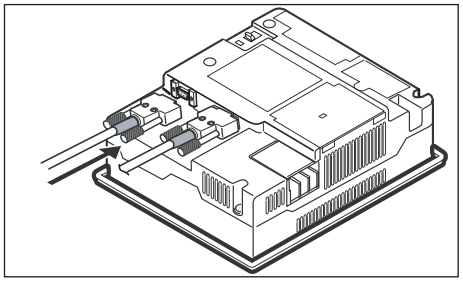
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



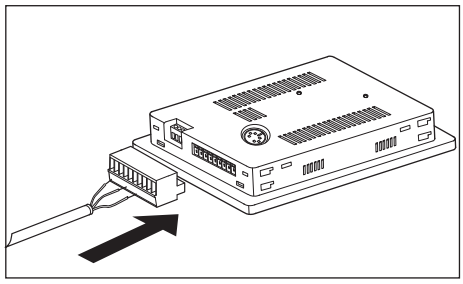
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

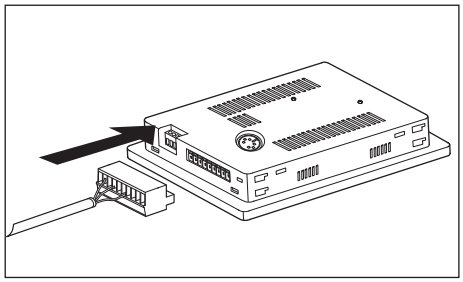


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



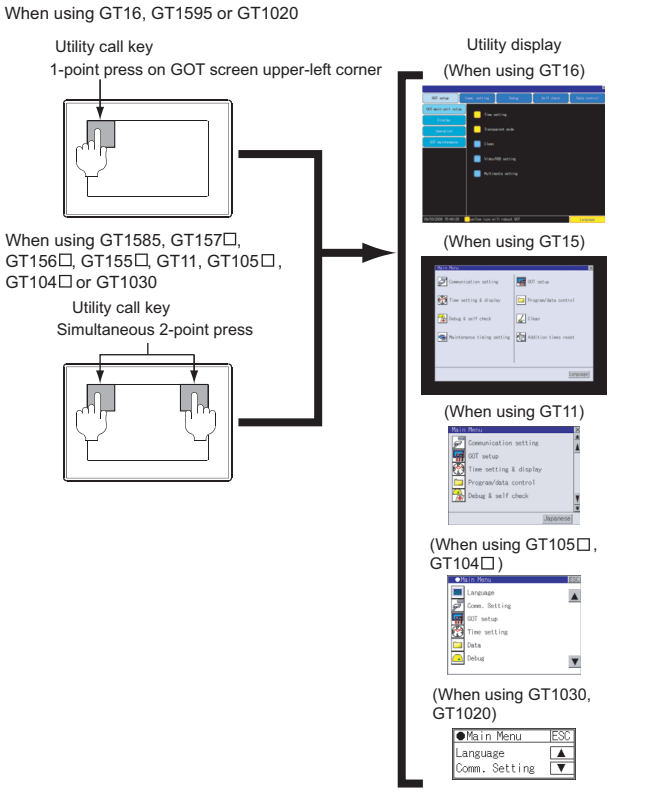
17.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

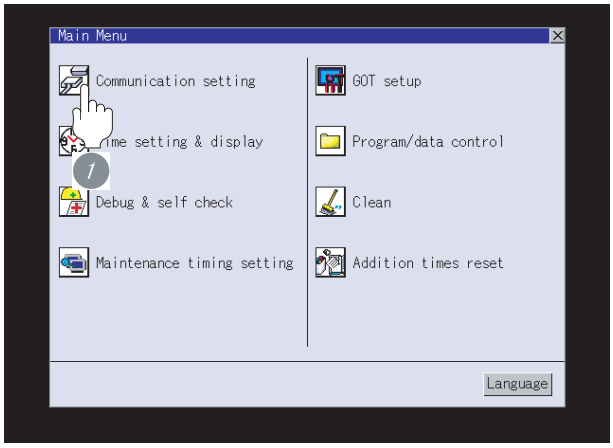


Point

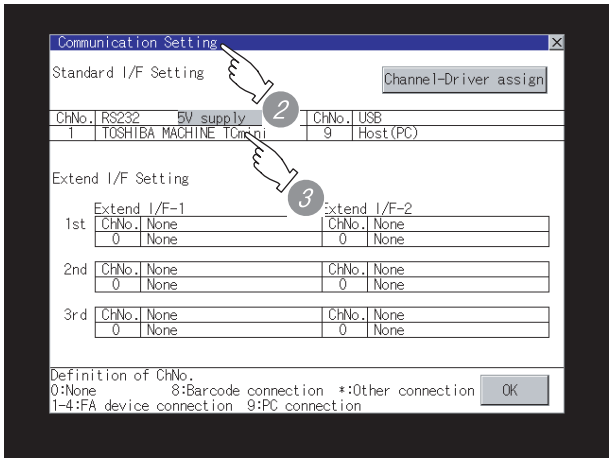
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  TOSHIBA MACHINE TCmini

When the communication driver name is not displayed normally, carry out the following procedure again.

Section 17.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

17.3.7 Checking for normal monitoring

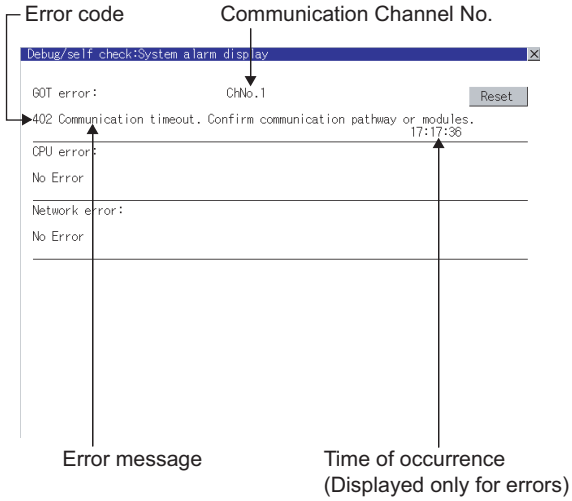
1 Check for errors occurring on the GOT (for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check (for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

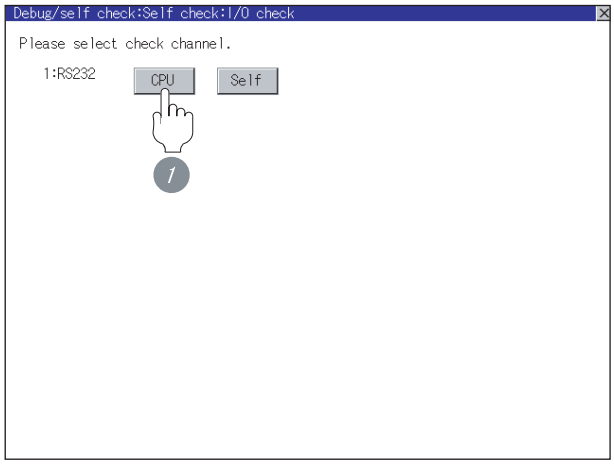
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

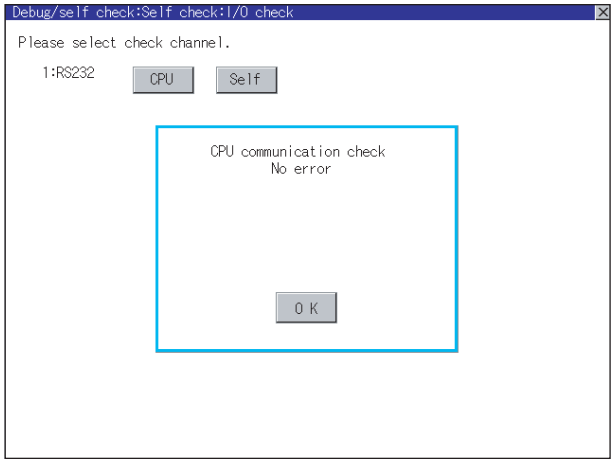
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



3 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

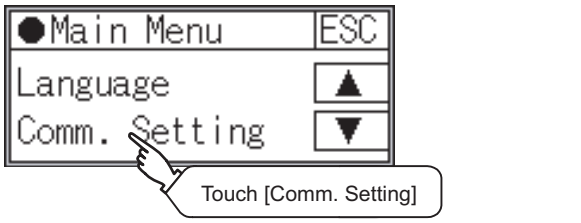
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

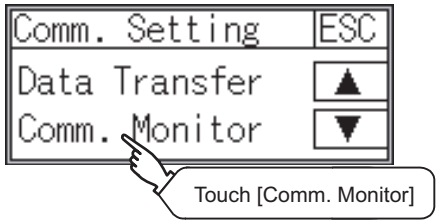
(Operation of communication monitoring function screen)

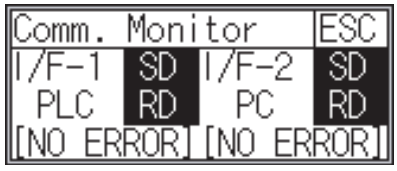
Main Menu





Communication settings





4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 17.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

17.4 PLC Side Setting

Point

TOSHIBA MACHINE PLC

For details of the TOSHIBA MACHINE PLC, refer to the following manual.

☞ User's Manual for the TOSHIBA MACHINE PLC

Model name		Refer to
PLC CPU	TC3, TC8	Section 17.4.1
	TC6	Section 17.4.2

17.4.1 Connecting to TC3, TC8 series

No communication settings.

Communication is available using default value of the PLC.

17.4.2 Connecting to TC6 series

The setting of transmission speed is changeable.

Set the following Special AUX Relay(A) using engineer link tool.

The communication may not work properly if the settings are made using the GOT.

Transmission speed*1	Special AUX Relay		
	A158	A159	A15A
9600bps	OFF	OFF	OFF
19200bps	ON	OFF	OFF
38400bps	-	ON	OFF
57600bps	-	OFF	ON
115200bps	-	ON	ON

*1 Specify the transmission speed to match the baud rate of the GOT.
For how to set the baud rate of the GOT, refer to the following.

☞ Section 17.3.3 Setting communication interface (Communication settings)

17.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	TOSHIBA MACHINE PLC connection	Supporting the TOSHIBA MACHINE PLC connection	2.77F	Communication driver TOSHIBA MACHINE TCmini [03.12.**]
GT24V10 20 30				Standard monitor OS [01.08.**] Communication driver TOSHIBA MACHINE TCmini [01.03.**]
GT16	TOSHIBA MACHINE PLC connection	Supporting the connections to GT16	2.90U	Communication driver TOSHIBA MACHINE TCmini [04.02.**]
GT105□ 4□	TOSHIBA MACHINE PLC connection	Supporting the connections to GT105 □ Supporting the connections to GT104 □		Standard monitor OS [01.10.**] Communication driver TOSHIBA MACHINE TCmini [01.05.**]

MEMO

18

CONNECTION TO HITACHI IES PLC



18.1 System Configuration . . . . . page 18-2

This section describes equipment and cables needed when connecting a GOT to a HITACHI IES PLC.
Select a system suitable for your application.

18.2 Connection Cable . . . . . page 18-6

This section describes the specifications of the cables needed when connecting a GOT to a HITACHI IES PLC.
Check the specifications of the connection cables.

18.3 Preparatory Procedures for Monitoring . . . . . page 18-12

This section provides the procedures to be followed before performing monitoring in connection to a HITACHI IES PLC.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

18.4 PLC Side Setting . . . . . page 18-21

The PLC side settings for GOT connection are explained.

When checking the PLC side settings, refer to this section.

18.5 List of Functions Added by Version Upgrade . . . . . page 18-22

This section describes the functions added by version upgrade of GT Designer2 or OS.

18.1 System Configuration

Select a system configuration suitable for your application.

Point

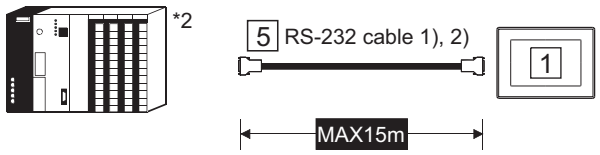
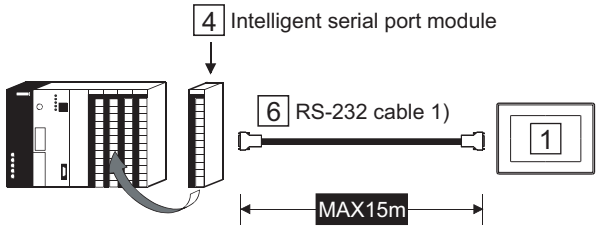
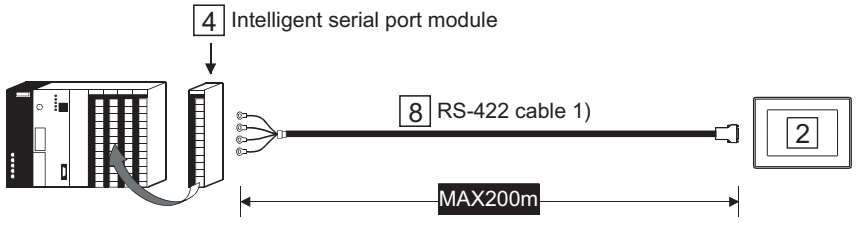
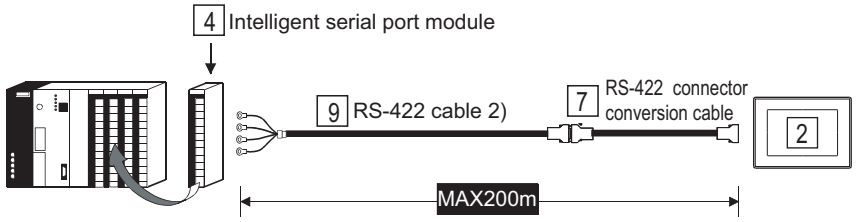
Conventions used in this section

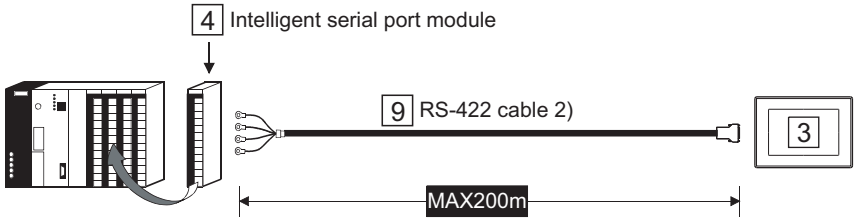
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

18.1.1 Connecting to large-sized H series

Communication driver
· HITACHI HIDIC H
· HITACHI HIDIC H (Protocol2)

1 System configuration and connection conditions

Connection conditions		System configuration *1	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial
			
	200m or less		GT16
			

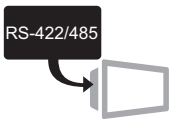
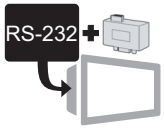
Connection conditions		System configuration *1	Model
Number of GOTs	Distance		
1	200m or less		GT16 GT15 GT11 Serial

*1 To use "transmission control procedure 2" as a protocol, select "HITACHI HIDIC H (Protocol2)" as a communication driver.

*2 To connect to the large-sized H series, connect to the peripheral port of the CPU module.

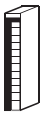
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

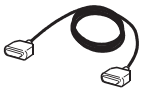
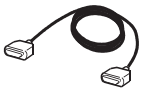
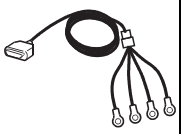
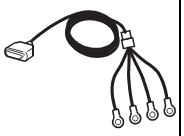
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Intelligent serial port module	COMM-H, COMM-2H

4 is a product manufactured HITACHI Industrial Equipment Systems Co., Ltd. For details of this product, contact HITACHI Industrial Equipment Systems Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-232 cable 1)*1*2 • Between CPU and GOT	GT09-C30R20401-15P(3m)	GT16 GT15 GT11 Serial
		RS-232 cable 2)*1*2 • Between CPU and GOT	GT09-C30R20402-15P(3m)	
	6	RS-232 cable 1)*1 • Between intelligent serial port module and GOT	GT09-C30R20401-15P(3m)	
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-422 cable 1) • Between intelligent serial port module and GOT	(To be prepared by the user. Section 18.2 Connection Cable)	
	9	RS-422 cable 2)*1 • Between intelligent serial port module and RS-422 connector conversion cable • Between intelligent serial port module and GOT	GT09-C30R40401-7T(3m) GT09-C100R40401-7T(10m) GT09-C200R40401-7T(20m) GT09-C300R40401-7T(30m)	GT16 GT15 GT11 Serial

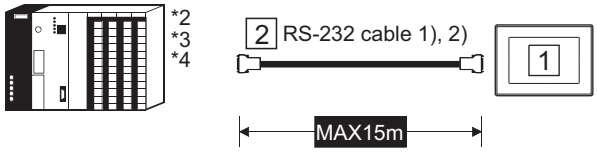
*1 The RS-232 and RS-422 cable can be prepared by the user.(Section 18.2 Connection Cable)

*2 The connection diagram of the cable to be used varies according to the specified transmission speed. (Section 18.2 Connection Cable)

18.1.2 Connecting to H-200 to 252 series, H series board type or EH-150 series

Communication driver
: HITACHI HIDIC H
: HITACHI HIDIC H (Protocol2)

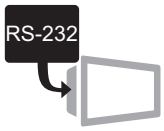
1 System configuration and connection conditions

Connection conditions		System configuration*1
Number of GOTs	Distance	
1	15m or less	

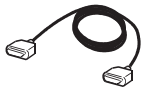
*1 To use "transmission control procedure 2" as a protocol, select "HITACHI HIDIC H (Protocol2)" as a communication driver.
*2 To connect to H-200 to 252 series, connect to the peripheral port of the CPU module.
*3 To connect to the EH-150 series, connect to the serial port of the CPU module.The module jack (8 pins)/D-sub connector (15 pins) conversion cable (EH-RS05 made by HITACHI Industrial Equipment Systems Co., Ltd.) is necessary.
*4 To connect to serial port 2 of H-252C (CPU22-02HC, CPE22-02HC), the round connector (8 pins)/D-sub connector (15 pins) conversion cable (CNCOM-05 made by HITACHI Industrial Equipment Systems Co., Ltd.) is necessary.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) Cable

Image	No.	Name	Model name
	2	RS-232 cable 1)*1*2 • Between CPU and GOT	GT09-C30R20401-15P(3m)
		RS-232 cable 2)*1*2 • Between CPU and GOT	GT09-C30R20402-15P(3m)

*1 The RS-232 cable can be prepared by the user.(☞ Section 18.2 Connection Cable)
*2 The connection diagram of the cable to be used varies according to the specified transmission speed.
(☞ Section 18.2 Connection Cable)

18.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

Point RS-232 cable connection diagram

The connection diagram of the cable to be used varies according to the specified transmission speed.

1 RS-232 cable (☞ Section 18.2.1)

Model		Specified transmission speed	Connection cable
			GT16, GT15, GT11
PLC CPU (Large-sized H series)	H-302/702/1002/2002	—	RS-232 cable 1)
	H-4010	4800bps	RS-232 cable 1)
		19200bps	RS-232 cable 2)
		38400bps*1	RS-232 cable 2)
		Other than above	RS-232 cable 1), RS-232 cable 2)
	H-300/700/2000	—	RS-232 cable 1)
Intelligent serial port module	COMM-H, COMM-2H	—	RS-232 cable 1)
PLC CPU (H-200 to 252 series)	H-200/250/252/252B	—	RS-232 cable 1)
	H-252C	4800bps	RS-232 cable 1)
		19200bps	RS-232 cable 2)
		Other than above	RS-232 cable 1), RS-232 cable 2)
H series board type		—	RS-232 cable 1)
EH-150 series		4800bps	RS-232 cable 1)
		19200bps	RS-232 cable 2)
		38400bps	RS-232 cable 2)
		Other than above	RS-232 cable 1), RS-232 cable 2)

*1 Can be specified with the CPU software of revision "J" or later.

2 RS-422 cable (☞ Section 18.2.2)

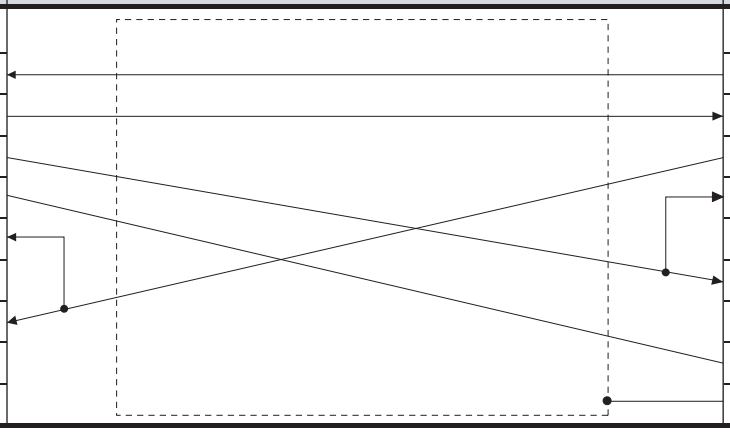
Model		Specified transmission speed	Connection cable	
			GT16	GT15, GT11
Intelligent serial port module	COMM-H, COMM-2H	—	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 2)

18.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

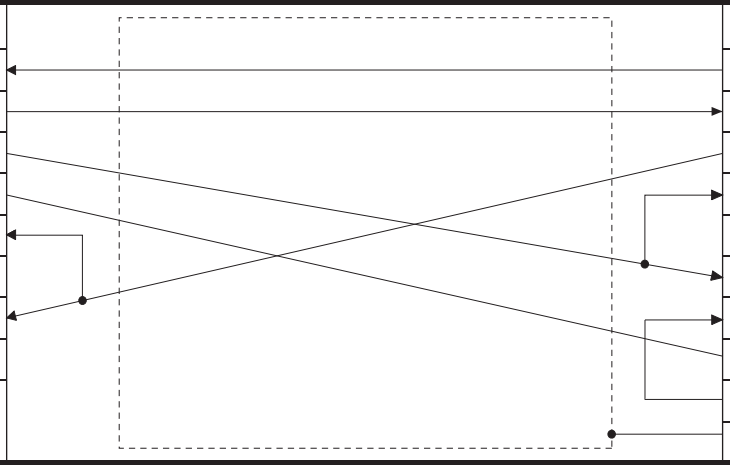
1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	HITACHI IES PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	NC
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	RV1(ER)
RS(RTS)	7		7	RV2(DR)
CS(CTS)	8		8	PHL
—	9		9	SG
			FG	

*1 GT16 : CD, GT15 : CD, GT11: NC

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	HITACHI IES PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		1	NC
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	RV1(ER)
RS(RTS)	7		7	RV2(DR)
CS(CTS)	8		8	PHL
—	9		9	SG
			14	ER
			FG	

*2 GT16: CD, GT15: CD, GT11: NC

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-			

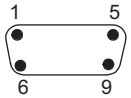
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) HITACHI IES PLC side connector
Use the connector compatible with the HITACHI IES PLC side module.
For details, refer to the following manual.

☞ User's Manual for the HITACHI IES PLC

3 Precautions when preparing a cable

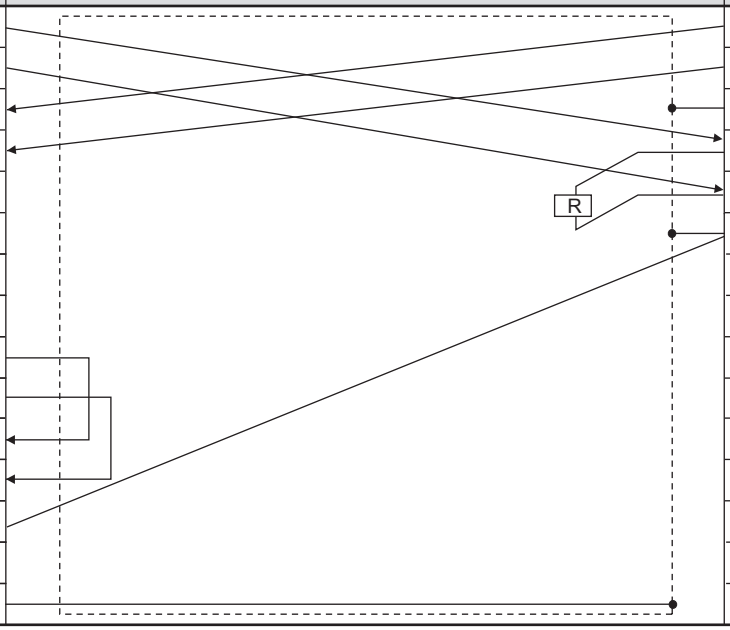
The length of the RS-232 cable must be 15m or less.

18.2.2 RS-422 cable

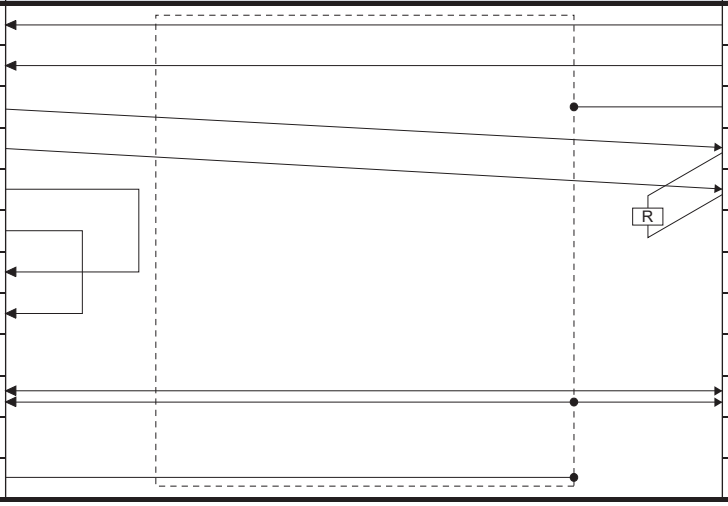
The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Connection diagram

(1) RS-422 cable 1)

GOT side		Cable connection and signal direction	HITACHI IES PLC side
Signal name	Pin No.		Name of terminal block
SDA1(TXD1+)	1		TXDP
SDB1(TXD1-)	2		TXDN
RDA1(RXD1+)	3		TXDG
RDB1(RXD1-)	4		RXDP
SDA2(TXD2+)	5		RXDN
SDB2(TXD2-)	6		RXDG
RDA2(RXD2+)	7		
RDB2(RXD2-)	8		
RSA(RTS+)	9		
RSB(RTS-)	10		
CSA(CTS+)	11		
CSB(CTS-)	12		
SG	13		
NC	14		
	Shell		

(2) RS-422 cable 2)

GOT side		Cable connection and signal direction	HITACHI IES PLC side
Signal name	Pin No.		Name of terminal block
RDA	2		TXDP
RDB	7		TXDN
SDA	1		TXDG
SDB	6		RXDP
RSA	3		RXDN
RSB	8		—
CSA	4		—
CSB	9		—
—	—		—
SG	5		RXDG
—	—		—
FG	—		—

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

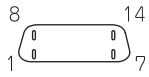
GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

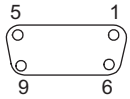
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

(2) HITACHI IES PLC side connector

Use the connector compatible with the HITACHI IES PLC side module.

For details, refer to the following manual.

☞ User's Manual for the HITACHI IES PLC

3 Precautions when preparing a cable

The length of the RS-422 cable must be 200m or less.

4 Connecting terminating resistors

When connecting an intelligent serial port module to a GOT, a terminating resistor has to be connected to the intelligent serial port module.

The terminating resistor is unnecessary on the GOT side because one is built in the GOT.

☞ User's Manual for the HITACHI IES PLC

18.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 18.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 18.3.2
Checking OS installation on GOT

⇩

Set the communication interface. (Communication settings)

☞ Section 18.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 18.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 18.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 18.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 18.3.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

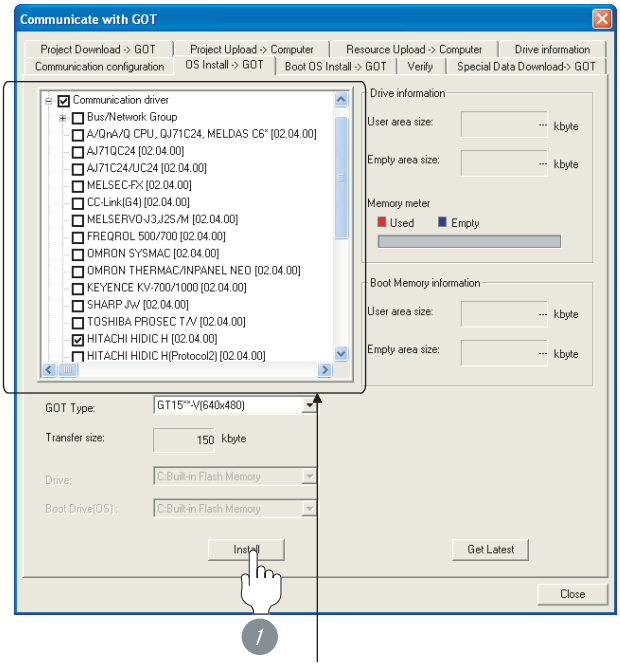
☞ Section 18.4 PLC Side Setting

18.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check either of the following under the Communication driver.

· HITACHI HIDIC H
· HITACHI HIDIC H (Protocol2)

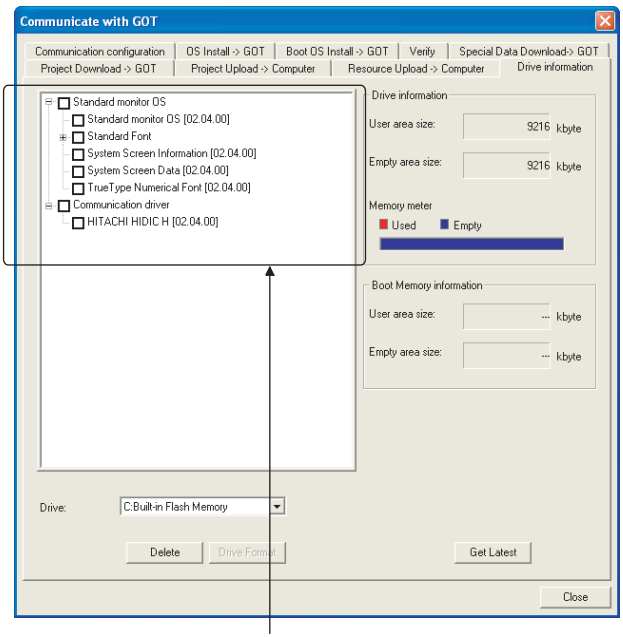
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

18.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS had been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (either of the following):

· HITACHI HIDIC H

· HITACHI HIDIC H (Protocol2)

18.3.3 Setting communication interface (Communication settings)

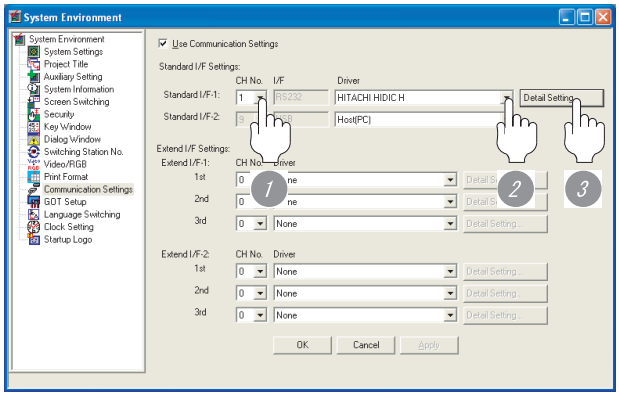
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set [1] to the channel No. used.

2 Set the following to the driver.

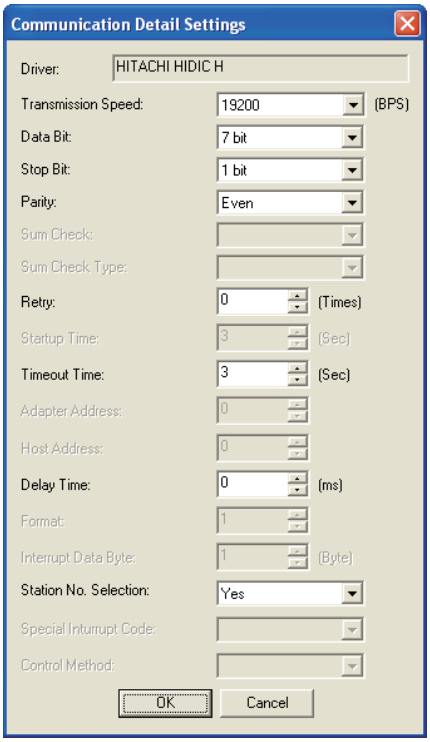
- HITACHI HIDIC H
- HITACHI HIDIC H (Protocol2)

3 Perform the detailed settings for the driver.

(2 Communication detail settings)

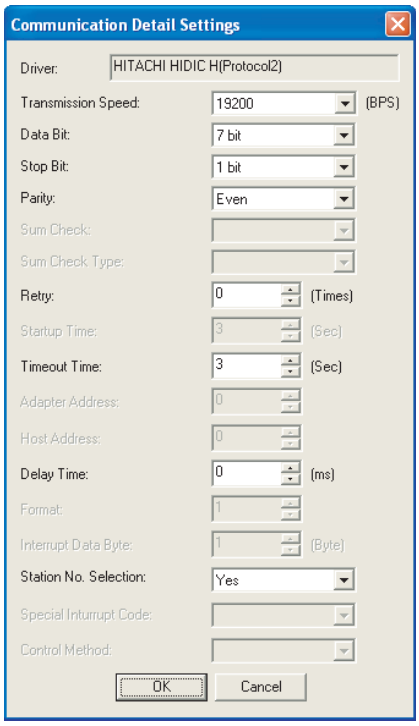
2 Communication detail settings

(1) HITACHI HIDIC H



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms
Station No. Selection	Specify whether to use the station No. during communication. If [Yes] is selected, the station No. is fixed to "0." <Default: Yes>	Yes or No

(2) HITACHI HIDIC H (Protocol2)



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms
Station No. Selection	Specify whether to use the station No. during communication. If [Yes] is selected, the station No. is fixed to "0." <Default: Yes>	Yes or No

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.

For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

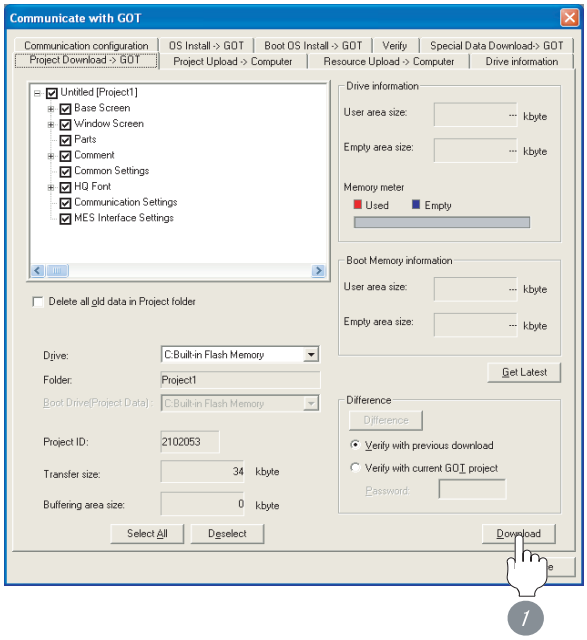
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

18.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

18.3.5 Attaching communication unit and connecting cable

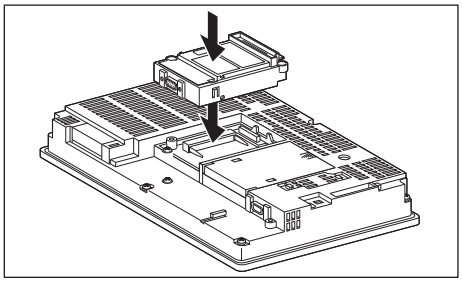
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

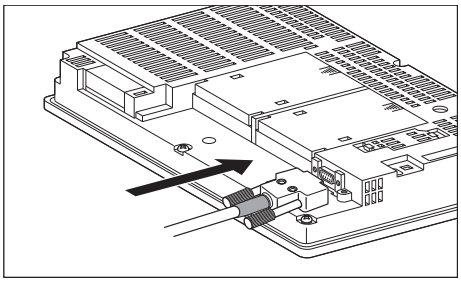
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

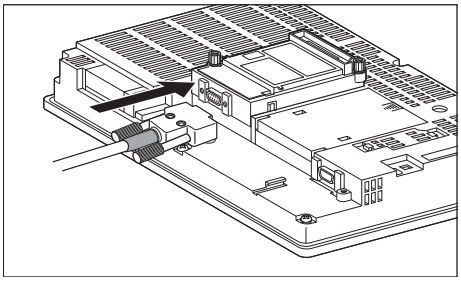
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



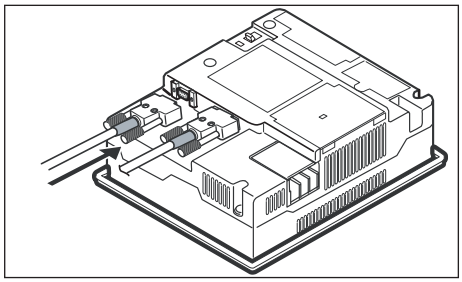
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

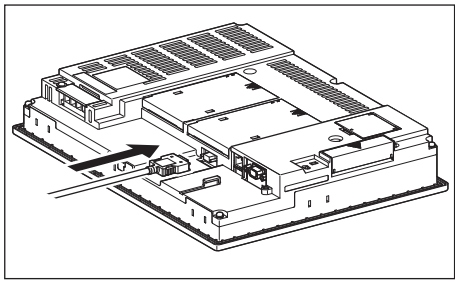


(2) How to connect the RS-422 cable

(a) For the GT16

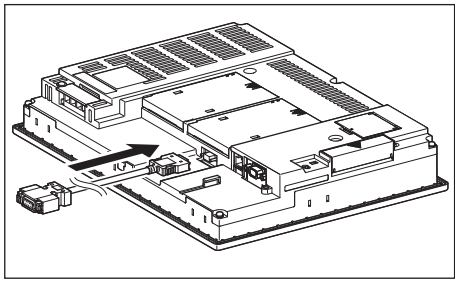
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

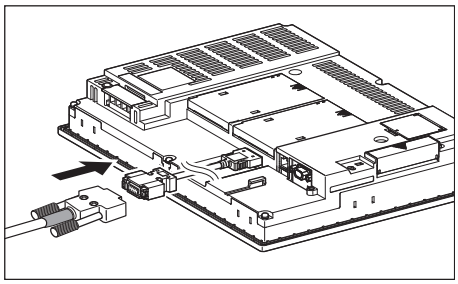


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

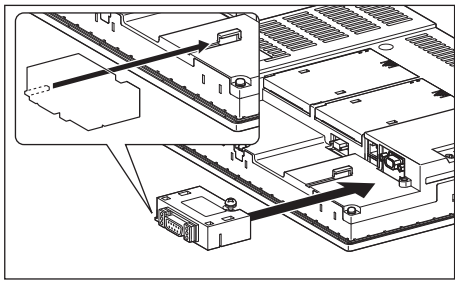


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

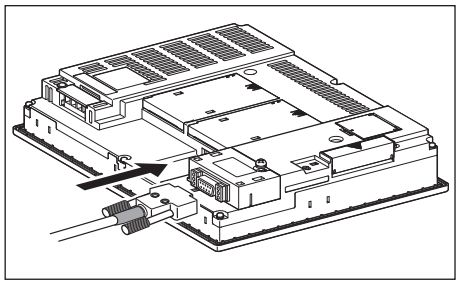


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

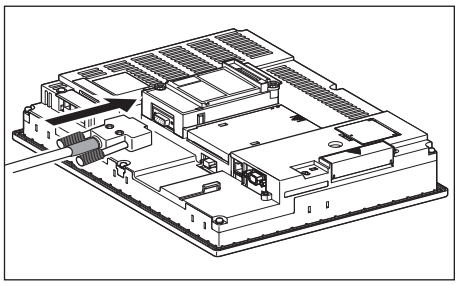


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

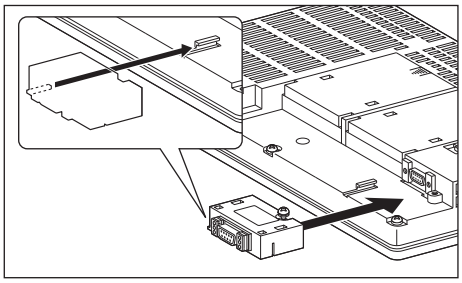
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



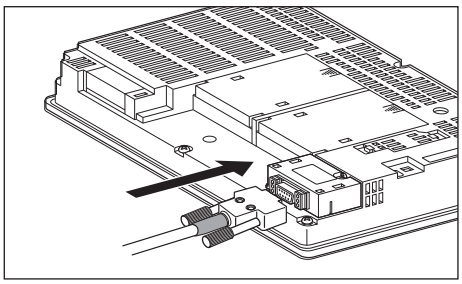
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155□)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

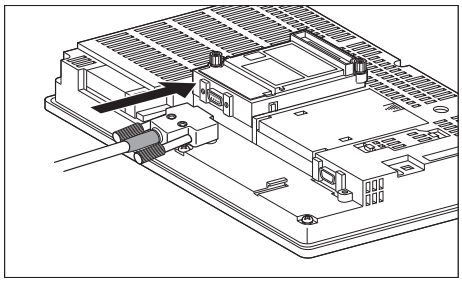


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

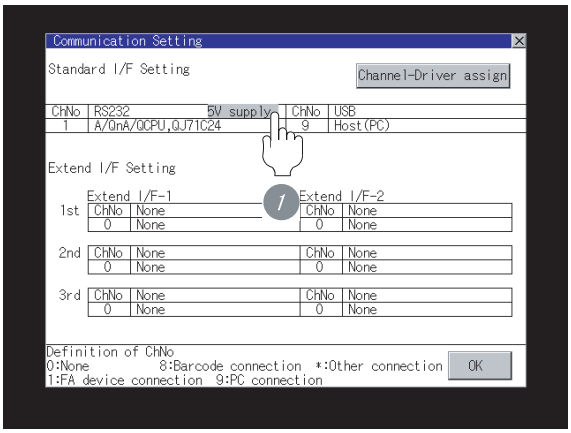
Point

When using the RS-422 conversion unit

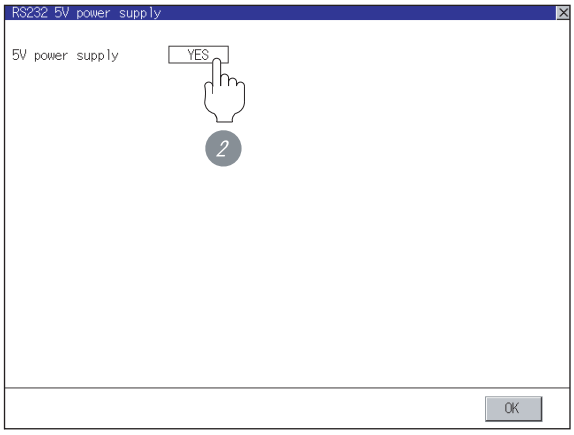
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

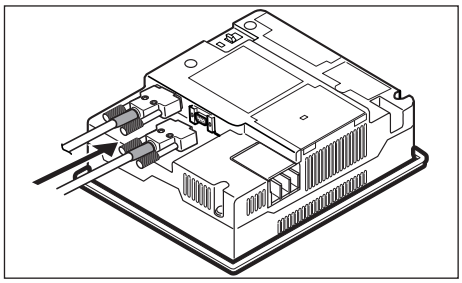


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



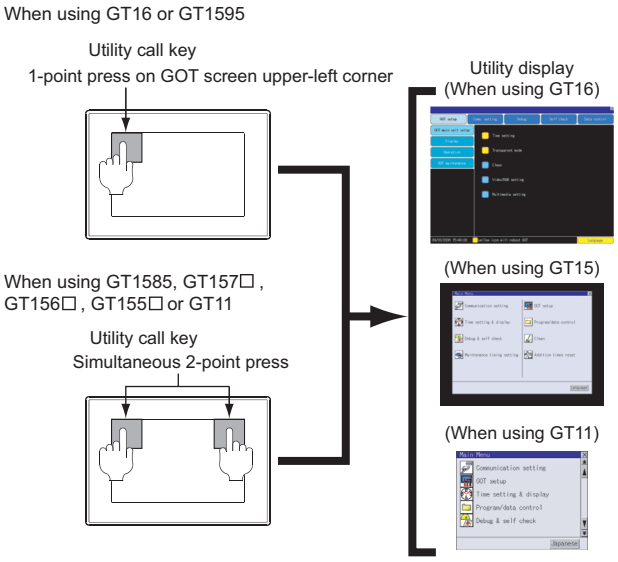
18.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

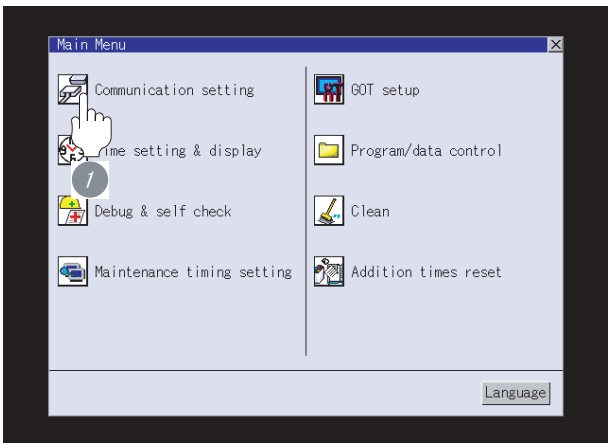


Point

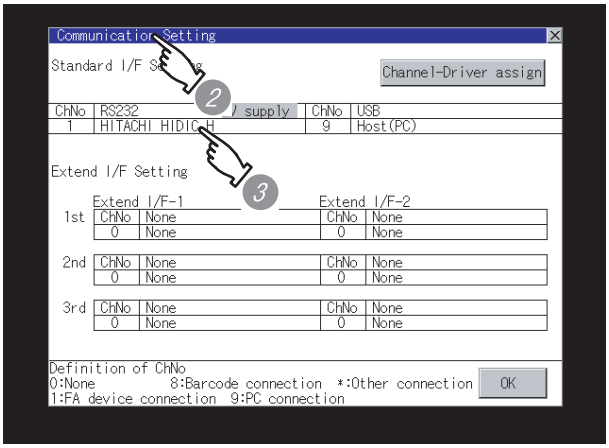
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver (either of the following):
  HITACHI HIDIC H
  HITACHI HIDIC H (Protocol2)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 18.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

18.3.7 Checking for normal monitoring

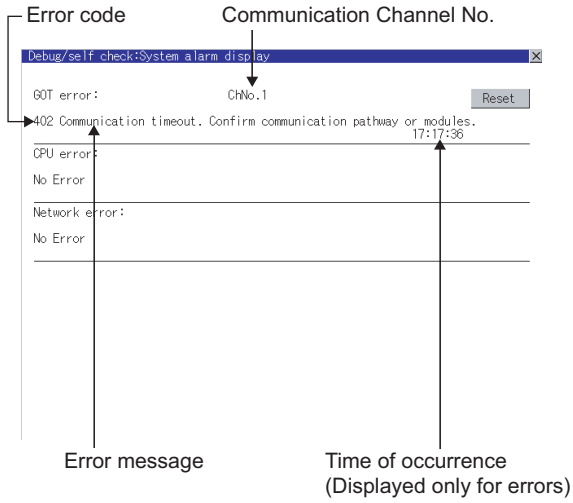
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

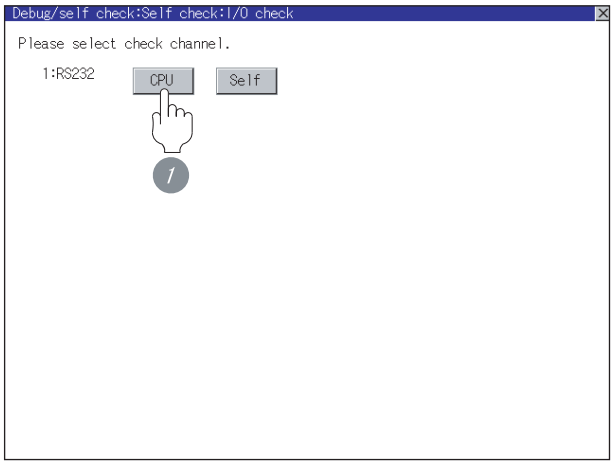
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

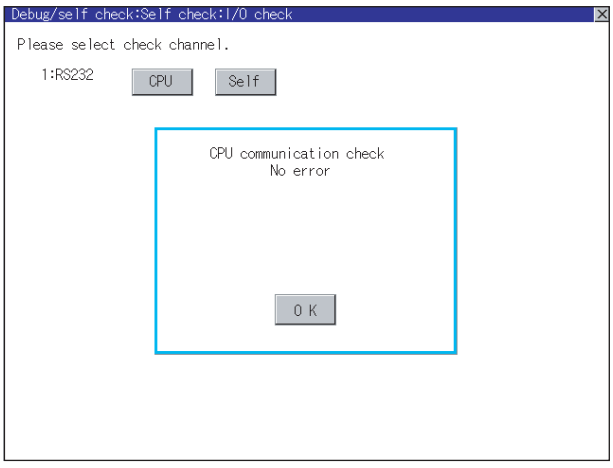
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 18.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

18.4 PLC Side Setting

Point

HITACHI IES PLC

For details of the HITACHI IES PLC, refer to the following manual.

☞ User's Manual for the HITACHI IES PLC

1 Directly connecting to the CPU

Item	Setting
Transmission speed*1*2*3	4800bps, 9600bps, 19200bps, 38400bps
Station No.	0
Data length	7bit
Stop bit	1bit
Pairty bit	Even
Control procedure	DTR control
Communication format	RS-232
Sum check	Performed
Protocol	transmission control procedure 1

*1 Indicates only the transmission speeds that can be specified on the GOT side.

*2 Specify the transmission speed to match the transmission speed of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

☞ Section 18.3.3 Setting communication interface (Communication settings)

*3 The setting range varies according to the PLC to be connected.

2 Connecting to the intelligent serial port module

(1) For transmission control procedure1

Item	Setting
Transmission speed	19200bps
Station No.	0
Data length	7bit
Stop bit	1bit
Pairty bit	Even
Control procedure	None
Communication format	For RS-232 communication: RS-232 MODE switch 2 For RS-422 communication: RS-422 MODE switch 2
Sum check	Performed

(2) For transmission control procedure2

Item	Setting
Transmission speed	19200bps
Station No.	0
Data length	7bit
Stop bit	1bit
Pairty bit	Even
Control procedure	None
Communication format	For RS-232 communication: RS-232 MODE switch 9 For RS-422 communication: RS-422 MODE switch 9
Sum check	Performed

18.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	HITACHI IES PLC connection	Supporting the HITACHI IES PLC connection	2.09K	Communication driver • HITACHI HIDIC H [01.02.**] • HITACHI HIDIC H (Protocol2) [01.02.**]
GT15 GT11 Serial	HITACHI IES PLC connection	Supporting the retry, the timeout time and the delay time	2.73B	Communication driver • HITACHI HIDIC H [03.09.**] • HITACHI HIDIC H (Protocol2) [03.09.**]
GT16	HITACHI IES PLC connection	Supporting the connection to GT16	2.90U	Communication driver • HITACHI HIDIC H [04.02.**] • HITACHI HIDIC H (Protocol2) [04.02.**]

19

CONNECTION TO HITACHI PLC



19.1 System Configuration . . . . . page 19-2
This section describes the equipment and cables needed when connecting a GOT to an HITACHI PLC.
Select a system suitable for your application.

19.2 Connection Cable . . . . . page 19-9
This section describes the specifications of the cables needed when connecting to an HITACHI PLC.
Check the specifications of the connection cables.

19.3 Preparatory Procedures for Monitoring . . . . . page 19-15
This section provides the procedures to be followed before performing monitoring in connection to an HITACHI PLC.
This procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

19.4 PLC Side Setting . . . . . page 19-24
The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

19.5 List of Functions Added by Version Upgrade . . . . . page 19-25
This section describes the functions added by version upgrade of GT Designer2 or OS.

19.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

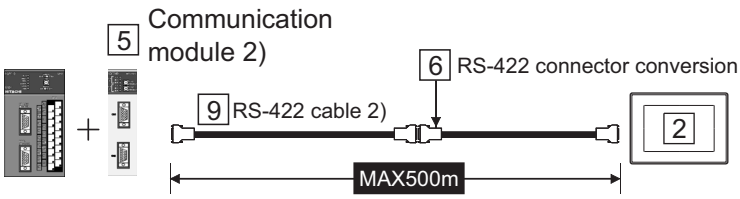
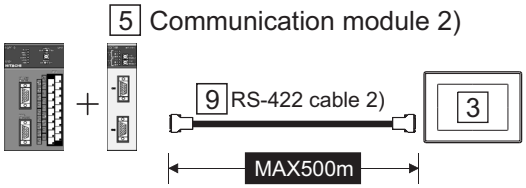
19.1.1 Connecting to S10V

Communication driver
HITACHI S10mini/S10V

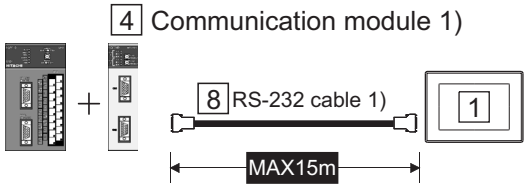
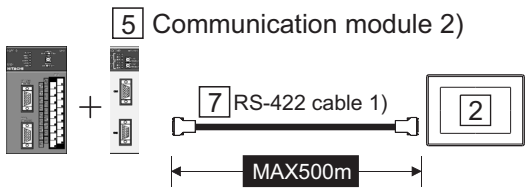
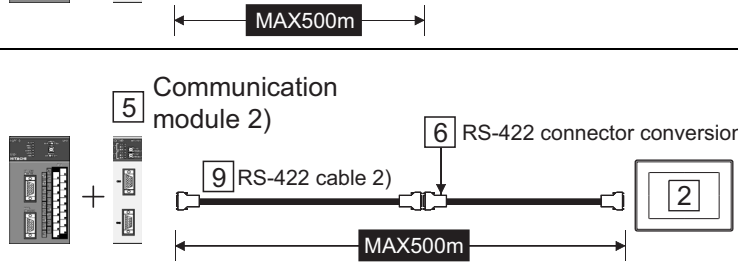
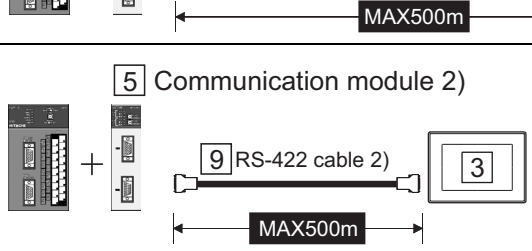
1 System configuration and connection conditions

When connecting to LQP510

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less	4 Communication module 1) 8 RS-232 cable 1) 1 MAX15m	GT16 GT15 GT11 Serial
1	500m or less	8 RS-422 cable 1) 2 MAX500m	GT16
1	500m or less	6 RS-422 connector conversion cable 9 RS-422 cable 2) 2 MAX500m	GT16
1	500m or less	9 RS-422 cable 2) 3 MAX500m	GT16 GT15 GT11 Serial
1	500m or less	5 Communication module 2) 7 RS-422 cable1) 2 MAX500m	GT16

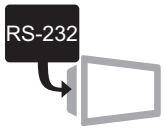
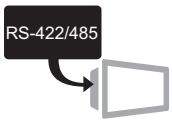
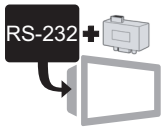
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	500m or less		GT16
1	500m or less		GT16 GT15 GT11 Serial

When connecting to LQP520

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial
1	500m or less		GT16
1	500m or less		GT16
1	500m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

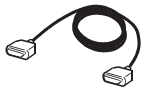
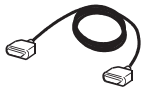
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Communication module 1)	LQE560
	5	Communication module 2)	LQE565

4, 5 is manufactured by Hitachi, Ltd. For details of the product, contact Hitachi, Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	7	RS-422 cable 1) • Between PLC and GOT	To be prepared by the user. ☞ Section 19.2 Connection Cable	GT16
	8	RS-232 cable 1) *1 • Between Communication module 1) and GOT	GT09-C30R21301-9S (3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 2) *1 • Between Communication module 2) and RS-422 connector conversion cable • Between Communication module 2) and GOT	GT09-C30R41301-9S (3m) GT09-C100R41301-9S (10m) GT09-C200R41301-9S (20m) GT09-C300R41301-9S (30m)	GT16 GT15 GT11 Serial

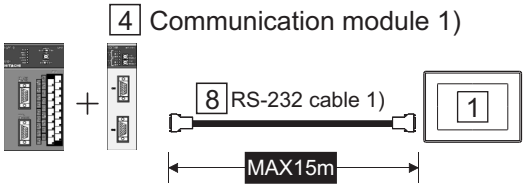
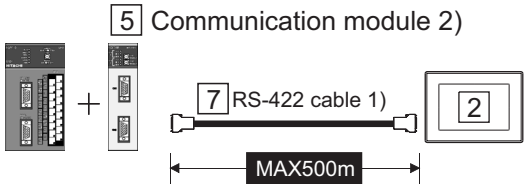
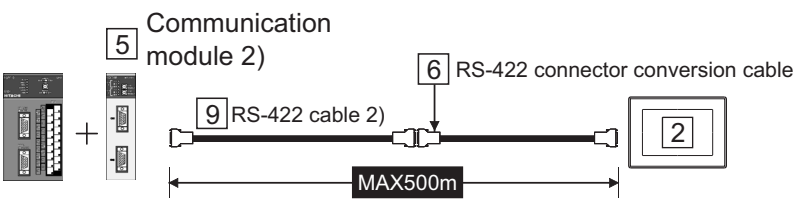
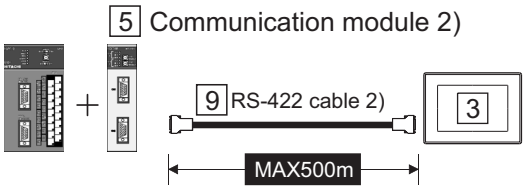
*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 19.2 Connection Cable)

19.1.2 Connecting to S10mini

Communication driver

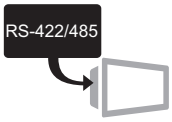
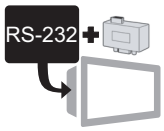
HITACHI S10mini/S10V

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial
1	500m or less		GT16
1	500m or less		GT16
1	500m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT15
	2	RS-422/485 Communication Unit • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT15

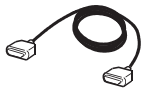
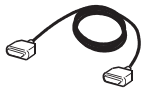
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Communication module 1)	LQE560, LQE060, LQE160
	5	Communication module 2)	LQE565, LQE165

4, 5 is manufactured by Hitachi, Ltd. For details of the product, contact Hitachi, Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	7	RS-422 cable 1) • Between PLC and GOT	To be prepared by the user. ☞ Section 19.2 Connection Cable	GT16
	8	RS-232 cable 1) *1 • Between Communication module 1) and GOT	GT09-C30R21301-9S (3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 2) *1 • Between Communication module 2) and RS-422 connector conversion cable • Between Communication module 2) and GOT	GT09-C30R41301-9S (3m) GT09-C100R41301-9S (10m) GT09-C200R41301-9S (20m) GT09-C300R41301-9S (30m)	GT16 GT15 GT11 Serial

*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 19.2 Connection Cable)

19.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ section 19.2.1)

Model name		Connection cable
		GT16, GT15, GT11
Communication module	LQE560	RS-232 cable 1)
	LQE060	
	LQE160	

2 RS-232 cable (☞ section 19.2.2)

Model name		Connection cable	
		GT16	GT15, GT11
PLC	LQP510	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 2)
Communication module	LQE565	RS-232 cable 1) RS-422 cable 2)	RS-422 cable 2)
	LQE165		

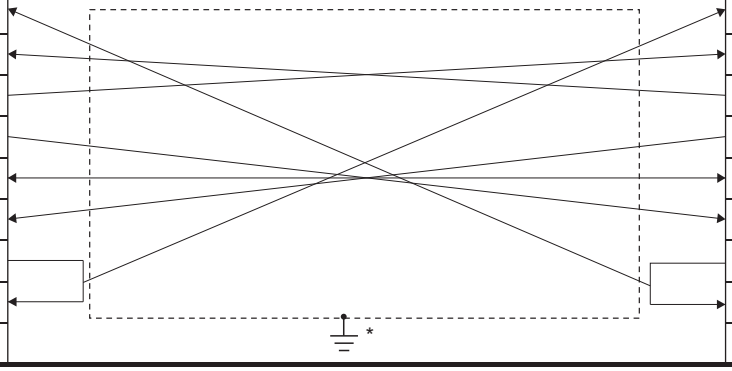
19.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

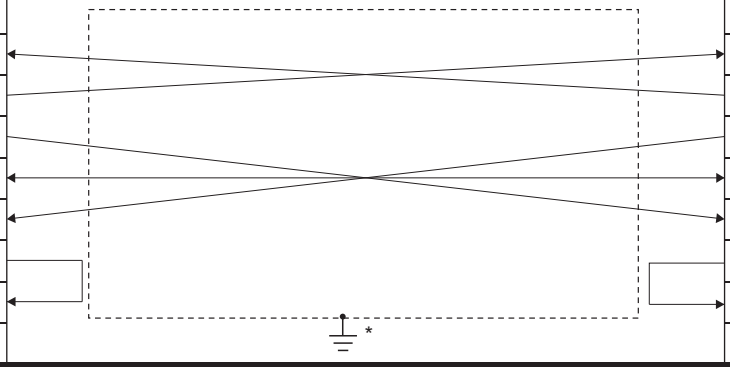
(1) RS-232 cable 1)

(a) For GT16, GT15

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	CD
RD(RXD)	2		2	RD
SD(TXD)	3		3	SD
ER(DTR)	4		4	ER
SG	5		5	SG
DR(DSR)	6		6	DR
RS(RTS)	7		7	RS
CS(CTS)	8		8	CS
—	9		9	—

* Connect FG grounding to the appropriate part of a cable shield line.

(b) For the GT11

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	CD
RD(RXD)	2		2	RD
SD(TXD)	3		3	SD
ER(DTR)	4		4	ER
SG	5		5	SG
DR(DSR)	6		6	DR
RS(RTS)	7		7	RS
CS(CTS)	8		8	CS
—	9		9	—

* Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-			

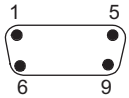
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) HITACHI PLC side connector
Use the connector compatible with the HITACHI PLC side module.
For details, refer to the following manual.

☞ User's Manual for the HITACHI PLC.

3 Precautions when preparing a cable

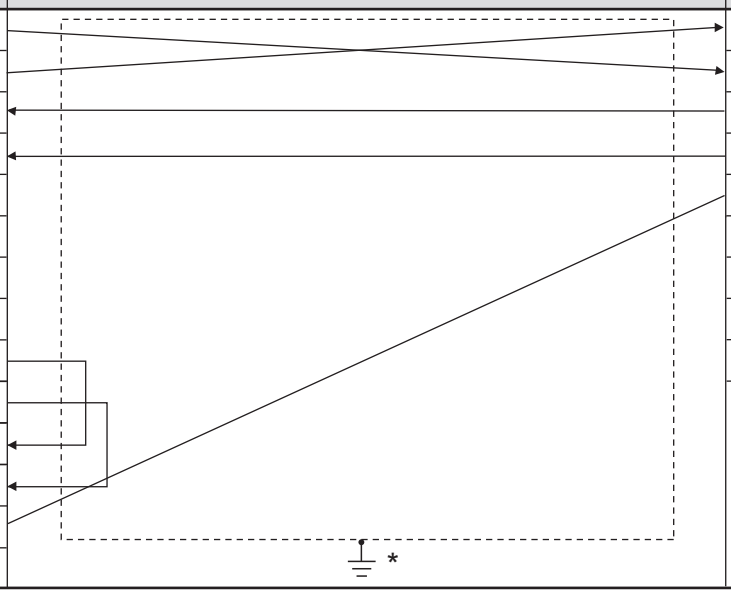
The length of the RS-232 cable must be 15m or less.

19.2.2 RS-422 cable

The following provides the connection diagrams and the connectors of the RS-422 cable connecting the GOT to the PLC.

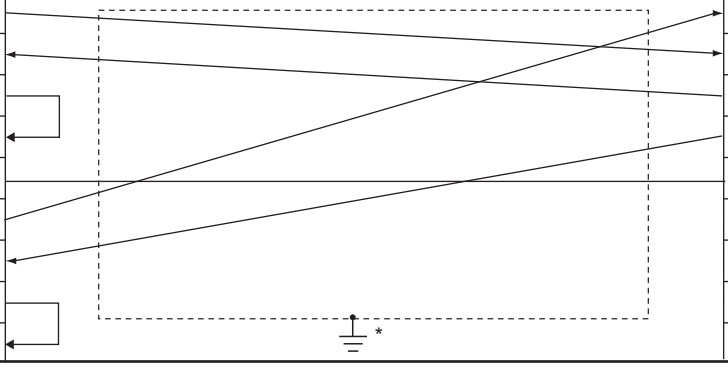
1 Connection diagram

(1) RS-422 cable 1)

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	RD-L
SDB1(TXD1-)	2		2	RD-H
RDA1(RXD1+)	3		3	SD-H
RDB1(RXD1-)	4		4	SD-L
SDA2(TXD2+)	5		5	SG
SDB2(TXD2-)	6		6	—
RDA2(RXD2+)	7		7	ATT-H
RDB2(RXD2-)	8		8	—
RSA(RTS+)	9		9	ATT-L
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			

* Connect FG grounding to the appropriate part of a cable shield line.

(2) RS-422 cable 2)

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA	1		1	RD-L
RDA	2		2	RD-H
RSA	3		3	SD-H
CSA	4		4	SD-L
SG	5		5	SG
SDB	6		6	—
RDB	7		7	ATT-H
RSB	8		8	—
CSB	9		9	ATT-L

* Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

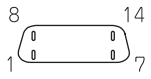
GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16 *1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S			

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

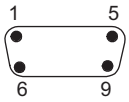
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

3 Precautions when preparing a cable

The length of the RS-422 cable must be 500m or less.

19.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 19.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 19.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 19.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 19.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 19.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 19.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 19.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

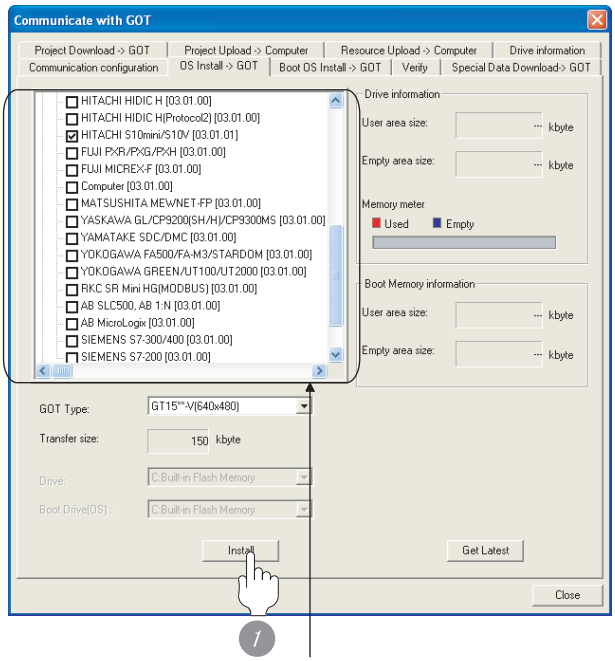
Section 19.4 PLC Side Setting

19.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

- HITACHI S10mini/S10V

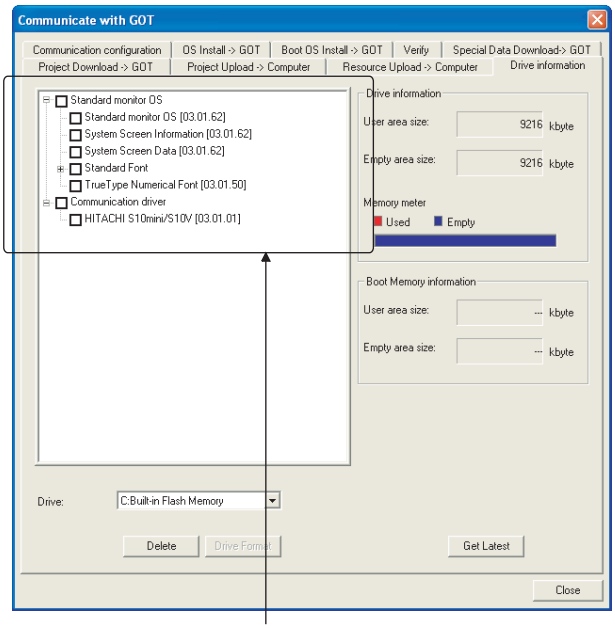
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

19.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: HITACHI S10mini/S10V

19.3.3 Setting communication interface (Communication settings)

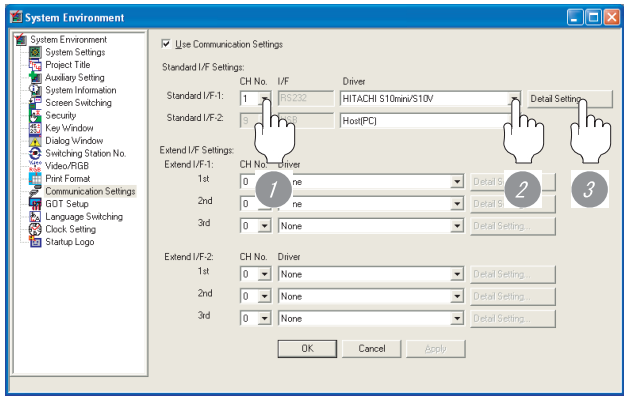
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



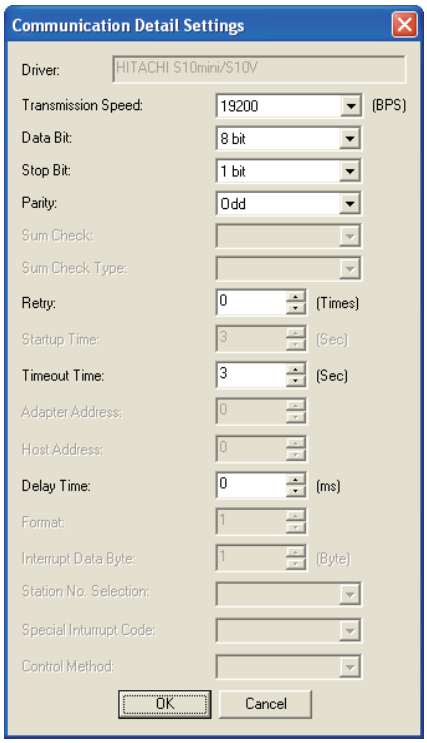
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "HITACHI S10mini/S10V".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Odd>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0>	0 to 300 ms

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

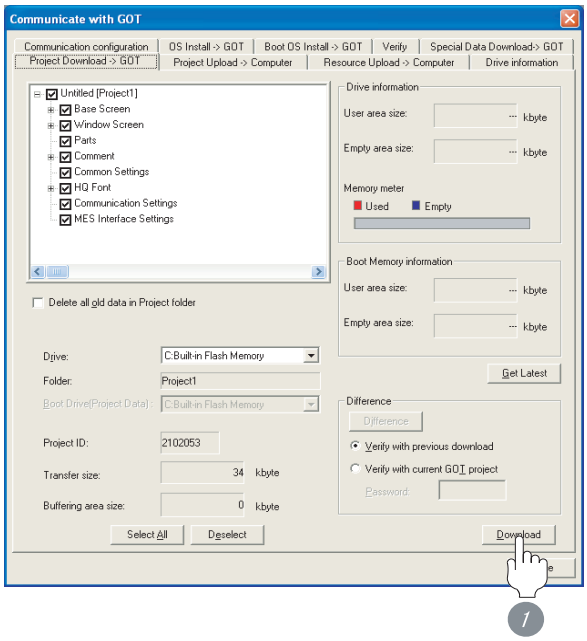
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

19.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

19.3.5 Attaching communication unit and connecting cable

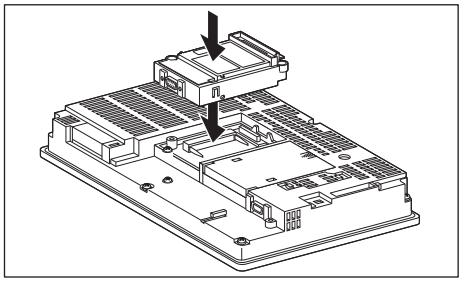
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

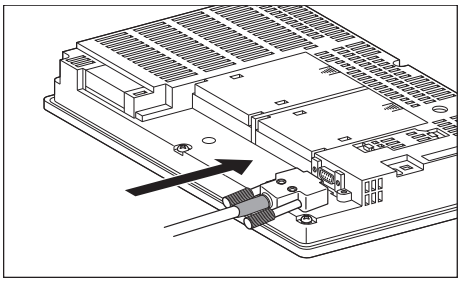
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

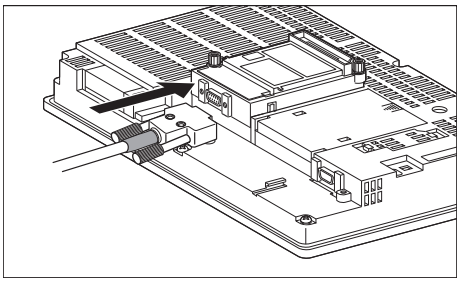
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



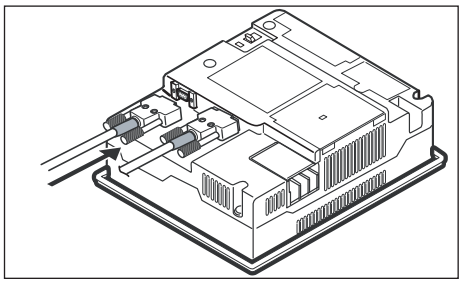
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

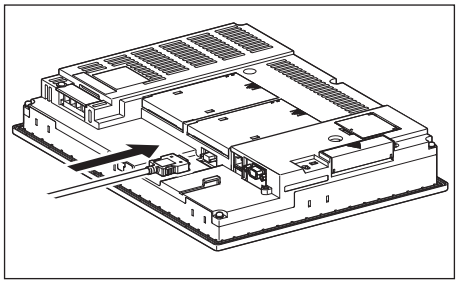


(2) How to connect the RS-422 cable

(a) For the GT16

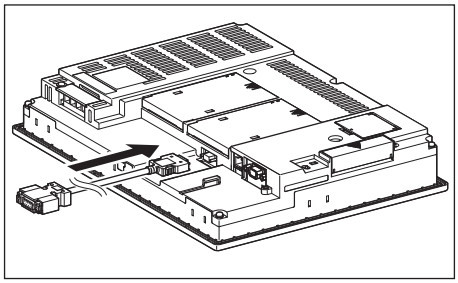
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

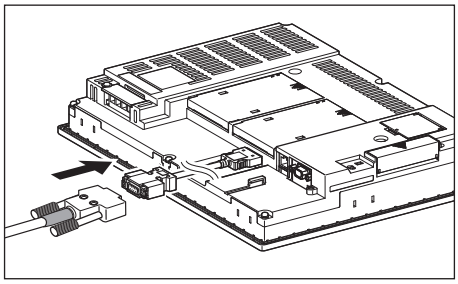


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

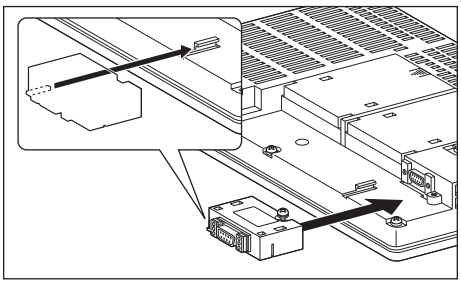


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

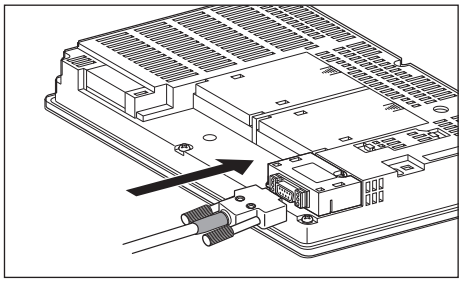


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

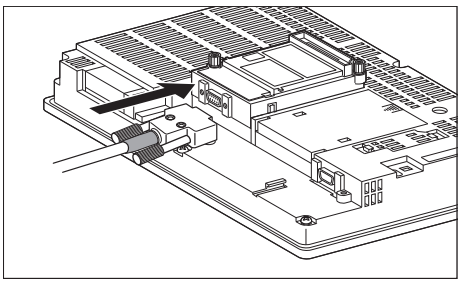


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

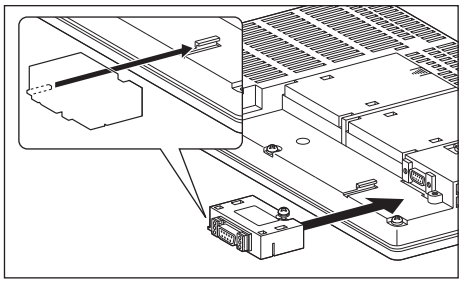
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



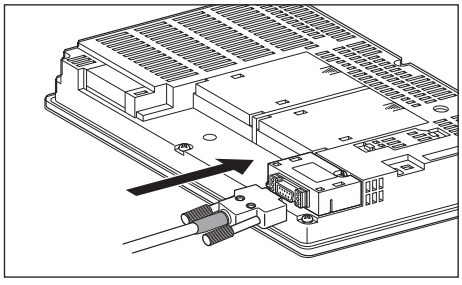
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

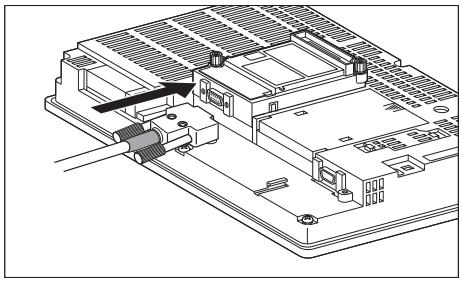


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

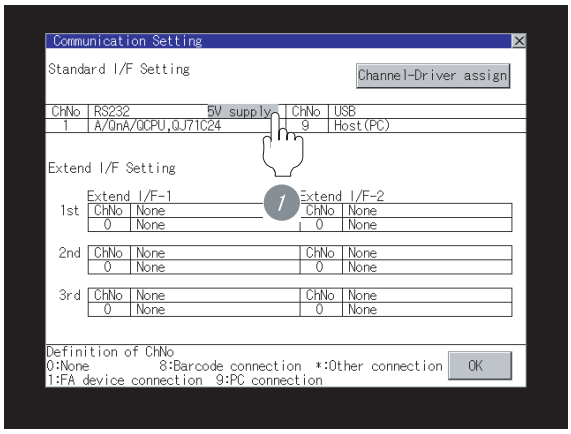
Point

When using the RS-422 conversion unit

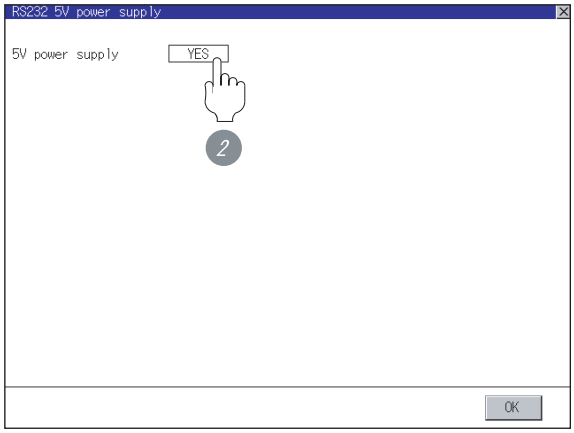
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

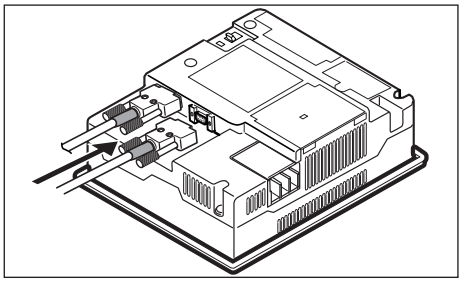


2 Set [5V power supply] to "YES".



(c) For the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



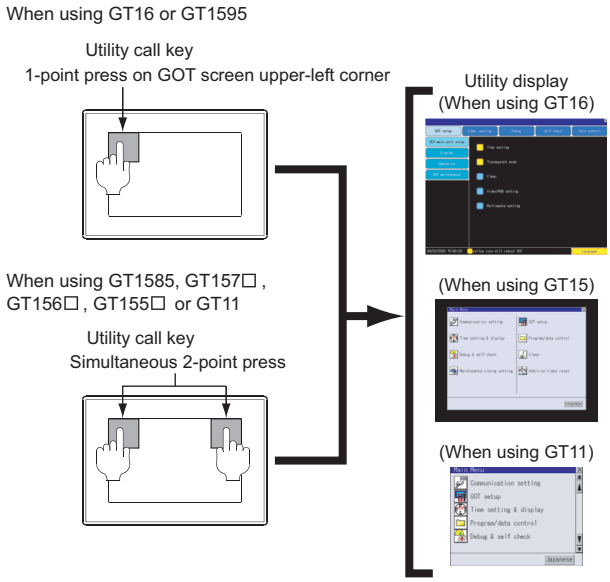
19.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

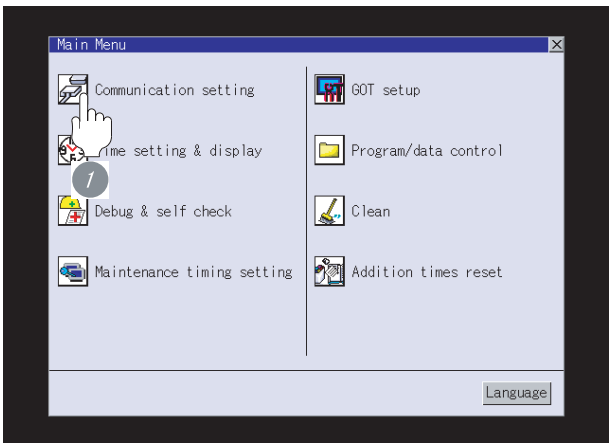


Point

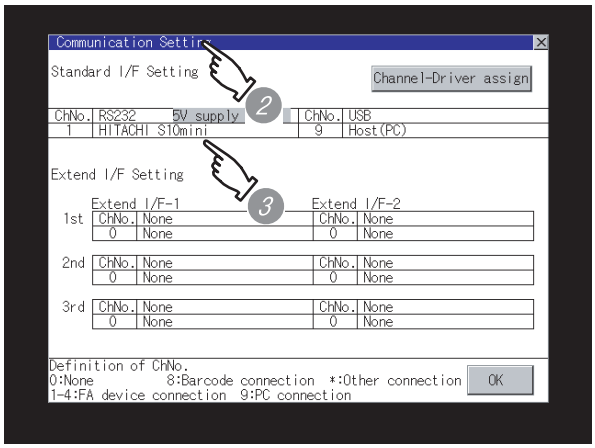
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  HITACHI S10mini/S10V

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 19.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

19.3.7 Checking for normal monitoring

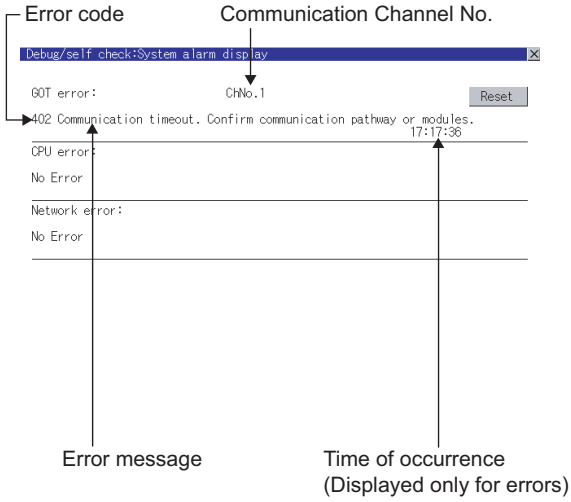
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check.

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

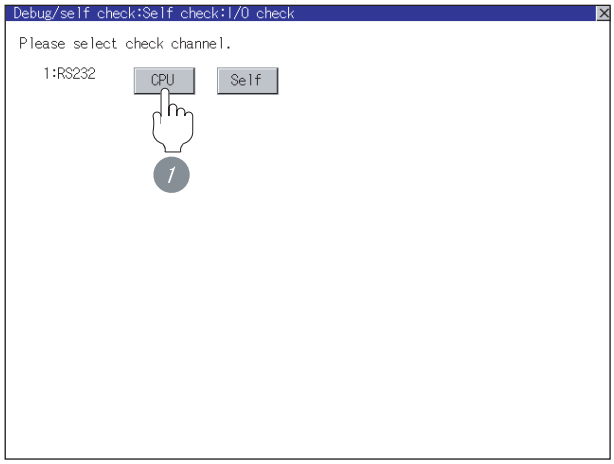
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

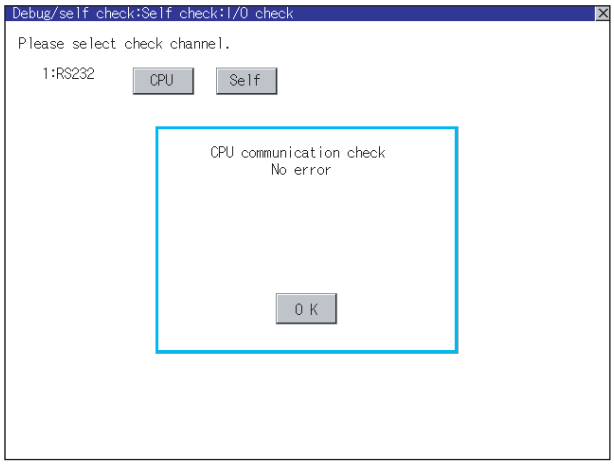
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 15.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

19.4 PLC Side Setting

Point

HITACHI PLC

For details of HITACHI PLCs, refer to the following manuals.

☞ Manuals for HITACHI PLCs

Model name		Reference
Communication module	LQE560	Section 19.4.1
	LQE060	
	LQE160	
	LQE565	
	LQE165	

19.4.1 Connecting to communication module

1 Communication settings

Make the communication settings of the Communication module.

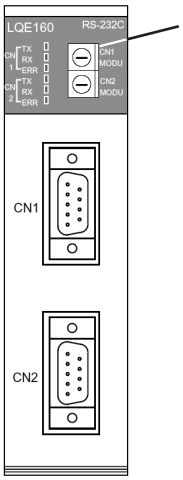
Item	Set value
Channel No. setting*1*2	#0 to #3
Protocol setting	H-7338 protocol
Transmission speed	19200bps (fixed)
Data length	8 bits (fixed)
Parity bit	Odd (fixed)
Start bit	1 bit (fixed)
Stop bit	1 bit (fixed)

*1 The ranges of available channel No. differ depending on the model of communication module.

*2 Avoid duplication of the channel No.

2 Settings by switch

Make the communication settings using each setting switch.



Setting switches for the channel No. and the protocol
CN1 MODU, CN2 MODU

(1) Settings of the channel No. and the protocol

Switch positions	Protocol	Channel No.
8	H-7338	#0
9		#1
A		#2
B		#3



CN1 MODU



CN2 MODU

19.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	Connection to HITACHI PLC	Supporting the HITACHI PLC connection	2.43V	Communication driver HITACHI S10mini/S10V [03.01.**]
GT16	Connection to HITACHI PLC	Supporting the connections to GT16	2.90U	Standard monitor OS [04.00.**] Communication driver HITACHI S10mini/S10V [04.02.**]

MEMO

20

CONNECTION TO FUJI FA PLC



20.1 System Configuration . . . . . page 20-2
This section describes the equipment and cables needed when connecting a GOT to a FUJI FA PLC. Select a system suitable for your application.

20.2 Connection Cable . . . . . page 20-14
This section describes the specifications of the cables needed when connecting to a FUJI FA PLC. Check the specifications of the connection cables.

20.3 Preparatory Procedures for Monitoring . . . . . page 20-21
This section provides the procedures to be followed before performing monitoring in connection to a FUJI FA PLC. This procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

20.4 PLC Side Setting . . . . . page 20-30
The PLC side settings for GOT connection are explained. When checking the PLC side settings, refer to this section.

20.5 Precautions . . . . . page 20-36
This section describes the precautions about PLC connection. Refer to this section without fail before starting PLC connection.

20.6 List of Functions Added by Version Upgrade . . . . . page 20-37
This section describes the functions added by version upgrade of GT Designer2 or OS.

20.1 System Configuration

Select a system configuration suitable for your application.

Point

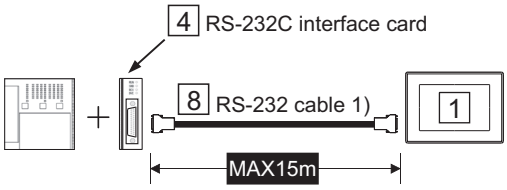
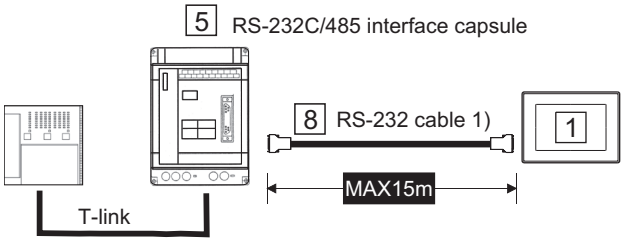
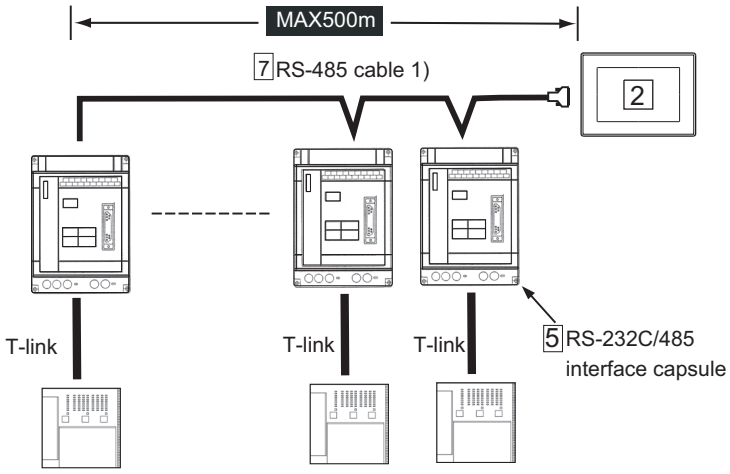
Conventions used in this section

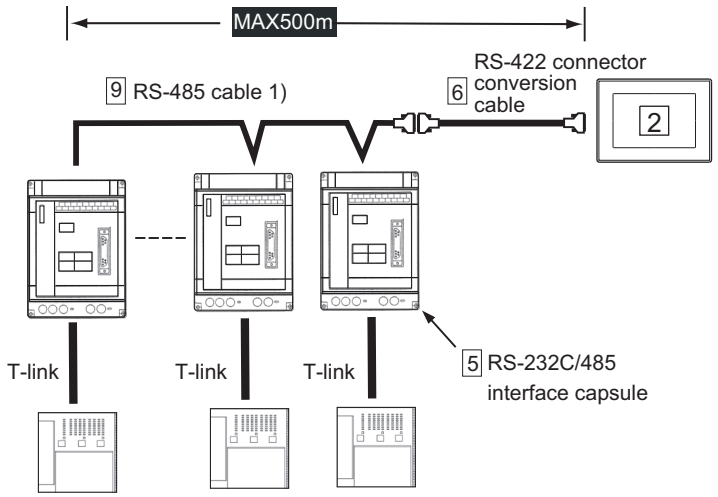
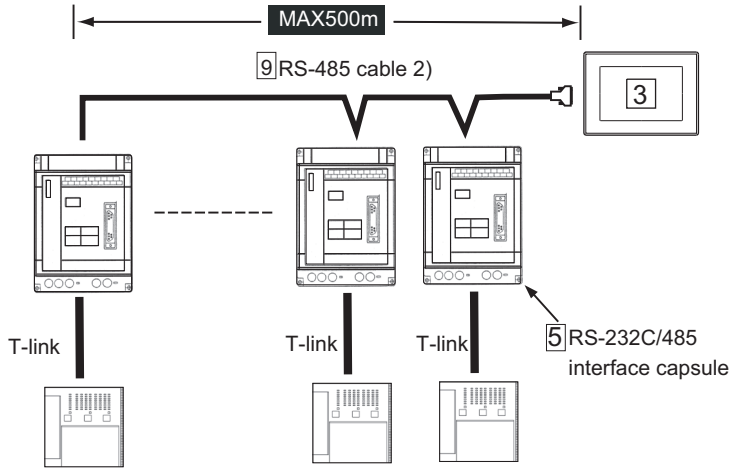
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

20.1.1 Connecting to MICREX-F55

Communication driver
FUJI MICREX-F

1 System configuration and connection conditions

Connection conditions			System configuration*1	Model
Number of GOTs	Number of PLCs	Distance		
1	1	Between GOT and RS-232C interface card 15m or less		GT16 GT15 GT11 Serial
1	1	Between GOT and RS-232C/485 interface capsule 15m or less		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16

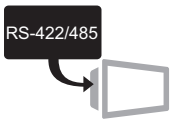
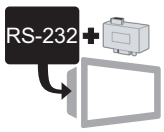
Connection conditions			System configuration*1	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16 GT15 GT11 Serial

*1 For details on the system configuration on the PLC side, refer to the following.

Section 20.5 Precautions

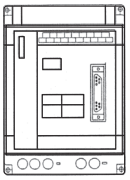
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

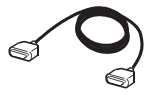
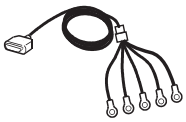
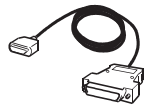
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	RS-232C interface card	NV1L-RS2
	5	RS-232C/485 interface capsule	FFK120A-C10

4, 5 is manufactured by Fuji Electric FA Components & Systems Co., Ltd.For details of the product, contact Fuji Electric FA Components & Systems Co., Ltd.

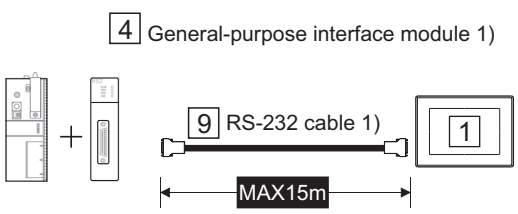
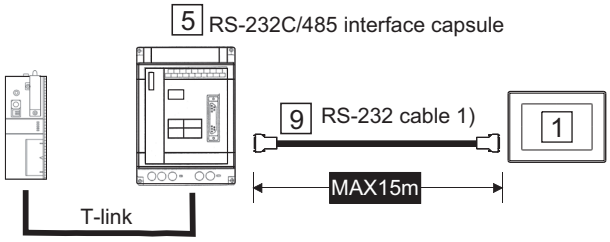
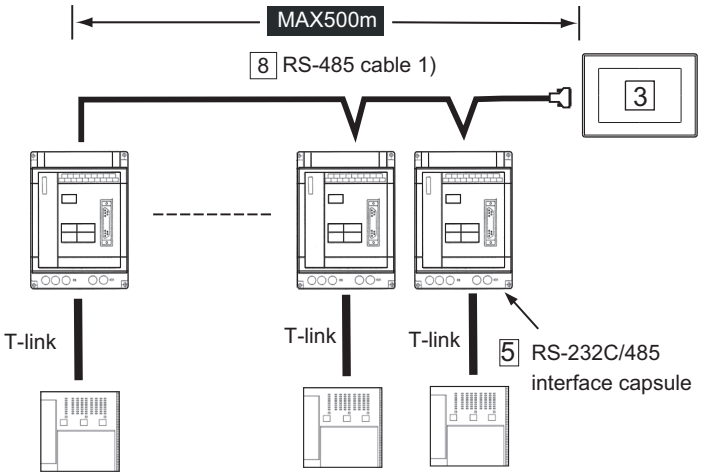
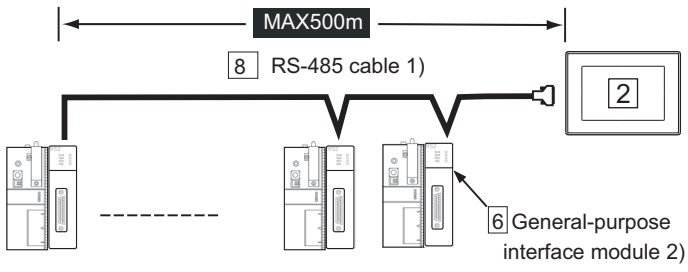
(3) Cable

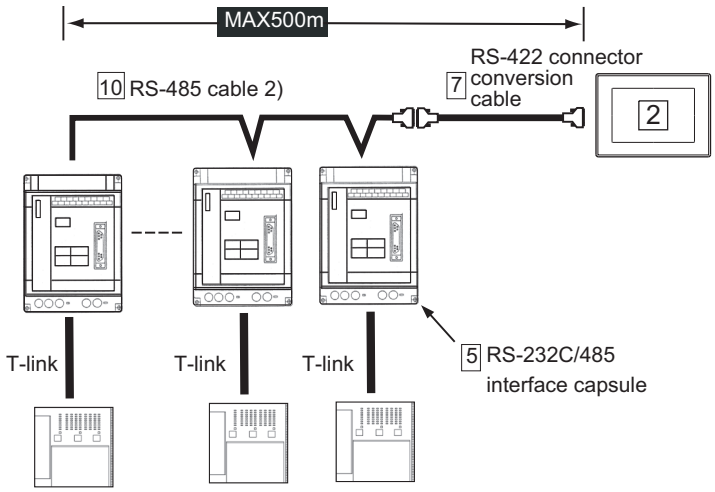
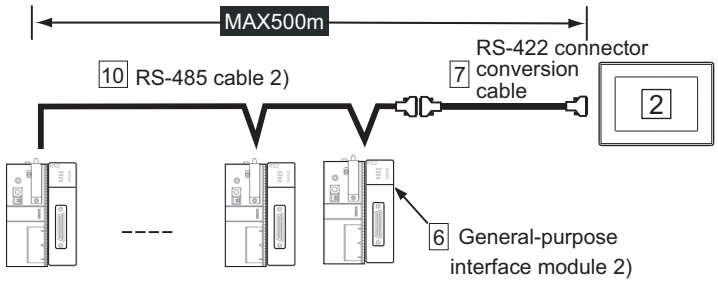
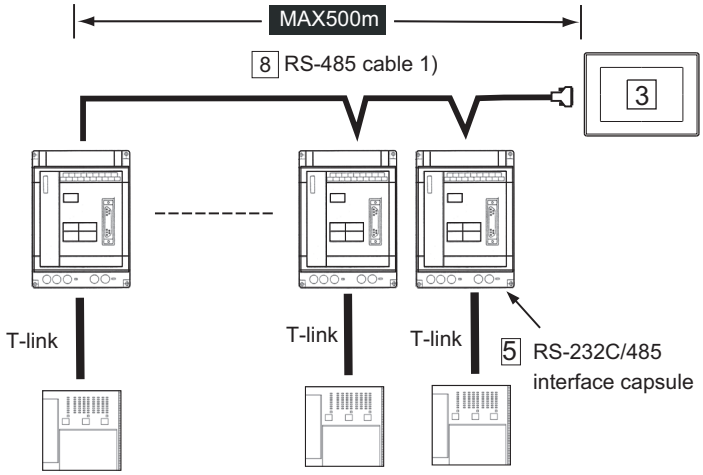
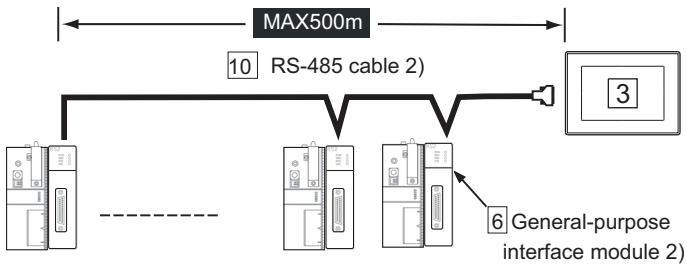
Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-485 cable 1) • Between RS-232C/485 interface capsule and GOT	(To be prepared by the user. ☞ Section 20.2 Connection Cable)	
	8	RS-232 cable 1) *1 • Between RS-232C interface card and GOT • Between RS-232C/485 interface capsule and GOT	GT09-C30R21003-25P (3m)	GT16 GT15 GT11 Serial
	9	RS-485 cable 2) *1 • Between RS-232C/485 interface capsule and RS-422 connector conversion cable • Between RS-232C/485 interface capsule and GOT	GT09-C30R41001-6T (3m) GT09-C100R41001-6T (10m) GT09-C200R41001-6T (20m) GT09-C300R41001-6T (30m)	

*2 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 20.2 Connection Cable)

20.1.2 Connecting to MICREX-F70

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	1	Between GOT and General-purpose interface card 15m or less		GT16 GT15 GT11 Serial
1	1	Between GOT and RS-232C/485 interface capsule 15m or less		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16
1	Max. 31 units	Between GOT and General-purpose interface module 500m or less		

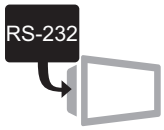
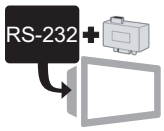
Connection conditions			System configuration	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16
1	Max. 31 units	Between GOT and General-purpose interface module 500m or less		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16 GT15 GT11 Serial
1	GT16, GT15: Max. 31 units GT11: Max. 10 units	Between GOT and General-purpose interface module 500m or less		

*1 For details on the system configuration on the PLC side, refer to the following.

Section 20.5 Precautions

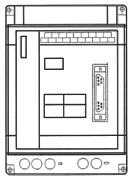
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

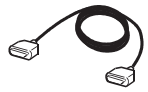
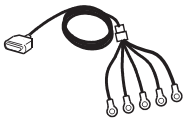
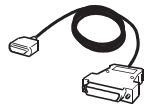
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	General-purpose interface module 1)	NC1L-RS2
	5	RS-232C/485 interface capsule	FFK120A-C10
	6	General-purpose interface module 2)	NC1L-RS4

4, 5, 6 is manufactured by Fuji Electric FA Components & Systems Co., Ltd. For details of the product, contact Fuji Electric FA Components & Systems Co., Ltd.

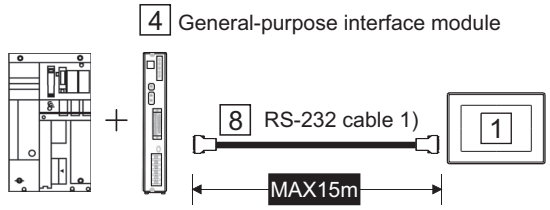
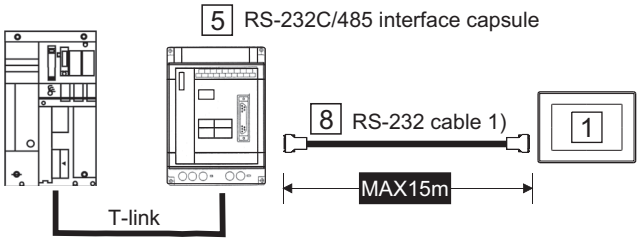
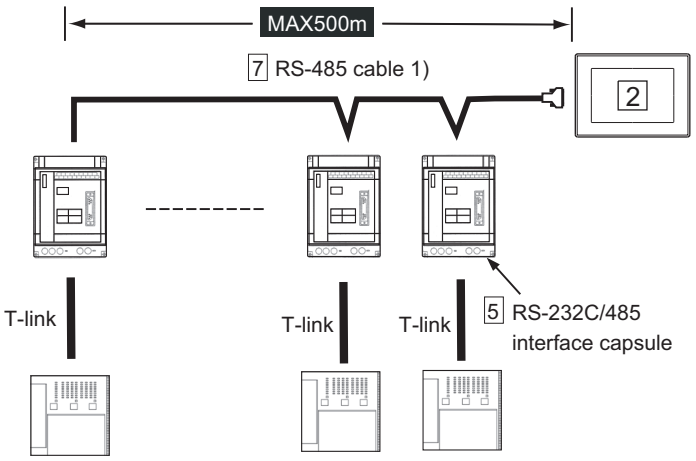
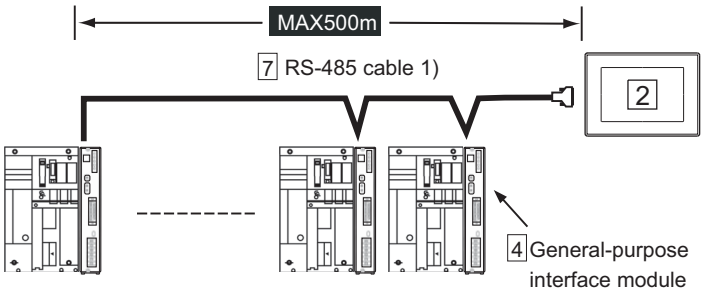
(3) Cable

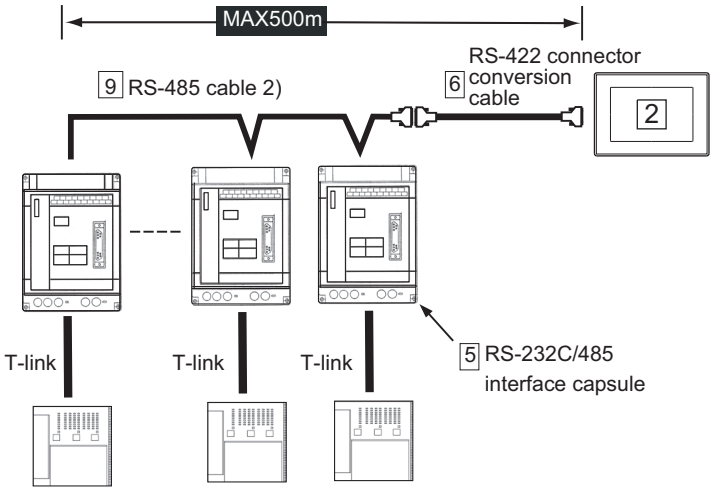
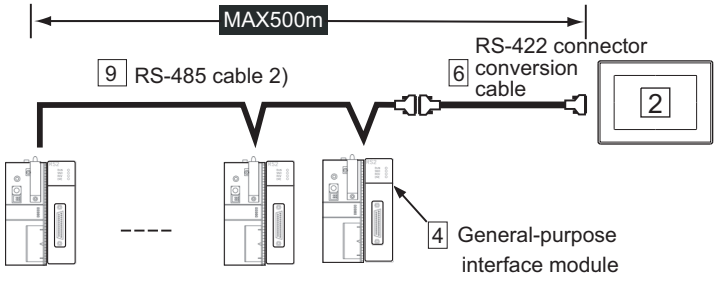
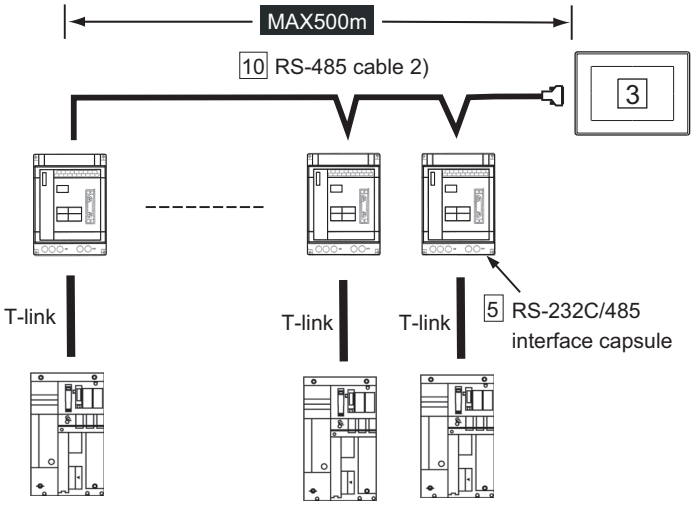
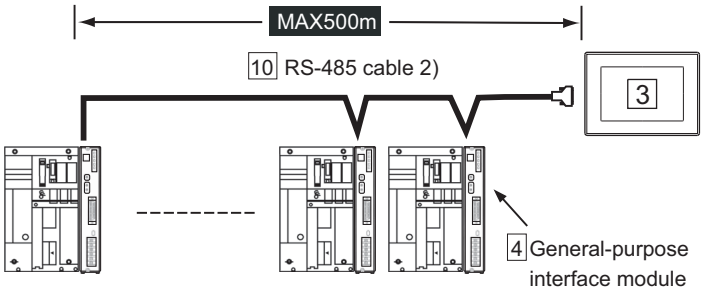
Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-485 cable 1) • Between RS-232C/485 interface capsule and GOT • Between general-purpose interface module 2) and GOT	(To be prepared by the user. ☞ Section 20.2 Connection Cable)	
	9	RS-232 cable 1) *2 • Between General-purpose interface module 1) and GOT • Between RS-232C/485 interface capsule and GOT	GT09-C30R21003-25P (3m)	
	10	RS-485 cable 2) *2 • Between general-purpose interface module 2) and RS-422 connector conversion cable or GOT • Between RS-232C/485 interface capsule and RS-422 connector conversion cable or GOT	GT09-C30R41001-6T (3m) GT09-C100R41001-6T (10m) GT09-C200R41001-6T (20m) GT09-C300R41001-6T (30m)	GT16 GT15 GT11 Serial

*2 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 20.2 Connection Cable)

20.1.3 Connecting to MICREX-F120S/140S/150S

1 System configuration and connection conditions

Connection conditions			System configuration*1	Model
Number of GOTs	Number of PLCs	Distance		
1	1	Between GOT and General-purpose interface module 15m or less		GT16 GT15 GT11 Serial
1	1	Between GOT and RS-232C/485 interface capsule 15m or less		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16
1	Max. 31 units	Between GOT and General-purpose interface module 500m or less		

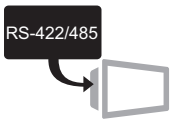
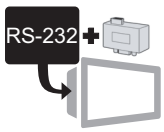
Connection conditions			System configuration*1	Model
Number of GOTs	Number of PLCs	Distance		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16
1	Max. 31 units	Between GOT and General-purpose interface module 500m or less		
1	Max. 6 units	Between GOT and RS-232C/485 interface capsule 500m or less		GT16 GT15 GT11 Serial
1	GT16, GT15: Max. 31 units GT11 Max. 10 units	Between GOT and General-purpose interface module 500m or less		

*1 For details on the system configuration on the PLC side, refer to the following.

Section 20.5 Precautions

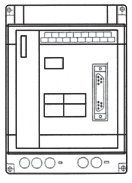
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

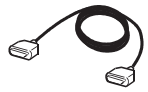
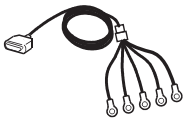
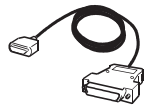
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	General-purpose interface module	FFU120B
	5	RS-232C/485 interface capsule	FFK120A-C10

4, 5 is manufactured by Fuji Electric FA Components & Systems Co., Ltd. For details of the product, contact Fuji Electric FA Components & Systems Co., Ltd.

(3) Cable

Image	No.	Name	Model name	
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-485 cable 1) • Between RS-232C/485 interface capsule and GOT • Between general-purpose interface module and GOT	(To be prepared by the user. ☞ Section 20.2 Connection Cable)	
	8	RS-232 cable 1) *1 • Between General-purpose interface module and GOT • Between RS-232C/485 interface capsule and GOT	GT09-C30R21003-25P (3m)	GT16 GT15 GT11 Serial
	9	RS-485 cable 2) *1 • Between general-purpose interface module and RS-422 connector conversion cable or GOT • Between RS-232C/485 interface capsule and RS-422 connector conversion cable or GOT	GT09-C30R41001-6T (3m) GT09-C100R41001-6T (10m) GT09-C200R41001-6T (20m) GT09-C300R41001-6T (30m)	

*1 The RS-232 and RS-422 cable can be prepared by the user. (☞ Section 20.2 Connection Cable)

20.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ Section 20.2.1)

Model name		Connection cable
		GT16, GT15, GT11
RS-232C interface card	NV1L-RS2	RS-232 cable 1)
RS-232C/485 interface capsule	FFK120A-C10	RS-232 cable 1)
General-purpose interface module	NC1L-RS2	RS-232 cable 1)
	FFU120B	RS-232 cable 1)

2 RS-485 cable (☞ Section 20.2.2)

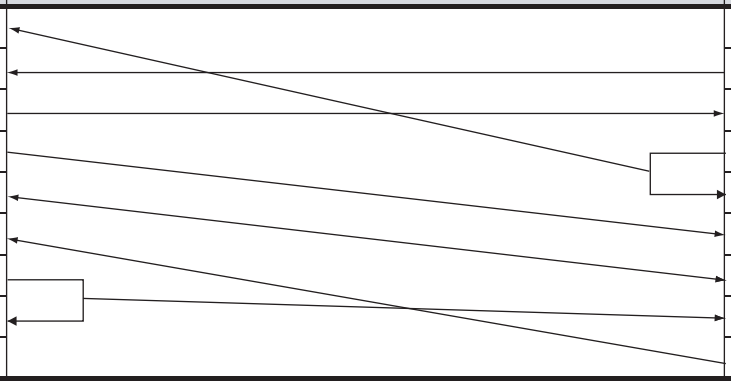
Model name		Connection cable	
		GT16	GT15, GT11
RS-232C/485 interface capsule	FFK120A-C10	RS-485 cable 1) RS-485 cable 2)	RS-485 cable 2)
General-purpose interface module	NC1L-RS4		RS-485 cable 2)
	FFU120B		RS-485 cable 2)

20.2.1 RS-232 cable

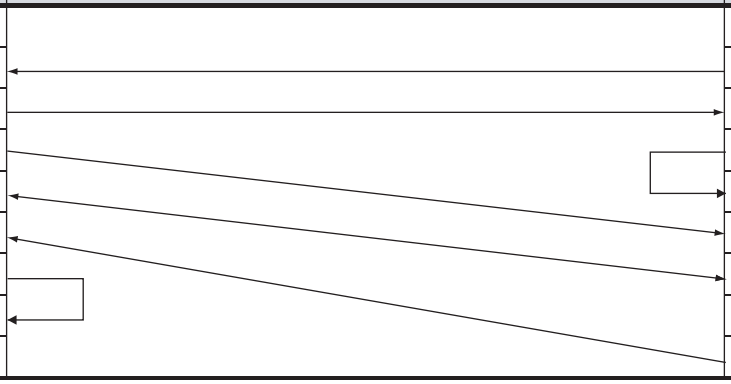
The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

(a) For GT16, GT15

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	DR
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	ER

(b) For the GT11

GOT side		Cable connection and signal direction	PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	DR
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	ER

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-			

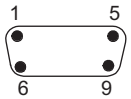
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) FUJI FA PLC side connector
Use the connector compatible with the FUJI FA PLC side module.
For details, refer to the following manual.

☞ User's Manual for the FUJI FA PLC.

3 Precautions when preparing a cable

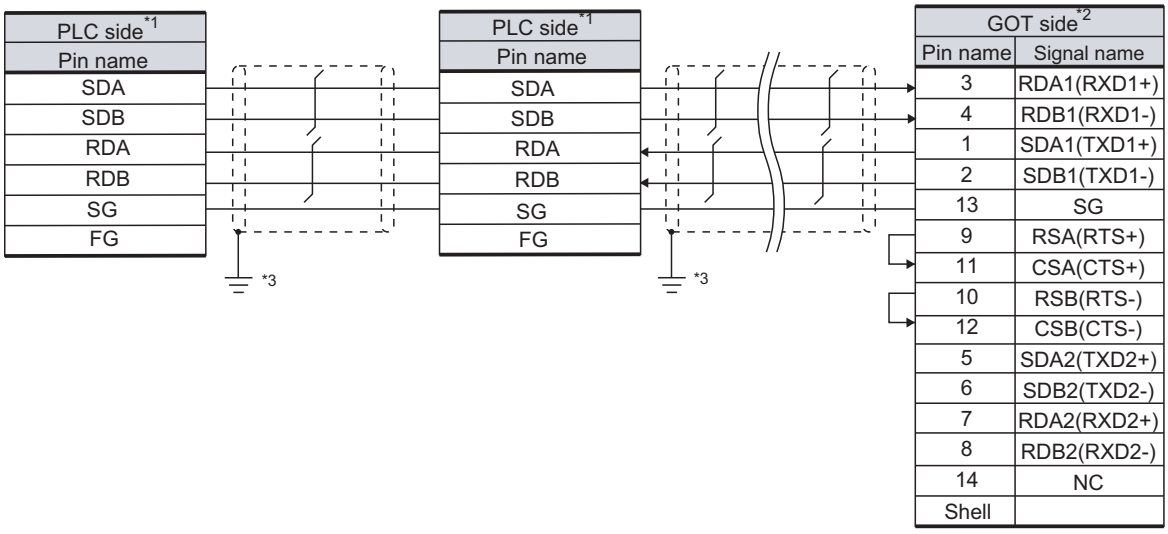
The length of the RS-232 cable must be 15m or less.

20.2.2 RS-485 cable

The following provides the connection diagrams and the connectors of the RS-485 cable connecting the GOT to the PLC.

1 Connection diagram

(1) RS-485 cable 1)



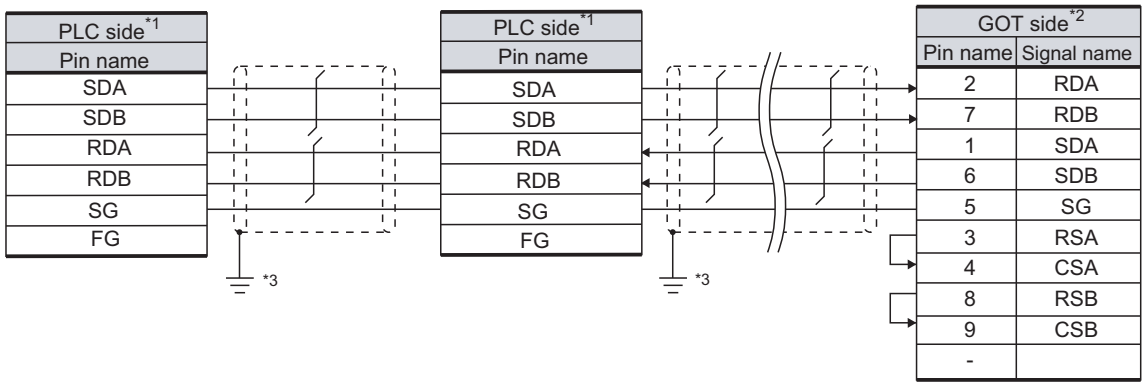
*1 Turn ON the terminating switch of a interface converter which will be a terminal.

*2 Set the terminating resistor of GOT side to [Disable].

4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

(2) RS-485 cable 2)



*1 Turn ON the terminating switch of a interface converter which will be a terminal.

*2 Set the terminating resistor of GOT side to [Disable].

4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

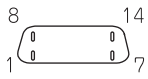
GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd.
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

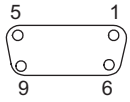
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

3 Precautions when preparing a cable

The length of the RS-485 cable must be 500m or less.

4 Connecting terminating resistors

(1) GOT

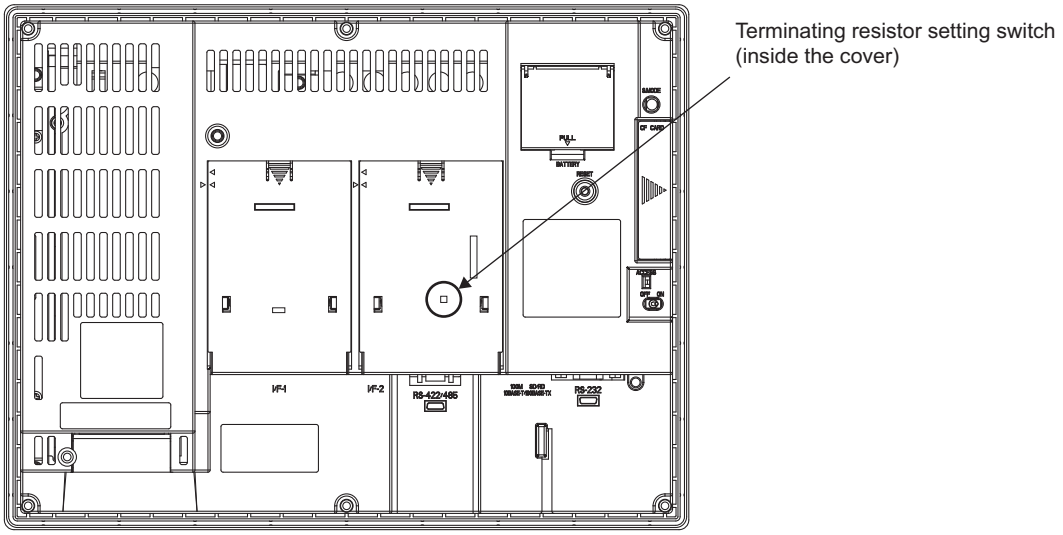
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

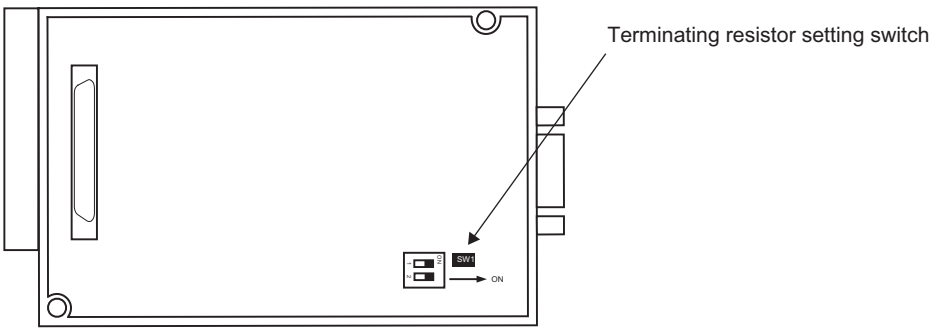
*1 The default setting is "Disable".



• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

20.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 20.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 20.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 20.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 20.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 20.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 20.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 20.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

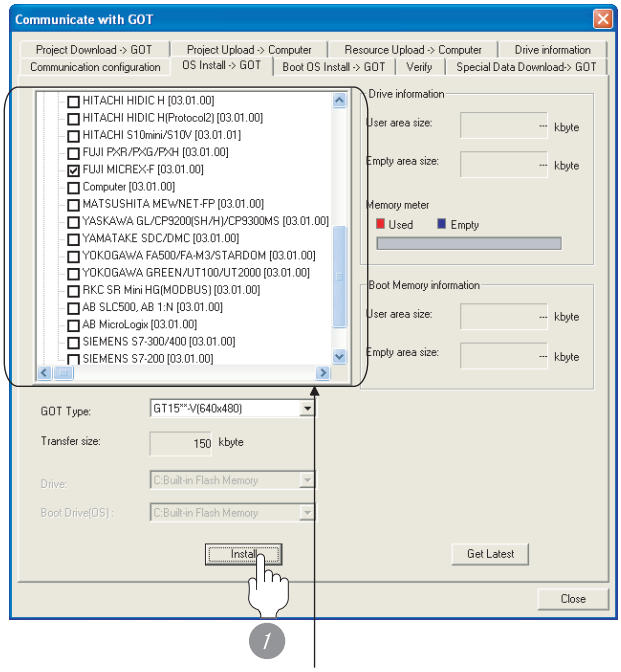
Section 20.4 PLC Side Setting

20.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

- FUJI MICREX-F

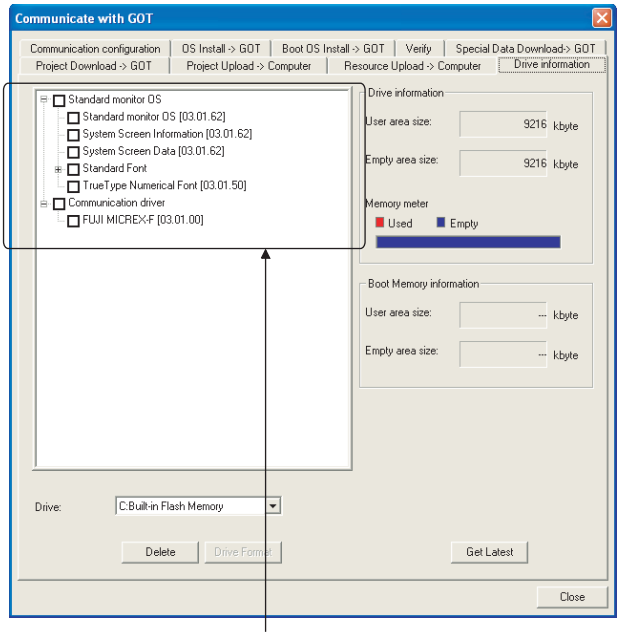
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

20.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: FUJI MICREX-F

20.3.3 Setting communication interface (Communication settings)

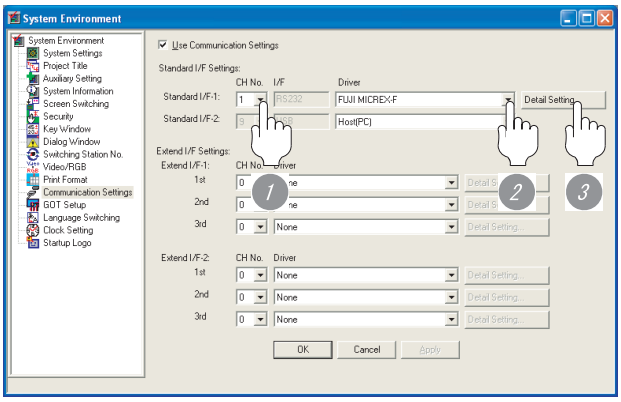
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

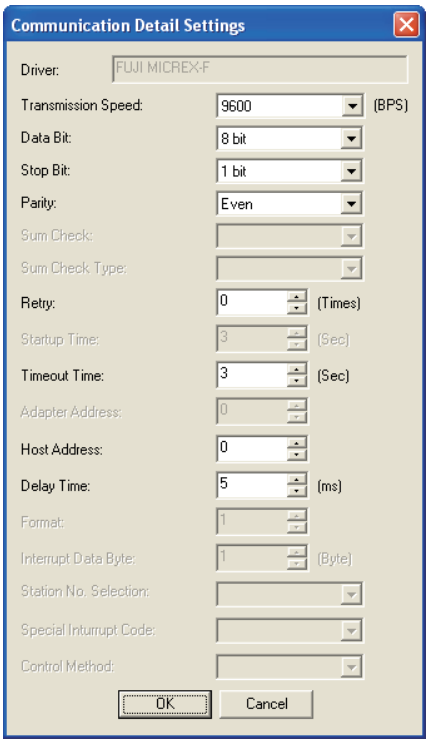
1 Communication settings



(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to "FUJI MICREX-F".
3. Perform the detailed settings for the driver.
   (☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 5ms>	0 to 300 ms
Host Address	Specify the host address (station No. of the GOT to which the PLC is connected) in the connected network. <Default: 0>	0 to 99

Point

(1) Host Address

When connectting to PLC by RS-232 communication, set the Host Address to “0”.

(2) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT □ User's Manual

(3) Precedence in communication settings

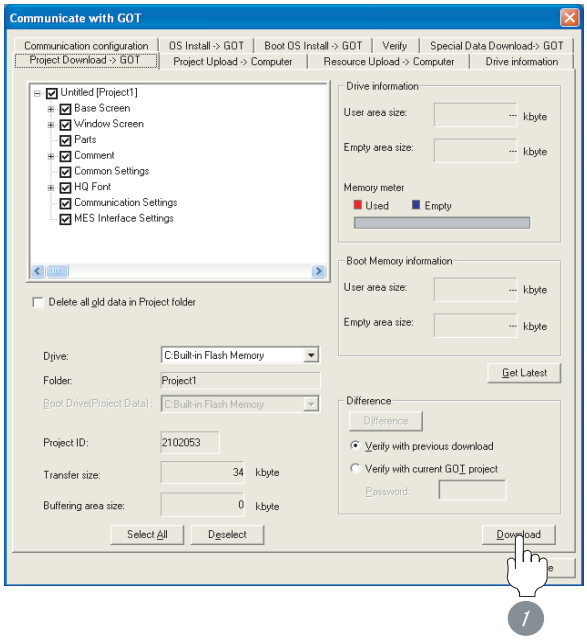
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

20.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

20.3.5 Attaching communication unit and connecting cable

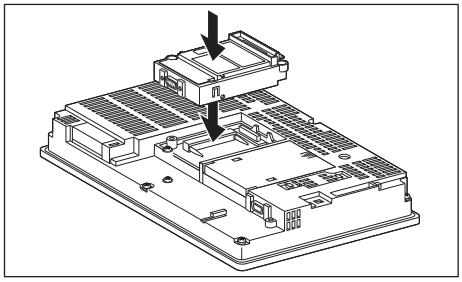
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

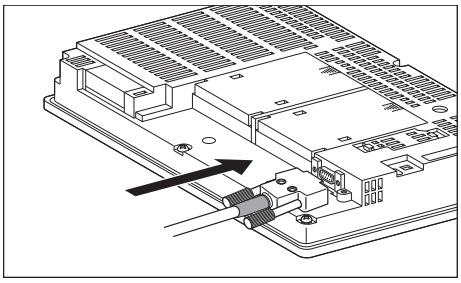
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

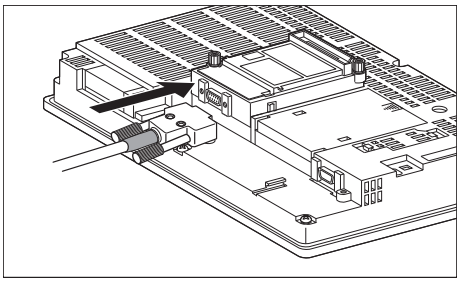
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



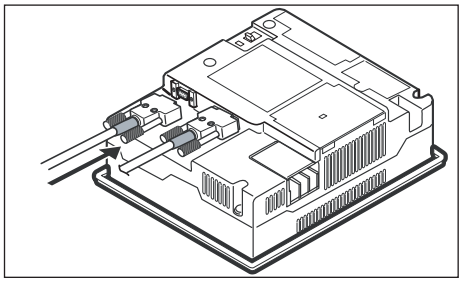
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

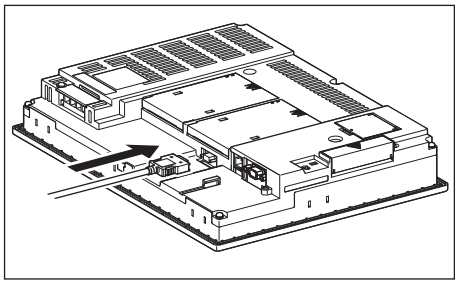


(2) How to connect the RS-422 cable

(a) For the GT16

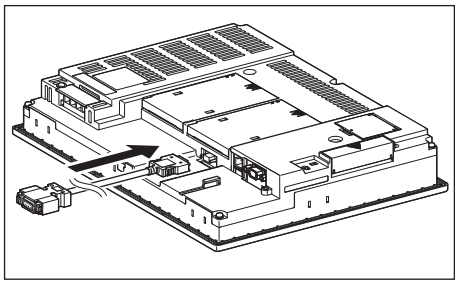
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

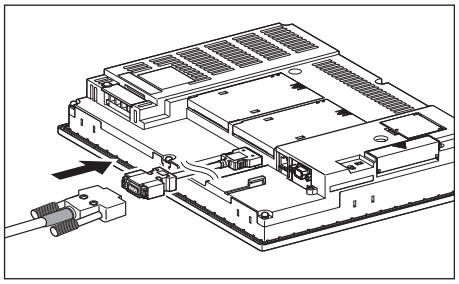


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

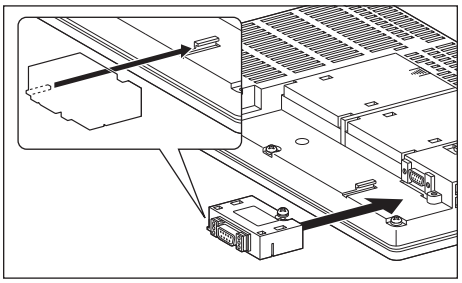


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

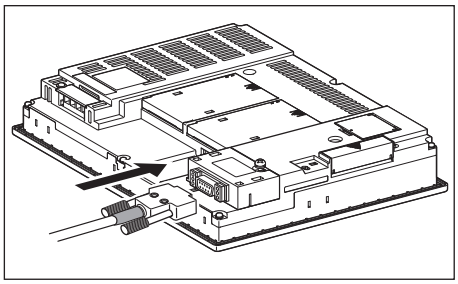


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

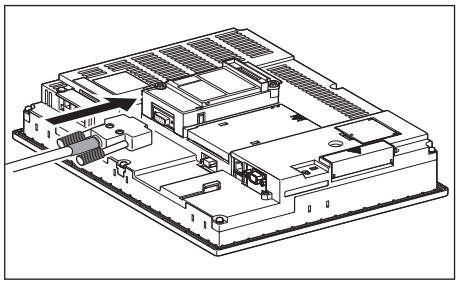


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

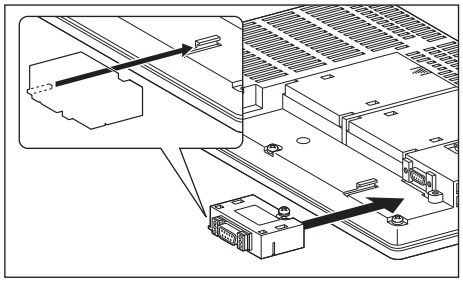
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



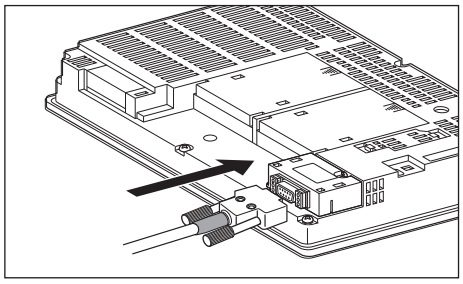
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

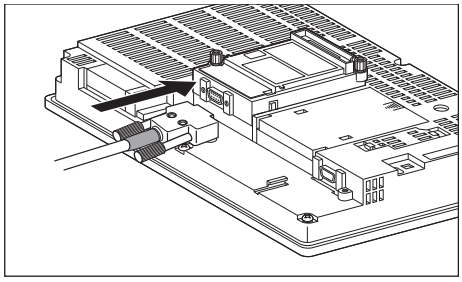


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

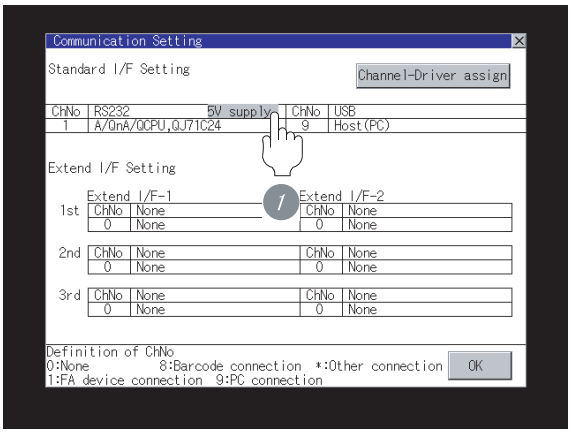
Point

When using the RS-422 conversion unit

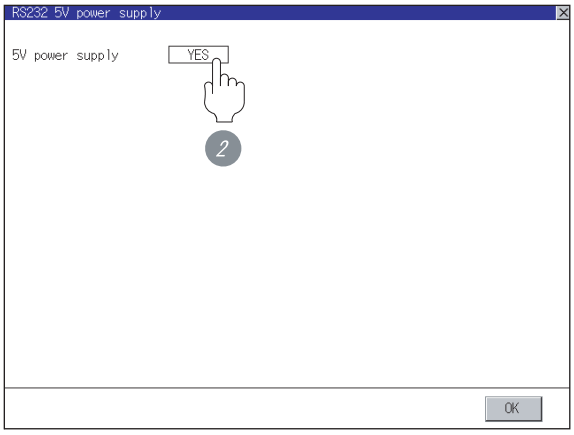
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

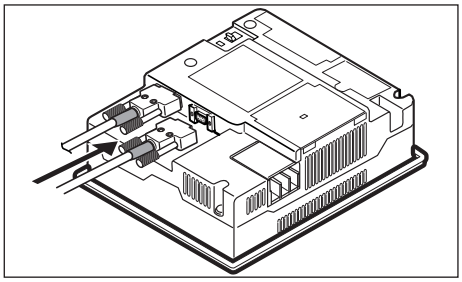


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



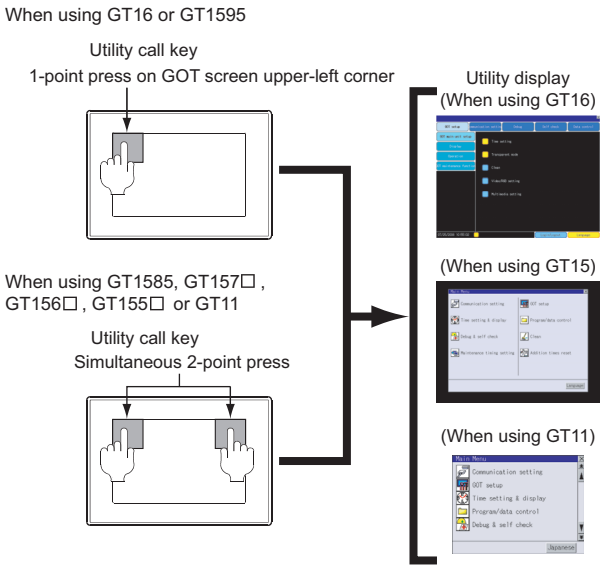
20.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

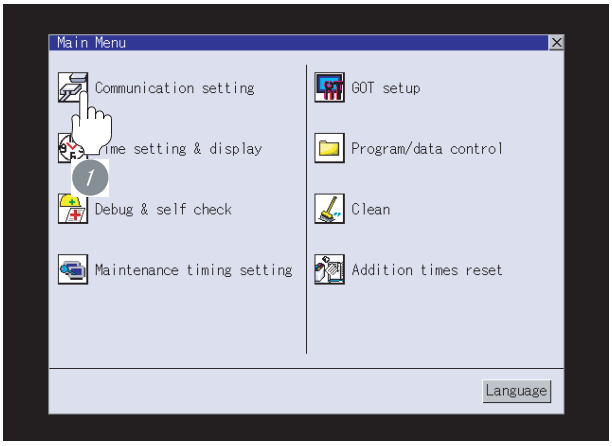


Point

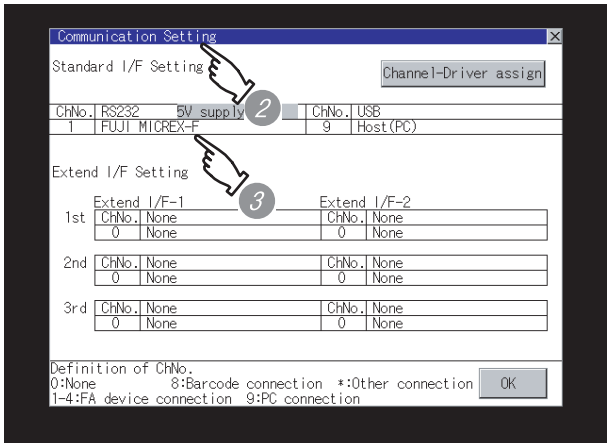
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  FUJI MICREX-F

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 20.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

20.3.7 Checking for normal monitoring

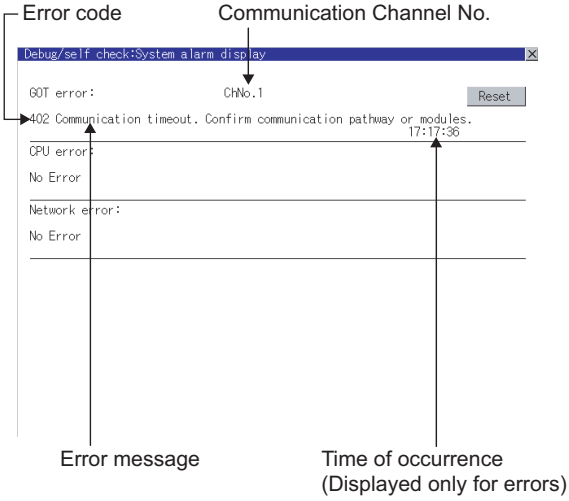
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check.

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

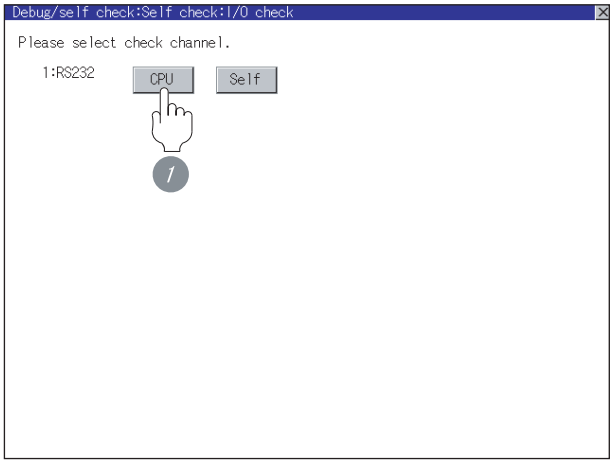
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

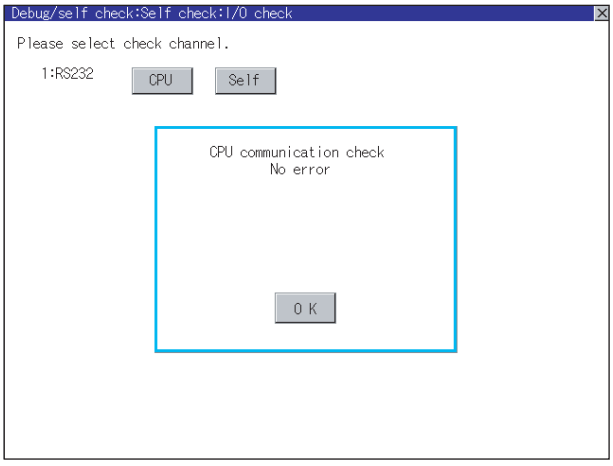
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 20.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

20.4 PLC Side Setting

Point

FUJI FA PLC

For details of FUJI FA PLCs, refer to the following manuals.

☞ Manuals for FUJI FA PLCs

Model name		Reference
General-purpose interface card	NV1L-RS2	Section 20.4.1
General-purpose interface module	NC1L-RS2	
	NC1L-RS4	Section 20.4.2
	FFU120B	Section 20.4.3
RS-232C/485 interface capsule	FFK120A-C10	Section 20.4.4

20.4.1 Connecting to NV1L-RS2, NC1L-RS2

1 Communication settings

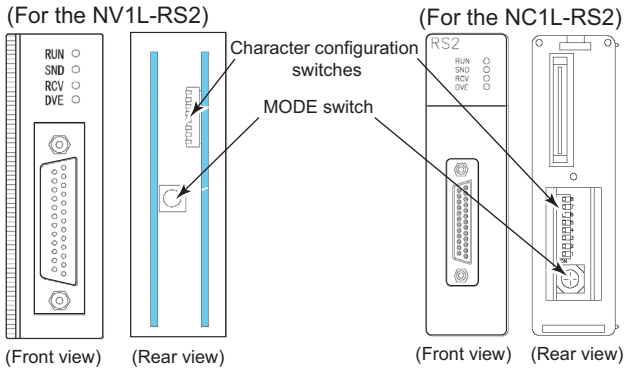
Make the communication settings using the setting switches.

Item	Set value
MODE	Command-setting-type start-stop synchronization, nonsequence format
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch

*1 Adjust the settings with GOT settings.

2 Settings by switch

Make the communication settings using each setting switch.



(1) Setting of MODE

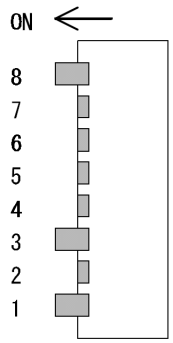
Make the MODE settings using the MODE switch.

MODE	Switch position	
	NV1L-RS2	NC1L-RS2
Command-setting-type start-stop synchronization, nonsequence format	1	1

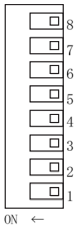


(2) Setting of Transmission speed, Stop bit, Data length, Parity bit, Initializing method

For the NV1L-RS2



For the NC1L-RS2



Setting item	Set value	Switch No. 1	2	3	4	5	6	7	8
Transmission speed	9600 bps	ON	OFF	ON					
	19200 bps	OFF	ON	ON					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7 bits					ON			
	8 bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON

20.4.2 Connecting to NC1L-RS4

1 Communication settings

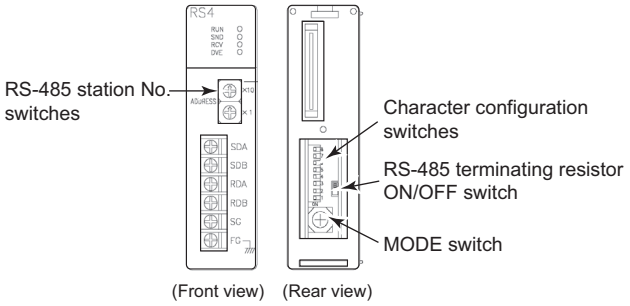
Make the communication settings using the setting switches.

Item	Set value
MODE	Command-setting-type start-stop synchronization, nonsequence format
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch
Station No.*2	0 to 99
Terminating resistor*3	ON or OFF

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 Turn ON the terminating switch of a general-purpose interface module which will be a terminal.

2 Settings by switch

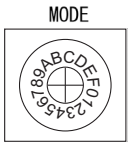
Make the communication settings using each setting switch.



(1) Setting of the MODE

Make the MODE settings using the MODE switch.

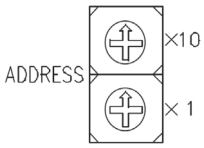
MODE	Switch positions
Command-setting-type start-stop synchronization, nonsequence format	3



(2) Setting of the station No.

Make the station No. using RS-485 station No. switches.

Station No.
0 to 99



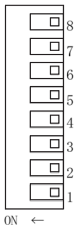
(3) Setting of the terminating resistor

Turn ON/OFF the terminating resistor using RS-485 terminating resistor ON/OFF switch.



(4) Setting of Transmission speed, Stop bit, Data length, Parity bit, Initializing method

Make the settings using the character configuration switches.



Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed	9600 bps	ON	OFF	ON					
	19200 bps	OFF	ON	ON					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7 bits					ON			
	8 bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON

20.4.3 Connecting to FFU120B

1 Communication settings

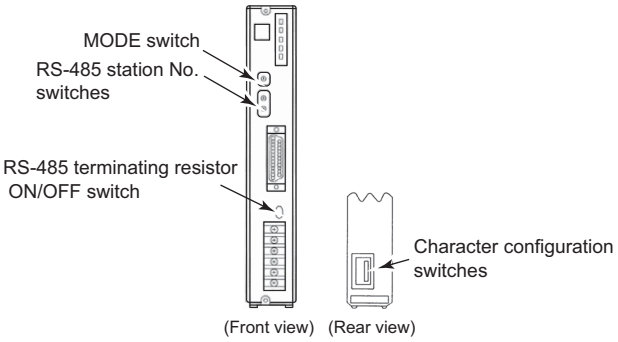
Make the communication settings using the setting switches.

Item	Set value
MODE	Command-setting-type start-stop synchronization, nonsequence format
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch
Station No.*2	0 to 99
Terminating resistor*3	ON or OFF

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 Turn ON the terminating switch of a general-purpose interface module which will be a terminal.

2 Settings by switch

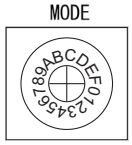
Make the communication settings using each setting switch.



(1) Setting of the MODE

Make the MODE settings using the MODE switch.

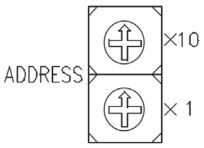
MODE	Switch positions
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1	1
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1, and RS-485 1:N	2
Command-setting-type start-stop synchronization, nonsequence format RS-485 1:N	3



(2) Setting of the station No.

Make the station No. using RS-485 station No. switches.

Station No.
0 to 99



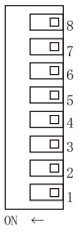
(3) Setting of the terminating resistor

Turn ON/OFF the terminating resistor using RS-485 terminating resistor ON/OFF switch.



(4) Setting of Transmission speed, Stop bit, Data length, Parity bit, Initializing method

Make the settings using the character configuration switches.



Setting item	Set value	Switch No. 1	2	3	4	5	6	7	8
Transmission speed	9600 bps	ON	OFF	ON					
	19200 bps	OFF	ON	ON					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7 bits					ON			
	8 bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON

20.4.4 RS-232/RS-422 interface converter setting

1 Communication settings

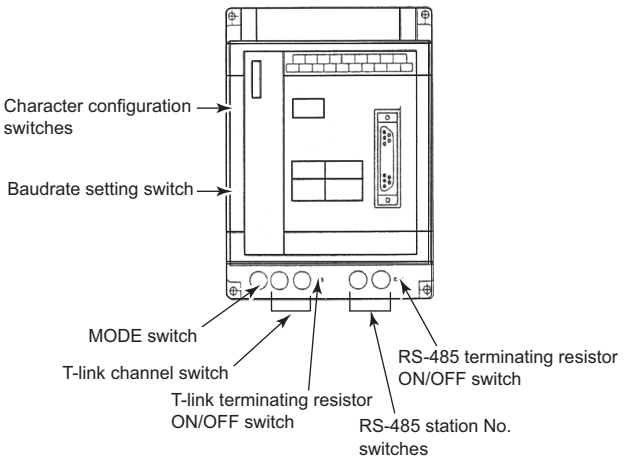
Make the communication settings using the setting switches.

Item	Set value
MODE*4	Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1
	Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1, and RS-485 1:N
	Command-setting-type start-stop synchronization, nonsequence format RS-485 1:N
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch
Station No.*2	0 to 99
Terminating resistor*3	ON or OFF
T-link channel switch	Manuals for FUJI FA PLCs
T-link terminating resistor	

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 Turn ON the terminating switch of a general-purpose interface module which will be a terminal.
*4 Set as necessary.

2 Settings by switch

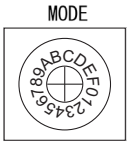
Make the communication settings using the setting switches.



(1) Setting of MODE

Make the MODE settings using the MODE switch.

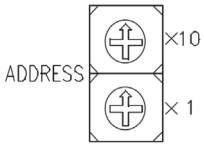
MODE	Switch positions
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1	1
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1, and RS-485 1:N	2
Command-setting-type start-stop synchronization, nonsequence format RS-485 1:N	3



(2) Setting of Station No.

Make the station No. using RS-485 station No. switches.

Station No.
0 to 99



(3) Setting of Terminating resistor

Turn ON/OFF the terminating resistor using RS-485 terminating resistor ON/OFF switch.



(4) Setting of Stop bit, Data length, Parity bit, Initializing method

Make the settings using the character configuration switches.



Setting item	Set value	Switch No. 1	2	3	4	5	6	7	8
disable		OFF	OFF	OFF					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7 bits					ON			
	8 bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON

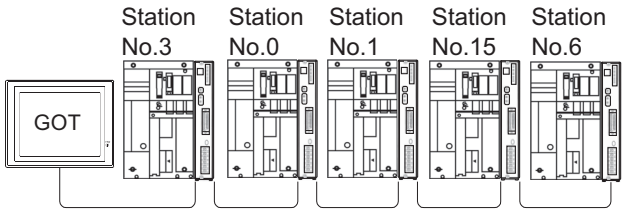
(5) Setting of Transmission speed



Setting item	Set value	Switch position 1	2	3	4	5	6	7	8
Transmission speed	9600 bps	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
	19200 bps	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF

20.4.5 Station NO. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
0 to 99

20.5 Precautions

20.5.1 Station No. settings of the PLC side

In the system configuration, the PLC with the station number set with the host address must be included.For details of host address setting, refer to the following.

☞ Section 20.3.3 Setting communication interface (Communication settings)

20.5.2 System configuration of the PLC side

GOT can communicate in a system configuration where NC1L-PS4, FFU120B and FFK120A-C10 are mixed.

When using FFK120A-C10, the number of PLCs that can communicate is at most 6 units.

20.5.3 GOT clock function

The GOT clock function is available only for the PLC with the station number set with the host address.
For details of host address setting, refer to the following.

☞ Section 20.3.3 Setting communication interface (Communication settings)

20.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	Connection to FUJI FA PLC	Supporting the FUJI FA PLC connection	2.43V	Communication driver FUJI MICREX-F [03.01.**]
GT16	Connection to FUJI FA PLC	Supporting the connections to GT16	2.90U	Communication driver FUJI MICREX-F [04.02.**]

MEMO

21

CONNECTION TO PANASONIC PLC



21.1 System Configuration . . . . . page 21-2

This section describes the equipment and cables needed when connecting a GOT to a PANASONIC PLC.
Select a system suitable for your application.

21.2 Connection Cable . . . . . page 21-25

This section describes the specifications of the cables needed when connecting to a GOT to a PANASONIC PLC.
Check the specifications of the connection cables.

21.3 Preparatory Procedures for Monitoring . . . . . page 21-38

This section provides the procedures to be followed before performing monitoring in connection to a PANASONIC PLC.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

21.4 PLC Side Setting . . . . . page 21-48

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

21.5 List of Functions Added by Version Upgrade . . . . . page 21-49

This section describes the functions added by version upgrade of GT Designer2 or OS.

21.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

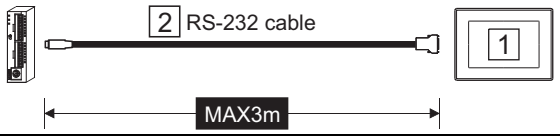
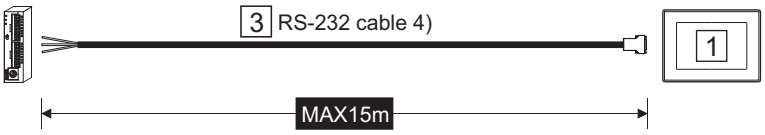
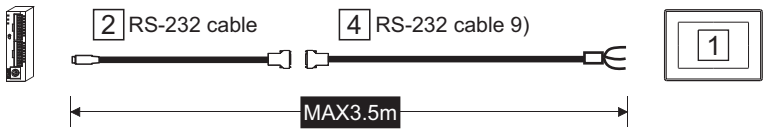
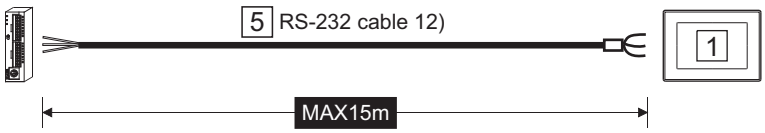
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

21.1.1 Connecting to FP0-C16CT or FP0-C32CT

Communication driver

Panasonic MEWNET-FP

1 System configuration and connection conditions

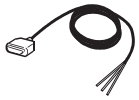
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less	Connect to the tool port. 	GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less	Connect to the RS232C port. 	GT16 GT15 GT11 Serial GT10 5□ 4□
	3.5m or less	Connect to the tool port. 	GT24V 10 20 30 (RS-232)
	15m or less	Connect to the RS232C port. 	GT24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) Cable

Image	No.	Name	Model name	Model
	2	RS-232 cable • Between tool port of PLC CPU and GOT	AFC8503(3m)	GT16 GT15 GT11 Serial GT105□4□
	3	RS-232 cable 4) • Between RS232C port of PLC CPU and GOT	GT09-C30R20904-3C(3m)	GT16 GT15 GT11 Serial GT105□4□
	4	RS-232 cable 9) • Between RS-232 cable and GOT	To be prepared by the user. ☞ Section 21.2 Connection Cable	
	5	RS-232 cable 12) • Between RS232C port of PLC CPU and GOT		GT24V1020 30 (RS-232)

*1 The RS-232 cable can be prepared by the user. (☞ Section 21.2 Connection Cable)

2 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of this product, contact Panasonic Electric Works Co., Ltd.

21.1.2 Connecting to FP1-C24C or FP1-C40C

Communication driver
Panasonic MEWNET-FP

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15.5m or less	Connect to the tool port. 3 FP peripheral device connection cable; 2 RS422/232C conversion adapter; 4 RS-232 cable 1); 1; MAX15.5m	GT16 GT15 GT11 Serial GT105□4□
	15m or less	Connect to the RS232C port. 5 RS-232 cable 3); 1; MAX15m	GT16 GT15 GT11 Serial GT105□4□
	15.5m or less	Connect to the tool port. 3 FP peripheral device connection cable; 2 RS422/232C conversion adapter; 6 RS-232 cable 8); 1; MAX15.5m	GT24V1020 30 (RS-232)
	15m or less	Connect to the RS232C port. 7 RS-232 cable 13); 1; MAX15m	GT24V1020 30 (RS-232)

2 System equipment

(1) GOT

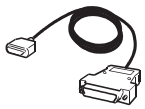
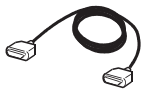
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	RS422/232C conversion adapter	AFP8550

2 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of this product, contact Panasonic Electric Works Co., Ltd.

(3) Cable

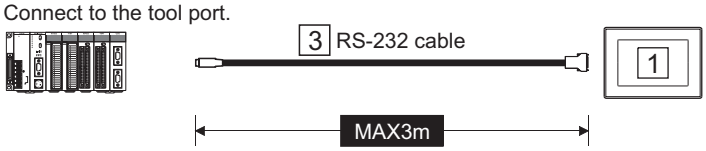
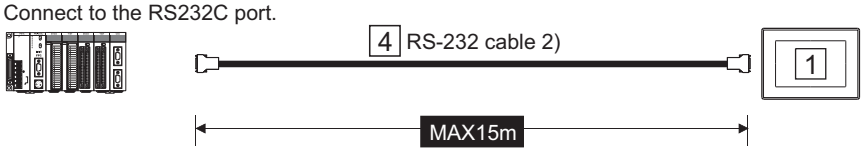
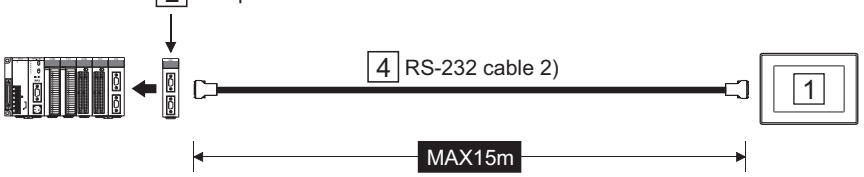
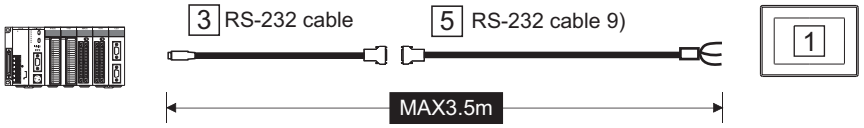
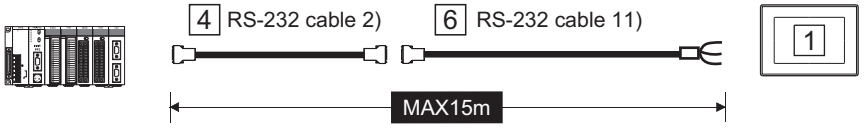
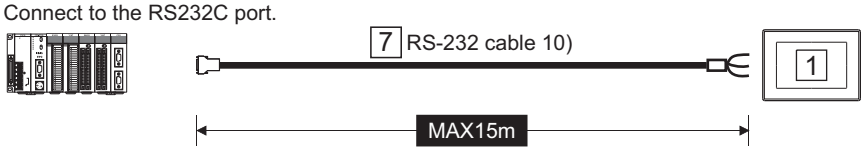
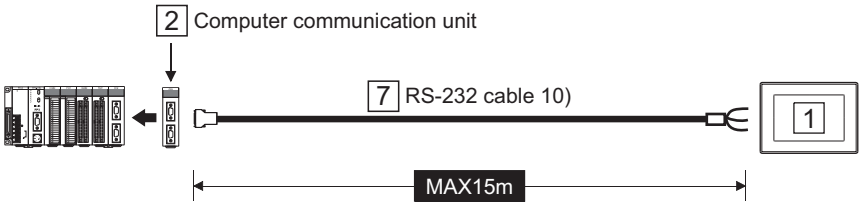
Image	No.	Name	Model name	Model
	3	FP peripheral device connection cable • Between tool port of PLC CPU and RS422/232C conversion adapter	AFP15205(0.5m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	4	RS-232 cable 1) • Between RS422/232C conversion adapter and GOT	GT09-C30R20901-25P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	5	RS-232 cable 3) • Between RS232C port of PLC CPU and GOT	GT09-C30R20903-9P(3m)	
	6	RS-232 cable 8) • Between RS422/232C conversion adapter and GOT	To be prepared by the user. Section 21.2 Connection Cable	GT24V 10 20 30 (RS-232)
	7	RS-232 cable 13) • Between RS232C port of PLC CPU and GOT		

3 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of this product, contact Panasonic Electric Works Co., Ltd.

21.1.3 Connecting to FP2 or FP2SH

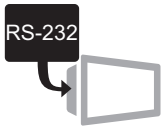
Communication driver
Panasonic MEWNET-FP

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less	Connect to the tool port. 	GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or lessdj	Connect to the RS232C port. 	GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
	3.5m or less	Connect to the tool port. 	GT24V10 20 30 (RS-232)
	15m or less	Connect to the RS232C port. 	GT24V10 20 30 (RS-232)
		Connect to the RS232C port. 	GT24V10 20 30 (RS-232)
			GT24V10 20 30 (RS-232)

2 System equipment

(1) GOT

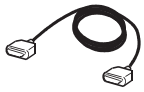
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	Computer communication unit	AFP2462

2 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of this product, contact Panasonic Electric Works Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	3	RS-232 cable • Between tool port of PLC CPU and GOT	AFC8503(3m)	GT16 GT15 GT11 Serial GT105□ 4□
	4	RS-232 cable 2)*1 • Between RS232C port of PLC CPU and GOT • Between computer communication unit and GOT	AFC85853(3m) GT09-C30R20902-9P(3m)	GT16 GT15 GT11 Serial GT105□ 4□
	5	RS-232 cable 9) • Between RS-232 cable and GOT	To be prepared by the user. Section 21.2 Connection Cable	GT24V 10 20 30 (RS-232)
	6	RS-232 cable 11) • Between RS-232 cable 2) and GOT		
	7	RS-232 cable 10) • Between RS232C port of PLC CPU and GOT • Between computer communication unit and GOT		

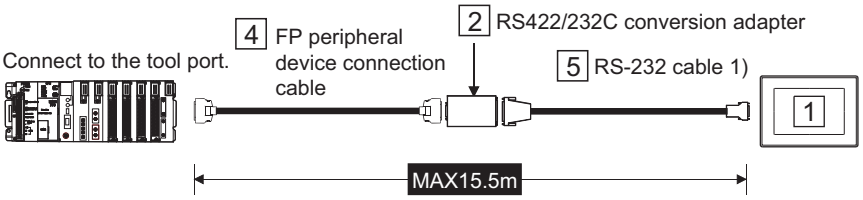
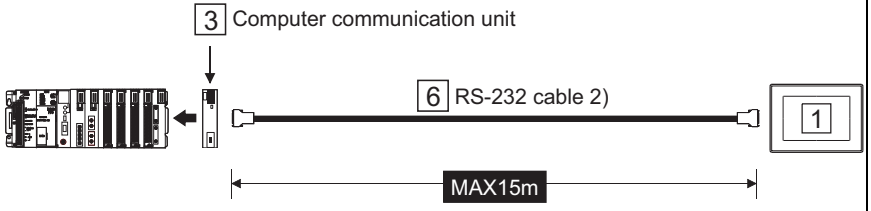
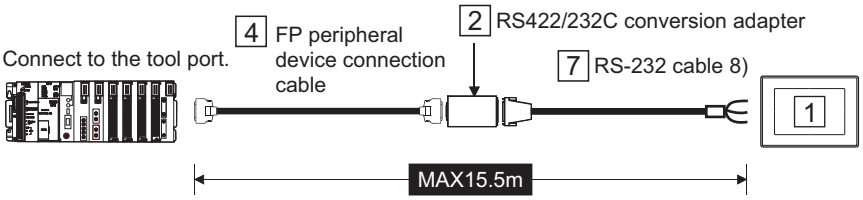
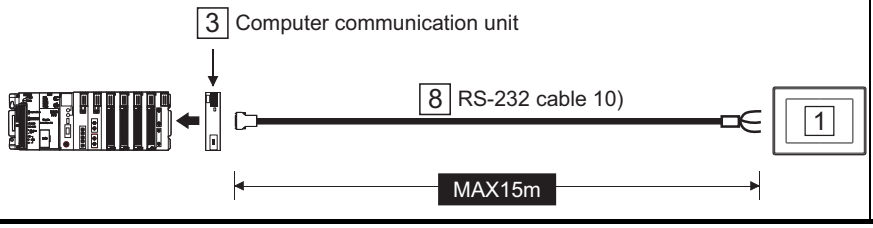
*1 The RS-232 cable can be prepared by the user. (Section 21.2 Connection Cable)

3 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

21.1.4 Connecting to FP3

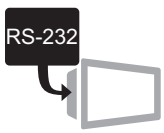
Communication driver
Panasonic MEWNET-FP

1 System configuration and connection conditions

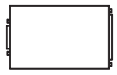
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15.5m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15.5m or less		GT24V 10 20 30 (RS-232)
	15m or less		GT24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

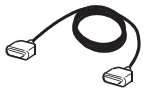
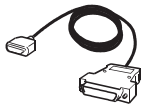
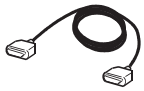
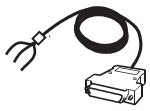
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT10 5□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	RS422/232C conversion adapter	AFP8550
	3	computer communication unit	AFP3462

2 and 3 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	4	FP peripheral device connection cable • Between tool port of PLC CPU and RS422/232C conversion adapter	AFP5520(0.5m)*2	GT16 GT15 GT11 Serial GT10 5□ 4□
	5	RS-232 cable 1) • Between RS422/232C conversion adapter and GOT	GT09-C30R20901-25P	GT16 GT15 GT11 Serial GT10 5□ 4□
	6	RS-232 cable 2)*1 • Between computer communication unit and GOT	AFC85853(3m)*2 GT09-C30R20902-9P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	7	RS-232 cable 8) • Between RS422/232C conversion adapter and GOT	To be prepared by the user. Section 21.2 Connection Cable	GT24V 10 20 30 (RS-232)
	8	RS-232 cable 10) • Between computer communication unit and GOT		

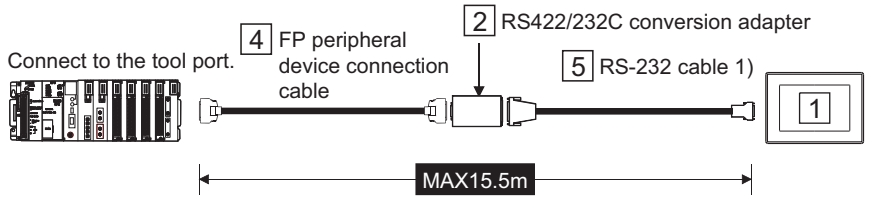
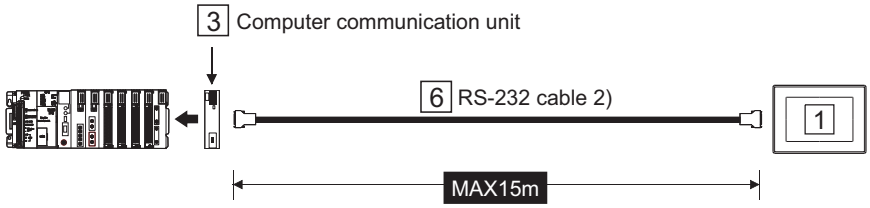
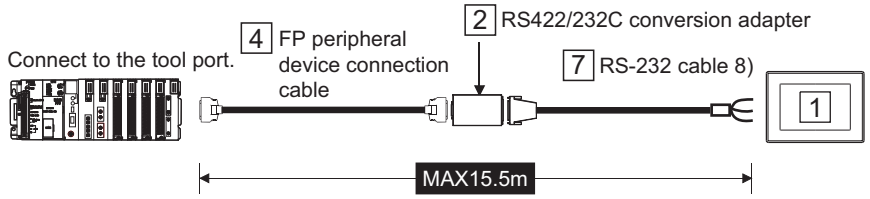
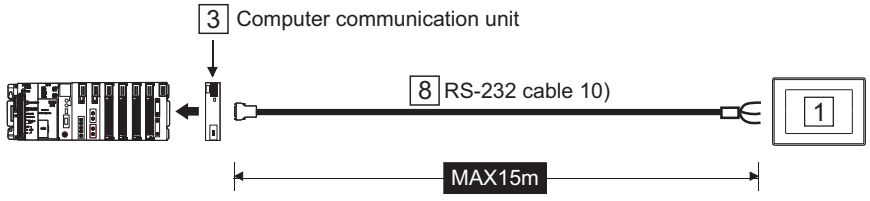
*1 The RS-232 cable can be prepared by the user. (Section 21.2 Connection Cable)

*2 4 and 6 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

21.1.5 Connecting to FP5

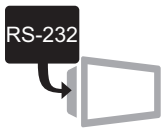
Communication driver
Panasonic MEWNET-FP

1 System configuration and connection conditions

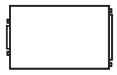
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15.5m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15.5m or less		GT24V10 20 30 (RS-232)
	15m or less		GT24V10 20 30 (RS-232)

2 System equipment

(1) GOT

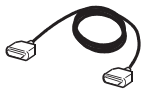
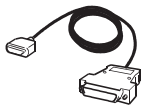
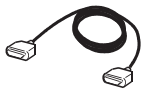
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT10 5□ 4□ GT24V10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	RS422/232C conversion adapter	AFP8550
	3	computer communication unit	AFP5462

2 and 3 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	4	FP peripheral device connection cable • Between tool port of PLC CPU and RS422/232C conversion adapter	AFP5520(0.5m)*2	GT16 GT15 GT11 Serial GT10 5□ 4□
	5	RS-232 cable 1) • Between RS422/232C conversion adapter and GOT	GT09-C30R20901-25P	GT16 GT15 GT11 Serial GT10 5□ 4□
	6	RS-232 cable 2)*1 • Between computer communication unit and GOT	AFC85853(3m)*2 GT09-C30R20902-9P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	7	RS-232 cable 8) • Between RS422/232C conversion adapter and GOT	To be prepared by the user. Section 21.2 Connection Cable	GT24V10 20 30 (RS-232)
	8	RS-232 cable 10) • Between computer communication unit and GOT		

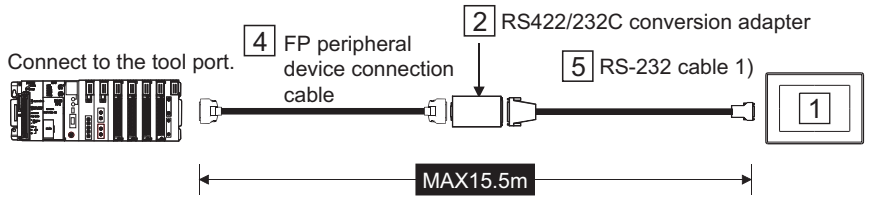
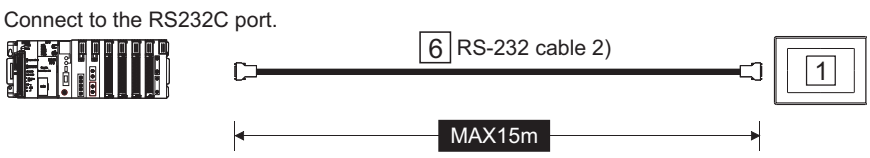
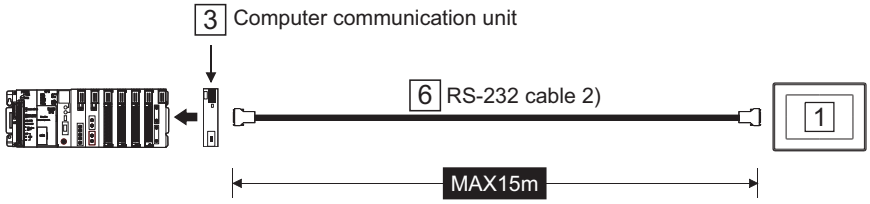
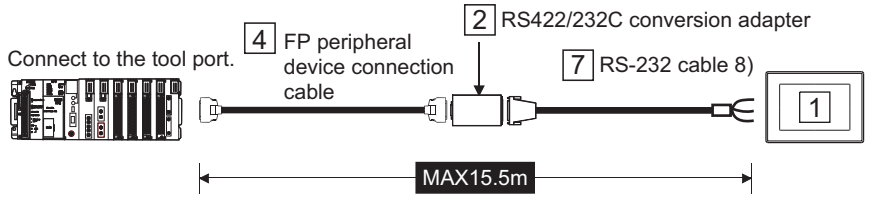
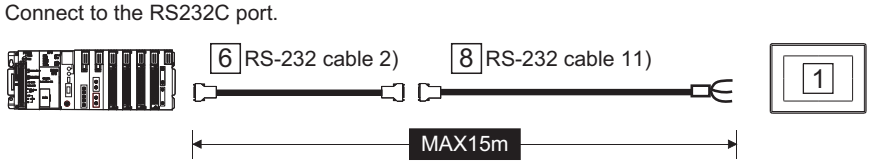
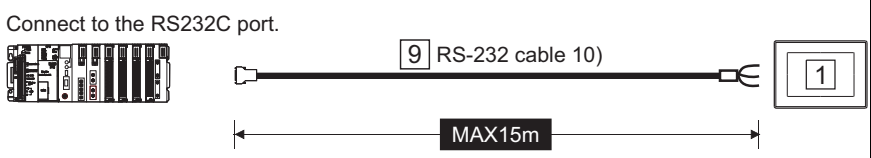
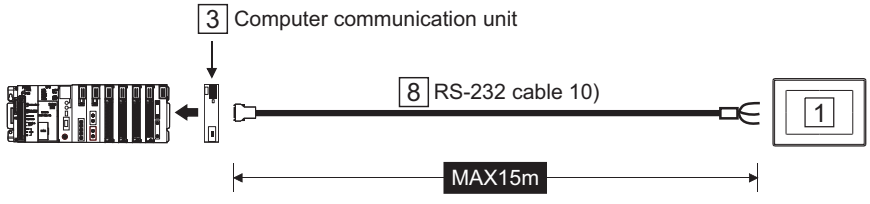
*1 The RS-232 cable can be prepared by the user. (Section 21.2 Connection Cable)

*2 4 and 6 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

21.1.6 Connecting to FP10 (S)

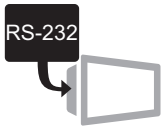
Communication driver
Panasonic MEWNET-FP

1 System configuration and connection conditions

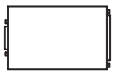
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15.5m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
	15.5m or less		GT24V 10 20 30 (RS-232)
	15m or less		GT24V 10 20 30 (RS-232)
			GT24V 10 20 30 (RS-232)
			GT24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

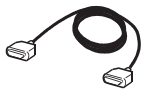
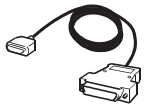
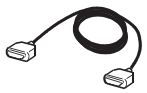
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	RS422/232C conversion adapter	AFP8550
	3	Computer communication unit	AFP3462

2 and 3 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	4	FP peripheral device connection cable • Between tool port of PLC CPU and RS422/232C conversion adapter	AFP5520(0.5m)*2	GT16 GT15 GT11 Serial GT10 5□ 4□
	5	RS-232 cable 1) • Between RS422/232C conversion adapter and GOT	GT09-C30R20901-25P	GT16 GT15 GT11 Serial GT10 5□ 4□
	6	RS-232 cable 2)*1 • Between RS232C port of PLC CPU and GOT • Between computer communication unit and GOT	AFC85853(3m)*2 GT09-C30R20902-9P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	7	RS-232 cable 8) • Between RS422/232C conversion adapter and GOT	To be prepared by the user. ☞ Section 21.2 Connection Cable	GT24V10 20 30 (RS-232)
	8	RS-232 cable 11) • Between RS-232 cable 2) and GOT		
	9	RS-232 cable 10) • Between RS232C port of PLC CPU and GOT • Between computer communication unit and GOT		

*1 The RS-232 cable can be prepared by the user. (☞ Section 21.2 Connection Cable)

*2 4 and 6 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

21.1.7 Connecting to FP10SH

Communication driver

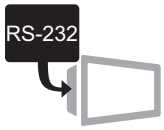
Panasonic MEWNET-FP

1 System configuration and connection conditions

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	15m or less	Connect to the tool port or RS232C port. 3 RS-232 cable 2) 1 MAX15m	GT16 GT15 GT11 Serial GT105□4□
		2 Computer communication unit 3 RS-232 cable 2) 1 MAX15m	GT16 GT15 GT11 Serial GT105□4□
		Connect to the tool port or RS232C port. 4 RS-232 cable 10) 1 MAX15m	GT24V10 20 30 (RS-232)
		Connect to the tool port or RS232C port. 3 RS-232 cable 2) 5 RS-232 cable 11) 1 MAX15m	GT24V10 20 30 (RS-232)
		2 Computer communication unit 4 RS-232 cable 10) 1 MAX15m	GT24V10 20 30 (RS-232)

2 System equipment

(1) GOT

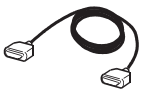
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT10 5□ 4□ GT 24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	Computer communication unit	AFP3462

2 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of this product, contact Panasonic Electric Works Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	3	RS-232 cable 2)*1 • Between tool port of PLC CPU and GOT • Between RS232C port of PLC CPU and GOT • Between computer communication unit and GOT	AFC85853(3m)*2 GT09-C30R20902-9P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	4	RS-232 cable 10) • Between tool port of PLC CPU and GOT • Between RS232C port of PLC CPU and GOT • Between computer communication unit and GOT	To be prepared by the user. ☞ Section 21.2 Connection Cable	GT 24V 10 20 30 (RS-232)
	5	RS-232 cable 11) • Between RS-232 cable 2) and GOT		

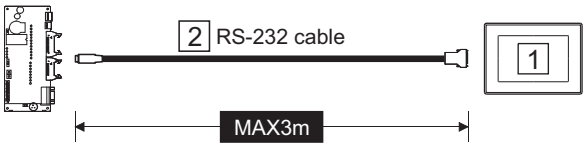
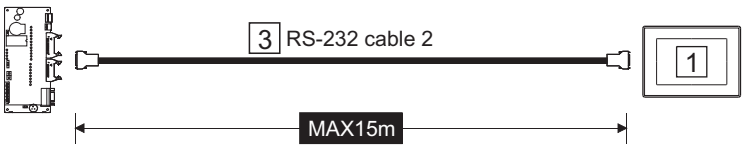
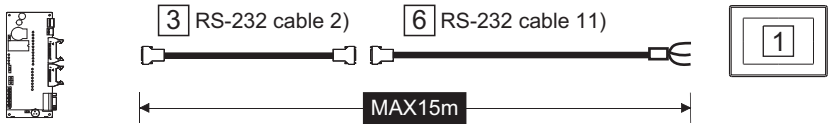
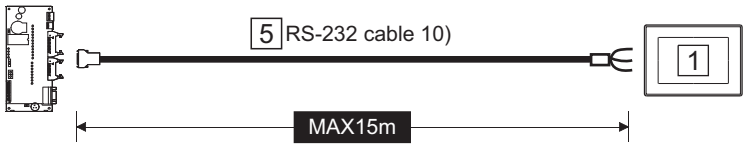
*1 The RS-232 cable can be prepared by the user. (☞ Section 21.2 Connection Cable)

*2 3 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of this product, contact Panasonic Electric Works Co., Ltd.

21.1.8 Connecting to FP-M (C20TC) or FP-M (C32TC)

Communication driver
Panasonic MEWNET-FP

1 System configuration and connection conditions

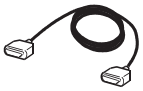
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less	Connect to the tool port. 	GT16 GT15 GT11 Serial GT105□4□
	15m or less	Connect to the RS232C port. 	GT16 GT15 GT11 Serial GT105□4□
	3.5m or less	Connect to the tool port. 	GT24V 10 20 30 (RS-232)
	15m or less	Connect to the RS232C port. 	GT24V 10 20 30 (RS-232)
		Connect to the tool port or RS232C port. 	GT24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) Cable

Image	No.	Name	Model name	Model
	2	RS-232 cable • Between tool port of PLC CPU and GOT	AFC8503(3m)*2	GT16 GT15 GT11 Serial GT105□ 4□
	3	RS-232 cable 2)*1 • Between RS232C port of PLC CPU and GOT	AFC85853(3m)*2 GT09-C30R20902-9P(3m)	GT16 GT15 GT11 Serial GT105□ 4□
	4	RS-232 cable 9) • Between RS-232 cable and GOT	To be prepared by the user. ☞ Section 21.2 Connection Cable	GT24V1020 30 (RS-232)
	5	RS-232 cable 10) • Between tool port of PLC CPU and GOT • Between RS232C port of PLC CPU and GOT		
	6	RS-232 cable 11) • Between RS-232 cable 2) and GOT		

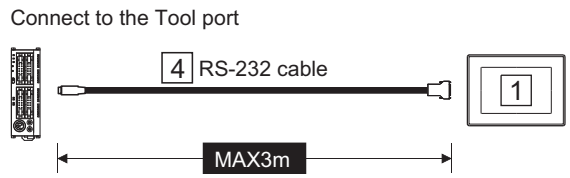
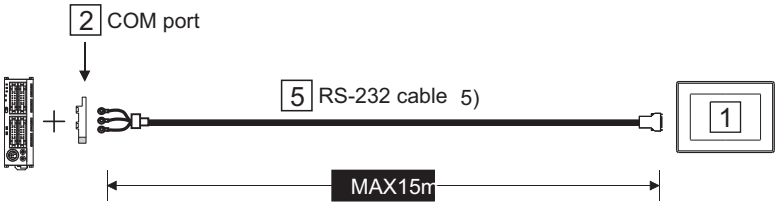
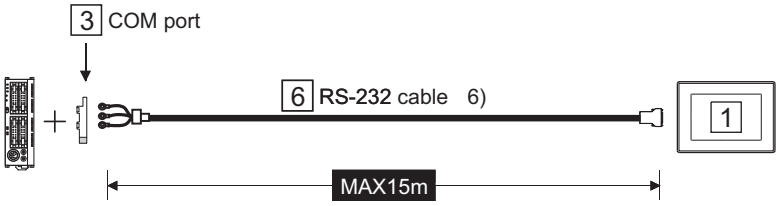
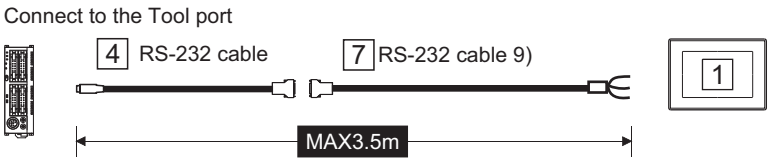
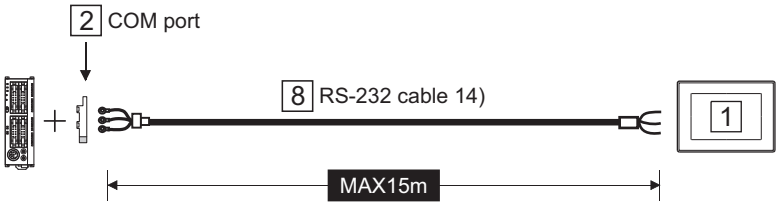
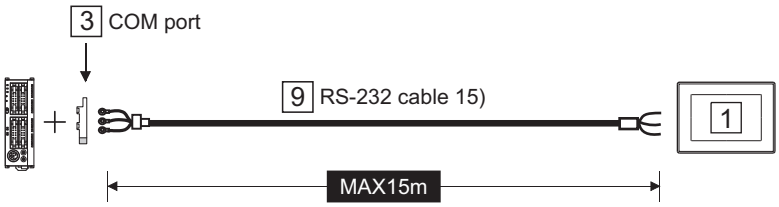
*1 The RS-232 cable can be prepared by the user. (☞ Section 21.2 Connection Cable)

*2 2 and 3 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these products, contact Panasonic Electric Works Co., Ltd.

21.1.9 Connecting to FP SIGMA

Communication driver
Panasonic MEWNET-FP

1 System configuration and connection condition

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	3.5m or less		GT24V 10 20 30 (RS-232)
	15m or less		GT24V 10 20 30 (RS-232)
			GT24V 10 20 30 (RS-232)

2 System Equipment

(1) GOT

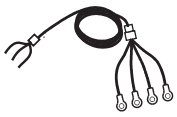
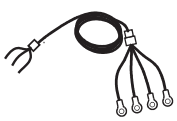
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT10 5□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	COM port	AFPG801
	3	COM port	AFPG802

2, 3 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these product, contact Panasonic Electric Works Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	4	RS-232 cable Between tool port of PLC CPU and GOT	AFC8503(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	5	RS-232 cable 5) Between COM port of PLC CPU and GOT	Prepared by the user. ☞ Section 21.2 Connection Cable)	GT16 GT15 GT11 Serial GT10 5□ 4□
	6	RS-232 cable 6) Between COM port of PLC CPU and GOT		
	7	RS-232 cable 9) • Between RS-232 cable and GOT	Prepared by the user. ☞ Section 21.2 Connection Cable)	GT24V 10 20 30 (RS-232)
	8	RS-232 cable 14) Between COM port of PLC CPU and GOT		
	9	RS-232 cable 15) Between COM port of PLC CPU and GOT		

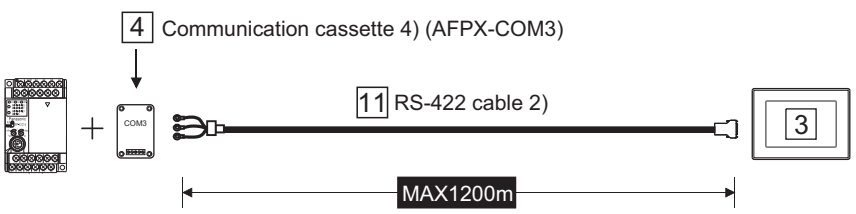
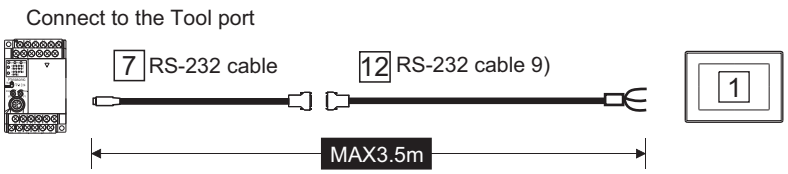
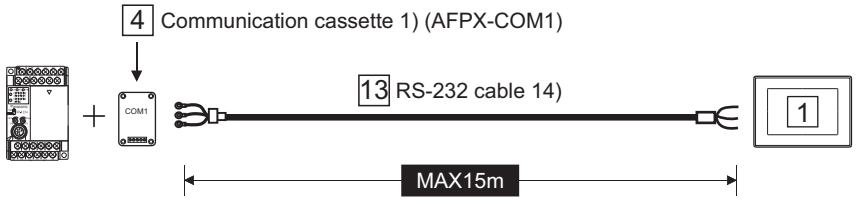
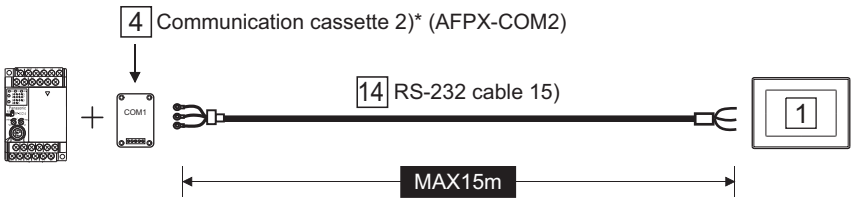
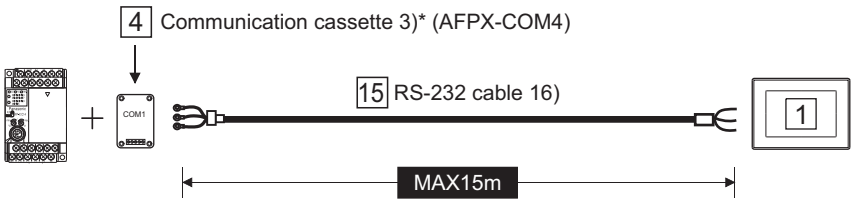
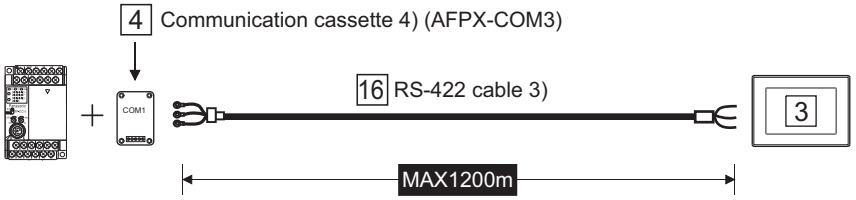
4 is a product manufactured by Panasonic Electric Works Co., Ltd. For details of this product, contact Panasonic Electric Works Co., Ltd.

21.1.10 Connecting to FP-X

Communication driver
Panasonic MEWNET-FP

1 System configuration and connection condition

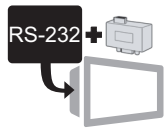
Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	3m or less	Connect to the Tool port 7 RS-232 cable 1 MAX3m	GT16 GT15 GT11 Serial GT105□4□
	15m or less	4 Communication cassette 1) (AFPX-COM1) 8 RS-232 cable 5) 1 MAX15m	GT16 GT15 GT11 Serial GT105□4□
		4 Communication cassette 2)* (AFPX-COM2) 9 RS-232 cable 6) 1 MAX15m	GT16 GT15 GT11 Serial GT105□4□
		4 Communication cassette 3)* (AFPX-COM4) 10 RS-232 cable 7) 1 MAX15m	GT16 GT15 GT11 Serial GT105□4□
	1200m or less	4 Communication cassette 4) (AFPX-COM3) 6 RS-422 cable 1) 2 MAX1200m	GT16
		4 Communication cassette 4) (AFPX-COM3) 11 RS-422 cable 2) 5 RS-422 connector conversion cable 2 MAX1200m	GT16

Connection conditions		System configuration	Model
Number of GOTs	Distance		
1	1200m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	3.5m or less		GT 24V 10 20 30 (RS-232)
	15m or less		GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
	1200m or less		GT 24V 10 20 30 (RS-422)

* To connect C30 and C60, USB port may set at the COM2 port on the communication cassette 2) (AFPX-COM2), and 3) (AFPX-COM4). In this case, set the COM2 port to RS232C.

2 System Equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

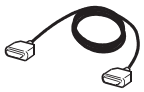
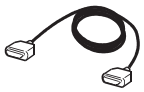
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Communication cassette 1)	AFPX-COM1 (RS232C one channel type)
		Communication cassette 2)	AFPX-COM2 (RS232C two channel type)
		Communication cassette 3)	AFPX-COM4 (RS485 one channel and RS232C one channel mixed type)
		Communication cassette 4)	AFPX-COM3 (RS485/RS422 one channel type)

4 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these product, contact Panasonic Electric Works Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-422 cable 1) • Between Communication cassette and GOT	Prepared by the user. ☞ Section 21.2 Connection Cable	GT16
	7	RS-232 cable Between tool port of PLC CPU and GOT	AFC8503(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	8	RS-232 cable 5) • Between Communication cassette and GOT	Prepared by the user. ☞ Section 21.2 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□
	9	RS-232 cable 6) • Between Communication cassette and GOT		
	10	RS-232 cable 7) • Between Communication cassette and GOT		
	11	RS-232 cable 2) • Between Communication cassette and GOT • Between Communication cassette and RS-422 connector conversion cable		
	12	RS-232 cable 9) • Between RS-232 cable and GOT	Prepared by the user. ☞ Section 21.2 Connection Cable	GT24V10 20 30 (RS-232)
	13	RS-232 cable 14) • Between Communication cassette and GOT		
	14	RS-232 cable 15) • Between Communication cassette and GOT		
	15	RS-232 cable 16) • Between Communication cassette and GOT		
	16	RS-422 cable 3) • Between Communication cassette and GOT	Prepared by the user. ☞ Section 21.2 Connection Cable	GT24V10 20 30 (RS-422)

7 are products manufactured by Panasonic Electric Works Co., Ltd. For details of these product, contact Panasonic Electric Works Co., Ltd.

21.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following shows each cable connection diagram and relevant connectors.

1 RS-232 cable (☞ Section 21.2.1)

Model			Connection cable	
			GT16, GT15, GT11, GT105□, GT104□	GT1030, GT1020
PLC CPU	FP0-C16CT, FP0-C32CT	Connecting to RS-232C port	RS-232 cable 4)	RS-232 cable 12)
	FP1-C24C, FP1-C40C	Connecting to RS-232C port	RS-232 cable 3)	RS-232 cable 13)
	FP2, FP2SH	Connecting to RS-232C port	RS-232 cable 2)	RS-232 cable 10)
	FP10(S)	Connecting to RS-232C port		
	FP10SH	Connecting to tool port		
		Connecting to RS-232C port		
	FP-M (C20TC), FP-M (C32TC)	Connecting to RS-232C port		
RS-232 cable	AFC8503		—	RS-232 cable 9)
	AFC85853		—	RS-232 cable 11)
RS422/232C conversion adapter	AFP8550		RS-232 cable 1)	RS-232 cable 8)
Computer communication unit	AFP3462 AFP2462 AFP5462		RS-232 cable 2)	RS-232 cable 10)
COM port (Mounting on FP-∑)	AFPG801		RS-232 cable 5)	RS-232 cable 14)
	AFPG802		RS-232 cable 6)	RS-232 cable 15)
Communication cassette (Mounting on FP-X)	AFPX-C0M1		RS-232 cable 5)	RS-232 cable 14)
	AFPX-C0M2		RS-232 cable 6)	RS-232 cable 15)
	AFPX-C0M4		RS-232 cable 7)	RS-232 cable 16)

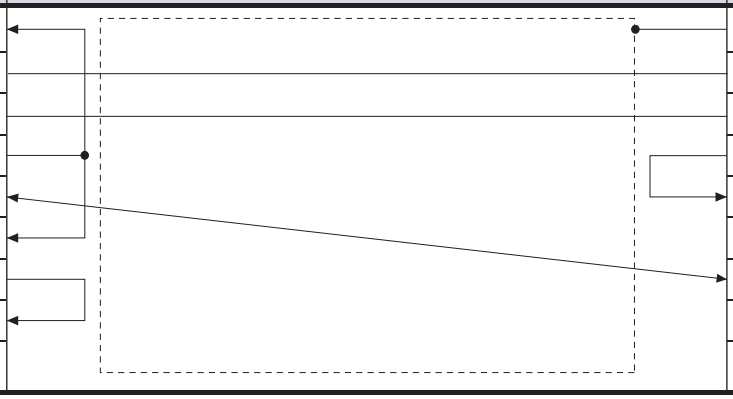
2 RS-422 cable (☞ Section 21.2.2)

Model		Connection cable		
		GT16	GT15, GT11, GT105□, GT104□	GT1030, GT1020
Communication cassette (Mounting on FP-X)	AFPX-C0M3	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 2)	RS-422 cable 3)

21.2.1 RS-232 Cable

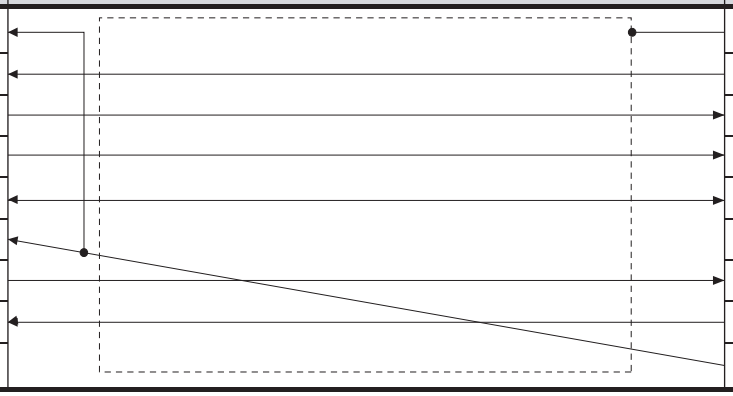
1 Connection diagram

(1) RS-232 cable 1) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	PANASONIC PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	FG
RD(RXD)	2		3	RD
SD(TXD)	3		2	SD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	DR
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	ER

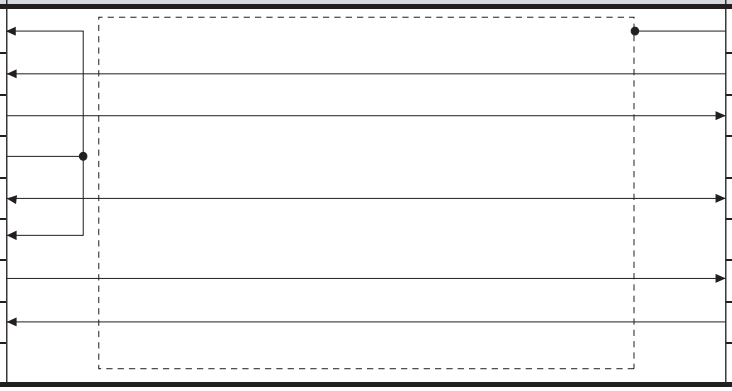
*1 GT16 : CD, GT15 : CD, GT11: NC, GT105☐ : NC, GT104☐ : NC

(2) RS-232 cable 2) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	PANASONIC PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		8	CD
SG	5		7	SG
DR(DSR)	6		6	RI
RS(RTS)	7		5	CS
CS(CTS)	8		4	RS
—	9		9	ER

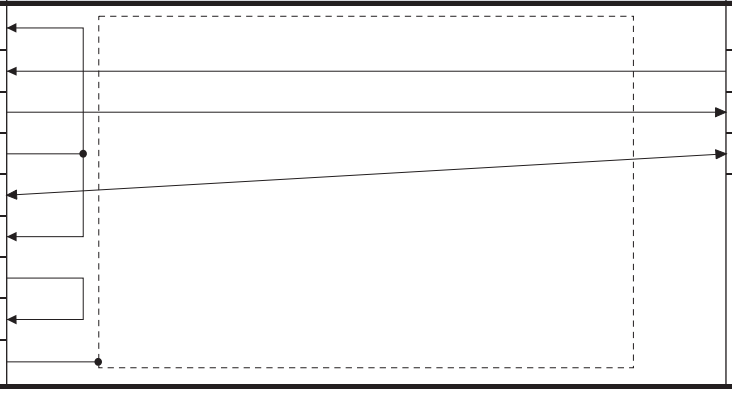
*1 GT16 : CD, GT15 : CD, GT11: NC, GT105☐ : NC, GT104☐ : NC

(3) RS-232 cable 3) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	PANASONIC PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		8	—
SG	5		7	SG
DR(DSR)	6		6	—
RS(RTS)	7		5	CS
CS(CTS)	8		4	RS
—	9		9	—

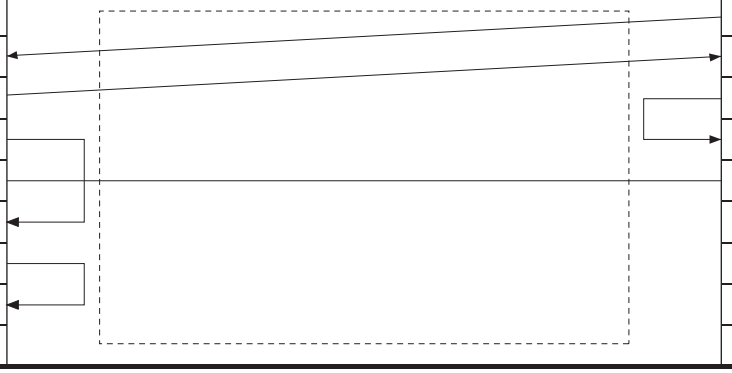
*1 GT16 : CD, GT15 : CD, GT11: NC, GT105☐ : NC, GT104☐ : NC

(4) RS-232 cable 4) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	PANASONIC PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1			
RD(RXD)	2		S	SD
SD(TXD)	3		R	RD
ER(DTR)	4		G	SG
SG	5			
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
—	9			

*1 GT16 : CD, GT15 : CD, GT11: NC, GT105☐ : NC, GT104☐ : NC

(5) RS-232 cable 5) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	PANASONIC PLC side
Signal name	Pin No.		Pin name
CD	1		SD
RD(RXD)	2		RD
SD(TXD)	3		RS
ER(DTR)	4		CS
SG	5		SG
DR(DSR)	6		
RS(RTS)	7		
CS(CTS)	8		
—	9		

(6) RS-232 cable 6) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	PANASONIC PLC side	
Signal name	Pin No.		Pin name	
CD/NC *1	1		S1	Serial port *2
RD(RXD)	2		R1	
SD(TXD)	3		S2	Serial port *2
ER(DTR)	4		R2	
SG	5		SG	
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
—	9			

*1 GT16 : CD, GT15 : CD, GT11 : NC, GT105☐: NC, GT104☐: NC

*2 PANASONIC PLC Side has two serial ports.
S1 and R1, S2 and R2 constitute the serial port, respestively. Use one of the serial ports.

(7) RS-232 cable 7) (For GT16, GT15, GT11, GT105☐, GT104☐)

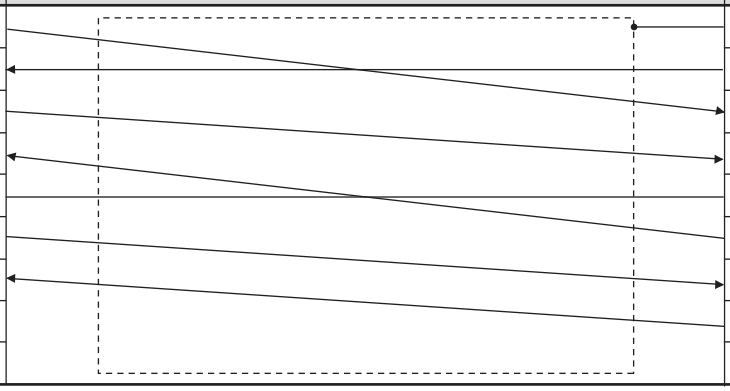
GOT side		Cable connection and signal direction	PANASONIC PLC side
Signal name	Pin No.		Pin name
CD/NC *1	1		+
RD(RXD)	2		-
SD(TXD)	3		SD
ER(DTR)	4		RD
SG	5		SG
DR(DSR)	6		
RS(RTS)	7		
CS(CTS)	8		
—	9		

*1 GT16 : CD, GT15 : CD, GT11 : NC, GT105☐: NC, GT104☐: NC

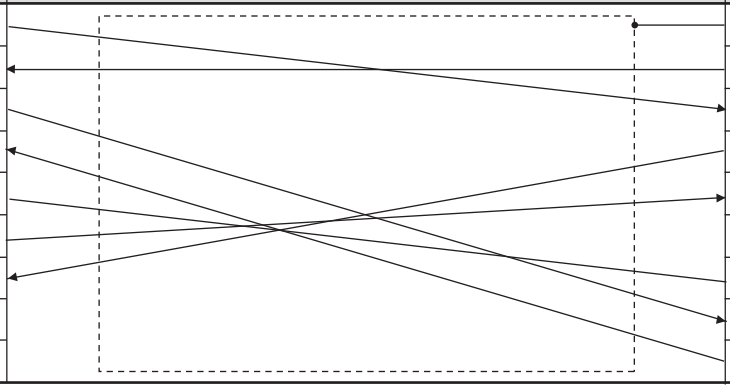
(8) RS-232 cable 8) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side	
Signal name		Pin No.	Signal name
SD		1	FG
RD		2	SD
ER		3	RD
DR		4	RS
SG		5	CS
RS		6	DR
CS		7	SG
NC		8	CD
NC		20	ER

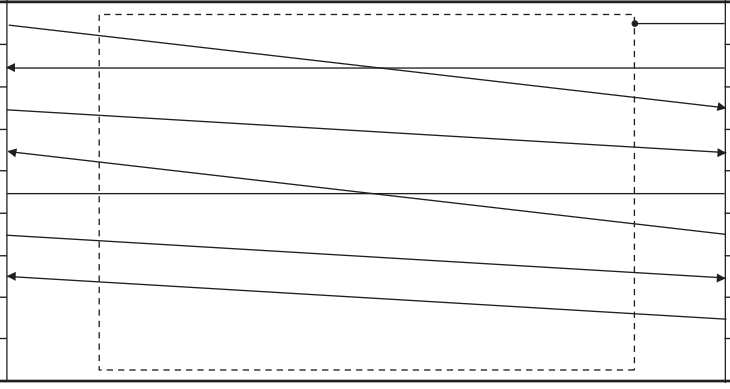
(9) RS-232 cable 9) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side	
Signal name		Pin No.	Signal name
SD		1	CD
RD		2	RD
ER		3	SD
DR		4	DTR
SG		5	SG
RS		6	DSR
CS		7	RS
NC		8	CS
NC		9	—

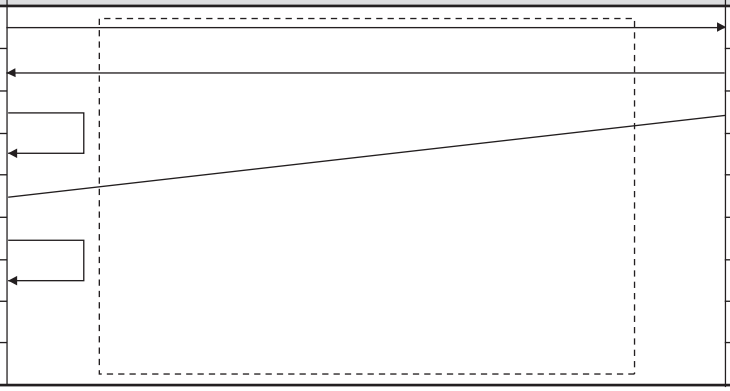
(10) RS-232 cable 10) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side	
Signal name		Pin No.	Signal name
SD		1	FG
RD		2	SD
ER		3	RD
DR		4	RS
SG		5	CS
RS		6	RI
CS		7	SG
NC		8	CD
NC		9	ER

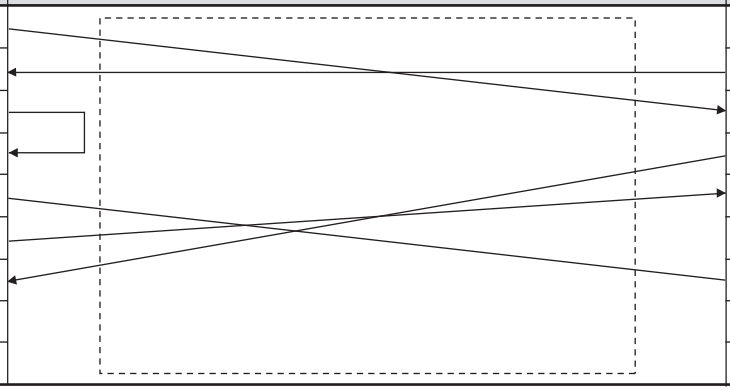
(11) RS-232 cable 11) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side	
Signal name		Pin No.	Signal name
SD		1	CD
RD		2	RD
ER		3	SD
DR		4	DTR
SG		5	SG
RS		6	DSR
CS		7	RS
NC		8	CS
NC		9	—

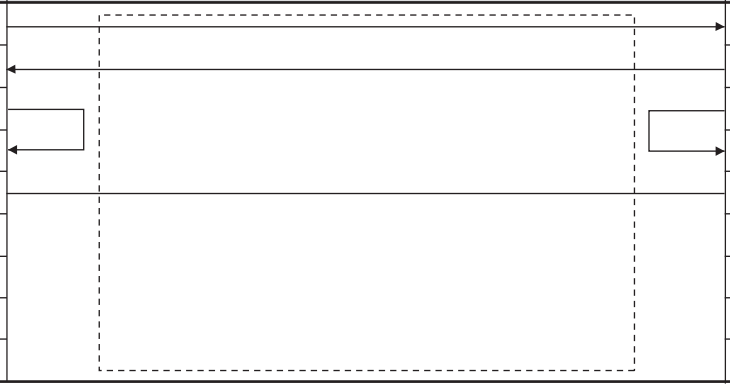
(12) RS-232 cable 12) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side	
Signal name		Pin name	Signal name
SD		R	RD
RD		S	RS
ER		G	SG
DR			
SG			
RS			
CS			
NC			
NC			

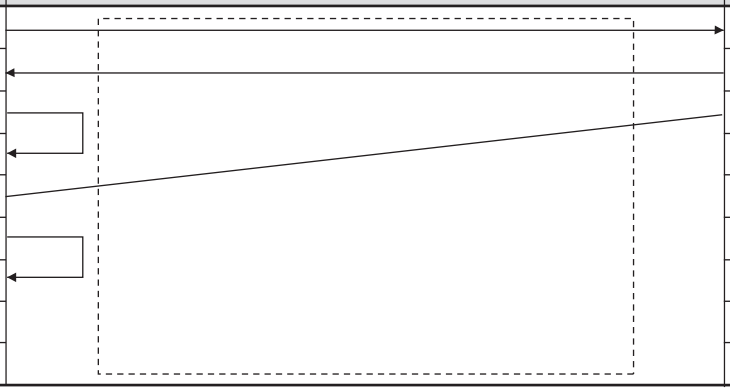
(13) RS-232 cable 13) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side	
Signal name		Pin name	Signal name
SD		1	FG
RD		2	SD
ER		3	RD
DR		4	RS
SG		5	CS
RS		6	
CS		7	SG
NC		8	
NC		9	

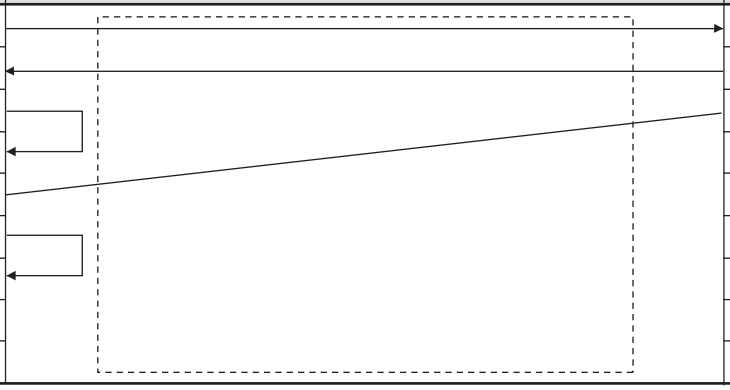
(14) RS-232 cable 14) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side
Signal name		Signal name
SD		RD
RD		SD
ER		RS
DR		CS
SG		SG
RS		
CS		
NC		
NC		

(15) RS-232 cable 15) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side	
Signal name		Pin name	Signal name
SD		R1(RD)	RD
RD		S1(SD)	SD
ER		SG	SG
DR			
SG			
RS			
CS			
NC			
NC			

(16) RS-232 cable 16) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side
Signal name		Pin name
SD		RD
RD		SD
ER		SG
DR		
SG		
RS		
CS		
NC		
NC		

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

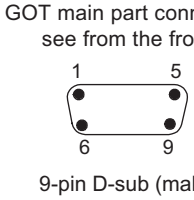
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030, GT1020.

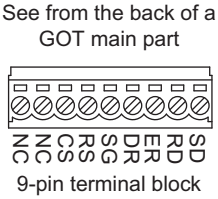
(b) Connector pin arrangement

GT16, GT15, GT11, GT105☐, GT104☐



9-pin D-sub (male)

GT1030, GT1020



9-pin terminal block

(2) Connector for PANASONIC PLC
Use the connector applicable to the PANASONIC PLC.
For the details, refer to the following manual.

☞ User's manual for PANASONIC PLC

3 Precautions for making cable

The length of the RS-232 cable must be 15m or less.
The length of the cable must be 3m or less with a transmission speed of 38400bps.

21.2.2 RS-422 Cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Connection diagram

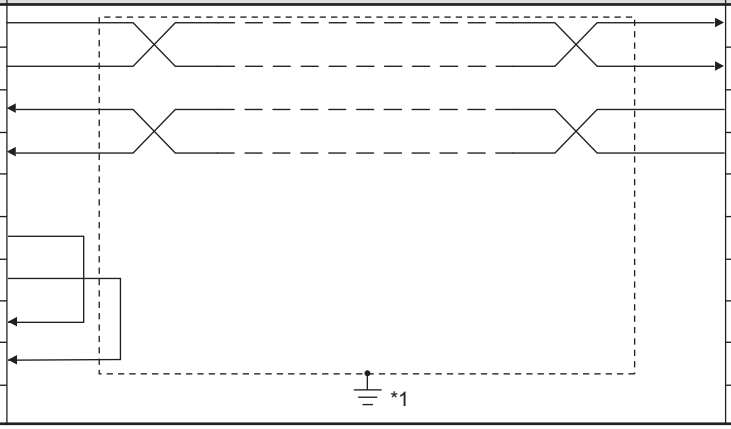
(1) RS-422 cable 1) (For GT16)

GOT side		Cable connection and signal direction	PANASONIC PLC side
Signal name	Pin No.		Pin Name
SDA1(TXD1+)	1		R+
SDB1(TXD1-)	2		R-
RDA1(RXD1+)	3		S+
RDB1(RXD1-)	4		S-
SDA2(TXD2+)	5		
SDB2(TXD2-)	6		
RDA2(RXD2+)	7		
RDB2(RXD2-)	8		
RSA(RTS+)	9		
RSB(RTS-)	10		
CSA(CTS+)	11		
CSB(CTS-)	12		
SG	13		
NC	14		
	Shell		

(2) RS-422 cable 2) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	PANASONIC PLC side
Signal name	Pin No.		Pin name
RDA	2		S+
RDB	7		S-
SDA	1		R+
SDB	6		R-
RSA	3		
RSB	8		
CSA	4		
CSB	9		
SG	5		
FG	—		

(3) RS-422 cable 3) (For GT1020, GT1030)

GOT side (terminal block)	Cable connection and signal direction	PANASONIC PLC side
Signal name		Pin name
SDA		R+
SDB		R-
RDA		S+
RDB		S-
SG		
RSA		
RSB		
CSA		
CSB		

*1 Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Model	Connetcor type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1045-Q, GT1040-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin terminal block*2	PHOENIX CONTACT Inc.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

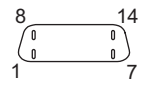
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5BK or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16

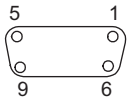
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

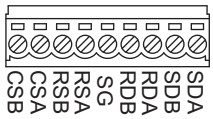
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

3 Precautions when preparing a cable

The length of the RS-422 cable must be 1200m or less.

4 Connecting terminating resistors

(1) GOT

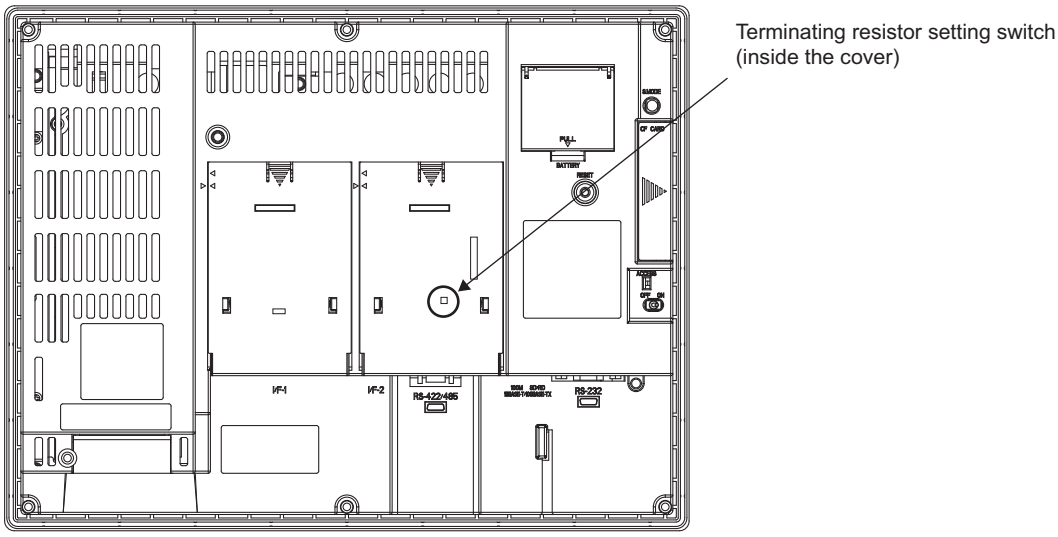
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

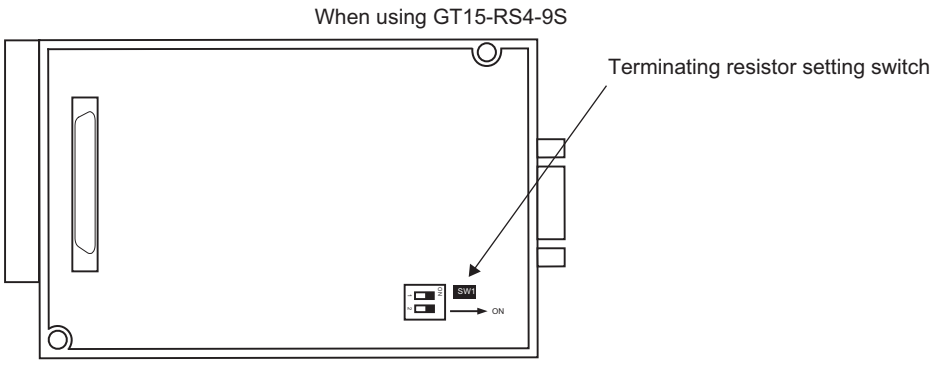
*1 The default setting is "Enable".



• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

21.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 21.3.1
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 21.3.2
Checking OS installation on GOT

↓

Set the communication interface. (Communication settings)

☞ Section 21.3.3
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 21.3.4
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 21.3.5
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 21.3.6
Verifying GOT recognizes controllers

↓

Make sure that monitoring is performed normally.

☞ Section 21.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

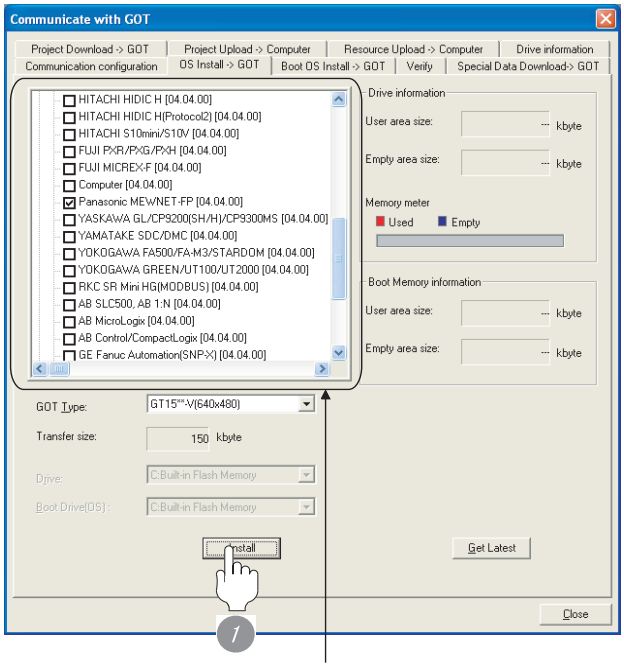
☞ Section 21.4 PLC Side Setting

21.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the communication driver.

• Panasonic MEWNET-FP

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

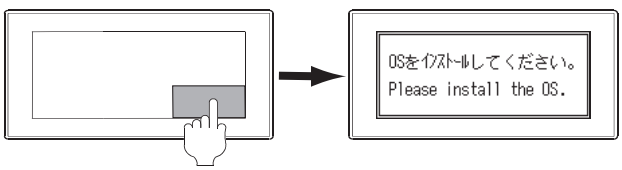
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



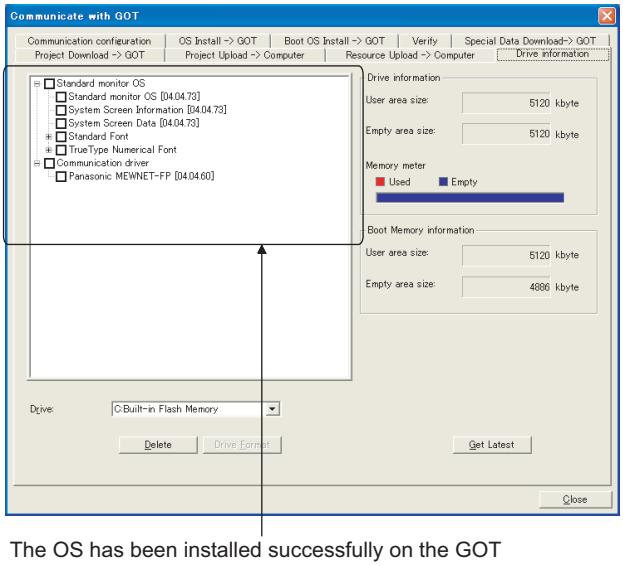
Turn on the GOT while the bottom right corner is touched.

21.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Panasonic MEWNET-FP

21.3.3 Setting communication interface (Communication settings)

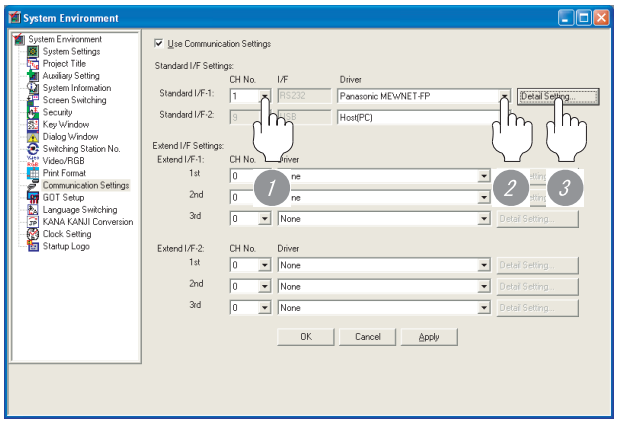
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



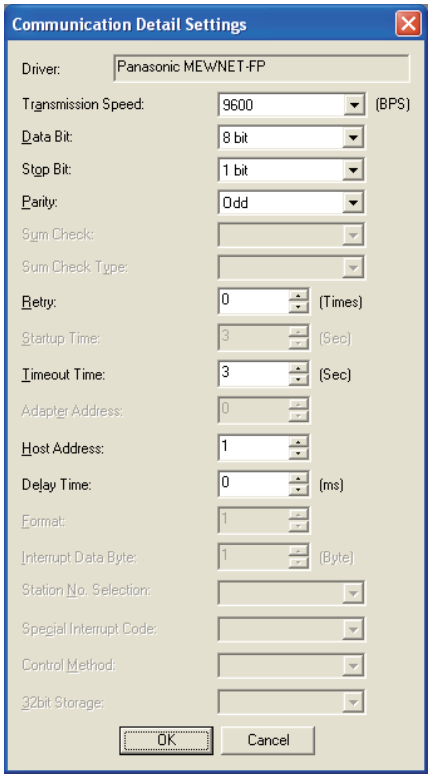
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "Panasonic MEWNET-FP".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	4800bps, 9600bps, 19200bps, 38400bps 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 time>	0 to 5 times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 1>	1 to 31
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

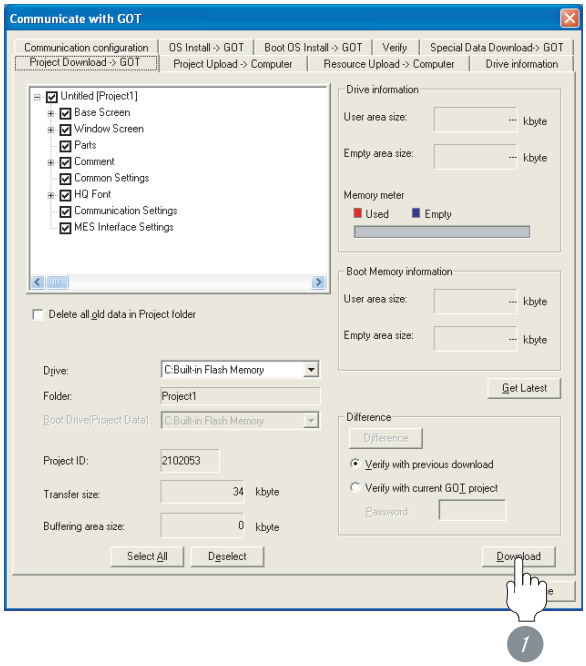
Communication settings can be changed on only GT Designer2.

21.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

21.3.5 Attaching communication unit and connecting cable

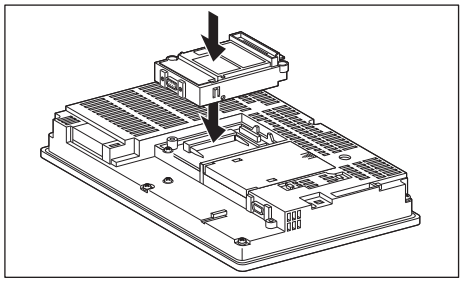
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit, refer to the following manual.

GT15 Serial Communication Unit User's Manual

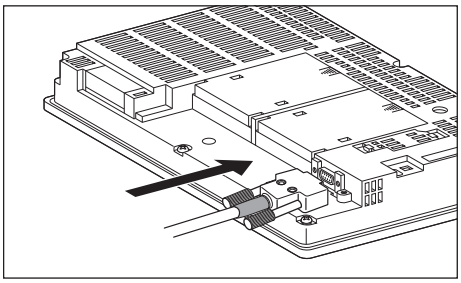
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For the GT16, GT15

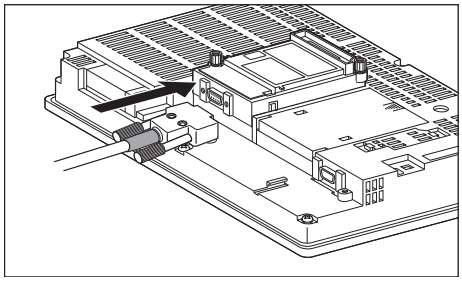
• connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



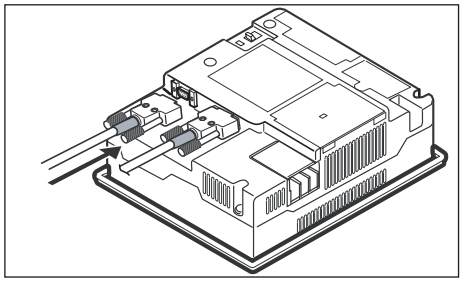
• connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



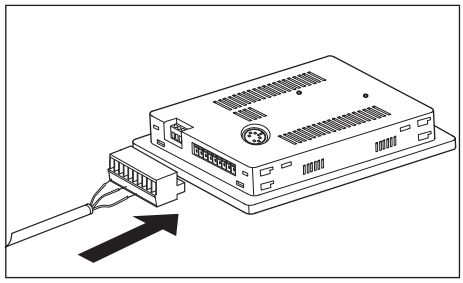
(b) For the GT11, GT105 □, GT104 □

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

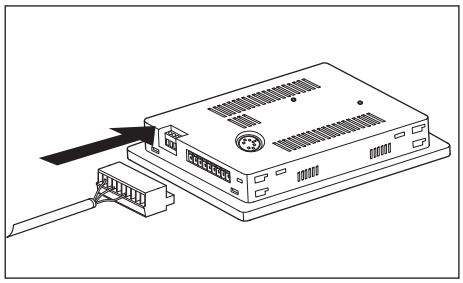


(c) For the GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

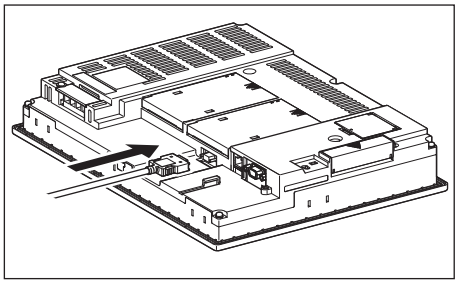


(2) How to connect the RS-422 cable

(a) For GT16

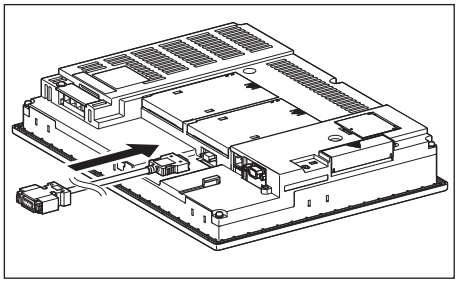
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

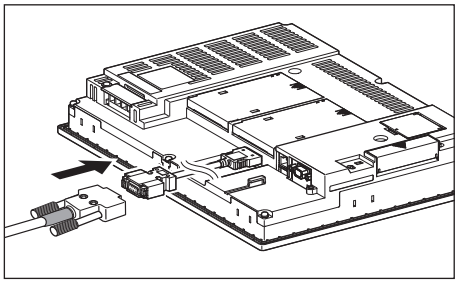


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

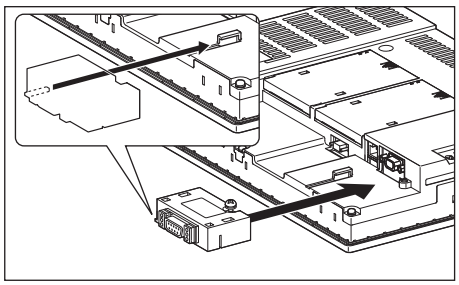


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

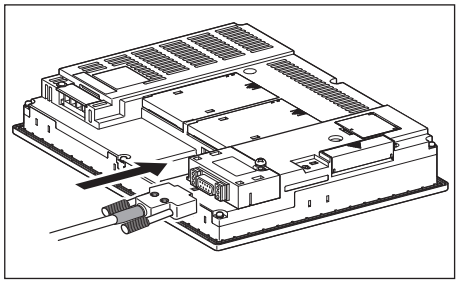


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

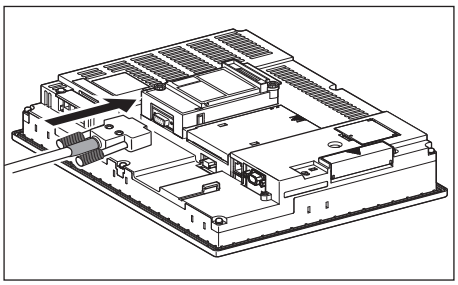


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

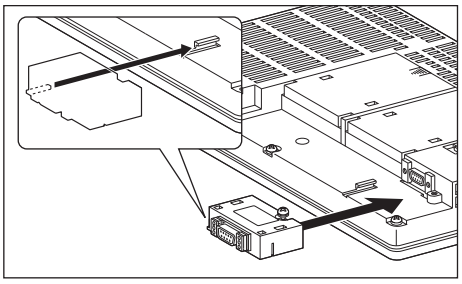
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



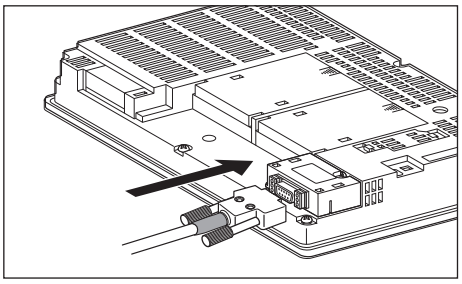
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155□)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

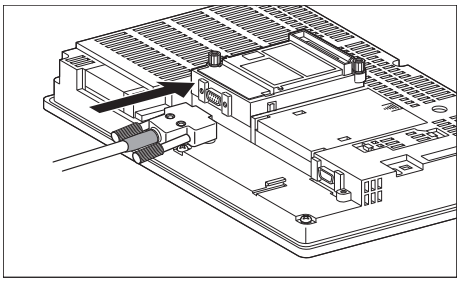


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

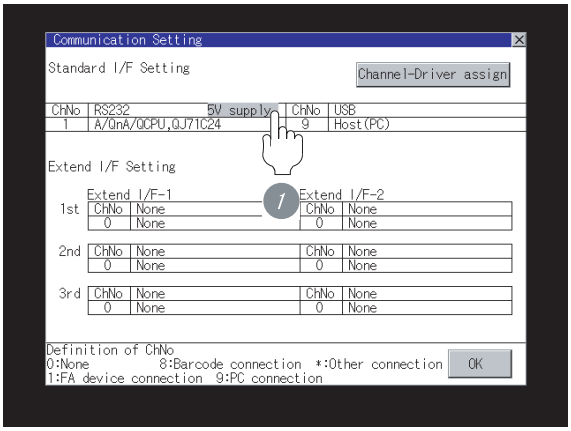
Point

When using the RS-422 conversion unit

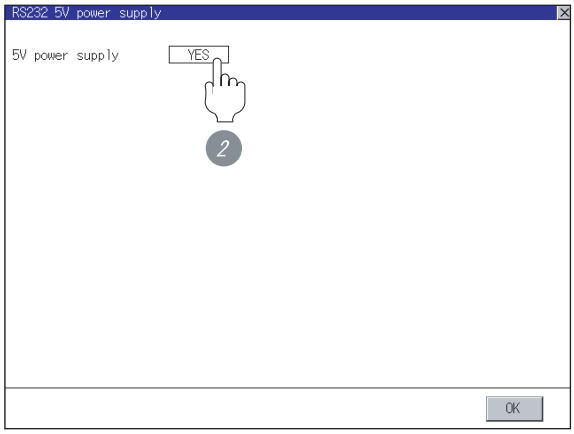
On "Communication Setting" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT □ User's Manual

1 Touch [5V supply].

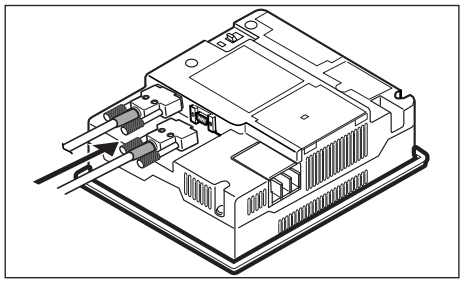


2 Set [5V power supply] to "YES".



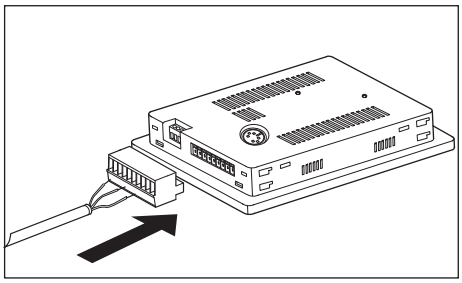
(c) For the GT11, GT105□, GT104□

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

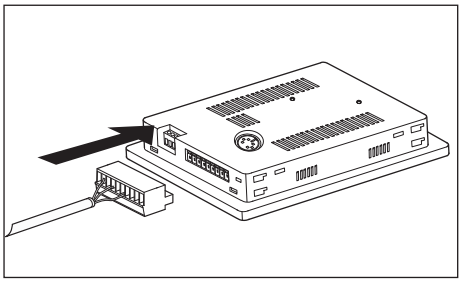


(d) For the GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



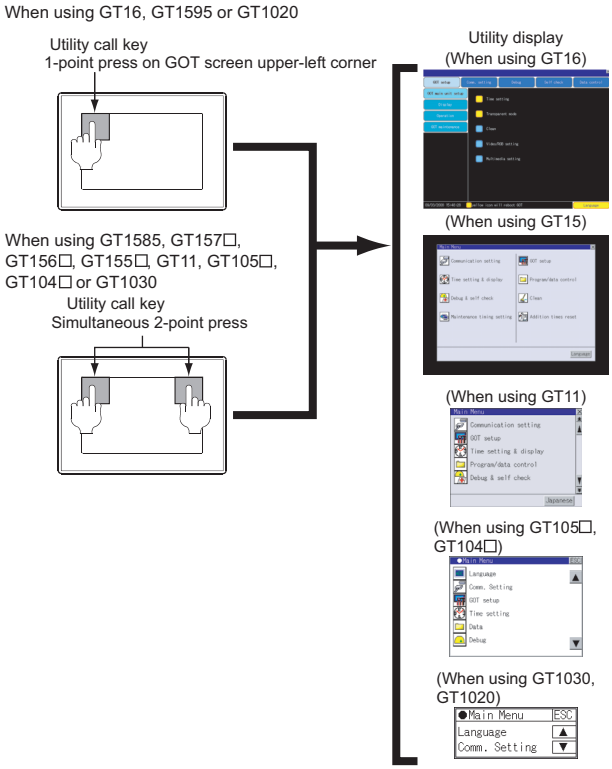
21.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

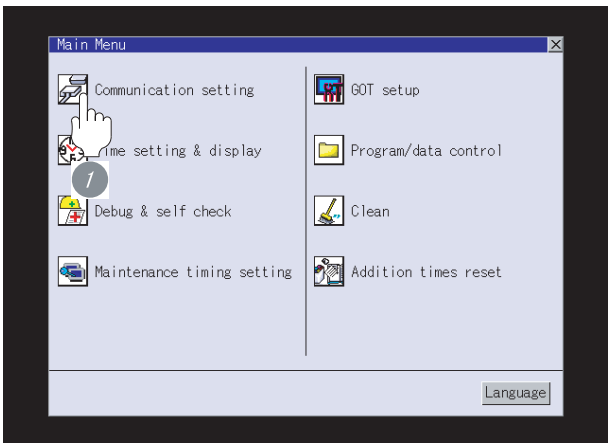


Point

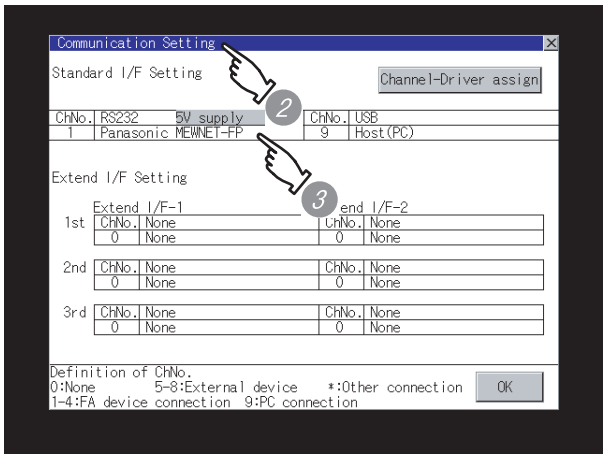
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: Panasonic MEWNET-FP

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 21.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

Communication settings can be changed on only GT Designer2.

21.3.7 Checking for normal monitoring

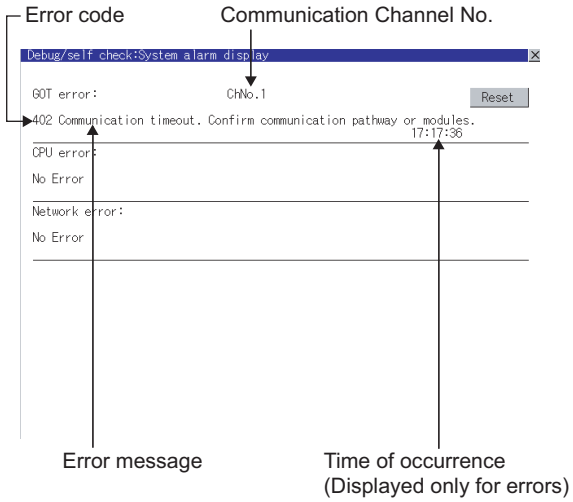
1 Check for errors occurring on the GOT (GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check (For GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

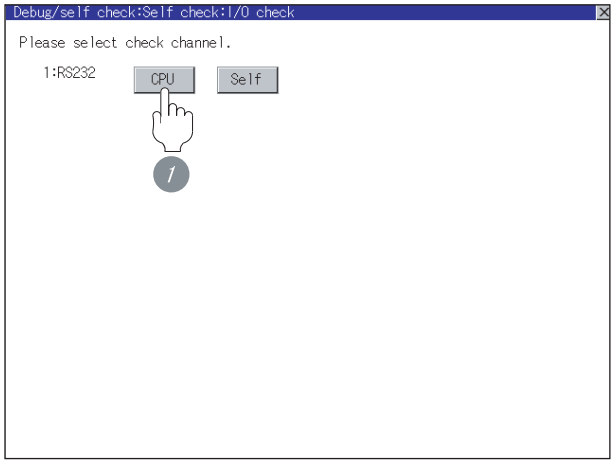
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

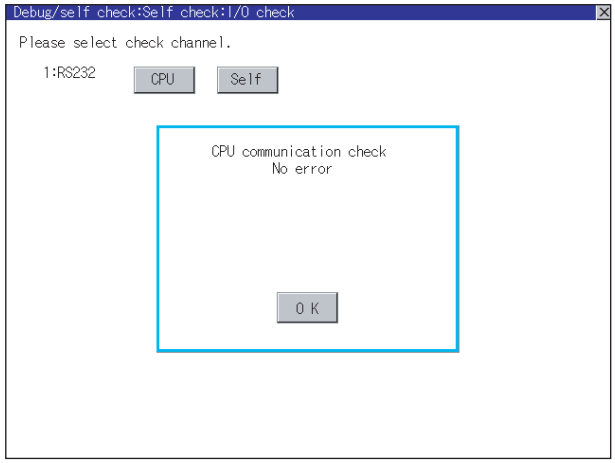
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

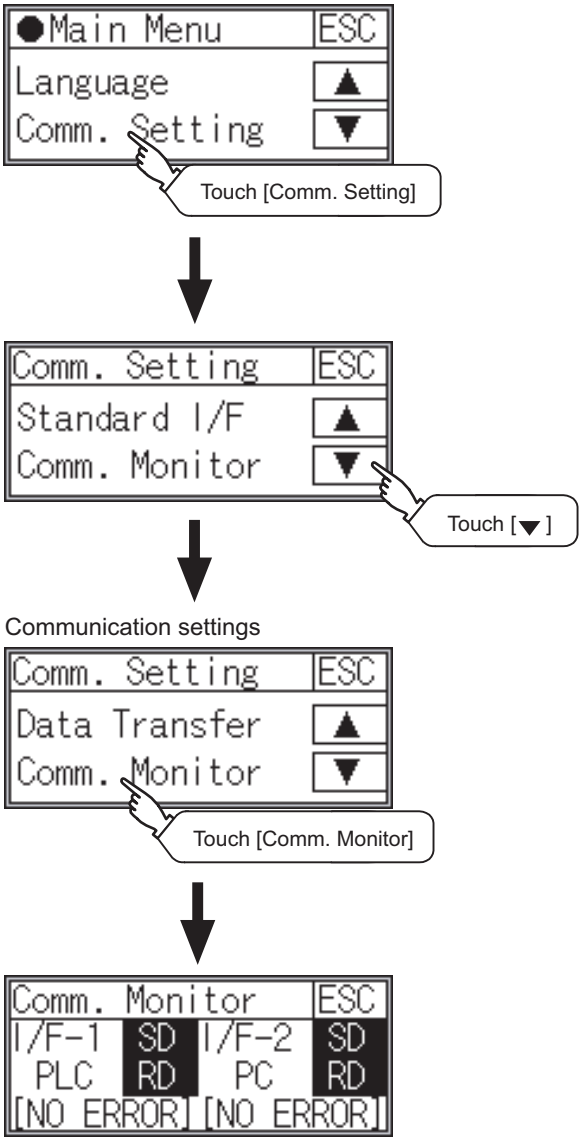
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 21.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

21.4 PLC Side Setting

Point

PANASONIC PLC

For details of the PANASONIC PLC, refer to the following manual.

☞ User's Manual for the PANASONIC PLC.

1 Connecting to the tool port of the PLC CPU

Item	Setting
Transmission speed*1*2*3	4800bps, 9600bps, 19200bps, 38400bps, 115200bps
Data length	7bit, 8bit
Stop bit	1bit
Parity bit	Odd
Modem connection	No
Module No.	1

*1 Indicates only the transmission speeds that can be set on the GOT side.

*2 Set the same transmission speed of the GOT. For the transmission speed setting of the GOT, refer to the following.

☞ Section 21.3.3 Setting communication interface (Communication settings)

*3 The setting range varies with the connected PLC.

2 Connecting to the RS232C and COM port of the PLC CPU

Item	Setting
Transmission speed*4*5*6	4800bps, 9600bps, 19200bps, 38400bps, 115200bps
Data length	7bit, 8bit
Stop bit	1bit
Parity bit	Odd
Modem connection	No
Serial port action selection*7	1 (Computer link)
Module No.	1

*4 Indicates only the transmission speeds that can be set on the GOT side.

*5 Set the same transmission speed of the GOT. For the transmission speed setting of the GOT, refer to the following.

☞ Section 21.3.3 Setting communication interface (Communication settings)

*6 The setting range varies with the connected PLC.

*7 Set when connecting to FP0, FP1, FP2 or FP-M.

3 Connecting to the computer communication unit

Item	Setting
Transmission speed*1*2*3	4800bps, 9600bps, 19200bps
Data length	7bit, 8bit
Stop bit	1bit
Parity bit	Odd
Parity check	Yes
Control signal	Invalidate CS, CD

*1 Indicates only the transmission speeds that can be set on the GOT side.

*2 Set the same transmission speed of the GOT. For the transmission speed setting of the GOT, refer to the following.

☞ Section 21.3.3 Setting communication interface (Communication settings)

*3 The setting range varies with the connected PLC.

4 Connecting to the communication cassette

(1) Communication setting

Set the commnumication settings for the COM 1 port and COM2 port to connect GOT.

Item	Setting
Communication mode	Computer link
Transmission speed*4*5	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Modem Enable	Disable
Data length	7bit, 8bit
Stop bit	1bit
Parity check	Odd
Unit No.	1
Port selection*6	Communication cassete

*4 Indicates only the transmission speeds that can be set on the GOT side.

*5 Set the same transmission speed of the GOT. For the transmission speed setting of the GOT, refer to the following.

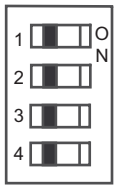
☞ Section 21.3.3 Setting communication interface (Communication settings)

*6 Set the COM2 port only.

(2) Switch setting on the Communication cassette (AFPX-COM3)

Set the switch on the back.

Switch No.	Setting	Description
1	OFF	RS422
2	OFF	
3	OFF	
4	OFF	Terminating resistor OFF



21.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	PANASONIC PLC connection	Supporting the PANASONIC PLC connection	2.09K	Communication driver MATSUSHITA MEWNET-FP [01.02.**]
GT15 GT11 Serial	PANASONIC PLC connection	Supporting the PANASONIC PLC FPSIGMA connection	2.18U	Communication driver MATSUSHITA MEWNET-FP [02.00.**]
GT15 GT11 Serial	PANASONIC PLC connection	Supporting the PANASONIC PLC FP-X connection	2.58L	Communication driver MATSUSHITA MEWNET-FP [03.03.**]
GT24V1020 30 GT5V1020	PANASONIC PLC connection	Supporting the connections to GT10	2.73B	Standard monitor OS [01.06.**] Communication driver MATSUSHITA MEWNET-FP [01.00.**]
GT15 GT11 Serial	PANASONIC PLC connection	Supporting the timeout time and the delay time	2.73B	Communication driver MATSUSHITA MEWNET-FP [03.09.**]
GT16	PANASONIC PLC connection	Supporting the connections to GT16	2.90U	Communication driver MATSUSHITA MEWNET-FP [04.02.**]
GT105□ 4□	PANASONIC PLC connection	Supporting the connections to GT105 □ Supporting the connections to GT104 □		Standard monitor OS [01.10.**] Communication driver MATSUSHITA MEWNET-FP [01.05.**]
GT16 GT15 GT11 Serial	PANASONIC PLC connection	Changed the communication driver name	2.96A	Communication driver Panasonic MEWNET-FP [04.04.**]
GT105□ 4□ GT24V1020 30 GT5V1020				Communication driver Panasonic MEWNET-FP [01.07.**]

MEMO

22

CONNECTION TO YASKAWA PLC

22.1 Serial Connection . . . . . page 22-2

This section describes the equipment and cables needed when connecting a GOT to a YASKAWA PLC.
Select a system suitable for your application.



22.2 Ethernet Connection . . . . . page 22-46

This section describes the equipment and cables needed for Ethernet connection.



22.3 List of Functions Added by Version Upgrade . . . . . page 22-71

This section describes the functions added by version upgrade of GT Designer2 or OS.

22.1 Serial Connection

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

22.1.1 System configuration(GL120 or GL130)

Communication driver

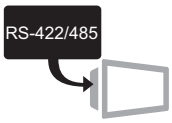
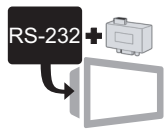
YASKAWA GL/CP9200(SH/H)/CP9300MS

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	7 RS-232 cable 1) — 1	GT16 GT15 GT11 Serial
		4 MEMOBUS module; 6 RS-422 cable 1) — 2	GT16
		4 MEMOBUS module; 8 RS-422 cable 5); 5 RS-422 connector conversion cable — 2	GT16
		4 MEMOBUS module; 8 RS-422 cable 5) — 3	GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

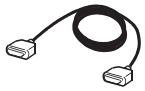
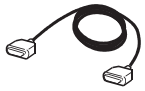
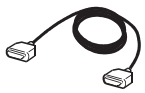
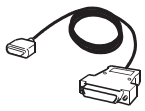
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	MEMOBUS module	JAMSC-120NOM27100

4 is a product manufactured by YASKAWA Electric Corporation. For details of this product, contact YASKAWA Electric Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-422 cable 1)*1 • Between MEMOBUS module and GOT	GT09-C30R40201-9P(3m) GT09-C100R40201-9P(10m) GT09-C200R40201-9P(20m) GT09-C300R40201-9P(30m)	GT16
	7	RS-232 cable 1)*1 • Between CPU and GOT	GT09-C30R20201-9P(3m)	GT16 GT15 GT11 Serial
	8	RS-422 cable 5)*1 • Between MEMOBUS module and GOT • Between MEMOBUS module and RS-422 connector conversion cable	GT09-C30R40201-9P(3m) GT09-C100R40201-9P(10m) GT09-C200R40201-9P(20m) GT09-C300R40201-9P(30m)	GT16 GT15 GT11 Serial

*1 The RS-232 and RS-422 cable can be prepared by the user.(Section 22.1.7 Connection Cable)

22.1.2 System configuration(GL60S, GL60H or GL70H)

Communication driver

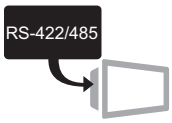
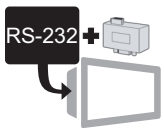
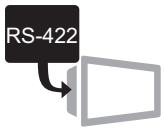
YASKAWA GL/CP9200(SH/H)/CP9300MS

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	4 MEMOBUS module 8 RS-232 cable 1) 1	GT16 GT15 GT11 Serial
		5 MEMOBUS module 7 RS-422 cable 1) 2	GT16
		5 MEMOBUS module 9 RS-422 cable 5) 6 RS-422 connector conversion cable 2	GT16
		5 MEMOBUS module 9 RS-422 cable 5) 3	GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

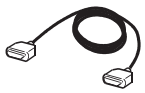
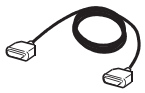
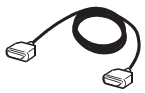
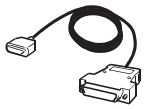
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	MEMOBUS module	JAMSC-IF60, JAMSC-IF61
	5		JAMSC-IF612

4 and 5 are products manufactured by YASKAWA Electric Corporation. For details of these products, contact YASKAWA Electric Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-422 cable 1)*1 • Between MEMOBUS module and GOT	GT09-C30R40201-9P(3m) GT09-C100R40201-9P(10m) GT09-C200R40201-9P(20m) GT09-C300R40201-9P(30m)	GT16
	8	RS-232 cable 1)*1 • Between MEMOBUS module and GOT	GT09-C30R20201-9P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 5)*1 • Between MEMOBUS module and GOT • Between MEMOBUS module and RS-422 connector conversion cable	GT09-C30R40201-9P(3m) GT09-C100R40201-9P(10m) GT09-C200R40201-9P(20m) GT09-C300R40201-9P(30m)	GT16 GT15 GT11 Serial

*1 The RS-232 and RS-422 cable can be prepared by the user.(Section 22.1.7 Connection Cable)

22.1.3 System configuration(MP-920/930, CP-9300MS/9200(H) or PROGIC-8)

Communication driver	Communication driver
YASKAWA GL/CP9200(SH/H)/CP9300MS	YASKAWA MP
(For GT16, GT15,GT11)	(For GT10)

1 System configuration and connection conditions

When connecting to MP-920, MP-930

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	7 RS-232 cable 1) — 1	GT16 GT15 GT11 Serial GT10 5□ 4□
		11 RS-232 cable 6) — 1	GT 24V 10 20 30 (RS-232)

When connecting to CP-9200(H), PROGIC-8 (port 1)

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	7 RS-232 cable 1) — 1	GT16 GT15 GT11 Serial

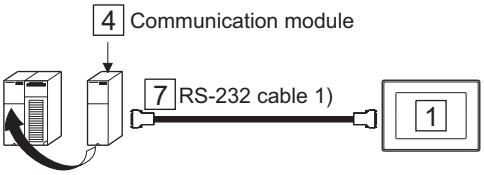
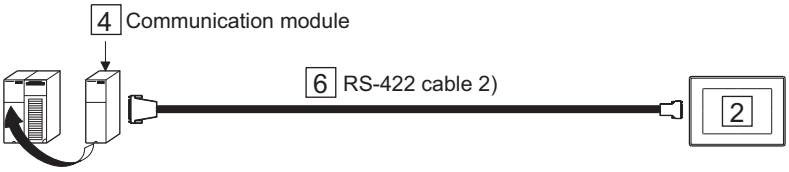
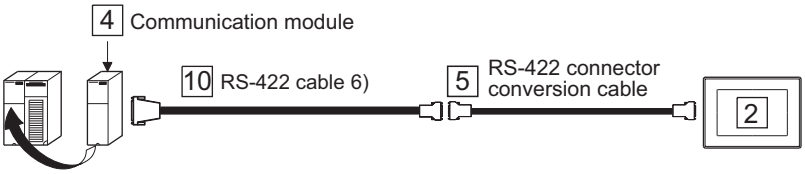
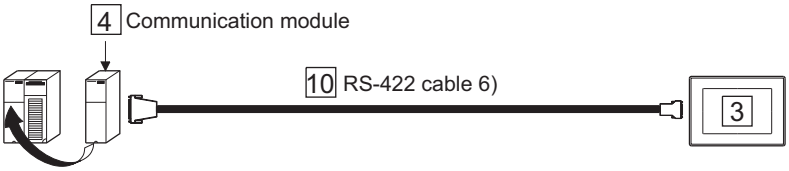
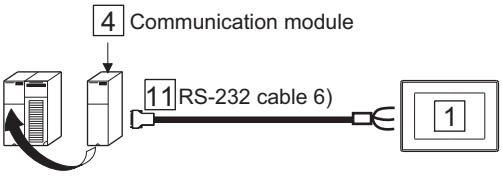
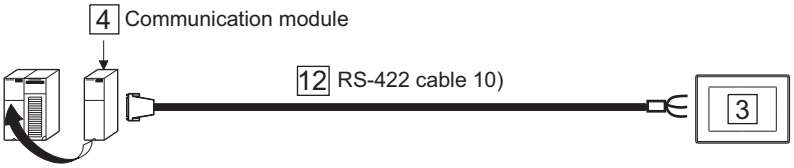
When connecting to PROGIC-8 (port 2)

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	8 RS-232 cable 2) — 1	GT16 GT15 GT11 Serial

When connecting to CP-9300MS (CP-9300MC compatible/non-compatible)

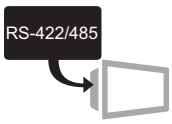
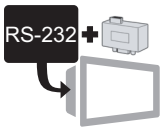
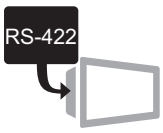
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	9 RS-232 cable 3) — 1	GT16 GT15 GT11 Serial

When connecting to MP-920 (217IF)

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.		GT16 GT15 GT11 Serial GT105□ 4□
			GT16
			GT16
			GT16 GT15 GT11 Serial GT105□ 4□
			GT24V 10 20 30 (RS-232)
			GT24V 10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

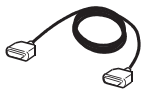
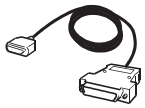
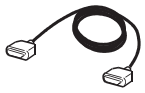
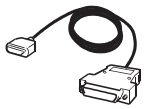
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Communication module	217IF

4 is a product manufactured by YASKAWA Electric Corporation. For details of this product, contact YASKAWA Electric Corporation.

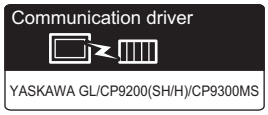
(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-422 cable 2) • Between Communication module and GOT	To be prepared by the user. Section 22.1.7 Connection Cable	GT16
	7	RS-232 cable 1)*1 • Between CPU and GOT • Between Communication module and GOT	GT09-C30R20201-9P(3m)*2	GT16 GT15 GT11 Serial GT10 5□ 4□
	8	RS-232 cable 2)*1 • Between CPU and GOT	GT09-C30R20202-15P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	9	RS-232 cable 3)*1 • Between CPU and GOT	GT09-C30R20203-9P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	10	RS-422 cable 6)*1 • Between Communication module and GOT • Between Communication Module and RS-422 connector conversion cable	To be prepared by the user. Section 22.1.7 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□
	11	RS-232 cable 6) • Between CPU and GOT • Between Communication module and GOT	To be prepared by the user. Section 22.1.7 Connection Cable	GT24V10 20 30 (RS-232)
	12	RS-422 cable 10) • Between Communication module and GOT	To be prepared by the user. Section 22.1.7 Connection Cable	GT24V10 20 30 (RS-422)

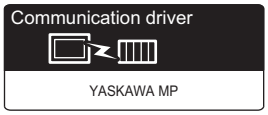
*1 The RS-232 cable can be prepared by the user.(Section 22.1.7 Connection Cable)

*2 When connecting the CP9200 (N), prepare the RS-232 cable. (Section 22.1.7 Connection Cable)

22.1.4 System configuration(MP-940)



(For GT16, GT15,GT11)



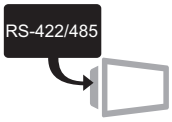
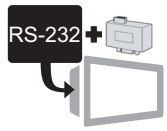
(For GT10)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	6 RS-232 cable 4) — 1	GT16 GT15 GT11 Serial GT10
	300m or less	5 RS-422 cable 3) — 2	GT16
		7 RS-422 cable 7) — 4 RS-422 connector conversion cable — 2	GT16
		7 RS-422 cable 7) — 3	GT16 GT15 GT11 Serial GT10
	Differs according to PLC side specifications.	8 RS-232 cable 7) — 1	GT24V10 20 30 (RS-232)
		9 RS-422 cable 9) — 3	GT24V10 20 30 (RS-422)

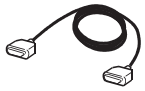
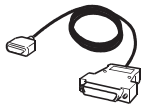
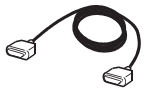
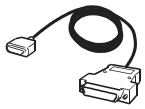
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	5	RS-422 cable 3) • Between CPU and GOT	To be prepared by the user. ☞ Section 22.1.7 Connection Cable	GT16
	6	RS-232 cable 4)*1 • Between CPU and GOT	GT09-C30R20204-14P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	7	RS-422 cable 3)*1 • Between CPU and GOT	GT09-C30R40202-14P(3m) GT09-C100R40202-14P(10m) GT09-C200R40202-14P(20m) GT09-C300R40202-14P(30m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	8	RS-232 cable 7) • Between CPU and GOT	To be prepared by the user. ☞ Section 22.1.7 Connection Cable	GT24V10 20 30 (RS-232)
	9	RS-422 cable 9) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable	To be prepared by the user. ☞ Section 22.1.7 Connection Cable	GT24V10 20 30 (RS-422)

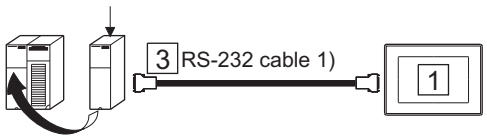
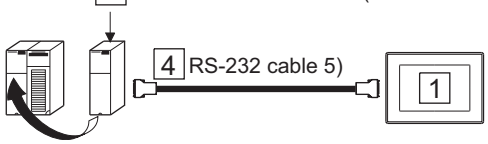
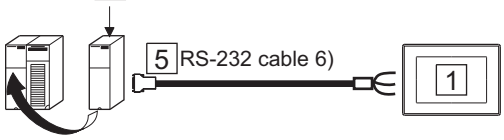
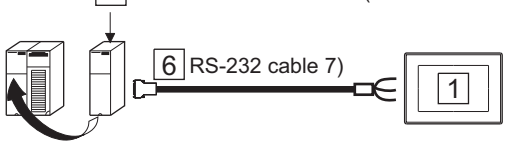
*1 The RS-232 and RS-422 cable can be prepared by the user.(☞ Section 22.1.7 Connection Cable)

22.1.5 System configuration(CP-9200SH)

Communication driver: YASKAWA GL/CP9200(SH/H)/CP9300MS (For GT16, GT15,GT11)

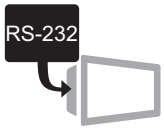
Communication driver: YASKAWA MP (For GT10)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	2 Communication module (CN1 connection) 	GT16 GT15 GT11 Serial GT105□ 4□
		2 Communication module (CN2 connection) 	GT16 GT15 GT11 Serial GT105□ 4□
		2 Communication module (CN1 connection) 	GT24V 10 20 30 (RS-232)
		2 Communication module (CN2 connection) 	GT24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

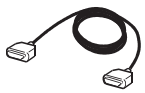
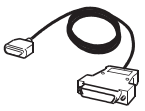
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	Communication module	CP-217IF

2 is a product manufactured by YASKAWA Electric Corporation. For details of this product, contact YASKAWA Electric Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	3	RS-232 cable 3)*1 • Between Communication module (CN1 connection) and GOT	GT09-C30R20203-9P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	4	RS-232 cable 5)*1 • Between Communication module (CN2 connection) and GOT	GT09-C30R20205-25P(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□
	5	RS-232 cable 6) • Between Communication module (CN1 connection) and GOT	To be prepared by the user. Section 22.1.7 Connection Cable	GT24V10 20 30 (RS-232)
	6	RS-232 cable 8) • Between Communication module (CN2 connection) and GOT		

*1 The RS-232 cable can be prepared by the user.(Section 22.1.7 Connection Cable)

22.1.6 System configuration(MP2200 or MP2300)

Communication driver
YASKAWA GL/CP9200(SH/H)/CP9300MS
(For GT16, GT15,GT11)

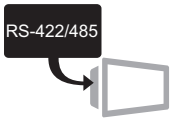
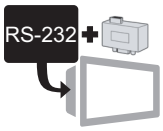
Communication driver
YASKAWA MP
(For GT10)

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to PLC side specifications.	4 5 Communication module 8 RS-232 cable 1) 1	GT16 GT15 GT11 Serial GT10 5□ 4□
		4 Communication module 7 RS-422 cable 4) 2	GT16
		4 Communication module 9 RS-422 cable 8) 6 RS-422 connector conversion cable 2	GT16
		4 Communication module 9 RS-422 cable 8) 3	GT16 GT15 GT11 Serial GT10 5□ 4□
1	Differs according to PLC side specifications.	4 5 Communication module 10 RS-232 cable 6) 1	GT24V10 20 30 (RS-232)
		4 Communication module 11 RS-422 cable 11) 2	GT24V10 20 30 (RS-422)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

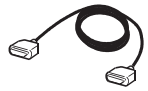
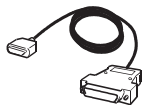
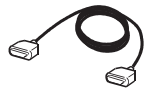
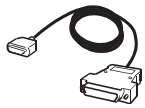
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Communication module	217IF-01
	5		218IF-01

4 and 5 are products manufactured by YASKAWA Electric Corporation. For details of these products, contact YASKAWA Electric Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-422 cable 4) • Between Communication module and GOT	To be prepared by the user. ☞ Section 22.1.7 Connection Cable	GT16
	8	RS-232 cable 1)*1 • Between Communication module and GOT	GT09-C30R20201-9P(3m)	GT16 GT15 GT11 Serial GT105□4□
	9	RS-422 cable 8)*1 • Between Communication module and GOT • Between Communication Module and RS-422 connector conversion cable	To be prepared by the user. ☞ Section 22.1.7 Connection Cable	GT16 GT15 GT11 Serial GT105□4□
	10	RS-232 cable 6) • Between Communication module and GOT	To be prepared by the user. ☞ Section 22.1.7 Connection Cable	GT24V10 20 30 (RS-232)
	11	RS-422 cable 11) • Between Communication module and GOT	To be prepared by the user. ☞ Section 22.1.7 Connection Cable	GT24V10 20 30 (RS-422)

*1 The RS-232 and RS-422 cable can be prepared by the user.(☞ Section 22.1.7 Connection Cable)

22.1.7 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

(1) RS-232 cable (☞ Section 1)

Model			Connection cable			
			GT16	GT15, GT11	GT105□, GT104□	GT1030, GT1020
PLC CPU	GL120		RS-232 cable 1)	RS-232 cable 1)	—	—
	GL130				—	—
	CP-9300MS (CP-9300MC compatible/non-compatible)		RS-232 cable 3)	RS-232 cable 3)	—	—
	CP-9200(H)		RS-232 cable 1)	RS-232 cable 1)	—	—
	PROGIC-8	Connecting to port 1	RS-232 cable 1)	RS-232 cable 1)	—	—
		Connecting to port 2	RS-232 cable 2)	RS-232 cable 2)	—	—
	MP-920		RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 6)
	MP-930					
	MP-940		RS-232 cable 4)	RS-232 cable 4)	RS-232 cable 4)	RS-422 cable 7)
MEMOBUS module	JAMSC-IF60		RS-232 cable 1)	RS-232 cable 1)	—	—
	JAMSC-IF61				—	—
Communication module	217IF		RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 6)
	CP-217IF	CN1 connection	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 6)
		CN2 connection	RS-232 cable 5)	RS-232 cable 5)	RS-232 cable 5)	RS-232 cable 8)
	217IF-01		RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 6)
	218IF-01		RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 6)

(2) RS-422 cable (☞ Section 3)

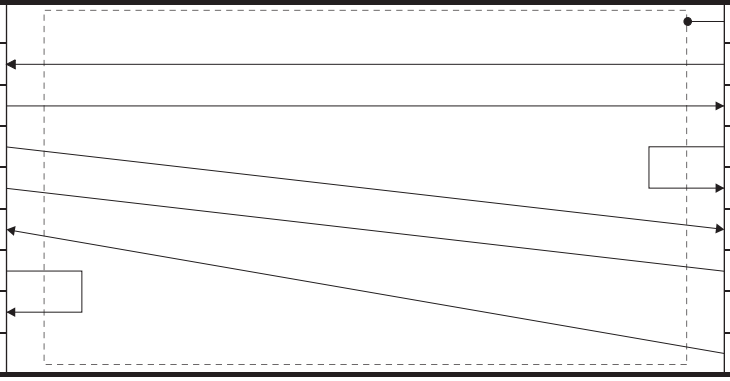
Model		Connection cable			
		GT16	GT15, GT11	GT105□, GT104□	GT1030, GT1020
PLC CPU	MP-940	RS-422 cable 3) RS-422 cable 7)	RS-422 cable 7)	RS-422 cable 7)	RS-422 cable 9)
MEMOBUS module	JAMSC-120NOM27100	RS-422 cable 1) RS-422 cable 5)	RS-422 cable 5)	—	—
	JAMSC-IF612	RS-422 cable 1) RS-422 cable 5)	RS-422 cable 5)	—	—
Communication module	217IF	RS-422 cable 2) RS-422 cable 6)	RS-422 cable 6)	RS-422 cable 6)	RS-422 cable 10)
	217IF-01	RS-422 cable 4) RS-422 cable 8)	RS-422 cable 8)	RS-422 cable 8)	RS-422 cable 11)

1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

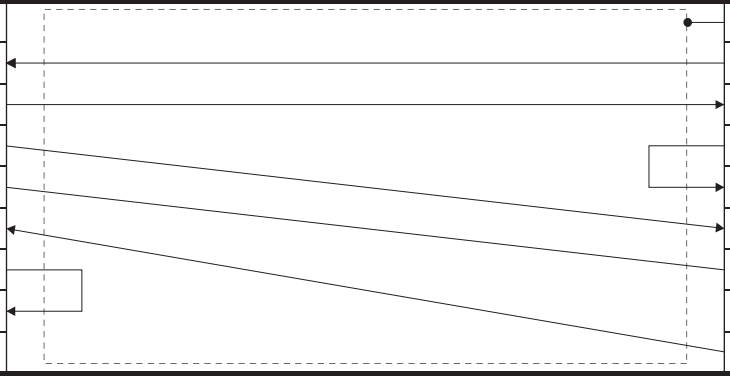
(1) Connection diagram

(a) RS-232 cable 1) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	FG
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	RTS
SG	5		5	CTS
DR(DSR)	6		6	DSR
RS(RTS)	7		7	GND
CS(CTS)	8		8	EST
—	9		9	DTR

*1 GT16:CD, GT15 : CD, GT11: NC, GT105□:NC, GT104□:NC

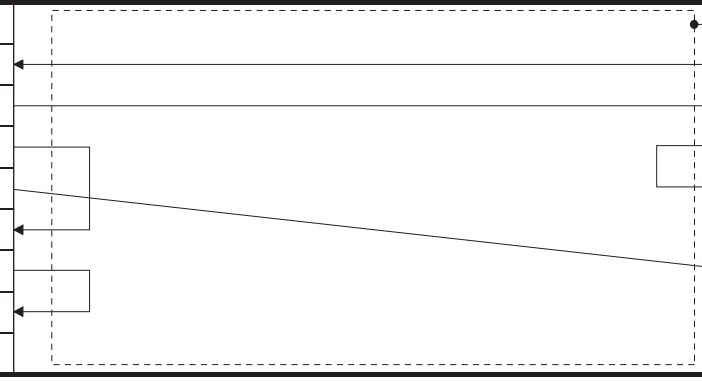
(b) RS-232 cable 2) (For GT16, GT15, GT11)

GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		1	FG
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	RTS
SG	5		5	CTS
DR(DSR)	6		6	DSR
RS(RTS)	7		7	GND
CS(CTS)	8		8	NC
—	9		9	DTR

*2 GT16:CD, GT15 : CD, GT11: NC

(c) RS-232 cable 3) (For GT16, GT15, GT11, GT105☐, GT104☐)

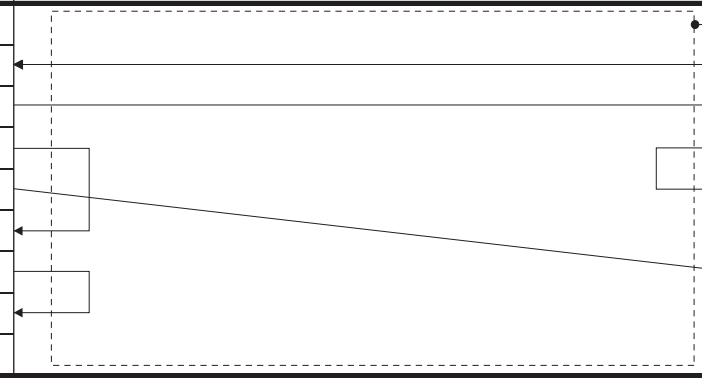
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*3	1		1	FG
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	RTS
SG	5		5	OP/CTS
DR(DSR)	6		6	DSR
RS(RTS)	7		7	GND
CS(CTS)	8		8	PWR
—	9		9	DTR



*3 GT16:CD, GT15 : CD, GT11: NC, GT105☐:NC, GT104☐:NC

(d) RS-232 cable 4) (For GT16, GT15, GT11, GT105☐, GT104☐)

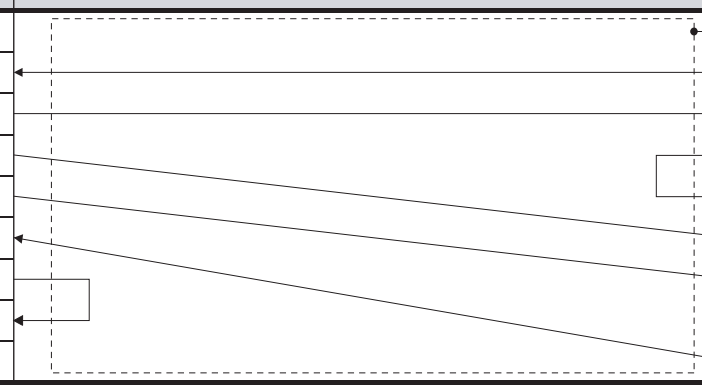
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		Clamped by hood	
RD(RXD)	2		1	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		12	RTS
SG	5		6	CTS
DR(DSR)	6		2	—
RS(RTS)	7		14	GND
CS(CTS)	8			
—	9			



*2 GT16:CD, GT15 : CD, GT11: NC, GT105☐:NC, GT104☐:NC

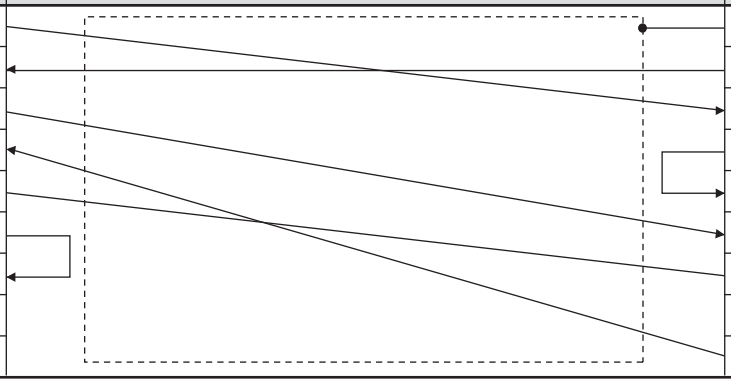
(e) RS-232 cable 5) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*3	1		1	FG
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	DSR
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	DTR

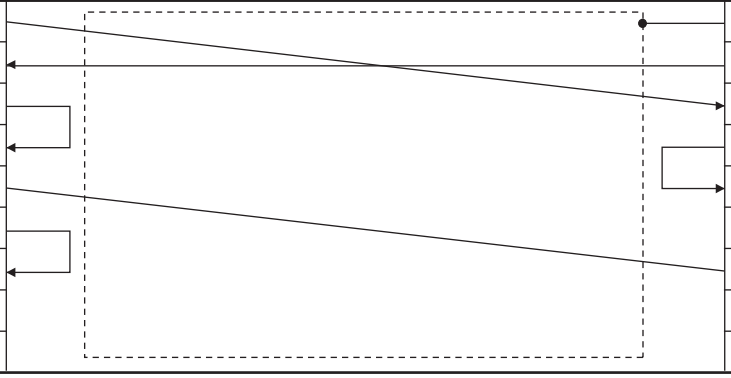


*3 GT16:CD, GT15 : CD, GT11: NC, GT105☐:NC, GT104☐:NC

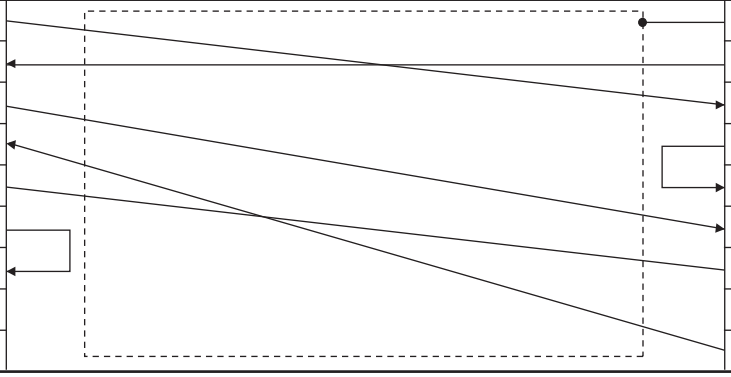
(f) RS-232 cable 6) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	YASKAWA PLC side Pin No.	YASKAWA PLC side Signal name
SD		1	FG
RD		2	TXD
ER		3	RXD
DR		4	RTS
SG		5	CTS
RS		6	DSR
CS		7	GND
NC		8	EST
NC		9	DTR

(g) RS-232 cable 7) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	YASKAWA PLC side Pin No.	YASKAWA PLC side Signal name
SD		Clamped by hood	
RD		1	TXD
ER		3	RXD
DR		12	RTS
SG		6	CTS
RS		2	-
CS		14	GND
NC			
NC			

(h) RS-232 cable 8) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	YASKAWA PLC side Pin No.	YASKAWA PLC side Signal name
SD		1	FG
RD		2	TXD
ER		3	RXD
DR		4	RS
SG		5	CS
RS		6	DSR
CS		7	SG
NC		8	CD
NC		20	DTR

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

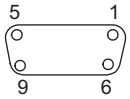
☞ GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5BK or corresponding product)of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

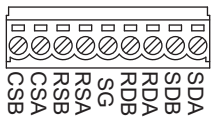
GOT main part connector
see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a
GOT main part



9-pin terminal block

(c) YASKAWA PLC side connector

Use the connector compatible with the YASKAWA PLC side module.
For details, refer to the following manual.

☞ User's Manual for the YASKAWA PLC

3 Precautions when preparing a cable

The maximum length of the RS-232 cable differs according to the specifications of the YASKAWA PLC side.
For details, refer to the following manual:

☞ User's Manual for the YASKAWA PLC

4 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

(1) Connection diagram

(a) RS-422 cable 1) (For GT16)

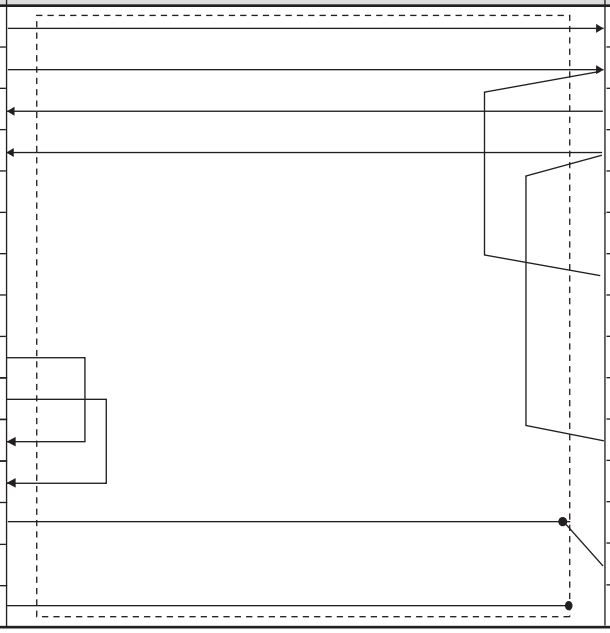
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		3	RDA
SDB1(TXD1-)	2		6	RDB
RDA1(RXD1+)	3		2	SDA
RDB1(RXD1-)	4		9	SDB
SDA2(TXD2+)	5		1	PGND
SDB2(TXD2-)	6		4	Receiving side termination
RDA2(RXD2+)	7		8	Sending side termination
RDB2(RXD2-)	8		7	SG
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

(b) RS-422 cable 2) (For GT16)

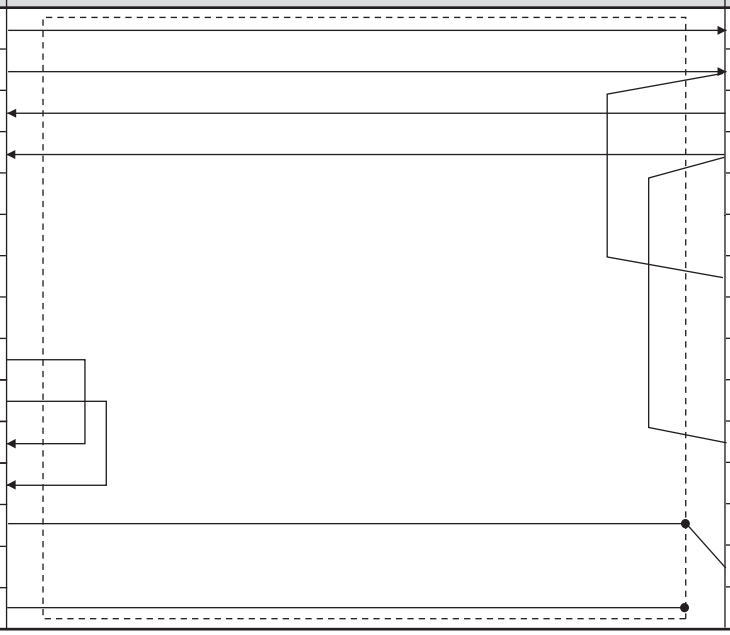
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		2	RX+
SDB1(TXD1-)	2		1	RX-
RDA1(RXD1+)	3		7	TX+
RDB1(RXD1-)	4		5	TXR+
SDA2(TXD2+)	5		3	NC
SDB2(TXD2-)	6		4	RXR+
RDA2(RXD2+)	7		6	TX-
RDB2(RXD2-)	8		8	SG
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			

* The terminating resistor (120Ω) is valid by connecting pin 1 with pin 4 and pin 5 with pin 6 of the YASKAWA PLC side.

(c) RS-422 cable 3) (For GT16)

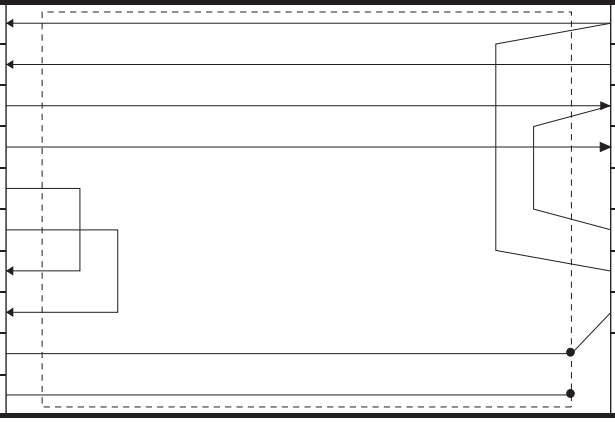
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		3	RX+
SDB1(TXD1-)	2		4	RX-
RDA1(RXD1+)	3		1	TX+
RDB1(RXD1-)	4		2	TX-
SDA2(TXD2+)	5		5	-
SDB2(TXD2-)	6		6	RX-
RDA2(RXD2+)	7		7	Receiving side termination
RDB2(RXD2-)	8		8	TX+
RSA(RTS+)	9		9	TX-
RSB(RTS-)	10		10	RX+
CSA(CTS+)	11		11	Sending side termination
CSB(CTS-)	12		12	-
SG	13		13	VCC
NC	14		14	GND
	Shell			

(d) RS-422 cable 4) (For GT16)

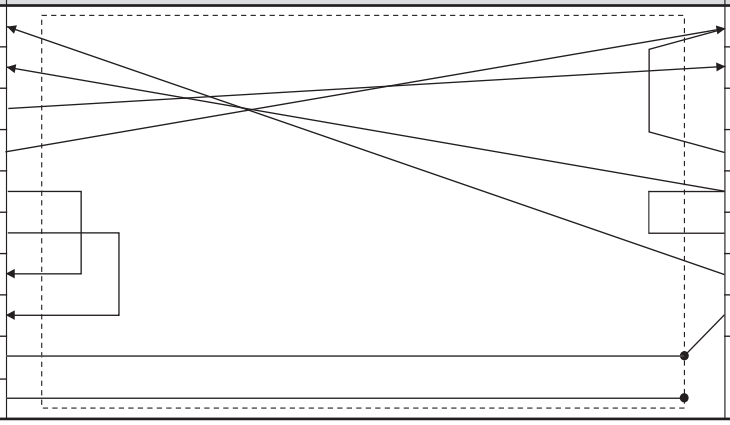
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		3	RX+
SDB1(TXD1-)	2		4	RX-
RDA1(RXD1+)	3		1	TX+
RDB1(RXD1-)	4		2	TX-
SDA2(TXD2+)	5		5	-
SDB2(TXD2-)	6		6	RX-
RDA2(RXD2+)	7		7	RXR
RDB2(RXD2-)	8		8	TX+
RSA(RTS+)	9		9	TX-
RSB(RTS-)	10		10	RX+
CSA(CTS+)	11		11	TXR
CSB(CTS-)	12		12	-
SG	13		13	VCC
NC	14		14	GND
	Shell			

* Connect RXR with RX(-) and TXR with TX(-) of 217IF01, and insert the terminating resistor.

(e) RS-422 cable 5) (For GT16, GT15, GT11)

GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		2	SDA
RDB	7		9	SDB
SDA	1		3	RDA
SDB	6		6	RDB
RSA	3		1	PGND
RSB	8		4	Receiving side termination
CSA	4		8	Sending side termination
CSB	9		7	SG
SG	5			
FG	—			

(f) RS-422 cable 6) (For GT16, GT15, GT11, GT105☐, GT104☐)

GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		1	RX-
RDB	7		2	RX+
SDA	1		3	—
SDB	6		4	RXR+
RSA	3		5	TXR+
RSB	8		6	TX-
CSA	4		7	TX+
CSB	9		8	SG
SG	5			
FG	—			

* The terminating resistor (120Ω) is valid by connecting pin 1 with pin 4 and pin 5 with pin 6 of the YASKAWA PLC side.

(g) RS-422 cable 7) (For GT16, GT15, GT11, GT105☐, GT104☐)

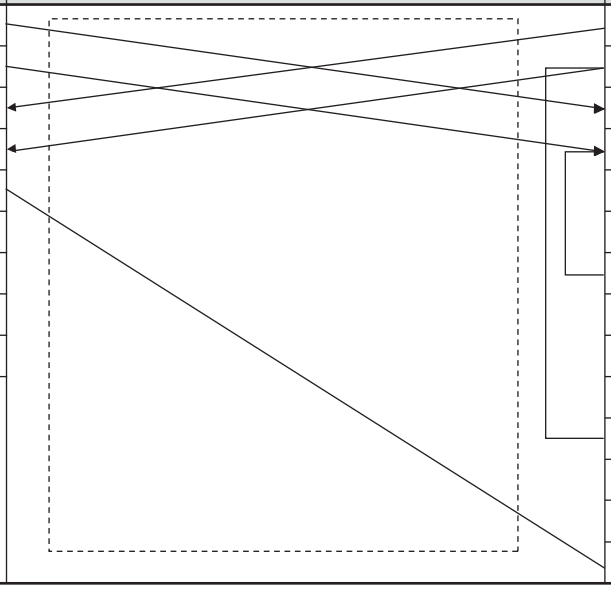
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		1	TX+
RDB	7		2	TX-
SDA	1		3	RX+
SDB	6		4	RX-
RSA	3		5	—
RSB	8		6	RX-
CSA	4		7	Receiving side termination
CSB	9		8	TX+
SG	5		9	TX-
FG	—		10	RX+
			11	Sending side termination
			12	—
			13	VCC
			14	GND

(h) RS-422 cable 8) (For GT16, GT15, GT11, GT105☐, GT104☐)

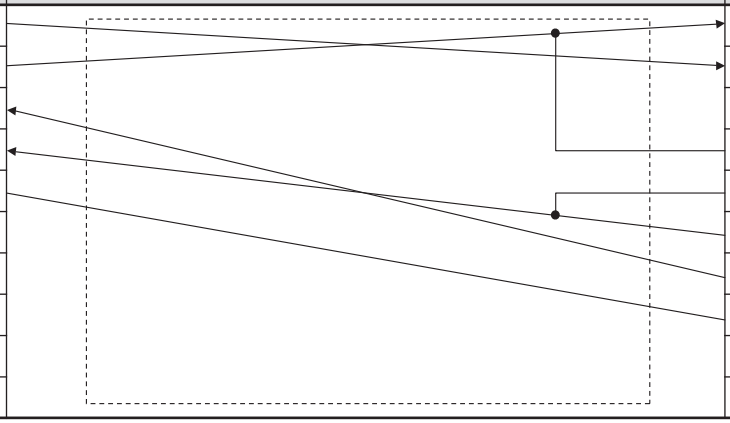
GOT side		Cable connection and signal direction	YASKAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
RDA	2		1	TX+
RDB	7		2	TX-
SDA	1		3	RX+
SDB	6		4	RX-
RSA	3		5	—
RSB	8		6	RX-
CSA	4		7	RXR
CSB	9		8	TX+
SG	5		9	TX-
FG	—		10	RX+
			11	TXR
			12	—
			13	VCC
			14	GND

* Connect RXR with RX(-) and TXR with TX(-) of 217IF01, and insert the terminating resistor.

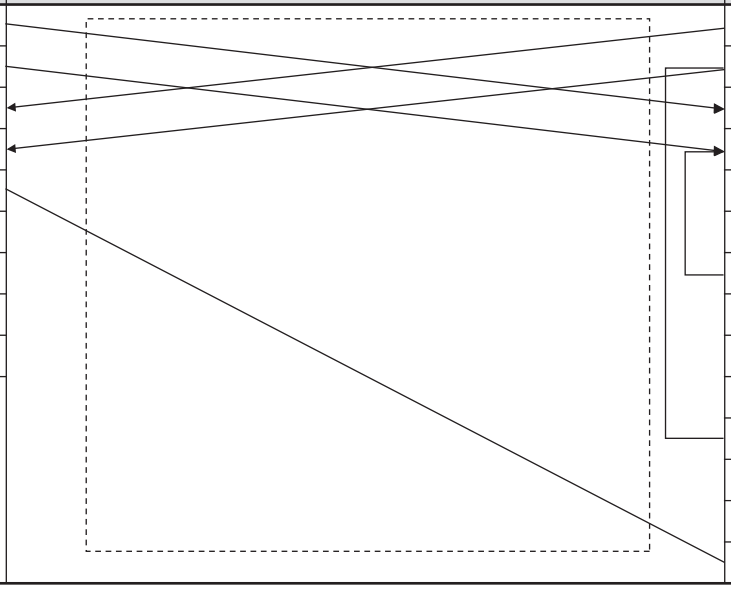
(i) RS-422 cable 9) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	YASKAWA PLC side Pin No.	YASKAWA PLC side Signal name
SDA		1	TX+
SDB		2	TX-
RDA		3	RX+
RDB		4	RX-
SG		5	—
RSA		6	RX-
RSB		7	Receiving side termination
CSA		8	TX+
CSB		9	TX-
		10	RX+
		11	Sending side termination
		12	—
		13	VCC
		14	GND

(j) RS-422 cable 10) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	YASKAWA PLC side Pin No.	YASKAWA PLC side Signal name
SDA		1	RX(-)
SDB		2	RX(+)
RDA		3	NC
RDB		4	RXR(+)
SG		5	TXR(+)
RSA		6	TX(-)
RSB		7	TX(+)
CSA		8	SG
CSB			

(k) RS-422 cable 11) (For GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	YASKAWA PLC side	
Signal name		Pin No.	Signal name
SDA		1	TX+
SDB		2	TX-
RDA		3	RX+
RDB		4	RX-
SG		5	—
RSA		6	RX-
RSB		7	RXR
CSA		8	TX+
CSB		9	TX-
		10	RX+
		11	TXR
		12	—
		13	VCC
		14	GND

5 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Model	Connetcor type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd.
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1045-Q, GT1040-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin terminal block*2	PHOENIX CONTACT Inc.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

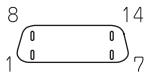
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16

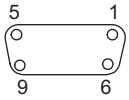
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

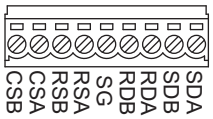
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(c) YASKAWA PLC side connector

Use the connector compatible with the YASKAWA PLC side module.

For details, refer to the following manual.

☞ User's Manual for the YASKAWA PLC

6 Precautions when preparing a cable

The length of RS-422 cable 2) must be 300m or less.

The maximum length of RS-422 cable 1) differs according to the specifications of the YASKAWA PLC side.

For details, refer to the following manual:

☞ User's Manual for the YASKAWA PLC

7 Connecting the terminating resistor

When connecting a YASKAWA PLC to a GOT, connect a terminating resistor to the YASKAWA PLC if required.

No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

☞ User's Manual for the YASKAWA PLC

22.1.8 Preparatory Procedure for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 22.1.9
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

Section 22.1.10
Checking OS installation on GOT

↓

Set the communication interface. (Communication settings)

Section 22.1.11
Setting communication interface (Communication settings)

↓

Download the project data.

Section 22.1.12
Downloading project data

↓

Attach the communication unit and connect the cable.

Section 22.1.13
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the controller.

Section 22.1.14
Verifying GOT recognizes controllers

↓

Make sure that monitoring is performed normally.

Section 22.1.15
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

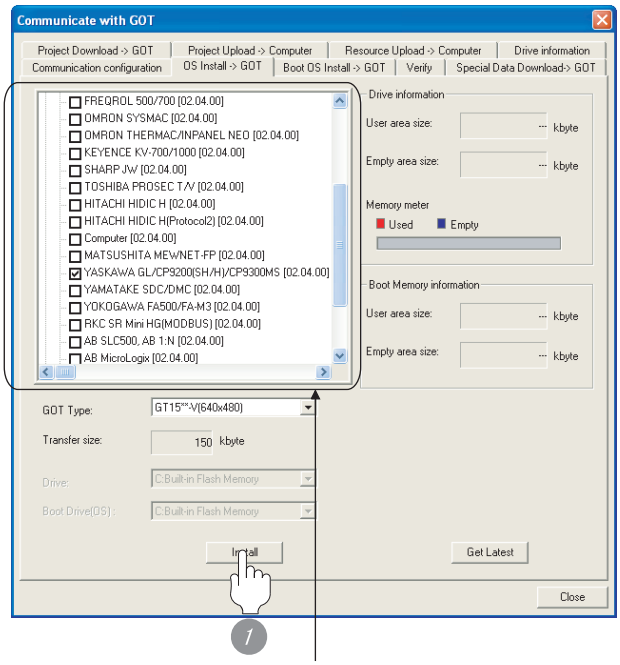
Section 22.1.16 PLC Side Setting

22.1.9 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

<GT16, GT15, GT11>
YASKAWA GL/CP9200(SH/H)/CP9300MS
<GT10>
YASKAWA MP

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

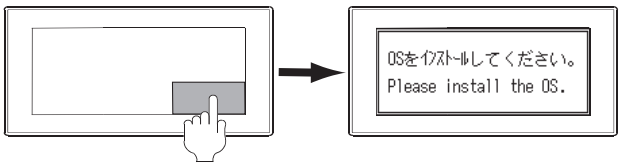
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

GT10 User's Manual

(Operating of transmission mode)



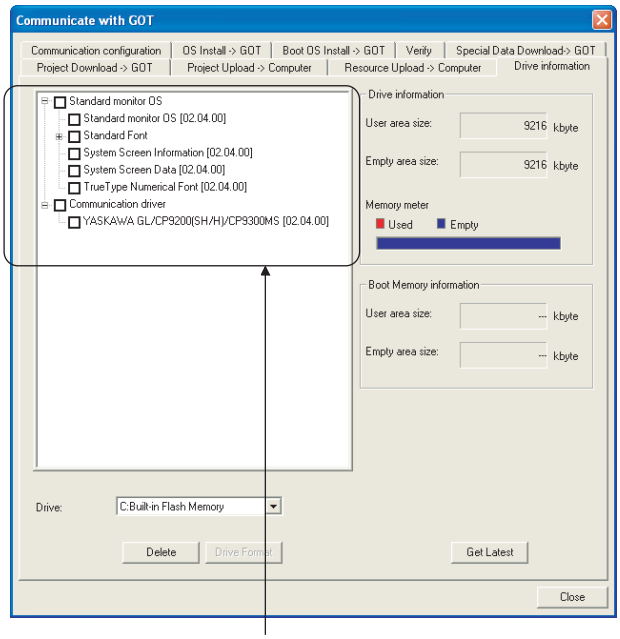
Turn on the GOT while the bottom right corner is touched.

22.1.10 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver:
   <GT16, GT15, GT11>
   YASKAWA GL/CP9200(SH/H)/CP9300MS
   <GT10>
   YASKAWA MP

22.1.11 Setting communication interface (Communication settings)

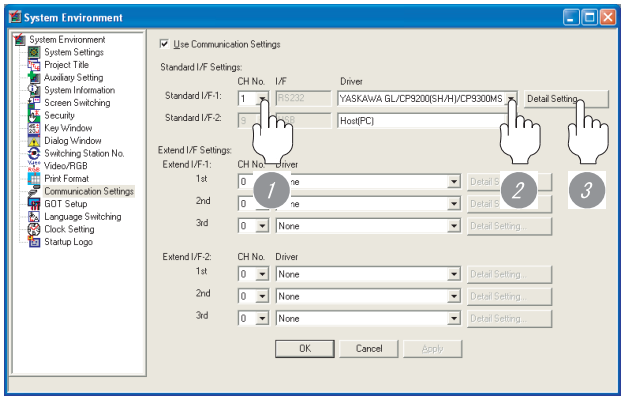
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

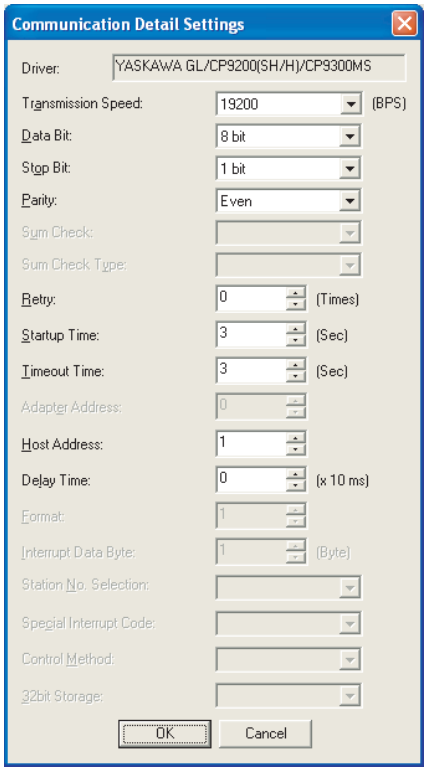
1 Set [1] to the channel No. used.

2 Set the following to the driver.
<GT16, GT15, GT11>
YASKAWA GL/CP9200(SH/H)/CP9300MS
<GT10>
YASKAWA MP

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

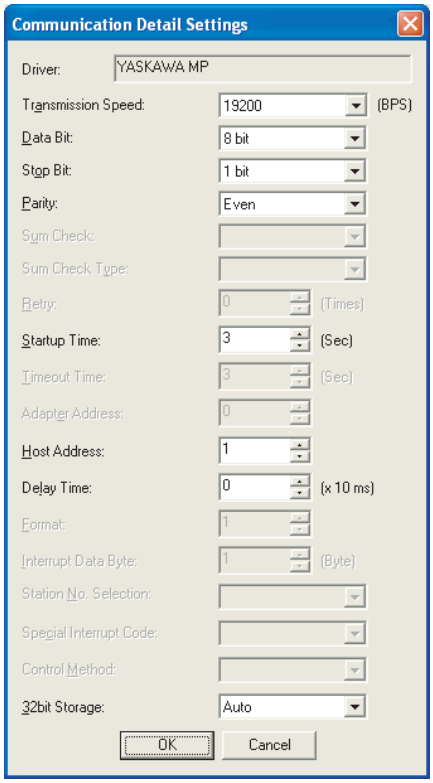
2 Communication detail settings

(1) YASKAWA GL/CP9200(SH/H)/CP9300MS



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the controller. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 30 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 1>	1 to 31
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 30 (× 10 ms)

(2) YASKAWA MP



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the controller. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 1>	1 to 31
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 30 (× 10 ms)
32bit Storage	Select the 2 words (32 bits data) storage order. <Default: Auto>	LH Order/ HL Order/ Auto

Point

(1) Delay time

When connecting to PLC CP-9200(H) and CP-9300MS, set the following.

Model name		Delay time
CP-9200(H)		30ms or more
CP-9300MS	port:0	10ms or more
	port:1	30ms or more

(2) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.

For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(3) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

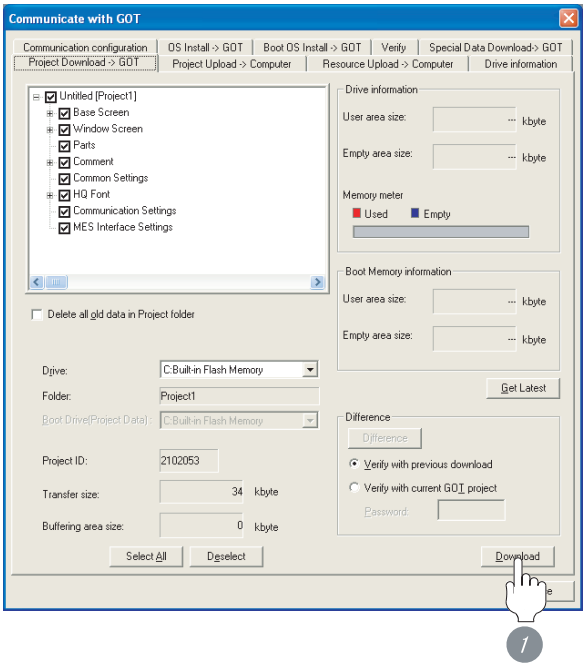
Communication settings can be changed on only GT Designer2.

22.1.12Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

22.1.13Attaching communication unit and connecting cable

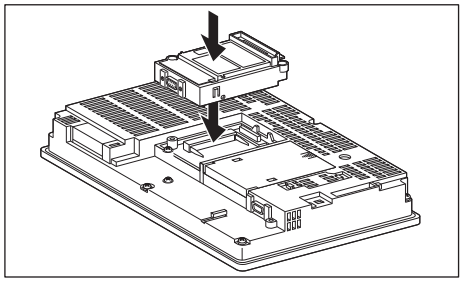
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

GT15 Serial Communication Unit User's Manual

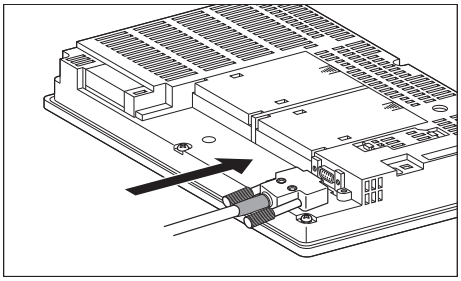
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

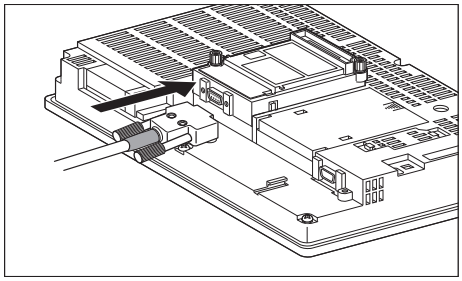
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



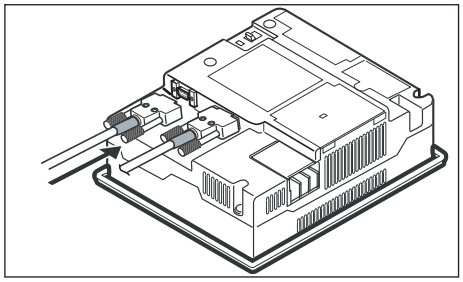
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



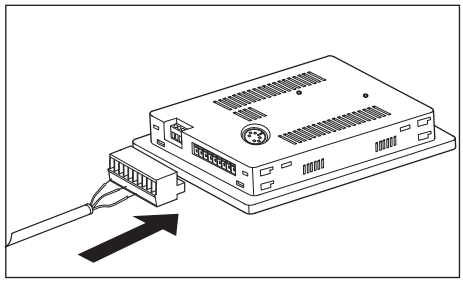
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

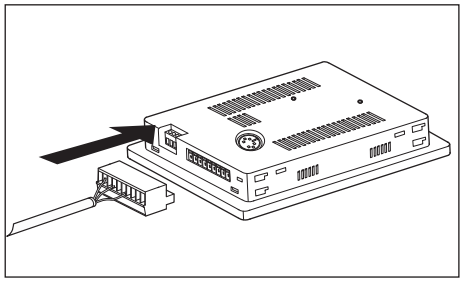


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

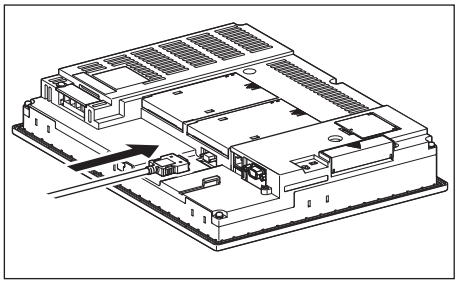


(2) How to connect the RS-422 cable

(a) For the GT16

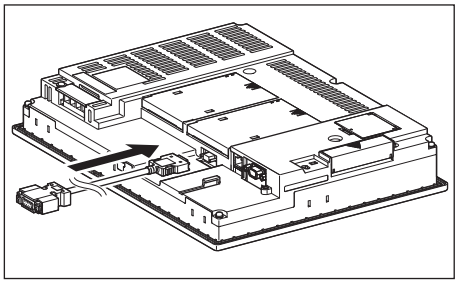
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

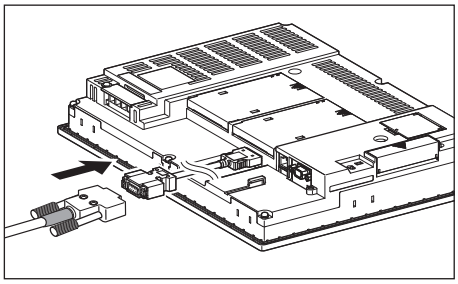


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

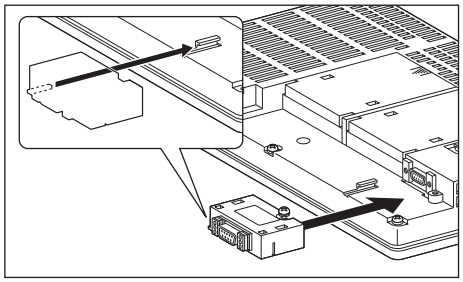


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

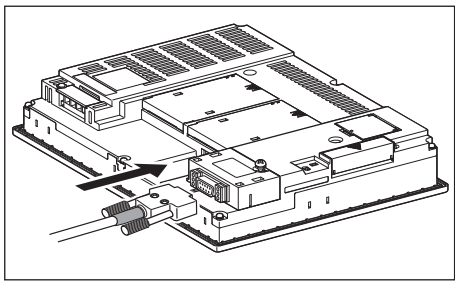


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

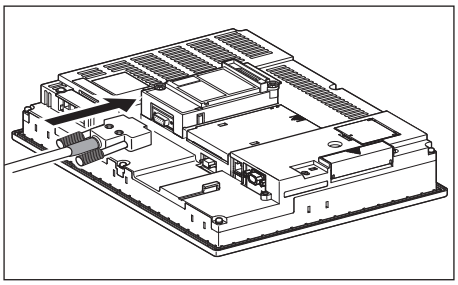


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

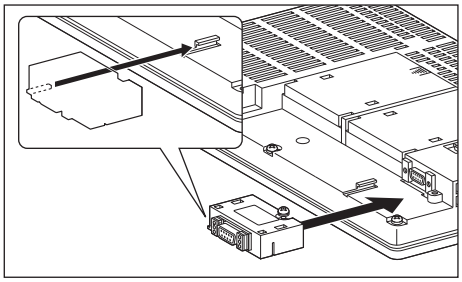
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



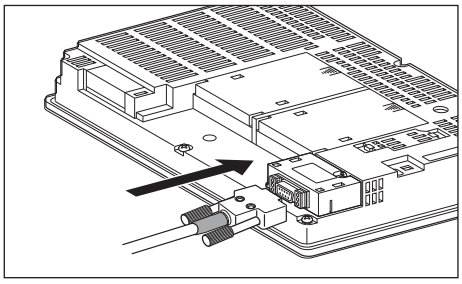
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

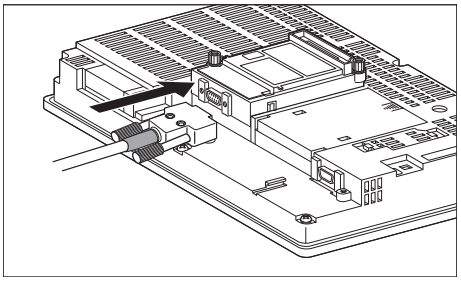


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

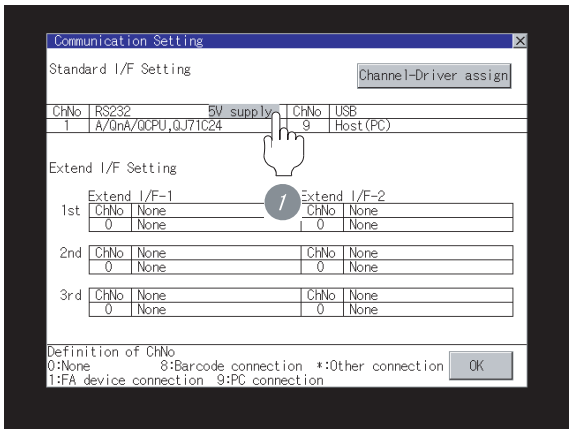
Point

When using the RS-422 conversion unit

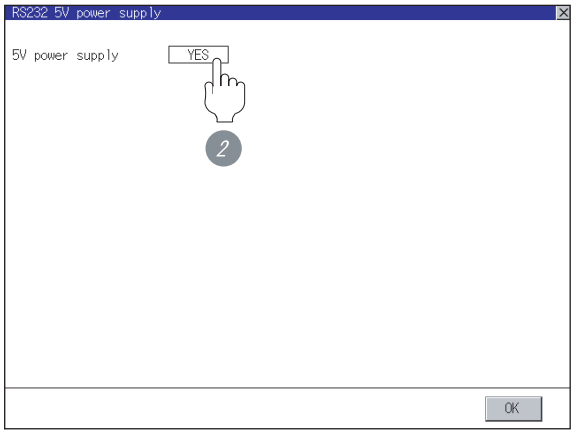
On [Communication Settings] on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

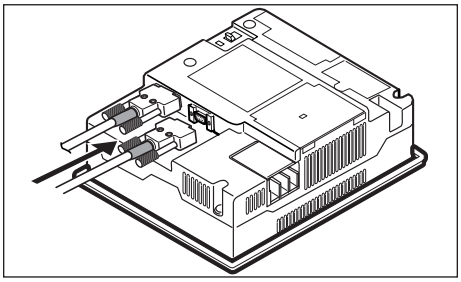


2 Set [5V power supply] to [YES].



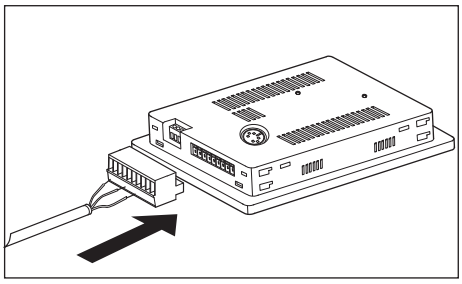
(c) In the case of the GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

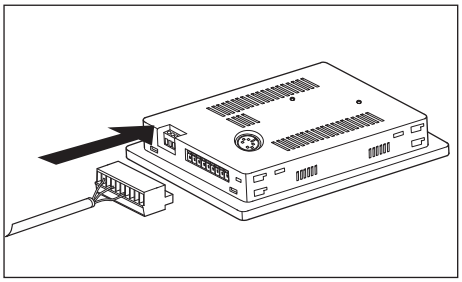


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



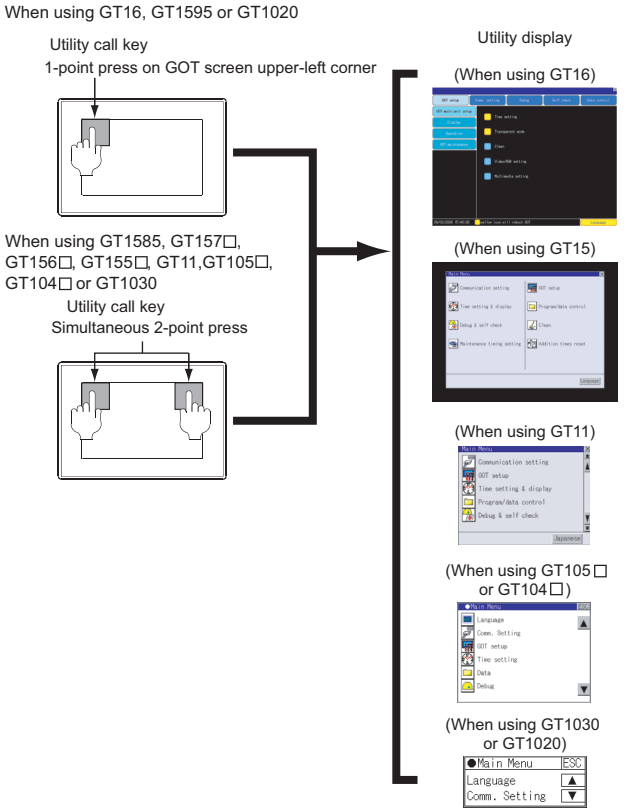
22.1.14 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

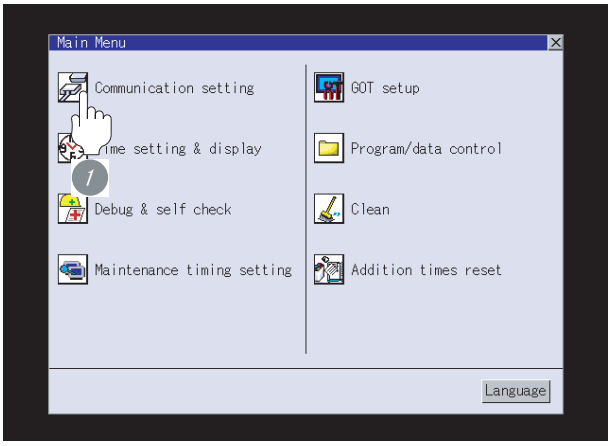


Point

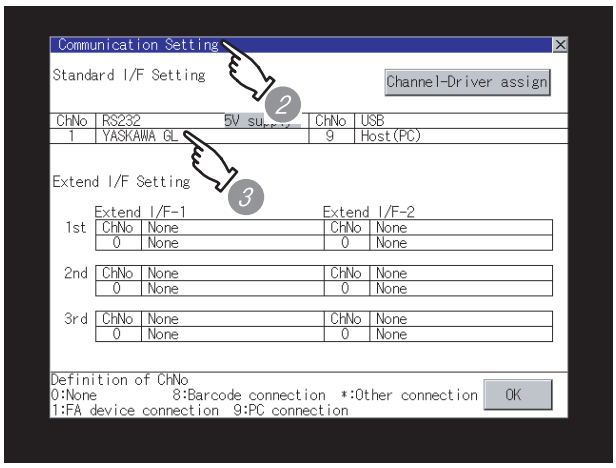
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT □ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
<GT16, GT15, GT11>
- Communication driver : YASKAWA GL

<GT10>
- Communication driver : YASKAWA MP

4 When the communication driver name is not displayed normally, carry out the following procedure again.
☞ Section 22.1.8 Preparatory Procedure for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.
☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.
☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

22.1.15Checking for normal monitoring

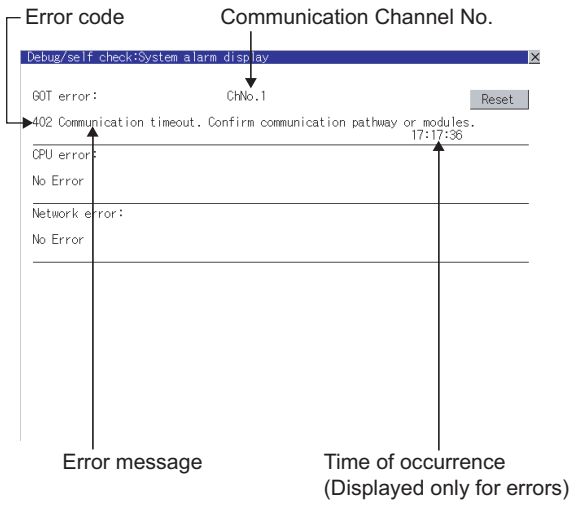
1 Check for errors occurring on the GOT.(For GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

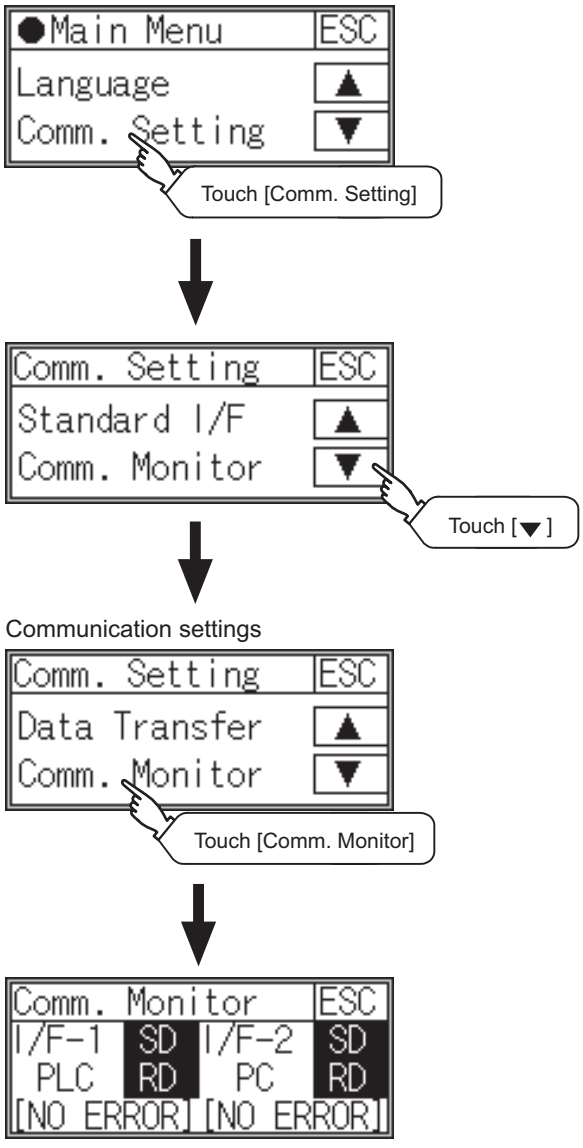
Display the communication monitoring function screen by [Main Menu]→[Comm. Setting]→[Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 22.1.16 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

22.1.16PLC Side Setting

Point

YASKAWA PLC

For details of YASKAWA PLCs, refer to the following manuals.

☞ Manuals for YASKAWA PLCs

1 Communication and port settings

Make the communication and port settings with a peripheral tool.

Device Name	Settings
Address*1	1 to 31
Protocol	MEMOBUS
Mode	RTU
Transmission speed*2*3	4800bps, 9600bps, 19200bps, 38400bps, 57600bps
Data length	8 bits
Stop bit	1 bit
Parity bit	Even
Error check	CRC16

*1 Set the address according to the Host Address setting on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
☞ Section 22.1.11 Setting communication interface (Communication settings)

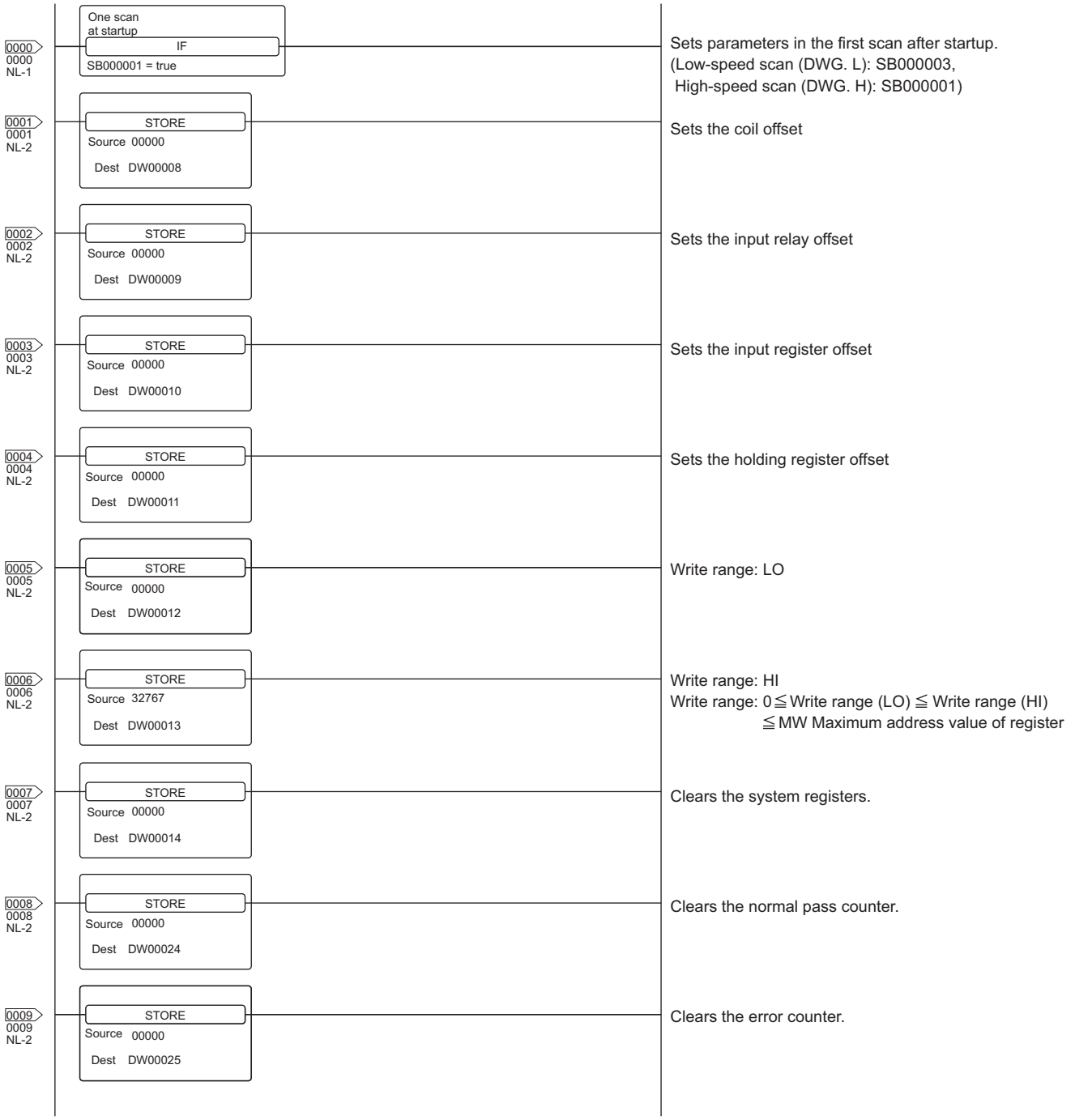
*2 Only transmission speeds available on the GOT side are shown.
Also, the setting range differs depending on the YASKAWA PLC model.

*3 Set the same transmission speed as that of the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 22.1.11 Setting communication interface (Communication settings)

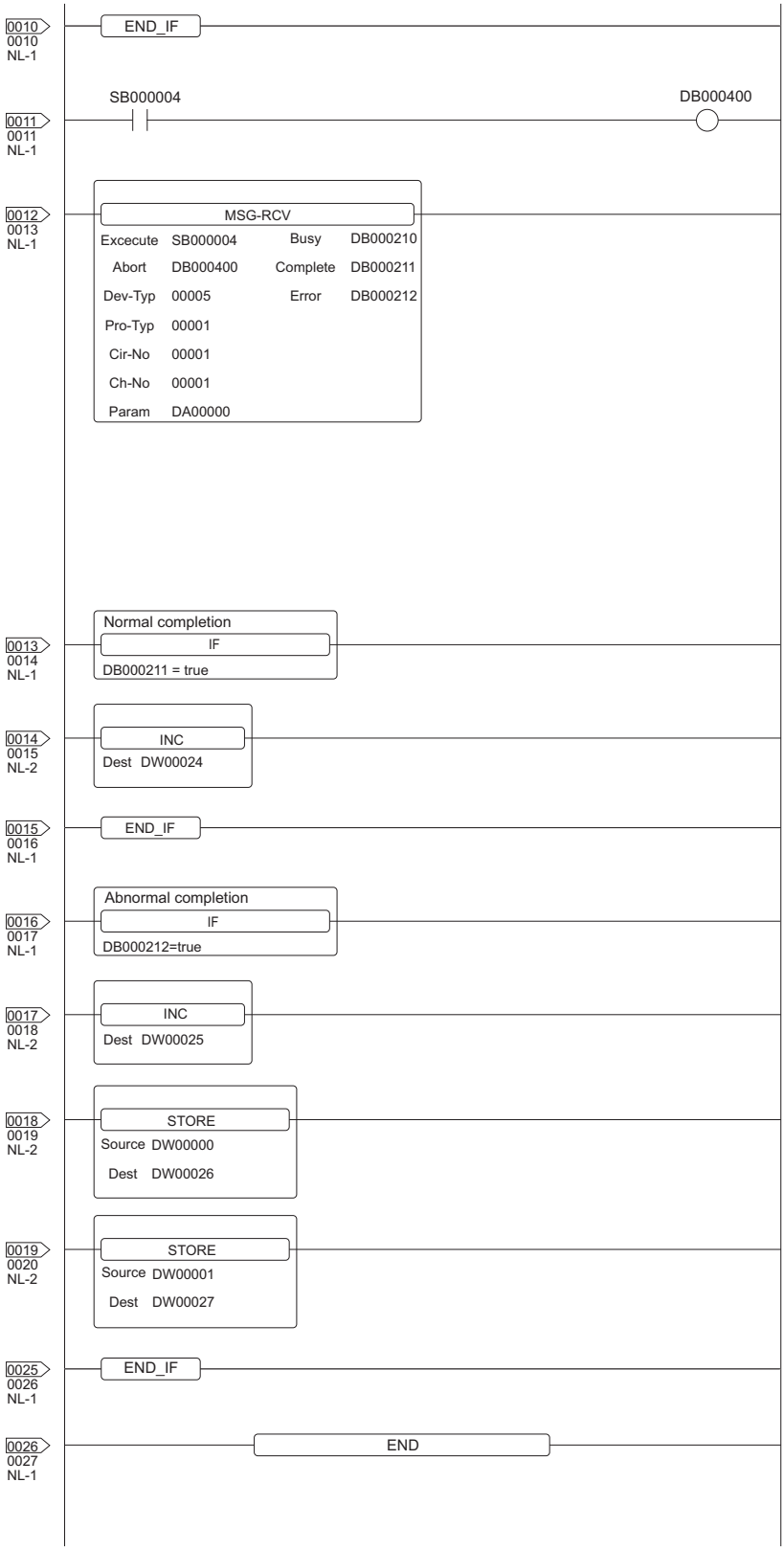
2 Sequence program

To communicate the YASKAWA PLCs with the GOT1000 series, the ladder program to receive messages is required.

The following shows an example ladder program for MP2000 series.



(Continued to next page)


0010
0010
NL-1
END_IF
Parameter settings completed.
SB000004
DB000400
0011
0011
NL-1
Sends a Message Receive instruction(Execute).
0012
0013
NL-1
MSG-RCV
Excecute SB000004
Busy DB000210
Abort DB000400
Complete DB000211
Dev-Typ 00005
Error DB000212
Pro-Typ 00001
Cir-No 00001
Ch-No 00001
Param DA00000
Message receive function (MSG-RCV)
When the receive message command coil (Execute) turns on, the executing coil (Busy) turns on.
The normal completion coil (Complete) or abnormal completion coil (Error) turns on at the completion of processing.
Receive message abort coil
Communication device type (Dev-Typ)
: 5 (=217IF)
Communication protocols (Pro-Typ)
: 1 (MEMOBUS)
Line number (Cir-No)
: 1 (For 217IF, any of 1 to 16 set in (2))
Transmission buffer channel number (Cir-No)
: 1 (Always 1 for 217IF)
Normal completion
0013
0014
NL-1
IF
DB000211 = true
Checking the normal completion
(Does the normal completion coil turn on?)
0014
0015
NL-2
INC
Dest DW00024
Increments the normal pass counter by 1.
0015
0016
NL-1
END_IF
Abnormal completion
0016
0017
NL-1
IF
DB000212=true
Checking the abnormal completion
(Does the abnormal completion coil turn on?)
0017
0018
NL-2
INC
Dest DW00025
Increments the abnormal pass counter by 1.
0018
0019
NL-2
STORE
Source DW00000
Dest DW00026
Stores the processing results
0019
0020
NL-2
STORE
Source DW00001
Dest DW00027
Stores the status
0025
0026
NL-1
END_IF
0026
0027
NL-1
END

22.2 Ethernet Connection

Select a system configuration suitable for your application.

Point

Conventions used in this section

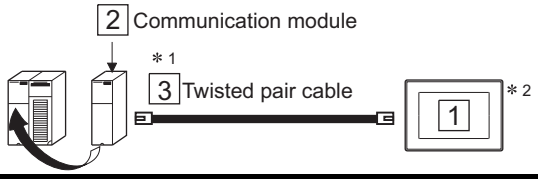
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

22.2.1 System configuration(MP-920)

Communication driver

Ethernet(YASKAWA)/Gateway

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
10	100m or less*3	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.

GT16 User's Manual (Hardware)

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model name
	2	Communication module	218IF

2 is a product manufactured by YASKAWA Electric Corporation. For details of this product, contact YASKAWA Electric Corporation.

(3) Cable

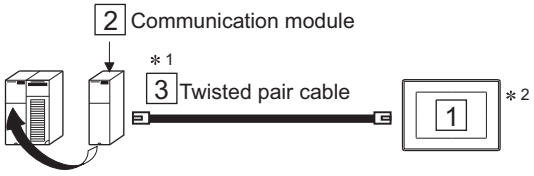
Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

22.2.2 System configuration(MP2200 or MP2300)

Communication driver

Ethernet(YASKAWA)/Gateway

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
10	100m or less*3	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

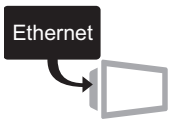
*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.

☞ GT16 User's Manual (Hardware)

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model
	2	Communication module	218IF-01

2 is a product manufactured by YASKAWA Electric Corporation. For details of this product, contact YASKAWA Electric Corporation.

(3) Cable

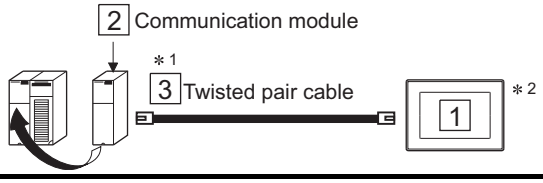
Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

22.2.3 System configuration (CP-9200SH, CP-312)

Communication driver

Ethernet(YASKAWA)/Gateway

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
10	100m or less*3	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

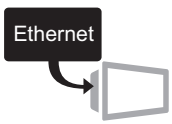
*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.

GT16 User's Manual (Hardware)

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model
	2	Communication module	CP-218IF

2 is a product manufactured by YASKAWA Electric Corporation. For details of this product, contact YASKAWA Electric Corporation.

(3) Cable

Image	No.	Name	Model
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

22.2.4 Preparatory procedures for monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 22.2.5
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 22.2.6
Checking OS installation on GOT

Set the communication interface. (Communication settings)

Section 22.2.7
Setting communication interface (Communication settings)

Download the project data.

Section 22.2.8
Downloading project data

Attach the communication unit and connect the cable.

Section 22.2.9
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the controller.

Section 22.2.10
Verifying GOT recognizes controller

Make sure that monitoring is performed normally.

Section 22.2.11
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

Section 22.2.12 PLC side setting (MP2000 series, MP920 series)

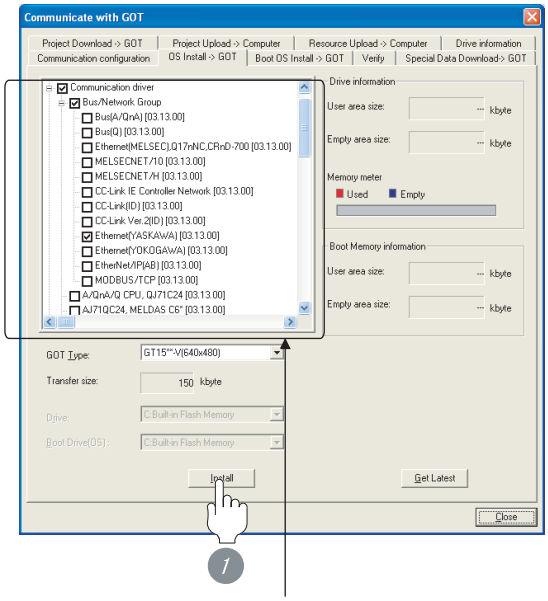
Section 22.2.13 PLC side setting (CP-9200SH series, CP-312 series)

22.2.5 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
Ethernet (YASKAWA)

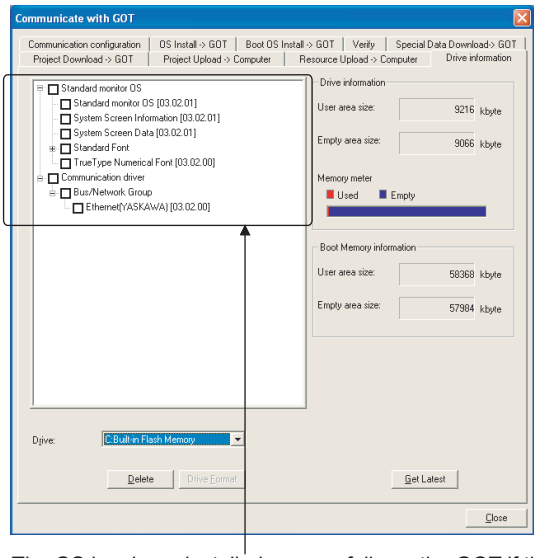
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

22.2.6 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Ethernet (YASKAWA)

22.2.7 Setting communication interface (Communication settings)

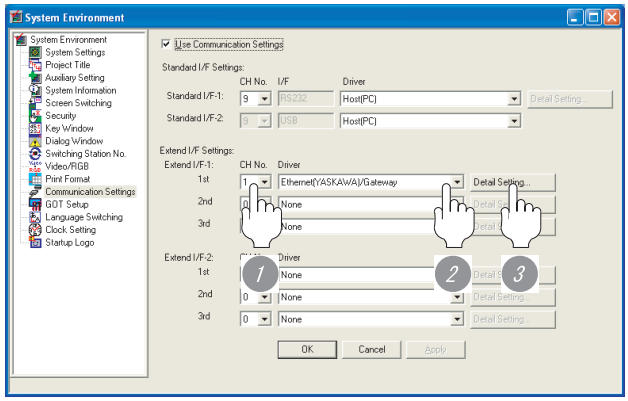
Make the GOT communication interface settings on [Communication Settings] and [Ethernet] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] and [Ethernet] of GT Designer2, refer to the following manual.

GT Designer2 Version☐ Screen Design Manual

1 Communication settings



(For GT15)

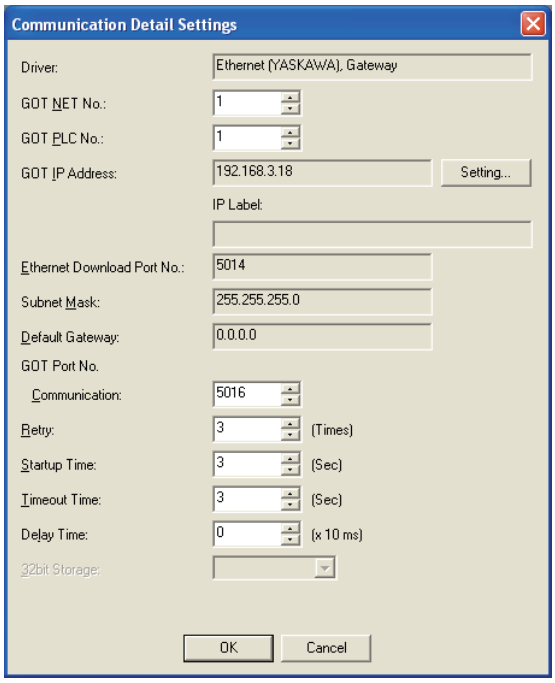
1 Set [1] to the channel No. used.

2 Set the driver to [Ethernet(YASKAWA)/Gateway].

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

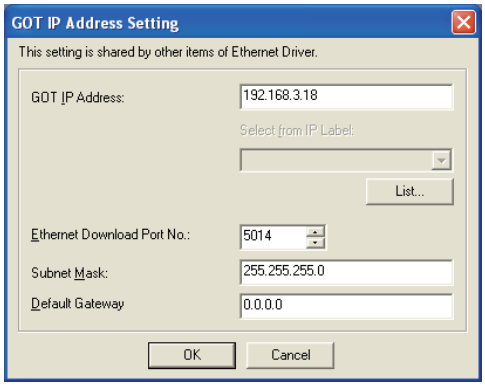
2 Communication detail settings

(1) GT16

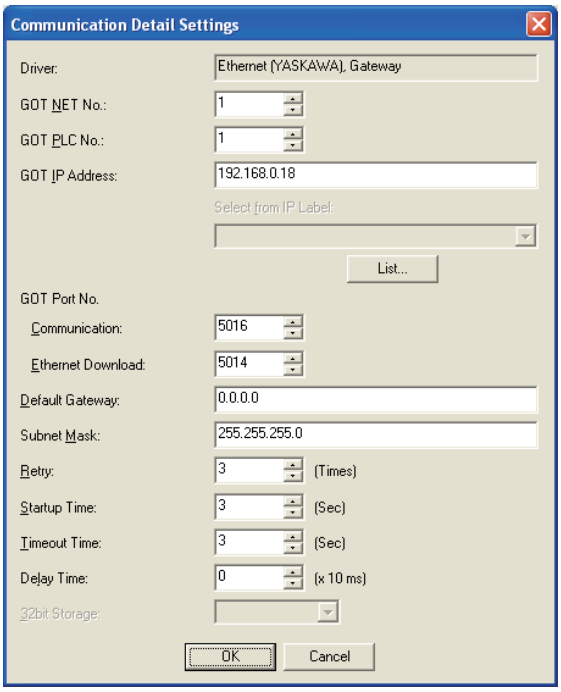


Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address*1	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.*1	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*1	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*1	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5016>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10ms)

*1 Click the Setting button and perform the setting in the [GOT IP Address Setting] screen.



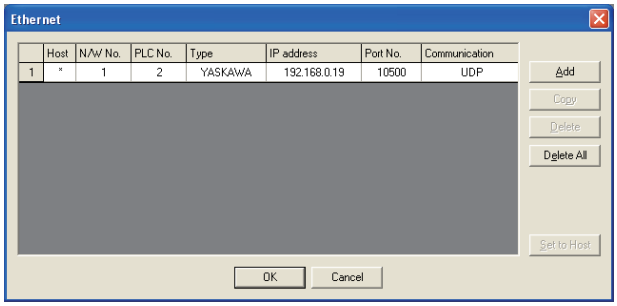
(2) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the controller. <Default: 5016>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No. (Ethernet download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10ms)

3 Ethernet setting

(1) Ethernet setting



Item	Description	Setting
Host	The host is displayed. (The host is indicated with an asterisk (*).)	-
N/W No.	Set the network No. of the connected Ethernet module. <Default: blank>	1 to 239
PLC No.	Set the station No. of the connected Ethernet module. <Default: blank>	1 to 64
Type	YASKAWA (fixed)	YASKAWA (fixed)
IP address*1	Set the IP address of the connected Ethernet module. <Default: blank>	PLC side IP address
Port No.	Set the port No. of the connected Ethernet module. <Default: 10500>	256 to 65534
Communication	Select a communication protocol. <Default: UDP>	UDP, TCP

*1 Connection with the PLC is unavailable with the default value. Set the IP address of the PLC side to be connected.

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

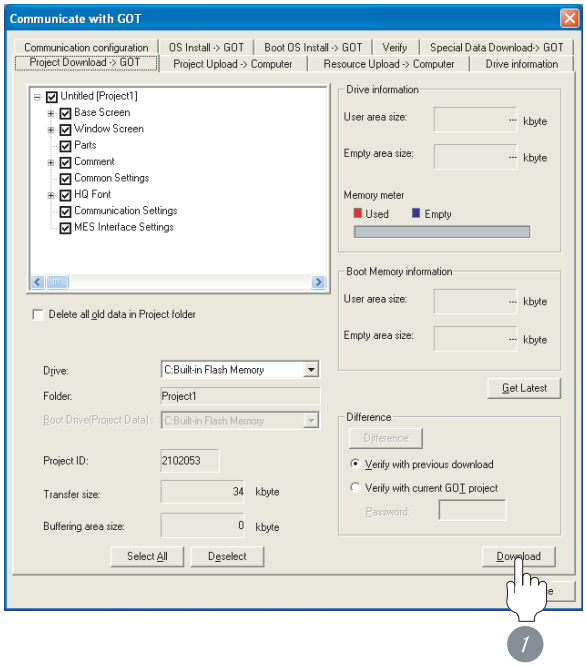
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

22.2.8 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

22.2.9 Attaching communication unit and connecting cable

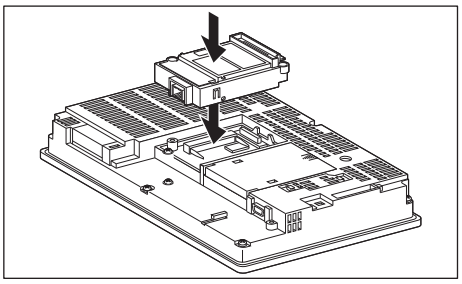
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

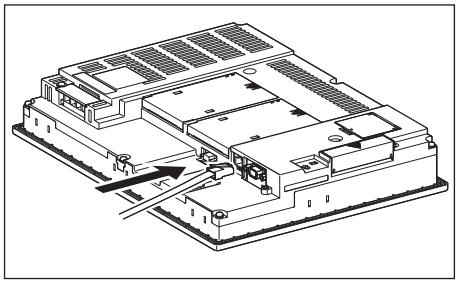
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet Communication Unit User's Manual

2 Connecting the cable

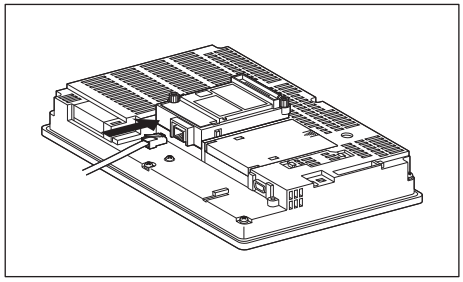
(1) For GT16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) For GT15

1 Connect the twisted pair cable to the Ethernet communication unit.



22.2.10Verifying GOT recognizes controller

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

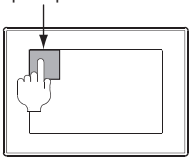
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

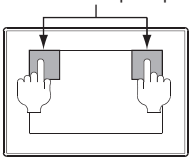
When using GT16 or GT1595

Utility call key
1-point press on GOT screen upper-left corner



When using GT1585, GT157☐, GT156☐ or GT155☐

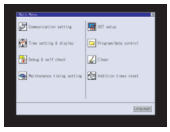
Utility call key
Simultaneous 2-point press



Utility display (When using GT16)



(When using GT15)



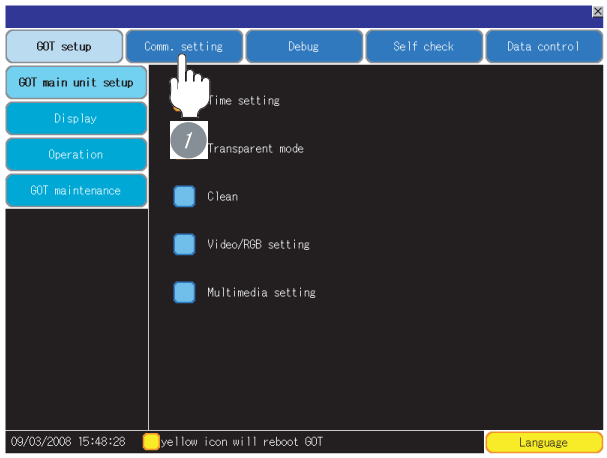
Point

When setting the utility call key to 1-point

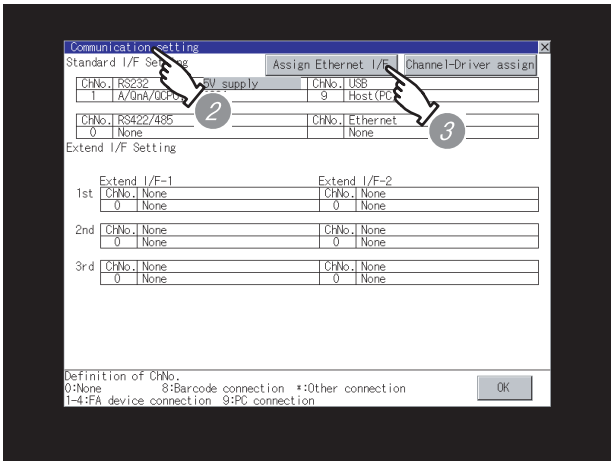
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual

(1) GT16

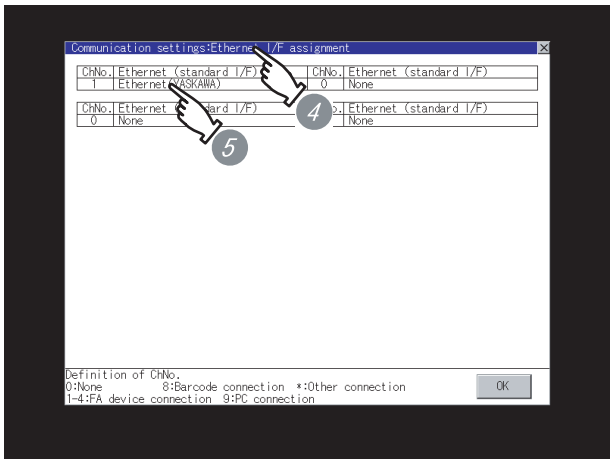


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet/IF].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.
- Communication driver: Ethernet (YASKAWA)

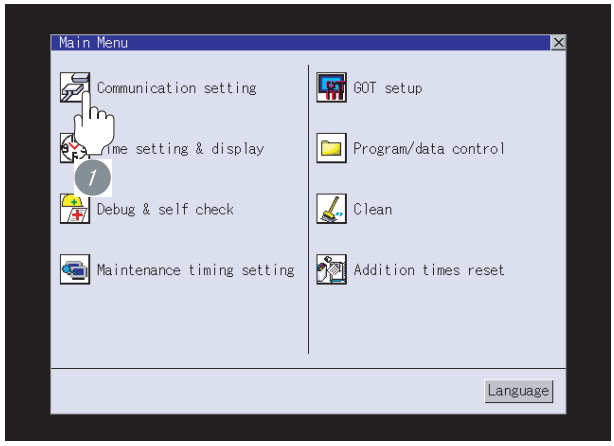
6 When the communication driver name is not displayed normally, carry out the following procedure again.
☞ Section 22.2.4 Preparatory procedures for monitoring

Point

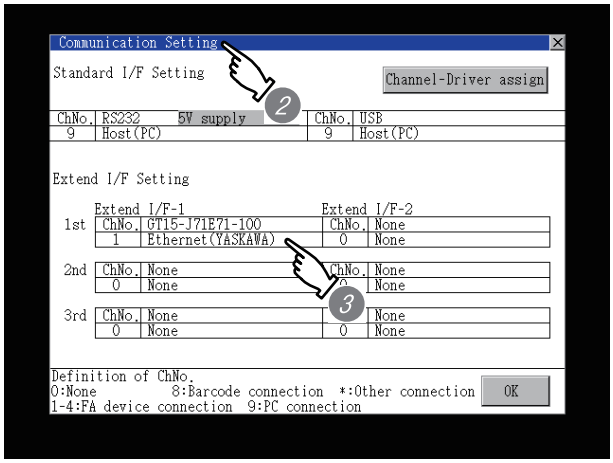
When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.
☞ GT16 User's Manual (Basic Utility)

(2) GT15



1 After powering up the GOT, touch [Main Menu] → [Communication Setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
- Communication driver: Ethernet (YASKAWA)

4 When the communication driver name is not displayed normally, carry out the following procedure again.
☞ Section 22.2.4 Preparatory procedures for monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.
☞ GT15 User's Manual

22.2.11 Checking for normal monitoring

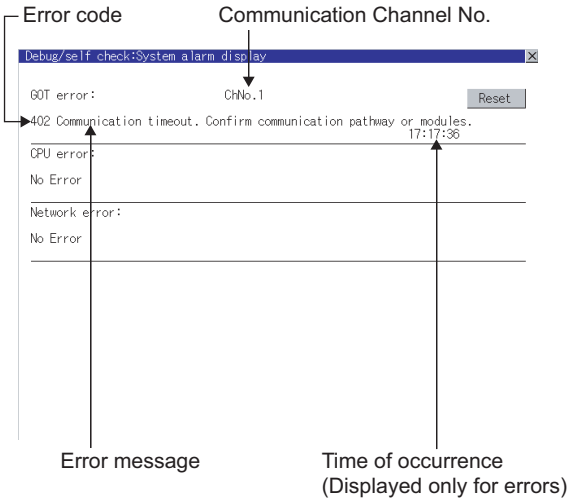
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

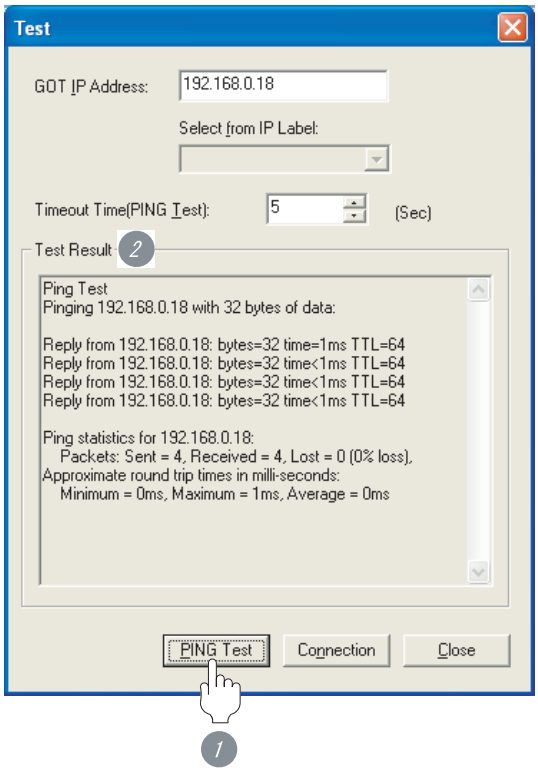
WindowsExecute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication
C:\>Ping 192.168.0.18
Request timed out.

(2) When using the [PING Test] of GT Designer2

Select [Communication] → [Communication configuration] → [Ethernet] and Test to display "PING Test".



1 Specify the [GOT IP address] of the [PING Test] and click on the PING Test button.

2 The [Test Result] is displayed after the [PING Test] is finished.

(3) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of [Communication Settings]
- IP address of GOT svpecified by Ping command

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 22.2.12 PLC side setting (MP2000 series, MP920 series)

☞ Section 22.2.13 PLC side setting (CP-9200SH series, CP-312 series)

4 Confirming the communication state to each station (station monitoring function)

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT. When detecting the abnormal state, it is confirming the response by executing a Ping command to the faulty station.

The station monitoring state can be confirmed by using GOT internal device.

(1) Station monitoring state

(a) No. of faulty station (GS230)
Total No. of the faulty CPU are stored.
The station No. of faulty stations are stored to GS231 through GS238.
(☞ (b)Faulty station information (GS231 to GS238))

Device	b15 to b8	b7 to b0
GS230	(00H fixed)	No. of faulty stations

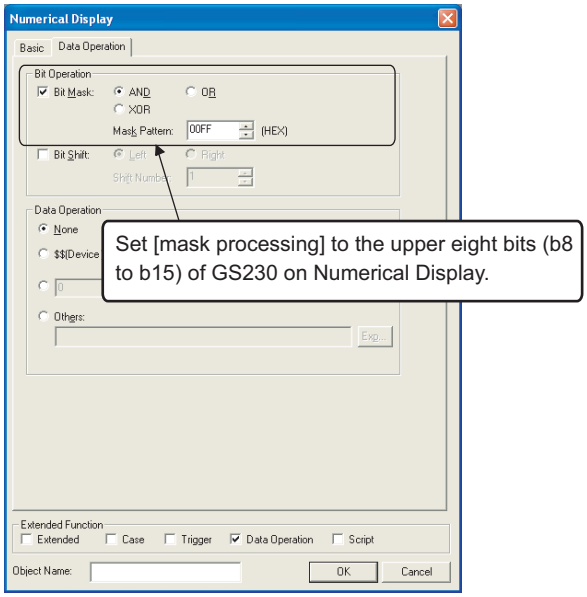
Point

When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.
For the data operation, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

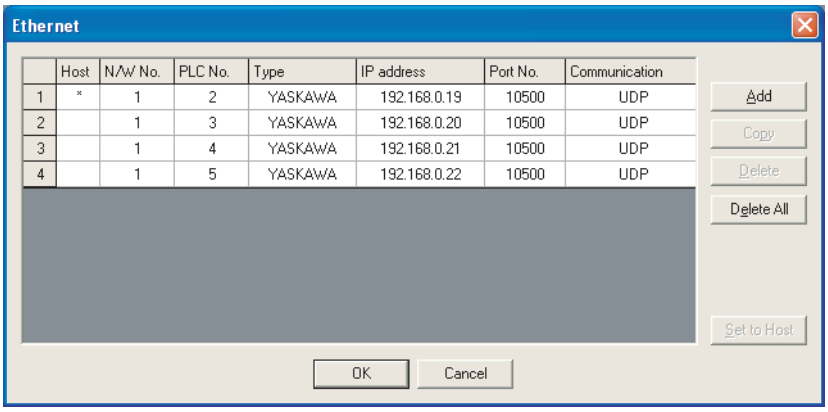
<Numerical Display (Data Operation tab)>



(b) Faulty station information (GS231 to GS238)

- The bit of the Ethernet setting No. corresponding to the faulty station is set.
  0: Normal
  1: Abnormal
- The bit is reset after the fault is recovered.

GS231 bit 0 · · ·
GS231 bit 1 · · ·
GS231 bit 2 · · ·
GS231 bit 3 · · ·



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

22.2.12PLC side setting (MP2000 series, MP920 series)

Point

YASKAWA PLC

For details of YASKAWA PLCs, refer to the following manuals.

☞Manuals for YASKAWA PLCs

1 Parameter setting

Make the parameter settings with a peripheral tool.

Settings for 218IF-01

Item		Setting	Range
Trans-mission Parameters	Local IP Address	[ ].[ ].[ ].[ ]	IP address of PLC
	Response Time	0	Not reuqired for communication with GOT
	Count of Retry (Number of Retries)	0	Not reuqired for communication with GOT
	CN*1	1	1 to 20
	Local Port (Local Station's Port Number)	10500	256 to 65534
	Node IP Address (Remote Station's IP Address)*2	[ ].[ ].[ ].[ ]	IP address of GOT
	Node Port (Remote Station's Port Number)*2	[ ]	Port No. of GOT
	Connection Type	UDP (recommended)	UDP/TCP
	Protocol Type	Extended MEMOBUS	Extended MEMOBUS, MEMOBUS, MELSEC, None, MODBUS/TCP
	Code	BIN	RTU, BIN, ACII
	Node Name (Remote Station's Name)	GOT1000	Name of GOT
Local Port: TCP/IP Setting	Subnet Mask	[ ].[ ].[ ].[ ]	PLC side settings
	Gateway IP Address	[ ].[ ].[ ].[ ]	
	System Port No. (Diagnostic/Engineering Port No.)	10000	
	TCP (Transmission Control Protocol) Zero Window Timer Value	3 sec	
	TCP Retry Time	500ms	
	TCP Close Time	60 sec	
	IP Assemble Time	30 sec	
	MAX. Packet Length	1500 bytes	

*1 Do not set the same value for the No. for MITSUBISHI PLC and connection No. for the CNO.

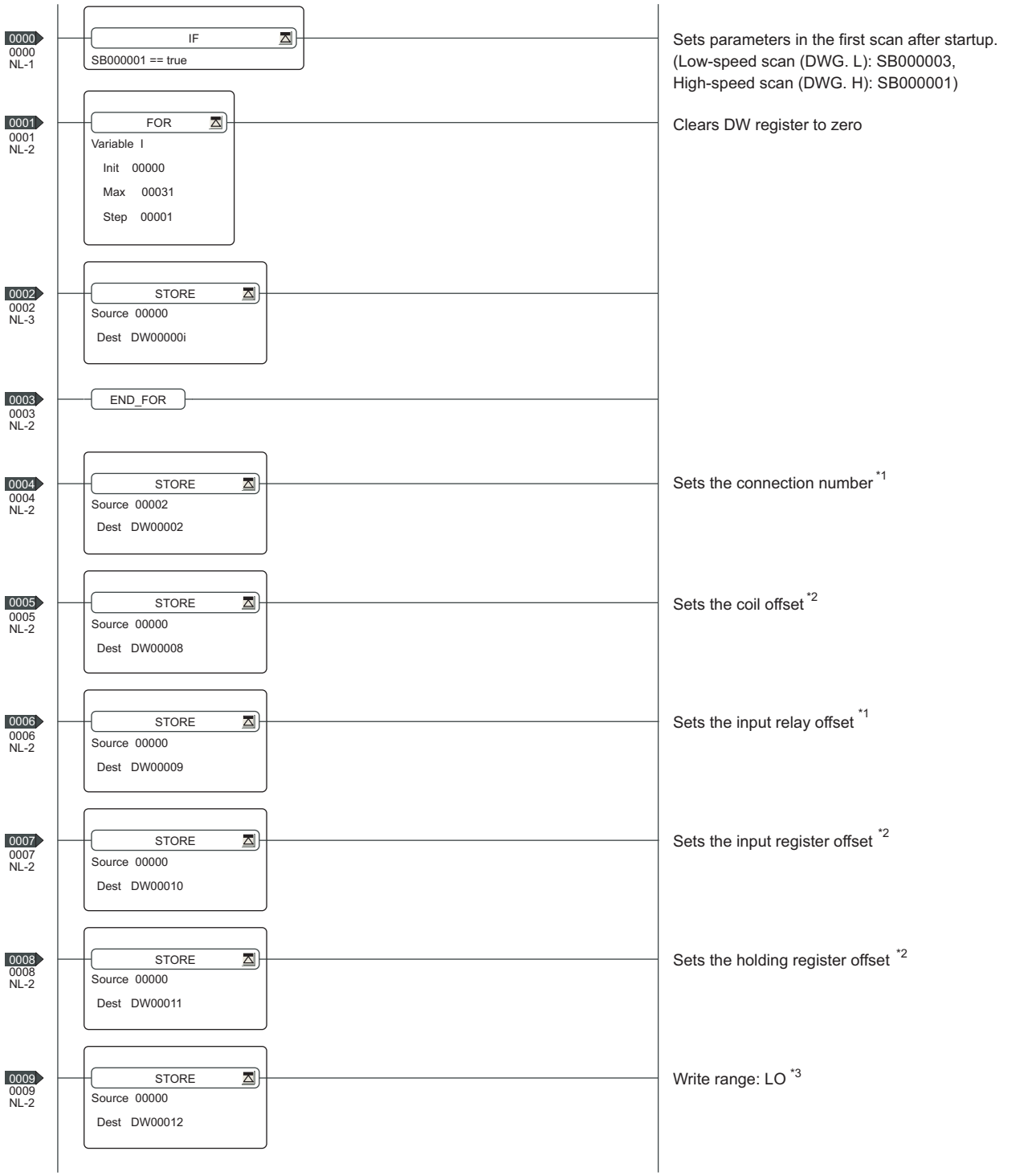
*2 Set the same the Node IP Address (Remote Station's IP Address) and the Node Port (Remote Station's Port Number) as the Local IP Address and the Local Port (Local Station's Port Number) on the GOT side. For the Local IP Address and the Local Port (Local Station's Port Number) on the GOT side, refer to the following.

☞ Section 22.2.7 Setting communication interface (Communication settings)

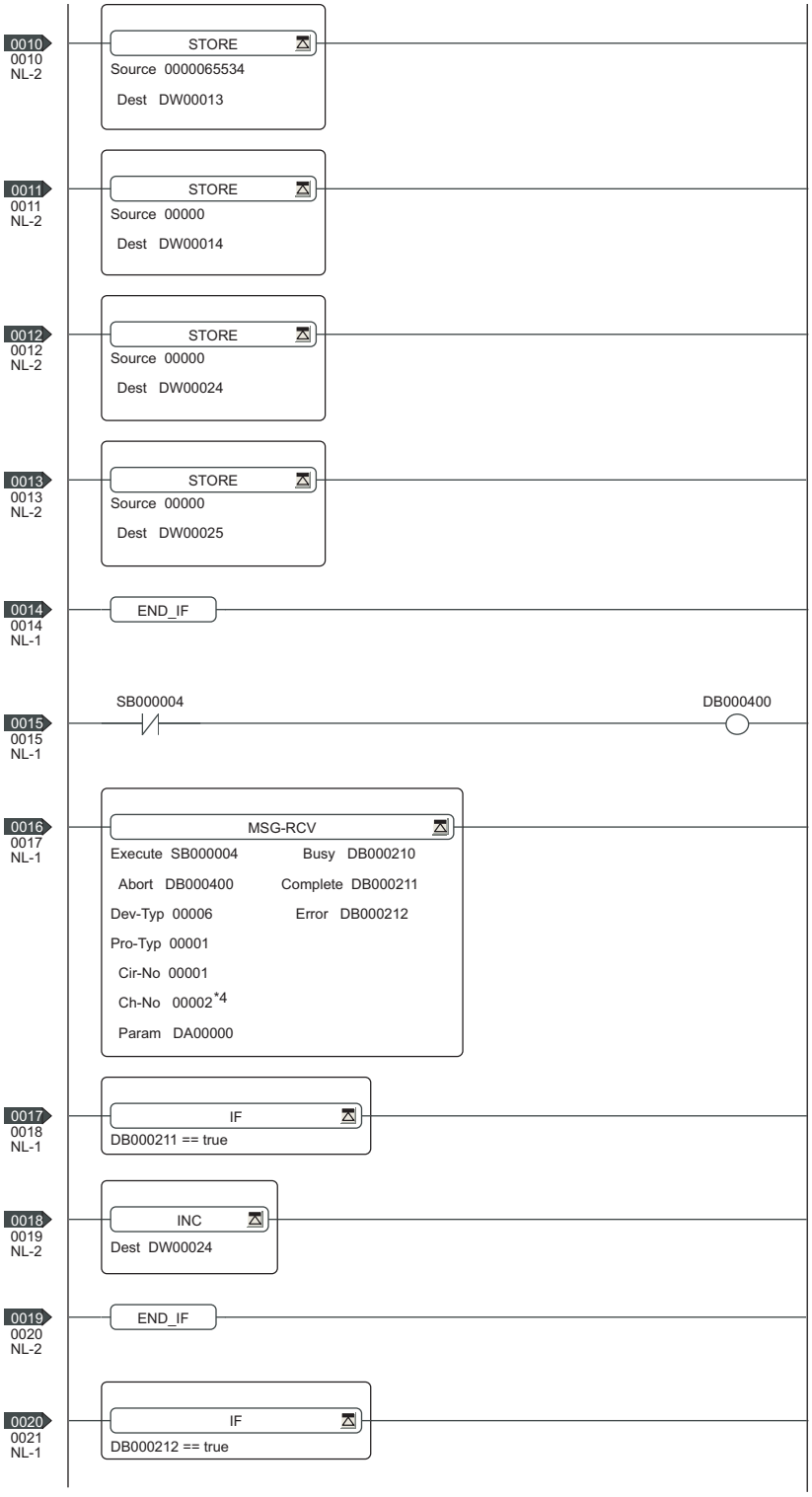
2 Sequence program

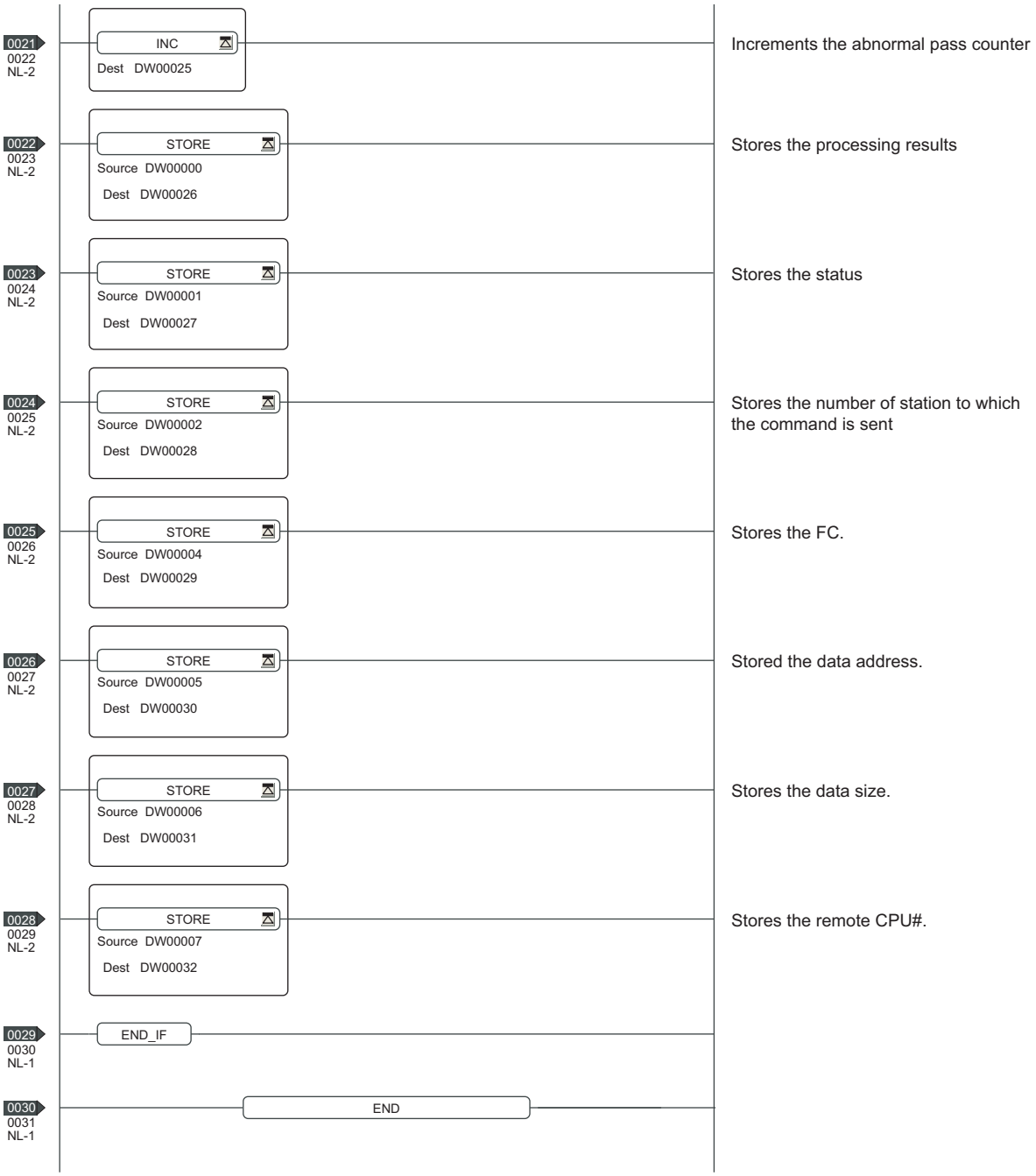
To communicate the MP2000 series or MP920 series with the GOT1000 series, the ladder program to receive massages is required. When connecting the MP2000 series or MP920 series with multiple GOTs, ladder programs to receive messages for each GOT are required.

ladder program to receive massages



(Continued to next page)


0010
0010
NL-2
STORE
Source 0000065534
Dest DW00013
Write range: HI *3
0011
0011
NL-2
STORE
Source 00000
Dest DW00014
Clears the system registers
0012
0012
NL-2
STORE
Source 00000
Dest DW00024
Clears the normal pass counter
0013
0013
NL-2
STORE
Source 00000
Dest DW00025
Clears the error counter
0014
0014
NL-1
END_IF
Parameter settings completed
SB000004
DB000400
0015
0015
NL-1
Sends a Message Receive instruction
0016
0017
NL-1
MSG-RCV
Execute SB000004
Busy DB000210
Abort DB000400
Complete DB000211
Dev-Typ 00006
Error DB000212
Pro-Typ 00001
Cir-No 00001
Ch-No 00002 *4
Param DA00000
The executing coil turns ON when the CPU receives the command.
The normal or abnormal completion coil turns ON at the completion of processing.
Pro-Type: 1 for extended MEMOBUS or MELSEC.
2 for non-procedure.
0017
0018
NL-1
IF
DB000211 == true
The normal completion coil turns ON at normal completion
0018
0019
NL-2
INC
Dest DW00024
Increments the normal pass counter
0019
0020
NL-2
END_IF
0020
0021
NL-1
IF
DB000212 == true
The abnormal completion coil turns ON at abnormal completion



*1: When connecting to multiple GOTs, set connection numbers individually for each GOT.
*2: Set the offset for each device.
*3: Set the available write range for the holding registers.
*4: When connecting to multiple GOTs, set channel numbers individually for each GOT.

22.2.13PLC side setting (CP-9200SH series, CP-312 series)

Point

YASKAWA PLC

For details of YASKAWA PLCs, refer to the following manuals.

Manuals for YASKAWA PLCs

1 Parameter setting

Make the parameter settings with a peripheral tool.

Settings for CP-218IF

Item	Setting
Module Type	CP-218
CPU Number	01
Circuit Number	01
Hot Swapping	○

Item	CNO 03	CNO 04	CNO 05
Local Port	10500	10501	10030
Node IP Address*1	192.168.001.018	192.168.001.020	192.168.001.073
Node Port*1	05016	05017	21001
Connect Type	TCP	TCP	UDP
Protocol Type	Extended MEMOBUS	Extended MEMOBUS	Extended MEMOBUS
Code	BIN	BIN	BIN

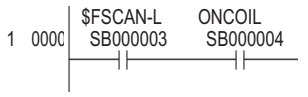
*1 Be sure to set the values above for the address so that the GOT communicates with the programmable controller correctly.
For the Host Address setting on the GOT side, refer to the following.

Section 22.2.7 Setting communication interface (Communication settings)

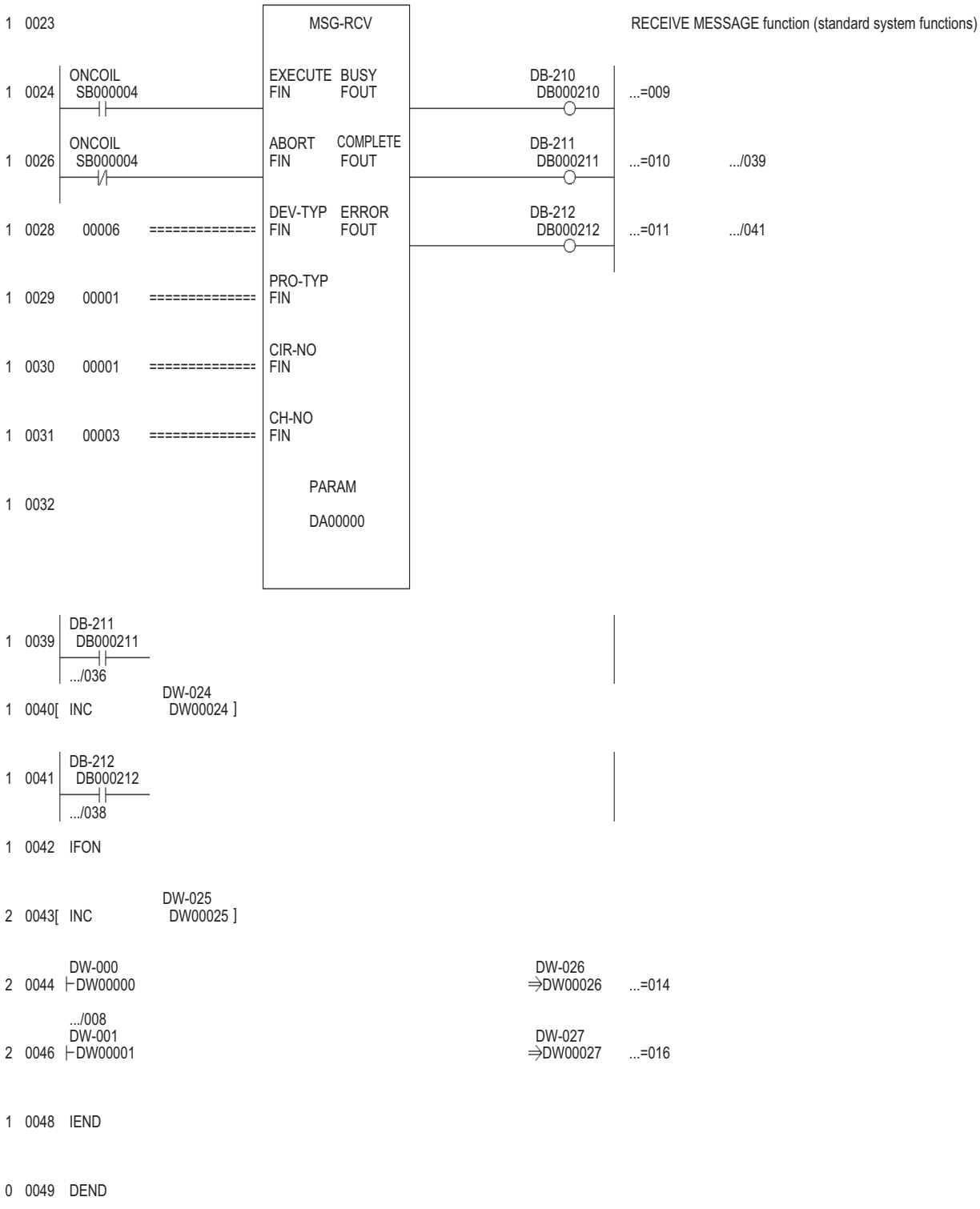
2 Sequence program

To communicate the CP-9200SH series or CP-312 series with the GOT1000 series, the ladder program to receive messages is required. When connecting the CP-9200SH series or CP-312 series with multiple GOTs, ladder programs to receive messages for each GOT are required.

ladder program to receive massages



```
1  0000 | $FSCAN-L      ONCOIL
        |  SB000003     SB000004
        |-----| |-----------| |-----
        |                                                                  |

1  0002  IFON

2  0003  FOR              I        = 00000      to  00031      by 00001

3  0007 ├ 00000                                                  ⇒DW00000    ...=001        .../044

2  0009  FEND

                                                                  DW-002
2  0010 ├ 00003                                                  ⇒DW00002    ...=002

                                                                  DW-008
2  0012 ├ 00000                                                  ⇒DW00008    ...=003

                                                                  DW-009
2  0014                                                          ⇒DW00009    ...=004

                                                                  DW-010
2  0015                                                          ⇒DW00010    ...=005

                                                                  DW-011
2  0016 ├ 16500                                                  ⇒DW00011    ...=006

                                                                  DW-012
2  0018 ├ 16500                                                  ⇒DW00012    ...=007

                                                                  DW-013
2  0020 ├ 18499                                                  ⇒DW00013    ...=008

1  0022  IEND
```


1 0023
MSG-RCV
RECEIVE MESSAGE function (standard system functions)
ONCOIL
1 0024 SB000004
EXECUTE FIN
BUSY FOUT
DB-210 DB000210
...=009
ONCOIL
1 0026 SB000004
ABORT FIN
COMPLETE FOUT
DB-211 DB000211
...=010
.../039
1 0028 00006 ==========
DEV-TYP FIN
ERROR FOUT
DB-212 DB000212
...=011
.../041
1 0029 00001 ==========
PRO-TYP FIN
1 0030 00001 ==========
CIR-NO FIN
1 0031 00003 ==========
CH-NO FIN
1 0032
PARAM
DA00000
1 0039 DB-211 DB000211
.../036
1 0040[INC DW-024 DW00024]
1 0041 DB-212 DB000212
.../038
1 0042 IFON
2 0043[INC DW-025 DW00025]
2 0044 DW-000 DW00000
⇒DW-026 DW00026
...=014
.../008
2 0046 DW-001 DW00001
⇒DW-027 DW00027
...=016
1 0048 IEND
0 0049 DEND

22.2.14 Precautions

1 When connecting to multiple GOTs

(1) Setting PLC No.
When connecting two or more GOTs in the Ethernet network, set each [PLC No.] to the GOT.

☞ Section 22.2.7 Setting communication interface (Communication settings)

(2) Setting IP address
Do not use the IP address "192.168.0.18" when using multiple GOTs.
A communication error may occur on the GOT with the IP address.

2 When setting IP address

Do not use "0" and "255" at the end of an IP address.
(Numbers of *.*.*.0 and *.*.*.255 are used by the system.)
The GOT may not monitor the controller correctly with the above numbers.
Consult with the administrator of the network before setting an IP address to the GOT and controller.

3 When connecting to the multiple network equipments (including GOT) in a segment

By increasing the network load, the transmission speed between the GOT and PLC may be reduced.
The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

22.3 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	YASKAWA PLC connection	Supporting the MP2200/MP2300 connection	2.47Z	Communication driver YASKAWA GL/CP9200 (SH/H)/ CP9300MS [03.02.**] Ethernet (YASKAWA) [03.02.**]
GT16 GT15 GT11 Serial	YASKAWA PLC connection	Supporting the Ethernet connection	2.47Z	Communication driver Ethernet (YASKAWA) [03.02.**]
GT24V10 20 30	YASKAWA PLC connection	Supporting the connections to GT10	2.73B	Standard monitor OS [01.06.**] Communication driver YASKAWA MP [01.00.**]
GT15 GT11 Serial	YASKAWA PLC connection	Supporting the retry and the timeout time	2.73B	Communication driver YASKAWA GL/CP9200 (SH/H)/ CP9300MS [03.09.**]
GT16 GT15	YASKAWA PLC connection	Supporting the connection to CP-312	2.77F	Communication driver Ethernet (YASKAWA) [03.12.**]
GT24V10 20 30	YASKAWA PLC connection	Added the 32-bit storage order to the communication detail settings	2.77F	Communication driver YASKAWA MP [01.03.**]
GT105 GT104	YASKAWA PLC connection	Supporting the connections to GT105 ☐ Supporting the connections to GT104 ☐	2.90U	Standard monitor OS [01.10.**] Communication driver YASKAWA MP [01.05.**]
GT16	YASKAWA PLC connection	Supporting the connections to GT16		Communication driver YASKAWA GL/CP9200 (SH/H)/ CP9300MS [04.02.**] Ethernet (YASKAWA) [04.02.**]

MEMO

23

CONNECTION TO YOKOGAWA PLC

23.1 Serial Connection . . . . . page 23-2

This section describes the equipment and cables needed for RS-232/RS-422 connection.
Select a system suitable for your application.



23.2 Ethernet Connection . . . . . page 23-33

This section describes the equipment and cables needed when connecting to Ethernet.



23.3 List of Functions Added by Version Upgrade . . . . . page 23-48

This section describes the functions added by version upgrade of GT Designer2 or OS.

23.1 Serial Connection



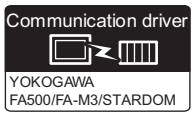
Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

23.1.1 System configuration(FA-M3)



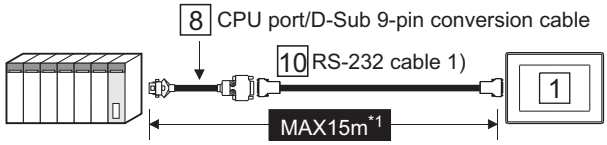
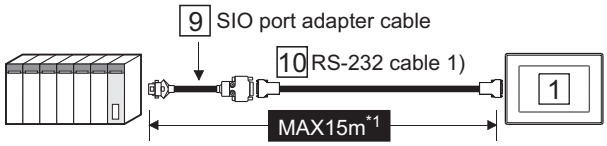
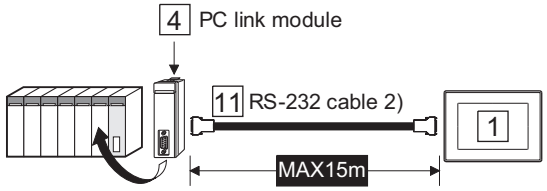
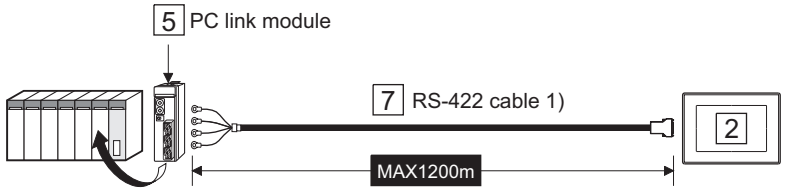
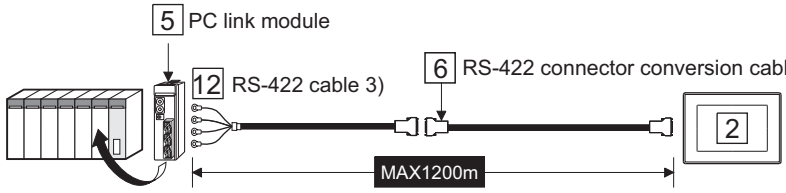
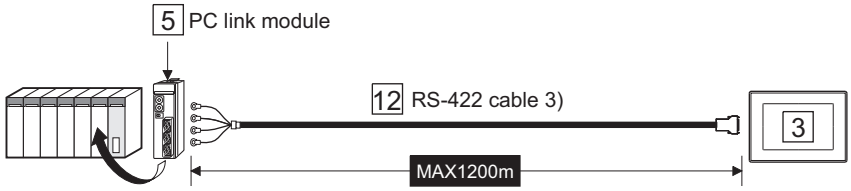
1 System configuration and connection conditions

Point

(1) When connecting the following PLC CPU with a programming tool interface connector to a GOT, use the compatiple conversion cable as shown below.

PLC CPU	Conversion cable
F3SP10, F3SP20, F3SP30, F3FP36	-
F3SP05, F3SP21, F3SP25, F3SP35, F3SP08, F3SP28, F3SP38, F3SP53, F3SP58, F3SP59	CPU port/D-Sub 9-pin conversion cable
F3SP66, F3SP67	SIO port adapter cable

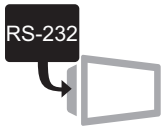
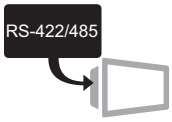
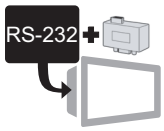
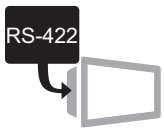
(2) Since the F3SP10 is not compatible with the PC link module (F3LC11-2N), RS-422 connection is not available for it.

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial
			GT16 GT15 GT11 Serial
			GT16 GT15 GT11 Serial
	1200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial

*1 Including the length of the CPU port/D-Sub 9-pin conversion cable or the SIO port adapter cable.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

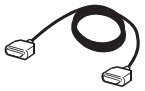
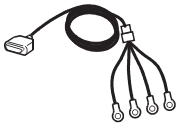
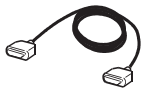
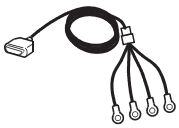
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	PC link module	F3LC01-1N, F3LC11-1N, F3LC11-1F, F3LC12-1F
	5		F3LC11-2N

4 and 5 are products manufactured by YOKOGAWA Electric Corporation. For details of these products, contact YOKOGAWA Electric Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-422 cable 1) • Between PC link module and GOT	(To be prepared by the user. ☞ Section 23.1.4 Connection Cable)	GT16
	8	CPU port/D-Sub 9-pin conversion cable	KM10-0C	GT16 GT15 GT11 Serial
	9	SIO port adapter cable	KM10-0S	GT16 GT15 GT11 Serial
	10	RS-232 cable 1)*1 • Between CPU port/D-Sub 9-pin conversion cable and GOT	GT09-C30R20301-9P(3m)	GT16 GT15 GT11 Serial
	11	RS-232 cable 2)*1 • Between PC link module and GOT	GT09-C30R20302-9P(3m)	GT16 GT15 GT11 Serial
	12	RS-422 cable 3)*1 • Between PC link module and GOT • Between PC link module and RS-422 connector conversion cable	GT09-C30R40301-6T(3m) GT09-C100R40301-6T(10m) GT09-C200R40301-6T(20m) GT09-C300R40301-6T(30m)	GT16 GT15 GT11 Serial

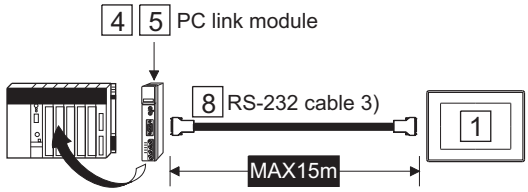
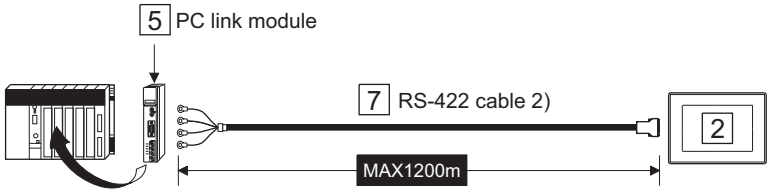
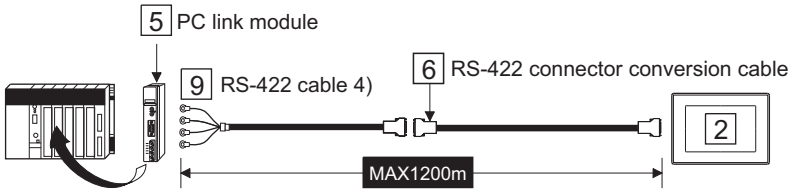
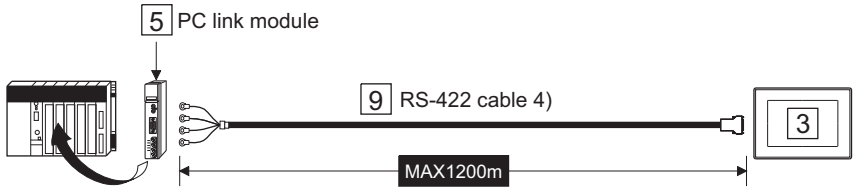
*1 The RS-232 and RS-422 cable can be prepared by the user.(☞ Section 23.1.4 Connection Cable)

9 and 10 is product manufactured by YOKOGAWA Electric Corporation. For detail of this product, contact YOKOGAWA Electric Corporation.

23.1.2 System configuration(FA500)

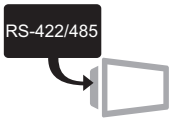
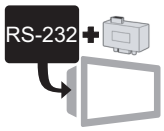
Communication driver
YOKOGAWA
FA500/FA-M3/STARDOM

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial
	1200m or less		GT16
			GT16
			GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

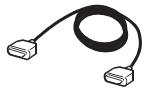
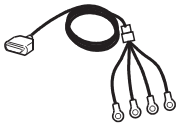
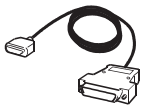
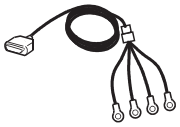
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	PC link module	LC01-0N
	5		LC02-0N

4 and 5 are products manufactured by YOKOGAWA Electric Corporation. For details of these products, contact YOKOGAWA Electric Corporation.

(3) Cable

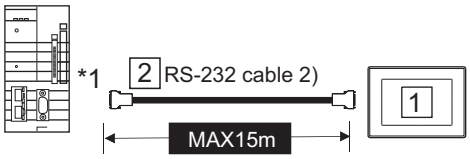
Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-422 cable 2) • Between PC link module and GOT	(To be prepared by the user. ☞ Section 23.1.4 Connection Cable)	GT16
	8	RS-232 cable 3)*1 • Between PC link module and GOT	GT09-C30R20205-25P(3m)	GT16 GT15 GT11 Serial
	9	RS-422 cable 4)*1 • Between PC link module and GOT • Between PC link module and RS-422 connector conversion cable	GT09-C30R40302-6T(3m) GT09-C100R40302-6T(10m) GT09-C200R40302-6T(20m) GT09-C300R40302-6T(30m)	GT16 GT15 GT11 Serial

*1 The RS-232 and RS-422 cable can be prepared by the user.(☞ Section 23.1.4 Connection Cable)

23.1.3 System configuration(STARDOM)

Communication driver
YOKOGAWA
FA500/FA-M3/STARDOM

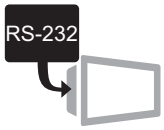
1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial

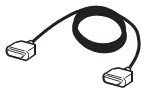
*1 Connect the RS-232 cable to the COM port of the PLC.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) Cable

Image	No.	Name	Model name	Model
	2	RS-232 cable 2)*1 • Between PLC and GOT	GT09-C30R20305-9S(3m)	GT16 GT15 GT11 Serial

*1 The RS-232 cable can be prepared by the user. (☞ Section 23.1.4 Connection Cable)

23.1.4 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

(1) RS-232 cable (☞ Refer to this section 1)

Model		Connection cable
		GT16, GT15, GT11
CPU port/D-Sub 9-pin conversion cable	KM10-0C	RS-232 cable 1)
SIO port adapter cable	KM10-0S	
PC link module	F3LC01-1N	RS-232 cable 2)
	F3LC11-1N	
	F3LC11-1F	RS-232 cable 2)
	F3LC12-1F	
	LC01-0N	RS-232 cable 3)
	LC02-0N	
STARDOM		RS-232 cable 2)

(2) RS-422 cable (☞ Refer to this section 4)

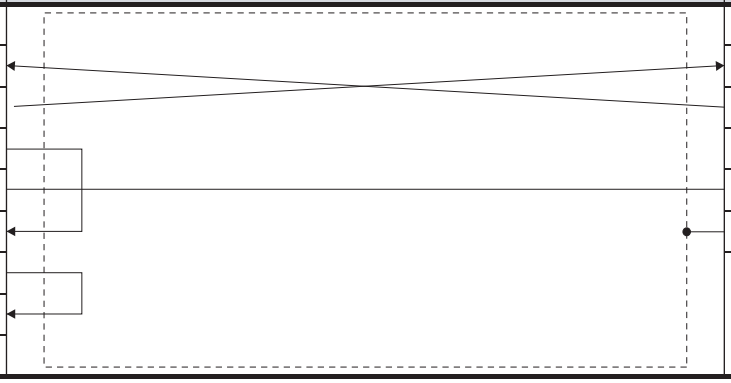
Model		Connection cable	
		GT16	GT15, GT11
PC link module	F3LC11-2N	RS-422 cable 1) RS-422 cable 3)	RS-422 cable 3)
	LC02-0N	RS-422 cable 2) RS-422 cable 4)	RS-422 cable 4)

1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

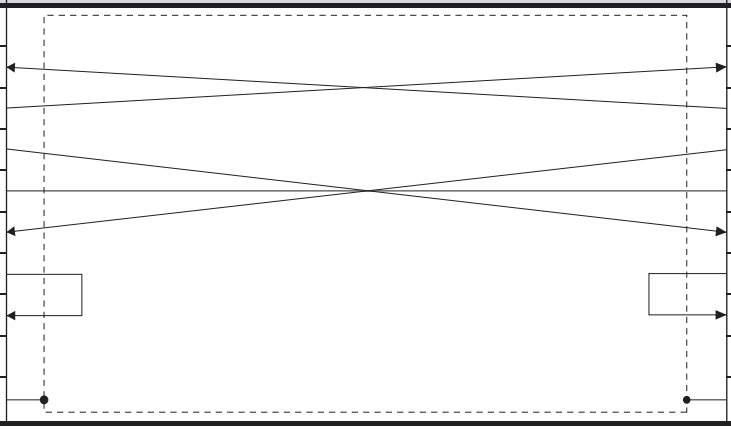
(1) Connection diagram

(a) RS-232 cable 1)

GOT side		Cable connection and signal direction	YOKOGAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		—	—
RD(RXD)	2		2	RD
SD(TXD)	3		3	SD
ER(DTR)	4		—	—
SG	5		5	SG
DR(DSR)	6		SHIELD	—
RS(RTS)	7			
CS(CTS)	8			
—	9			

*1 GT16 : CD, GT15 : CD, GT11 : NC

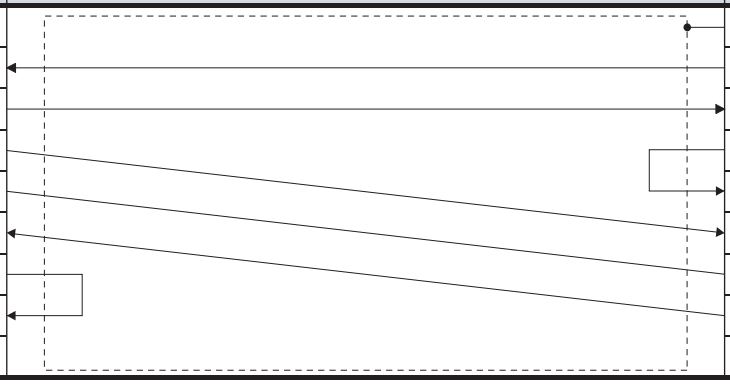
(b) RS-232 cable 2)

GOT side		Cable connection and signal direction	YOKOGAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		1	—
RD(RXD)	2		2	RD
SD(TXD)	3		3	SD
ER(DTR)	4		4	ER
SG	5		5	SG
DR(DSR)	6		6	DR
RS(RTS)	7		7	RS
CS(CTS)	8		8	CS
—	9		9	—
Shell*3	—		—	Shell*3

*2 GT16 :CD, GT15 :CD, GT11: NC

*3 Connect the shield to the housing of the connectors on both the GOT and YOKOGAWA product sides.

(c) RS-232 cable 3)

GOT side		Cable connection and signal direction	YOKOGAWA PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	FG
RD(RXD)	2		2	SD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RS
SG	5		5	CS
DR(DSR)	6		6	DR
RS(RTS)	7		7	SG
CS(CTS)	8		20	ER
—	9			

*1 GT16 : CD, GT15 : CD, GT11 : NC

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-			

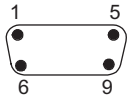
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(d) YOKOGAWA PLC side connector

Use the connector compatible with the YOKOGAWA PLC side module.

For details, refer to the following manual.

☞ User's Manual for the YOKOGAWA PLC

3 Precautions when preparing a cable

The length of cables RS-232 2) and 3) must be 15m or less.

The length of the cable RS-232 1) must not exceed 15m including the CPU port/D-Sub 9-pin conversion cable length.

4 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

Point

Differences in polarity between GOT and YOKOGAWA PLC

The polarity of poles A and B in signal names is reversed between GOT and YOKOGAWA PLC.

(1) Connect a cable according to the following connection diagrams.

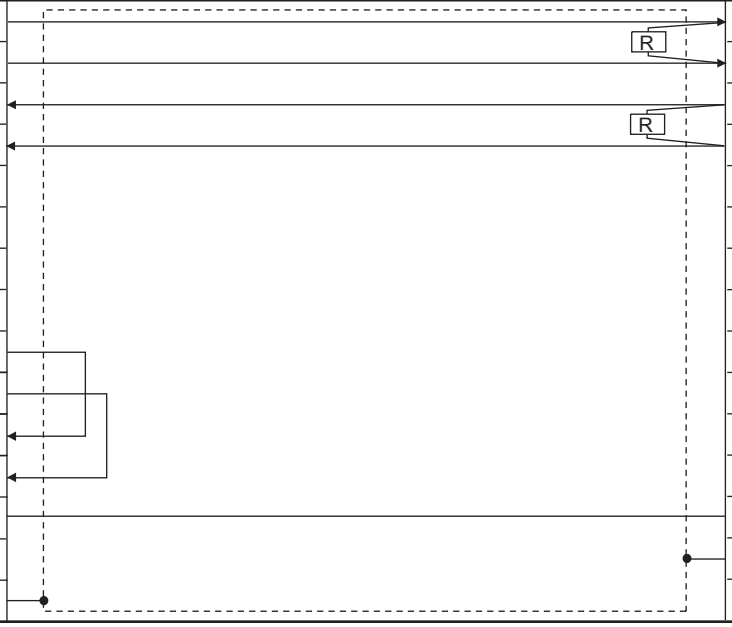
(1) Connection diagram

(a) RS-422 cable 1)

GOT side		Cable connection and signal direction	YOKOGAWA PLC side
Signal name	Pin No.		Terminal block name
SDA1(TXD1+)	1		RDB
SDB1(TXD1-)	2		RDA
RDA1(RXD1+)	3		SDB
RDB1(RXD1-)	4		SDA
SDA2(TXD2+)	5		—
SDB2(TXD2-)	6		—
RDA2(RXD2+)	7		—
RDB2(RXD2-)	8		—
RSA(RTS+)	9		—
RSB(RTS-)	10		—
CSA(CTS+)	11		—
CSB(CTS-)	12		—
SG	13		SG
NC	14		SHIELD
	Shell		

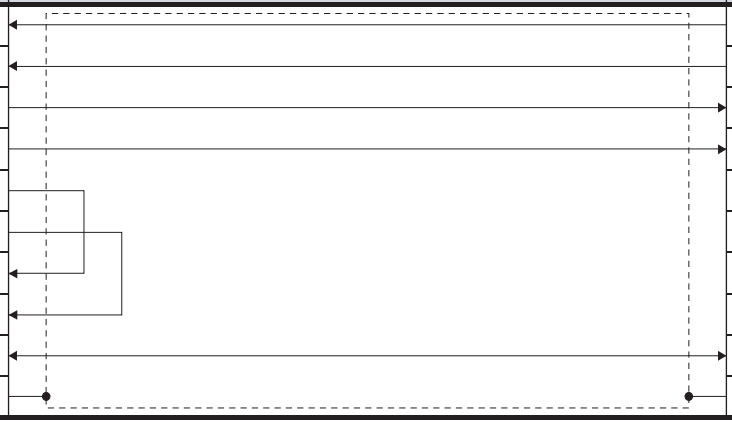
(b) RS-422 cable 2)

GOT side		Cable connection and signal direction	YOKOGAWA PLC side
Signal name	Pin No.		Terminal block name
SDA1(TXD1+)	1		RDB
SDB1(TXD1-)	2		RDA
RDA1(RXD1+)	3		SDB
RDB1(RXD1-)	4		SDA
SDA2(TXD2+)	5		—
SDB2(TXD2-)	6		—
RDA2(RXD2+)	7		—
RDB2(RXD2-)	8		—
RSA(RTS+)	9		—
RSB(RTS-)	10		—
CSA(CTS+)	11		—
CSB(CTS-)	12		—
SG	13		SG
NC	14		SHIELD
	Shell		

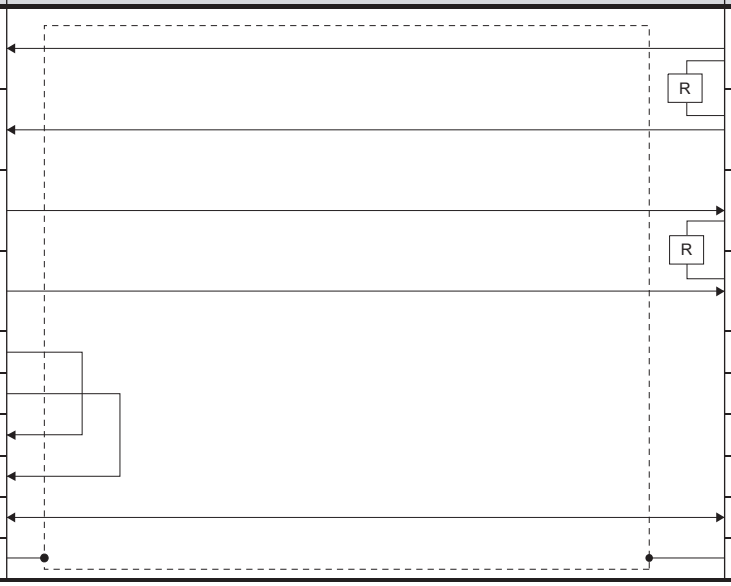


(c) RS-422 cable 3)

GOT side		Cable connection and signal direction	YOKOGAWA PLC side
Signal name	Pin No.		Terminal block name
RDA	2		SDB
RDB	7		SDA
SDA	1		RDB
SDB	6		RDA
RSA	3		—
RSB	8		—
CSA	4		—
CSB	9		—
SG	5		SG
FG	—		SHIELD



(d) RS-422 cable 4)

GOT side		Cable connection and signal direction	YOKOGAWA PLC side
Signal name	Pin No.		Terminal block name
RDA	2		SDB
RDB	7		SDA
SDA	1		RDB
SDB	6		RDA
RSA	3		—
RSB	8		—
CSA	4		—
CSB	9		—
SG	5		SG
FG	—		FG

5 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

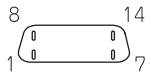
GOT	Model	Connetcor type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16 *1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

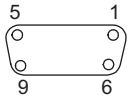
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

6 Precautions when preparing a cable

Limit the length of the RS-422 cable to 1200m.

7 Connecting the terminating resistor

When connecting a PLC link module to a GOT, a terminating resistor must be connected to the PC link module.

No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

The following describes how to connect it on the PC link module.

(1) F3LC11-2N

Set the terminator switch (TERMINATOR) on the front panel of F3LC11-2N to the "4-WIRE" side to enable the terminator.

(2) LC02-0N

Connect the terminating resistor provided with the LC02-0N across SDA and SDB, and across RDA and RDB on the terminal block.

23.1.5 Preparatory Procedure for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 23.1.6
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 23.1.7
Checking OS installation on GOT

Setting the communication interface.
(Communication settings)

Section 23.1.8
Setting communication interface (Communication settings)

Download the project data.

Section 23.1.9
Downloading project data

Attach the communication unit and connect the cable.

Section 23.1.10
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the controller.

Section 23.1.11
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 23.1.12
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

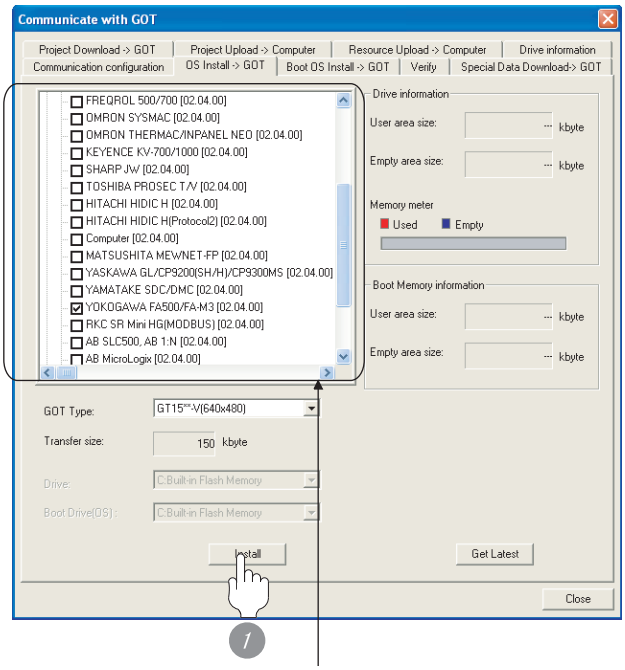
Section 23.1.13 PLC side setting

23.1.6 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• YOKOGAWA FA500/FA-M3

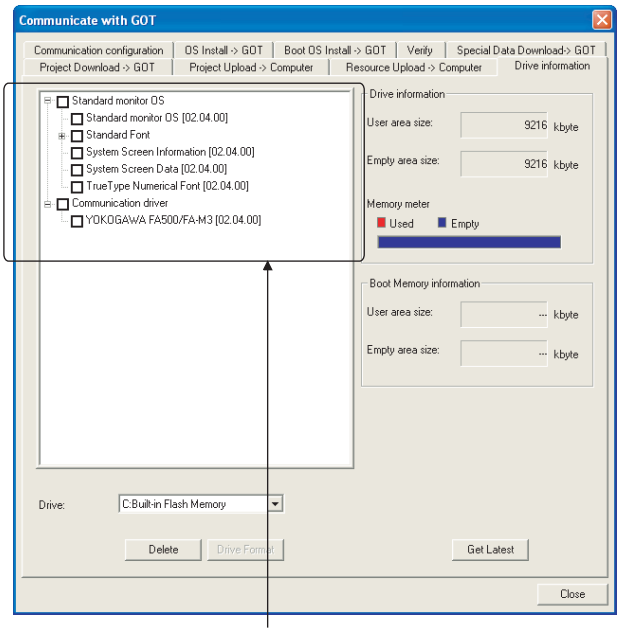
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

23.1.7 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:
1) Standard monitor OS
2) Communication driver: YOKOGAWA FA500/FA-M3

23.1.8 Setting communication interface (Communication settings)

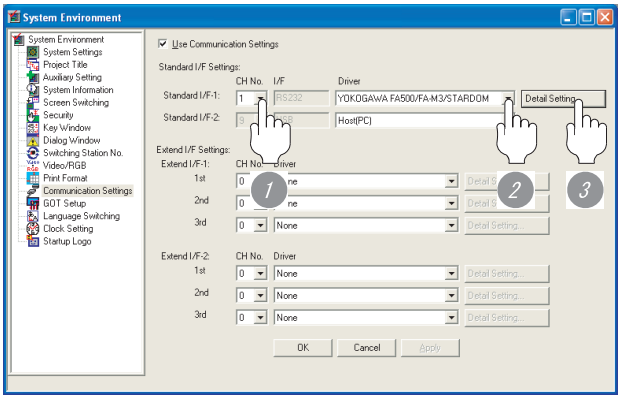
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



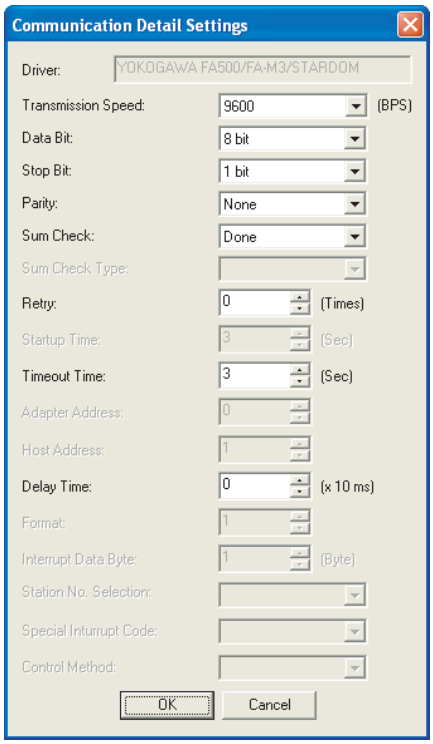
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "YOKOGAWA FA500/FA-M3/ STARDOM".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the controller. <Default: 9600bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the controller. <Default: 8 bits>	7 bits or 8 bits
Stop Bit	Specify the stop bit length for communications. <Default: 1 bit>	1 bit or 2bits
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: None>	None Even Odd
Sum check	Set whether or not to perform a sum check during communication. <Default: Done>	Done, None
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 times>	0 to 5 times
Timeout Time	Set the time period for a communication to time out. <Default: 3 seconds>	3 to 30 seconds
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0ms>	0 to 30 (x 10 ms)

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

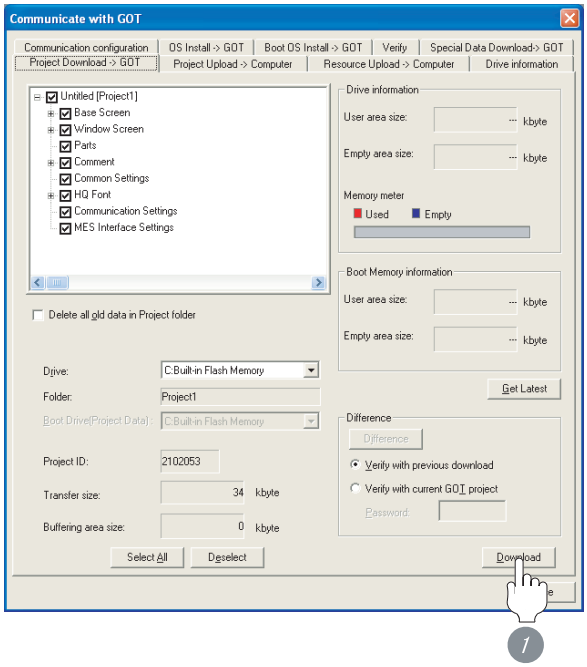
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

23.1.9 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

23.1.10 Attaching communication unit and connecting cable

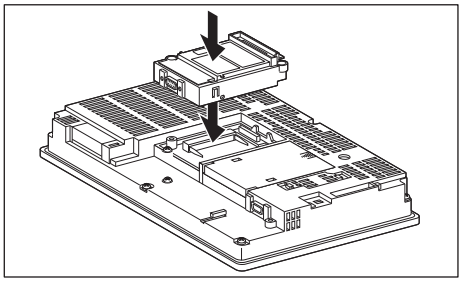
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

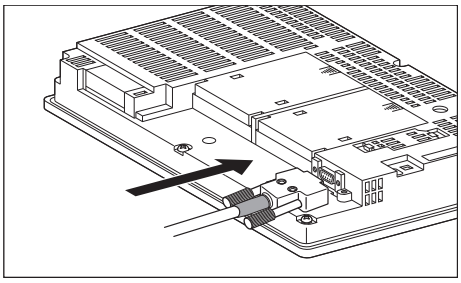
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

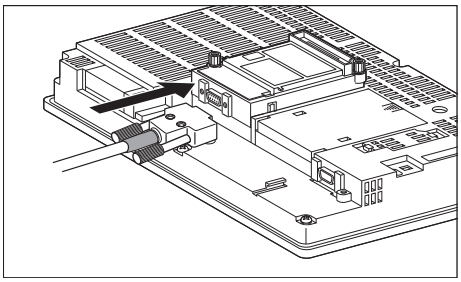
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



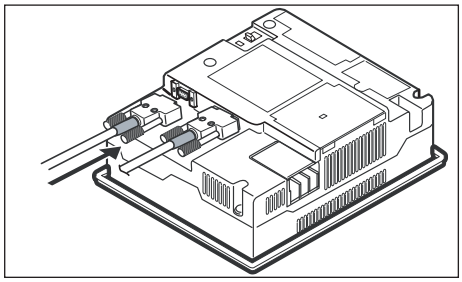
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

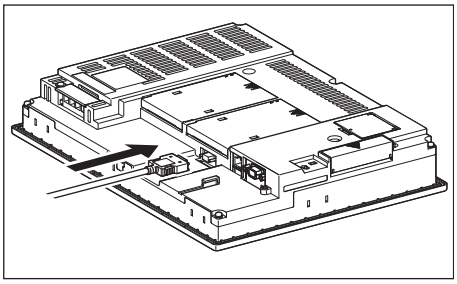


(2) How to connect the RS-422 cable

(a) For the GT16

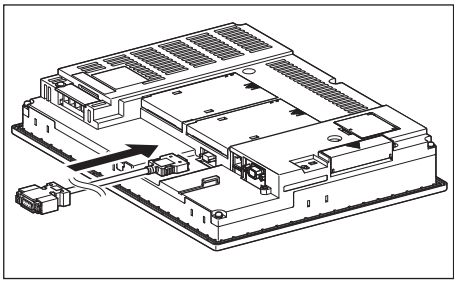
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

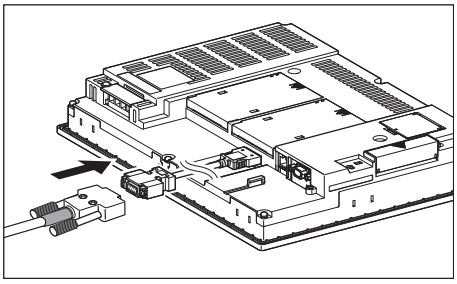


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

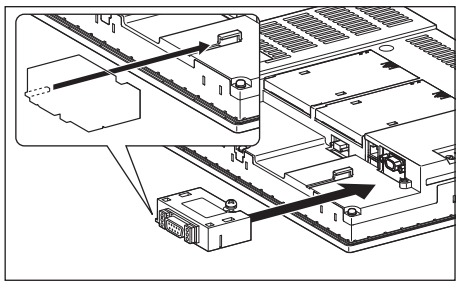


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

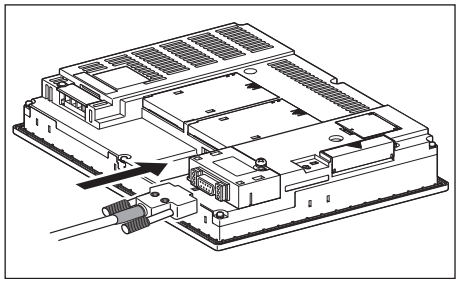


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

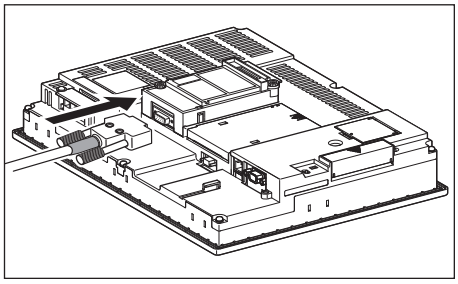


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

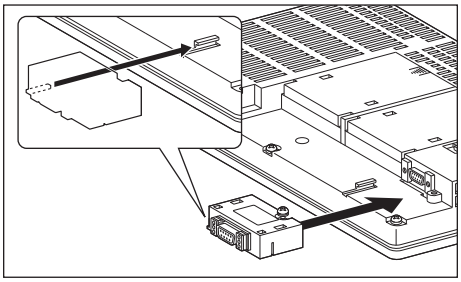
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



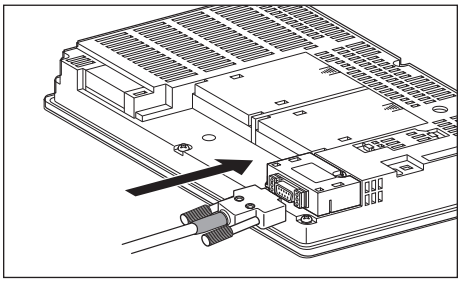
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

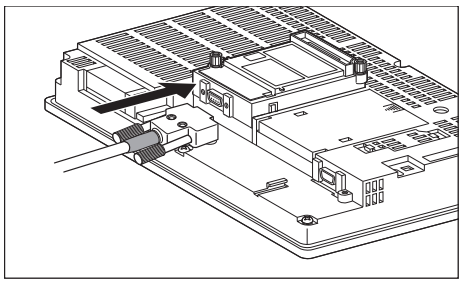


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

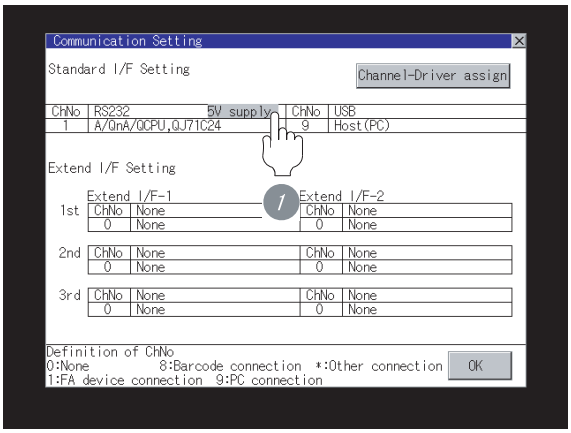
Point

When using the RS-422 conversion unit

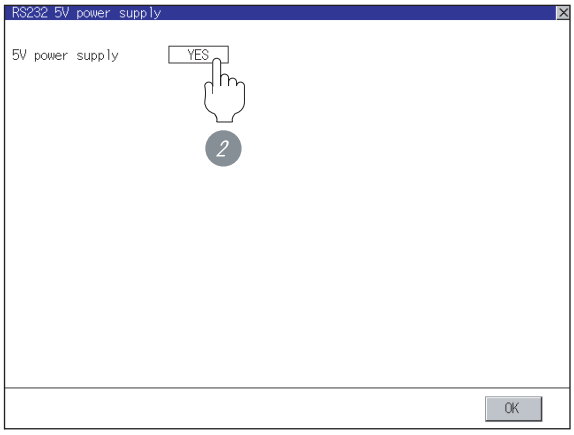
On [Communication Settings] on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

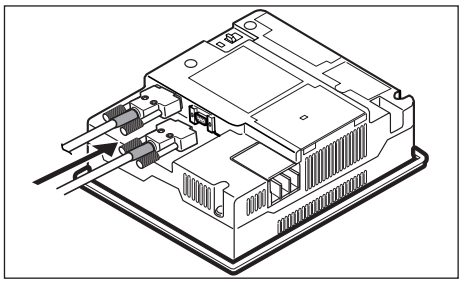


2 Set [5V power supply] to [YES].



(c) For the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



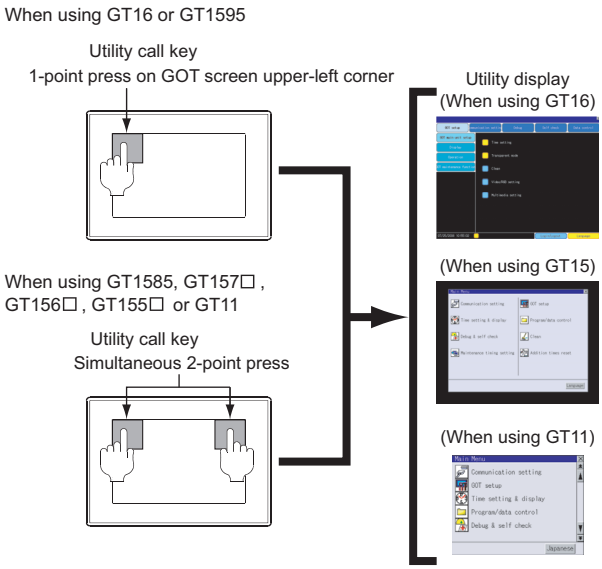
23.1.11 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

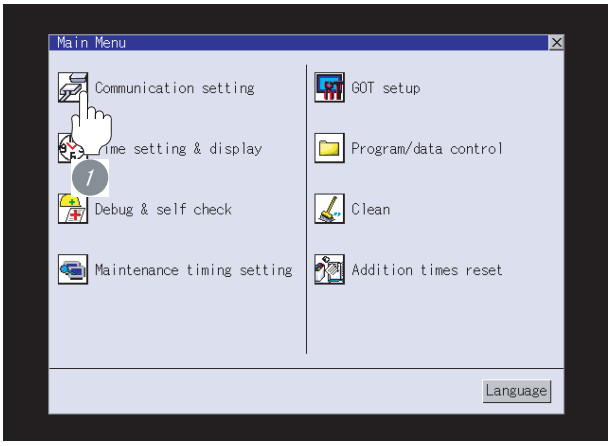


Point

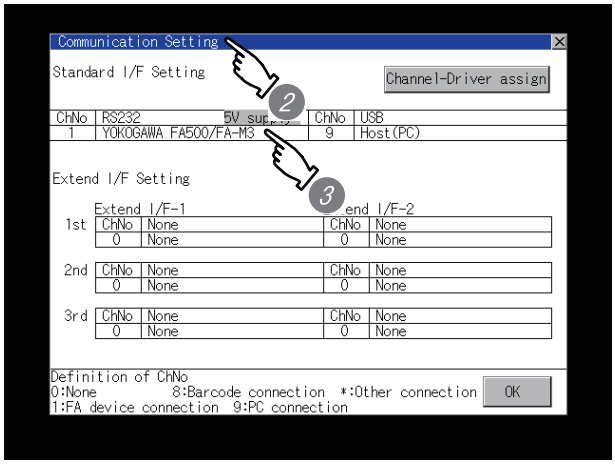
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication Settings] from the Utility.



2 The [Communication Settings] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: YOKOGAWA FA500/FA-M3

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 23.1.5 Preparatory Procedure for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

23.1.12Checking for normal monitoring

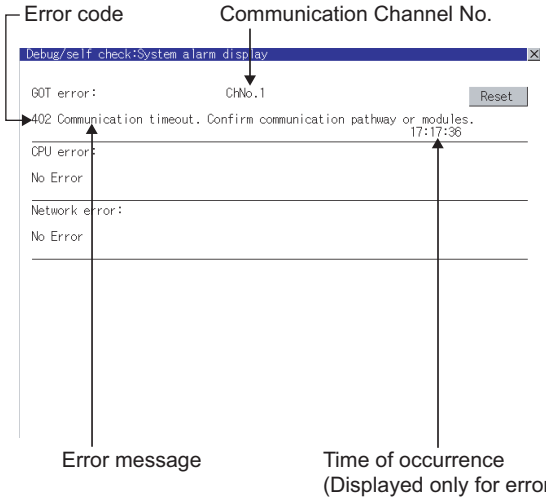
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 23.1.13 PLC side setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

23.1.13 PLC side setting

Point

YOKOGAWA PLC

For details of YOKOGAWA PLCs, refer to the following manuals.

☞ Manuals for YOKOGAWA PLCs

Model		Reference
CPU port/D-Sub 9-pin conversion cable	KM10-0C	Section 23.1.14
SIO port adapter cable	KM10-0S	
PC link module	F3LC01-1N	Section 23.1.15
	F3LC11-1N	
	F3LC11-2N	
	F3LC11-1F	Section 23.1.16
	F3LC12-1F	
	LC01-0N	Section 23.1.17
	LC02-0N	
STARDOM		Section 23.1.18

23.1.14 Connecting to CPU port/D-sub 9-pin conversion cable, SIO port adapter cable

1 Setting of PLC CPU

Make the PLC CPU settings, displaying [Configuration] → [Communication Settings] with the program development tool or the ladder-programming tool.

Item	Setting				
Communication mode*1	Set the communication mode of the CPU (transmission speed and data format). Set the transmission speed and data format according to settings of the transmission speed, data length, parity and stop bit on the GOT side. For details on these GOT side settings, refer to the following. ☞ Section 23.1.8 Setting communication interface (Communication settings)				
	Item	Transmission speed and data format			
		Transmission speed	Data length	Parity	Stop bit
	Communication mode 0	9600bps	8 bits	Even	1 bit
	Communication mode 1	9600bps	8 bits	None	1 bit
	Communication mode 2	19200bps	8 bits	Even	1 bit
	Communication mode 3	19200bps	8 bits	None	1 bit
	Communication mode 4	38400bps	8 bits	Even	1 bit
	Communication mode 5	38400bps	8 bits	None	1 bit
	Communication mode 6	57600bps	8 bits	Even	1 bit
	Communication mode 7	57600bps	8 bits	None	1 bit
	Communication mode 8	115200bps	8 bits	Even	1 bit
	Communication mode 9	115200bps	8 bits	None	1 bit
CPU PC link function settings	Set the following when using the CPU programming port as the PC link function. Make the checksum setting according to the sum check setting on the GOT side. For the sum check setting on the GOT side, refer to the following. ☞ Section 23.1.8 Setting communication interface (Communication settings)				
	Item	Setting			
	Use of PC link function	Mark. (Use enabled)			
	Checksum	Mark. (ON) Do not mark. (OFF)			
	End character	Do not mark. (OFF)			
	Protect function	Do not mark. (OFF)			

*1 The communication mode that can be selected differs according to the CPU.

23.1.15Connecting PC link module (F3LC01-1N, F3LC11-1N, F3LC11-2N)

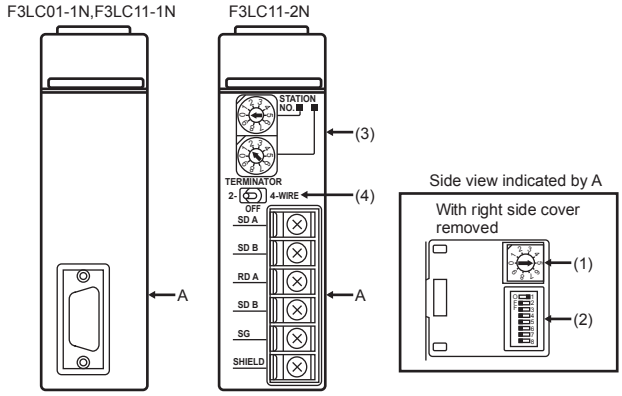
1 Switch setting on the PC link module

Set the switches accordingly.

Point

Switch setting

Set the switches before mounting the PC link module to the base unit.



(1) Transmission speed switch

Set the same transmission speed as that of the GOT side.

For the transmission speed setting on the GOT side, refer to the following.

Section 23.1.8 Setting communication interface (Communication settings)



Setting *1	Transmission speed
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(2) Data format setting switch

Set the data length, parity, stop bit and checksum consistent with the corresponding settings on the GOT side.

For the settings on the GOT side, refer to the following.

Section 23.1.8 Setting communication interface (Communication settings)



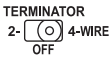
Switch No.	Description	Setting
1	Data length	ON (8 bits), OFF (7 bits)
2	Parity	ON, OFF
3		ON (even), OFF (odd)
4	Stop bit	ON (2 bits), OFF (1 bit)
5	Checksum	ON, OFF
6	End character specification	OFF (none)
7	Protect function	OFF (disabled)
8	—	OFF

(3) Station No. switch (F3LC11-2N only)



Rotary switch	Description	Setting
1)	Station No. (10's digit)	0
2)	Station No. (1's digit)	1

(4) Terminator switch (F3LC11-2N only)



Setting	Description
4-WIRE	Resistor connected (4-wire type)

23.1.16Connecting PC link module (F3LC11-1F, F3LC12-1F)

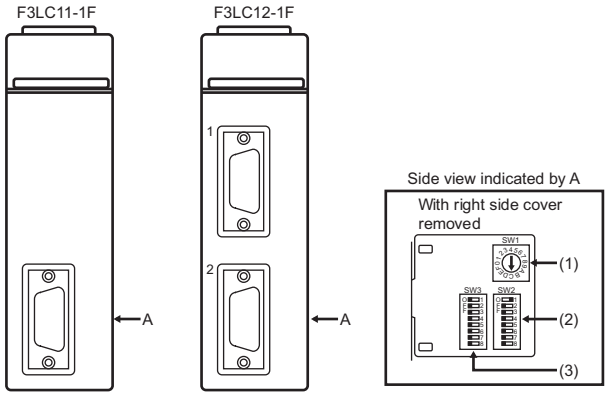
1 Switch setting on the PC link module

Set the switches accordingly.

Point

Switch setting

Set the switches before mounting the PC link module to the base unit.



(1) Transmission speed switch (SW1)

Set the same transmission speed setting as that of the GOT side.

For the transmission speed setting on the GOT side, refer to the following.

Section 23.1.8 Setting communication interface (Communication settings)



Setting *1	Transmission speed
4	4800bps
5	9600bps
7	19200bps
9	38400bps
A	57600bps
C	115200bps

*1 Only transmission speeds available on the GOT side are shown.

(2) Data format switch (SW2)

Set the character length, parity, stop bit and checksum consistent with the corresponding settings on the GOT side.

For the settings on the GOT side, refer to the following.

Section 23.1.8 Setting communication interface (Communication settings)



Switch No.	Description	Setting
1	Character length	ON (8 bits), OFF (7 bits)
2	Parity	ON, OFF
3		ON (even), OFF (odd)
4	Stop bit	ON (2 bits), OFF (1 bit)
5	Checksum	ON, OFF
6	End character specification	OFF
7	Protect function	OFF (disabled)
8	Security function	OFF (disabled)

(3) Module function switch (SW3)



Switch No.	Description	Setting
1 to 6	User setting inhibited	OFF
7	Modem compatibility	OFF (not compatible)
8	External modem	OFF (none)

23.1.17Connecting PC link module (LC01-0N, LC02-0N)

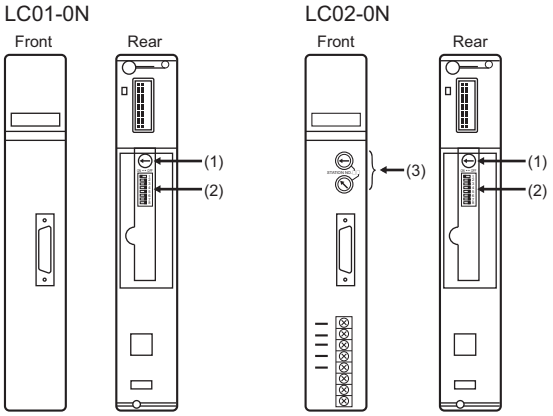
1 Switch setting on the PC link module

Set the switches accordingly.

Point

Switch setting

Set the switches before mounting the PC link module to the base unit.



(1) Transmission speed switch

Set the same transmission speed as that of the GOT side.

For the transmission speed setting on the GOT side, refer to the following.

Section 23.1.8 Setting communication interface (Communication settings)



Setting *1	Transmission speed
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(2) Data format switch

Set the data length, parity, stop bit and checksum consistent with the corresponding settings on the GOT side.

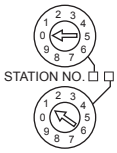
For the settings on the GOT side, refer to the following.

Section 23.1.8 Setting communication interface (Communication settings)



Switch No.	Description	Setting
1	Data length	ON (8 bits), OFF (7 bits)
2	Parity	ON, OFF
3		ON (even), OFF (odd)
4	Stop bit	ON (2 bits), OFF (1 bit)
5	Checksum	ON, OFF
6	End character specification	OFF
7	Protect function	OFF (disabled)
8	—	OFF

(3) Station No. switch (LC02-0N only)



Rotary Switch	Description	Setting	
		RS-232 communication	RS-422 communication
1)	Station No. (10's digit)	0	0
2)	Station No. (1's digit)	1	2

23.1.18Connecting to STARDOM

Make the communication settings as shown below. For details of the communication settings, refer to the following manual.

☞ Peripheral Software Manual for YOKOGAWA PLC

Point

Connection between STARDOM and the PC for communication settings

For the communication settings of STARDOM, STARDOM and the PC for communication settings must be connected to Ethernet using the Resource Configurator (peripheral software).

1 COM port setting

Make the settings on the FCX Maintenance Page for STARDOM.

1. Select "Reboot (Maintenance Mode)" on the Reboot screen of the FCX Maintenance Page to set the maintenance mode.
2. Set the COM1 port driver to be used. Execute "JEROS Basic Setting File" from the "Edit System Setting File" screen on the FCX Maintenance Page. Confirm that the line of "Com1SioDriver" is as follows.
   Com1SioDriver =DUONUS_SIO
3. Set the COM1 port to be used. Execute "COM1 Port Setting File" from the "Edit System Setting Files" screen on the FCX Maintenance Page. Make the settings as follows according to the communication specifications on the setting screen.
   Leave the settings as default if not listed on the communication setting items.

   (Communication setting items) ( ) in the table shows the names on the FCX Maintenance Page.

Item	Set value
Transmission speed (Baudrate) *1	4800bps,9600bps,19200bps, 38400bps 57600bps,115200bps
Data length (DataBitLength) *1	8 bits or 7 bits
Stop bit (StopBitLength) *1	1 bit or 2 bits
Parity bit (Parity) *1	none/odd/even

```
Baudrate              =*1
DataBitLength         =*1
StopBitLength         =*1
Parity                =*1
FifoMode              =YES
InitialDTRState       =ON
SendFlowControlMode   =CTS
ReceiveFlowControlMode=DTR
```

*1: Adjust the settings with GOT communication settings.
(☞ Section 23.1.8 Setting communication interface (Communication settings)

4. Select "Reboot (Online Mode)" on the "Reboot" screen of the FCX Maintenance Page to set the online mode.

2 Defining Logic POU

Define Logic POU using Logic Designer (peripheral software), and download the project to STARDOM.

For the detail procedures of communication settings, refer to the following manual.

☞ Peripheral Software Manual for YOKOGAWA PLC

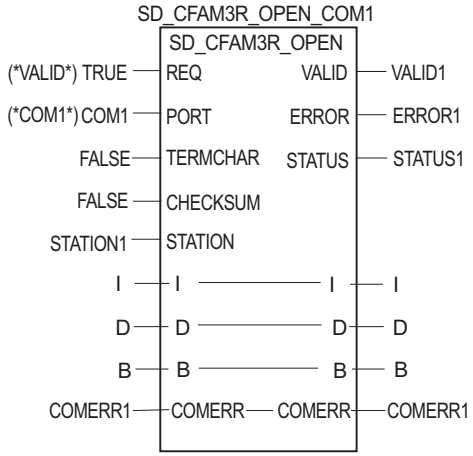
1. Start Logic Designer and create a new project using a template.
   Use "STARDOM Serial Communication" template.

2. Insert FA-M3 Emulator Firmware Library to the new project.
   The library path inserted in the procedures above is as follows.
   {Install Folder}\LogicDesigner\Mwt\Plc\Fw_lib\SD_FCXPLCR_LIB\SD_FCXPLCR_LIB.fwl

3. Insert FA-M3 Emulator User Library to the new project.
   The library path inserted in the procedures above is as follows.
   {Install Folder}\LogicDesigner\Libraries\SD_CFAM3R_PF.mwt

4. Copy a sample project POU to the new project.
   For the following terminals, set as shown below.

   REQ terminal : TRUE
   TERMCHAR terminal : FALSE
   PORT terminal : COM1
   STATION terminal : STATION1



(Definition example of Logic POU)

5. Defining the instance
   Instantiate Logic POU. Define an already defined instance to Task0 .

6. Defining Target Setting
   Define the IP address or host name of STARDOM for which the communication settings are made.

7. Downloading the project
   When the download is completed, start STARDOM.

23.1.19 Precautions

1 Device range

When performing monitoring with the GOT connected to a YOKOGAWA PLC and setting devices for objects, use devices within the device range of the YOKOGAWA PLC.
When a device outside the range is set on an object, an indefinite value is displayed on the object. (No error is displayed in the system alarm.)
For details on the device range of YOKOGAWA PLCs, refer to the following manual:

☞ User's Manual for the YOKOGAWA PLC

2 Connecting to STARDOM

(1) Redundant system
When STARDOM is configured with a redundant system, the connection is not supported.

(2) System alarm
The PLC error does not appear in the system alarm.

(3) GOT clock function
Since the STARDOM does not have a clock function, the settings of [time adjusting] or [time broad cast] by GOT clock control will be disabled.

23.2 Ethernet Connection

Select a system configuration suitable for your application.

Point

Conventions used in this section

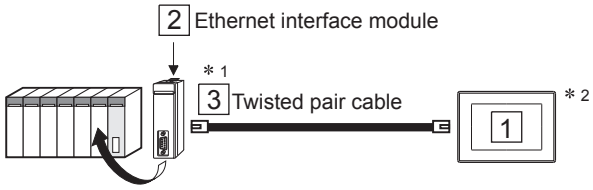
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

23.2.1 System configuration(FA-M3)

Communication driver

Ethernet(YOKOGAWA)/Gateway

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
TCP: 8 UDP: 128 (recommended to 16 units or less)	100m or less*3	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

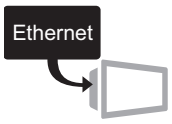
*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.

GT16 User's Manual (Hardware)

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model
	2	Ethernet interface module	F3LE01-5T, F3LE11-0T, F3LE12-0T

2 is a product manufactured by YOKOGAWA Electric Corporation. For details of this product, contact YOKOGAWA Electric Corporation.

(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

23.2.2 Preparatory procedures for monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 23.2.3
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 23.2.4
Checking OS installation on GOT

Set the communication interface. (Communication settings)

Section 23.2.5
Setting communication interface (Communication settings)

Download the project data.

Section 23.2.6
Downloading project data

Attach the communication unit and connect the cable.

Section 23.2.7
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the controller.

Section 23.2.8
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 23.2.9
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

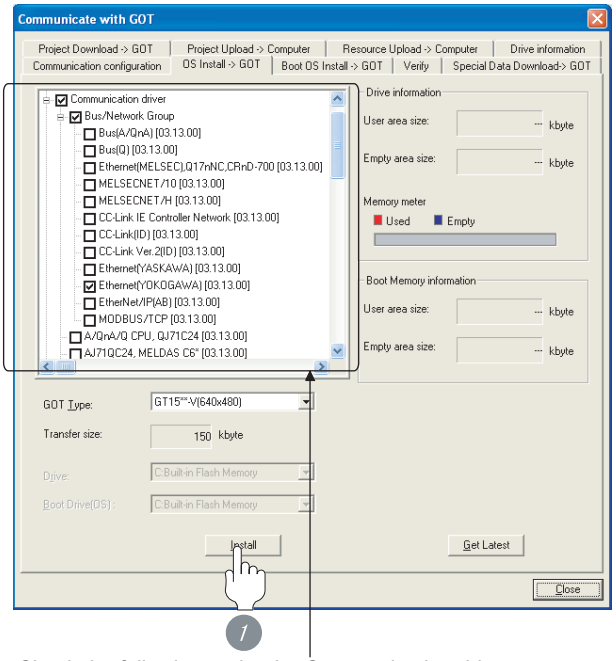
Section 23.2.10 PLC side setting

23.2.3 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
· Ethernet (YOKOGAWA)

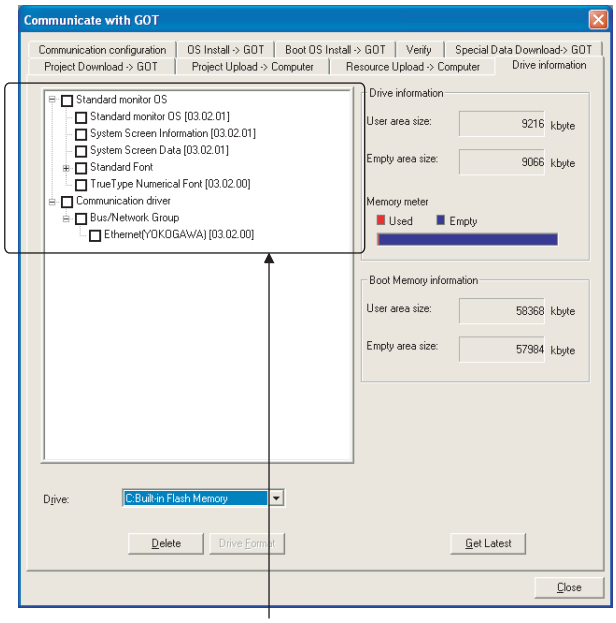
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

23.2.4 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Ethernet (YOKOGAWA)

23.2.5 Setting communication interface (Communication settings)

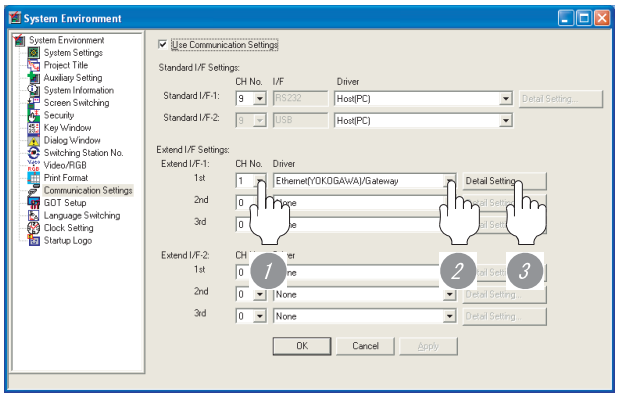
Make the GOT communication interface settings on [Communication Settings] and [Ethernet] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] and [Ethernet] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

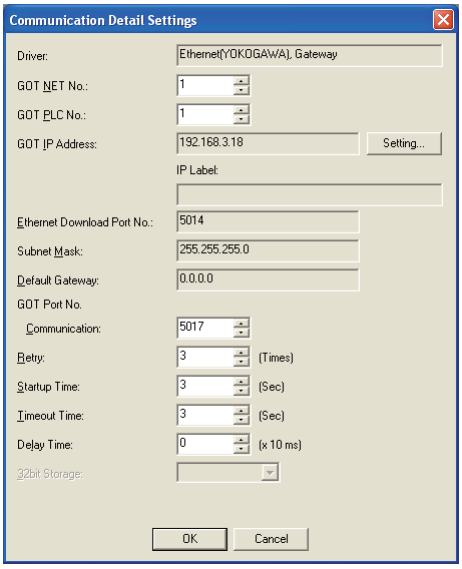
1 Set [1] to the channel No. used.

2 Set the driver to [Ethernet(YOKOGAWA)/Gateway].

3 Perform the detailed settings for the driver.
(☞ 2 GT15)

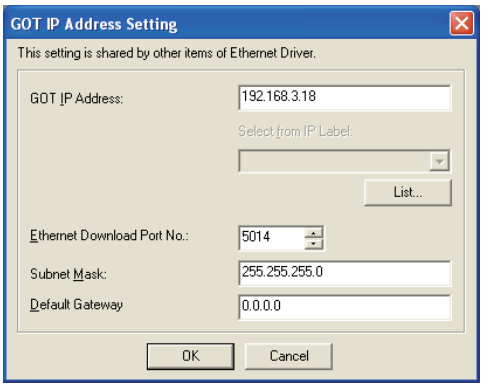
2 Communication detail settings

(1) GT16

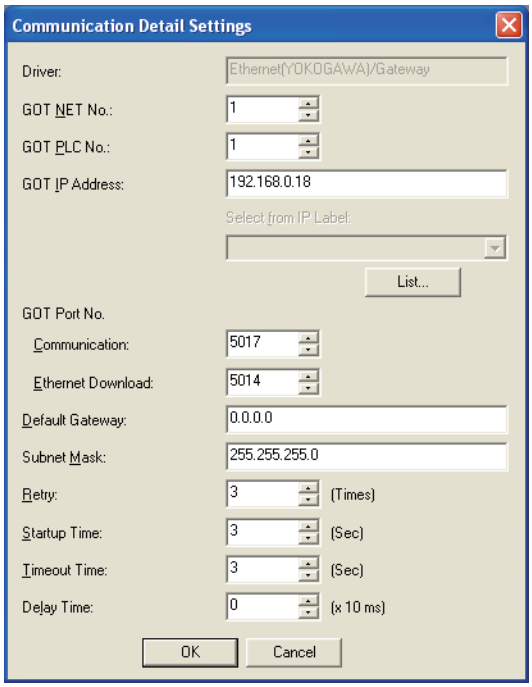


Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address*1	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Ethernet Download)*1	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*1	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*1	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the controller. <Default: 5017>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (10 ms)

*1 Click the Setting button and perform the setting in the [GOT IP Address Setting] screen.



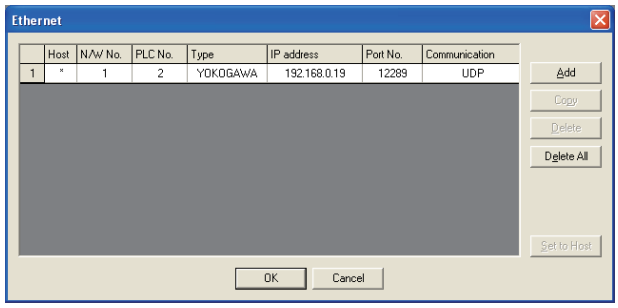
(2) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the controller. <Default: 5017>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No. (Ethernet Download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (10 ms)

3 Ethernet setting

(1) Ethernet setting



Item	Description	Setting
Host	The host is displayed. (The host is indicated with an asterisk (*).)	-
N/W No.	Set the network No. of the connected Ethernet module. <Default: blank>	1 to 239
PLC No.	Set the station No. of the connected Ethernet module. <Default: blank>	1 to 64
Type	YOKOGAWA (fixed)	YOKOGAWA (fixed)
IP address	Set the IP address of the connected Ethernet module. <Default: blank>	PLC side IP address
Port No.	Set the port No. of the connected Ethernet module. <Default: 12289>	12289, 12291
Communication	Select a communication protocol. <Default: UDP>	UDP, TCP

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

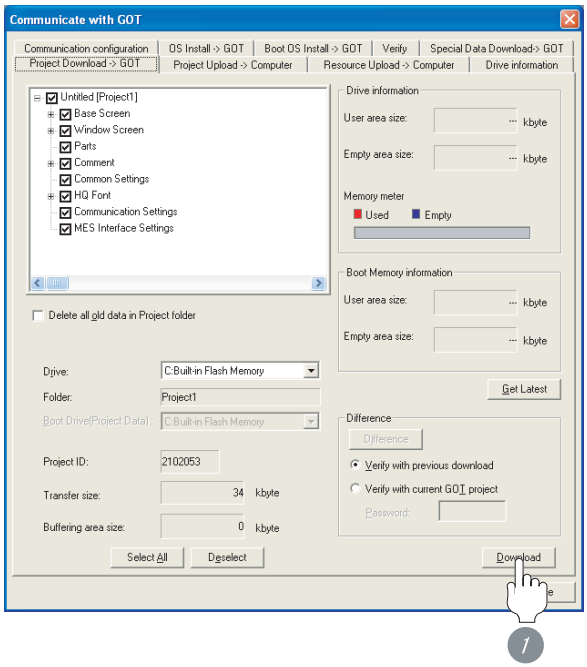
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

23.2.6 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

23.2.7 Attaching communication unit and connecting cable

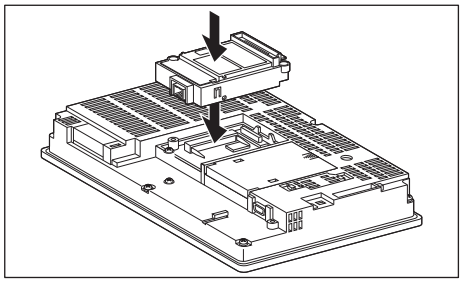
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

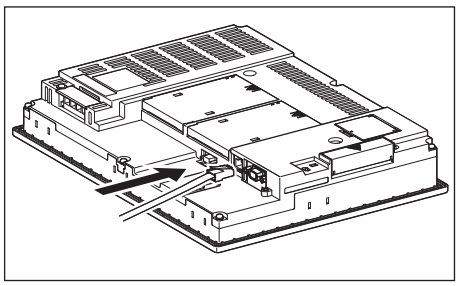
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet Communication Unit User's Manual

2 Connecting the cable

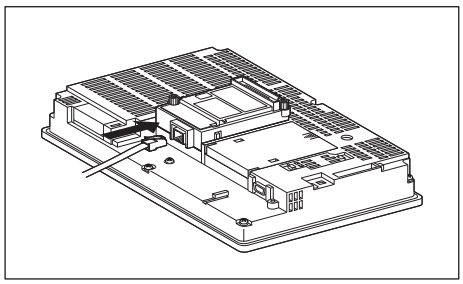
(1) For GT16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) For GT15

2 Connect the twisted pair cable to the Ethernet communication unit.



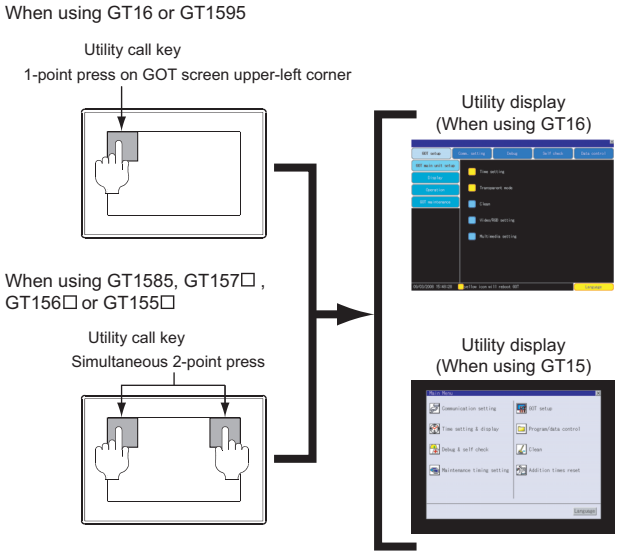
23.2.8 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)



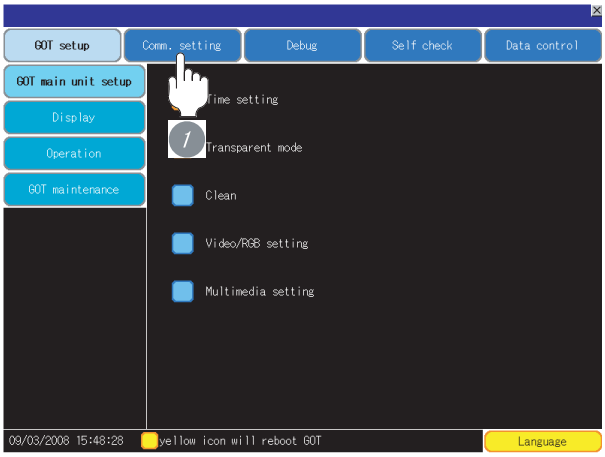
Point

When setting the utility call key to 1-point

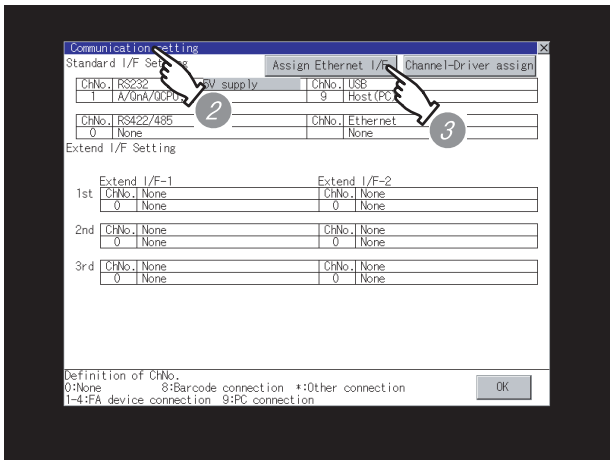
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual

(1) GT16

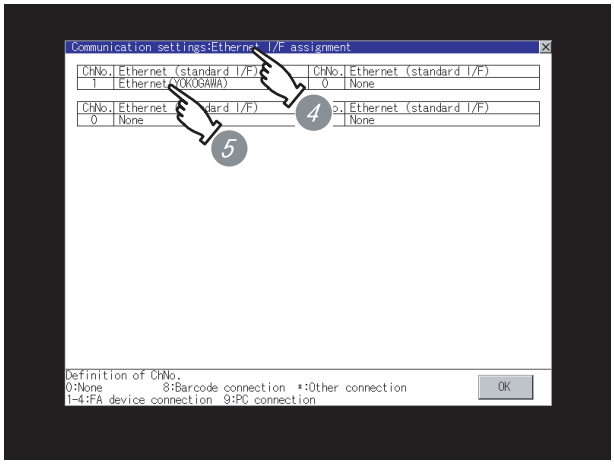


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet/IF].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver : Ethernet (YOKOGAWA)

6 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 23.2.2 Preparatory procedures for monitoring

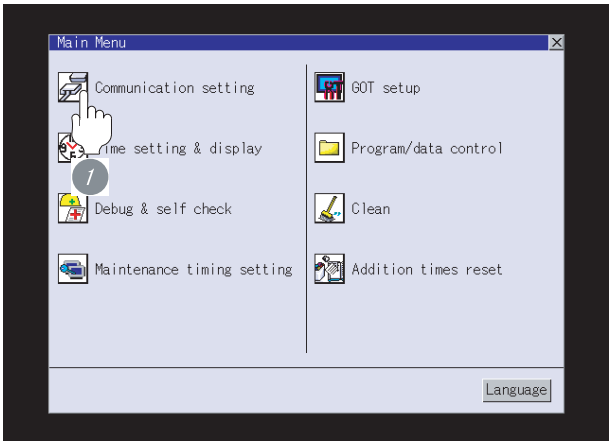
Point

When changing communication interface setting by Utility

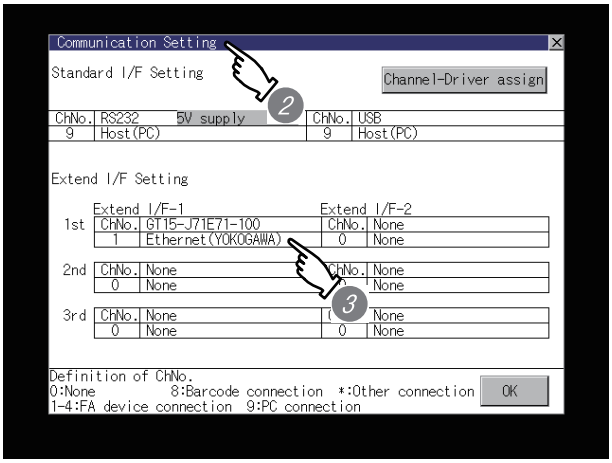
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility)

(2) GT15



1 After powering up the GOT, touch [Main Menu] → [Communication Settings] from the Utility.



2 The [Communication Settings] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: Ethernet (YOKOGAWA)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 23.2.2 Preparatory procedures for monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT15 User's Manual

23.2.9 Checking for normal monitoring

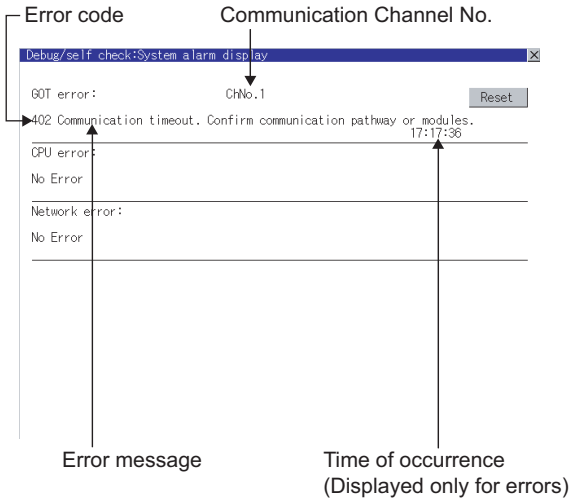
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication

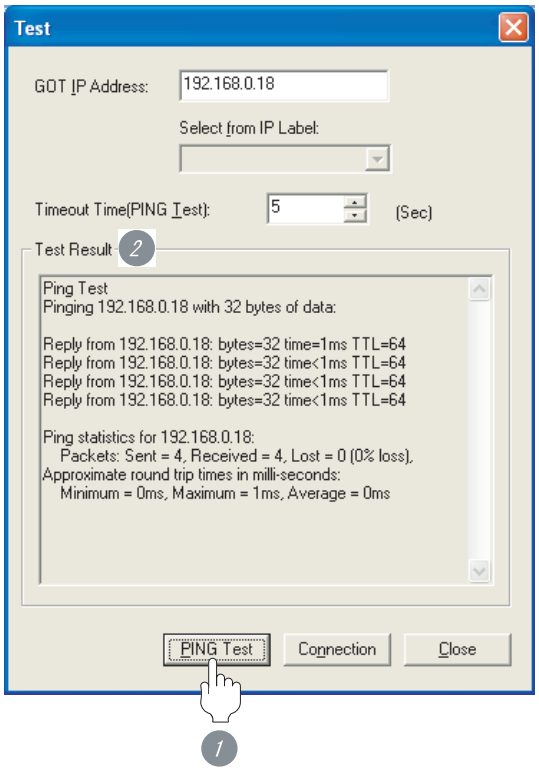
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication

C:\>Ping 192.168.0.18
Request timed out.

(2) When using the [PING Test] of GT Designer2

Select [Communication] → [Communication configuration] → [Ethernet] and Test to display [PING Test].



1 Specify the [GOT IP address] of the [PING Test] and click on the PING Test button.

2 The [Test Result] is displayed after the [PING Test] is finished.

(3) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of [Communication Settings]
- IP address of GOT svpecified by Ping command

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 23.2.10 PLC side setting

4 Confirming the communication state to each station (station monitoring function)

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT.

When detecting the abnormal state, it is confirming the response by executing a Ping command to the faulty station.

The station monitoring state can be confirmed by using GOT internal device.

(1) Station monitoring state

(a) No. of faulty station (GS230)

Total No. of the faulty CPU are stored.
The station No. of faulty stations are stored to GS231 through GS238. (☞ (b)Faulty station information (GS231 to GS238))

Device	b15 to b8	b7 to b0
GS230	(00H fixed)	No. of faulty stations

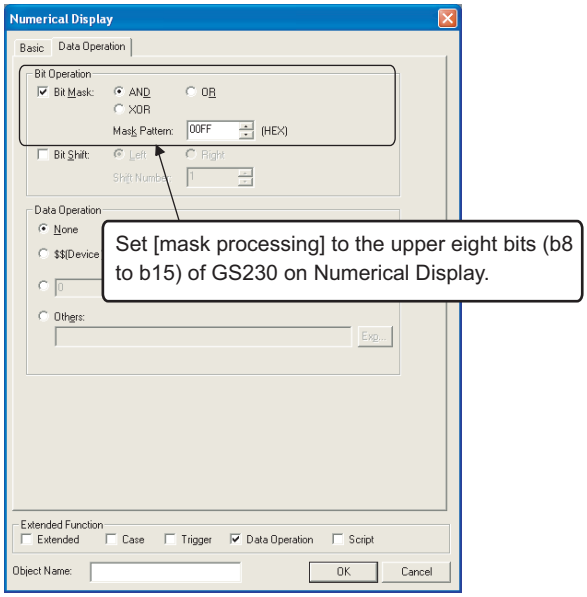
Point

When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.
For the data operation, refer to the following manual.

☞ GT Designer2 Version☐ Screen Design Manual

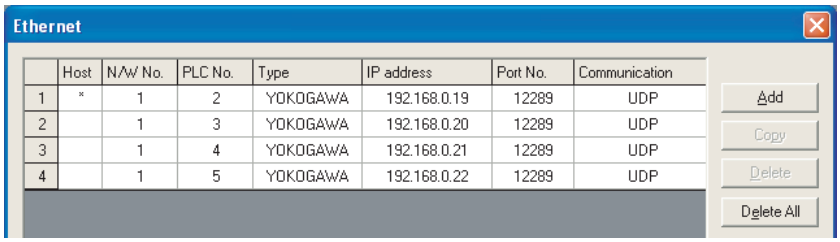
<Numerical Display (Data Operation tab)>



(b) Faulty station information (GS231 to GS238)

- The bit of the Ethernet setting No. corresponding to the faulty station is set.
  0: Normal
  1: Abnormal
- The bit is reset after the fault is recovered.

GS231 bit 0 · · ·
GS231 bit 1 · · ·
GS231 bit 2 · · ·
GS231 bit 3 · · ·



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

23.2.10 PLC side setting

Point

YOKOGAWA PLC

For details of YOKOGAWA PLCs, refer to the following manuals.

☞ Manuals for YOKOGAWA PLCs

Model		Reference
Ethernet interface module	F3LE01-5T	Section 23.2.11
	F3LE11-0T	
	F3LE12-0T	Section 23.2.12

23.2.11 Connecting to Ethernet Interface Module (F3LE01-5T, F3LE11-0T)

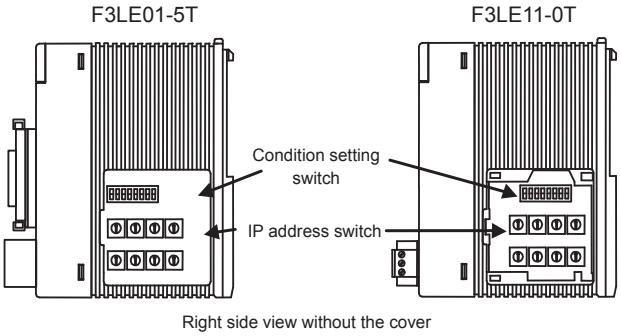
1 Switch settings of Ethernet Interface Module

Set the switches.

Point

Switch setting

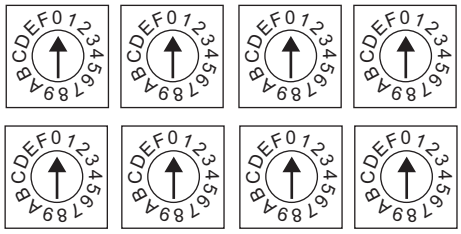
Set the switches before mounting the Ethernet Interface Module on the base unit.



Right side view without the cover

(1) IP address switch

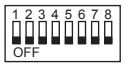
Set the IP address with eight Hex rotary switches on the side of the base unit.



Hexadecimal	C0	A8	FA	D2
	↓	↓	↑	↑
Decimal	192	168	250	210

(2) Communications condition switch

Set the data format, write protection, line processing at TCP timeout error or operation mode with the DIP switch on the side of the base unit.



Switch No.	Description	Setting
1	Data code	ON (binary), OFF (ASCII)
2	Write protect	ON (protect) OFF (not protect)
3	Always set to off	ON (not available), OFF (always)
4		
5		
6		
7	Line processing on TCP timeout*1	ON (not close the line) OFF (close the line)
8	Loopback test	ON (test operation), OFF (normal operation)

*1 Applicable to only F3LE01-5T.

23.2.12 Connecting to Ethernet Interface Module (F3LE12-0T)

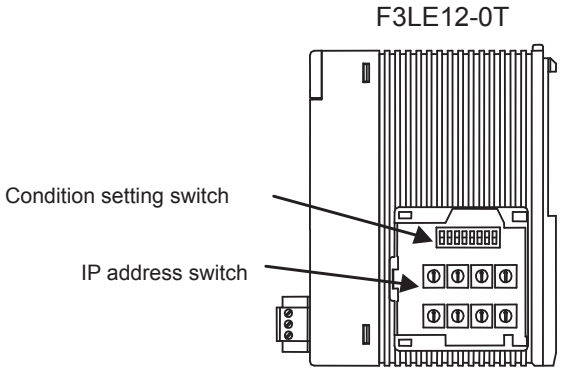
1 Switch settings of Ethernet Interface Module

Set the switches.

Point

Switch setting

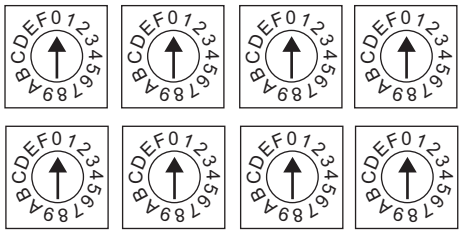
Set the switches before mounting Ethernet Interface Module on the base unit.



Right side view with the cover

(1) IP address switch

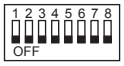
Set the IP address with eight Hex rotary switches on the side of the base unit.



Hexadecimal	C0	A8	FA	D2
	↑	↑	↑	↑
Decimal	192	168	250	210

(2) Communications condition switch

Set the data format, write protection, line processing at TCP timeout error or operation mode with the DIP switch on the side of the base unit.



Switch No.	Description	Setting
1	Data code	ON (binary), OFF (ASCII)
2	Write protect	ON (protect), OFF (not protect)
3	Always set to off	ON (not available), OFF (always)
4		
5		
6		
7		
8	Loopback test	ON (test operation), OFF (normal operation)

23.2.13 Precautions

1 Device range

When performing monitoring with the GOT connected to a YOKOGAWA PLC and setting devices for objects, use devices within the device range of the YOKOGAWA PLC.
When a device outside the range is set on an object, an indefinite value is displayed on the object. (No error is displayed in the system alarm.)
For details on the device range of YOKOGAWA PLCs, refer to the following manual:

☞ Manuals for YOKOGAWA PLCs

2 When setting IP address

Do not use "0" and "255" at the end of an IP address.
(Numbers of *.*.*.0 and *.*.*.255 are used by the system.)
The GOT may not monitor the controller correctly with the above numbers.
Consult with the administrator of your network before setting an IP address to the GOT and controller.

3 When connecting to multiple GOTs

(1) Setting PLC No.
When connecting two or more GOTs in the Ethernet network, set each [PLC No.] to the GOT.

☞ Section 23.2.5 Setting communication interface (Communication settings)

(2) Setting IP address
Do not use the IP address [192.168.0.18] when using multiple GOTs.
A communication error may occur on the GOT with the IP address.

4 When connecting to the multiple network equipments (including GOT) in a segment

By increasing the network load, the transmission speed between the GOT and PLC may be reduced.
The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

23.3 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	YOKOGAWA PLC connection	• Supporting the connecting to STARDOM • Extending the device range of FA-M3	2.32J	Communication driver YOKOGAWA FA500/FA-M3/ STARDOM [03.00.**]
GT15 GT11 Serial	YOKOGAWA PLC connection	Supporting the F3RP66 and F3RP67 connection	2.47Z	Communication driver YOKOGAWA FA500/FA-M3/ STARDOM [03.02.**] Ethernet (YOKOGAWA) [03.02.**]
GT16 GT15	YOKOGAWA PLC connection	Supporting the Ethernet connection	2.47Z	Communication driver Ethernet (YOKOGAWA) [03.02.**]
GT16	YOKOGAWA PLC connection	Supporting the connections to GT16	2.90U	Communication driver YOKOGAWA FA500/FA-M3/ STARDOM [04.02.**] Ethernet (YOKOGAWA) [04.02.**]

24

CONNECTION TO ALLEN-BRADLEY PLC

24.1 Serial Connection . . . . . page 24-2

This section describes the equipment and cables needed for RS-232/RS-422 connection.
Select a system suitable for your application.



24.2 Ethernet Connection . . . . . page 24-23

This section describes the equipment and cables needed when connecting to Ethernet.



24.3 List of Functions Added by Version Upgrade . . . . . page 24-37

This section describes the functions added by version upgrade of GT Designer2 or OS.

24.1 Serial Connection

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

24.1.1 System Configuration (SLC500 Series)

Communication driver: AB SLC500, AB 1:N (For GT16, GT15, GT11)

Communication driver: AB SLC500 (For GT10)

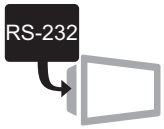
1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less	*1 3 RS-232 cable 1) 1 MAX15m	GT16 GT15 GT11 Serial GT10
		DH485 network *1 2 Adapter 4 RS-232 cable 2) 1 MAX15m	GT16 GT15 GT11 Serial GT10
		*1 5 RS-232 cable 5) 1 MAX15m	GT24V 10 20 30 (RS-232)

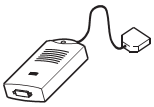
*1 GT10 cannot connect with the following PLCs.
SLC500-20, SLC500-30, SLC500-40, SLC5/01, SLC5/02

2 System equipment

(1) GOT

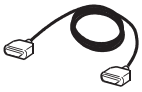
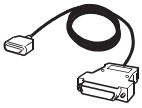
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	Adapter	1770-KF3

2 is an Allen-Bradley product manufactured by Rockwell Automation, Inc. For details of this product, contact Rockwell Automation, Inc.

(3) Cable

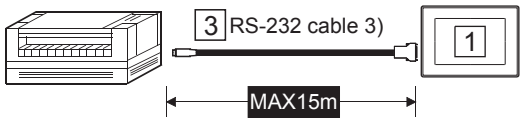
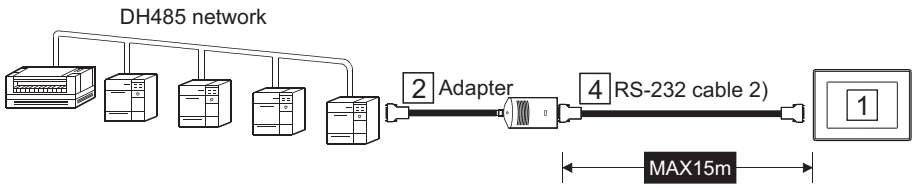
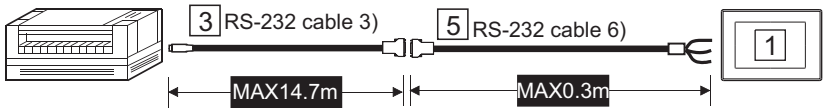
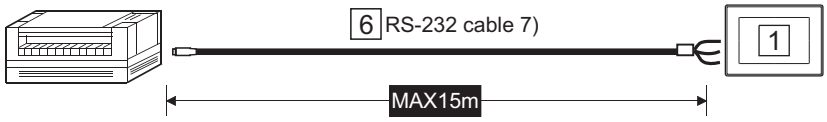
Image	No.	Name	Model name	Model
	3	RS-232 cable 1)*1 • Between CPU and GOT	GT09-C30R20701-9S(3m)	GT16 GT15 GT11 Serial GT105□ 4□
	4	RS-232 cable 2)*1 • Between Adapter and GOT	(To be prepared by the user. Section 24.1.4 Connection Cable)	GT16 GT15 GT11 Serial GT105□ 4□
	5	RS-232 cable 5) Between CPU and GOT	To be prepared by the user. Section 24.1.4 Connection Cable	GT24V 10 20 30 (RS-232)

*1 The RS-232 cable can be prepared by the user. (Section 24.1.4 Connection Cable)

24.1.2 System Configuration (MicroLogix1000/1200/1500 Series)

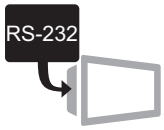
Communication driver
AB MicroLogix

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT16 GT15 GT11 Serial GT10 5□ 4□
			GT24V 10 20 30 (RS-232)
			GT24V 10 20 30 (RS-232)

2 System equipment

(1) GOT

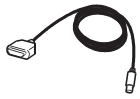
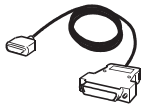
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT10 5□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	Adapter	1770-KF3

2 is an Allen-Bradley product manufactured by Rockwell Automation, Inc. For details of this product, contact Rockwell Automation, Inc.

(3) Cable

Image	No.	Name	Model name	Model
	3	RS-232 cable 3)*1 • Between CPU and GOT • Between CPU and RS-232 cable 6)	1761-CBL-PM02 cable (Series C or later)	GT16 GT15 GT11 Serial GT105□4□ GT24V 10 20 30 (RS-232)
	4	RS-232 cable 2)*1 • Between Adapter and GOT	To be prepared by the user. ☞ Section 24.1.4 Connection Cable	GT16 GT15 GT11 Serial GT105□4□ (RS-232)
	5	RS-232 cable 6) • Between RS-232 cable 3) and GOT	To be prepared by the user. ☞ Section 24.1.4 Connection Cable	GT24V 10 20 30 (RS-232)
	6	RS-232 cable 7) • Between CPU and GOT	To be prepared by the user. ☞ Section 24.1.4 Connection Cable	GT24V 10 20 30 (RS-232)

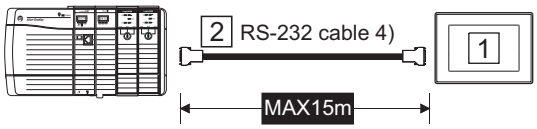
*1 The RS-232 cable can be prepared by the user.(☞ Section 24.1.4 Connection Cable)

3 is an Allen-Bradley product manufactured by Rockwell Automation, Inc. For details of this product, contact Rockwell Automation, Inc.

24.1.3 System Configuration (Control/Compact/FlexLogix Series)

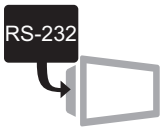
Communication driver
AB Control/CompactLogix

1 System configuration and connection conditions

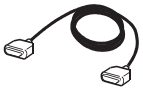
Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) Cable

Image	No.	Name	Model	Model
	2	RS-232 cable 4)*1 • Between CPU and GT	1747-CP3, 1756-CP3	GT16 GT15 GT11 Serial

*1 The RS-232 cable can be prepared by the user.(☞ Section 24.1.4 Connection Cable)

2 is an Allen-Bradley product manufactured by Rockwell Automation, Inc. For details of this product, contact Rockwell Automation, Inc.

24.1.4 Connection Cable

The RS-232 cable used for connection between the GOT and PLC needs to be prepared by the user.
The following shows each cable connection diagram and relevant connectors.

Model		Connection cable		
		GT16, GT15, GT11	GT105□, GT104□	GT1030, GT1020
CPU	SLC500 Series	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 5)
	MicroLogix1000/1200/1500 Series	RS-232 cable 3)	RS-232 cable 3)	RS-232 cable 6) RS-232 cable 7)
	Control/Compact/FlexLogix Series	RS-232 cable 4)	—	—
Adapter	1770-KF3	RS-232 cable 2)	—	—

1 Connection diagram

(1) RS-232 cable 1) (between CPU (SLC500 Series) and GOT)

(for GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	ALLEN-BRADLEY PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	CD
RD(RXD)	2		2	RXD
SD(TXD)	3		3	TXD
ER(DTR)	4		4	DTR
SG	5		5	SG
DR(DSR)	6		6	DSR
RS(RTS)	7		7	RTS
CS(CTS)	8		8	CTS
—	9		—	FG

*1 GT16 : CD, GT15 : CD, GT11, NC, GT105□ : NC, GT104□ : NC

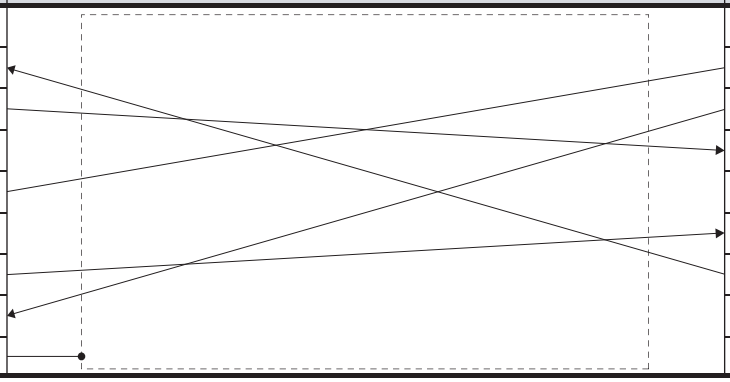
(2) RS-232 cable 2) (between Adapter (1770-KF3) and GOT) (for GT16, GT15, GT11)

GOT side		Cable connection and signal direction	ALLEN-BRADLEY PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		1	FG
RD(RXD)	2		2	TXD
SD(TXD)	3		3	RXD
ER(DTR)	4		4	RTS
SG	5		5	CTS
DR(DSR)	6		6	DSR
RS(RTS)	7		7	SG
CS(CTS)	8		8	CD
—	9		20	DTR

*2 GT16 : CD, GT15 : CD, GT11, NC

(3) RS-232 cable 3) (between CPU (MicroLogix1000/1200/1500 Series) and GOT)

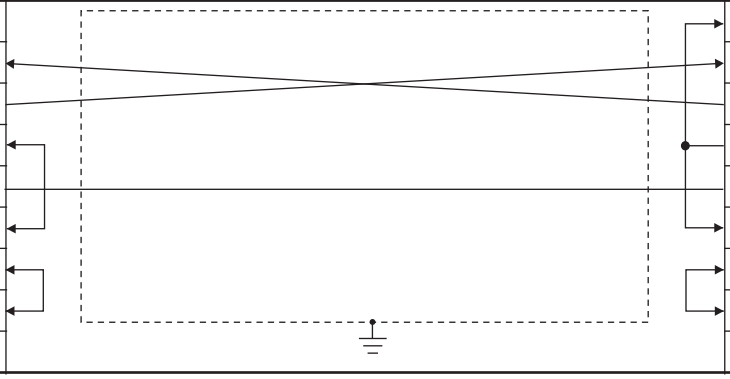
(for GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	ALLEN-BRADLEY PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	24V
RD(RXD)	2		2	SG
SD(TXD)	3		3	RTS
ER(DTR)	4		4	RXD
SG	5		5	CD
DR(DSR)	6		6	CTS
RS(RTS)	7		7	TXD
CS(CTS)	8		8	SG
—	9		—	FG

*1 GT16:CD, GT15:CD, GT11:NC, GT105□: NC, GT104□: NC

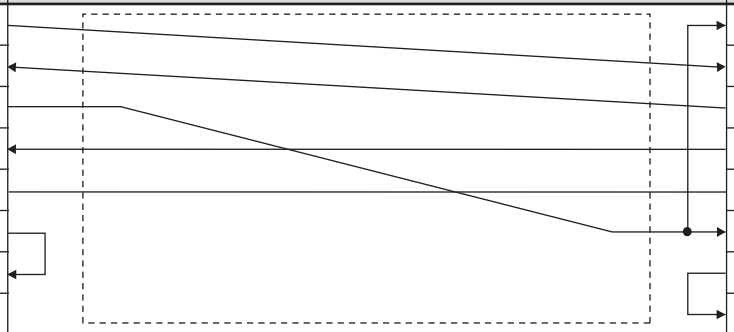
(4) RS-232 cable 4) (between CPU (Control/Compact/FlexLogix Series) and GOT)

(for GT16, GT15, GT11)

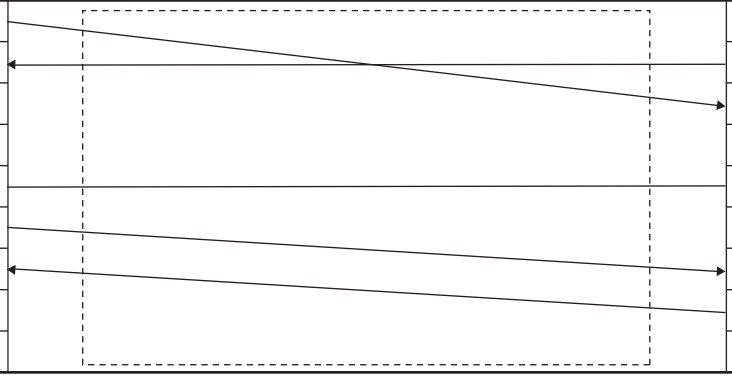
GOT side		Cable connection and signal direction	ALLEN-BRADLEY PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*2	1		1	CD
RD(RXD)	2		2	RXD
SD(TXD)	3		3	TXD
ER(DTR)	4		4	DTR
SG	5		5	SG
DR(DSR)	6		6	DSR
RS(RTS)	7		7	RTS
CS(CTS)	8		8	CTS
—	9		—	FG

*2 GT16:CD, GT15:CD, GT11:NC

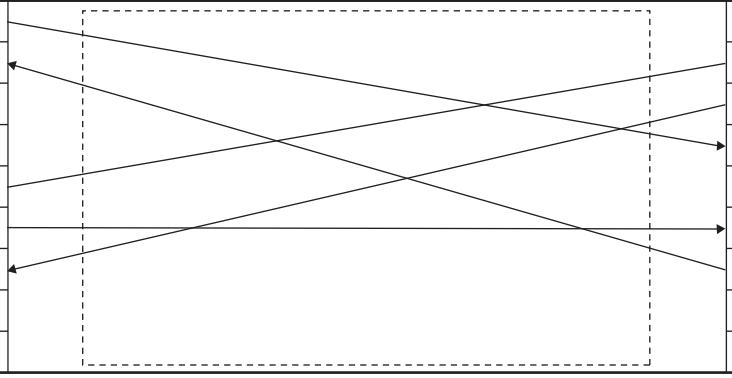
(5) RS-232 cable 5) (between CPU (SLC500 Series) and GOT(GT1030, GT1020:DC24V type only))

GOT side (Terminal block) Signal name	Cable connection and signal direction	ALLEN-BRADLEY PLC side Pin No.	Signal name
SD		1	CD
RD		2	RXD
ER		3	TXD
DR		4	DTR
SG		5	SG
RS		6	DSR
CS		7	RTS
NC		8	CTS
NC		—	FG

(6) RS-232 cable 6) (between 1761-CBL-PM02 and GOT(GT1030, GT1020:DC24V type only))

GOT side (Terminal block) Signal name	Cable connection and signal direction	ALLEN-BRADLEY PLC side (Dedicated cable:1761-CBL-PM02) Pin No.	Signal name
SD		1	—
RD		2	RXD
ER		3	TXD
DR		4	—
SG		5	SG
RS		6	—
CS		7	RTS
NC		8	CTS
NC		9	—

(7) RS-232 cable 7) (between CPU (MicroLogix1000/1200/1500 Series) and GOT(GT1030, GT1020))

GOT side (Terminal block) Signal name	Cable connection and signal direction	ALLEN-BRADLEY PLC side Pin No.	Signal name
SD		1	24V
RD		2	SG
ER		3	RTS
DR		4	RXD
SG		5	CD
RS		6	CTS
CS		7	TXD
NC		8	SG
NC		—	FG

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C□)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155□	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

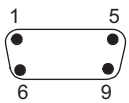
GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5BK or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

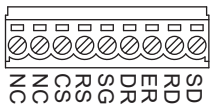
GOT main part connector see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) ALLEN-BRADLEY PLC side connector
Use the connector compatible with the ALLEN-BRADLEY PLC side module.
For details, refer to the following manual.

☞ Manuals for ALLEN-BRADLEY PLCs

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

24.1.5 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 24.1.6
Installing OS onto the GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 24.1.7
Checking OS installation on GOT

⇩

Setting the communication interface.
(Communication settings)

☞ Section 24.1.8
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 24.1.9
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 24.1.10
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 24.1.11
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 24.1.12
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

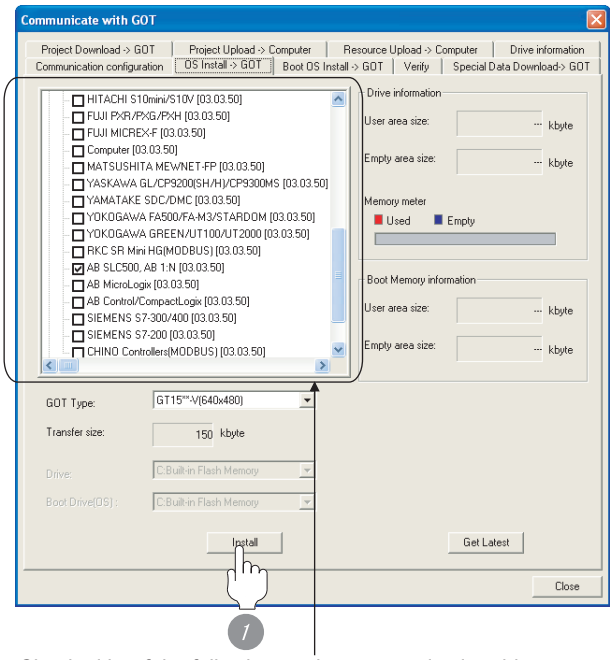
☞ Section 24.1.13 PLC Side Setting

24.1.6 Installing OS onto the GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check eithr of the following on the communication driver.

<GT16, GT15, GT11>

- When connecting to SLC500 Series: AB SLC500, AB 1:N
- When connecting to MicroLogix1000/1200/1500 Series: AB MicroLogix
- When connecting to Control/ComPact/FlexLogix Series AB Control/CompactLogix

<GT10>

- When connecting to SLC500 Series:AB SLC500
- When connecting to MicroLogix1000/1200/1500 Series:

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

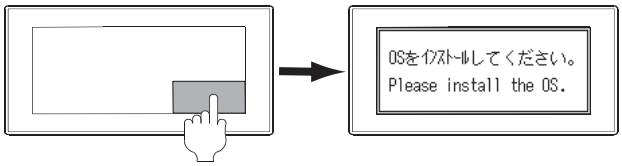
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



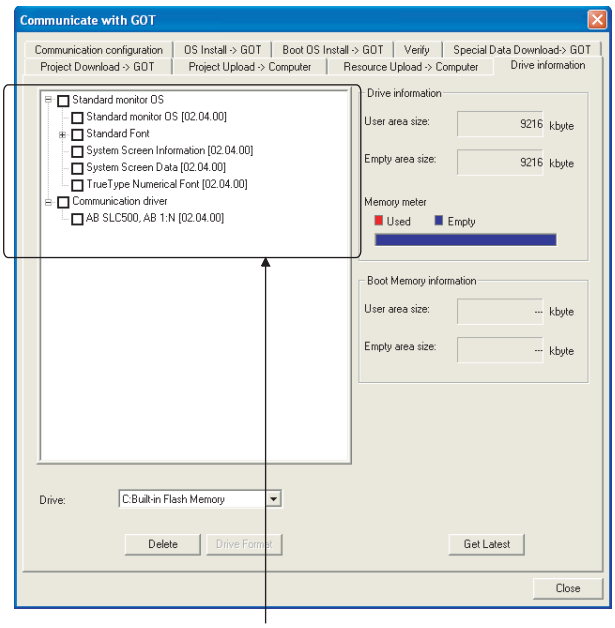
Turn on the GOT while the bottom right corner is touched.

24.1.7 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (either of the following):

<GT16, GT15, GT11>

- AB SLC500, AB 1:N
- AB MicroLogix
- AB Control/CompactLogix

<GT10>

- AB SLC500
- ABMicroLogix

24.1.8 Setting communication interface (Communication settings)

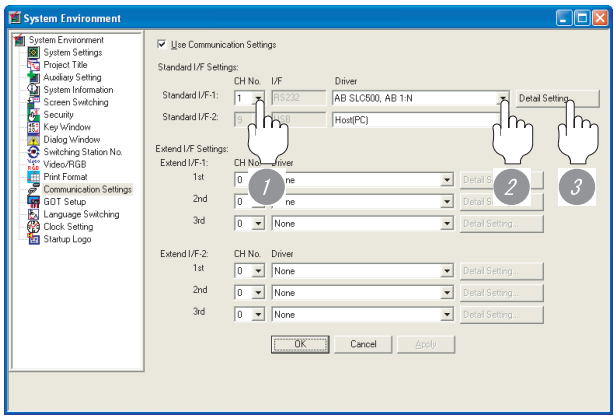
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set [1] to the channel No. used.

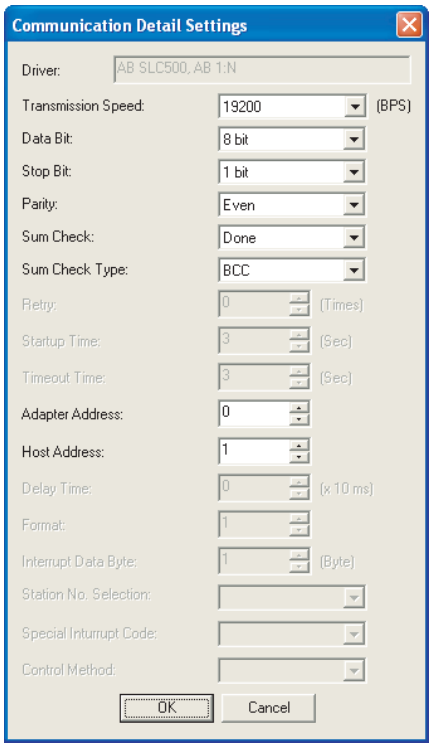
2 Set the following to the driver.
<GT16, GT15, GT11>
- When connecting to SLC500 Series: AB SLC500, AB 1:N
- When connecting to MicroLogix1000/1200/1500 Series: AB MicroLogix
- When connecting to Control/Compact/FlexLogix Series: AB Control/CompactLogix

<GT10>
- When connecting to SLC500 Series: AB SLC500
- When connecting to MicroLogix1000/1200/1500 Series: AB MicroLogix

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

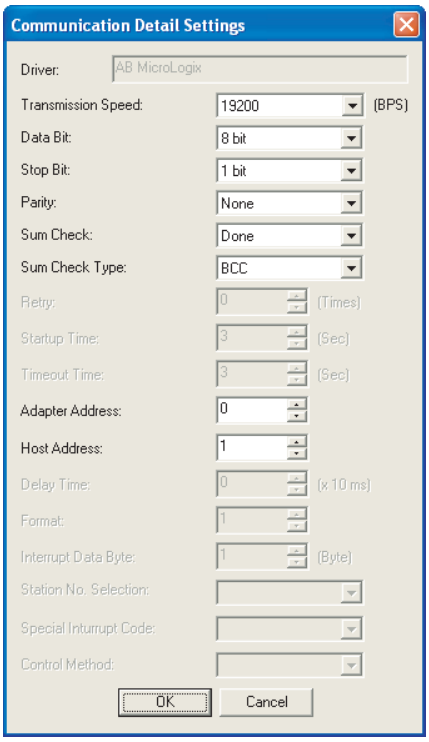
2 Communication detail settings

(1) AB SLC500, AB 1:N



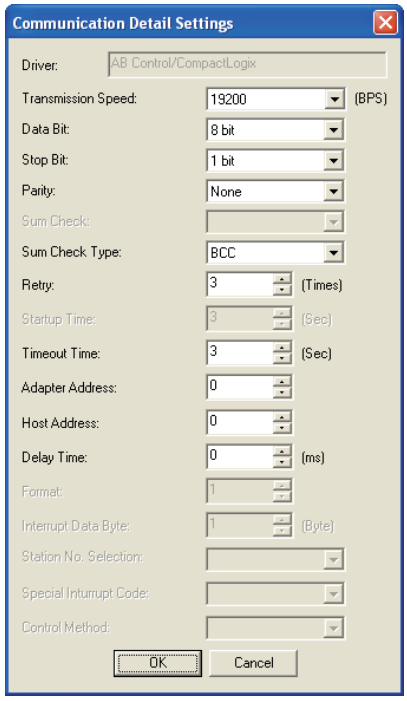
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps
Adapter Address	Specify the adapter address (station No. of the PLC that the GOT will monitor) in the connected network. <Default: 0>	0 to 31
Host Address	Specify the host address (station No. of the adapter to which the GOT is connected) in the connected network. <Default: 1>	1 to 31

(2) AB MicroLogix



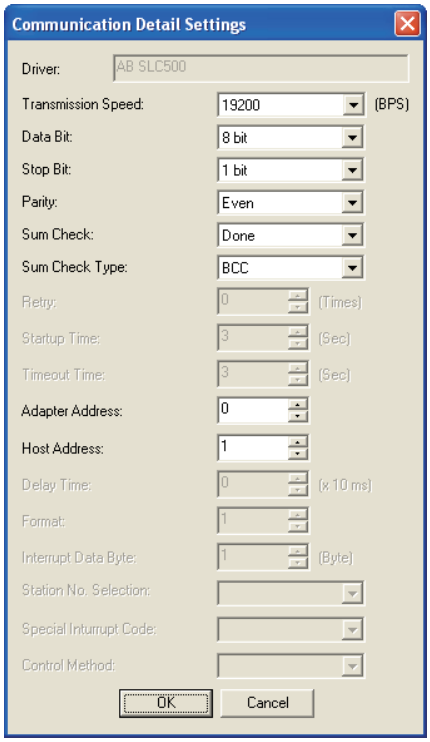
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps
Sum Check Type	Specify the format in which the sum check is performed during communication when performing sum check. <Default: BCC>	BCC, CRC16
Adapter Address	Specify the adapter address (station No. of the PLC that the GOT will monitor) in the connected network. <Default: 0>	0 to 31
Host Address	Specify the host address (station No. of the adapter to which the GOT is connected) in the connected network. <Default: 1>	1 to 31

(3) AB Control/CompactLogix



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: None>	None Even Odd
Sum Check Type	Specify the format in which the sum check is performed during communication when performing sum check. <Default: BCC>	BCC, CRC16
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Adapter Address	Specify the adapter address (station No. of the PLC that the GOT will monitor) in the connected network. <Default: 0>	0 to 254
Host Address	Specify the host address (station No. of the adapter to which the GOT is connected) in the connected network. <Default: 0>	0 to 254
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0ms>	0 to 300 ms

(4) AB SLC500



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps
Adapter Address	Specify the adapter address (station No. of the PLC that the GOT will monitor) in the connected network. <Default: 0>	0 to 31
Host Address	Specify the host address (station No. of the adapter to which the GOT is connected) in the connected network. <Default: 1>	1 to 31

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

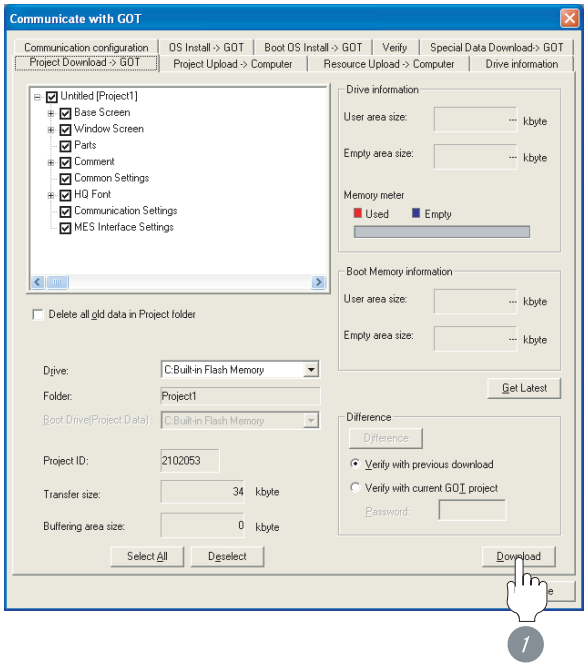
Communication settings can be changed on only GT Designer2.

24.1.9 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

24.1.10 Attaching communication unit and connecting cable

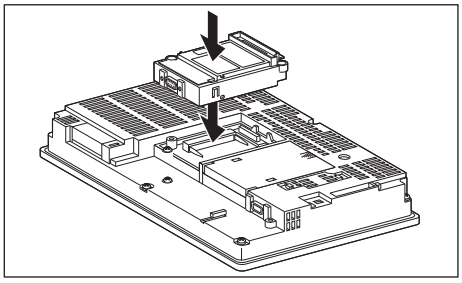
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

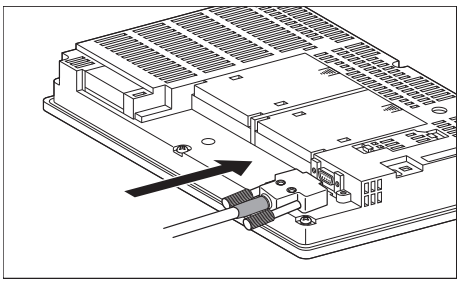
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For the GT16, GT15

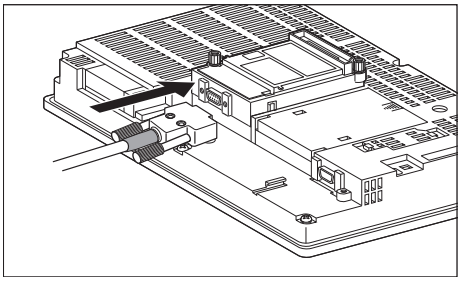
• connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



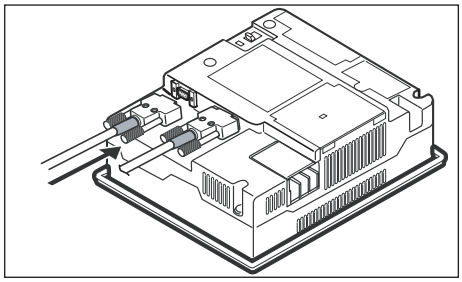
• connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



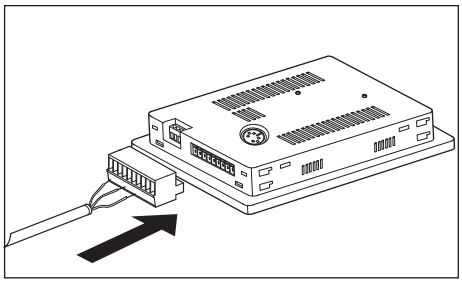
(b) For the GT11, GT105☐, GT104☐

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

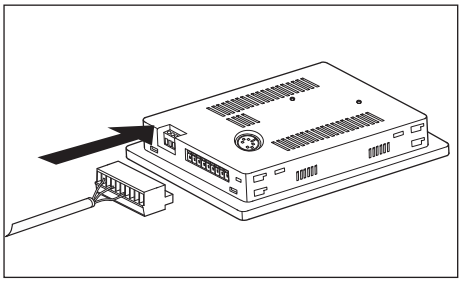


(c) For the GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



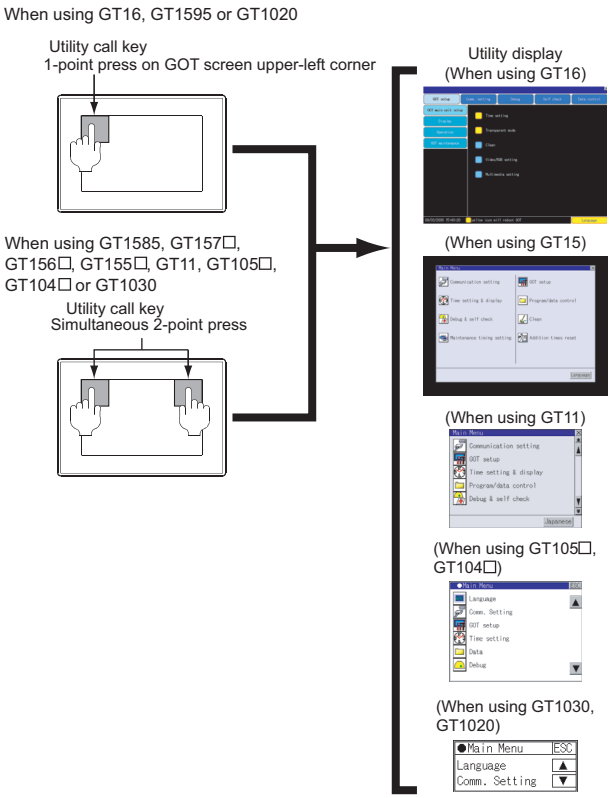
24.1.11 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

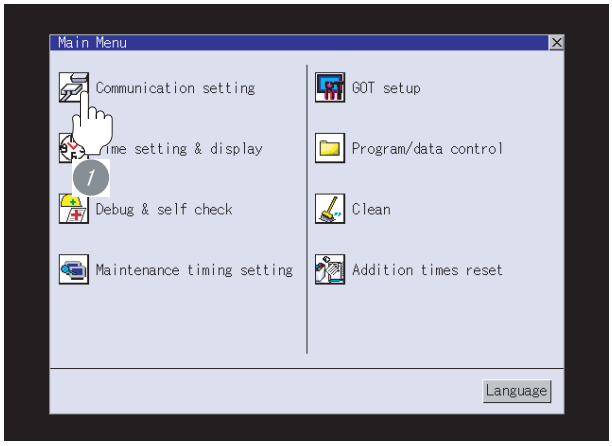


Point

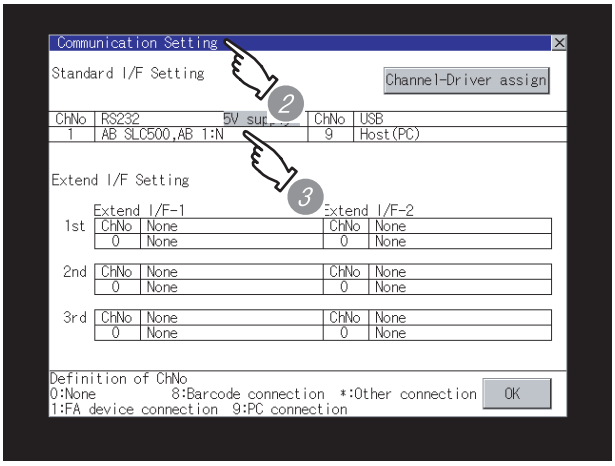
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

<GT16, GT15, GT11>

- Communication driver (one of the following)
  AB SLC500, AB 1:N
  AB MicroLogix
  AB Control/CompactLogix

<GT10>

- Communication driver (one of the following)
  AB SLC500
  AB MicroLogix

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 24.1.5 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

24.1.12Checking for normal monitoring

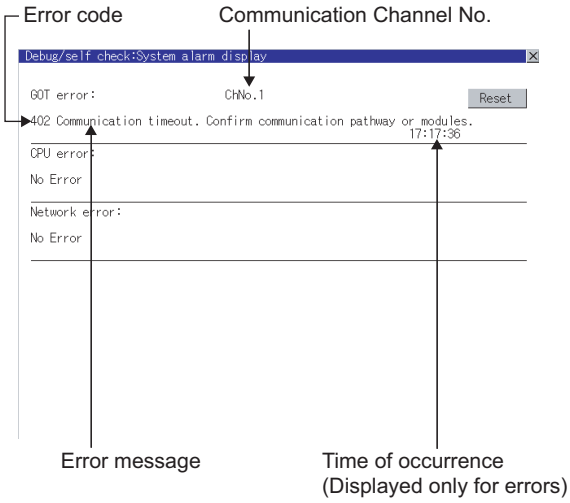
1 Check for errors occurring on the GOT. (GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT □ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version □ Screen Design Manual

2 Perform an I/O check. (GT16, GT15, GT11)

Whether the controller can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

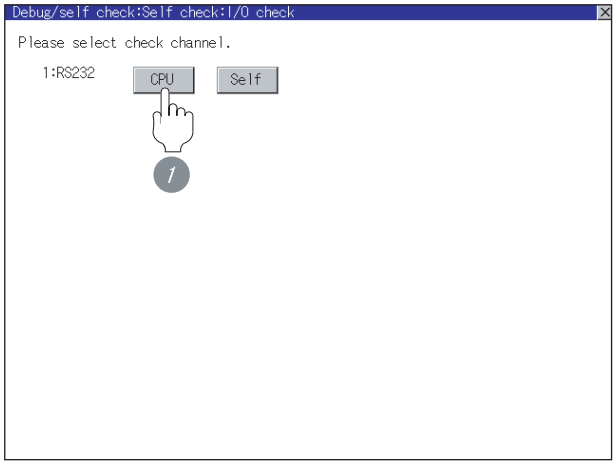
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

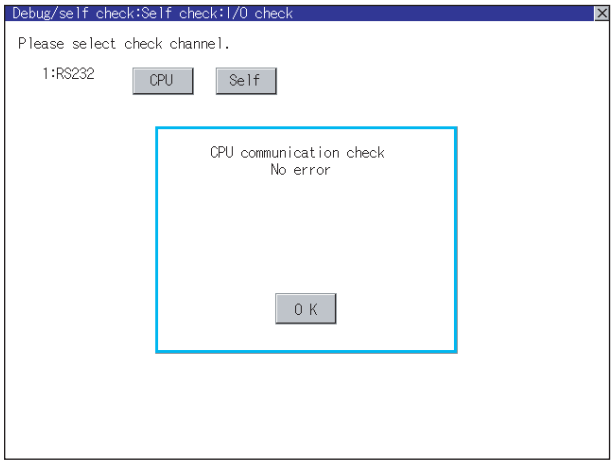
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT □ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

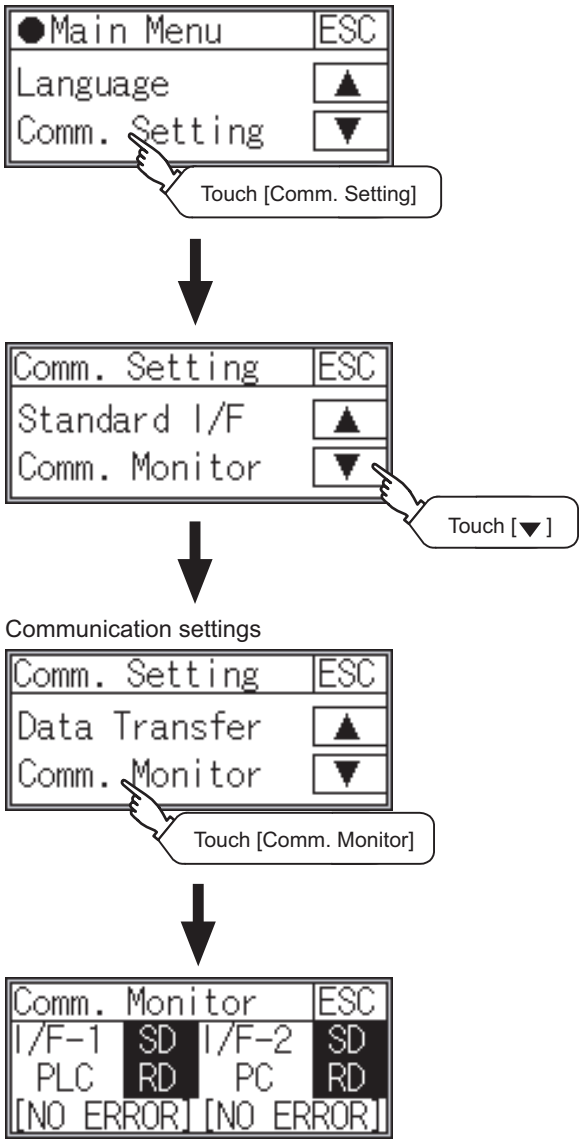
3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.
If this check ends successfully, it means correct communication interface settings and proper cable connection.
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .
For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 24.1.13 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

24.1.13PLC Side Setting

Point

ALLEN-BRADLEY PLC

For details of ALLEN-BRADLEY PLCs, refer to the following manuals.

☞ Manuals for ALLEN-BRADLEY PLCs

1 Direct CPU connection (setting of Allen-Bradley PLC)

Item	Setting details		
	SLC500 Series	MicroLogix1000/1200/1500 Series	Control/Compact/FlexLogix Series
Baud Rate*1	4800bps, 9600bps, 19200bps	4800bps, 9600bps, 19200bps, 38400bps	4800bps, 9600bps, 19200bps, 38400bps
Parity	EVEN	NONE	NONE
Control Line	NO HANDSHAKING		
Communication Driver	DF1 HALF-DUPLEX SLAVE		
Duplicate Packet Detection	DISABLE		
Station Address	0		
Error Detection	BCC	BCC, CRC*2	BCC, CRC*2

*1 Set the Baud Rate according to the transmission speed setting on the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 24.1.8 Setting communication interface (Communication settings)

*2 Set the Error Detection according to the sum check format setting on the GOT side.
For the sum check format setting on the GOT side, refer to the following.
☞ Section 24.1.8 Setting communication interface (Communication settings)

2 Connecting to DH485 network via adapter (1770-KF3) (Setting of Adapter)

Item	Setting details
Baud Rate*1	4800bps, 9600bps, 19200bps
Parity	Even
Flow Control	Disable (No Handshaking)
DF1 Device Category	DF1 half-duplex slave, local mode
Error Detection*2	BCC
DH-485 Baud Rate	19200bps
Maximum Node Address	1 to 31*3
DH-485 Node Address	0 to 31*4

*1 Set the Baud Rate according to the transmission speed setting on the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Section 24.1.8 Setting communication interface (Communication settings)

*2 Set the Error Detection according to the sum check format setting on the GOT side.
For the sum check format setting on the GOT side, refer to the following.
☞ Section 24.1.8 Setting communication interface (Communication settings)

*3 For the Maximum Node Address, set the same address as the Maximum Node Address on the DH-485 network.

*4 Set the DH-485 Node Address according to the Host Address on the GOT side.
Set a unique DH-485 Node Address so that it does not conflict with the Node Address of the PLC CPU on the DH-485 network.
For the Host Address setting on the GOT side, refer to the following.
☞ Section 24.1.8 Setting communication interface (Communication settings)

24.2 Ethernet Connection

Select a system configuration suitable for your application.

Point Conventions used in this section

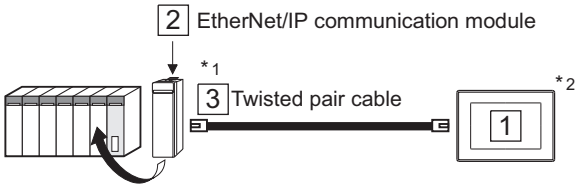
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

24.2.1 System configuration when connecting to ControlLogix, CompactLogix

Communication driver
EtherNet/IP(AB)/Gateway

1 System configuration and connection conditions

When connecting to ControlLogix

Connection conditions		System configuration
Number of GOTs	Distance	
TCP : 64 (recommended to 16 units or less)	100m or less*3	

When connecting to CompactLogix

Connection conditions		System configuration
Number of GOTs	Distance	
TCP : 32 (recommended to 16 units or less)	100m or less*3	

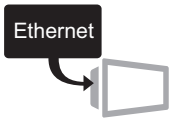
*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.
A cross cable is available for connecting the GOT to the Ethernet module.

*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
GT16 User's Manual (Hardware)

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model
	2	EtherNet/IP communication module	1756-ENET(10Mbps), 1756-ENBT(10/100Mbps)

2 is an Allen-Bradley product manufactured by Rockwell Automation, Inc. For details of this product, contact Rockwell Automation, Inc.

(3) Cable

Image	No.	Name	Model
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

24.2.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 24.2.3
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 24.2.4
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 24.2.5
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 24.2.6
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 24.2.7
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the controller.

☞ Section 24.2.8
Verifying GOT recognizes connected equipment

⇩

Make sure that monitoring is performed normally.

☞ Section 24.2.9
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When checking the PLC side settings, refer to the following.

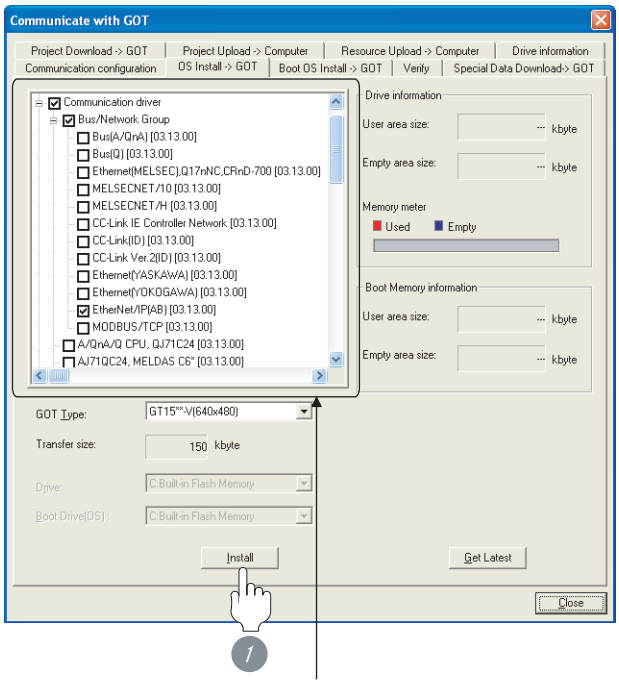
☞ Section 24.2.10 PLC side setting

24.2.3 Installing OS onto GOT

Install the standard monitor OS, communication driver, and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
・EtherNet/IP(AB)

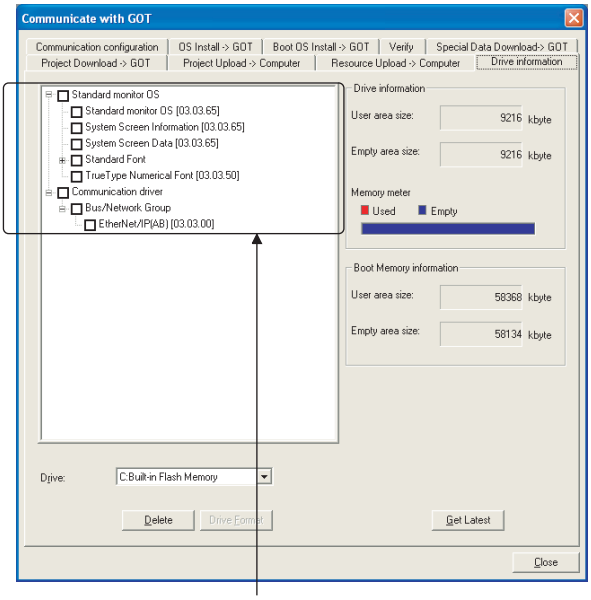
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

24.2.4 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:
1) Standard monitor OS
2) Communication driver: EtherNet/IP(AB)

24.2.5 Setting communication interface (Communication settings)

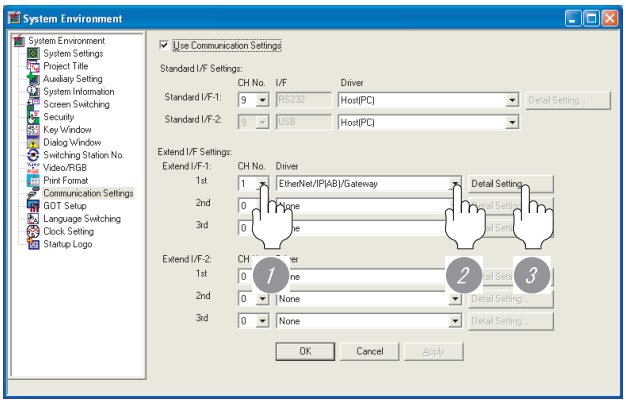
Make the GOT communication interface settings on [Communication setting] and [Ethernet] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication setting] and [Ethernet] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

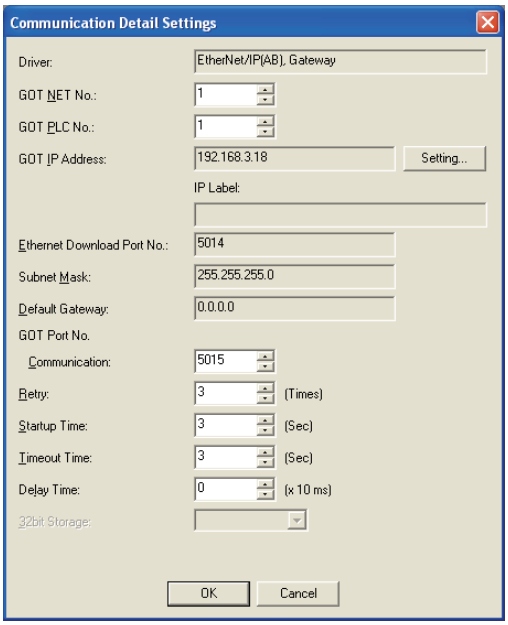


(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to [EtherNet/IP(AB)/Gateway].
3. Perform the detailed settings for the driver.
   (2 Communication detail settings)

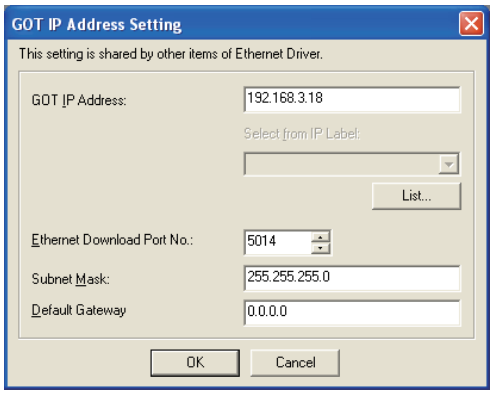
2 Communication detail settings

(1) GT16

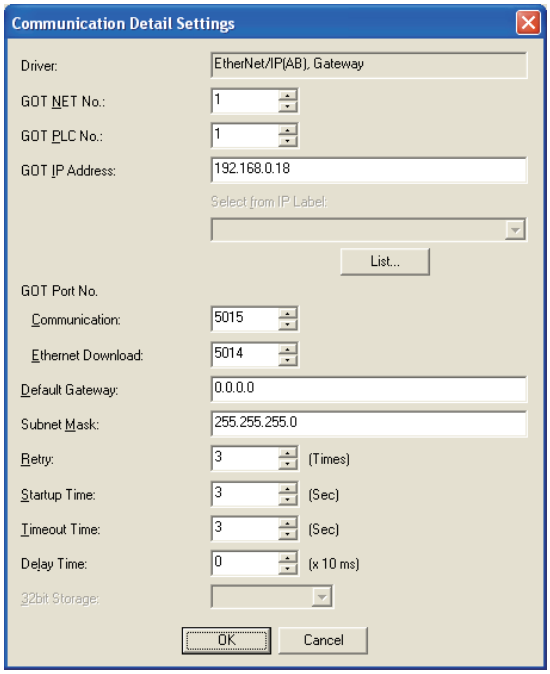


Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address*1	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.*1	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*1	Set the subnet mask for the sub network.(Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*1	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5015>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)

*1 Click the Setting button and perform the setting in the [GOT IP Address Setting] screen.



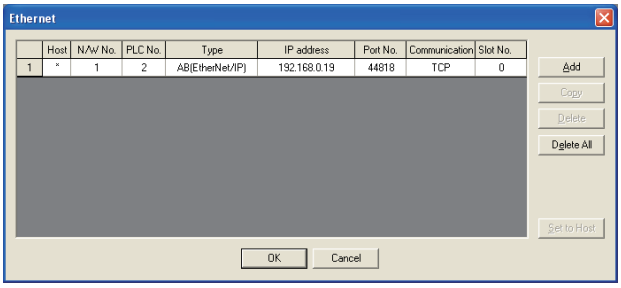
(2) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the connected equipment. Set the port No. without using the same No. as the port No. for the Ethernet download. <Default: 5015>	1024 to 65534 (Except for 5011, 5012, 5013 and 44818)
GOT Port No. (Ethernet download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network.(Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)

3 Ethernet setting

(1) Ethernet setting



Item	Description	Setting
Host	The host is displayed.(The host is indicated with an asterisk (*).)	-
N/W No.	Set the network No. of the connected Ethernet module. <Default: blank>	1 to 239
PLC No.	Set the station No. of the connected Ethernet module. <Default: blank>	1 to 64
Type	AB(EtherNet/IP) (fixed)	AB(EtherNet/ IP) (fixed)
IP address	Set the IP address of the connected Ethernet module. <Default: blank>	IP address of PLC
Port No.	44818 (fixed)	44818 (fixed)
Communica-tion	TCP (fixed)	TCP (fixed)
Slot No.	Set the slot No. of the PLC to which the Ethernet module is connected. <Default: blank>	0 to 16

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(3) Setting IP address and port No

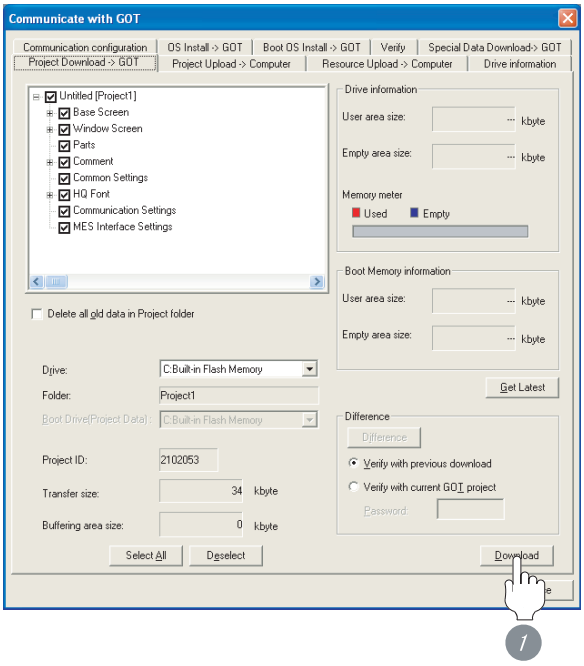
The same IP address cannot be set for the same port No.The same IP address can be set for the different port No.

24.2.6 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

24.2.7 Attaching communication unit and connecting cable

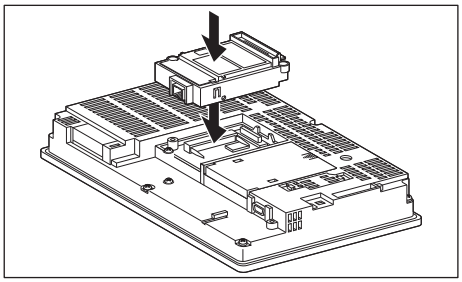
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

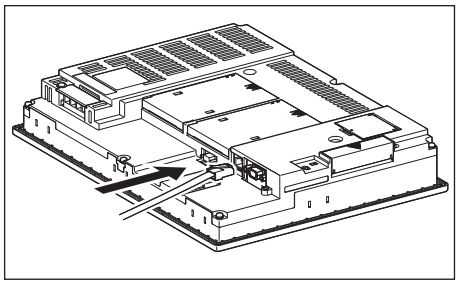
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet communication unit User's Manual

2 Connecting the cable

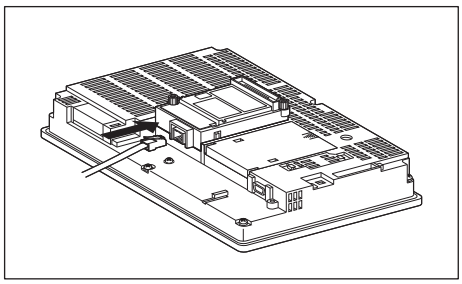
(1) For GT16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) For GT15

1 Connect the twisted pair cable to the Ethernet communication unit.



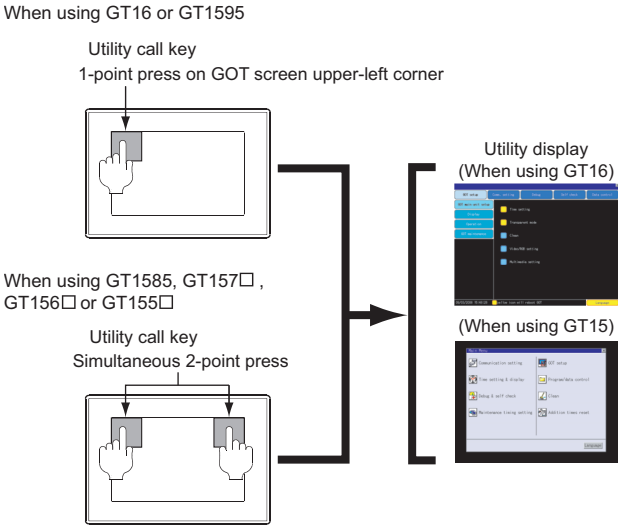
24.2.8 Verifying GOT recognizes connected equipment

Verify the GOT recognizes the controller on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)



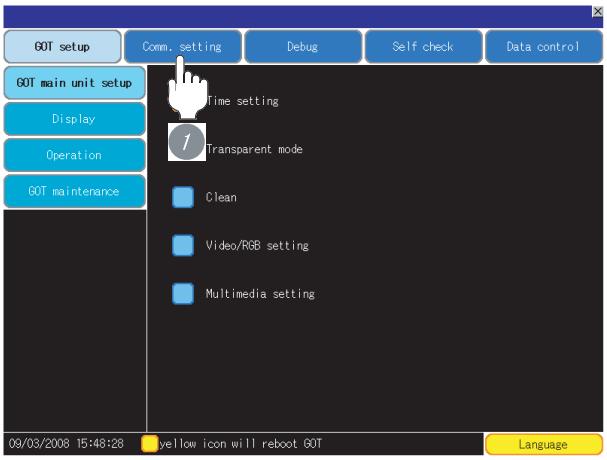
Point

When setting the utility call key to 1-point

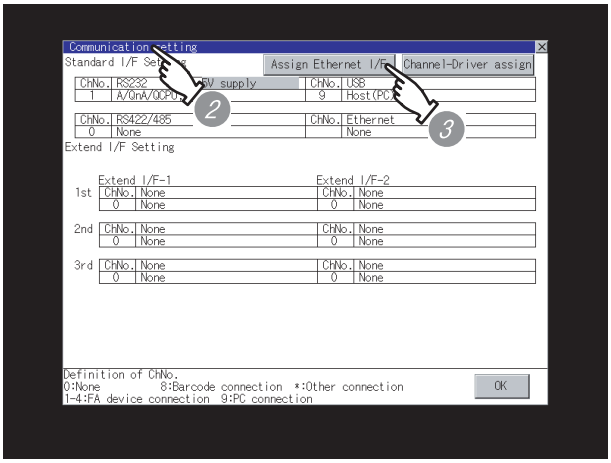
When setting "Pressing Time" to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.For the setting of the utility call key, refer to the following.

GT ☐User's Manual

(1) For GT16

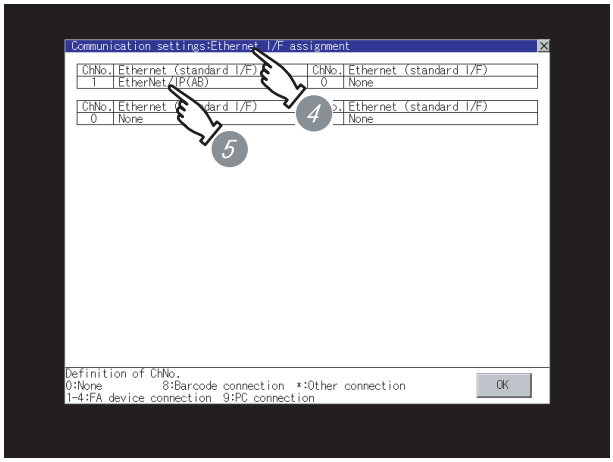


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet/IF].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver : EtherNet/IP (AB)

6 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 24.2.2 Preparatory Procedures for Monitoring

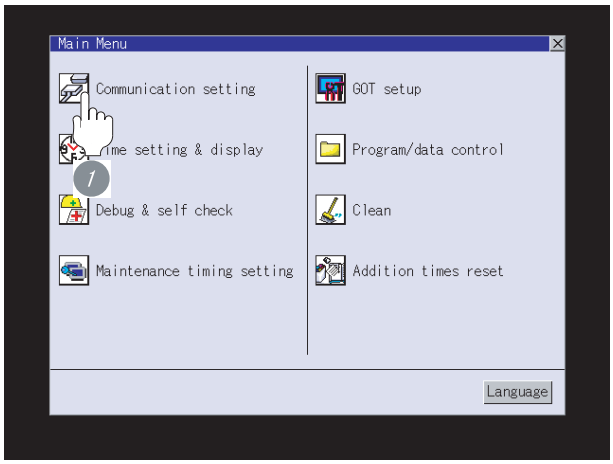
Point

When changing communication interface setting by Utility

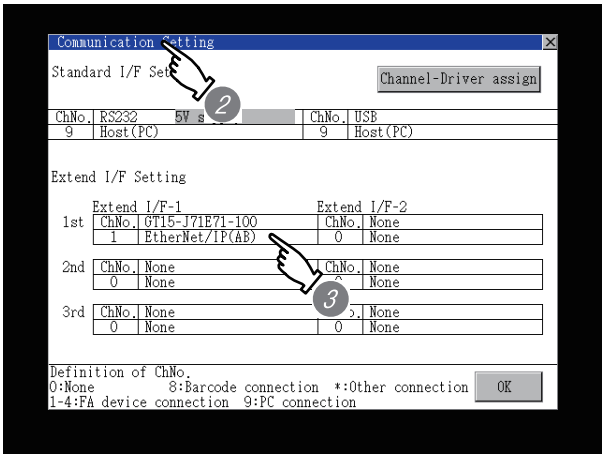
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility)

(2) For GT15



1 After powering up the GOT, touch [Main Menu] → [Communication Setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: EtherNet/IP(AB)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 24.2.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT15 User's Manual

24.2.9 Checking for normal monitoring

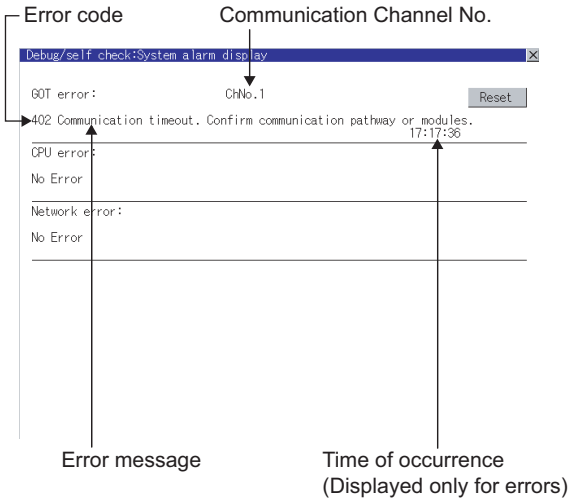
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen). Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows® .

(a) When normal communication

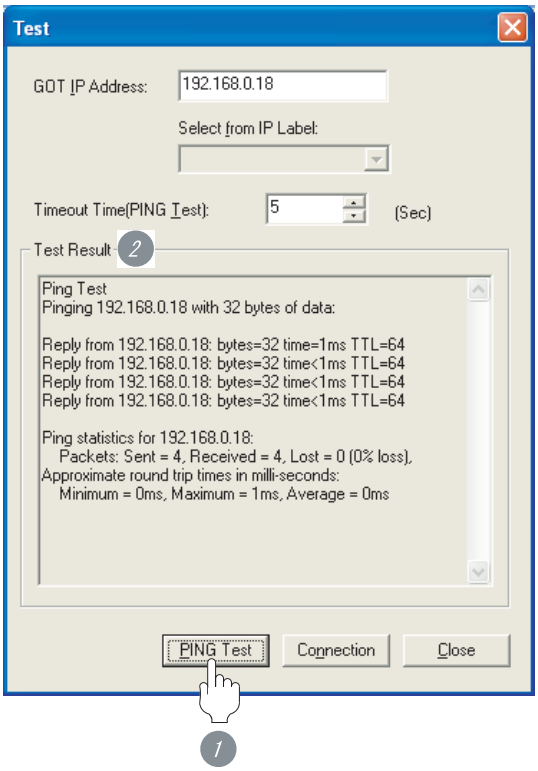
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication

C:\>Ping 192.168.0.18
Request timed out.

(2) When using the "PING Test" of GT Designer2

Select [Communication] → [Communication configuration] → [Ethernet] and Test to display [PING Test].



1 Specify the [GOT IP address] of the [PING Test] and click on the PING Test button.

2 The [Test Result] is displayed after the [PING Test] is finished.

(1) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of [Communication Settings]
- IP address of GOT specified by Ping command

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 24.2.10 PLC side setting

4 Confirming the communication state to each station (station monitoring function)

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT. When detecting the abnormal state, it is confirming the response by executing a Ping command to the faulty station.

The station monitoring state can be confirmed by using GOT internal device.

(1) Station monitoring state

(a) No. of faulty station (GS230)

Total No. of the faulty CPU are stored.
The station No. of faulty stations are stored to GS231 through GS238.(☞ (b)Faulty station information (GS231 to GS238))

Device	b15 to b8	b7 to b0
GS230	(00H fixed)	No. of faulty stations

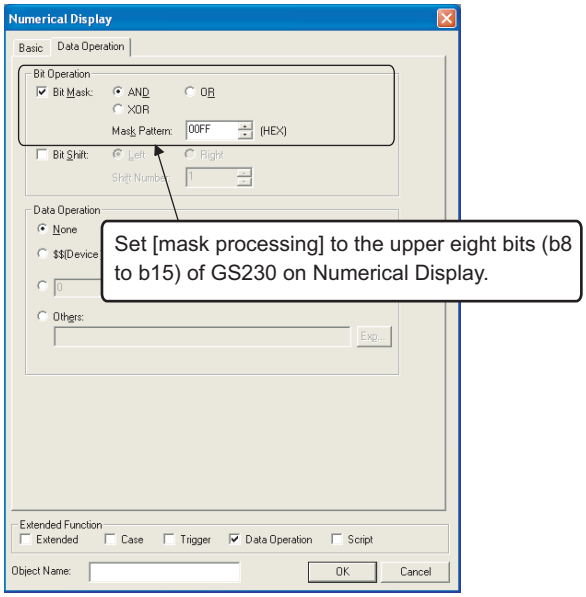
Point

When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.
For the data operation, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

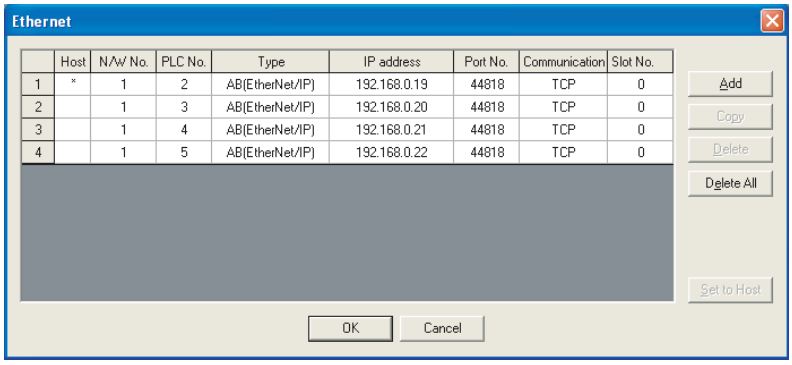
<Numerical Display (Data Operation tab)>



(b) Faulty station information (GS231 to GS238)

• The bit of the Ethernet setting No. corresponding to the faulty station is set.
  0: Normal
  1: Abnormal
• The bit is reset after the fault is recovered.

GS231 bit 0 · · ·
GS231 bit 1 · · ·
GS231 bit 2 · · ·
GS231 bit 3 · · ·



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

24.2.10PLC side setting

Point

ALLEN-BRADLEY PLC

For details of ALLEN-BRADLEY PLCs, refer to the following manuals.

☞ Manuals for ALLEN-BRADLEY PLCs

1 Parameter setting

Set the following parameters with the software package manufactured by the Allen-Bradley.

Item	Setting description
Name	Sets the name.
IP Address	IP address of the connected module*1
Slot	Slots No. for installing the EtherNet/IP communication module

*1 For the IP address, make the same setting as that of each Ethernet module set on GT Designer2.
Do not set the same IP Address as those of GOT and controller on the Ethernet network.
For the address setting on GT Designer2, refer to the following.

☞ Section 24.2.5 Setting communication interface (Communication settings)

24.2.11 Precautions

1 When setting IP address

Do not use "0" and "255" at the end of an IP address.
(Numbers of *.*.*.0 and *.*.*.255 are used by the system.)
The GOT may not monitor the controller correctly with the above numbers.
Consult with the administrator of the network before setting an IP address to the GOT and controller.

2 When connecting to multiple GOTs

(1) Setting PLC No.
When connecting two or more GOTs in the Ethernet network, set each [PLC No.] to the GOT.

☞ Section 24.2.5 Setting communication interface (Communication settings)

(2) Setting IP address
Do not use the IP address "192.168.0.18" when using multiple GOTs.
A communication error may occur on the GOT with the IP address.

3 When connecting to the multiple network equipments (including GOT) in a segment

By increasing the network load, the transmission speed between the GOT and PLC may be reduced.
The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

24.3 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	ALLEN-BRADLEY PLC connection	Supporting the Control/Compact/FlexLogix Series connection	2.58L	Communication driver AB Control/CompactLogix [03.03.**]
GT16 GT15	ALLEN-BRADLEY PLC connection	Supporting the Ethernet connection	2.58L	Communication driver Ethernet/IP(AB) [03.06.**]
GT24V10 20 30 GT5V10 20	ALLEN-BRADLEY PLC connection	Supporting the SLC500 Series connection Supporting the MicroLogix1000/1200/1500 Series connection	2.58L	Standard Monitor OS [01.04.**] Communication driver AB SLC500 [01.00.**] AB MicroLogix [01.00.**]
GT105 5□ 4□	ALLEN-BRADLEY PLC connection	Supporting the connection to GT105☐ Supporting the connections to GT104☐	2.90U	Standard Monitor OS [01.10.**] Communication driver AB SLC500 [01.05.**] AB MicroLogix [01.05.**]
GT16	ALLEN-BRADLEY PLC connection	Supporting the connection to GT16		Communication driver AB SLC500, AB 1:N [04.02.**] AB MicroLogix [04.02.**] AB Control/CompactLogix [04.02.**] Ethernet/IP(AB) [04.02.**]

MEMO

25

CONNECTION TO GE FANUC PLC



25.1 System Configuration . . . . . page 25-2
This section describes the equipment and cables needed when connecting a GOT to an GE FANUC PLC.
Select a system suitable for your application.

25.2 Connection Cable. . . . . page 25-16
This section describes the specifications of the cables needed when connecting to an GE FANUC PLC.
Check the specifications of the connection cables.

25.3 Preparatory Procedures for Monitoring . . . . . page 25-23
This section provides the procedures to be followed before performing monitoring in connection to an GE FANUC PLC.
This procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

25.4 PLC Side Setting . . . . . page 25-32
The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

25.5 Precautions . . . . . page 25-34
This section describes the precautions about PLC connection.
Refer to this section without fail before starting PLC connection.

25.6 List of Functions Added by Version Upgrade . . . . . page 25-35
This section describes the functions added by version upgrade of GT Designer2 or OS.

25.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.

25.1.1 Connecting to Series90-30

Communication driver
GE Fanuc Automation (SNP-X)

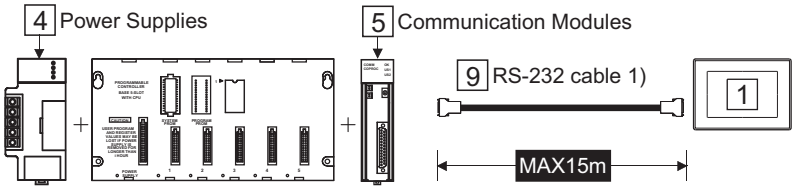
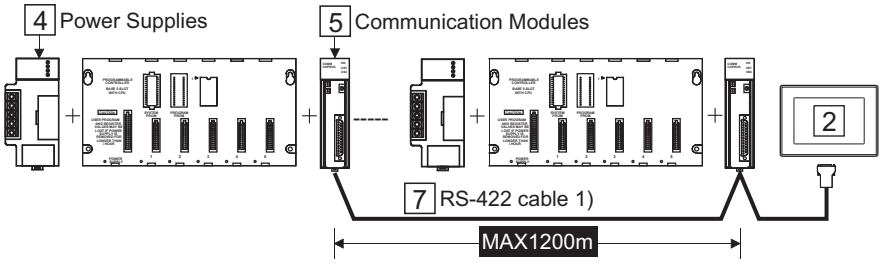
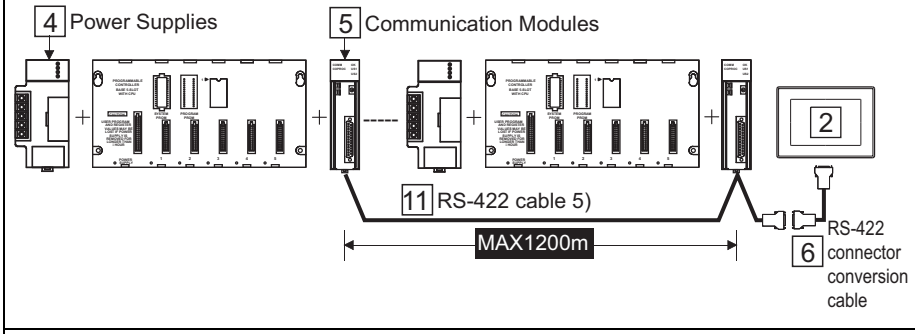
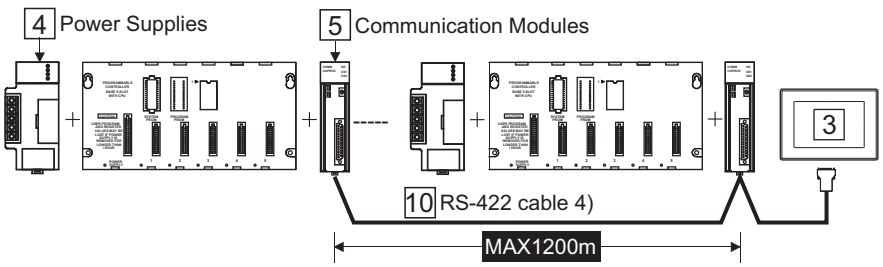
1 System configuration and connection conditions

Point

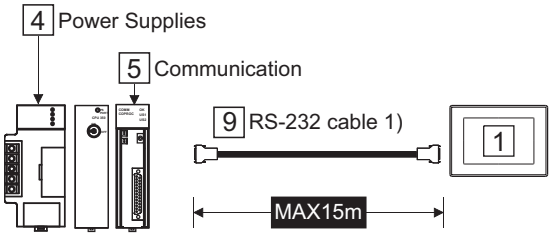
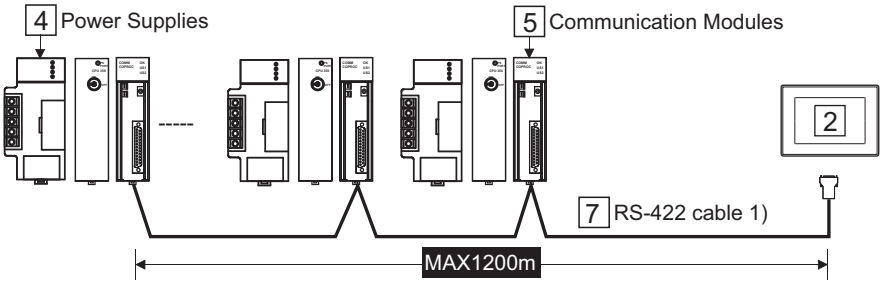
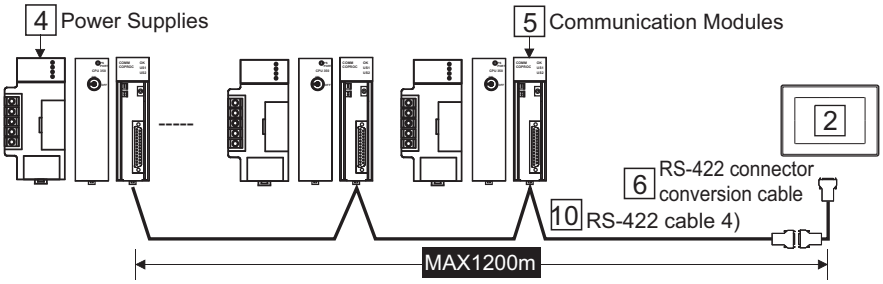
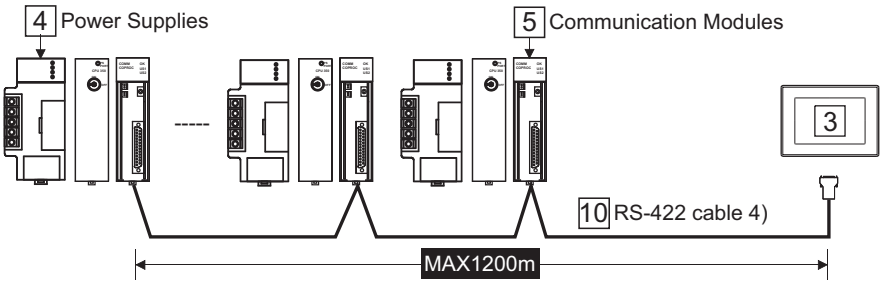
Connectable model

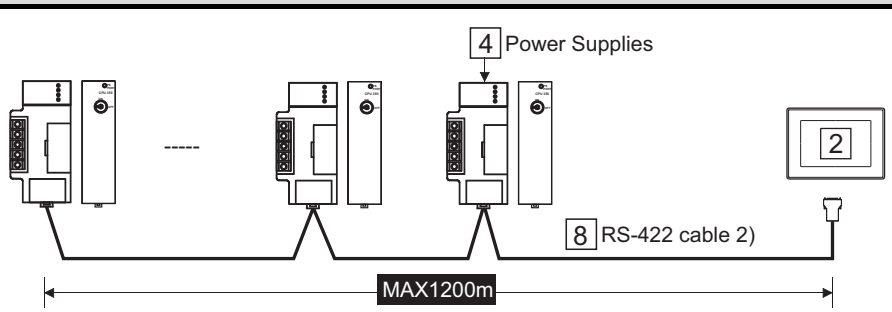
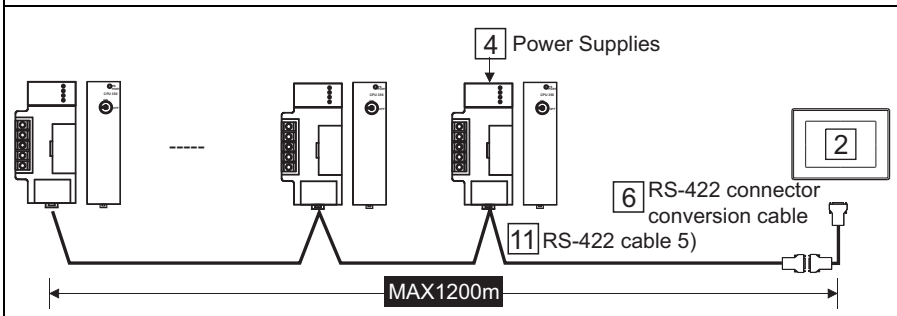
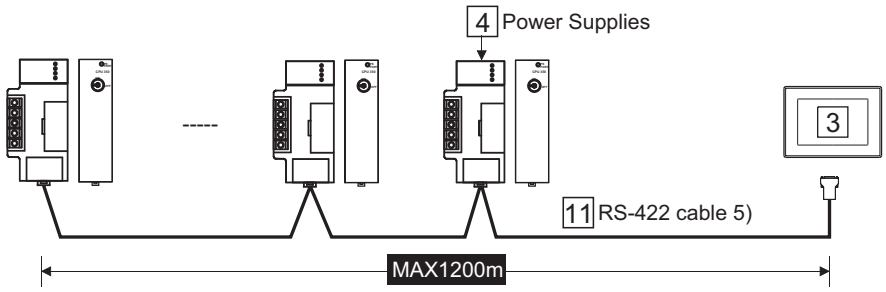
Only the models that are compatible with SNP-X protocol can be connected.

When connecting to IC693CPU311,IC693CPU313 and IC693CPU323

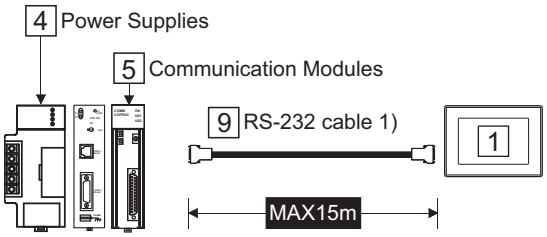
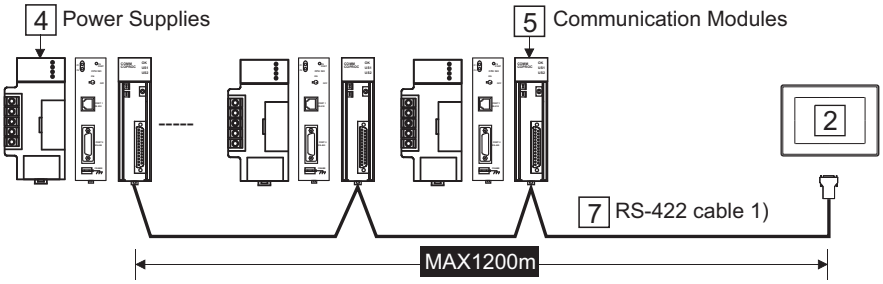
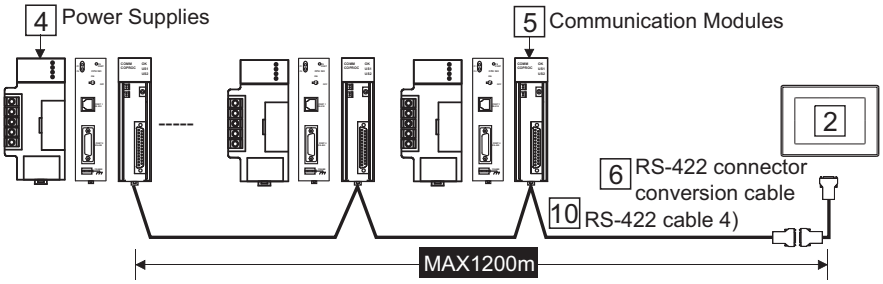
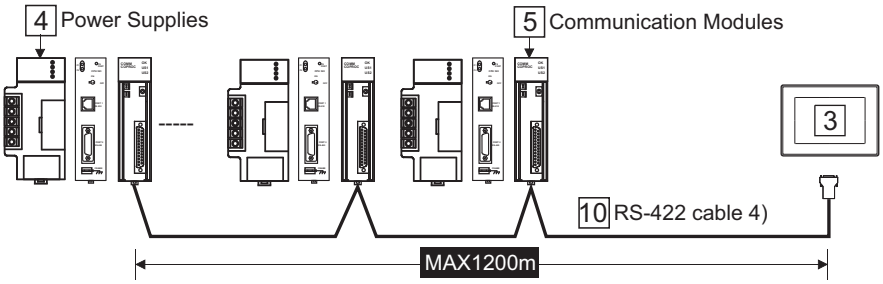
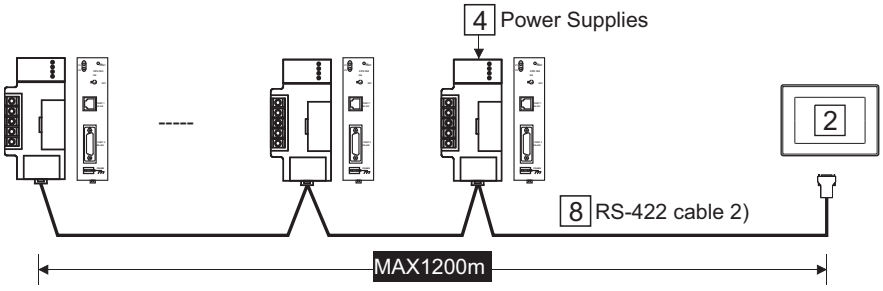
Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	1	15m		GT16 GT15 GT11 Serial
1	Max. 8 units	1200m		GT16
				GT16
				GT16 GT15 GT11 Serial

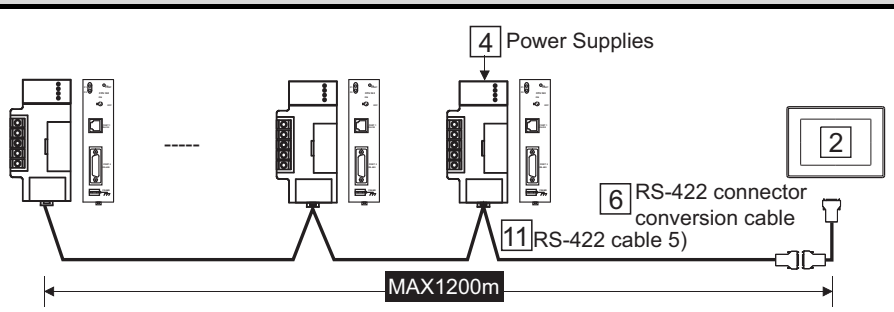
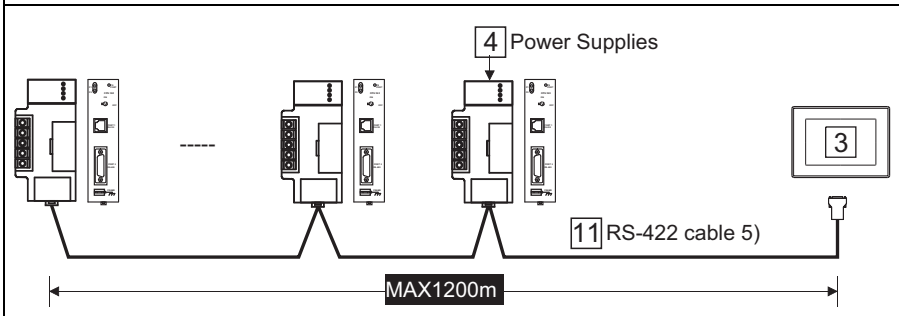
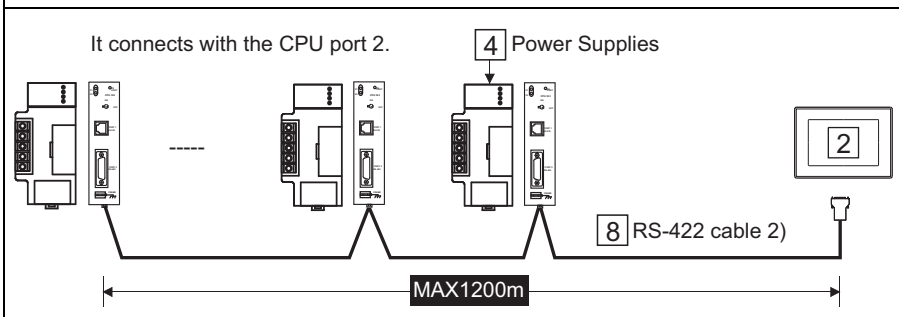
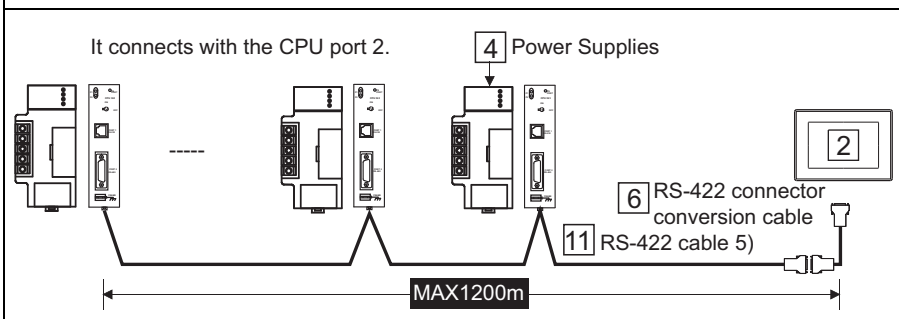
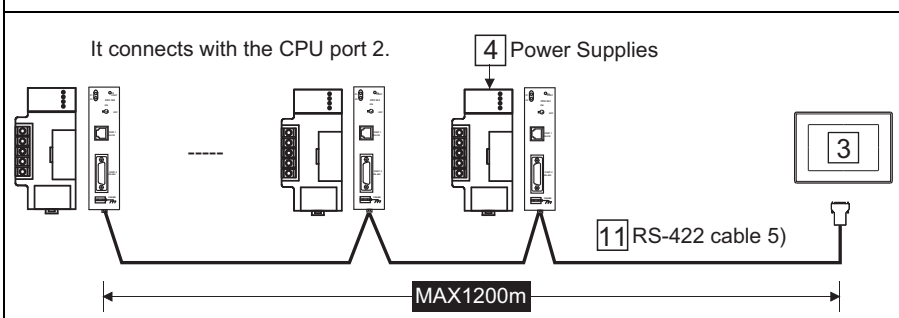
When connecting to IC693CPU350,IC693CPU360,IC693CPU366,IC693CPU367 and IC693CPU374

Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	1	15m		GT16 GT15 GT11 Serial
1	Max. 8 units	1200m		GT16
				GT16
				GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	Max. 8 units	1200m		GT 16
				GT 16
				GT 16 GT 15 GT 11 Serial

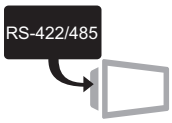
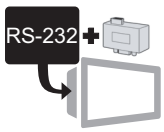
When connecting to IC693CPU363

Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	1	15m		GT16 GT15 GT11 Serial
1	Max. 8 units	1200m		GT16
				GT16
				GT16 GT15 GT11 Serial
				GT16

Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	Max. 8 units	1200m		GT16
				GT16 GT15 GT11 Serial
				GT16
				GT16
				GT16 GT15 GT11 Serial

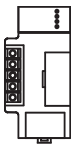
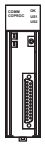
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

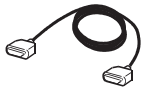
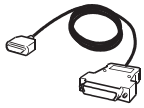
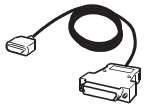
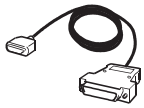
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Power Supplies	IC693PWR321, IC693PWR330, IC693PWR331, IC693PWR332, IC693PWR328
	5	Communication Modules	IC693CMM311

4, 5 are products manufactured by GE Fanuc Automation Corporation. For details of these products, contact GE Fanuc Automation Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-422 cable 1) • Between communication modules and GOT	(To be prepared by the user. Section 25.2 Connection Cable)	GT16
	8	RS-422 cable 2) • Between power supplies and GOT		
	9	RS-232 cable 1) • Between communication modules and GOT		GT16 GT15 GT11 Serial
	10	RS-422 cable 4) • Between communication modules and GOT • Between communication modules and RS-422 connector conversion cable		
	11	RS-422 cable 5) • Between power supplies and GOT • Between power supplies and RS-422 connector conversion cable		

25.1.2 Connecting to Series90-70

Communication driver
GE Fanuc Automation (SNP-X)

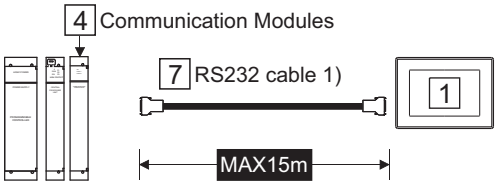
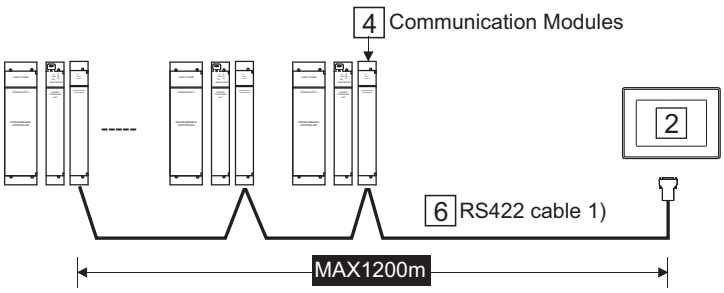
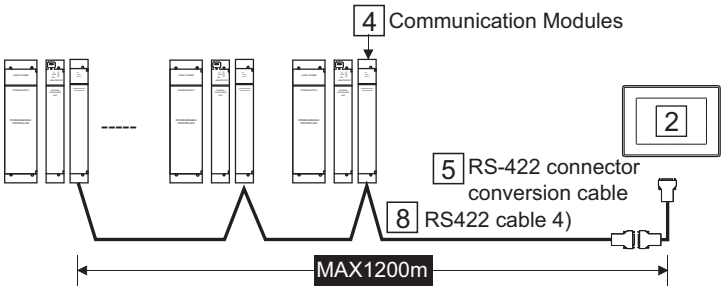
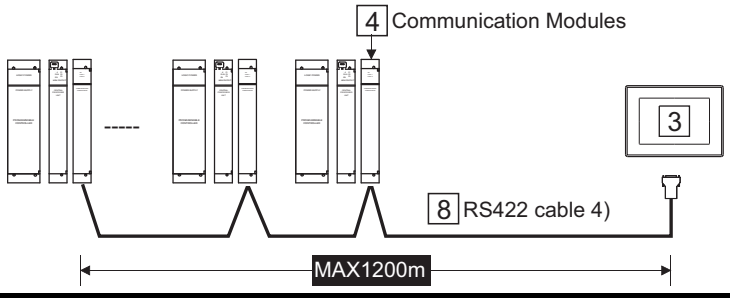
1 System configuration and connection conditions

Point

Connectable model

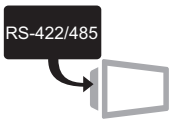
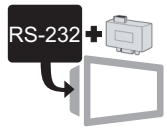
Only models that are compatible with SNP-X protocol can be connected.

When connecting to IC697CPX772,IC697CPX782,IC697CPX928,IC697CPX935,IC697CPU780, IC697CPU788,IC697CPU789,IC697CPU731,IC697CGR772,IC697CGR935 and IC697CPM790

Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	1	15m		GT16 GT15 GT11 Serial
1	Max. 8 units	1200m		GT16
				GT16
				GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

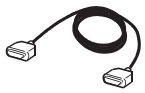
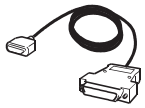
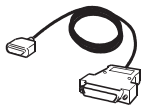
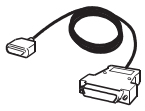
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) PLC

Image	No.	Name	Model name
	4	Communication Modules	IC697CMM711

4 is products manufactured by GE Fanuc Automation Corporation. For details of these products, contact GE Fanuc Automation Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS422 cable 1) • Between communication modules and GOT	(To be prepared by the user. Section 25.2 Connection Cable)	GT16
	7	RS-232 cable 1) • Between communication modules and GOT		GT16 GT15 GT11 Serial
	8	RS-422 cable 4) • Between communication modules and GOT • Between communication modules and RS-422 connector conversion cable		

25.1.3 Connecting to VersaMax Micro

Communication driver
GE Fanuc Automation (SNP-X)

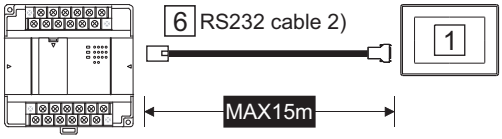
1 System configuration and connection conditions

Point

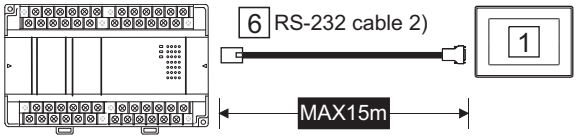
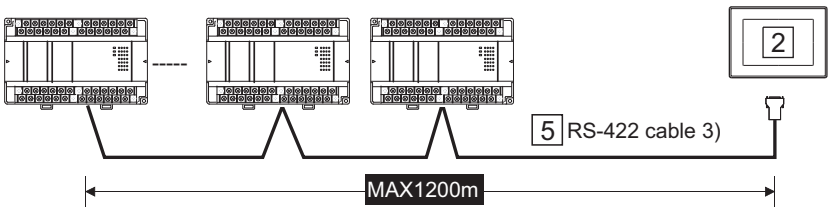
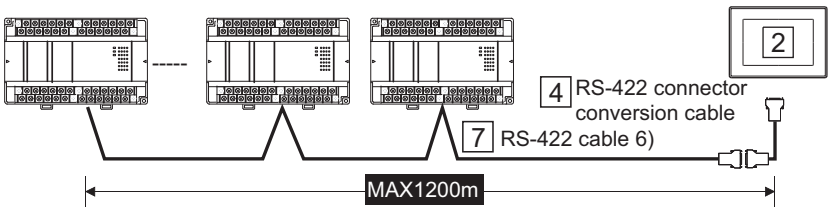
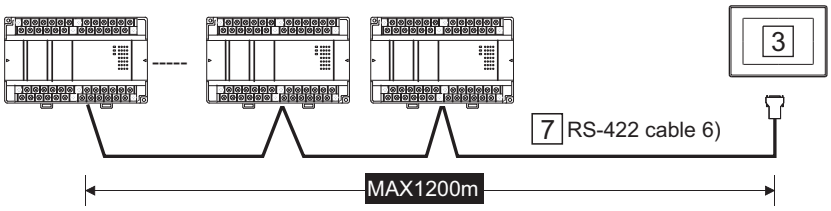
Connectable model

Only models that are compatible with SNP-X protocol can be connected.

When connecting to IC200UAA003,IC200UAR014,IC200UDD104,IC200UDD112,IC200UDR001, IC200UDR002 and IC200UDR003

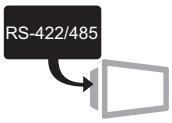
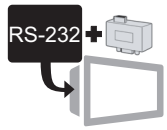
Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	1	15m		GT16 GT15 GT11 Serial

When connecting to IC200UAL004,IC200UAL005,IC200UAL006,IC200UAA007,IC200UAR028, IC200UDD110,IC200UDD120,IC200UDD212,IC200UDR005,IC200UDR006,IC200UDR010, IC200UDD064,IC200UDD164,IC200UDR164 and IC200UDR064

Connection conditions			System configuration	Model
No. of GOTs	No. of PLCs	Distance		
1	1	15m		GT16 GT15 GT11 Serial
1	Max. 8 units	1200m		GT16
				GT16
				GT16 GT15 GT11 Serial

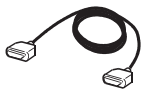
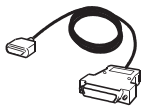
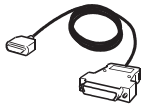
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	5	RS-422 cable 3) • Between CPU and GOT	(To be prepared by the user. Section 25.2 Connection Cable)	GT16
	6	RS-232 cable 2) • Between CPU and GOT		GT16 GT15 GT11 Serial
	7	RS-422 cable 6) • Between CPU and GOT • Between CPU and RS-422 connector conversion cable		

25.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ Refer to Section 25.2.1)

Model name			Conection cable
			GT16/GT15/GT11
PLC CPU	VersaMax Micro	IC200UAA003, IC200UAR014, IC200UDD104, IC200UDD112, IC200UDR001, IC200UDR002, IC200UDR003, IC200UAL004, IC200UAL005, IC200UAL006, IC200UAA007, IC200UAR028, IC200UDD110, IC200UDD120, IC200UDD212, IC200UDR005, IC200UDR006, IC200UDR010, IC200UDD064, IC200UDD164, IC200UDR164, IC200UDR064	RS-232 cable 2)
Communication Modules		IC693CMM311, IC697CMM711	RS-232 cable 1)

2 RS-422 cable (☞ Refer to Section 25.2.2)

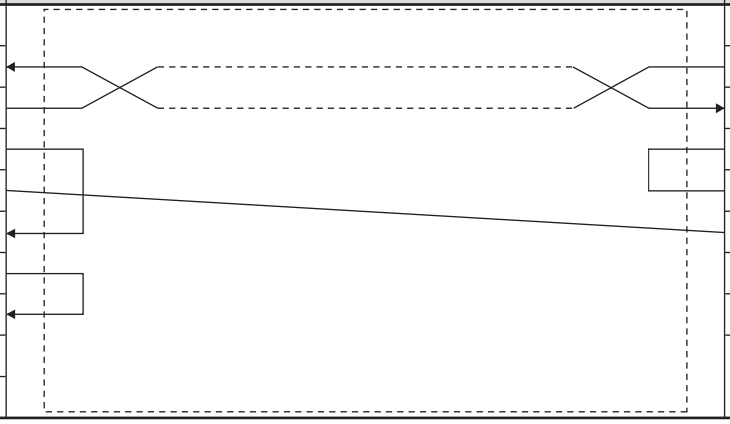
Model name			Conection cable	
			GT16	GT15/GT11
PLC CPU	Series 90-30	IC693CPU350, IC693CPU360, IC693CPU366, IC693CPU367, IC693CPU374	RS-422 cable 2)	RS-422 cable 5)
		IC693CPU363	RS-422 cable 2)	RS-422 cable 5)
	VersaMax Micro	IC200UAL004, IC200UAL005, IC200UAL006, IC200UAA007, IC200UAR028, IC200UDD110, IC200UDD120, IC200UDD212, IC200UDR005, IC200UDR006, IC200UDR010, IC200UDD064, IC200UDD164, IC200UDR164, IC200UDR064	RS-422 cable 3)	RS-422 cable 6)
Communication Modules		IC693CMM311, IC697CMM711	RS-422 cable 1)	RS-422 cable 4)

25.2.1 RS-232 cable

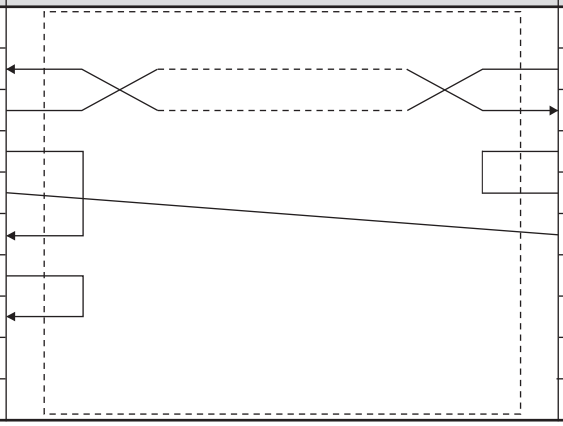
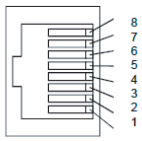
The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	Communication Modules	
Signal name	Pin No.		Pin No.	Signal name
CD/NC	1		1	SHILD
RD(RXD)	2		2	TD
SD(TXD)	3		3	RD
ER(DTR)	4		4	RTS
SG	5		5	CTS
DR(DSR)	6		7	SG
RS(RTS)	7		8	DCD
CS(CTS)	8		20	DTR
NC	9			
FG	-			

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	Communication Modules		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment
CD/NC	1				 RJ-45socket
RD(RXD)	2		4	TXD	
SD(TXD)	3		3	RXD	
ER(DTR)	4		1	RTS	
SG	5		2	CTS	
DR(DSR)	6		8	GND	
RS(RTS)	7		5	DCD	
CS(CTS)	8		6	DTR	
NC	9		7	SV	
FG	-				

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector specifications

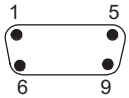
GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C□)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155□	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT15-RS2-9P	-		17LE-23090-27(D3CC)	

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(b) Conector pin arrangement

GOT main part conector
See from the front



9-pin D-sub(male)

(2) GE FANUC PLC side connector

Use the connector compatible with the GE FANUC PLC side module.
For details, refer to the following manual.

☞ User's Manual for the GE FANUC PLC

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

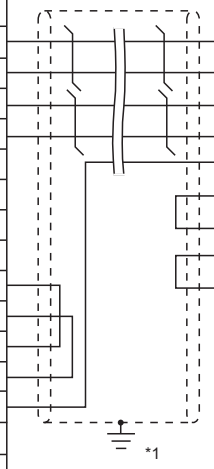
25.2.2 RS-422 cable

The following provides the connection diagrams and the connectors of the RS-422 cable connecting the GOT to the PLC.

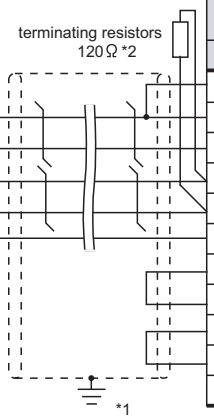
1 Connection diagram

(1) RS-422 cable 1) (for GT16)

GOT side	
Signal name	Pin No.
SDA1(TXD1+)	1
SDB1(TXD1-)	2
RDA1(RXD1+)	3
RDB1(RXD1-)	4
SDA2(TXD2+)	5
SDB2(TXD2-)	6
RDA2(RXD2+)	7
RDB2(RXD2-)	8
RSA(RTS+)	9
RSB(RTS-)	10
CSA(CTS+)	11
CSB(CTS-)	12
SG	13
SHLD	14
	Shell



Communication Modules	
Pin No.	Signal name
24	TERM
25	RD(B')
13	RD(A')
21	SD(B)
9	SD(A)
7	0V
10	RTS(A)
11	CTS(A')
22	RTS(B)
23	CTS(B')
1	SHLD



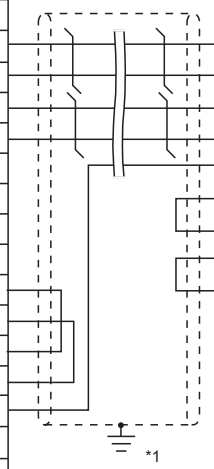
Communication Modules	
Pin No.	Signal name
24	TERM
25	RD(B')
13	RD(A')
21	SD(B)
9	SD(A)
7	0V
10	RTS(A)
11	CTS(A')
22	RTS(B)
23	CTS(B')
1	SHLD

*1 Connect FG grounding to the appropriate part of a cable shield line.

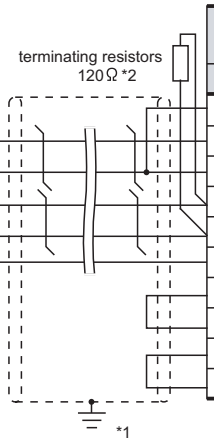
*2 A terminating resistor should be connected to communication module at a terminal station.

(2) RS-422 cable 2) (for GT16)

GOT side	
Signal name	Pin No.
SDA1(TXD1+)	1
SDB1(TXD1-)	2
RDA1(RXD1+)	3
RDB1(RXD1-)	4
SDA2(TXD2+)	5
SDB2(TXD2-)	6
RDA2(RXD2+)	7
RDB2(RXD2-)	8
RSA(RTS+)	9
RSB(RTS-)	10
CSA(CTS+)	11
CSB(CTS-)	12
SG	13
SHLD	14
	Shell



PLC	
Pin No.	Signal name
9	RT
11	RD(B')
10	RD(A')
13	SD(B)
12	SD(A)
7	SG
6	RTS(A)
15	CTS(A')
14	RTS(B)
8	CTS(B')



PLC	
Pin No.	Signal name
9	RT
11	RD(B')
10	RD(A')
13	SD(B)
12	SD(A)
7	SG
6	RTS(A)
15	CTS(A')
14	RTS(B)
8	CTS(B')

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Terminating resistor should be provided for a PLC which will be a terminal.

(3) RS-422 cable 3) (for GT16)

GOT side	
Signal name	Pin No.
SDA1(TXD1+)	1
SDB1(TXD1-)	2
RDA1(RXD1+)	3
RDB1(RXD1-)	4
SDA2(TXD2+)	5
SDB2(TXD2-)	6
RDA2(RXD2+)	7
RDB2(RXD2-)	8
RSA(RTS+)	9
RSB(RTS-)	10
CSA(CTS+)	11
CSB(CTS-)	12
SG	13
SHLD	14
	Shell

PLC	
Pin No.	Signal name
9	RT
11	RD(B')
10	RD(A')
13	SD(B)
12	SD(A)
7	SG
6	RTS(A)
15	CTS(A')
14	RTS(B)
8	CTS(B')
1	SHLD

terminating resistors 120Ω *2

PLC	
Pin No.	Signal name
9	RT
11	RD(B')
10	RD(A')
13	SD(B)
12	SD(A)
7	SG
6	RTS(A)
15	CTS(A')
14	RTS(B)
8	CTS(B')
1	SHLD

*1

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Terminating resistor should be provided for a PLC which will be a terminal.

(4) RS-422 cable 4) (for GT16, GT15, GT11)

GOT side	
Signal name	Pin No.
SDA	1
SDB	6
RDA	2
RDB	7
SG	5
RSA	3
CSA	4
RSB	8
CSB	9

Communication Modules	
Pin No.	Signal name
24	TERM
25	RD(B')
13	RD(A')
21	SD(B)
9	SD(A)
7	0V
10	RTS(A)
11	CTS(A')
22	RTS(B)
23	CTS(B')
1	SHLD

terminating resistors 120Ω *2

Communication Modules	
Pin No.	Signal name
24	TERM
25	RD(B')
13	RD(A')
21	SD(B)
9	SD(A)
7	0V
10	RTS(A)
11	CTS(A')
22	RTS(B)
23	CTS(B')
1	SHLD

*1

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 A terminating resistor should be connected to communication module at a terminal station.

(5) RS-422 cable 5) (for GT16, GT15, GT11)

GOT side	
Signal name	Pin No.
SDA	1
SDB	6
RDA	2
RDB	7
SG	5
RSA	3
CSA	4
RSB	8
CSB	9

PLC	
Pin No.	Signal name
9	RT
11	RD(B')
10	RD(A')
13	SD(B)
12	SD(A)
7	SG
6	RTS(A)
15	CTS(A')
14	RTS(B)
8	CTS(B')

terminating resistors 120Ω *2

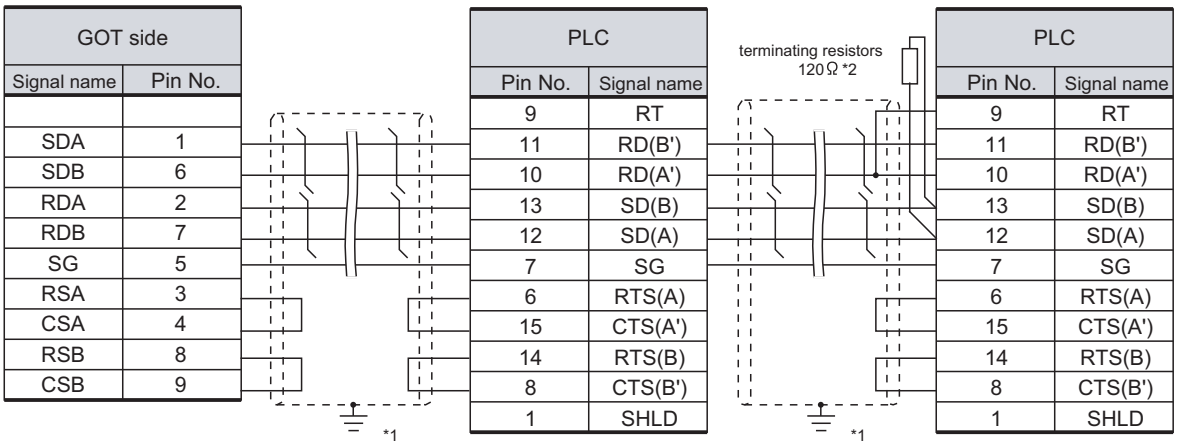
PLC	
Pin No.	Signal name
9	RT
11	RD(B')
10	RD(A')
13	SD(B)
12	SD(A)
7	SG
6	RTS(A)
15	CTS(A')
14	RTS(B)
8	CTS(B')

*1

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Terminating resistor should be provided for a PLC which will be a terminal.

(6) RS-422 cable 6) (for GT16, GT15, GT11)



*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Terminating resistor should be provided for a PLC which will be a terminal.

2 Connector specifications

(1) GOT side connector

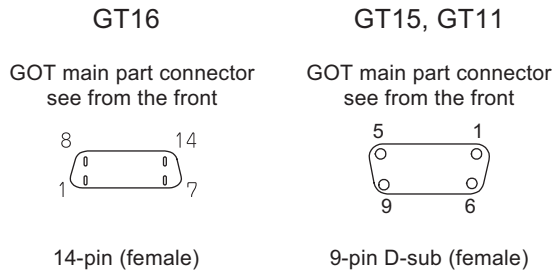
(a) Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Conector pin arrangement



(2) GE FANUC PLC side connector

Use the connector compatible with the GE FANUC PLC side module.

For details, refer to the following manual.

☞ User's Manual for the GE FANUC PLC

3 Precautions when preparing a cable

The length of the RS-422 cable must be 1200m or less.

4 Connecting terminating resistors

(1) GOT

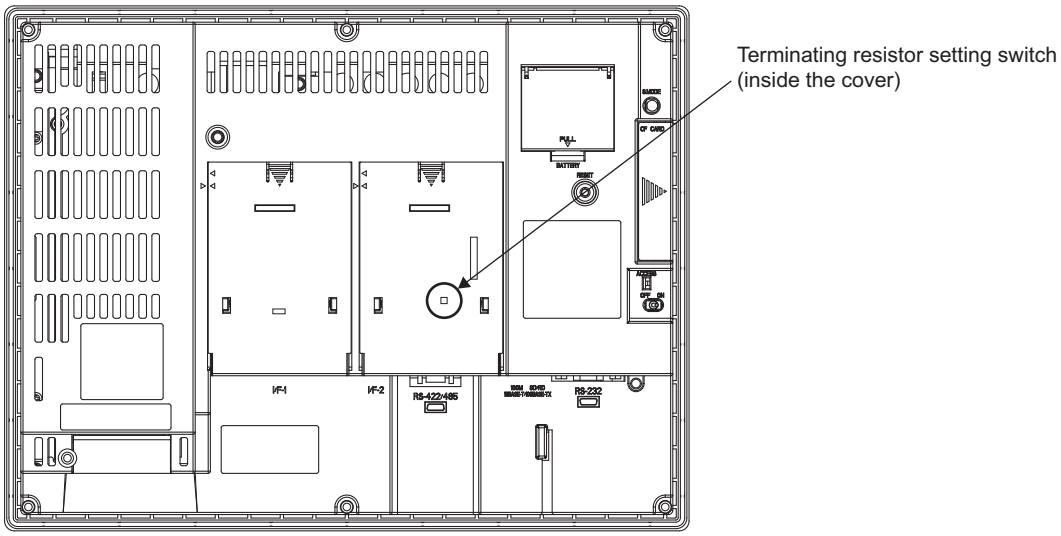
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

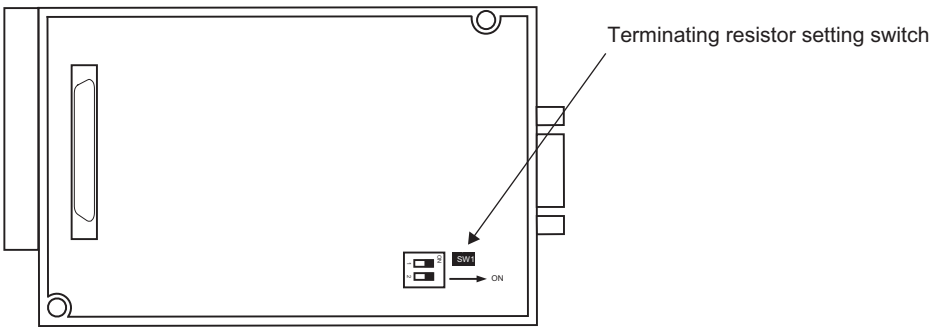
*1 The default setting is "Disable".



• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

25.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 25.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 25.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 25.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 25.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 25.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 25.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 25.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

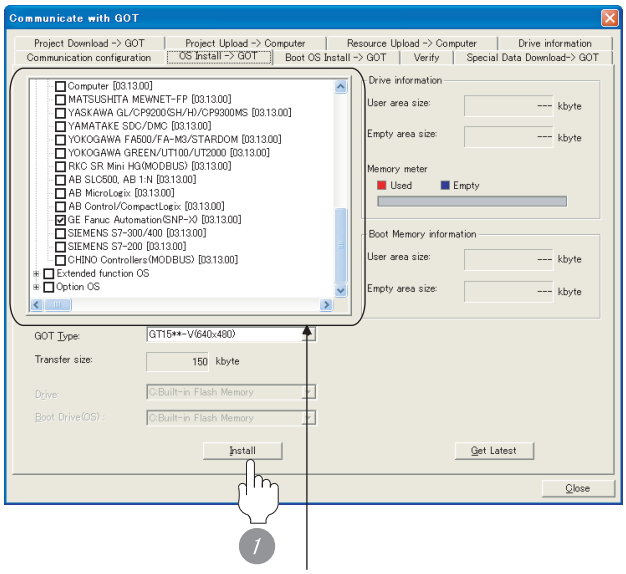
Section 25.4 PLC Side Setting

25.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

- GE Fanuc Automation(SNP-X)

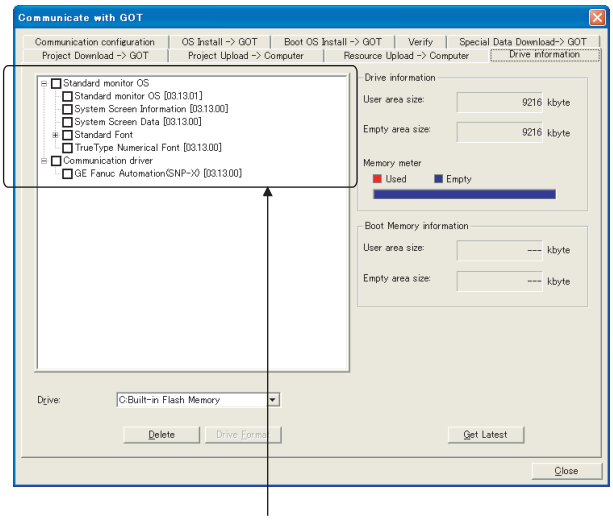
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

25.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: GE Fanuc Automation(SNP-X)

25.3.3 Setting communication interface (Communication settings)

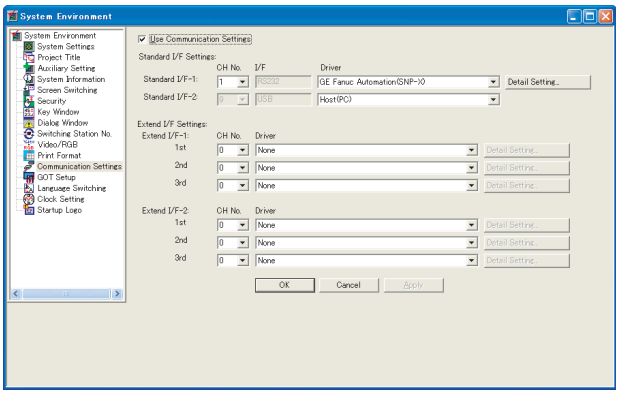
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

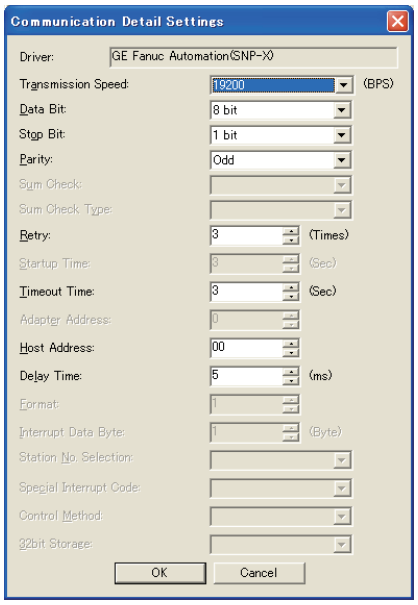


(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to "GE Fanuc Automation(SNP-X)".
3. Perform the detailed settings for the driver.
   (☞ 2 Communication detail settings)

2 Communication detail settings

(1) GE Fanuc Automation(SNP-X)



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Odd>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 5ms>	0 to 300 ms
Host Address	Specify the host address (station No. of the GOT to which the PLC is connected) in the connected network. <Default: 00>	00 to 31

Point

(1) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT □ User's Manual

(2) Precedence in communication settings

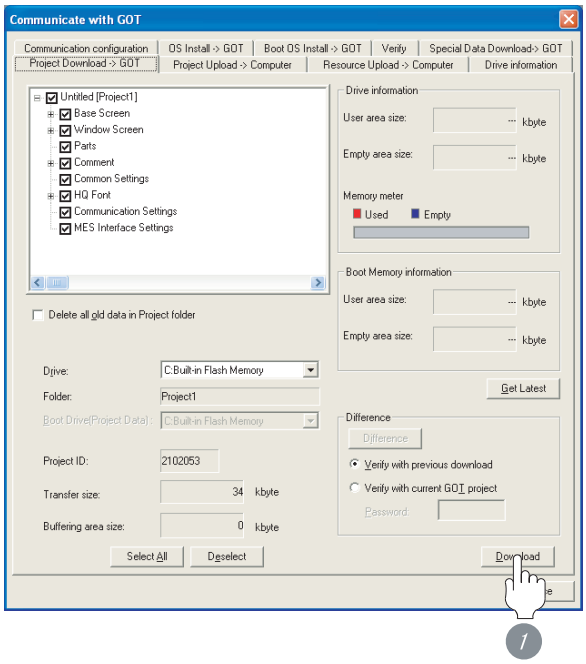
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

25.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

25.3.5 Attaching communication unit and connecting cable

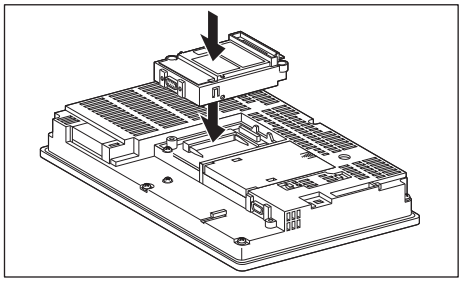
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

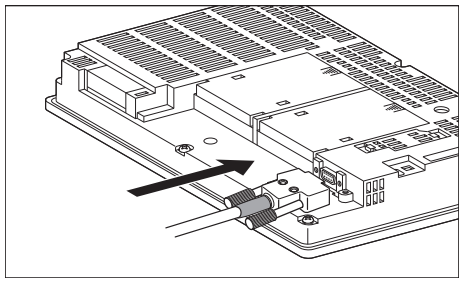
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

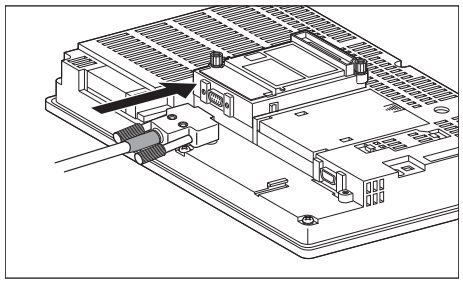
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



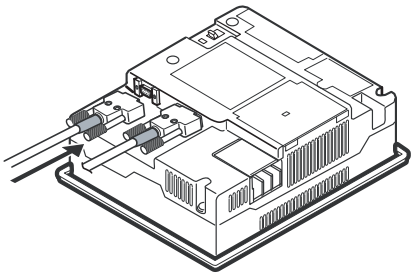
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

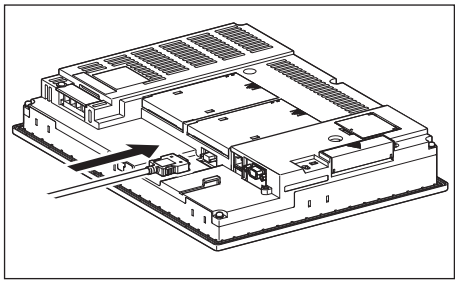


(2) How to connect the RS-422 cable

(a) For the GT16

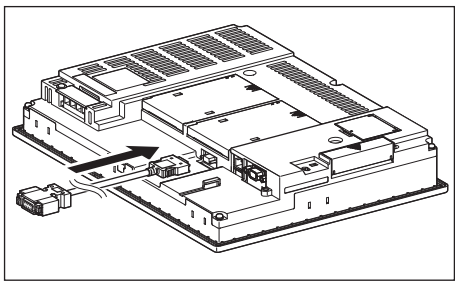
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

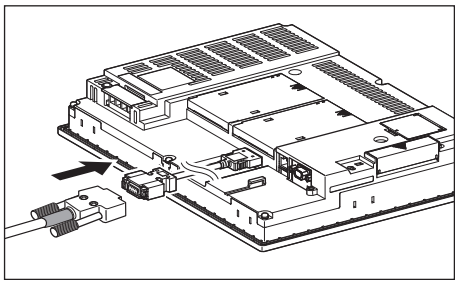


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

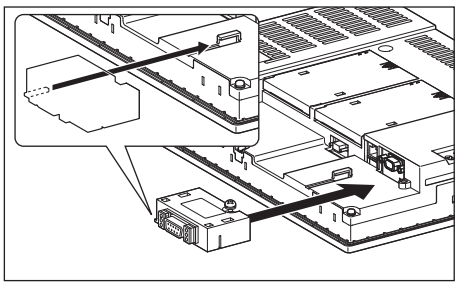


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

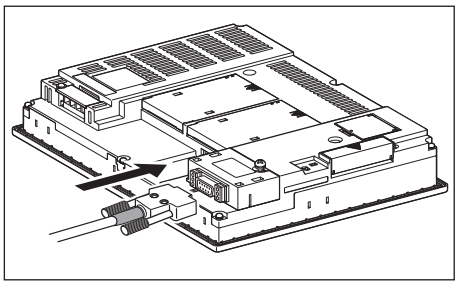


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

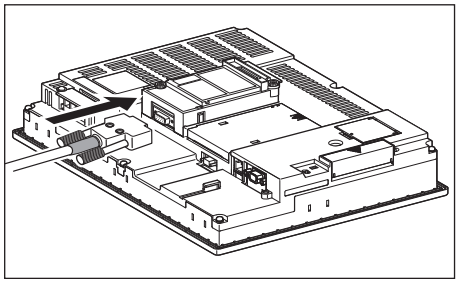


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

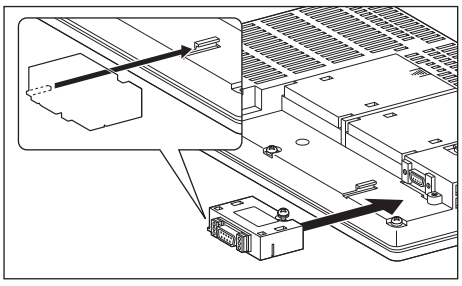
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



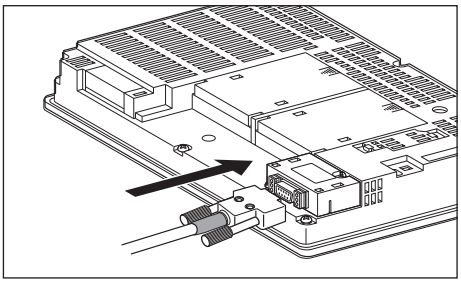
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155□)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

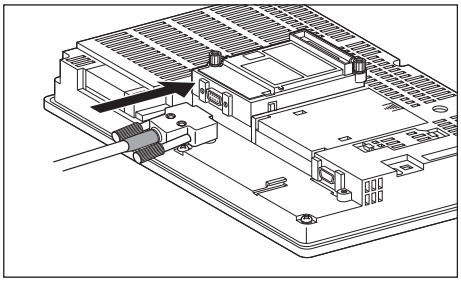


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

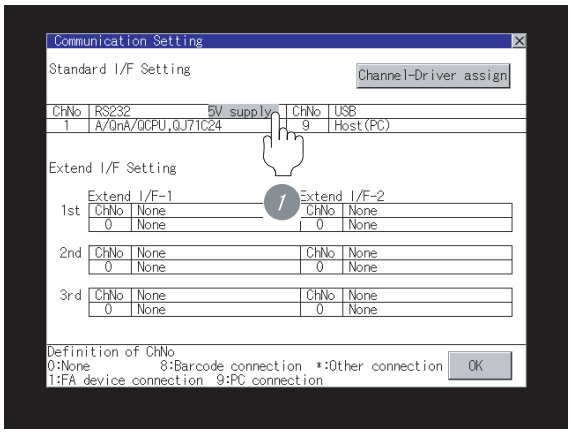
Point

When using the RS-422 conversion unit

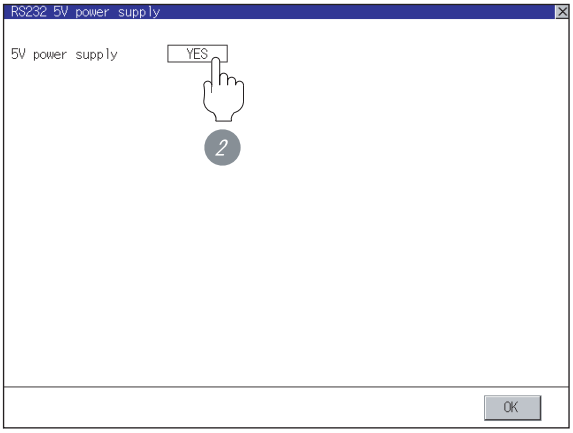
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

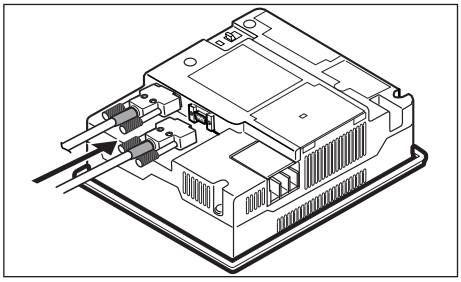


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

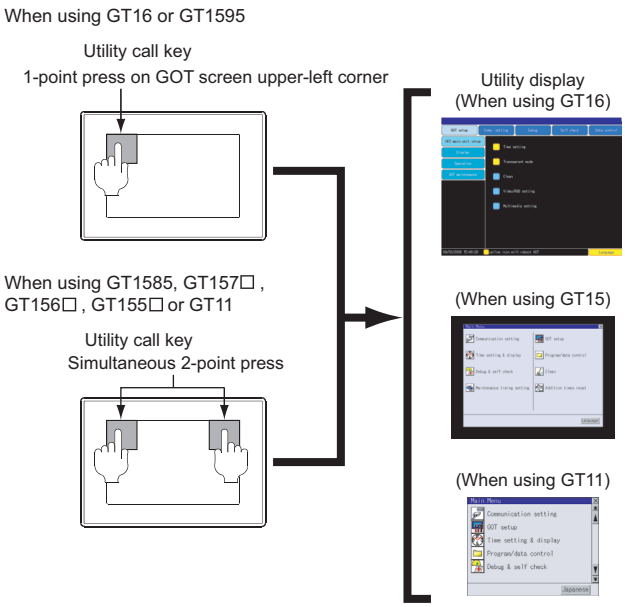


25.3.6 Verifying GOT recognizes controllers

- Verify the GOT recognizes controllers on [Communication Settings] of the Utility.
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

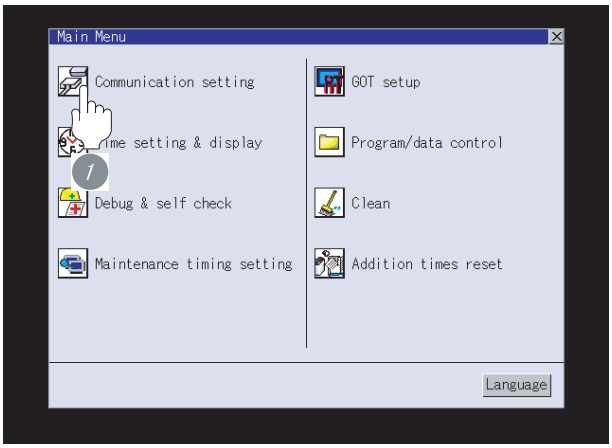


Point

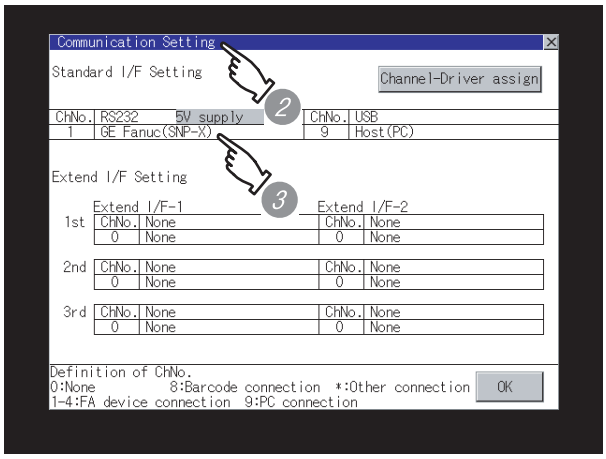
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  GE Fanuc Automation(SNP-X)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 25.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

25.3.7 Checking for normal monitoring

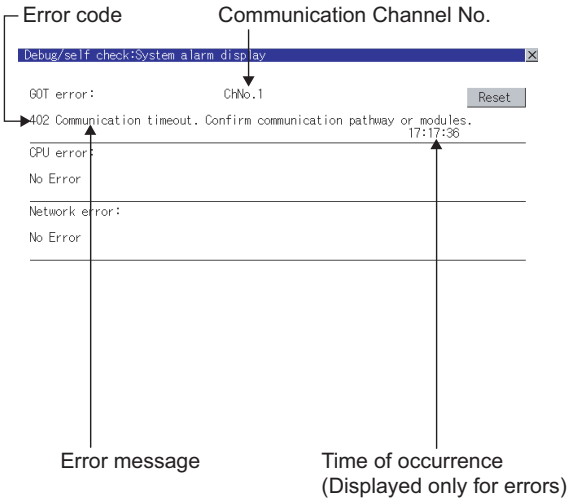
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check.

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

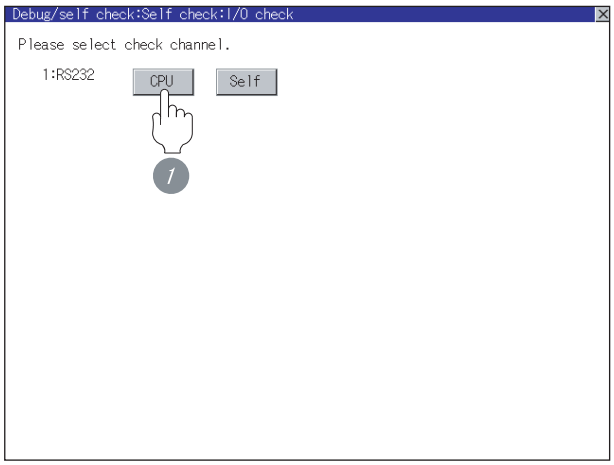
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

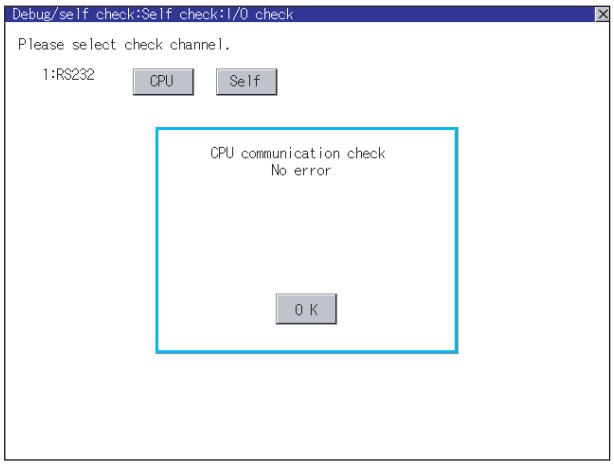
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

Section 25.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

25.4 PLC Side Setting

Point

GE FANUC PLC

For details of GE FANUC PLCs, refer to the following manuals.

☞ Manuals for GE FANUC PLCs

Model		Reference
PLC CPU	Series 90-30	Section 25.4.1
	VersaMaxMicro	Section 25.4.2
Data Communications Module	IC693CMM311	Section 25.4.3
	IC697CMM711	Section 25.4.4

25.4.1 Connecting to Series 90-30

1 Communication settings

Make the communication settings using the engineering tool.

When making the settings, set [Configuration Mode] on the [Setting] tab of the engineering tool to "SNP only".

Setting item	PLC side setting
Port Mode*1	SNP
Port Type*2	Slave
Data Rate	9600bps, 19200bps
Flow Control	NONE
Parity	EVEN, ODD, NONE
Stop Bits	1 bit, 2 bit
Timeout*3	Long
Turn Around Delay*4	0
SNP ID*5	00 to 31
Converter Power Consumption*6	0

*1 Set to SNP.
*2 Set to Slave.
*3 Set to Long.
*4 Set to 0.
*5 Set within the range of 00 to 31.
When specifying the station No. from 0 to 9, add "0" before the number and set it as 00 to 09.
*6 Set to 0.(only when connecting to Port2)

25.4.2 Connecting to VersaMaxMicro

1 Communication settings

Make the communication settings using the engineering tool.

Setting item	PLC side setting
Data Rate	9600bps, 19200bps, 38400bps
Bits / Character	7 bit, 8 bit
Parity	EVEN, ODD, NONE
Stop Bits	1 bit, 2 bit
Port Mode*1	SNP
Port Type*2	Slave
Flow Control	NONE
Timeout*3	Long
Turn Around Delay*4	0
SNP ID*5	00 to31

*1 Set to the SNP protocol.
*2 Set to Slave.
*3 Set to Long.
*4 Set to 0.
*5 Set within the range of 00 to 31.
When specifying the station No. from 0 to 9, add "0" before the number and set it as 00 to 09.

25.4.3 Connecting to IC693CMM311

1 Communication settings

Make the communication settings using the engineering tool.

When making the settings, set [Configuration Mode] on the [Setting] tab of the engineering tool to "SNP only".

Setting item	PLC side setting
SNP Enable*1	YES
SNP Mode*2	Slave
Interface*3	RS232, RS485
Data Rate	9600bps, 19200bps
Parity	ODD, NONE, EVEN
Stop Bits	1 bit, 2 bit
Flow Control*4	NONE
Turn Around Delay*5	NONE
Timeout*6	Long

*1 Set to YES.
*2 Set to SLAVE.
*3 Set the communication format to be used.
(only when connecting to Port2)
*4 Set to NONE.
*5 Set to NONE.
*6 Set to LONG.

25.4.4 Connecting to IC697CMM711

1 Communication settings

Make the communication settings using the engineering tool.

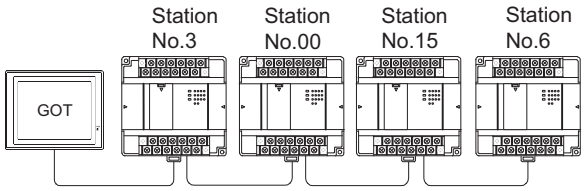
When making the settings, set [Configuration Mode] on the [Setting] tab of the engineering tool to "SNP only".

Setting item	PLC side setting
SNP Enable*1	YES
SNP Mode*2	Slave
Interface*3	RS232, RS485
Data Rate	9600bps, 19200bps
Parity	ODD, NONE, EVEN
Stop Bits	1 bit, 2 bit
Flow Control*4	NONE
Turn Around Delay*5	NONE
Timeout*6	Long

*1 Set to YES.
*2 Set to SLAVE.
*3 Set the communication format to be used.
(only when connecting to Port2)
*4 Set to NONE.
*5 Set to NONE.
*6 Set to LONG.

25.4.5 Station NO. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
00 to 31

Point

PLC Station NO. settings

Make sure to set a 2-digit number for the station No. of the PLC to be monitored by the GOT.

25.5 Precautions

1 GOT clock control function

The PLC clock data cannot be written to or read from the GOT.
The settings of "time adjusting" or "time broadcast" made on the GOT will be disabled on the PLC.

25.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	Connection to GE FANUC PLC	Supporting the GE FANUC PLC connection	2.82L	Communication driver GE Fanuc Automation(SNP-X) [03.13.**]
GT16	Connection to GE FANUC PLC	Supporting the connection to GT16	2.90U	Communication driver GE Fanuc Automation(SNP-X) [04.02.**]

MEMO

26

CONNECTION TO LS INDUSTRIAL SYSTEMS PLC



26.1 System Configuration . . . . . page 26-2

This section describes the equipment and cables needed when connecting a GOT to an LS INDUSTRIAL SYSTEMS PLC.
Select a system suitable for your application.

26.2 Connection Cable . . . . . page 26-14

This section describes the specifications of the cables needed when connecting to an LS INDUSTRIAL SYSTEMS PLC.
Check the specifications of the connection cables.

26.3 Preparatory Procedures for Monitoring . . . . . page 26-22

This section provides the procedures to be followed before performing monitoring in connection to an LS INDUSTRIAL SYSTEMS PLC.
This procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

26.4 PLC Side Setting . . . . . page 26-32

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.
Check the specifications of the connection cables.

26.5 List of Functions Added by Version Upgrade . . . . . page 26-33

This section describes the functions added by version upgrade of GT Designer2 or OS.

26.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

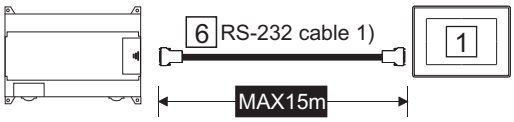
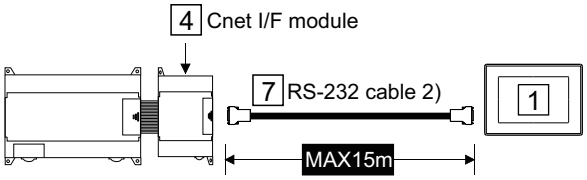
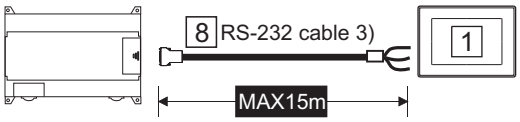
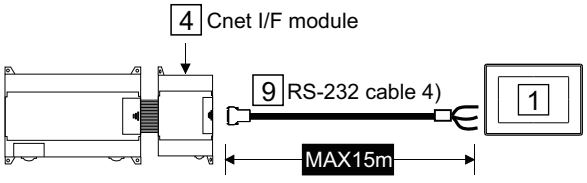
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

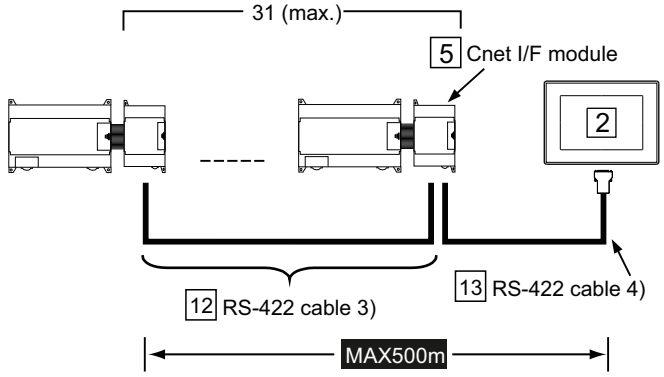
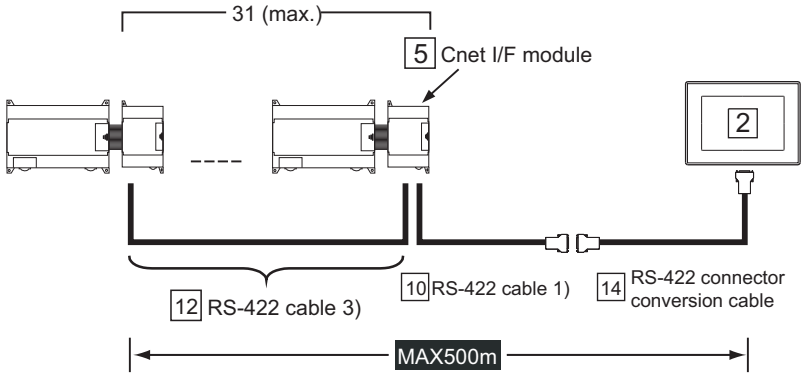
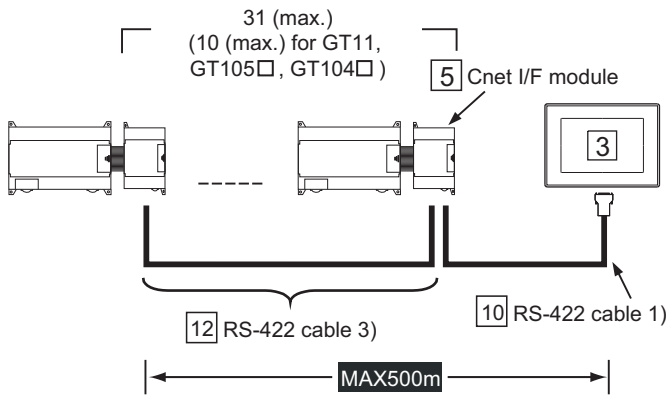
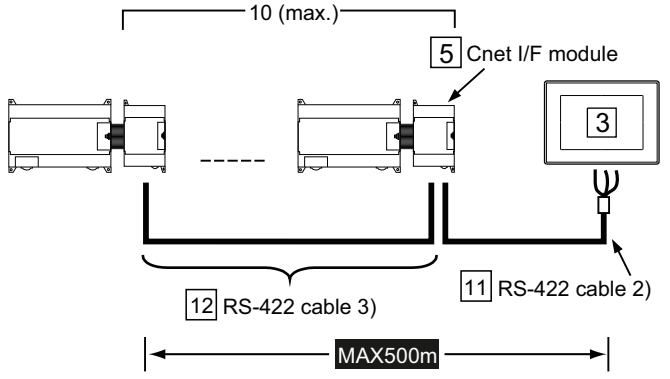
26.1.1 When connecting to K80S or K120S

Communication driver
LS Industrial Systems
MASTER-K

1 System configuration and connection conditions

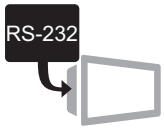
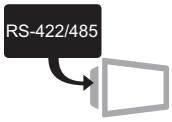
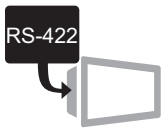
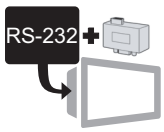
When connecting to K80S or K120S

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10
1	15m or less		GT16 GT15 GT11 Serial GT10
1	15m or less		GT24V10 20 30 (RS-232)
1	15m or less		GT24V10 20 30 (RS-232)

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	500m or less		GT16
1	500m or les		GT16
1	500m or les		GT16 GT15 GT11 Serial GT105□ 4□
1	500m or les		GT24V 10 20 30 (RS-422)

2 System equipment

(1) GOT

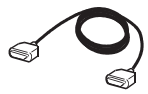
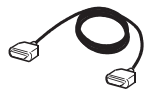
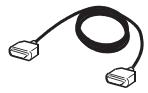
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422 conversion unit • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	4	Cnet I/F module (RS-232 type)	G7L-CUEB
	5	Cnet I/F module (RS-422/485 type)	G7L-CUEC

4 and 5 are products manufactured by LS Industrial Systems Co., Ltd. For details of these products, contact LS Industrial Systems Co., Ltd.

(3) Cable

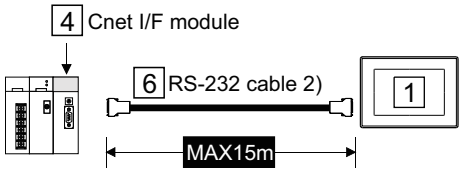
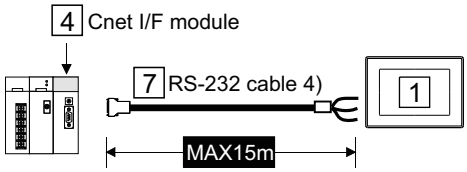
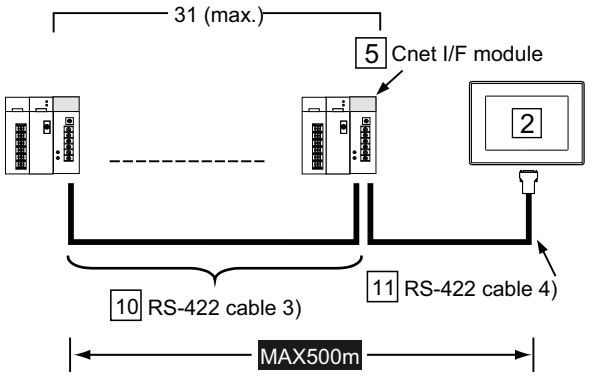
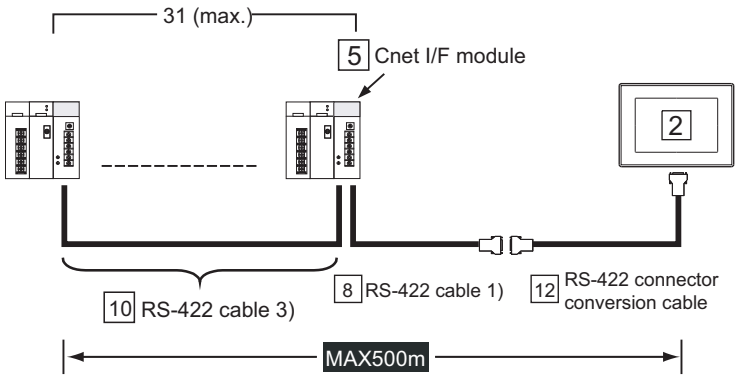
Image	No.	Name	Model name	Model
	6	RS-232 cable 1) • Between PLC and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ 4□
	7	RS-232 cable 2) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ 4□
	8	RS-232 cable 3) • Between PLC and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT24V 10 20 30 (RS-232)
	9	RS-232 cable 4) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT24V 10 20 30 (RS-232)
	10	RS-422 cable 1) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ 4□
	11	RS-422 cable 2) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT24V 10 20 30 (RS-422)
	12	RS-422 cable 3) • Between PLCs (Cnet I/F module)	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30
	13	RS-422 cable 4) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16
	14	RS-422 connector conversion cable • Between PLC (Cnet I/F module) and GOT	GT16-C02R4-9S	GT16

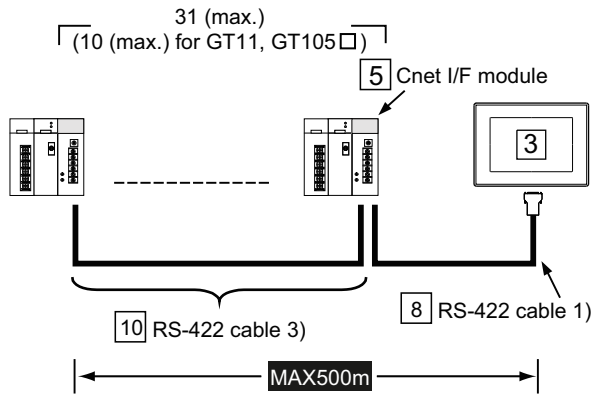
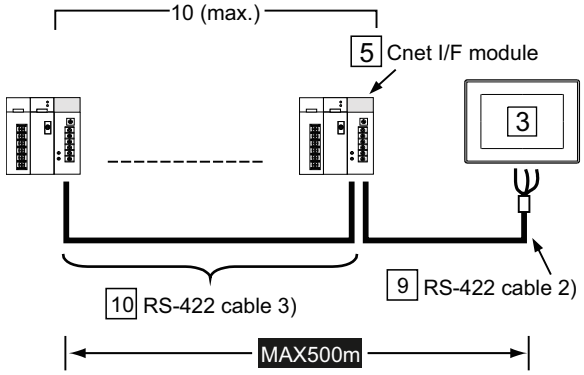
26.1.2 Connecting to K200S

Communication driver
LS Industrial Systems
MASTER-K

1 System configuration and connection conditions

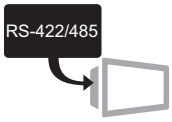
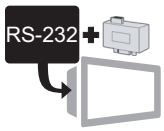
When connecting to K200S

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
1	15m or less		GT 24V 10 20 30 (RS-232)
1	500m or less		GT16
1	500m or less		GT16

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	500m or less		GT16 GT15 GT11 Serial GT105□ 4□
1	500m or less		GT24V 10 20 30 (RS-422)

2 System equipment

(1) GOT

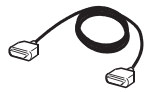
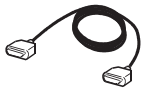
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V10 20 30 (RS-422)
		RS-422 conversion unit • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	4	Cnet I/F module (RS-232 type)	G4L-CUEB
	5	Cnet I/F module (RS-422/485 type)	G6L-CUEC

4 and 5 are products manufactured by LS Industrial Systems Co., Ltd. For details of these product, contact LS Industrial Systems Co., Ltd.

(3) Cable

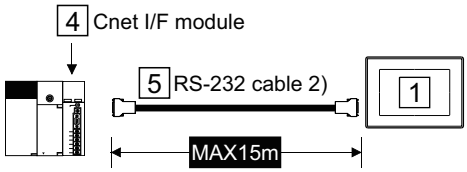
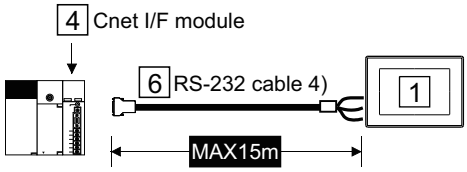
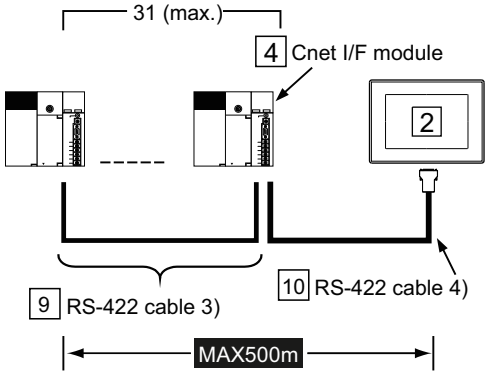
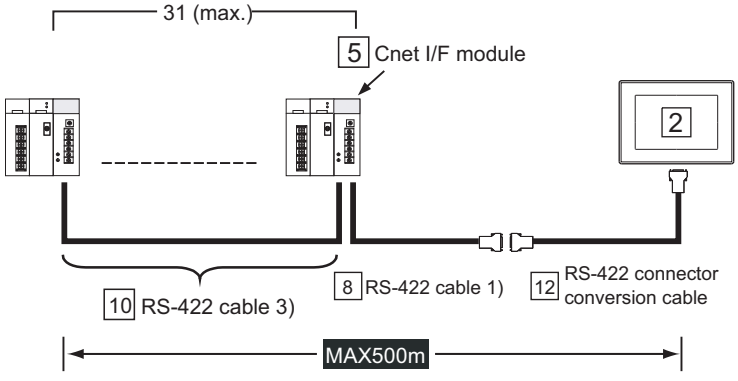
Image	No.	Name	Model name	Model
	6	RS-232 cable 2) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□4□
	7	RS-232 cable 4) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT24V10 20 30 (RS-232)
	8	RS-422 cable 1) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□4□
	9	RS-422 cable 2) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT24V10 20 30 (RS-422)
	10	RS-422 cable 3) • Between PLCs (Cnet I/F module)	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□4□ GT24V10 20 30 (RS-422)
	11	RS-422 cable 4) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16
	12	RS-422 connector conversion cable • Between PLC (Cnet I/F module) and GOT	GT16-C02R4-9S	GT16

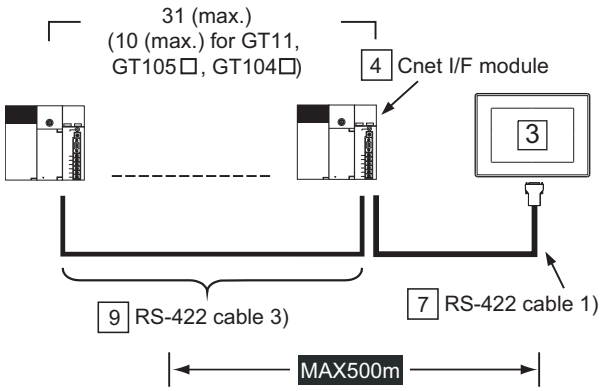
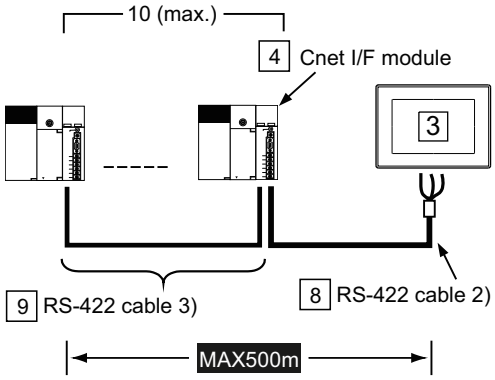
26.1.3 Connecting to K300S

Communication driver
LS Industrial Systems
MASTER-K

1 System configuration and connection conditions

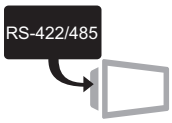
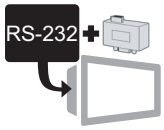
When connecting to K300S

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10
1	15m or less		GT24V10 20 30 (RS-232)
1	500m or less		GT16
1	500m or less		GT16

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	500m or less		GT16 GT15 GT11 Serial GT105□ GT104□
1	500m or less		GT24V10 20 30 (RS-422)

2 System equipment

(1) GOT

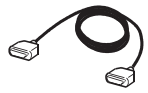
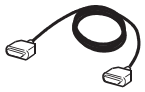
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ GT24V1020 30
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ GT24V1020 30
		RS-422 Conversion Unit • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	4	Cnet I/F module (RS-232/422/485 type)	G4L-CUEA

4 is a product manufactured by LS Industrial Systems Co., Ltd. For details of this product, contact LS Industrial Systems Co.,Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-232 cable 2) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ GT104□
	6	RS-232 cable 4) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT24V10 20 30 (RS-232)
	7	RS-422 cable 1) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ GT104□
	8	RS-422 cable 2) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT24V10 20 30 (RS-422)
	9	RS-422 cable 3) • Between PLCs (Cnet I/F module)	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□ GT104□ GT24V10 20 30 (RS-422)
	10	RS-422 cable 4) • Between PLC (Cnet I/F module) and GOT	(To be prepared by the user. ☞ Section 26.2 Connection Cable)	GT16
	11	RS-422 connector conversion cable	GT16-C02R4-9S	GT16

26.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ Section 26.2.1)

Model		Connection cable		
		GT16	GT15, GT11, GT105□, GT104□	GT1020, GT1030
PLC CPU	K80S, K120S	RS-232 cable 1)	RS-232 cable 1)	RS-232 cable 3)
Cnet I/F module	G7L-CUEB	RS-232 cable 2)	RS-232 cable 2)	RS-232 cable 4)
	G6L-CUEB	RS-232 cable 2)	RS-232 cable 2)	RS-232 cable 4)
	G4L-CUEA	RS-232 cable 2)	RS-232 cable 2)	RS-232 cable 4)

2 RS-422 cable (☞ Section 26.2.2)

Model		Connection cable		
		GT16	GT15, GT11, GT105□, GT104□	GT1020, GT1030
Cnet I/F module	G7L-CUEC	RS-422 cable 4)	RS-422 cable 1)	RS-422 cable 2)
		RS-422 cable 1) GT16-C02R4-9S		
	G6L-CUEC	RS-422 cable 4)	RS-422 cable 1)	RS-422 cable 2)
		RS-422 cable 1) GT16-C02R4-9S		
	G4L-CUEA	RS-422 cable 4)	RS-422 cable 1)	RS-422 cable 2)
		RS-422 cable 1) GT16-C02R4-9S		

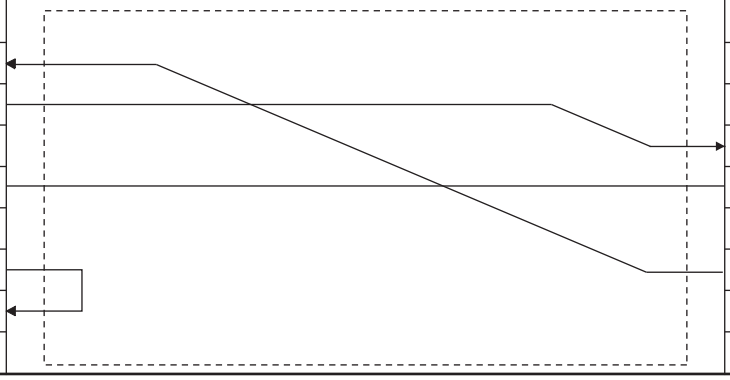
Model		Connection cable
Between Cnet I/F module	G7L-CUEC	RS-422 cable 3)
	G6L-CUEC	RS-422 cable 3)
	G4L-CUEA	RS-422 cable 3)

26.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

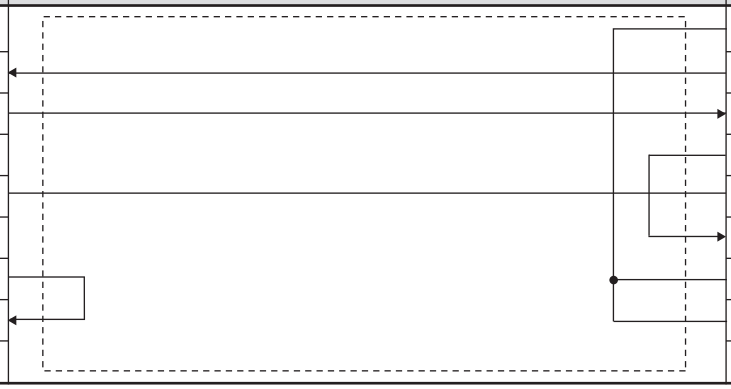
1 Connection diagram

(1) RS-232 cable 1) (For GT16, GT15, GT11, GT105 □ , GT104 □)

GOT side		Cable connection and signal direction	LS INDUSTRIAL SYSTEM PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	5V
RD(RXD)	2		2	RXD1
SD(TXD)	3		3	TXD1
ER(DTR)	4		4	RXD2
SG	5		5	SG
DR(DSR)	6		6	5V
RS(RTS)	7		7	TXD2
CS(CTS)	8		8	SG
NC	9		9	SG

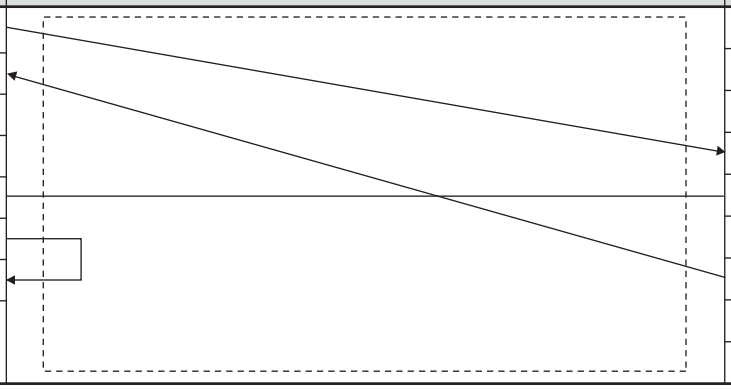
*1 GT16:CD, GT15 : CD, GT11: NC, GT105□:NC, GT104□:NC

(2) RS-232 cable 2) (For GT16, GT15, GT11, GT105 □ , GT104 □)

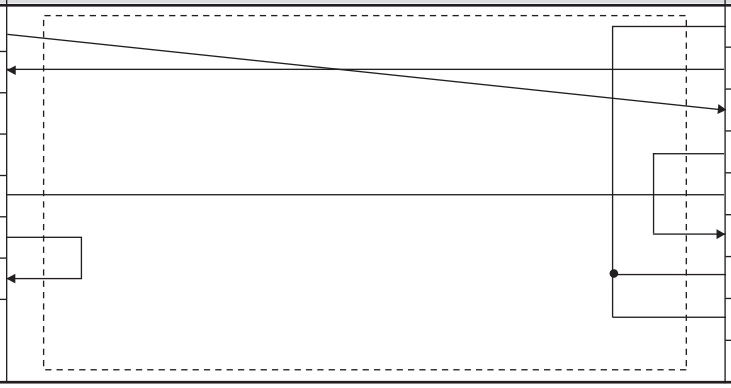
GOT side		Cable connection and signal direction	LS INDUSTRIAL SYSTEM PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	CD
RD(RXD)	2		3	TXD
SD(TXD)	3		2	RXD
ER(DTR)	4		4	DTR
SG	5		5	SG
DR(DSR)	6		6	DSR
RS(RTS)	7		7	RTS
CS(CTS)	8		8	CTS
NC	9		9	-

*1 GT16:CD, GT15 : CD, GT11: NC, GT105□:NC, GT104□:NC

(3) RS-232 cable 3) (For GT1020, GT1030)

GOT side (terminal block)	Cable connection and signal direction	LS INDUSTRIAL SYSTEM PLC side	
Signal name		Pin No.	Signal name
SD		1	5V
RD		2	RXD1
ER		3	TXD1
DR		4	RXD2
SG		5	SG
RS		6	5V
CS		7	TXD2
		8	SG
		9	SG

(4) RS-232 cable 4) (For GT1020, GT1030)

GOT side (terminal block)	Cable connection and signal direction	LS INDUSTRIAL SYSTEM PLC side	
Signal name		Pin No.	Signal name
SD		1	CD
RD		3	TXD
ER		2	RXD
DR		4	DTR
SG		5	SG
RS		6	DSR
CS		7	RTS
		8	CTS
		9	-

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

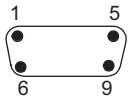
☞ GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

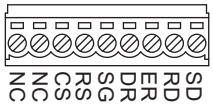
GOT main part connector
see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a
GOT main part



9-pin terminal block

(2) LS INDUSTRIAL SYSTEMS PLC side connector
Use the connector compatible with the LS INDUSTRIAL SYSTEMS PLC side module.
For details, refer to the following manual.

☞ User's Manual for the LS INDUSTRIAL SYSTEMS PLC.

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

26.2.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a PLC.

1 Connection diagram

(1) RS-422 cable 1) (For GT16, GT15, GT11, GT105 □ , GT104 □)

GOT side		Cable connection and signal direction	LS INDUSTRIAL SYSTEMS PLC side (terminal block)*1
Signal name	Pin No.		Signal name
SDA	1		RDA
SDB	6		RDB
RDA	2		SDA
RDB	7		SDB
SG	5		SG
RSA	3		FG
RSB	8		
CSA	4		
CSB	9		

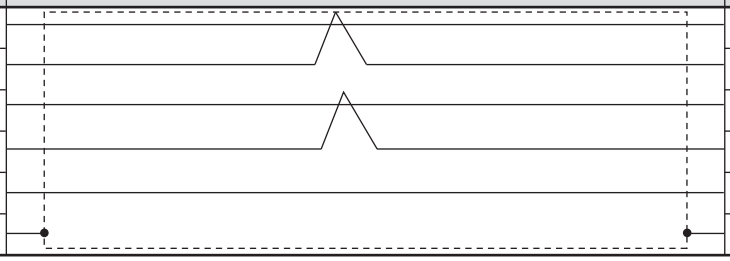
*1 : For the system terminal, connect a 120 Ω(1/2W) terminating resistor across RDA and RDB, and across SDA and SDB respectively.

(2) RS-422 cable 2) (For GT1020, GT1030)

GOT side (terminal block)	Cable connection and signal direction	LS INDUSTRIAL SYSTEMS PLC side (terminal block)*2
Signal name		Signal name
SDA		RDA
SDB		RDB
RDA		SDA
RDB		SDB
SG		SG
RSA		FG
RSB		
CSA		
CSB		

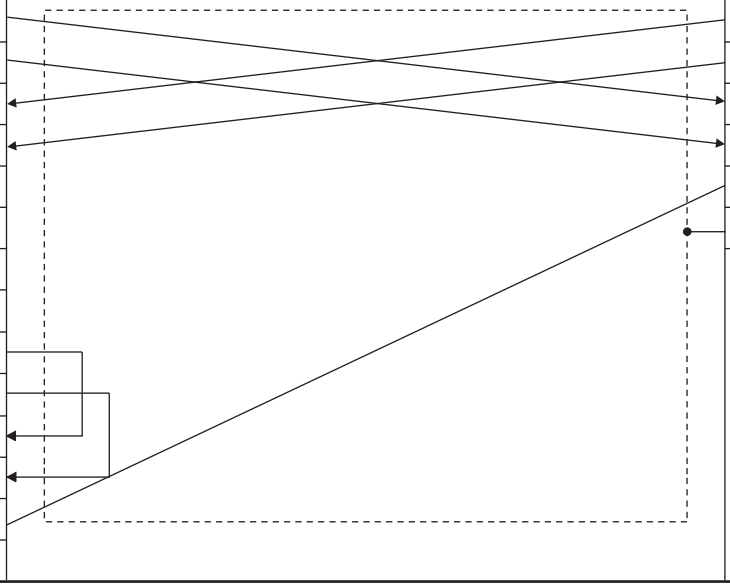
*2 :For the system terminal, connect a 120 Ω(1/2W) terminating resistor across RDA and RDB, and across SDA and SDB respectively.

(3) RS-422 cable 3) (For G4L-CUEA, G6L-CUEC, G7L-CUEC)

LS INDUSTRIAL SYSTEMS PLC side (terminal block)*3	Cable connection and signal direction	LS INDUSTRIAL SYSTEMS PLC side (terminal block)*3
Signal name		Signal name
RDA		RDA
RDB		RDB
SDA		SDA
SDB		SDB
SG		SG
FG		FG

*3 : For the system terminal, connect a 120Ω (1/2W) terminating resistor across RDA and RDB, and across SDA and SDB respectively.

(4) RS-422 cable 4) (For G7L-CUEC/GT16, G6L-CUEC/GT16, G4L-CUEA/GT16)

GOT side		Cable connection and signal direction	LS INDUSTRIAL SYSTEMS PLC side (terminal block)
Signal name	Pin No.		Signal name
SDA1	1		SDA
SDB1	2		SDB
RDA1	3		RDA
RDB1	4		RDB
SDA2	5		SG
SDB2	6		FG
RDA2	7		
RDB2	8		
RSA	9		
RSB	10		
CSA	11		
CSB	12		
SG	13		
NC	14		

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd.
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1045-Q, GT1040-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin terminal block*2	PHOENIX CONTACT Inc
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

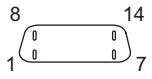
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDRE14MAG1+, a dedicated pressure welding tool is required.
For details on the connectors and pressure welding tools, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16

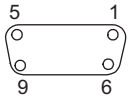
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

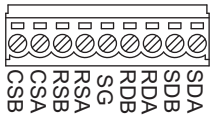
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) LS INDUSTRIAL SYSTEMS PLC side connector

Use the connector compatible with the LS INDUSTRIAL SYSTEMS PLC side module.

For details, refer to the following manual.

☞ User's Manual for the LS INDUSTRIAL SYSTEMS PLC

3 Precautions when preparing a cable

The length of the RS-422 cable must be 200m or less.

4 Connecting the terminator

When connecting a LS INDUSTRIAL SYSTEMS PLC to a GOT, a terminating resistor must be set to the LS INDUSTRIAL SYSTEMS PLC.

No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

☞ Section 26.4 PLC Side Setting

26.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 26.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 26.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 26.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 26.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 26.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 26.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 26.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

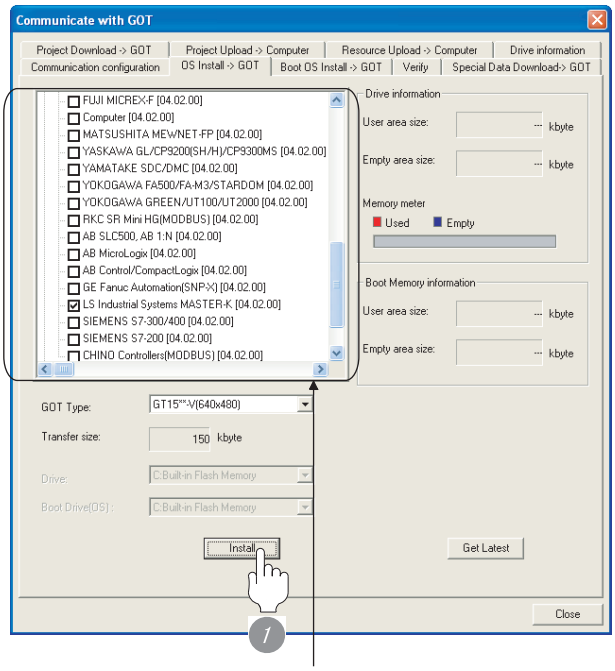
☞ Section 26.4 PLC Side Setting

26.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
LS Industrial Systems MASTER-K

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

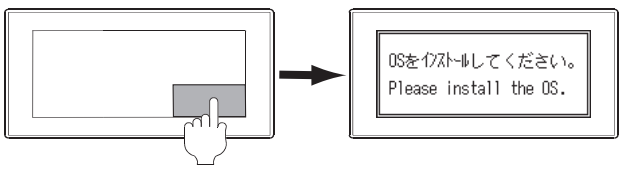
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



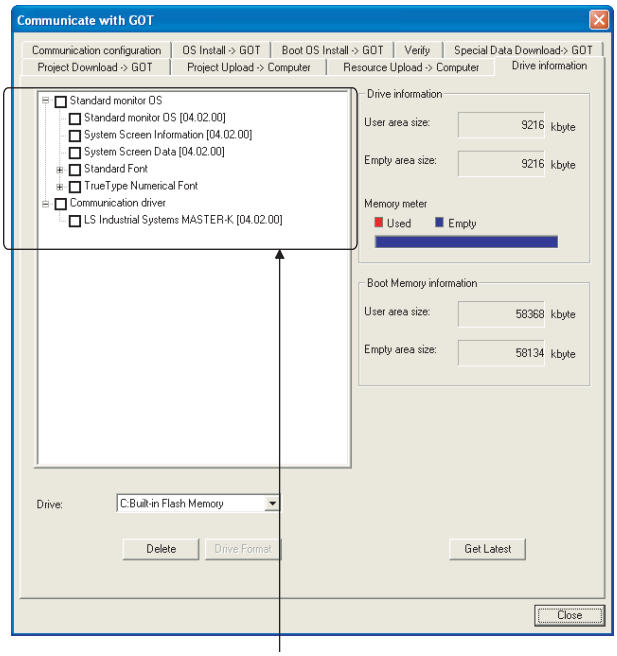
Turn on the GOT while the bottom right corner is touched.

26.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: LS Industrial Systems - MASTER-K

26.3.3 Setting communication interface (Communication settings)

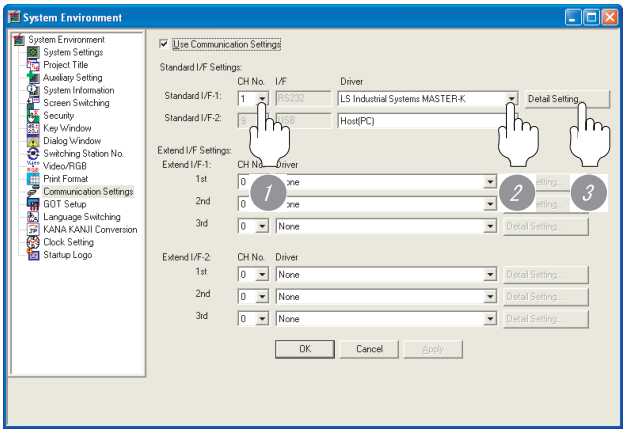
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

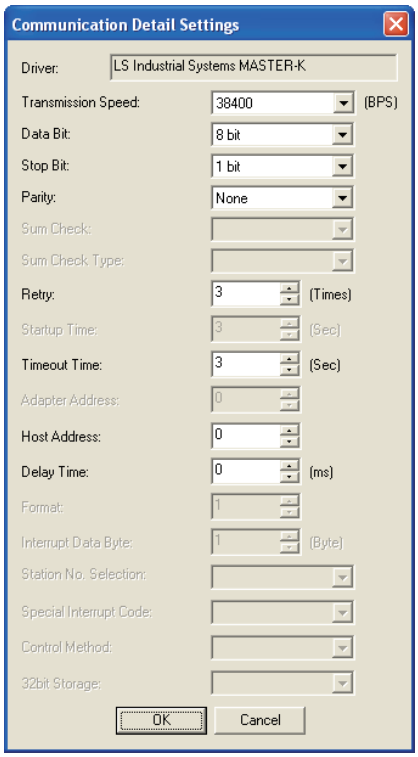


1 Set [1] to the channel No. used.

2 Set the driver to "LS Industrial Systems MASTER-K".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 38400bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: None>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 0>	0 to 31
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0ms>	0 to 300 ms

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

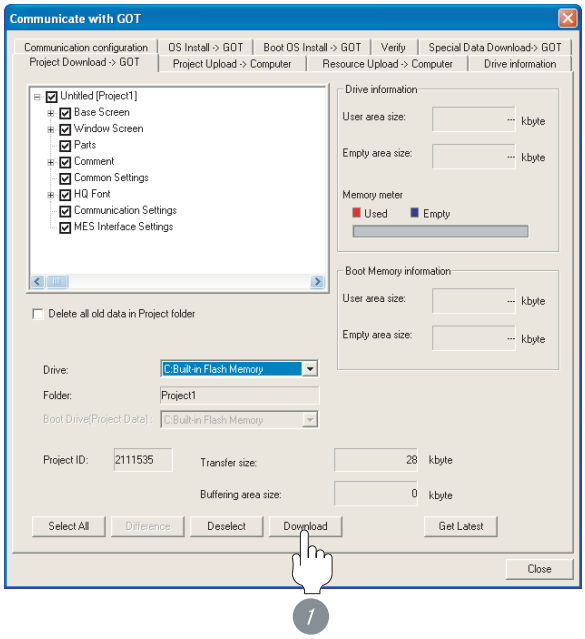
Communication settings can be changed on only GT Designer2.

26.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

26.3.5 Attaching communication unit and connecting cable

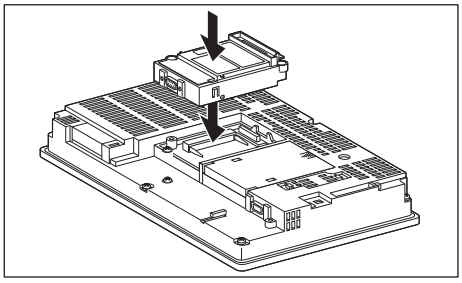
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

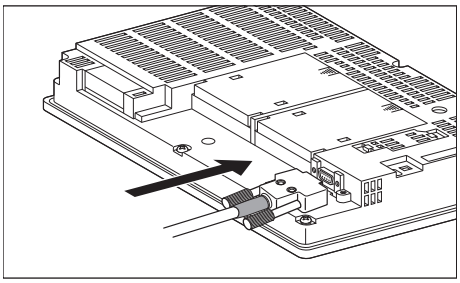
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For the GT15

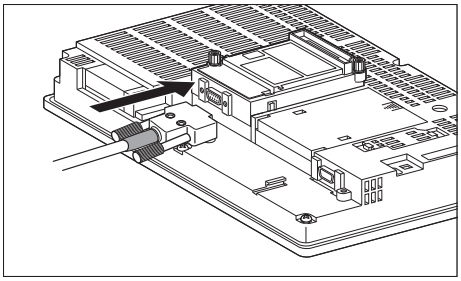
- Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



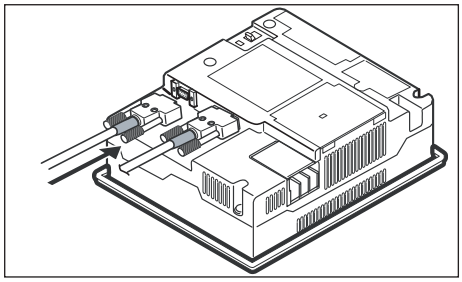
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



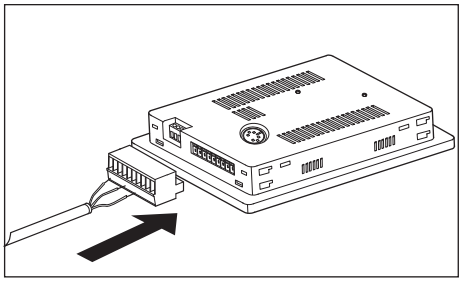
(b) For the GT11, GT105 □, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

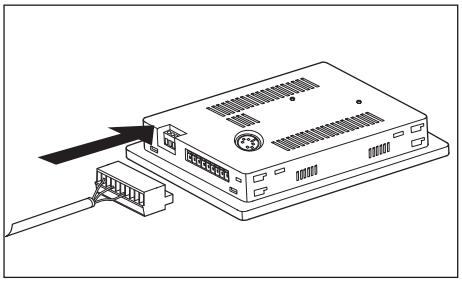


(c) For the GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

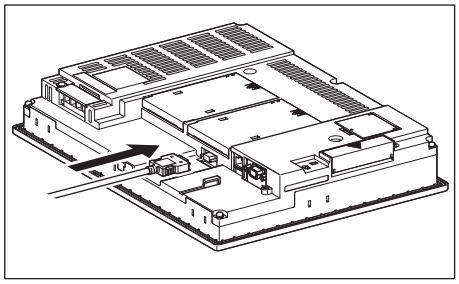


(2) How to connect the RS-422 cable

(a) For the GT16

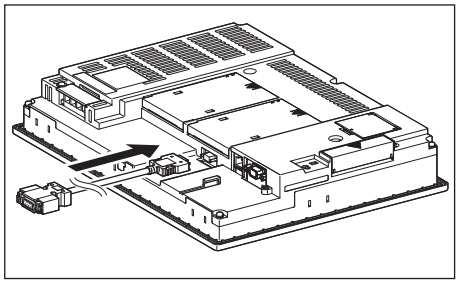
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

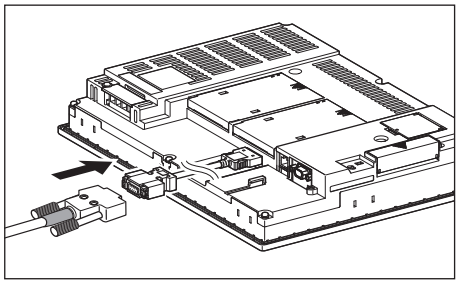


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

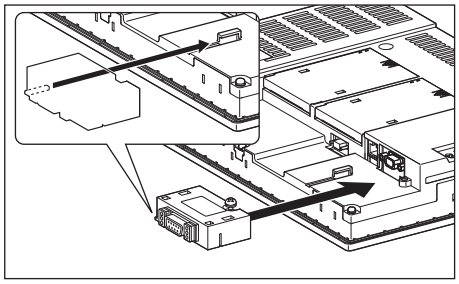


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

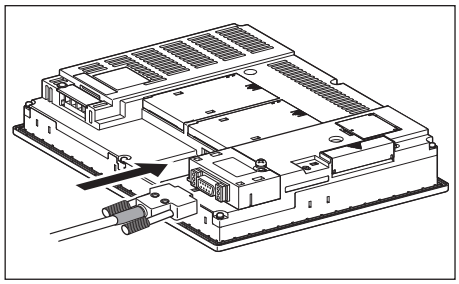


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

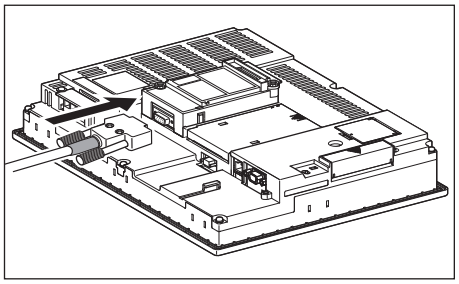


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

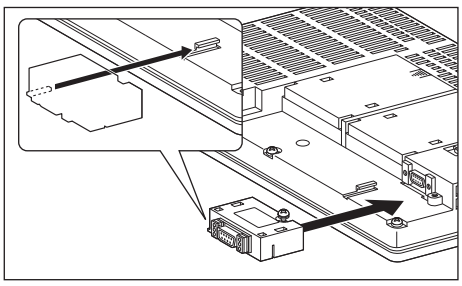
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



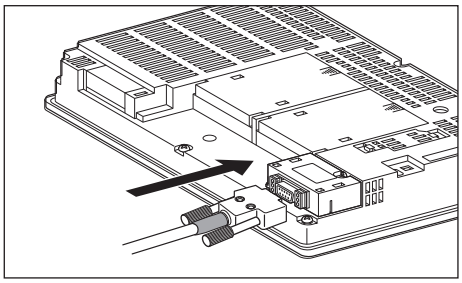
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155□.)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

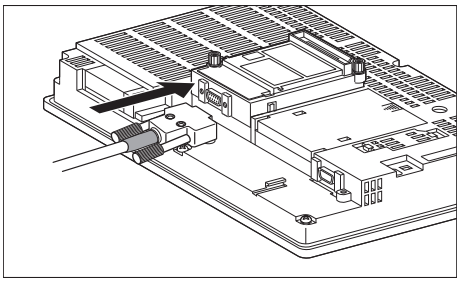


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

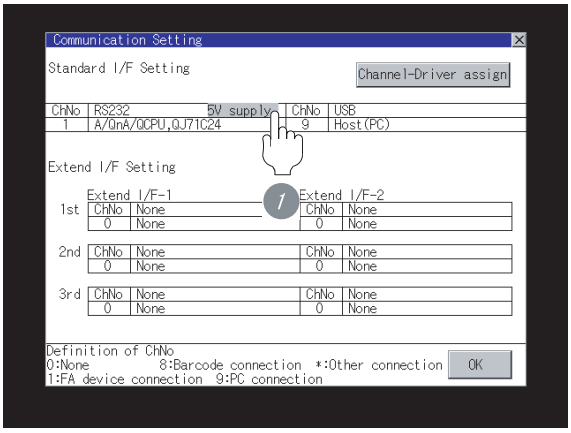
When using the RS-422 conversion unit

On "Communication settings" on the GOT utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the RS-422 conversion unit and the GOT utility, refer to the following manual:

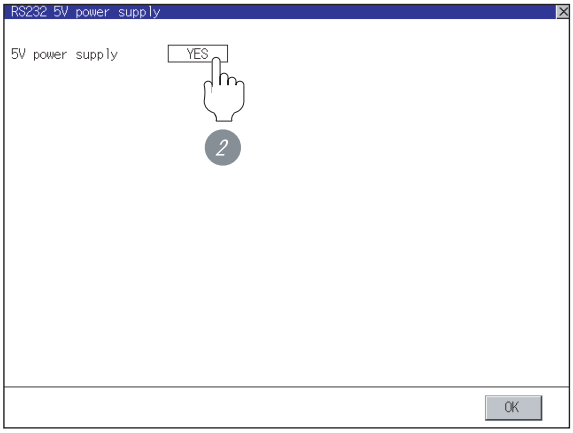
☞ GT □ User's Manual

☞ GT15 RS-422 Conversion Unit User's Manual

1 Touch [5V supply].

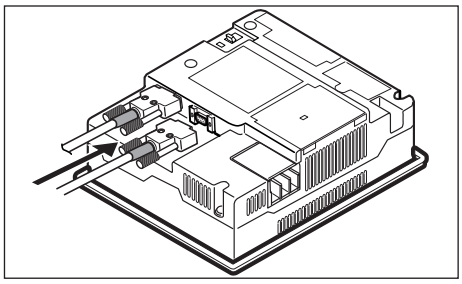


2 Set [5V power supply] to "YES".



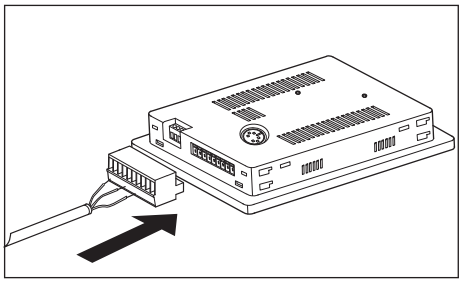
(c) For the GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

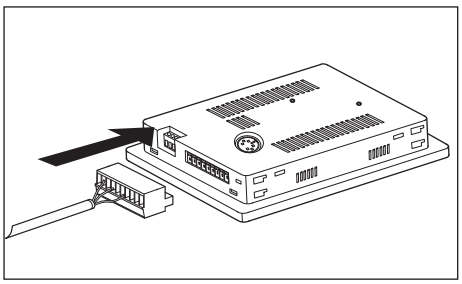


(d) For the GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



26.3.6 Verifying GOT recognizes controllers

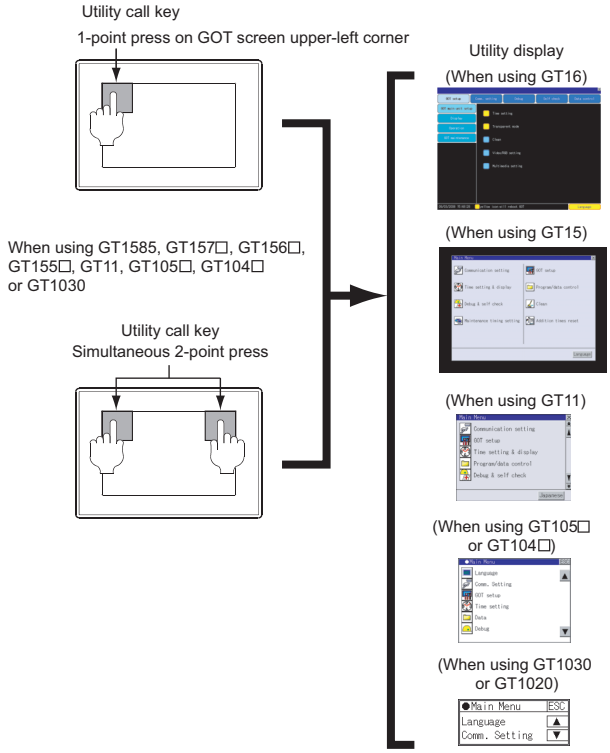
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16, GT1595 or GT1020

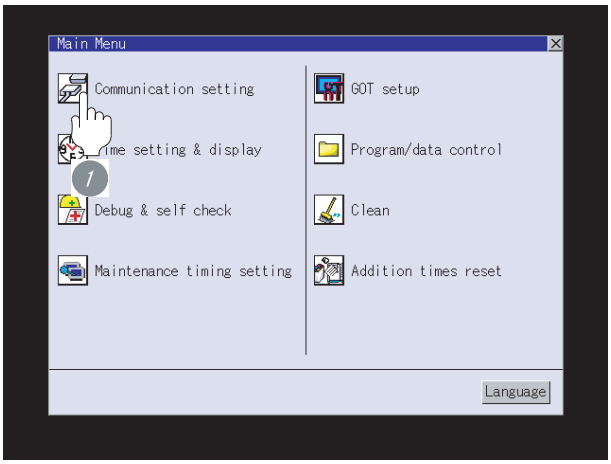


Point

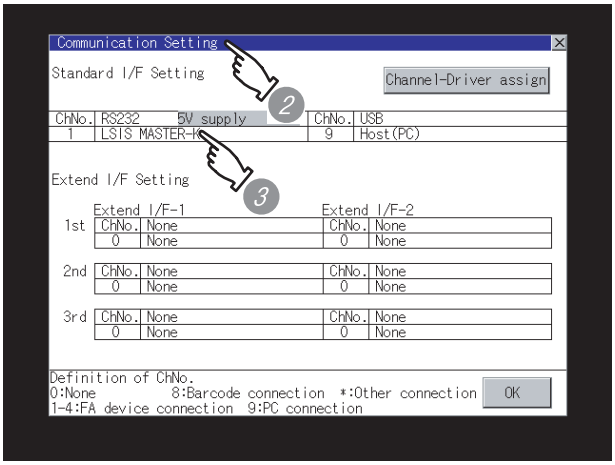
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
- Communication driver: LSIS MASTER-K

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 26.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

26.3.7 Checking for normal monitoring

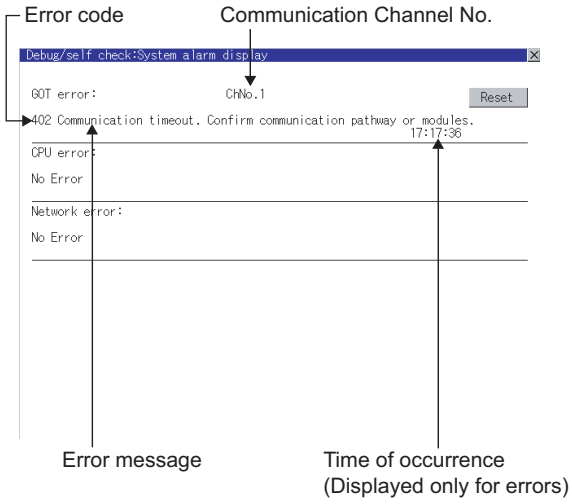
1 Check for errors occurring on the GOT (for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check (for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

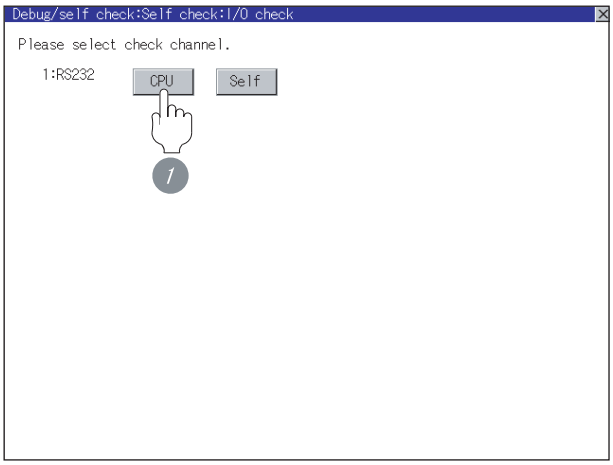
Display the I/O check screen from Main Menu.

- For GT16
  Display the I/O check screen from [Main Menu] → [Self check] → [I/O check].

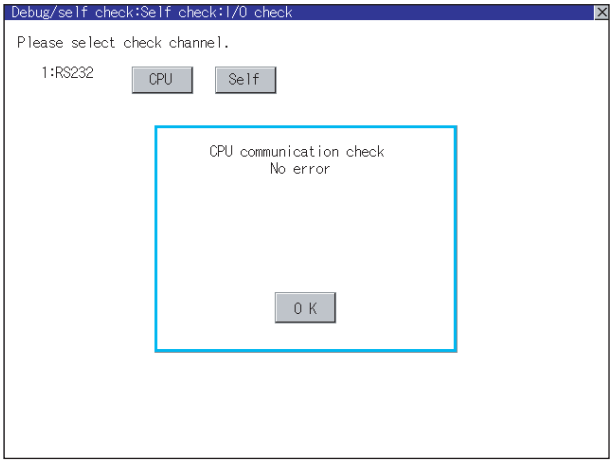
- For GT15, GT11
  Display the I/O check screen from [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manuals:

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

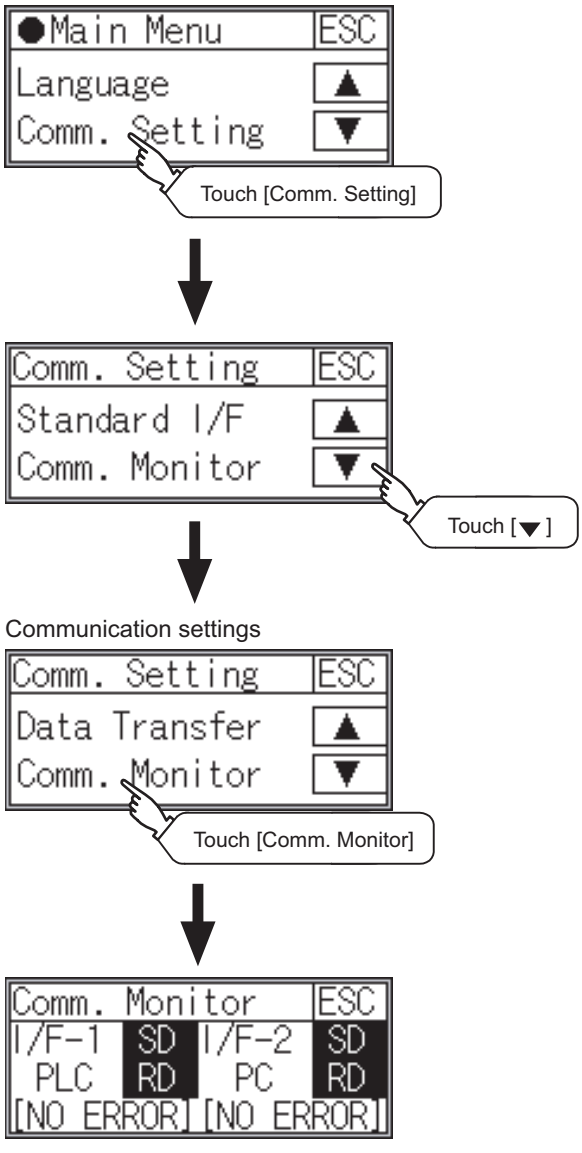
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



4 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 26.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

26.4 PLC Side Setting

Point

LS INDUSTRIAL SYSTEMS PLC

For details of LS INDUSTRIAL SYSTEMS PLCs, refer to the following manuals.

☞ Manuals for LS INDUSTRIAL SYSTEMS PLCs

Model		Reference
PLC CPU	K80S K120S	Section 26.4.1
	K200S	
	K300S	
Cnet I/F module	G7L-CUEB	Section 26.4.2
	G7L-CUEC	
	G6L-CUEB	
	G6L-CUEC	
	G4L-CUEA	

26.4.1 Connecting to PLC CPU

1 Settings of the communication specifications

There is no item to be set using the hardware.
Set the items using the engineering software for MASTER-K.

Item	Setting details
Station No.	0 to 31
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600bps
Data bit	7 or 8
Parity bit	None, Even, Odd
Stop bit	1 or 2

*1 For the setting method of the engineering software, refer to the following.

☞ Manuals for LS INDUSTRIAL SYSTEMS PLCs

26.4.2 Connecting to Cnet I/F module

1 Settings of the communication specifications

There is no item to be set using the hardware.Set the items using the engineering software for MASTER-K.

Item		Setting details
Comm. mode		Dedicated protocol
Data format	Data bit	7 or 8
	Stop bit	1 or 2
	Start bit	1
	Parity bit	Even/Odd/None
Channel selection		Stand-alone mode/Interlocking mode
Synchronization		Asynchronous
Transmission speed (bps)	RS-232C	300/600/1200/2400/4800/9600/ 19200/38400
	RS-422/485	300/600/1200/2400/4800/9600/ 19200/38400/76800

*1 For the setting method of the engineering software, refer to the following.

☞ Manuals for LS INDUSTRIAL SYSTEMS PLCs

26.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT16 GT15 GT11 Serial	LS INDUSTRIAL SYSTEMS PLC connection	Supporting the connection to LS INDUSTRIAL SYSTEMS PLC	2.90U	Communication driver LSIS MASTER-K [04.02.**]
GT105□ 4□ GT24V1020 30 GT5V1020				Standard monitor OS [01.10.**] Communication driver LSIS MASTER-K [01.05.**]

MEMO

27

CONNECTION TO SIEMENS PLC



27.1 System Configuration . . . . . page 27-2

This section describes the equipment and cables needed when connecting a GOT to a SIEMENS PLC.
Select a system suitable for your application.

27.2 Connection Cable . . . . . page 27-6

This section describes the specifications of the cables needed when connecting a GOT to a SIEMENS PLC.
Check the specifications of the connection cables.

27.3 Preparatory Procedures for Monitoring . . . . . page 27-9

This section provides the procedures to be followed before performing monitoring in connection to a SIEMENS PLC.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

27.5 Precautions . . . . . page 27-18

This section describes the precautions to observe when a GOT is connected to a SIEMENS PLC.
Be sure to read this section when connecting the GOT to a SIEMENS PLC.

27.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

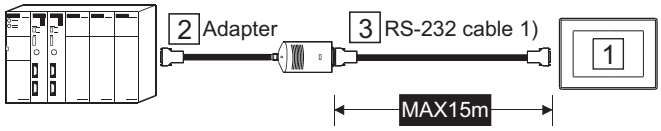
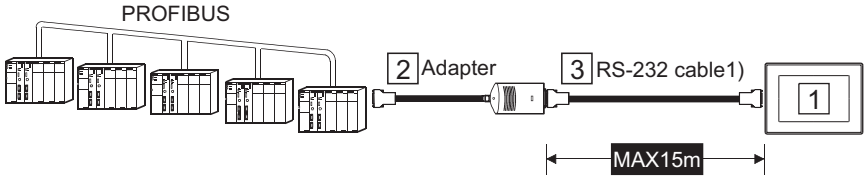
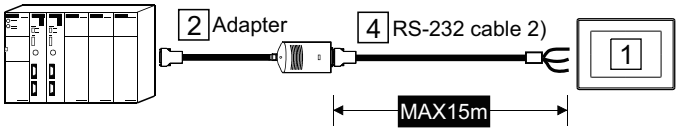
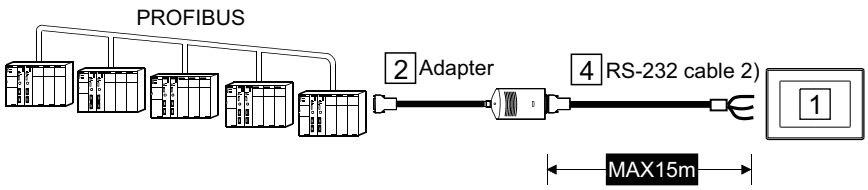
Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.

27.1.1 Connecting to a SIMATIC S7-300/400 Series

Communication driver

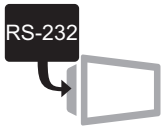
SIEMENS S7-300/400

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT105□ GT24V1020 30 (RS-232)
			GT16 GT15 GT11 Serial GT105□ GT24V1020 30 (RS-232)
1	15m or less		GT24V1020 30 (RS-232)
			GT24V1020 30 (RS-232)

2 System equipment

(1) GOT

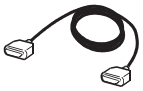
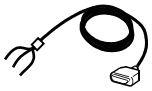
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	HMI Adapter	MLFB: 6ES7 972-0CA11-0XA0

2 is a product manufactured by Siemens AG. For details of this product, contact Siemens AG.

(3) Cable

Image	No.	Name	Model name	Model
	3	RS-232 cable 1) *1 • Between HMI Adapter and GOT	GT09-C30R20801-9S(3m)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30
	4	RS-232 cable 2) • Between HMI Adapter and GOT	(To be prepared by the user. Section 27.2 Connection Cable)	GT24V1020 30 (RS-232)

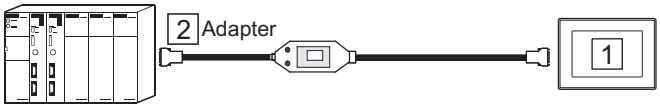
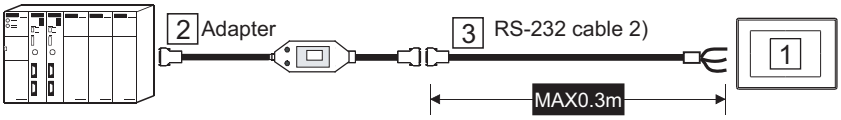
*1 The RS-232 cable can be prepared by the user. (Section 27.2 Connection Cable)

27.1.2 Connecting to a SIMATIC S7-200 Series

Communication driver

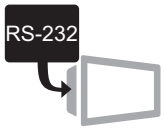
SIEMENS S7-200

1 System configurations and connection conditions

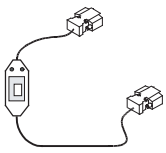
Connection condition		System configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30
			GT24V1020 30 (RS-232)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) PLC

Image	No.	Name	Model name
	2	PC/PPI cable	6ES7 901-3BF20-0XA0

2 is a product manufactured by Siemens AG. For details of this product, contact Siemens AG.

(3) Cable

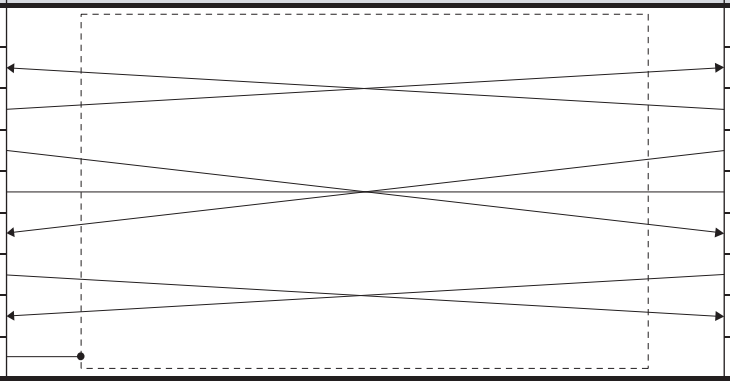
Image	No.	Name	Model name	Model
	3	RS-232 cable 3) • Between PC/PPI cable and GOT	(To be prepared by the user ☞ Section 27.2 Connection Cable)	GT24V1020 30 (RS-232)

27.2 Connection Cable

The RS-232 cable used for connection between the GOT and PLC needs to be prepared by the user.
The following shows each cable connection diagram and relevant connectors.

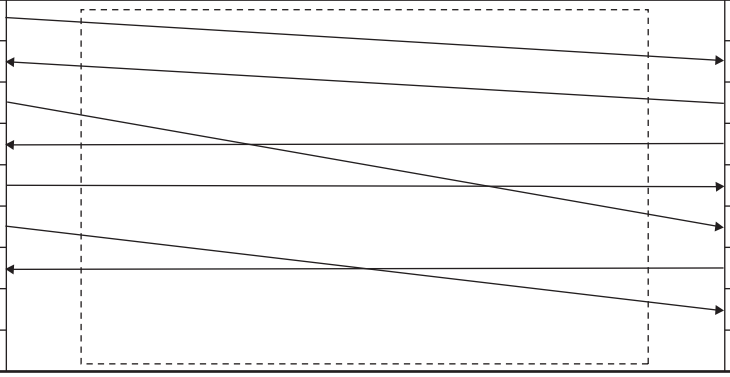
1 Connection diagram

(1) RS-232 cable 1) (Between HMI Adapter and GOT) (for GT16, GT15, GT11, GT105□, GT104□)

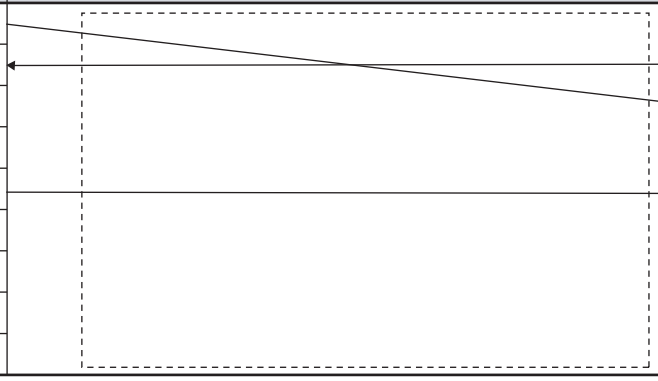
GOT side		Cable connection and signal direction	SIEMENS PLC side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	CD
RD(RXD)	2		2	RXD
SD(TXD)	3		3	TXD
ER(DTR)	4		4	DTR
SG	5		5	SG
DR(DSR)	6		6	DSR
RS(RTS)	7		7	RTS
CS(CTS)	8		8	CTS
—	9		9	FG

*1 GT16 : CD, GT15 : CD, GT11, NC, GT105□ : NC, GT104□ : NC

(2) RS-232 cable 2) (Between HMI Adapter and GOT) (for GT1030, GT1020)

GOT side		Cable connection and signal direction	SIEMENS PLC side	
Signal name	Pin No.		Pin No.	Signal name
SD(TXD)	1		1	CD
RD(RXD)	2		2	RXD
ER(DTR)	3		3	TXD
DR(DSR)	4		4	DTR
SG	5		5	SG
RS(RTS)	6		6	DSR
CS(CTS)	7		7	RTS
NC	8		8	CTS
NC	9		9	FG

(3) RS-232 cable 3) (Between PC/PPI cable and GOT) (for GT1030, GT1020)

GOT side (terminal block)	Cable connection and signal direction	SIEMENS PLC side	
Signal name		Pin No.	Signal name
SD		1	-
RD		2	RD(RXD)
ER		3	SD(TXD)
DR		4	-
SG		5	SG(GND)
RS		6	-
CS		7	-
NC		8	-
NC		9	-

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

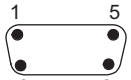
☞ GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105☐, GT104☐

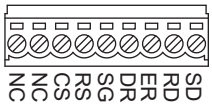
GOT main part connector see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) SIEMENS PLC side connector
Use the connector compatible with the SIEMENS PLC side.
For details, refer to the following manual.

☞ User's Manual for the SIEMENS PLC

3 Precautions when preparing a cable

The length of the cable RS-232 must be 15m or less.

27.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 27.3.1
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 27.3.2
Checking OS installation on GOT

↓

Set the communication interface.
(Communication settings)

☞ Section 27.3.3
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 27.3.4
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 27.3.5
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 27.3.6
Verifying GOT recognizes controllers

↓

Make sure that monitoring is performed normally.

☞ Section 27.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

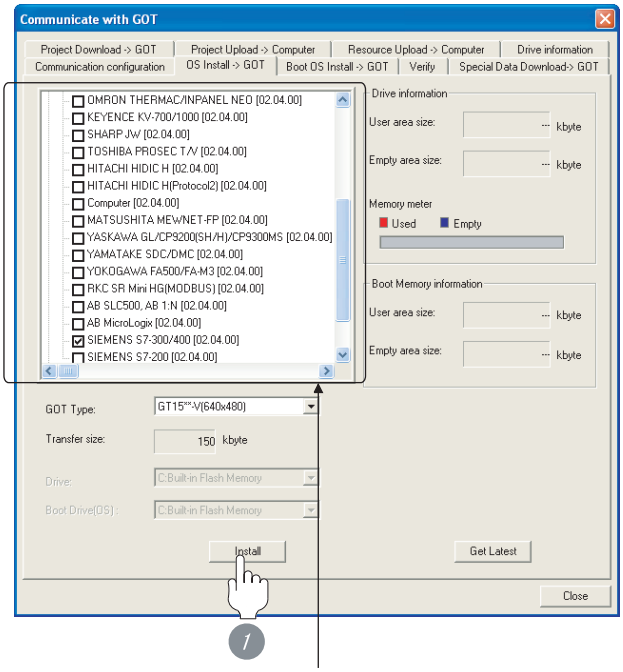
☞ Section 27.4 PLC Side Setting

27.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following on the communication driver.
· When connecting to SIEMENS S7-300/400
: SIEMENS S7-300/400
· When connecting to SIEMENS S7-200
: SIEMENS S7-200

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

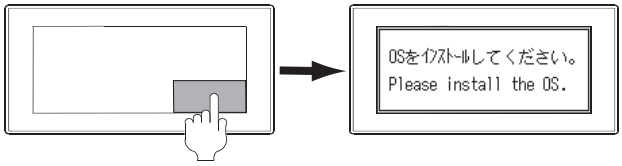
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



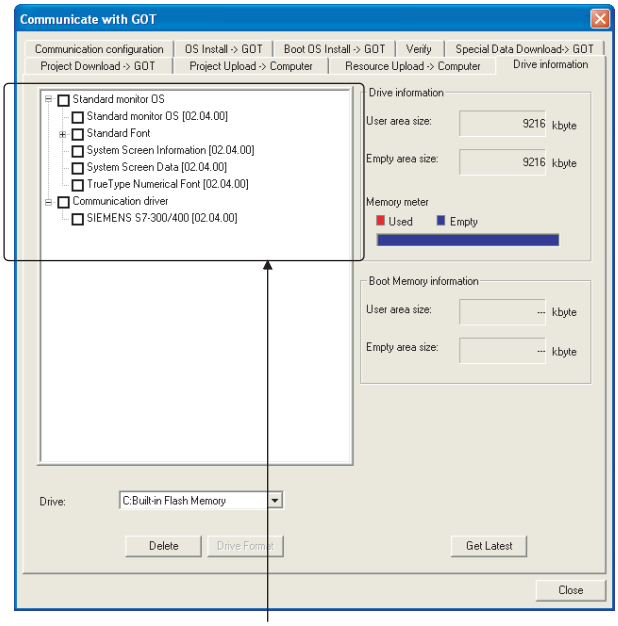
Turn on the GOT while the bottom right corner is touched.

27.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (any of the following)

· When connecting to SIEMENS S7-300/400 :
SIEMENS S7-300/400

· When connecting to SIEMENS S7-200 :
SIEMENS S7-200

27.3.3 Setting communication interface (Communication settings)

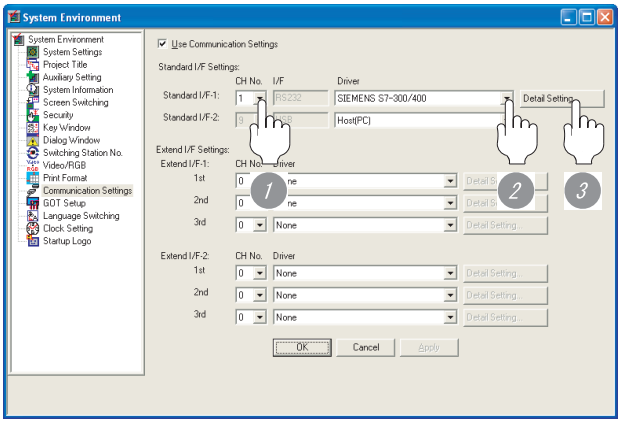
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



1 Set [1] to the channel No. used.

2 Set the following in the driver box.

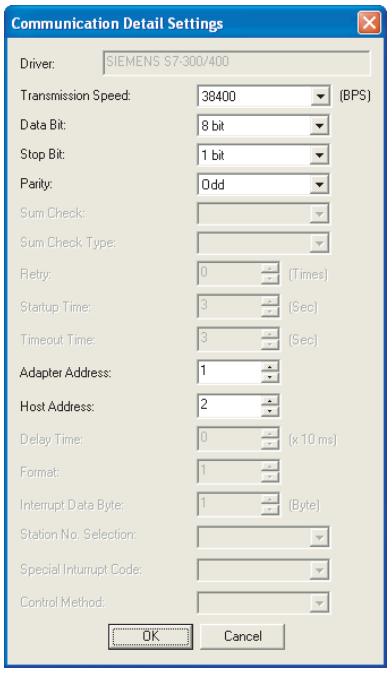
- When connectiong to SIEMENS S7-300/400 : SIEMENS S7-300/400.
- When connectiong to SIEMENS S7-200 : SIEMENS S7-200.

3 Perform the detailed settings for the driver.

(☞ 2 Communication detail settings)

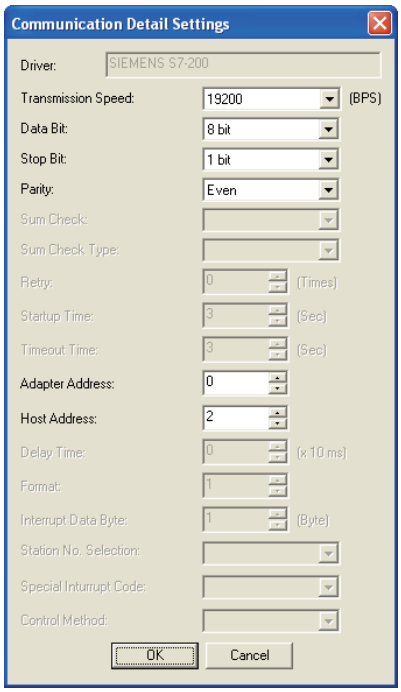
2 Communication detail settings

(1) SIEMENS S7-300/400.



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 38400bps>	9600bps, 19200bps, 38400bps
Adapter Address	Specify the adapter address (station No. of the PLC that the GOT will monitor) in the connected network. <Default: 1>	1 to 31
Host Address	Specify the host address (station No. of the adapter to which the GOT is connected) in the connected network. <Default: 2>	1 to 31

(2) SIEMENS S7-200



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Adapter Addrres	Specify the adapter addrres(station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 0>	0 to 31
Host Address	Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. <Default: 2>	1 to 31

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

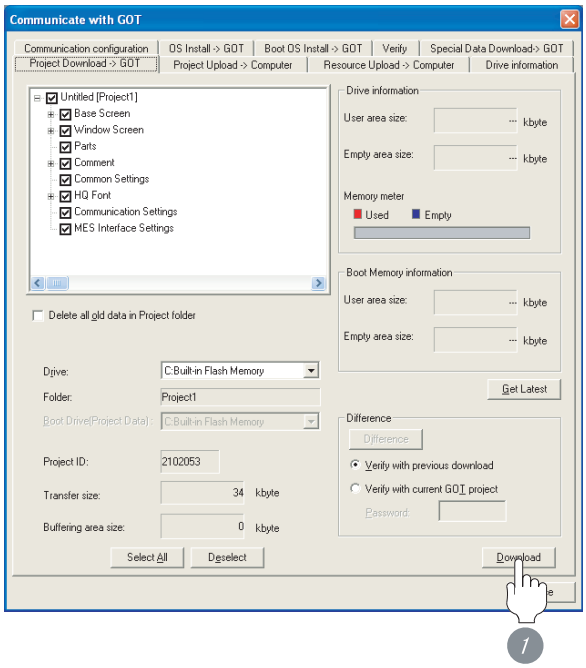
Communication settings can be changed on only GT Designer2.

27.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

27.3.5 Attaching communication unit and connecting cable

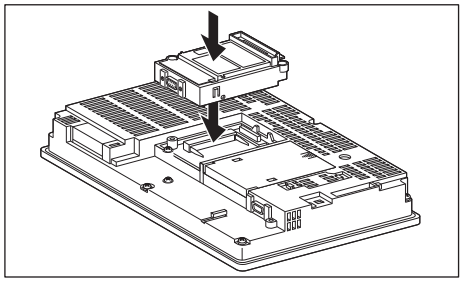
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit, refer to the following manual.

GT15 Serial Communication Unit User's Manual

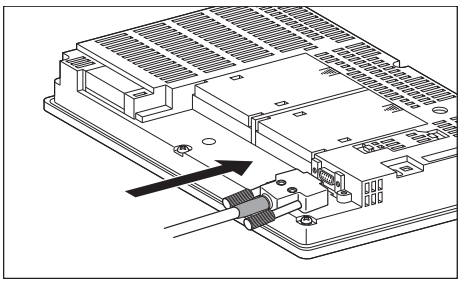
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

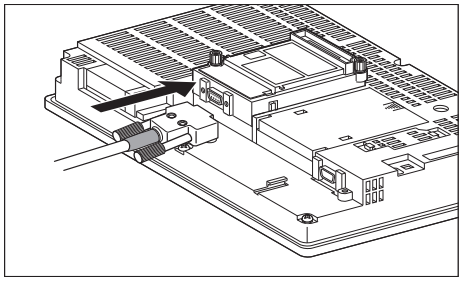
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



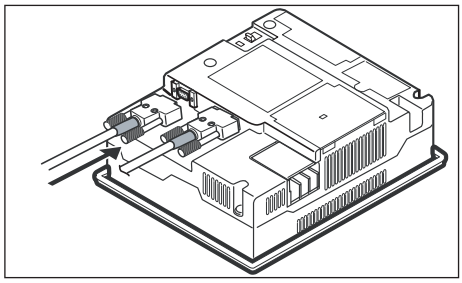
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



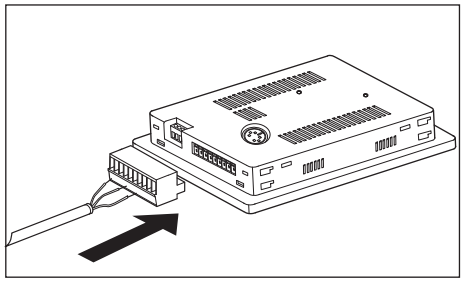
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

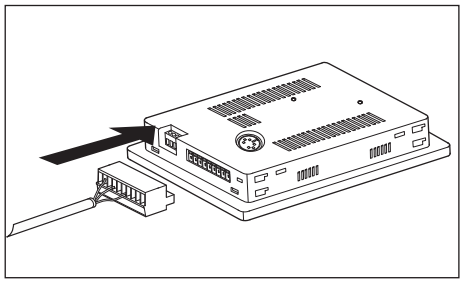


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



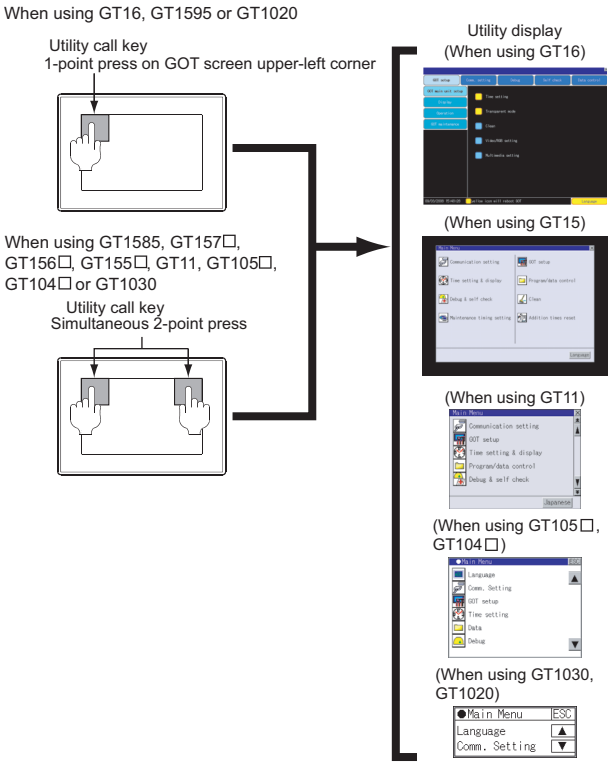
27.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

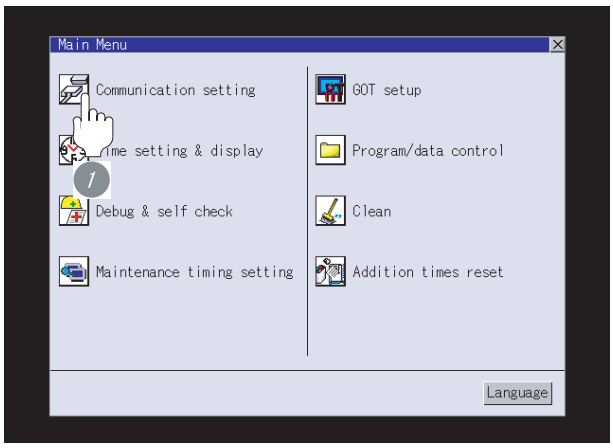


Point

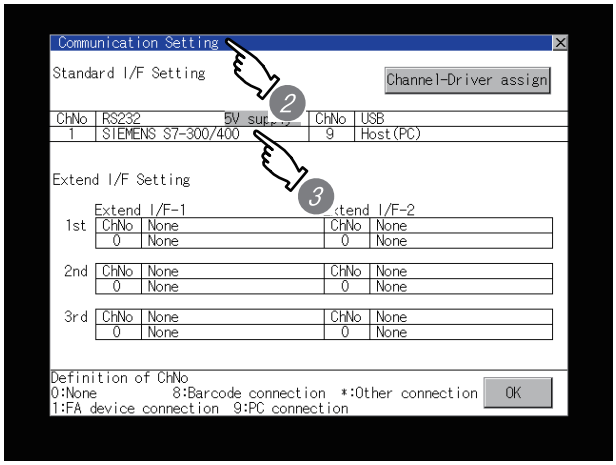
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver (any of the following):

<GT15, GT11>

- SIEMENS S7-300/400
- SIEMENS S7-200

<GT10>

- SIEMENS S7-200
- SIEMENS S7-300

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 27.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.
☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.
☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

27.3.7 Checking for normal monitoring

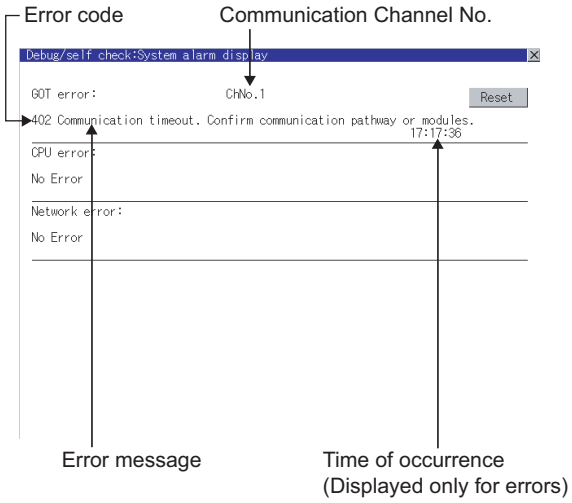
1 Check for errors occurring on the GOT. (for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

2 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

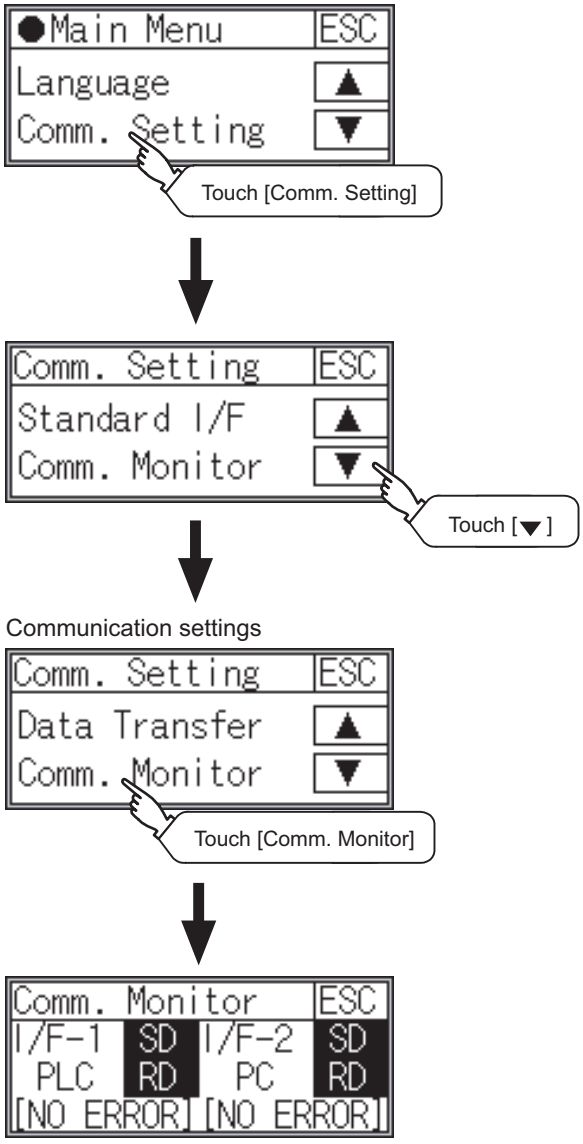
Display the communication monitoring function screen by [Main Menu]→ [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 27.4 PLC Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

27.4 PLC Side Setting

Point

SIEMENS PLC

For details of SIEMENS PLCs, refer to the following manuals.

☞ USER's Manual for the SIEMENS PLC

Model name		Reference
PLC CPU	S7-200	Section 27.4.2
HMI Adapter	6ES7 972-0CA11-0XA0	Section 27.4.1
PC/PPI cable	6ES7 901-3BF20-0XA0	Section 27.4.2

27.4.1 Connecting to HMI Adapter

1 Communication settings

Set the communication settings of HMI adapter by operating the GOT.

Setting item	PLC side settings
Transmission speed	9600bps, 19200bps, 38400bps
Data bit	8-bit (fixed)
Parity bit	EVEN (fixed)
Stop bit	1-bit (fixed)
Adapter address*1	1 to 31
Host address*1	1 to 31

*1 Set the address without overlapping the address of other units.

27.4.2 Connecting to SIMATIC S7-200

1 Communication settings

Set the communication settings of PLC and PC/PPI cable.

(1) PLC settings

Set the communication settings of PLC by operating the SIEMENS programing tool(STEP7-WIN32).

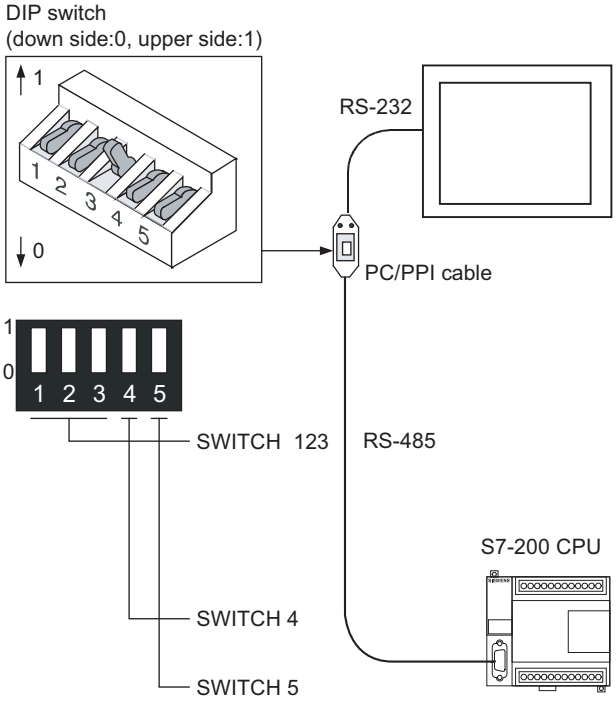
Setting item	PLC settings
Transmission speed*1	9600bps,19200bps
Data bit	8-bit(fixed)
Parity bit	Even(fixed)
Stop bit	1-bit(ifixed)
Host address*2	1 to 31

*1 Adjust with GOT settings.

*2 Set the address without overlapping the address of other units.

(2) PC/PPI cable settings

Set the transmission speed by operating the DIP switch on the PC/PPI cable.



SWITCH 1	SWITCH 2	SWITCH 3	SWITCH 4	SWITCH 5	Transmission speed
0	0	1	0	0	19200bps*1
0	1	0	0	0	9600bps*1

*1 Adjust with GOT settings.

27.5 Precautions

1 GOT alarm list (system alarm) function

Error information cannot be monitored when the GOT is connected to a SIEMENS PLC.
(The error information on the PLC CPU side can be monitored.)
For details on the alarm list (system alarm), refer to the following manual:

☞ GT Designer2 Version □ Screen Design Manual

2 At system startup

(1) When powering ON the system
Turn ON all PLC CPUs before turning ON the GOT.
If the GOT is turned ON before power-up of the PLC CPUs, restart the GOT.

(2) When powering OFF a PLC CPU at another station
When a PLC CPU at another station (the PLC CPU to which the HMI Adapter is not connected) is turned OFF, monitoring by the GOT is stopped.
To resume the monitoring, restart the GOT.
(Monitoring will not be resumed on GOT even if the PLC CPU is turned ON again.)

27.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	SIEMENS PLC connection	Supporting the SIEMENS PLC S7-300/400 connection	2.00A	Communication driver SIEMENS S7-300/400 [01.00.**]
GT15 GT11 Serial	SIEMENS PLC connection	Supporting the SIEMENS PLC S7-200 connection	2.18U	Communication driver SIEMENS S7-200 [02.01.**]
GT24V1020 30 GT5V1020	SIEMENS PLC connection	Supporting the connections to GT10 Supporting the SIEMENS PLC S7-200 connection	2.58L	Standard Monitor OS [01.04.**] Communication driver SIEMENS S7-200 [01.00.**]
GT16	SIEMENS PLC connection	Supporting the connection to GT16	2.90U	Communication driver SIEMENS S7-300/400 [04.02.**] SIEMENS S7-200 [04.02.**]
GT1054□	SIEMENS PLC connection	Supporting the connection to GT105□ Supporting the connections to GT104□		Standard Monitor OS [01.10.**] Communication driver SIEMENS S7-200 [01.05.**]
GT1054□ GT24V1020 30	SIEMENS PLC connection	Supporting the connections to GT10 Supporting the SIEMENS PLC S7-300/400 connection		Standard Monitor OS [01.10.**] Communication driver SIEMENS S7-300/400 [01.05.**]

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expence.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(2) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(3) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
5. Replacing consumable parts such as the battery, backlight and fuses.
6. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
7. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
8. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation equipment for recreation and amusement, and safety devices, shall also be excluded from the graphic operation terminal range of applications.
However, in certain cases, some applications may be possible, providing the user consults the local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at our discretion.
In some of three cases, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required.

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GRAPHIC OPERATION TERMINAL

GOT1000

GOT1000 Series Connection Manual 2/3

MODEL	GT1000-U(CON)-E
MODEL CODE	1D7M26
SH(NA)-080532ENG-Q 2/3(1209)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.

Printed in Japan, September 2012.

MITSUBISHI

GRAPHIC OPERATION TERMINAL
GOT

GRAPHIC OPERATION TERMINAL

GOT1000

GOT1000 Series Connection Manual 3/3

MITSUBISHI PLC CONNECTIONS

THIRD PARTY PLC CONNECTIONS

MICROCOMPUTER CONNECTION

MODBUS® CONNECTION

TEMPERATURE CONTROLLER CONNECTIONS

OTHER CONNECTIONS

OTHER FUNCTIONS



● SAFETY PRECAUTIONS ●

(Always read these precautions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product.
In this manual, the safety precautions are ranked as "WARNING" and "CAUTION".

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the ⚠ caution level may lead to a serious accident according to the circumstances.
Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠ WARNING

- Some failures of the GOT, communication unit or cable may keep the outputs on or off.
  An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
  Not doing so can cause an accident due to false output or malfunction.

- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  For bus connection : The CPU becomes faulty and the GOT becomes inoperative.
  For other than bus connection : The GOT becomes inoperative.
  A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur.
  Not doing so can cause an accident due to false output or malfunction.

- Do not use the GOT as the warning device that may cause a serious accident.
  An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.
  Failure to observe this instruction may result in an accident due to incorrect output or malfunction.

[DESIGN PRECAUTIONS]

⚠WARNING

- Incorrect operation of the touch switch(s) may lead to a serious accident if the GOT backlight is gone out.
  When the GOT backlight goes out, the POWER LED flickers (green/orange) and the display section turns black and causes the monitor screen to appear blank, while the input of the touch switch(s) remains active.
  This may confuse an operator in thinking that the GOT is in "screensaver" mode, who then tries to release the GOT from this mode by touching the display section, which may cause a touch switch to operate.
  Note that the following occurs on the GOT when the backlight goes out.
  The POWER LED flickers (green/orange) and the monitor screen appears blank.

- The display section of the GT16 is an analog-resistive type touch panel.
  If you touch the display section simultaneously in 2 points or more, the switch that is located around the center of the touched point, if any, may operate.
  Do not touch the display section in 2 points or more simultaneously.
  Doing so may cause an accident due to incorrect output or malfunction.

- When programs or parameters of the controller (such as a PLC) that is monitored by the GOT are changed, be sure to reset the GOT or shut off the power of the GOT at the same time.
  Not doing so can cause an accident due to false output or malfunction.

⚠CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm apart.
  Not doing so noise can cause a malfunction.

- Do not press the GOT display section with a pointed material as a pen or driver.
  Doing so can result in a damage or failure of the display section.

[MOUNTING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT to/from the panel.
  Not doing so can cause the GOT to fail or malfunction.

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the communication unit, option function board or multi-color display board onto/from the GOT.
  Not doing so can cause the unit to fail or malfunction.

- Before mounting an optional function board or Multi-color display board, wear a static discharge wrist strap to prevent the board from being damaged by static electricity.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Use the GOT in the environment that satisfies the general specifications described in the User's Manual.
  Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT.
- When loading the communication unit or option unit to the GOT (GT16, GT15), fit it to the extension interface of the GOT and tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, failure or malfunction due to the damage of the screws or unit.
- When mounting the multi-color display board onto the GOT (GT15), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
  Loose tightening may cause the unit and/or GOT to malfunction due to poor contact.
  Overtightening may damage the screws, unit and/or GOT; they might malfunction.
- When mounting the option function board onto the GOT (GT16), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
- When mounting an optional function board onto the GOT(GT15), fully connect it to the connector until you hear a click.
- When mounting an optional function board onto the GOT(GT11), fully connect it to the connector.
- When inserting a CF card into the GOT(GT16, GT15, GT11), push it into the CF card interface of GOT until the CF card eject button will pop out.
  Failure to do so may cause a malfunction due to poor contact.
- When inserting/removing a CF card into/from the GOT(GT16, GT15, GT11), turn the CF card access switch off in advance.
  Failure to do so may corrupt data within the CF card.
- When removing a CF card from the GOT, make sure to support the CF card by hand, as it may pop out.
  Failure to do so may cause the CF card to drop from the GOT and break.
- When installing a USB memory to the GOT(GT16), make sure to install the USB memory to the USB interface firmly.
  Failure to do so may cause a malfunction due to poor contact.
- Before removing the USB memory from the GOT(GT16), operate the utility screen for removal.
  After the successful completion dialog box is displayed, remove the memory by hand carefully.
  Failure to do so may cause the USB memory to drop, resulting in a damage or failure of the memory.
- For closing the USB environmental protection cover, fix the cover by pushing the △ mark on the latch firmly to comply with the protective structure.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Remove the protective film of the GOT.
  When the user continues using the GOT with the protective film, the film may not be removed.
- Operate and store the GOT in environments without direct sunlight, high temperature, dust, humidity, and vibrations.
- Use the protective cover for oil when the GOTs (GT16, GT15, GT11 and GT10) are used in the environment with oil or chemicals.
  Not doing so can cause failures or malfunction due to the infiltration of oil or chemicals.

[WIRING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before wiring.
  Failure to do so may result in an electric shock, product damage or malfunctions.

⚠CAUTION

- Please make sure to ground FG terminal and LG terminal and protective ground terminal of the GOT power supply section by applying Class D Grounding (Class 3 Grounding Method) or higher which is used exclusively for the GOT.
  Not doing so may cause an electric shock or malfunction.
- Be sure to tighten any unused terminal screws with a torque of 0.5 to 0.8N•m.
  Failure to do so may cause a short circuit due to contact with a solderless terminal.
- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product.
  Not doing so can cause a fire or failure.
- Tighten the terminal screws of the GOT power supply section in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT. Not doing so can cause a fire, failure or malfunction.
- The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring.
  Do not peel this label during wiring.
  Before starting system operation, be sure to peel this label because of heat dissipation.

[WIRING PRECAUTIONS]

⚠CAUTION

- Plug the bus connection cable by inserting it into the connector of the connected unit until it "clicks". After plugging, check that it has been inserted snugly. Not doing so can cause a malfunction due to a contact fault.
- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.
- Plug the QnA/ACPU/Motion controller (A series) bus connection cable by inserting it into the connector of the connected unit until it "clicks". After plugging, check that it has been inserted snugly. Not doing so can cause a malfunction due to a contact fault.

[TEST OPERATION PRECAUTIONS]

⚠WARNING

- Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method. During test operation, never change the data of the devices which are used to perform significant operation for the system. False output or malfunction can cause an accident.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠WARNING

- When power is on, do not touch the terminals. Doing so can cause an electric shock or malfunction.
- Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Doing so will cause the battery to produce heat, explode, or ignite, resulting in injury and fire.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases. Not switching the power off in all phases can cause a unit failure or malfunction. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- Do not drop or apply strong impact to the unit.
  Doing so may damage the unit.
- Do not drop or give an impact to the battery mounted to the unit.
  Doing so may damage the battery, causing the battery fluid to leak inside the battery.
  If the battery is dropped or given an impact, dispose of it without using.
- Before touching the unit, always touch grounded metal, etc. to discharge static electricity from human body, etc.
  Not doing so can cause the unit to fail or malfunction.
- Replace battery with GT15-BAT(GT16, GT15) or GT11-50BAT(GT11, GT10) by Mitsubishi electric Co. only.
  Use of another battery may present a risk of fire or explosion.
- Dispose of used battery promptly.
  Keep away from children. Do not disassemble and do not dispose of in fire.

[TOUCH PANEL PRECAUTIONS]

⚠CAUTION

- For the analog-resistive film type touch panels, normally the adjustment is not required. However, the difference between a touched position and the object position may occur as the period of use elapses. When any difference between a touched position and the object position occurs, execute the touch panel calibration.
- When any difference between a touched position and the object position occurs, other object may be activated. This may cause an unexpected operation due to incorrect output or malfunction.

[BACKLIGHT REPLACEMENT PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply of the GOT (and the PLC CPU in the case of a bus topology) and remove the GOT from the control panel before replacing the backlight (when using the GOT with the backlight replaceable by the user).
  Not doing so can cause an electric shock.
  Replacing a backlight without removing the GOT from the control panel can cause the backlight or control panel to drop, resulting in an injury.

⚠CAUTION

- Wear gloves for the backlight replacement when using the GOT with the backlight replaceable by the user.
  Not doing so can cause an injury.
- Before replacing a backlight, allow 5 minutes or more after turning off the GOT when using the GOT with the backlight replaceable by the user.
  Not doing so can cause a burn from heat of the backlight.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- When disposing of the product, handle it as industrial waste.
- When disposing of this product, treat it as industrial waste.
  When disposing of batteries, separate them from other wastes according to the local regulations.
  (For details of the battery directive in EU member states, refer to the User's Manual of the GOT to be used.)

[TRANSPORTATION PRECAUTIONS]

⚠CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.
  (For details on models subject to restrictions, refer to the User's Manual for the GOT you are using.)
- Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of the User's Manual, as they are precision devices.
  Failure to do so may cause the unit to fail.
  Check if the unit operates correctly after transportation.

REVISIONS

* The manual number is given on the bottom left of the back cover.

Print Date	* Manual Number	Revision
Oct., 2004	SH(NA)-080532ENG-A	First edition
Mar., 2005	SH(NA)-080532ENG-B	Compatible with GT Designer2 Version2.09K Addition Chapter 5, Chapter 6, Chapter 7, Chapter 8, Chapter 10, Chapter 11, Chapter 12, Chapter 13, Chapter 19, Chapter 20, Chapter 21, Chapter 22, Chapter 23,Section 3.1.8, Section 3.1.9 Section numbers revised Revised throughout the manual due to addition of the new connection types and functions. Partial correction SAFETY PRECAUTIONS, ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, HOW TO READ THIS MANUAL, Chapter 1, Section 1.1, 1.2, 2.1.3, 2.1.5, 2.1.7, 2.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7, 4.1.7, 4.4.1, 14.1.3, 14.2, 15.3.3, 21.3, 21.4.4, 21.5
Oct., 2005	SH(NA)-080532ENG-C	Compatible with GT Designer2 Version2.18U Addition Chapter 10, Chapter 20, Chapter 21, Chapter 22, Chapter 23, Chapter 26, Chapter 27, Section 14.1.9, Section 18.1.2, Section 24.4.3 Section numbers revised Revised throughout the manual due to addition of the new connection types and functions. Partial correction SAFETY PRECAUTIONS, ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, HOW TO READ THIS MANUAL, Chapter 1 to 9, Chapter 11 to 19, Chapter 24, Chapter 25 Chapter 28 to 30 Volume separated Separated the manual as the following. SH(NA)-080532ENG-C 1/2:Chapter 1 to 18 SH(NA)-080532ENG-C 2/2:Chapter 19 to 30

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Print Date	* Manual Number	Revision
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Apr., 2006	SH(NA)-080532ENG-E	Compatible with GT Designer2 Version2.32J Addition Chapter 5, Section 7.1.2, Section 7.1.3, Section 7.3.2, Section 7.3.3, Section 18.1.3, Chapter 14, Chapter 23, Chapter 29, Chapter 36 Section numbers revised Revised throughout the manual due to addition of the new connection types and functions. Partial correction ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, HOW TO READ THIS MANUAL, Chapter 1, Section 2.2, 3.3, 4.3, 6.2, 7.2, 8.2, 9.2, 10.3, 11.3, 12.3, 13.3, 15.3, 16.3, 17.3, 18.3, 19.3, 20.3, 21.6, 22.3, 24.3, 25.3, 26.3, 27.3, 28.2, 30.2, 31.1.3, 31.2.2, 31.3.2, 31.4.2, 32.3, 34.3, 35.2
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INTRODUCTION

Thank you for choosing Mitsubishi Graphic Operation Terminal (Mitsubishi GOT).
Read this manual and make sure you understand the functions and performance of the GOT thoroughly in advance to ensure correct use.

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The following manuals are also related to this product.
In necessary, order them by quoting the details in the tables below.
Stored in the GT Works2/GT Designer2 in PDF format.

Related Manuals

Manual Name	Manual Number (Model Code)
GT16 User's Manual (Hardware) - Describes the GT16 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. (Sold separately)	SH-080928ENG (1D7MD3)
GT16 User's Manual (Basic Utility) - Describes the GT16 utility-relevant contents, including the screen settings, operation method settings, program/ data management, and self check function. (Sold separately)	SH-080929ENG (1D7MD4)
GT15 User's Manual - Describes the GT15 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT15 functions, including the utility. (Sold separately)	SH-080528ENG (1D7M23)
GT11 User's Manual - Describes the GT11 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT11 functions, including the utility. (Sold separately)	JY997D17501 (09R815)
GT10 User's Manual - Describes the GT10 hardware-relevant contents, including the specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the GT10 functions, including the utility. (Sold separately)	JY997D24701 (09R819)
GT11 Handy GOT User's Manual - Describes the Handy GOT hardware-relevant contents, including the system configurations, specifications, part names, mounting, power supply wiring, external dimensions, and option devices. - Describes the Handy GOT functions, including the utility, and how to make cables. (Sold separately)	JY997D20101 JY997D20102 (09R817)
GT SoftGOT1000 Version2 Operating Manual Describes the screen configuration, functions and using method of GT SoftGOT1000. (Sold separately)	SH-080602ENG (1D7M48)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series) Describes methods of the GT Designer2 installation operation, basic operation for drawing and transmitting data to GOT1000 series (Sold separately)	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) (1/3, 2/3, 3/3) Describes specifications and settings of each object function applicable to GOT1000 series. (Sold separately)	SH-080530ENG (1D7M25)

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Manual Name	Manual Number (Model Code)
GOT1000 Series Extended / Option Functions Manual Describes extended functions and option functions applicable to GOT series. (Sold separately)	SH-080544ENG (1D7M32)
GOT1000 Series Gateway Functions Manual Describes specifications, system comfigurations and setting method of the gateway function. (Sold separately)	SH-080545ENG (1D7M33)
GOT1000 Series MES Interface Function Manual Describes the specifications, system configurations, and setting method of GT MES interface function. (Sold separately)	SH-080654ENG (1D7M63)

ABBREVIATIONS AND GENERIC TERMS

Abbreviations and generic terms used in this manual are as follows:

■ GOT

Abbreviations and generic terms			Description
GOT1000 Series	GT SoftGOT1000		Abbreviation of GT SoftGOT1000
	GT1695	GT1695M-X	Abbreviation of GT1695M-XTBA, GT1695M-XTBD
	GT1685	GT1685M-S	Abbreviation of GT1685M-STBA, GT1685M-STBD
	GT1675	GT1675M-S	Abbreviation of GT1675M-STBA, GT1675M-STBD
		GT1675M-V	Abbreviation of GT1675M-VTBA, GT1675M-VTBD
	GT1665	GT1665M-S	Abbreviation of GT1665M-STBA, GT1665M-STBD
		GT1665M-V	Abbreviation of GT1665M-VTBA, GT1665M-VTBD
	GT16□□, GT16		Abbreviation of GT1695,GT1685, GT1675, GT1665
	GT1595	GT1595-X	Abbreviation of GT1595-XTBA, GT1595-XTBD
	GT1585	GT1585V-S	Abbreviation of GT1585V-STBA, GT1585V-STBD
		GT1585-S	Abbreviation of GT1585-STBA, GT1585-STBD
	GT157□	GT1575V-S	Abbreviation of GT1575V-STBA, GT1575V-STBD
		GT1575-S	Abbreviation of GT1575-STBA, GT1575-STBD
		GT1575-V	Abbreviation of GT1575-VTBA, GT1575-VTBD
		GT1575-VN	Abbreviation of GT1575-VNBA, GT1575-VNBD
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD
	GT156□	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD
		GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD
	GT155□	GT1555-V	Abbreviation of GT1555-VTBD
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD
		GT1550-Q	Abbreviation of GT1550-QLBD
	GT15□□, GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
	GT115□	GT1155-Q	Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD
	Handy GOT	GT1155HS-Q	Abbreviation of GT1155HS-QSBD
		GT1150HS-Q	Abbreviation of GT1150HS-QLBD
	GT11□□, GT11		Abbreviation of GT1155-Q, GT1150-Q, GT11 Handy GOT
	GT105□	GT1055-Q	Abbreviation of GT1055-QSBD
		GT1050-Q	Abbreviation of GT1050-QBBD
	GT104□	GT1045-Q	Abbreviation of GT1045-QSBD
		GT1040-Q	Abbreviation of GT1040-QBBD
	GT1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBDW, GT1030-LBDW2
	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW
	GT10□□, GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020
GOT900 Series			Abbreviation of GOT-A900 series, GOT-F900 series
GOT800 Series			Abbreviation of GOT-800 series

■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z*1, GT15-75J71BR13-Z*2
CC-Link IE controller network communication unit	GT15-J71GP23-SX
CC-Link communication unit	GT15-J61BT13, GT15-75J61BT13-Z*3
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S

*1 A9GT-QJ71LP23 + GT15-75IF900 set
*2 A9GT-QJ71BR13 + GT15-75IF900 set
*3 A8GT-J61BT13 + GT15-75IF900 set

■ Option unit

Abbreviations and generic terms		Description
Printer unit		GT15-PRN
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit		GT16M-MMR
CF card unit		GT15-CFCD
CF card extension unit*1		GT15-CFEX-C08SET
External I/O unit		GT15-DIO, GT15-DIOR
Sound output unit		GT15-SOUT
Fingerprint unit		GT15-80FPA

*1 GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

■ Option

Abbreviations and generic terms		Description			
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-256MC	GT05-MEM-32MC, GT05-MEM-512MC,	GT05-MEM-64MC, GT05-MEM-1GC,	GT05-MEM-128MC, GT05-MEM-2GC
Memory card adaptor		GT05-MEM-ADPC			
Option function board		GT16-MESB, GT15-QFNB32M,	GT15-FNB, GT15-QFNB48M,	GT15-QFNB, GT15-MESB48M,	GT15-QFNB16M, GT11-50FNB
Battery		GT15-BAT,	GT11-50BAT		
Protective Sheet	For GT16	GT16-90PSCB, GT16-80PSCB, GT16-70PSCB, GT16-60PSCB,	GT16-90PSGB, GT16-80PSGB, GT16-70PSGB, GT16-60PSGB,	GT16-90PSCW, GT16-80PSCW, GT16-70PSCW, GT16-60PSCW,	GT16-90PSGW, GT16-80PSGW, GT16-70PSGW, GT16-60PSGW
	For GT15	GT15-90PSCB, GT15-80PSCB, GT15-70PSCB, GT15-60PSCB, GT15-50PSCB,	GT15-90PSGB, GT15-80PSGB, GT15-70PSGB, GT15-60PSGB, GT15-50PSGB,	GT15-90PSCW, GT15-80PSCW, GT15-70PSCW, GT15-60PSCW, GT15-50PSCW,	GT15-90PSGW, GT15-80PSGW, GT15-70PSGW, GT15-60PSGW, GT15-50PSGW
	For GT11	GT11-50PSCB, GT11H-50PSC	GT11-50PSGB,	GT11-50PSCW,	GT11-50PSGW,
	For GT10	GT10-50PSCB, GT10-40PSCB, GT10-30PSCB, GT10-20PSCB,	GT10-50PSGB, GT10-40PSGB, GT10-30PSGB, GT10-20PSGB,	GT10-50PSCW, GT10-40PSCW, GT10-30PSCW, GT10-20PSCW,	GT10-50PSGW, GT10-40PSGW, GT10-30PSGW, GT10-20PSGW
Protective cover for oil		GT05-90PCO, GT05-50PCO	GT05-80PCO,	GT05-70PCO,	GT05-60PCO,
USB environmental protection cover		GT16-UCOV,	GT15-UCOV,	GT11-50UCOV	
Stand		GT15-90STAND, GT05-50STAND	GT15-80STAND,	GT15-70STAND,	A9GT-50STAND,
Attachment		GT15-70ATT-98, GT15-60ATT-87,	GT15-70ATT-87, GT15-60ATT-77,	GT15-60ATT-97, GT15-50ATT-95W,	GT15-60ATT-96, GT15-50ATT-85
Backlight		GT16-90XLTT, GT16-70SLTT, GT15-70SLTT, GT15-60VLTN	GT16-80SLTT, GT16-70VLTT, GT15-70VLTT,	GT15-90XLTT, GT16-60SLTT, GT15-70VLTN,	GT15-80SLTT, GT16-60VLTT, GT15-60VLTT,
Multi-color display board		GT15-XHNB,	GT15-VHNB		
Connector conversion box		GT11H-CNB-37S			
Emergency stop sw guard cover		GT11H-50ESCOV			
Memory loader		GT10-LDR			
Memory board		GT10-50FMB			

■ Software

Abbreviations and generic terms	Description
GT Works2 Version□	SW□D5C-GTWK2-E, SW□D5C-GTWK2-EV
GT Designer2 Version□	SW□D5C-GTD2-E, SW□D5C-GTD2-EV
GT Designer2	Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series
GT Converter2	Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series
GT Simulator2	Abbreviation of screen simulator GT Simulator 2 for GOT1000 / GOT900 series
GT SoftGOT1000	Abbreviation of monitoring software GT SoftGOT1000
GT SoftGOT2	Abbreviation of monitoring software GT SoftGOT2
GX Developer	Abbreviation of SW□D5C-GPPW-E(-EV)/SW□D5F-GPPW-E type software package
GX Simulator	Abbreviation of SW□D5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)
Document Converter	Abbreviation of document data conversion software Document Converter for GOT1000 series
PX Developer	Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control

License key (for GT SoftGOT1000)

Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

License key (for GT SoftGOT2)

Abbreviations and generic terms	Description
License key	A9GTSOFT-LKEY-P (For DOS/V PC)
License key FD	SW5D5F-SGLKEY-J (For PC CPU module)

Others

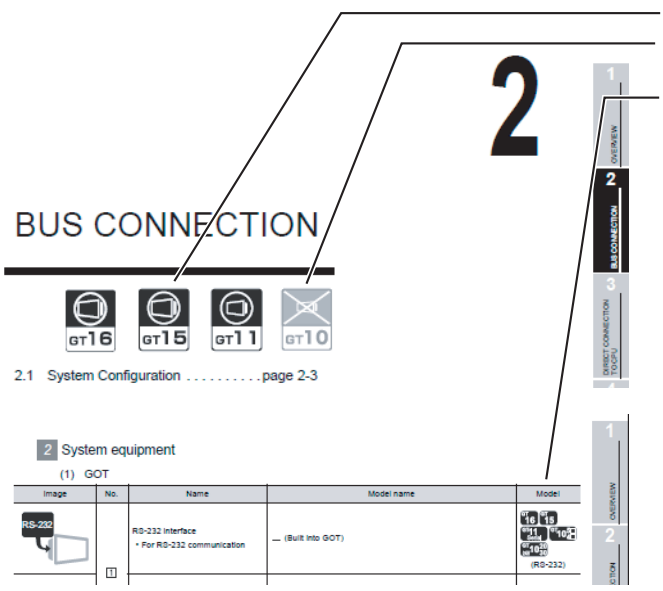
Abbreviations and generic terms		Description
OMRON PLC		Abbreviation of PLC manufactured by OMRON Corporation
KEYENCE PLC		Abbreviation of PLC manufactured by KEYENCE CORPORATION
KOYO EI PLC		Abbreviation of PLC manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.
SHARP PLC		Abbreviation of PLC manufactured by Sharp Manufacturing Systems Corporation
JTEKT PLC		Abbreviation of PLC manufactured by JTEKT Corporation
TOSHIBA PLC		Abbreviation of PLC manufactured by TOSHIBA CORPORATION
TOSHIBA MACHINE PLC		Abbreviation of PLC manufactured by TOSHIBA MACHINE CO., LTD.
HITACHI IES PLC		Abbreviation of PLC manufactured by Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI PLC		Abbreviation of PLC manufactured by Hitachi, Ltd.
FUJI FA PLC		Abbreviation of PLC manufactured by Fuji Electric FA Components & Systems Co., Ltd.
PANASONIC PLC		Abbreviation of PLC manufactured by Panasonic Electric Works Co., Ltd.
YASKAWA PLC		Abbreviation of PLC manufactured by YASKAWA Electric Corporation
YOKOGAWA PLC		Abbreviation of PLC manufactured by Yokogawa Electric Corporation
ALLEN-BRADLEY PLC		Abbreviation of Allen-Bradley PLC manufactured by Rockwell Automation, Inc.
GE FANUC PLC		Abbreviation of PLC manufactured by GE Fanuc Automation Corporation
LS IS PLC		Abbreviation of PLC manufactured by LS Industrial Systems Co., Ltd.
SCHNEIDER PLC		Abbreviation of PLC manufactured by Schneider Electric SA
SIEMENS PLC		Abbreviation of PLC manufactured by Siemens AG
Temperature controller	OMRON temperature controller	Abbreviation of temperature controller manufactured by OMRON Corporation
	SHINKO indicating controller	Abbreviation of temperature controller manufactured by Shinko Technos Co., Ltd.
	CHINO controller	Abbreviation of temperature controller manufactured by CHINO CORPORATION
	FUJI SYS temperature controller	Abbreviation of temperature controller manufactured by Fuji Electric Systems Co., Ltd.
	YAMATAKE temperature controller	Abbreviation of temperature controller manufactured by Yamatake Corporation
	YOKOGAWA temperature controller	Abbreviation of temperature controller manufactured by Yokogawa Electric Corporation
	RKC temperature controller	Abbreviation of temperature controller manufactured by RKC INSTRUMENT INC.
PC CPU module		Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD
GOT (server)		Abbreviation of GOTs that use the server function
GOT (client)		Abbreviation of GOTs that use the client function
Windows® font		Abbreviation of TrueType font and OpenType font available for Windows® (Differs from the True Type fonts settable with GT Designer2)
Intelligent function module		Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit.
MODBUS® /TCP		Generic term for the protocol designed to use MODBUS® protocol messages on a TCP/IP network.

1 About each of functions

This manual includes information of GT Designer2 Version2.96A.
For additional functions of upgraded version, refer to the List of functions added by version upgrade.
In addition, GT Designer2 Version2.98C supports the multimedia function of recording and playing video files with sound, and GT Works3 Version1.14Q supports the multidrop connection on GT16 and GT15.

2 Symbols

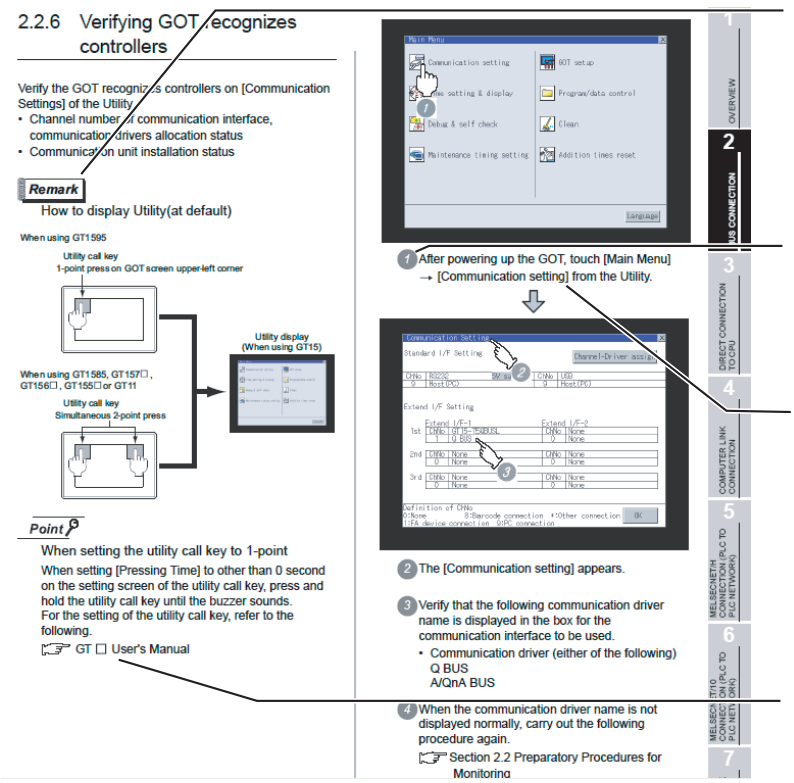
Following symbols are used in this manual.



Connectable model name
Not connectable model name

Applicable model name

GT16	Shows GT16.
GT15	Shows GT15.
GT11 Bus / GT11 Serial	Shows GT11.
GT11 Bus	Shows GT11 (BUS).
GT11 Serial	Shows GT11 (SERIAL).
GT105□ GT104□	Shows GT105□, GT104□.
GT10 24V 10 20 30 / GT10 5V 10 20	Shows GT10.
GT10 24V 10 20 30	Shows GT10(input power supply : 24V).
GT10 5V 10 20	Shows GT10(input power supply : 5V).



Point — Refers to the information required.

Hint! — Refers to information useful for operation.

Remark — Refers to the supplementary explanations for reference.

1 → 2 → 3 · · · · Indicates the operation steps.

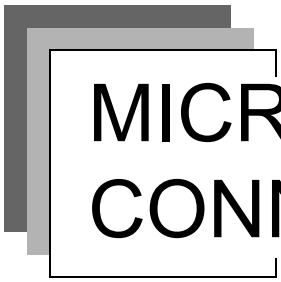
Menu and items are differentiated with parentheses.

[ ] : Refers to an item displayed on the computer screen or the GOT screen.

□ : Refers to a button displayed on the computer screen or the GOT screen, or a key of thecomputer keyboard.

Indicates the items in which the detailed explanation is described (manual, chapter, section, item of the manual).

*Since the above page was created for explanation purpose, it differs from the actual page



MICROCOMPUTER CONNECTION

Chapter 28 MICROCOMPUTER CONNECTION

MEMO

28

MICROCOMPUTER CONNECTION



28.1 Microcomputer Connection . . . . . page 28-2
This section describes the microcomputer connection of the GOT.

28.2 System Configuration . . . . . page 28-4
This section describes the equipment and cables needed for establishing a microcomputer connection.
Select a system suitable for your application.

28.3 Connection Cable . . . . page 28-7
This section describes the specifications of the cables needed when connecting a GOT to a microcomputer.
Check the specifications of the connection cables.

28.4 Device Data Area. . . . page 28-14
This section describes the virtual devices on the GOT, which are used for data transactions when a microcomputer connection is established.

28.5 Message Formats . . . page 28-29
This section describes the message formats used in the microcomputer connection.

28.6 Preparatory Procedures for Monitoring . . . . . page 28-82
This section provides the procedures to be followed before performing monitoring in a microcomputer connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

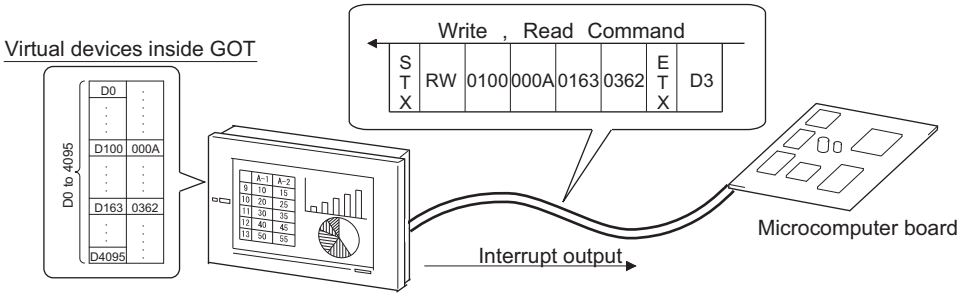
28.7 System Configuration Examples . . . . . page 28-92
This section gives an example of a system configuration for the microcomputer connection.

28.8 Precautions . . . . . page 28-95
This section describes the precautions about microcomputer connection.

28.9 List of Functions Added by Version Upgrade . . . . page 28-96
This section describes the functions added by version upgrade of GT Designer2 or OS.

28.1 Microcomputer Connection

The "microcomputer connection" is a function by which data can be written or read from a PC, microcomputer board, PLC, etc. (hereinafter referred to as "host") to virtual devices of the GOT. Interrupt output is also available from the GOT to the host.



Point

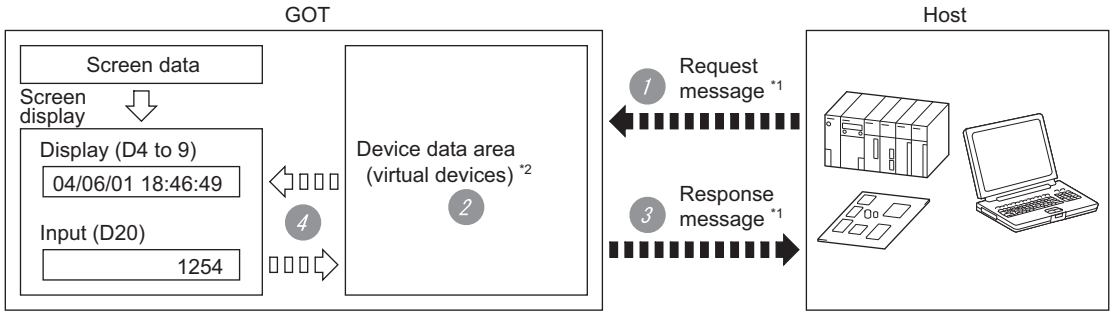
Virtual devices inside the GOT

The devices inside the GOT are used in the microcomputer connection. (PLC devices are not used.)

☞ Section 28.4 Device Data Area

1 Flow of data processing

(1) When reading or writing data



1 The host sends a request message (the read/write command) to the GOT.

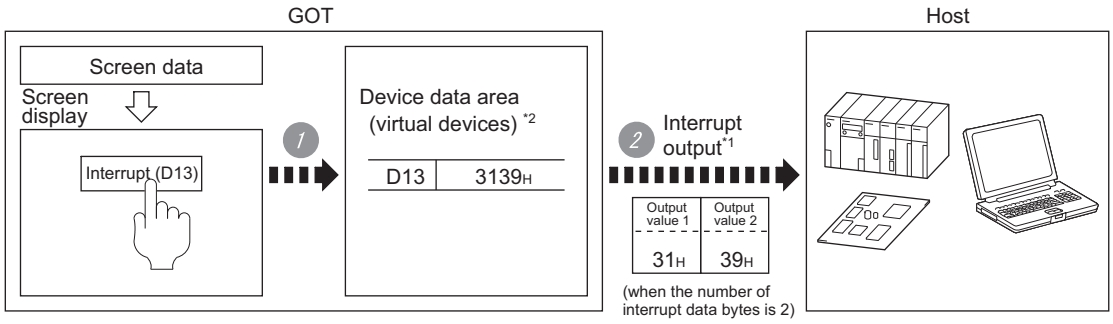
2 The GOT performs a read/write processing to its virtual devices according to the request from the host.

3 Upon completion of the processing, the GOT sends a response message (processing result) to the host.

4 Creating the following objects on the screen allows you to use the data read/written to the virtual devices:

- Numerical Display that displays data written by the write command
- Numerical Input that is used to input data to be upload to the host

(2) When outputting interrupts



1 Data are written to the virtual devices for interrupt output from the touch switches on the GOT.

2 The GOT sends the written data (interrupt output) to the host.

*1 ☞ Section 28.5 Message Formats

*2 ☞ Section 28.4 Device Data Area

28.2 System Configuration

Select a system configuration suitable for your application.

Point

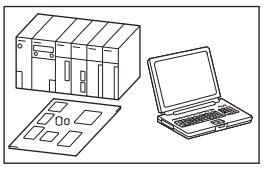
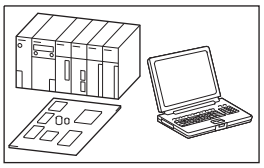
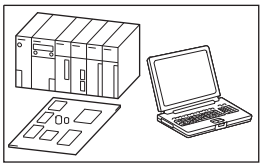
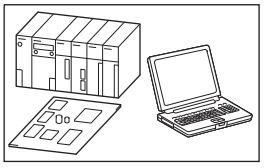
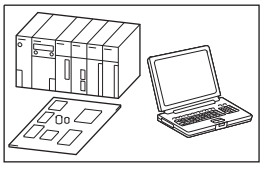
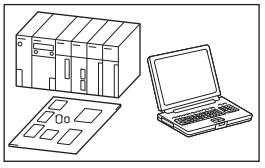
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

Communication driver

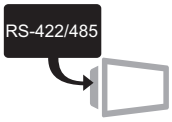
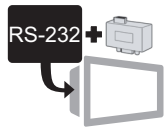
Computer

1 System configuration and connection conditions

Connection conditions		System configuration	Model
No. of GOTs	Distance		
1	Differs according to host side specifications.	 6 RS-232 cable 1) 1	GT16 GT15 GT11 Serial GT105□ 4□
		 5 RS-422 cable 1) 2	GT16
		 7 RS-422 cable 2) 4 RS-422 connector conversion cable 2	
		 7 RS-422 cable 2) 3	GT16 GT15 GT11 Serial GT105□ 4□
		 8 RS-232 cable 2) 1	GT24V10 20 30 (RS-232)
		 9 RS-422 cable 3) 3	GT24V10 20 30 (RS-422)

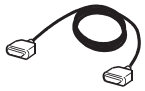
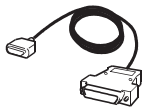
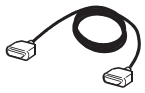
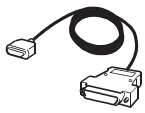
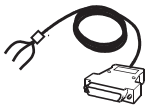
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	5	RS-422 cable 1) • Between host and GOT	(To be prepared by the user. ☞ Section 28.3 Connection Cable)	GT16
	6	RS-232 cable 1) • Between host and GOT	(To be prepared by the user. ☞ Section 28.3 Connection Cable)	GT16 GT15 GT11 Serial GT10 5□ 4□
	7	RS-422 cable2) • Between host and GOT • Between host and RS-422 connector conversion cable		
	8	RS-232 cable 2) • Between host and GOT	(To be prepared by the user. ☞ Section 28.3 Connection Cable)	GT 24V 10 20 30 (RS-232)
	9	RS-422 cable 3) • Between host and GOT	(To be prepared by the user. ☞ Section 28.3 Connection Cable)	GT 24V 10 20 30 (RS-422)

28.3 Connection Cable

The RS-232 or RS-422 cable used for connecting the GOT to the microcomputer should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

28.3.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a microcomputer.

1 Connection diagram

(1) RS-232 cable 1) (for GT16, GT15, GT11, GT105□, GT104□)

(a) Example of the case where the DTR/DSR signal is not used

GOT side		Cable connection and signal direction	Host side
Signal name	Pin No.		Signal name
CD/NC*1	1		FG
RD(RXD)	2		SD(TXD)
SD(TXD)	3		RD(RXD)
ER(DTR)	4		RS(RTS)
SG	5		CS(CTS)
DR(DSR)	6		—
RS(RTS)	7		SG
CS(CTS)	8		—
—	9		ER(DTR)

*1 GT16 : CD ,GT15 : CD ,GT11 : NC ,GT105□ : NC, GT104□ : NC

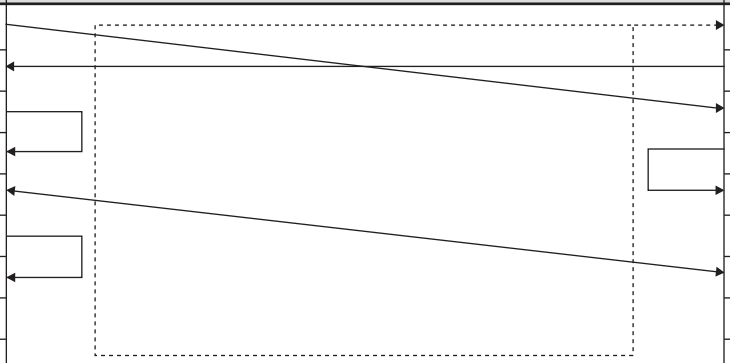
(b) Example of the case where the DTR/DSR signal is used

GOT side		Cable connection and signal direction	Host side
Signal name	Pin No.		Signal name
CD/NC*2	1		FG
RD(RXD)	2		SD(TXD)
SD(TXD)	3		RD(RXD)
ER(DTR)	4		RS(RTS)
SG	5		CS(CTS)
DR(DSR)	6		5V
RS(RTS)	7		DR(DSR)
CS(CTS)	8		ER(DTR)
—	9		SG

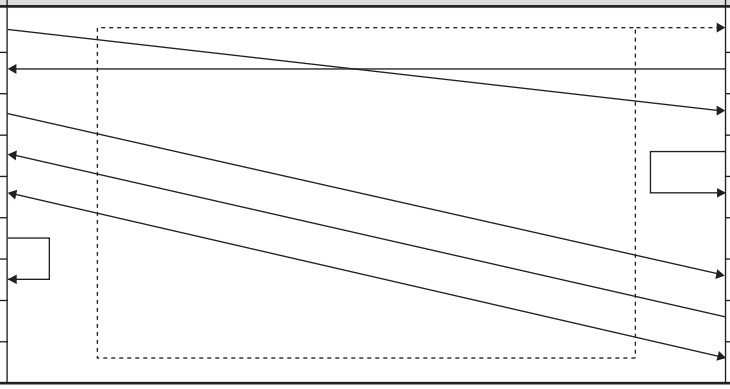
*2 GT16 : CD ,GT15 : CD ,GT11 : NC ,GT105□ : NC, GT104□ : NC

(2) RS-232 cable 2) (for GT1030, GT1020)

(a) Example of the case where the DTR/DSR signal is not used

GOT side Signal name	Cable connection and signal direction	Host side Signal name
SD		FG
RD		SD(TXD)
ER		RD(RXD)
DR		RS(RTS)
SG		CS(CTS)
RS		—
CS		SG
NC		—
NC		ER(DTR)

(b) Example of the case where the DTR/DSR signal is used

GOT side Signal name	Cable connection and signal direction	Host side Signal name
SD		FG
RD		SD(TXD)
ER		RD(RXD)
DR		RS(RTS)
SG		CS(CTS)
RS		5V
CS		DR(DSR)
NC		ER(DTR)
NC		SG

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed typ	17LE-23090-27(D3CC)	DDK Ltd

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

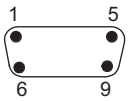
GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□

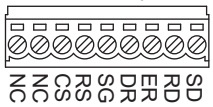
GOT main part connector
see from the front



9-pin D-sub (male)

GT1030, GT1020

See from the back of a
GOT main part



9-pin terminal block

(2) Host side connector
Use the connector compatible with the host side.

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

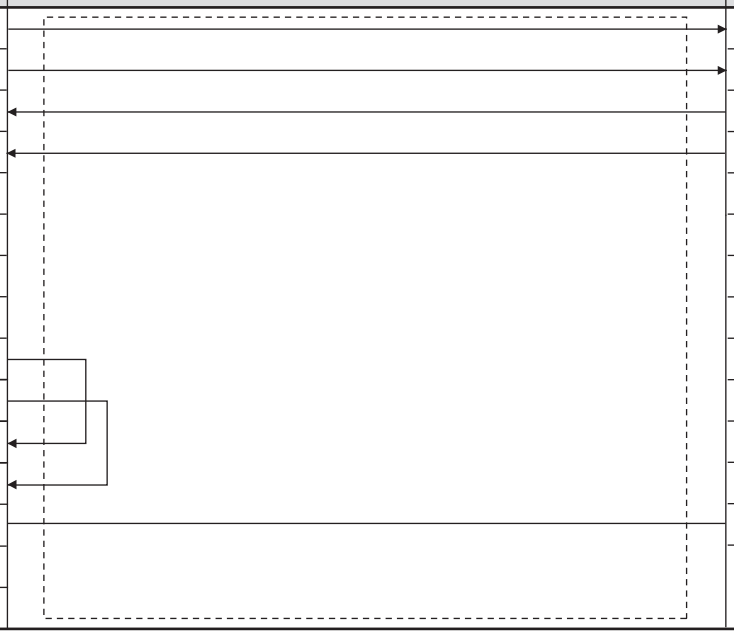
28.3.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a microcomputer.

1 Connection diagram

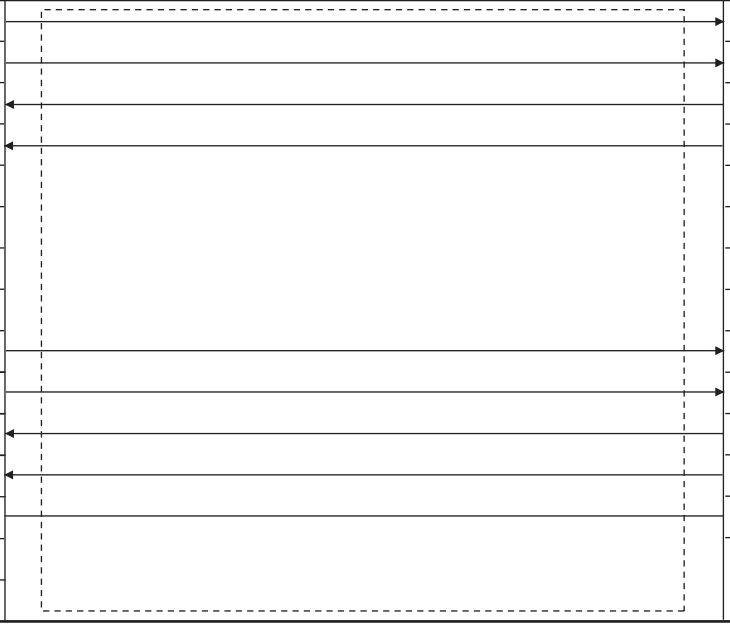
(1) RS-422 cable 1) (for GT16)

GOT side		Cable connection and signal direction	Host side
Signal name	Pin No.		Signal name
SDA1(TXD1+)	1		RDA
SDB1(TXD1-)	2		RDB
RDA1(RXD1+)	3		SDA
RDB1(RXD1-)	4		SDB
SDA2(TXD2+)	5		—
SDB2(TXD2-)	6		—
RDA2(RXD2+)	7		—
RDB2(RXD2-)	8		—
RSA(RTS+)	9		—
RSB(RTS-)	10		—
CSA(CTS+)	11		—
CSB(CTS-)	12		—
SG	13		SG
NC	14		
	Shell		



(2) RS-422 cable 2) (for GT16)

GOT side		Cable connection and signal direction	Host side
Signal name	Pin No.		Signal name
SDA1(TXD1+)	1		RDA
SDB1(TXD1-)	2		RDB
RDA1(RXD1+)	3		SDA
RDB1(RXD1-)	4		SDB
SDA2(TXD2+)	5		—
SDB2(TXD2-)	6		—
RDA2(RXD2+)	7		—
RDB2(RXD2-)	8		—
RSA(RTS+)	9		CSA
RSB(RTS-)	10		CSB
CSA(CTS+)	11		RDA
CSB(CTS-)	12		RSB
SG	13		SG
NC	14		
	Shell		



(3) RS-422 cable 3) (for GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	Host side
Signal name	Pin No.		Signal name
RDA	2		SDA
RDB	7		SDB
SDA	1		RDA
SDB	6		RDB
RSA	3		—
RSB	8		—
CSA	4		—
CSB	9		—
SG	5		SHELL

(4) RS-422 cable 4) (for GT1030, GT1020)

GOT side	Cable connection and signal direction	Host side
Signal name		Signal name
RDA		SDA
RDB		SDB
SDA		RDA
SDB		RDB
RSA		—
RSB		—
CSA		—
CSB		—
SG		SHELL

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1045-Q, GT1040-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin terminal block*2	PHOENIX CONTACT Inc.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

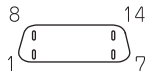
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

(b) Connector pin arrangement

GT16

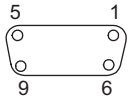
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

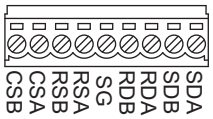
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) Host side connector

Use the connector compatible with the host side.

3 Precautions when preparing a cable

The length of the RS-422 cable must be 1200m or less.

28.4 Device Data Area

The following shows a list of virtual devices inside the GOT available in the microcomputer connection, and the address specification values for each data format.

The address specification of the virtual devices differs depending on the data format.*1

Model	Virtual device*2			Address specification value					Reference
	Name	Device range (decimal)	Device type	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15	
GT16 GT15 GT11 Serial	D	0 to 4095	Word	0 to 4095	D0 to 4095	D0 to 4095	0000 to 0FFFH	8000 to 9FFFH	Section 28.4.1
	R	0 to 4095	Word	4096 to 8191	R0 to 4095	R0 to 4095	1000 to 1FFFH	0000 to 1FFFH	Section 28.4.2
	L	0 to 2047	Bit	8192 to 8319	L0 to 2047	L0 to 2047	2000 to 207FH	A000 to A0FFH	Section 28.4.3
	M	0 to 2047	Bit	8320 to 8447	M0 to 2047	M0 to 2047	2080 to 20FFH	2000 to 20FFH	Section 28.4.4
	SD	0 to 15	Word	8448 to 8463	D9000 to 9015	SD0 to 15	2100 to 210FH	2100 to 211FH (3000 to 300DH)*3	Section 28.4.5
	SM	0 to 63	Bit	8464 to 8467	M9000 to 9063	SM0 to 63	2110 to 2113H	2200 to 2207H	Section 28.4.6
GT10 5□ 4□ GT24V10 20 30	D	0 to 511	Word	0 to 511	—			8000 to 83FFH	Section 28.4.1
	R	0 to 4095	Word	4096 to 8191	—			0000 to 1FFFH	Section 28.4.2
	L	0 to 2047	Bit	8192 to 8319	—			A000 to A0FFH	Section 28.4.3
	M	0 to 2047	Bit	8320 to 8447	—			2000 to 20FFH	Section 28.4.4
	SD	0 to 15	Word	8448 to 8463	—			2100 to 211FH (3000 to 300DH)*3	Section 28.4.5
	SM	0 to 63	Bit	8464 to 8467	—			2200 to 2207H	Section 28.4.6

*1 For the address specification method for each data format, refer to the following.

Section 28.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 When reusing GOT900 Series project data

- GOT-A900 Series virtual devices (D0 to 2047)
  Can be used as they are without changing the assignments.
- GOT-F900 Series virtual devices
  Since some of the assigned virtual device values differ as indicated below, change the assignment using device batch edit of GT Designer2.
  Refer to the following manual for device batch edit of GT Designer2.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual

GOT1000 Series virtual devices	GOT-F900 Series virtual devices
D0 to 2047	—
D2048 to 4095	—
R0 to 4095	D0 to 4095
L0 to 2047	—
M0 to 2047	M0 to 2047
SD0 to 15	D8000 to 8015 GD0 to 6
SM0 to 63	M8000 to 8063

*3 Access to SD3 to 9 can also be made by the specification of the addresses (3000 to 300D$_H$) of GD0 to 6 on the GOT-F900 Series.

Point

About values of virtual devices inside the GOT

When the GOT is turned OFF or reset, values are cleared to their defaults (bit devices: OFF, word devices: 0).

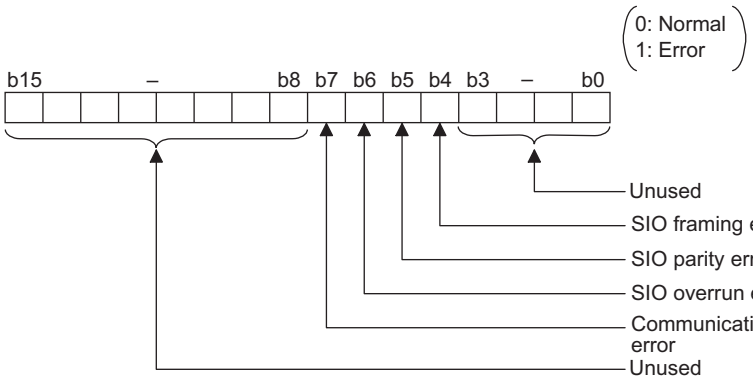
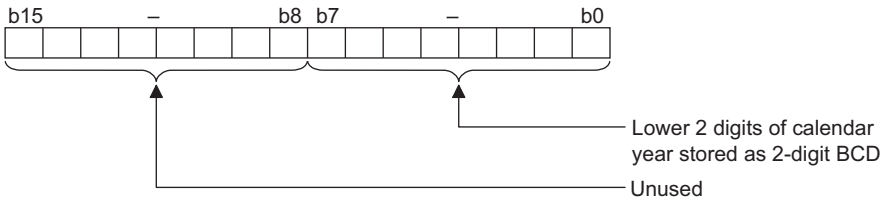
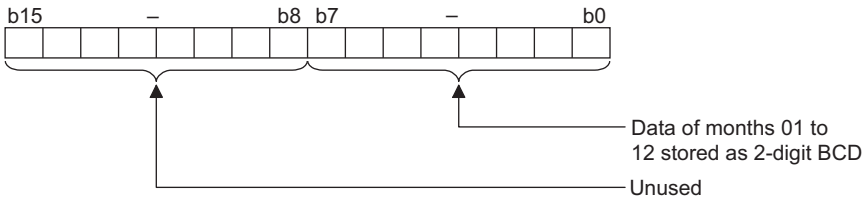
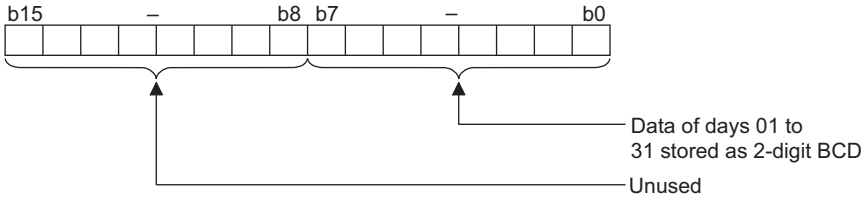
Values are held in the memory when project data are downloaded to the GOT.

28.4.1 D devices

The D devices are word devices into which GOT communication errors, clock data or other information are stored.
The user can also store data using the user area.

1 List of D devices

The following lists the D devices (virtual devices inside the GOT).

Address	Description	Set side
D0 to 2	Unused	—
D3	Communication error status Stores the communication error details of GOT.  • b4 to 6 turn ON when an SIO error occurs, and turn OFF when an request message from the host is received successfully after the error occurrence. • b7 turns ON about 3 seconds after the host side DTR becomes OFF, and turns OFF when transmission is performed successfully to the host after the error occurrence.	System
D4	Clock data (year) 	
D5	Clock data (month) 	
D6	Clock data (day) 	

(Continued to next page)

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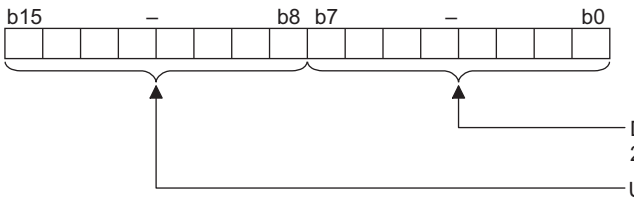
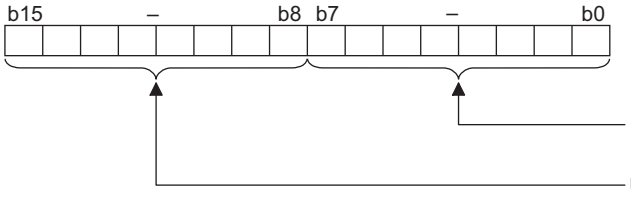
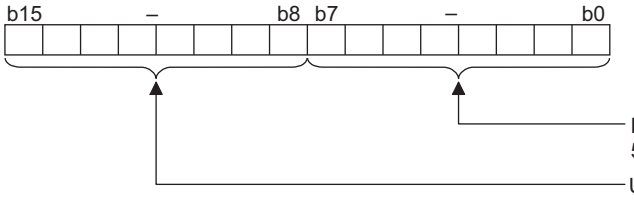
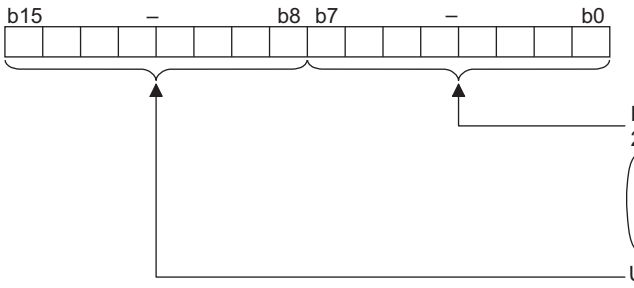
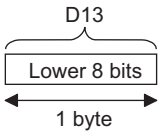
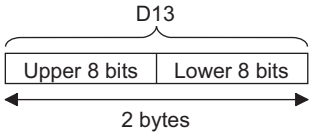
Address	Description	Set side
D7	Clock data (hour) 	System
D8	Clock data (minute) 	
D9	Clock data (second) 	
D10	Clock data (day of week)*1 	
D11, D12	Unused	—

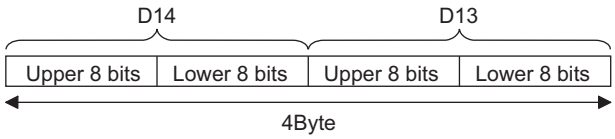
(Continued to next page)

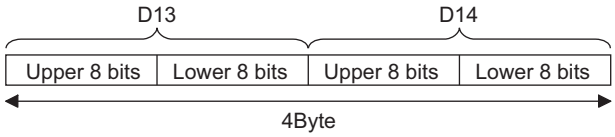
*1 If a wrong day of the week is set by the clock data setting command, the clock data will differ from the time displayed on the utility.
Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of the week is Tuesday),
"04" is stored to D10 although Tuesday (TUE) will be displayed on the utility time display.

(from previous page)

<table>
<tr><th colspan="2">Address</th><th>Description</th><th>Set side</th></tr>
<tr><td colspan="2">D13</td><td rowspan="2">Interrupt output
When data are written to D13 and D14 from a GOT touch switch, for example, the data of D13 and D14 are transmitted (interrupt output) to the host side.*1 *2
The data amount (the number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings". (☞ Section 28.6.3 Setting communication interface (Communication settings))
• Output value when 1 is set to "Interrupt Data Byte" in "Communication Detail Settings"
 

• Output value when 2 is set to "Interrupt Data Byte" in "Communication Detail Settings"
 

• Output value when 4 is set to "Interrupt Data Byte" in "Communication Detail Settings"
(1) When setting the LH order to [32bit Storage] for the communication detail settings
 

(2) When setting the HL order to [32bit Storage] for the communication detail settings
 
</td><td rowspan="2">User</td></tr>
<tr><td colspan="2">D14</td></tr>
<tr><td colspan="2">D15 to 19</td><td>Unused</td><td>—</td></tr>
<tr><td rowspan="4">GT16 GT15 GT11 Serial</td><td>D20 to 2031</td><td>User area</td><td>User</td></tr>
<tr><td>D2032 to 2034</td><td>Unused</td><td>—</td></tr>
<tr><td>D2035</td><td>1-second binary counter
The counter is incremented at 1-second intervals after the GOT is turned ON.
(The time elapsed after the GOT is turned ON is stored in 1-second units.) Data are stored in binary format.</td><td>System</td></tr>
<tr><td>D2036 to 4095</td><td>User area</td><td>User</td></tr>
<tr><td rowspan="2">GT105□ 54□ GT24V1020 30</td><td rowspan="2">D20 to 511</td><td rowspan="2">User area</td><td rowspan="2"></td></tr>
<tr><td></td></tr>
</table>

*1 After writing data, the interrupt is output within a period of 1 to 10ms.

*2 When data are written to D13 and D14 from the host side, interrupt output is not performed.

Point

(1) About the side where virtual devices are set
System: Set on the system side.
User: Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) About interrupt output (D13, D14)
- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (☞ Section 28.4.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings". (☞ Section 28.6.3 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FF$_H$ → 7F$_H$)

2 Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values of each data format.

Model	Address	Address specification value				
		Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
GT16 GT15 GT11 Serial	D0	0	D0	D0	0000$_H$	8000$_H$ (8000$_H$ Upper 8 bits / 8001$_H$ Lower 8 bits)
	D1	1	D1	D1	0001$_H$	8002$_H$ (8002$_H$ Upper 8 bits / 8003$_H$ Lower 8 bits)
	to	to	to	to	to	to
	D4095	4095	D4095	D4095	0FFF$_H$	9FFE$_H$ (9FFE$_H$ Upper 8 bits / 9FFF$_H$ Lower 8 bits)
GT105□ GT104□ GT24V10 GT24V20 GT24V30	D0	0	—			8000$_H$ (8000$_H$ Upper 8 bits / 8001$_H$ Lower 8 bits)
	D1	1	—			8002$_H$ (8002$_H$ Upper 8 bits / 8003$_H$ Lower 8 bits)
	to	to	—			to
	D511	511	—			83FE$_H$ (83FE$_H$ Upper 8 bits / 83FF$_H$ Lower 8 bits)

*1 For the address specification method for each data format, refer to the following.
☞ Section 28.5 Message Formats
- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

28.4.2 R devices

The R devices are word devices into which user data are stored.
All of these devices can be used as a user area.

1 List of R devices and differences in address specification by data format

The following shows the R devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Model	Address	Address specification value				
		Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
GT16 GT15 GT11 Serial	R0	4096	R0	R0	1000H	0000H: 0000H (Upper 8 bits) 0001H (Lower 8 bits); 0001H
	R1	4097	R1	R1	1001H	0002H: 0002H (Upper 8 bits) 0003H (Lower 8 bits); 0003H
	to	to	to	to	to	to
	R4095	8191	R4095	R4095	1FFFH	1FFEH: 1FFEH (Upper 8 bits) 1FFFH (Lower 8 bits); 1FFFH
GT105□ GT104□ GT24 GT1020 GT1030	R0	4096	—			0000H: 0000H (Upper 8 bits) 0001H (Lower 8 bits); 0001H
	R1	4097	—			0002H: 0002H (Upper 8 bits) 0003H (Lower 8 bits); 0003H
	to	to	—			to
	R4095	8191	—			1FFEH: 1FFEH (Upper 8 bits) 1FFFH (Lower 8 bits); 1FFFH

*1 For the address specification method for each data format, refer to the following.

Section 28.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection
-

28.4.3 L devices

The L devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

1 List of L devices and differences in address specification by data format

The following shows the L devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Model	Address								Address specification value				
	b7	b6	b5	b4	b3	b2	b1	b0	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
GT16 GT15 GT11 Serial	L7	L6	L5	L4	L3	L2	L1	L0	8192	Same as address column on left*2		2000H	A000H
	L15	L14	L13	L12	L11	L10	L9	L8					A001H
	L23	L22	L21	L20	L19	L18	L17	L16	8193			2001H	A002H
	L31	L30	L29	L28	L27	L26	L25	L24					A003H
	to								to			to	to
	L2039	L2038	L2037	L2036	L2035	L2034	L2033	L2032	8319			207FH	A0FEH
	L2047	L2046	L2045	L2044	L2043	L2042	L2041	L2040					A0FFH
GT105□ 104□ GT24V 1020 1030	L7	L6	L5	L4	L3	L2	L1	L0	8192	—			A000H
	L15	L14	L13	L12	L11	L10	L9	L8		—			A001H
	L23	L22	L21	L20	L19	L18	L17	L16	8193	—			A002H
	L31	L30	L29	L28	L27	L26	L25	L24		—			A003H
	to								to	—			to
	L2039	L2038	L2037	L2036	L2035	L2034	L2033	L2032	8319	—			A0FEH
	L2047	L2046	L2045	L2044	L2043	L2042	L2041	L2040		—			A0FFH

*1 For the address specification method for each data format, refer to the following.

Section 28.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 For reading or writing data in word units, specify the addresses in 16-point units. (Example: L0, L16, L32, etc.)

28.4.4 M devices

The M devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

1 List of M devices and differences in address specification by data format

The following shows the M devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Model	Address								Address specification value				
	b7	b6	b5	b4	b3	b2	b1	b0	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
GT16 GT15 GT11 Serial	M7	M6	M5	M4	M3	M2	M1	M0	8320	Same as address column on left*2		2080H	2000H
	M15	M14	M13	M12	M11	M10	M9	M8					2001H
	M23	M22	M21	M20	M19	M18	M17	M16	8321			2081H	2002H
	M31	M30	M29	M28	M27	M26	M25	M24					2003H
	to								to			to	to
	M2039	M2038	M2037	M2036	M2035	M2034	M2033	M2032	8447			20FFH	20FEH
	M2047	M2046	M2045	M2044	M2043	M2042	M2041	M2040					20FFH
GT105□ 54□ GT24V10 2030	M7	M6	M5	M4	M3	M2	M1	M0	8320	—			2000H
	M15	M14	M13	M12	M11	M10	M9	M8					2001H
	M23	M22	M21	M20	M19	M18	M17	M16	8321				2002H
	M31	M30	M29	M28	M27	M26	M25	M24					2003H
	to								to				to
	M2039	M2038	M2037	M2036	M2035	M2034	M2033	M2032	8447				20FEH
	M2047	M2046	M2045	M2044	M2043	M2042	M2041	M2040					20FFH

*1 For the address specification method for each data format, refer to the following.

Section 28.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

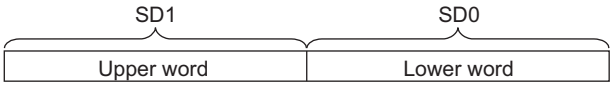
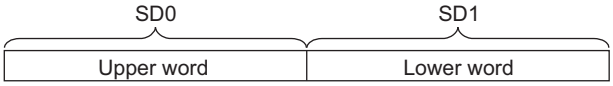
*2 For reading or writing data in word units, specify the addresses in 16-point units. (Example: M0, M16, M32, etc.)

28.4.5 SD devices

The SD devices are word devices into which GOT communication errors (error codes), clock data and other information are stored.

1 List of SD devices

The following lists the SD devices (virtual devices inside the GOT).

Address	Description	Set side
SD0 SD1	100ms counter (32 bits) The counter is incremented at 100ms intervals after GOT is turned ON. (The time elapsed after GOT is turned ON is stored in 100ms units.) (1) When setting the LH order to [32bit Storage] for the communication detail settings The lower and upper bits are stored in SD0 and SD1 respectively.  (2) When setting the HL order to [32bit Storage] for the communication detail settings The upper and lower bits are stored in SD0 and SD1 respectively.  	System
SD2*1	Communication error status An error data (error code) occurred during communication is stored. • Host Address (Communication error that occurred on the request destination GOT) 0: No error 1: Parity error 2: Framing error 3: Overrun error 4: Communication message error 5: Command error 6: Clock data setting error • Other station (Communication error that occurred on another GOT when multiple GOTs are connected) 101: Parity error 102: Framing error 103: Overrun error 104: Communication message error 105: Timeout error (No station of the specified address exists.) 106: Multiple units not connectable 107: Clock data setting error	
SD3	Clock data (second) Second data of 00 to 59 is stored.	
SD4	Clock data (minute) Minute data of 00 to 59 is stored.	
SD5	Clock data (hour) Hour data of 00 to 23 is stored.	
SD6	Clock data (day) Day data of 00 to 31 is stored.	
SD7	Clock data (month) Month data of 00 to 12 is stored.	

(Continued on next page)

*1 For details and corrective actions for the errors (error codes) that are stored into SD2, refer to the following:

2 Details and actions for errors (error codes) stored into SD2

(From previous page)

Address	Description	Set side
SD8	Clock data (year) 4-digit year data is stored.	System
SD9	Clock data (day of week)*1 Day-of-the-week data is stored. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday	
SD10 to 15	Unused	—

*1 If a wrong day of the week is set by the clock data setting command, the clock data will differ from the time displayed on the utility.
Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of week is Tuesday),"04" is stored to D9 although Tuesday (TUE) will be displayed on the utility time display.

Point About the side where virtual devices are set

System: Set on the system side.
User: Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

2 Details and actions for errors (error codes) stored into SD2

Error code	Description	Action
0	No error	—
1,101	Parity error The parity bit is not correct.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Set the same transmission settings on the GOT and the host.
2,102	Framing error The data bit and/or stop bit are not correct.	
3,103	Overrun error The next data were transmitted from the host before completion of the received data processing on the GOT.	• Check the Communication Detail Settings. • Decrease the transmission speed.
4,104	Communication message error EXT/CR could not be found before the upper limit of the receive buffer was exceeded.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Review the contents of the sending message
5	Command error An unsupported command was used.	• Review the contents of the sending message. • Check the command in the message. (☞ Section 28.5.2 List of commands)
105	Timeout error There is no response from the GOT, or the station of the specified address does not exist.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Review the contents of the sending message.
106	Multiple units not connectable The RS-232 port is occupied.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Check to see if the RS-232 port is occupied.
6,107	Clock data setting error A wrong value is set in the clock data.	• Review the contents of the sending message. • Check if any invalid data (e.g. "07" set as a day of the week) is set as clock data.

3 Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Address	Address specification value				
	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15 *2
SD0	8448	D9000	SD0	2100H	2100H (Upper 8 bits), 2101H (Lower 8 bits)
SD1	8449	D9001	SD1	2101H	2102H (Upper 8 bits), 2103H (Lower 8 bits)
SD2	8450	D9002	SD2	2102H	2104H (Upper 8 bits), 2105H (Lower 8 bits)
SD3	8451	D9003	SD3	2103H	2106H(3000H) (Upper 8 bits), 2107H(3001H) (Lower 8 bits)
SD4	8452	D9004	SD4	2104H	2108H(3002H) (Upper 8 bits), 2109H(3003H) (Lower 8 bits)
SD5	8453	D9005	SD5	2105H	210AH(3004H) (Upper 8 bits), 210BH(3005H) (Lower 8 bits)
SD6	8454	D9006	SD6	2106H	210CH(3006H) (Upper 8 bits), 210DH(3007H) (Lower 8 bits)
SD7	8455	D9007	SD7	2107H	210EH(3008H) (Upper 8 bits), 210FH(3009H) (Lower 8 bits)
SD8	8456	D9008	SD8	2108H	2110H(300AH) (Upper 8 bits), 2111H(300BH) (Lower 8 bits)
SD9	8457	D9009	SD9	2109H	2112H(300CH) (Upper 8 bits), 2113H(300DH) (Lower 8 bits)

*1 For the address specification method for each data format, refer to the following.

Section 28.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

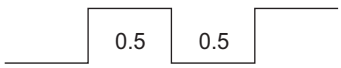
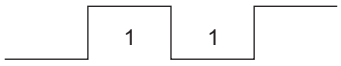
*2 SD3 to 9 correspond to GD0 to 6 on the GOT-F900 Series.
Access to SD3 to 9 can be also made by the specification of the addresses (3000 to 300DH) of GD0 to 6 on the GOT-F900 Series.

28.4.6 SM devices

The SM devices are bit devices into which interrupt outputs and clock data that turn ON/OFF at 1-second cycles.

1 List of SM devices

The following shows the SM devices (virtual devices inside the GOT).

<table>
<tr><th>Address</th><th>Description</th><th>Set side</th></tr>
<tr><td>SM0 to 49</td><td>Interrupt output
When the ON/OFF state of SM0 to 49 is changed by a touch switch on the GOT, for example, the interrupt codes shown below are transmitted (interrupt output) to the host side.*1*2
The data amount (number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings". (☞ Section 28.6.3 Setting communication interface (Communication settings))
<table>
<tr><th>Address</th><th>Event type</th><th>Interrupt code</th></tr>
<tr><td rowspan="2">SM0</td><td>Changed from OFF to ON</td><td>50H</td></tr>
<tr><td>Changed from ON to OFF</td><td>51H</td></tr>
<tr><td rowspan="2">SM1</td><td>Changed from OFF to ON</td><td>52H</td></tr>
<tr><td>Changed from ON to OFF</td><td>53H</td></tr>
<tr><td rowspan="2">SM2</td><td>Changed from OFF to ON</td><td>54H</td></tr>
<tr><td>Changed from ON to OFF</td><td>55H</td></tr>
<tr><td>≀</td><td>≀</td><td>≀</td></tr>
<tr><td rowspan="2">SM48</td><td>Changed from OFF to ON</td><td>B0H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B1H</td></tr>
<tr><td rowspan="2">SM49</td><td>Changed from OFF to ON</td><td>B2H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B3H</td></tr>
</table></td><td>User</td></tr>
<tr><td>SM50</td><td>1-second cycle clock
Turns ON/OFF at a 1-second cycle.
 
</td><td rowspan="2">System</td></tr>
<tr><td>SM51</td><td>2-second cycle clock
Turns ON/OFF at a 2-second cycle.
 
</td></tr>
<tr><td>SM52</td><td>Interrupt code output disable flag
Enables or disables the output of the interrupt code.
OFF : Interrupt code output enabled
ON : Interrupt code output disabled
When set to disable the interrupt code output, no interrupt data are output to the host.
(Relevant devices: D13, D14, SM0 to 49)</td><td>User</td></tr>
<tr><td>SM53 to 63</td><td>Unused</td><td>—</td></tr>
</table>

*1 After the ON/OFF state is changed, the interrupt data are output within a period of 1 to 10 ms.

*2 When the ON/OFF state of SM0 to 49 is changed from the host side, interrupt output is not performed.

Point

(1) About the side where virtual devices are set

System: Set on the system side.

User: Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) About interrupt outputs (SM0 to 49)

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (☞ Section 28.4.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings". (☞ Section 28.6.3 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: $FF_H \rightarrow 7F_H$)

2 Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Model	Address								Address Specification Value				
	b7	b6	b5	b4	b3	b2	b1	b0	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
GT16 GT15 GT11 Serial	SM7	SM6	SM5	SM4	SM3	SM2	SM1	SM0	8464	*2*4	*3*4	2110H	2200H
	SM15	SM14	SM13	SM12	SM11	SM10	SM9	SM8					2201H
	SM23	SM22	SM21	SM20	SM19	SM18	SM17	SM16	8465			2111H	2202H
	SM31	SM30	SM29	SM28	SM27	SM26	SM25	SM24					2203H
	SM39	SM38	SM37	SM36	SM35	SM34	SM33	SM32	8466			2112H	2204H
	SM47	SM46	SM45	SM44	SM43	SM42	SM41	SM40					2205H
	Unused			SM52	SM51	SM50	SM49	SM48	8467			2113H	2206H
	Unused								—				—
GT105□ 104□ GT24V 1020 1030	SM7	SM6	SM5	SM4	SM3	SM2	SM1	SM0	8464	—			2200H
	SM15	SM14	SM13	SM12	SM11	SM10	SM9	SM8		—			2201H
	SM23	SM22	SM21	SM20	SM19	SM18	SM17	SM16	8465	—			2202H
	SM31	SM30	SM29	SM28	SM27	SM26	SM25	SM24		—			2203H
	SM39	SM38	SM37	SM36	SM35	SM34	SM33	SM32	8466	—			2204H
	SM47	SM46	SM45	SM44	SM43	SM42	SM41	SM40		—			2205H
	Unused			SM52	SM51	SM50	SM49	SM48	8467	—			2206H
	Unused								—	—			—

*1 For the address specification method for each data format, refer to the following.

Section 28.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 In formats 3 to 6, values are specified within a range of M9000 to 9052.

*3 In formats 7 to 10, values are specified within a range of SM0 to 52.

*4 For reading or writing data in word units, specify the addresses in 16-point units. (Example: SM0, SM16, SM32, etc.)

28.5 Message Formats

This section describes the format of messages that can be used in the microcomputer connection.

28.5.1 Data format type and application

1 Data format type and application

Communication is possible using any of the data formats shown below.

(1) Formats 1, 2 (GOT-A900 series microcomputer connection)
This is the same message format as when a microcomputer connection is established with the GOT-A900 series.

Type	Name	Description	Reference
Format 1	GOT-A900 series microcomputer connection (format 1)	This format is used when the GOT is connected to the host in a 1:1 connection.	Section 28.5.3
Format 2	GOT-A900 series microcomputer connection (format 2)	This is the appended format with error code at the error response of the GOT-A900 series microcomputer connection (format 1).	

(2) Formats 3 to 6 (A compatible 1C frame)
This is the same message format as when communication is performed using the dedicated protocol of the A series computer link module.

Type	Name	Description	Reference
Format 3	A compatible 1C frame (format 1)	This is the basic format of the dedicated protocols.	Section 28.5.4
Format 4	A compatible 1C frame (format 2)	This is the appended format of the A compatible 1C frame (format 1) with a block No.	
Format 5	A compatible 1C frame (format 3)	This is the enclosed format of the A compatible 1C frame (format 1) with STX and ETX.	
Format 6	A compatible 1C frame (format 4)	This is the appended format of the A compatible 1C frame (format 1) with CR and LF.	

(3) Formats 7 to 10 (QnA compatible 3C/4C frame)
This is the same message format as when a communication is performed using the MC protocol of Q/QnA Series serial communication module.

Type	Name	Description	Reference
Format 7	QnA compatible 3C/4C frame (format 1)	This is the basic format of the MC protocols.	Section 28.5.5
Format 8	QnA compatible 3C/4C frame (format 2)	This is the appended format of the QnA compatible 3C/4C frame (format 1) with block No.	
Format 9	QnA compatible 3C/4C frame (format 3)	This is the enclosed format of the QnA compatible 3C/4C frame (format 1) with STX and ETX.	
Format 10	QnA compatible 3C/4C frame (format 4)	This is the appended format of the QnA compatible 3C/4C frame (format 1) with CR and LF.	

(4) Formats 11 to 13 (Digital Electronics Corporation's memory link method)
This is the same format as the protocol of the Digital Electronics Corporation's memory link method.

Type	Name	Description	Reference
Format 11	Digital Electronics Corporation's memory link method (compatible mode)	This is the basic format of the Digital Electronics Corporation's memory link method.	Section 28.5.6
Format 12	Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:1)	This is the appended format of the Digital Electronics Corporation's memory link method (compatible mode) with sum check, CR and LF.	
Format 13	Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)	This is the appended format of the Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:1) with a station No.	

(5) Formats 14, 15 (GOT-F900 series microcomputer connection)
This is the same message format as when a microcomputer connection is established with the GOT-F900 Series.

Type	Name	Description	Reference
Format 14	GOT-F900 series microcomputer connection (format 1)	Use this format when establishing a 1:1 or m:n connection between the GOT and the host. The end code is CR.	Section 28.5.7
Format 15	GOT-F900 series microcomputer connection (format 2)	Use this format when establishing a 1:1 or m:n connection between the GOT and the host. The end code is ETX or sum check.	

2 How to set data format

Set the data format at "Communication Detail Settings" in GT Designer2.
For details of the data format setting method, refer to the following.

☞ Section 28.6.3 Setting communication interface (Communication settings)

28.5.2 List of commands

The following shows the list of commands available in each data format.

1 List of commands for formats 1, 2 (GOT-A900 series microcomputer connection)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
RD	52H 44H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
WD	57H 44H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
RR	52H 52H	Random read in word units*1	Reads multiple different bit devices in 16-point units.	64 words (1024 points)
			Reads multiple different word devices in 1-point units.	64 points
RW	52H 57H	Random write in word units*1	Writes to multiple different bit devices in 16-point units.	64 words (1024 points)
			Writes to multiple different word devices in 1-point units.	64 points
TR	54H 52H	Read clock data	Reads the clock data of the GOT.	—
TS	54H 53H	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.

2 List of commands for formats 3 to 6 (A compatible 1C frame)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
BR JR	42H 52H 4AH 52H	Batch read in bit units	Reads bit devices in 1-point units.	64 points
WR QR	57H 52H 51H 52H	Batch read in word units	Reads bit devices in 16-point units.*3	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
BW JW	42H 57H 4AH 57H	Batch write in bit units	Writes to bit devices in 1-point units.	64 points
WW QW	57H 57H 51H 57H	Batch write in word units	Writes to bit devices in 16-point units.*3	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
BT JT	42H 54H 4AH 54H	Test in bit units(random write)	Writes to multiple different bit devices in 1-point units.	64 points
WT QT	57H 54H 51H 54H	Test in word units(random write)	Writes to multiple different bit devices in 16-point units.*3	64 words (1024 points)
			Writes to multiple different word devices in 1-point units.	64 points
TR*2	54H 52H	Read clock data	Reads the clock data of the GOT.	—
TS*2	54H 53H	Set clock data	Sets the clock data of the GOT.	—

*2 This is a dedicated command of GOT for the microcomputer connection.

*3 Specifies the address of bit devices in 16-point units. (Example: M0, M16, M32, and others)

3 Command lists for formats 7 to 10 (QnA compatible 3C/4C frame)

Command	Sub-command	Command name	Description	Max. number of points processed
0401	0001	Batch read in bit units	Reads bit devices in 1-point units.	64 points
0401	0000	Batch read in word units	Reads bit devices in 16-point units.*3	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
1401	0001	Batch write in bit units	Writes to bit devices in 1-point units.	64 points
1401	0000	Batch read in word units	Writes to bit devices in 16-point units.*3	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
0403	0000	Random read in word units*1	Reads multiple different bit devices in 16-point and 32-point units.*3	64 words (1024 points)
			Reads multiple different word devices in 1-point and 2-point units.	64 points
1402	0001	Random write in bit units	Writes to multiple different bit devices in 1-point units.	64 points
1402	0000	Random write in word units*1	Writes to multiple different bit devices in 16-point and 32-point units.*3	64 words (1024 points)
			Writes to multiple different word devices in 1-point and 2-point units.	64 points
0406	0000	Multiple block batch read	Reads multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block. *3	64 points
1406	0000	Multiple block batch write	Writes multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block. *3	64 points
1901*2	0000	Read clock data	Reads the clock data of the GOT.	—
0901*2	0000	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.

*2 This is a dedicated command of GOT for the microcomputer connection.

*3 Specifies the address of bit devices in 16-point units. (Example: M0, M16, M32, and others)

4 List of commands for formats 11 to 13 (Digital Electronics Corporation's memory link method)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
R	52H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
W	57H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
I	49H	Interrupt inquiry	Issues an interrupt inquiry. (format 13 only)	—
N*4	4DH	Read clock data	Reads the clock data of the GOT.	—
M*4	4EH	Set clock data	Sets the clock data of the GOT.	—

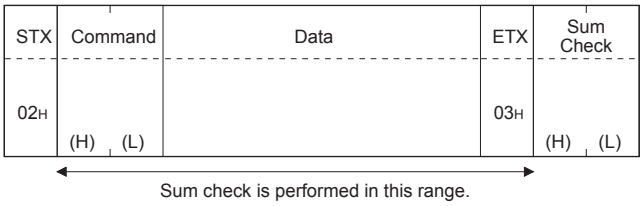
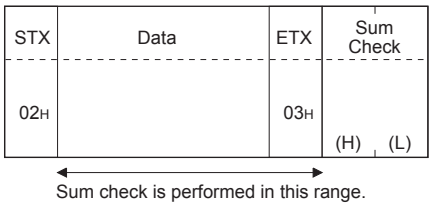
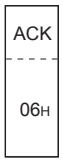
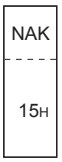
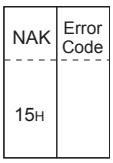
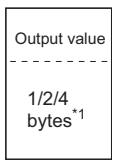
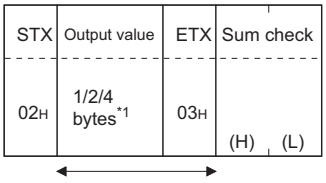
*4 This is a dedicated command of GOT for the microcomputer connection.

5 List of commands for formats 14, 15 (GOT-F900 series microcomputer connection)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
0	30H	Batch read (w/out station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
A	41H	Batch read (w/ station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
1	31H	Batch write (w/out station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
B	42H	Batch write (w/ station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
3	33H	Multi-point write in bit units (w/ station No.)	Writes bit patterns (bit ON/OFF, inversion, direct specification) in 1-point units (8 bits for 1 point) to a specified device.	70 bytes (560 points)
D	44H	Multi-point write in bit units (w/ station No.)		
4	34H	Fill command (w/out station No.)	Writes the same value to a range of specified devices.	—
E	45H	Fill command (w/ station No.)		
5	35H	Set clock data (w/out station No.)	Sets the clock data of the GOT.	—
F	46H	Set clock data (w/ station No.)		
6	36H	Read clock data (w/out station No.)	Reads the clock data of the GOT.	—
G	47H	Read clock data (w/ station No.)		

28.5.3 Formats 1, 2 (GOT-A900 series microcomputer connection)

1 Basic format of data communication

Item	Message format	
Request message (host → GOT)		
Response message during normal communication (GOT → host)	(1) During processing of read commands  (2) During processing of write commands 	
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) 	(format 2: GOT-A900 series microcomputer connection (format 2)) 
During interrupt output	(format 1: GOT-A900 series microcomputer connection (format 1)) 	(format 2: GOT-A900 series microcomputer connection (format 2)) 

*1 Set the number of interrupt data bytes at "Communication Detail Settings" in GT Designer2.
For the setting of the number of interrupt data bytes, refer to the following.

☞ Section 28.6.3 Setting communication interface (Communication settings)

2 Details of data items in message format

Point Data code during communication

Communication is performed in ASCII code. (excluding interrupt output)

(1) Control codes

Symbol	ASCII code	Description
STX	02H	Start of Text (start marker of message frame)
ETX	03H	End of Text (end marker of message frame)
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command

Specifies the contents to access from the host to GOT.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of commands that can be used, refer to the following.

☞ Section 28.5.2 List of commands

(3) Address

Specifies the head No. of the device data to be read/written.
The address notated in decimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device ranges that can be accessed, refer to the following.

☞ Section 28.4 Device Data Area

(4) Number of points

Specifies the number of device data to be read/written. (Setting range: 1 to 64)
The number of points notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(5) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (5)Read clock data (TR) command

☞ 3 (6)Set clock data (TS) command

(6) Data

Specifies data to read from/write to the specified device data. (word unit)

Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(7) Error code

This is the response message at faulty communication appended with error contents.

Error code is transmitted in 1 byte.

For details of the error codes generated in format 2 (GOT-A900 series microcomputer connection (format 2)), refer to the following:

☞ 4 Error code list

(8) Sum check code

The sum check code is obtained by converting the lower 1 byte (8 bits) of the result (sum), after having added the sum check target data as binary data, to 2-digit ASCII code (Hex).

STX	Command		Address				Number of points		ETX	Sum Check	
	R	D	0	1	0	0	0	2		B	C
02H	52H	44H	30H	31H	30H	30H	30H	32H	03H	42H	43H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

$52_H + 44_H + 30_H + 31_H + 30_H + 30_H + 30_H + 32_H + 03_H = 1BC_H$

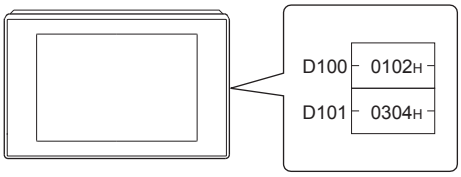
3 Message format

(1) Batch read in word units (RD) command

(a) When reading a word device

The following shows an example of reading the two points of the virtual devices D100 and D101.

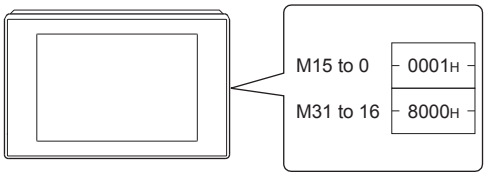
(Assuming D100="0102H" and D101="0304H" are stored.)



Item	Message format
Request message (host → GOT)	STX: 02H Command: R D (52H 44H) (H) (L) Address: 0 1 0 0 (30H 31H 30H 30H) (H) — — (L) Number of points: 0 2 (30H 32H) (H) (L) ETX: 03H Sum Check: B C (42H 43H) (H) (L) Sum check is performed in this range.
Response message during normal communication (GOT → host)	STX: 02H Data 1 (D100): 0 1 0 2 (30H 31H 30H 32H) (H) — — (L) Data 2 (D101): 0 3 0 4 (30H 33H 30H 34H) (H) — — (L) ETX: 03H Sum Check: 8 D (38H 44H) (H) (L) Sum check is performed in this range.
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(b) When reading a bit device

The following shows an example of reading the two points of the virtual devices M0 to M31. (Assuming M0="1" and M31="1" are stored.)

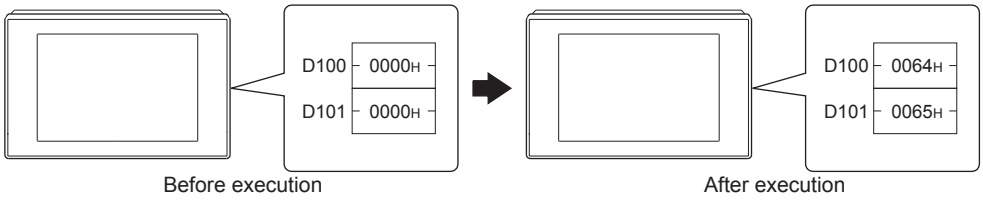


Item	Message format
Request message (host → GOT)	STX: 02H Command: R D = 52H 44H (H) (L) Address: 8 3 2 0 = 38H 33H 32H 30H (H) – – (L) Number of points: 0 2 = 30H 32H (H) (L) ETX: 03H Sum Check: C 8 = 43H 38H (H) (L) Sum check is performed in this range.
Response message during normal communication (GOT → host)	Sum check is performed in this range. STX: 02H Data 1 (M15 to 0): 0 0 0 1 = 30H 30H 30H 31H (H) – – (L) Data 2 (M31 to 16): 8 0 0 0 = 38H 30H 30H 30H (H) – – (L) ETX: 03H Sum Check: 8 C = 38H 43H (H) (L) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 M M M M M M M M M M M M M M M M M M M M M M M M M M M M 1 1 1 1 1 1 9 8 7 6 5 4 3 2 1 0 3 3 2 2 2 2 2 2 2 2 2 1 1 1 1 5 4 3 2 1 0 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(2) Batch write in word units (WD) command

(a) When writing to a word device

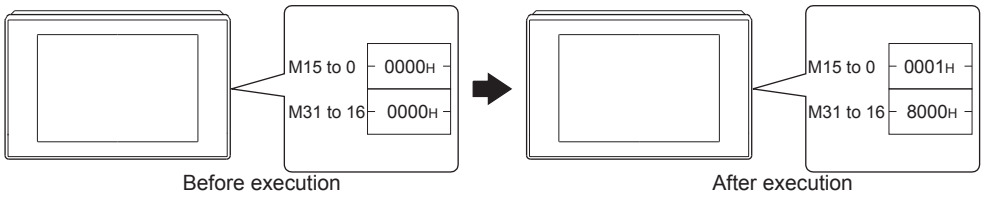
The following shows as example of writing "0064H" and "0065H" to virtual devices D100 and D101.



Item	Message format
Request message (host → GOT)	STX: 02H Command: W (57H) D (44H) Address: 0 (30H) 1 (31H) 0 (30H) 0 (30H) Number of points: 0 (30H) 2 (32H) Data 1(D100): 0 (30H) 0 (30H) 6 (36H) 4 (34H) Data 2 (D101): 0 (30H) 0 (30H) 6 (36H) 5 (35H) ETX: 03H Sum Check: 5 (35H) 6 (36H) Sum check is performed in this range.
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(b) When writing to a bit device

The following shows an example of writing "1"s to virtual devices M0 and M31.

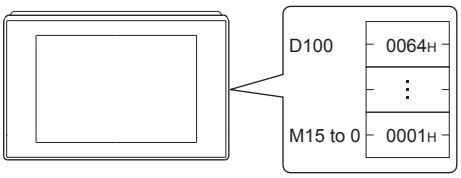


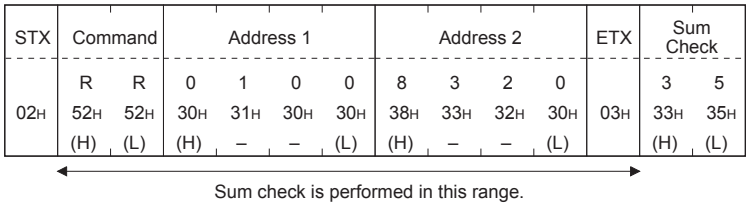
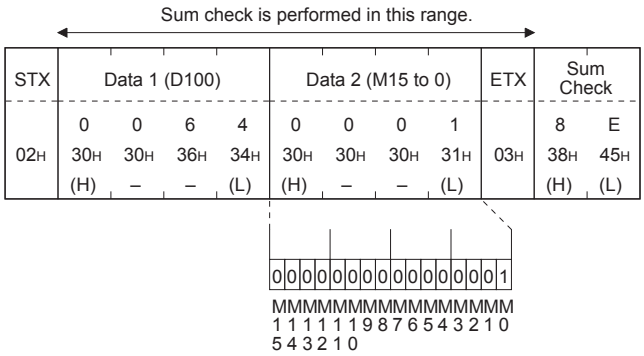
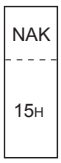
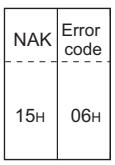
Item	Message format
Request message (host → GOT)	Sum check is performed in this range. STX: 02H Command: W 57H (H), D 44H (L) Address: 8 38H (H), 3 33H, 2 32H, 0 30H (L) Number of points: 0 30H (H), 2 32H (L) Data 1 (M15 to 0): 0 30H (H), 0 30H, 0 30H, 1 31H (L) Data 2 (M31 to 16): 8 38H (H), 0 30H, 0 30H, 0 30H (L) ETX: 03H Sum Check: 5 35H (H), 6 36H (L) 0000000000000001 1000000000000000 M15 M14 M13 M12 M11 M10 M9 M8 M7 M6 M5 M4 M3 M2 M1 M0 M31 M30 M29 M28 M27 M26 M25 M24 M23 M22 M21 M20 M19 M18 M17 M16
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(3) Random read in word units (RR) command

The following shows an example of reading the two points of the virtual devices D100 and M0 to M15.

(Assuming D100="0064H" and M0="1" are stored.)

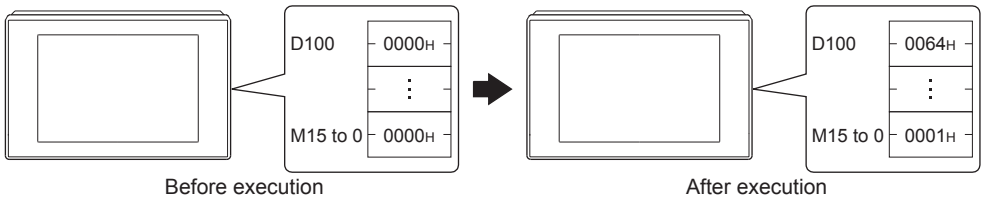


Item	Message format
Request message (host → GOT)	
Response message during normal communication (GOT → host)	
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1))  (format 2: GOT-A900 series microcomputer connection (format 2)) 

The above is a case where the sum check error (06H) has occurred.

(4) Random write in word units (RW) command

The following shows an example of writing "0064H" and "1" to virtual devices D100 and M0, respectively.

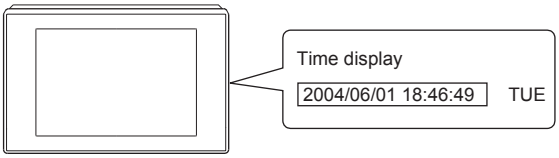


Item	Message format
Request message (host → GOT)	STX: 02H Command: R 52H (H), W 57H (L) Following*1 ETX: 03H Sum Check: C 43H (H), 5 35H (L) Sum check is performed in this range. *1 Address 1: 0 30H (H), 1 31H, 0 30H, 0 30H (L) Data 1 (D100): 0 30H (H), 0 30H, 6 36H, 4 34H (L) Address 2: 8 38H (H), 3 33H, 2 32H, 0 30H (L) Data 2 (M15 to 0): 0 30H (H), 0 30H, 0 30H, 1 31H (L) 0000000000000001 MMMMMMMMMMMMMMMM 1111119876543210 5432 10
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(5) Read clock data (TR) command

The following shows an example of reading the clock data of GOT.

(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)

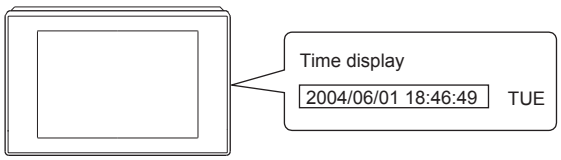


Item	Message format
Request message (host → GOT)	STX: 02H; Command: T 54H (H), R 52H (L); ETX: 03H; Sum Check: A 41H (H), 9 39H (L) Sum check is performed in this range.
Response message during normal communication (GOT → host)	STX: 02H; Year data: 0 30H (H), 4 34H (L); Month data: 0 30H (H), 6 36H (L); Day data: 0 30H (H), 1 31H (L); Hour data: 1 31H (H), 8 38H (L); Minute data: 4 34H (H), 6 36H (L); Second data: 4 34H (H), 9 39H (L); Day-of-week data: 0 30H (H), 2 32H (L); ETX: 03H; Sum Check: D 44H (H), 0 30H (L) Sum check is performed in this range.
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H; Error code: 06H The above is a case where the sum check error (06H) has occurred.

(6) Set clock data (TS) command

The following shows an example of setting the clock data of GOT.

(Assuming the clock data of GOT is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
<table>
<tr><td>STX</td><td colspan="2">Command</td><td colspan="2">Year data</td><td colspan="2">Month data</td><td colspan="2">Day data</td><td colspan="2">Hour data</td><td colspan="2">Minute data</td><td colspan="2">Second data</td><td colspan="2">Day-of-week data</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>T</td><td>S</td><td>0</td><td>4</td><td>0</td><td>6</td><td>0</td><td>1</td><td>1</td><td>8</td><td>4</td><td>6</td><td>4</td><td>9</td><td>0</td><td>2</td><td></td><td>7</td><td>7</td></tr>
<tr><td>02H</td><td>54H
(H)</td><td>53H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>30H
(H)</td><td>36H
(L)</td><td>30H
(H)</td><td>31H
(L)</td><td>31H
(H)</td><td>38H
(L)</td><td>34H
(H)</td><td>36H
(L)</td><td>34H
(H)</td><td>39H
(L)</td><td>30H
(H)</td><td>32H
(L)</td><td>03H</td><td>37H
(H)</td><td>37H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><td>ACK</td></tr>
<tr><td>06H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
(format 1: GOT-A900 series microcomputer connection (format 1))
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
(format 2: GOT-A900 series microcomputer connection (format 2))
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

Point

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

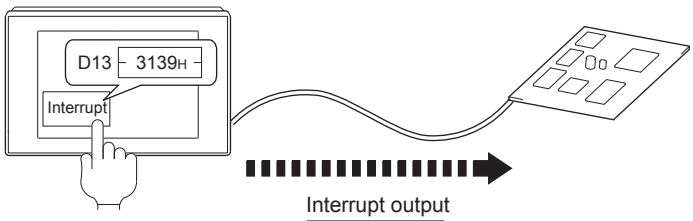
Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).

(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2



Interrupt output

Output value 1	Output value 2
31H	39H

Item	Message format
Interrupt output (GOT → host)	(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))

Output value 1
39H

(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))

STX	Output value 1	ETX	Sum check	
			3	C
02H	39H	03H	33H	43H
			(H)	(L)

Sum check is performed in this range.

(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 bytes"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))

Output value 1	Output value 2
31H	39H

(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))

STX	Output value 1	Output value 2	ETX	Sum check	
				6	D
02H	31H	39H	03H	36H	44H
				(H)	(L)

Sum check is performed in this range.

(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 bytes"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))

Output value1	Output value2	Output value3	Output value4
AAH	55H	31H	39H

(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))

STX	Output value1	Output value2	Output value3	Output value4	ETX	Sum Check	
						6	C
02H	AAH	55H	31H	39H	03H	36H	43H
						(H)	(L)

Sum check is performed in this range.

Point

Interrupt output

- To set so that interrupts are not issued, set SM52 (interrupt code output inhibit flag) ON. (☞ Section 28.4.6 SM devices)
- To issue interrupts, set the data length to "8 bits" at "Communication Detail Settings". (☞ Section 28.6.3 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FF$_H$ → 7F$_H$)

4 Error code list

In the case of format 2 (GOT-A900 series microcomputer connection (format 2)), the error contents (error code) are appended to the response message during faulty communication.
The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
06$_H$	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
10$_H$	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the command in the message. (☞ Section 28.5.2 List of commands)
11$_H$	Message length error The message exceeds the upper limit of the data length that GOT can received.	• Review the contents of the message to transmit. • Check the data length of the message. (Data length of the data section, etc.)
12$_H$	Communication message error EXT was not found within the upper limit of the receive buffer.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
15$_H$	Clock data setting error The setting value of clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
7A$_H$	Address error The start address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check the devices and the device range that can be used. (☞ Section 28.4 Device Data Area)
7B$_H$	Exceeded number of points error The read/write range exceeded the device range.	

5 Precautions

(1) Batch reading/writing crossing over different devices
When using the batch read (RD) or batch write (WD) command, do not batch read/write crossing over the different devices.
This will cause an error response.

(2) Storage order for 32-bit data
To use the program of GOT-A900 series with [32bit Order] setting to GOT1000 series, set [HL Order] to [32bit Order] for [Communication Detail Settings] when 32-bit data is set for GOT-A900 series.
With setting [LH Order], the order of upper bits and lower bits are reversed when the GOT displays and writes 32-bit data.

28.5.4 Formats 3 to 6 (A compatible 1C frame)

1 Basic format of data communication

This is the same message format as when communication is performed using the dedicated protocol (A compatible 1C frame) of the A Series computer link module.
For details of the basic format of data communication, refer to the following manual:

☞ Q Corresponding MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the dedicated protocol of the A Series computer link modules, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read in word units (QR) command in format 4 (A compatible 1C frame (format 2))

Character A section

ENQ	Block No.		Station No.		PLC No.		Command		Wait	Address							Number of points		Sum Check	
	0	0	0	0	0	0	Q	R	0	D	0	0	0	1	0	0	0	2	B	A
05H	30H	30H	30H	30H	30H	30H	51H	52H	30H	44H	30H	30H	30H	31H	30H	30H	30H	32H	42H	41H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	–	–	–	–	–	(L)	(H)	(L)	(H)	(L)

Sum check is performed in this range.

2 Details of data items in message format

Point Data code during communication

Communication is performed in ASCII code.

(1) Block No, PLC No.
The block No. and PLC No. are ignored in a microcomputer connection of the GOT.
Specify "00".
"00" is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(2) Station No.
Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 31)
The data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes the command whose station No. matches to "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ Section 28.6.3 Setting communication interface (Communication settings)

(3) Command

Specifies the contents of the GOT to which the host accesses.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ Section 28.5.2 List of commands

(4) Address

Specifies the head No. of the device data to be read/written.
The data annotated in decimal is converted to a 5- or 7-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 28.4 Device Data Area

(5) Number of points

Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
The data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(6) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (1)Read clock data (TR) command

☞ 3 (2)Set clock data (TS) command

(7) Error Code

This is the response message at faulty communication appended with error contents.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes generated in formats 3 to 6 (A compatible 1C frame), refer to the following:

☞ 4 Error code list

Point

When connecting a microcomputer, etc. that uses the dedicated protocol of the A series computer link module with the GOT

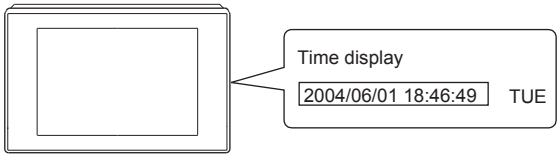
When connecting a microcomputer, etc. that uses the dedicated protocol of the A series computer link module with the GOT, correct the commands to use and the device range according to the specifications of GOT.

3 Message Format

The following shows the message format of the dedicated commands for the GOT microcomputer connection.

(1) Read clock data (TR) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Item	Message format
Request message (host → GOT)	Example: Format 3 (A compatible 1C frame (format 1))
Response message during normal communication (GOT → host)	Example: Format 3 (A compatible 1C frame (format 1))
Response message during faulty communication (GOT → host)	Example: Format 3 (A compatible 1C frame (format 1))

Request message (host → GOT)

ENQ	Station No.		PLC No.		Command		Wait	Sum Check	
	0	0	0	0	T	R	0	9	6
05H	30H	30H	30H	30H	54H	52H	30H	39H	36H
	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Response message during normal communication (GOT → host)

Character B section

STX	Station No.		PLC No.			ETX	Sum Check	
	0	0	0	0			9	0
02H	30H	30H	30H	30H	Following*1	03H	39H	30H
	(H)	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

	Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
	0	4	0	6	0	1	1	8	4	6	4	9	0	2
	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Response message during faulty communication (GOT → host)

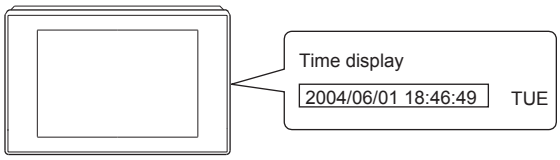
NAK	Station No.		PLC No.		Error code	
	0	0	0	0	0	5
15H	30H	30H	30H	30H	30H	35H
	(H)	(L)	(H)	(L)	(H)	(L)

The above is the case where an overrun error (05H) has occurred.

(2) Set clock data (TS) command

The following shows an example of setting the clock data of GOT.

(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format

Request message (host → GOT)

Example: Format 3 (A compatible 1C frame (format 1))

Character C section

ENQ	Station No.		PLC No.		Command		Wait	Following*1	Sum Check	
	0	0	0	0	T	S	0		6	4
05H	30H	30H	30H	30H	54H	53H	30H		36H	34H
	(H)	(L)	(H)	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Response message during normal communication (GOT → host)

Example: Format 3 (A compatible 1C frame (format 1))

ACK	Station No.		PLC No.	
	0	0	0	0
06H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)

Response message during faulty communication (GOT → host)

Example: Format 3 (A compatible 1C frame (format 1))

NAK	Station No.		PLC No.		Error code	
	0	0	0	0	0	5
15H	30H	30H	30H	30H	30H	35H
	(H)	(L)	(H)	(L)	(H)	(L)

The above is the case where an overrun error (05H) has occurred.

Point

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

4 Error code list

The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
01H	Parity error The parity bit does not match.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
02H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
03H	Protocol error Received a message that does not follow the control procedure of the format set at "Communication Detail Settings".	• Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
05H	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
06H	Character section error The character section specification error. • The method of specifying the character section is wrong. • The specified command has error. • The number of points of the processing requests exceeds the allowable range. • A non-existent device is specified. • The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check the commands in the message. (☞ Section 28.5.2 List of commands) • Check the devices that can be used and the device ranges. (☞ Section 28.4 Device Data Area) • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
07H	Character error A character other than "A to Z", "0 to 9", space, and control codes has been received.	• Review the contents of the message to transmit.

28.5.5 Formats 7 to 10 (QnA compatible 3C/4C frame)

1 Basic format of data communication

This is the same message format as when communication is performed using the MC protocol (QnA compatible 3C/4C frame) of the Q/QnA Series serial communication module.
For details of the basic format of data communication, refer to the following manual:

☞ Q Corresponding MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the MC protocol of the Q/QnA Series serial communication module, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read in word units (0401) command in format 8 (QnA compatible 4C frame (format 2))

ENQ	Block No.		Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1	Sum check	
	0	0	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0		B	A
05H	30H	30H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		42H	41H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Character A section

*1

Command				Sub-command				Device code		Start Device						Number of device points			
0	4	0	1	0	0	0	0	D	*	0	0	0	1	0	0	0	0	0	2
30H	34H	30H	31H	30H	30H	30H	30H	44H	2AH	30H	30H	30H	31H	30H	30H	30H	30H	30H	32H
(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	–	–	(L)	(H)	–	–	(L)

Point

QnA compatible 4C frame (format 5)

GOT cannot use the QnA compatible 4C frame (format 5).

2 Data item contents of message format

Point Data code during communication

Communication is performed in ASCII code.

(1) Block No., network No., PLC No., request destination module I/O No. and station No.
Ignored in a microcomputer connection of the GOT.
Specify "00". (The request destination module I/O No. is "0000".)
"00" is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
(The request destination module I/O No. is 4-digit.)

(2) Station No.
Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 1F$_H$)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes the command whose station No. matches to "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ Section 28.6.3 Setting communication interface (Communication settings)

(3) Command, sub-command
Specifies the contents to access from the host to GOT.
The command and sub-command are converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ Section 28.5.2 List of commands

(4) Device code
Specifies the code by which the device data to be read/written is recognized.
The device code is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 28.4 Device Data Area

(5) Head device
Specifies the head No. of the device data to be read/written.
Data notated in decimal is converted to a 6-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 28.4 Device Data Area

(6) Number of devices
Specifies the number of device data to be read/written. (Setting range: 1 to 40$_H$)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
When specifying multiple devices as follows, limit the total number of devices to within 64 points.

(a) When using random read/write command
When setting multiple bit accesses, word accesses or double word accesses, limit the total number of access points to within 64 points

(b) When using multiple block batch read/write commands
When setting multiple blocks, limit the total number of points of all blocks to within 64 points.

(7) Year, month, day, hour, minute, second and day of the week data
Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (1)Read clock data (1901) command

☞ 3 (2)Set clock data (0901) command

(8) Error Code
This is the response message at faulty communication appended with error contents.
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes that are generated in formats 7 to 10 (QnA compatible 3C/4C frame), refer to the following:

☞ 4 Error code list

Point

When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT

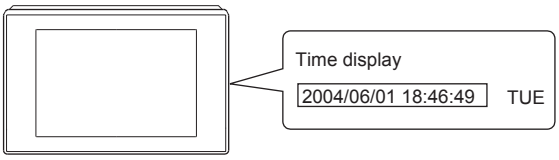
When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT, correct the commands to be used and the device ranges to match the GOT specifications.

3 Message Format

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Read clock data (1901) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Request message (host → GOT)

Example: Format 7 (QnA compatible 4C frame (format 1))

ENQ	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0		A	9
05H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		41H	39H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

*1 Character A section

Host Address No.		Command				Sub-command			
0	0	1	9	0	1	0	0	0	0
30H	30H	31H	39H	30H	31H	30H	30H	30H	30H
(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)

Response message during normal communication (GOT → host)

Example: Format 7 (QnA compatible 4C frame (format 1))

STX	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1	ETX	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0			E	E
02H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		03H	43H	43H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1 Character B section

Host Address No.		Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	0	0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	30H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

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Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

NAK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1
15H	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

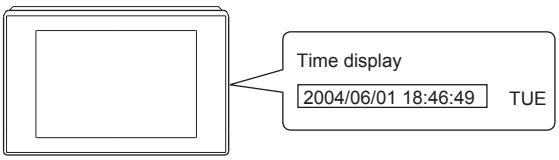
Error code			
7	F	6	9
37H	46H	36H	39H
(H)	–	–	(L)

The above is the case where a parity error (7F69H) has occurred.

(2) Set clock data (0901) command

The following shows an example of setting the clock data of GOT.

(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format
Request message (host → GOT)	Example: Format 7 (QnA compatible 4C frame (format 1))
Response message during normal communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

Request message (host → GOT)

ENQ	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7	5
05H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		37H	35H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

*1

Character C section

Command				Sub-command				
0	9	0	1	0	0	0	0	→ 1)
30H	39H	30H	31H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	–	–	(L)	

Character C section

1) →

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Response message during normal communication (GOT → host)

ACK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)

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Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

NAK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following*1
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Error code			
7	F	6	9
37H	46H	36H	39H
(H)	–	–	(L)

The above is the case where a parity error (7F69H) has occurred.

Point

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

4 Error code list

The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
7E40H	Command error An unsupported command or sub-command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (☞ Section 28.5.2 List of commands)
7E41H	Data length error Specified points exceeding the number of points that can be communicated during random read/write.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (☞ Section 28.4 Device Data Area)
7E42H	Number of data error The number of requests exceeds the command range.	
7E43H	Device error A non-existent device has been specified.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (☞ Section 28.4 Device Data Area)
7E46H	Clock data setting error The setting value of clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
7E4FH	Exceeded number of points error The read/write range exceeded the device range.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (☞ Section 28.4 Device Data Area)
7F20H	Character error A character other than "A to Z", "0 to 9", space, and control codes has been received.	• Review the contents of the message to transmit.
7F23H	Communication message error EXT/CR+LF was not found within the upper limit of the receive buffer.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
7F24H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit
7F67H	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
7F68H	Framing error The data bit and stop bit do not match.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
7F69H	Parity error The parity bit does not match.	
7F6AH	Buffer full error The receive buffer overflowed.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.

28.5.6 Formats 11 to 13 (Digital Electronics Corporation's memory link method)

1 Basic format of data communication

This is the same format as the protocol of the Digital Electronics Corporation's memory link method.
For details of the basic format of data communication, refer to the following manual:

☞ The connection manual of the device manufactured by Digital Electronics Corporation

This section describes items whose settings differ from the protocols of the Digital Electronics Corporation's memory link method and dedicated commands for a microcomputer connection of GOT.

Example: Request message for the batch read in word units (R) command in format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

ENQ	Station No.		ESC	Com-mand	Address				Number of points				Sum Check		CR	LF
	0	0		R	0	0	6	4	0	0	0	2	5	E		
05H	30H	30H	1BH	52H	30H	30H	36H	34H	30H	30H	30H	32H	35H	45H	0DH	0AH
	(H)	(L)			(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)		

Sum check is performed in this range.

2 Details of data items in message format

Point Data code during communication

Communication is performed in ASCII code.

(1) Command

Specifies the items to access from the host to GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

☞ Section 28.5.2 List of commands

(2) Station No.

Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 1FH)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The messages of commands whose station No. do not match are ignored.)
For details of setting "Communication Detail Settings", refer to the following.

☞ Section 28.6.3 Setting communication interface (Communication settings)

(3) Address

Specifies the head No. of the device data to be read/written.
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 28.4 Device Data Area

(4) Number of points

Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(5) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (1)Read clock data (N) command

☞ 3 (2)Set clock data (M) command

(6) Error Code

This is the response message at faulty communication appended with error contents.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes generated in formats 12 and 13 (Digital Electronics Corporation's memory link method (extended mode)), refer to the following:

☞ 4 Error code list

Point

When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT

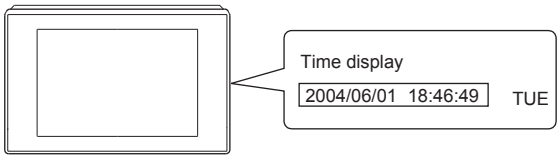
When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT, correct the commands to be used and the device ranges to match the specifications of the GOT.

3 Message Format

The following shows the message format of the dedicated command of the GOT for a microcomputer connection.

(1) Read clock data (N) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)

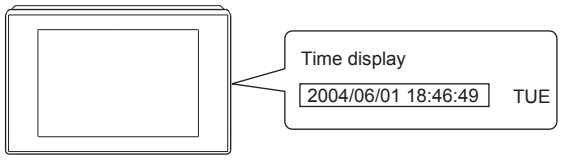


<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
<table>
<tr><td>ENQ</td><td>Station No.</td><td></td><td>ESC</td><td>Com-mand</td><td>Sum Check</td><td></td><td>CR</td><td>LF</td></tr>
<tr><td></td><td>0</td><td>0</td><td></td><td>N</td><td>C</td><td>E</td><td></td><td></td></tr>
<tr><td>05H</td><td>30H</td><td>30H</td><td>1BH</td><td>4EH</td><td>43H</td><td>45H</td><td>0DH</td><td>0AH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td></td><td></td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
This range Sum check</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
<table>
<tr><td>STX</td><td>Station No.</td><td></td><td>ESC</td><td>Com-mand</td><td></td><td>ETX</td><td>Sum Check</td><td></td><td>CR</td><td>LF</td></tr>
<tr><td></td><td>0</td><td>0</td><td></td><td>A</td><td rowspan="3">Following*1</td><td></td><td>8</td><td>E</td><td></td><td></td></tr>
<tr><td>02H</td><td>30H</td><td>30H</td><td>1BH</td><td>41H</td><td>03H</td><td>38H</td><td>45H</td><td>0DH</td><td>0AH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td></td><td></td><td></td><td></td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
This range Sum check
*1
<table>
<tr><td></td><td>Year data</td><td></td><td>Month data</td><td></td><td>Day data</td><td></td><td>Hour data</td><td></td><td>Minute data</td><td></td><td>Second data</td><td></td><td>Day-of-week data</td><td></td></tr>
<tr><td></td><td>0</td><td>4</td><td>0</td><td>6</td><td>0</td><td>1</td><td>1</td><td>8</td><td>4</td><td>6</td><td>4</td><td>9</td><td>0</td><td>2</td></tr>
<tr><td></td><td>30H</td><td>34H</td><td>30H</td><td>36H</td><td>30H</td><td>31H</td><td>31H</td><td>38H</td><td>34H</td><td>36H</td><td>34H</td><td>39H</td><td>30H</td><td>32H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td></tr>
</table></td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
<table>
<tr><td>NAK</td><td>Station No.</td><td></td><td>Error code</td><td></td><td>CR</td><td>LF</td></tr>
<tr><td></td><td>0</td><td>0</td><td>0</td><td>6</td><td></td><td></td></tr>
<tr><td>15H</td><td>30H</td><td>30H</td><td>30H</td><td>36H</td><td>0DH</td><td>0AH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.</td></tr>
</table>

(2) Set clock data (M) command

The following shows an example of setting the clock data of GOT.

(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format
Request message (host → GOT)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
Response message during normal communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
Response message during faulty communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

Request message (host → GOT)

ENQ	Station No.		ESC	Com-mand	Following*1	Sum Check		CR	LF
	0	0		M		9	A		
05H	30H (H)	30H (L)	1BH	4DH		39H (H)	41H (L)	0DH	0AH

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H (H)	34H (L)	30H (H)	36H (L)	30H (H)	31H (L)	31H (H)	38H (L)	34H (H)	36H (L)	34H (H)	39H (L)	30H (H)	32H (L)

Response message during normal communication (GOT → host)

ACK	Station No.		CR	LF
	0	0		
06H	30H (H)	30H (L)	0DH	0AH

Response message during faulty communication (GOT → host)

NAK	Station No.		Error code		CR	LF
	0	0	0	6		
15H	30H (H)	30H (L)	30H (H)	36H (L)	0DH	0AH

The above is a case where the sum check error (06H) has occurred.

Point

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

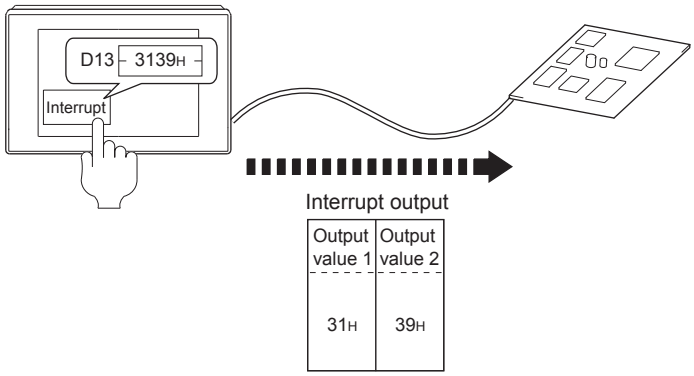
Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(3) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).

(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2 in format 11



Item	Message format
Interrupt output (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)) (1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"

STX	Station No.		ESC	Com-mand	Output value 1		ETX	Sum Check		CR	LF
	0	0		I	3	9		9	4		
02H	30H	30H	1BH	49H	33H	39H	03H	39H	44H	0DH	0AH
	(H)	(L)			(H)	(L)		(H)	(L)		

This range Sum check is performed.

(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 bytes"

STX	Station No.		ESC	Com-mand	Output value 1		Output value 2		ETX	Sum Check		CR	LF
	0	0		I	3	1	3	9		F	9		
02H	30H	30H	1BH	49H	33H	31H	33H	39H	03H	46H	39H	0DH	0AH
	(H)	(L)			(H)	(L)	(H)	(L)		(H)	(L)		

Sum check is performed in this range.

(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 bytes"

STX	Station No.		ESC	Com-mand	Output value 1		Output value 2		Output value 3		Output value 4		ETX	Sum Check		CR	LF
	0	0		I	A	A	5	5	3	1	3	9		E	7		
02H	30H	30H	1BH	49H	41H	41H	35H	35H	33H	31H	33H	39H	03H	45H	37H	0DH	0AH
	(H)	(L)			(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)		

Sum check is performed in this range.

Point

Interrupt output

- To set so that interrupts are not issued, set SM52 (interrupt code output inhibit flag) ON. (☞ Section 28.4.6 SM devices)
- To issue interrupts in format 11, set the data length to "8 bits" at "Communication Detail Settings". (☞ Section 28.6.3 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH → 7FH)

4 Error code list

In the case of formats 12 and 13 (Digital Electronics Corporation's memory link method (extended mode)), the details (error code) of the error are appended to the response message during faulty communication.

The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
06H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
10H	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the command in the message. (☞ Section 28.5.2 List of commands)
12H	Message length error The upper limit of the data length that can be received by the GOT has been exceeded.	• Review the contents of the message to transmit. • Check the data length of the message. (data length of the data section, etc.)
16H	Clock data setting error The setting value of clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
FAH	Address error The head address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check the devices that can be used and device ranges. (☞ Section 28.4 Device Data Area)
FBH	Exceeded number of points error The read/write range exceeded the device range.	
FCH	Message format error The format of the received message has error.	• Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
FFH	Timeout error There is no response from the GOT, or the slave of the specified address does not exist.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.

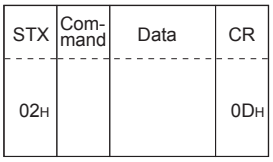
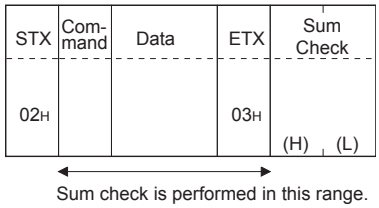
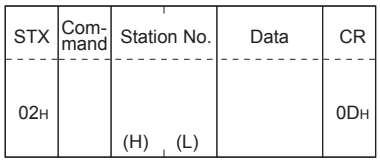
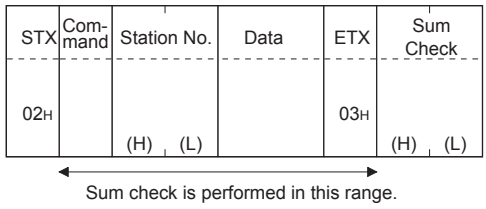
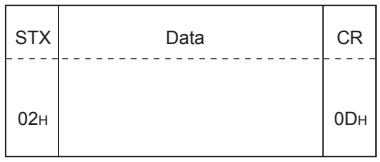
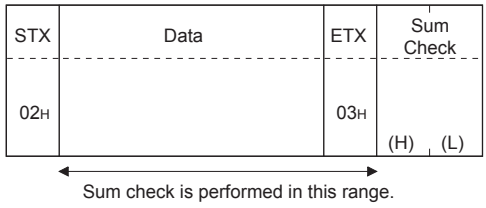
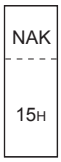
5 Precautions

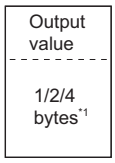
(1) Batch reading/writing crossing over different devices
When using the batch read (R) or batch write (W) command, do not batch read/write crossing over the different devices.
This will cause an error response.

(2) Storage order for 32-bit data
To use the program of Digital Electronics Corporation's memory link method with [32bit Order] setting to GOT1000 series, set [HL Order] to [32bit Order] for [Communication Detail Settings] when 32-bit data is set for GOT-A900 series.
With setting [LH Order], the order of upper bits and lower bits are reversed when the GOT displays and writes 32-bit data.

28.5.7 Formats 14, 15 (GOT-F900 series microcomputer connection)

1 Basic format of data communication

Item	Message format	
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))	(format 15: GOT-F900 series microcomputer connection (format 2))
	(1) w/out station No.	(1) w/out station No.
		
	(2) w/ station No.	(2) w/station No.
		
Response message during normal communication (GOT → host)	(1) During processing of read commands (format 14: GOT-F900 series microcomputer connection (format 1))	(format 15: GOT-F900 series microcomputer connection (format 2))
		
	(2) During processing of write commands	
		
Response message during faulty communication (GOT → host)		

Item	Message format
During interrupt output	

*1 Set the number of interrupt data bytes at "Communication Details Settings" on GT Designer2.
For details of setting the number of interrupt data bytes, refer to the following.
☞ Section 28.6.3 Setting communication interface (Communication settings)

2 Details of data items in message format

Point Data code during communication

Communication is performed in ASCII code. (excluding interrupt output)

(1) Control codes

Symbol	ASCII code	Description
STX	02H	Start of Text (start marker of message frame)
ETX	03H	End of Text (end marker of message frame)
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command

Specifies the contents to access from the host to the GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

☞ Section 28.5.2 List of commands

(3) Station No.

Station No. is used to identify the GOT that the host is to communicate with. (Setting range: 0 to 31)
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The messages of commands whose station No. do not match are ignored.)
For details of setting "Communication Detail Settings", refer to the following.

☞ Section 28.6.3 Setting communication interface (Communication settings)

(4) Address

Specifies the head No. of the device data to be read/written.
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device ranges that can be accessed, refer to the following.

☞ Section 28.4 Device Data Area

(5) Bit pattern

Specifies the pattern of the bits to change.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(6) Write specification

Specifies how to change the data of the specified address by bit pattern.
(Setting range: 0 to 3)

Data notated in decimal is converted to a 1-digit ASCII code (Hex) and transmitted.

☞ 3 (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(7) Number of bytes
Specifies the number of bytes of the device data to be batch read/written. (Setting range: 0 to FF_H)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(8) Number of points
Specifies the number of device data to be written to multiple points in bit units. (Setting range: 0 to 70)
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit

(9) Year, month, day, hour, minute, second and day of the week data
Specifies year, month, day, hour, minute, second and day of the week to be read/set to the clock data of the GOT.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

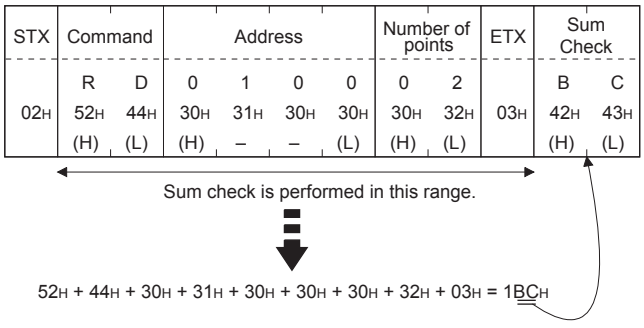
☞ 3 (5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)

☞ 3 (6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/ station No.)

(10) Data
Specifies the data to read from/write to the specified device data. (word unit)
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(11) Write data
Specifies the data to write to the specified device data.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(12) Sum check code (for format 15: GOT-F900 series microcomputer connection (format 2) only)
The sum check code is obtained by converting the lower 1 byte (8 bits) of the result (sum), after having added the sum check target data as binary data, to 2-digit ASCII code (Hex).



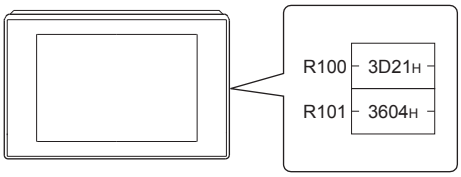
3 Message format

(1) Batch read (0) command (w/out station No.), batch read (A) command (w/station No.)

(a) When reading word device

The following shows an example of reading four bytes of virtual devices R100 to R101 from the GOT at station No.15.

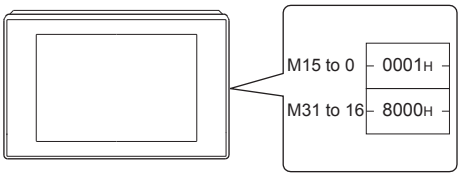
(Assuming that R100="3D21H" and R101="3604H" are stored.)

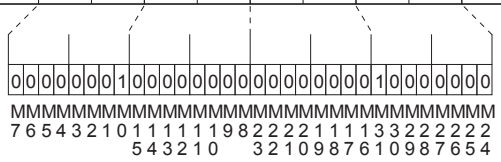


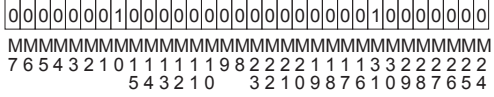
<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>CR</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td></tr>
<tr><td>02H</td><td>41H</td><td>31H
(H)</td><td>35H
(L)</td><td>30H
(H)</td><td>30H
–</td><td>43H
–</td><td>38H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td><td>E</td><td>9</td></tr>
<tr><td>02H</td><td>41H</td><td>31H
(H)</td><td>35H
(L)</td><td>30H
(H)</td><td>30H
–</td><td>43H
–</td><td>38H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>03H</td><td>45H
(H)</td><td>39H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td colspan="2">Data 1
(R100 upper)</td><td colspan="2">Data 2
(R100 lower)</td><td colspan="2">Data 3
(R101 upper)</td><td colspan="2">Data 4
(R101 lower)</td><td>CR</td></tr>
<tr><td></td><td>3</td><td>D</td><td>2</td><td>1</td><td>3</td><td>6</td><td>0</td><td>4</td><td></td></tr>
<tr><td>02H</td><td>33H
(H)</td><td>44H
(L)</td><td>32H
(H)</td><td>31H
(L)</td><td>33H
(H)</td><td>36H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td colspan="2">Data 1
(R100 upper)</td><td colspan="2">Data 2
(R100 lower)</td><td colspan="2">Data 3
(R101 upper)</td><td colspan="2">Data 4
(R101 lower)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>3</td><td>D</td><td>2</td><td>1</td><td>3</td><td>6</td><td>0</td><td>4</td><td></td><td>A</td><td>A</td></tr>
<tr><td>02H</td><td>33H
(H)</td><td>44H
(L)</td><td>32H
(H)</td><td>31H
(L)</td><td>33H
(H)</td><td>36H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>03H</td><td>41H
(H)</td><td>41H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(b) When reading bit device

The following shows an example of reading four bytes of the virtual devices M0 to M31.
(Assuming that M0="1" and M31="1" are stored.)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>CR</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>2</td><td>0</td><td>0</td><td>0</td><td>0</td><td>4</td><td></td></tr>
<tr><td>02H</td><td>41H</td><td>31H
(H)</td><td>35H
(L)</td><td>32H
(H)</td><td>30H
–</td><td>30H
–</td><td>30H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>2</td><td>0</td><td>0</td><td>0</td><td>0</td><td>4</td><td></td><td>D</td><td>0</td></tr>
<tr><td>02H</td><td>41H</td><td>31H
(H)</td><td>35H
(L)</td><td>32H
(H)</td><td>30H
–</td><td>30H
–</td><td>30H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>03H</td><td>44H
(H)</td><td>30H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td colspan="2">Data 1 (M7 to 0)</td><td colspan="2">Data 2 (M15 to 8)</td><td colspan="2">Data 3 (M23 to 16)</td><td colspan="2">Data 4 (M31 to 24)</td><td>CR</td></tr>
<tr><td></td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>8</td><td>0</td><td></td></tr>
<tr><td>02H</td><td>30H
(H)</td><td>31H
(L)</td><td>30H
(H)</td><td>30H
(L)</td><td>30H
(H)</td><td>30H
(L)</td><td>38H
(H)</td><td>30H
(L)</td><td>0DH</td></tr>
</table>


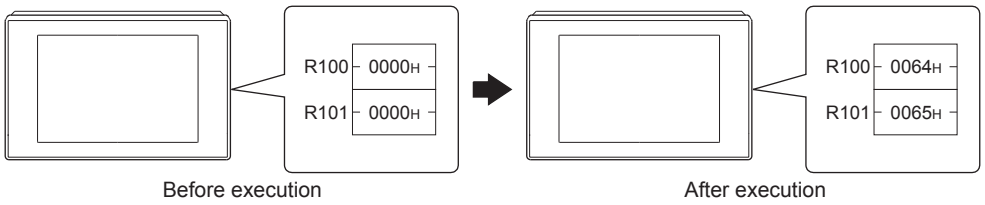
(format 15: GOT-F900 series microcomputer connection (format 2))
Sum check is performed in this range.
<table>
<tr><td>STX</td><td colspan="2">Data 1 (M7 to 0)</td><td colspan="2">Data 2 (M15 to 8)</td><td colspan="2">Data 3 (M23 to 16)</td><td colspan="2">Data 4 (M31 to 24)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>8</td><td>0</td><td></td><td>8</td><td>C</td></tr>
<tr><td>02H</td><td>30H
(H)</td><td>31H
(L)</td><td>30H
(H)</td><td>30H
(L)</td><td>30H
(H)</td><td>30H
(L)</td><td>38H
(H)</td><td>30H
(L)</td><td>03H</td><td>38H
(H)</td><td>43H
(L)</td></tr>
</table>


</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(2) Batch write (1) command (w/out station No.), batch write (B) command (w/station No.)

(a) When writing to word device

The following shows an example of writing "0064H" and "0065H" to virtual devices R100 and R101 on the GOT at station No.15.



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Address				Number of bytes		Following*1	CR
	B	1	5	0	0	C	8	0	4		
02H	42H	31H	35H	30H	30H	43H	38H	30H	34H		0DH
		(H)	(L)	(H)	–	–	(L)	(H)	(L)		

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Address				Number of bytes		Following*1	ETX	Sum Check	
	B	1	5	0	0	C	8	0	4			9	1
02H	42H	31H	35H	30H	30H	43H	38H	30H	34H		03H	39H	31H
		(H)	(L)	(H)	–	–	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

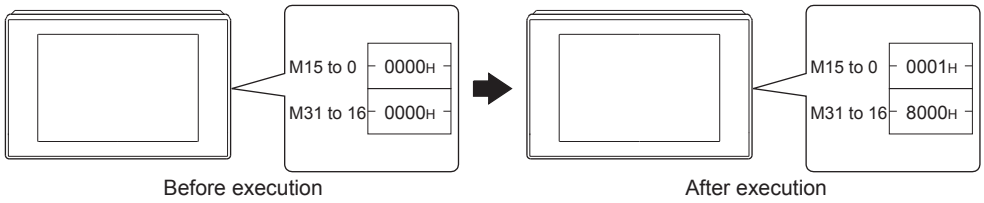
*1

Data 1 (R100 upper)		Data 2 (R100 lower)		Data 3 (R101 upper)		Data 4 (R101 lower)	
0	0	6	4	0	0	6	5
30H	30H	36H	34H	30H	30H	36H	35H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Item	Message format
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

(b) When writing to bit device

The following shows an example of writing "1"s to virtual devices M0 and M31 on the GOT at station No.15.



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Address				Number of bytes		Following*1	CR
	B	1	5	2	0	0	0	0	4		
02H	42H	31H (H)	35H (L)	32H (H)	30H –	30H –	30H (L)	30H (H)	34H (L)		0DH

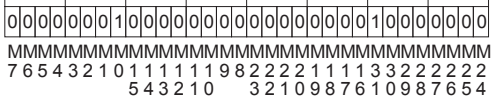
(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Address				Byte Number		Following*1	ETX	Sum Check	
	B	1	5	2	0	0	0	0	4			5	A
02H	42H	31H (H)	35H (L)	32H (H)	30H –	30H –	30H (L)	30H (H)	34H (L)		03H	35H (H)	41H (L)

Sum check is performed in this range.

*1

Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)	
0	1	0	0	0	0	8	0
30H (H)	31H (L)	30H (H)	30H (L)	30H (H)	30H (L)	38H (H)	30H (L)



Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

(3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)
The following shows an example of turning OFF the virtual device M31 and turning ON the virtual device M2038 on the GOT at station No.31.

Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Number of points		Following*1	CR
	D	3	1	0	2		
02H	44H	33H (H)	31H (L)	30H (H)	32H (L)		0DH

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Number of points		Following *1	ETX	Sum check	
	D	3	1	0	2			E	C
02H	44H	33H (H)	31H (L)	30H (H)	32H (L)		03H	45H (H)	43H (L)

Sum check is performed in this range.

*1

Write specification 1	Address1				Bit pattern1		Write specification 2	Address2				Bit pattern2	
1	2	0	0	3	8	0	0	2	0	F	E	4	0
31H	32H (H)	30H –	30H –	33H (L)	38H (H)	30H (L)	30H	32H (H)	30H –	46 –	45H (L)	34H (H)	30H (L)

*2 (write specification1=1)

	MM 33 10	MM 32 98	MM 32 76	MM 32 54
Source data bit pattern	10101010	10000000		
Result	00101010			

*2 (write specification2=0)

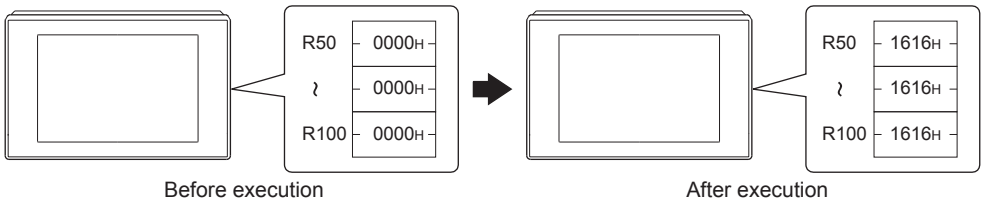
	MM 22 00 33	MM 22 00 33	MM 22 00 33	MM 22 00 33
Source data bit pattern	10101010	01000000		
Result	11101010			

Response message during normal communication (GOT → host)	ACK 06H
Response message during faulty communication (GOT → host)	NAK 15H

*2 The write specification specifies how the data of the specified address is changed in the bit pattern.

Write specification	Function	Description	Action example	
0	ON specification	Bits set to "1" by the bit pattern are turned ON.	Original data Bit pattern Result	1010 1100 1110
1	OFF specification	Bits set to "1" by the bit pattern are turned OFF.	Original data Bit pattern Result	1010 1100 0010
2	Invert specification	Bits set to "1" by the bit pattern are inverted.	Original data Bit pattern Result	1010 1100 0110
3	Write specification	The numerical values to write by the bit pattern are specified directly.	Original data Bit pattern Result	1010 1100 1100

(4) Fill command (4) (w/out station No.), fill command (E) (w/station No.)
The following shows an example of writing "16"s to virtual devices R50 to R100 on the GOT at station No.27.



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Start address				End address				Write Data		CR
	E	2	7	0	0	6	4	0	0	C	9	1	6	
02H	45H	32H (H)	37H (L)	30H (H)	30H –	36H –	34H (L)	30H (H)	30H –	43H –	39H (L)	31H (H)	36H (L)	0DH

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Start address				End address				Write Data		ETX	Sum Check	
	E	2	7	0	0	6	4	0	0	C	9	1	6		B	E
02H	45H	32H (H)	37H (L)	30H (H)	30H –	36H –	34H (L)	30H (H)	30H –	43H –	39H (L)	31H (H)	36H (L)	03H	42H (H)	45H (L)

Sum check is performed in this range.

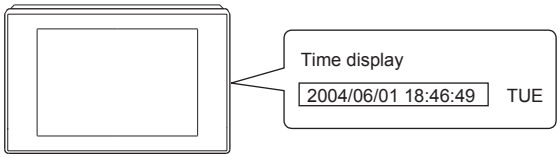
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

Point

(1) Start address/end address specification conditions
Specify addresses so that the start address is the same or less than the end address.
Error response occurs in the following cases:
- The address to specify has the start address greater than the end address.
- Either of the start address or end address exceeds the device range that can be specified.

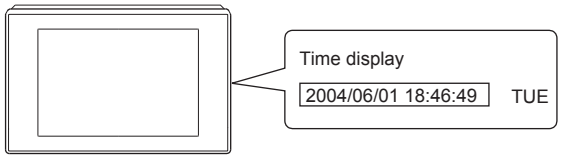
(2) Address specifying crossing over different devices
The start address and end address can be specified crossing over different devices.

(5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)
The following shows an example of reading the clock data of GOT at station No.27.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td>CR</td></tr>
<tr><td>02H</td><td>G
47H</td><td>2
32H
(H)</td><td>7
37H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td>02H</td><td>G
47H</td><td>2
32H
(H)</td><td>7
37H
(L)</td><td>03H</td><td>B
42H
(H)</td><td>3
33H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td colspan="2">Year data</td><td colspan="2">Month data</td><td colspan="2">Day data</td><td colspan="2">Hour data</td><td colspan="2">Minute data</td><td colspan="2">Second data</td><td colspan="2">Day-of-week data</td><td>CR</td></tr>
<tr><td>02H</td><td>0
30H
(H)</td><td>4
34H
(L)</td><td>0
30H
(H)</td><td>6
36H
(L)</td><td>0
30H
(H)</td><td>1
31H
(L)</td><td>1
31H
(H)</td><td>8
38H
(L)</td><td>4
34H
(H)</td><td>6
36H
(L)</td><td>4
34H
(H)</td><td>9
39H
(L)</td><td>0
30H
(H)</td><td>2
32H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td colspan="2">Year data</td><td colspan="2">Month data</td><td colspan="2">Day data</td><td colspan="2">Hour data</td><td colspan="2">Minute data</td><td colspan="2">Second data</td><td colspan="2">Day-of-week data</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td>02H</td><td>0
30H
(H)</td><td>4
34H
(L)</td><td>0
30H
(H)</td><td>6
36H
(L)</td><td>0
30H
(H)</td><td>1
31H
(L)</td><td>1
31H
(H)</td><td>8
38H
(L)</td><td>4
34H
(H)</td><td>6
36H
(L)</td><td>4
34H
(H)</td><td>9
39H
(L)</td><td>0
30H
(H)</td><td>2
32H
(L)</td><td>03H</td><td>D
44H
(H)</td><td>0
30H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/station No.)
The following shows an example of setting clock data of GOT at station No.27.
(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Year data		Month data		Day Data		Hour data		Minute data		Second data		Day-of-week data		CR
	F	2	7	0	4	0	6	0	1	1	8	4	6	4	9	0	2	
02H	46H	32H (H)	37H (L)	30H (H)	34H (L)	30H (H)	36H (L)	30H (H)	31H (L)	31H (H)	38H (L)	34H (H)	36H (L)	34H (H)	39H (L)	30H (H)	32H (L)	0DH

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Following*1	ETX	Sum Check	
	F	2	7			7	F
02H	46H	32H (H)	37H (L)		03H	37H (H)	46H (L)

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H (H)	34H (L)	30H (H)	36H (L)	30H (H)	31H (L)	31H (H)	38H (L)	34H (H)	36H (L)	34H (H)	39H (L)	30H (H)	32H (L)

Item	Message format
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

Point

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

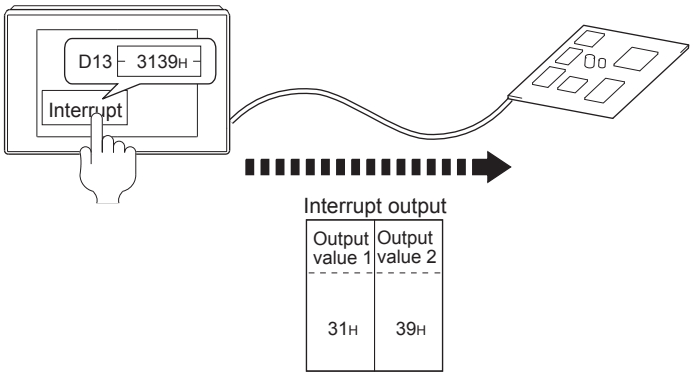
Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data has been written to interrupt output devices D13 and D14.

(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2



Item	Message format
Interrupt output (GOT → host)	(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte" Output value 1: 39H (2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 bytes" Output value 1: 31H, Output value 2: 39H (3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 bytes" Output value 1: AAH, Output value 2: 55H, Output value 3: 31H, Output value 4: 39H

Point

Interrupt output

- To set so that interrupts are not issued, set SM52 (interrupt code output inhibit flag) ON. (☞ Section 28.4.6 SM devices)
- To issue interrupts, set the data length to "8 bits" at "Communication Detail Settings". (☞ Section 28.6.3 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH → 7FH)

4 Error code list

When faulty, the error code is stored in SD2.
For details of error code stored in SD2, the error contents, cause and measures, refer to the following:

☞ Section 28.4.5 2 Details and actions for errors (error codes) stored into SD2

When an error other than those to be stored in SD2 occurs, at faulty, only the NAK response is executed.

5 Precautions

(1) Batch reading/writing crossing over different devices
When using the batch read (0, A) or batch write (1, B) command, do not batch read/write crossing over different devices.
This will cause an error response.

28.6 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 28.6.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 28.6.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 28.6.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 28.6.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 28.6.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 28.6.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

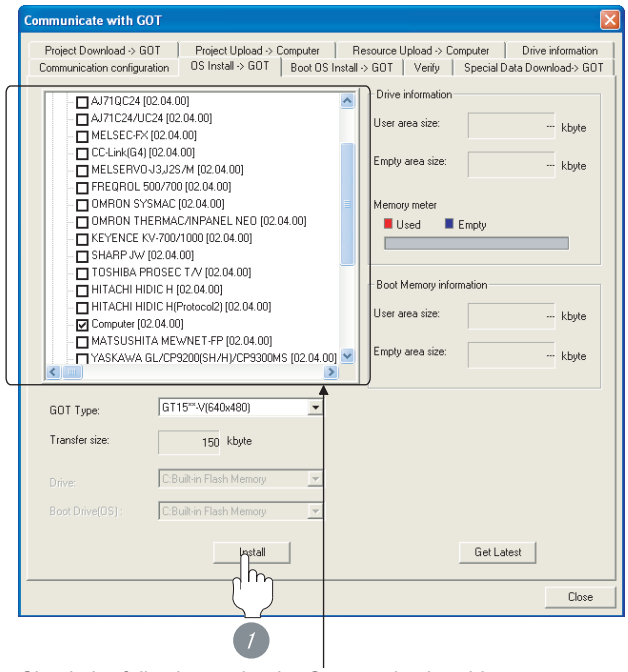
☞ Section 28.6.7
Checking for normal monitoring

28.6.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• Computer

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

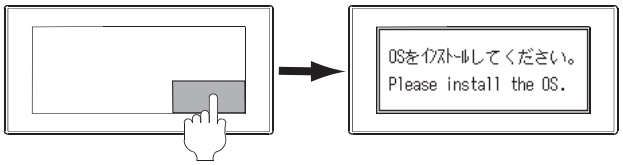
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



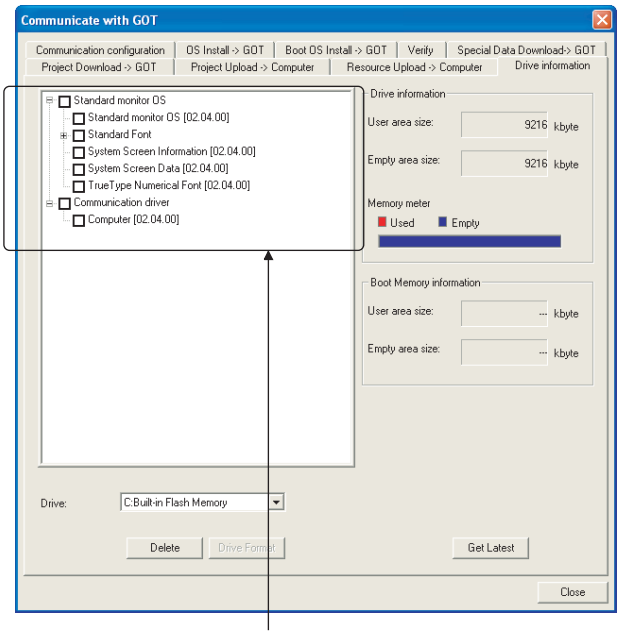
Turn on the GOT while the bottom right corner is touched.

28.6.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Computer

28.6.3 Setting communication interface (Communication settings)

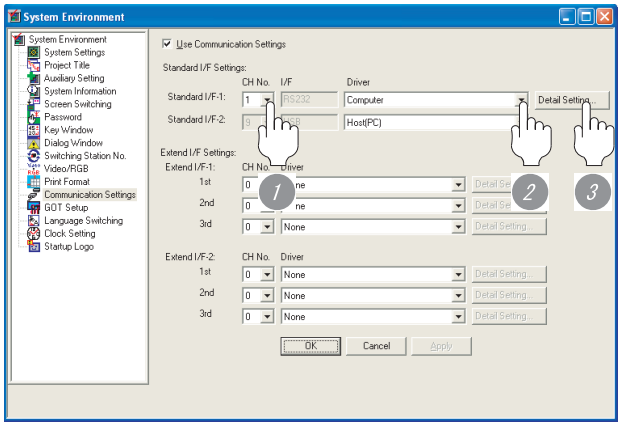
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

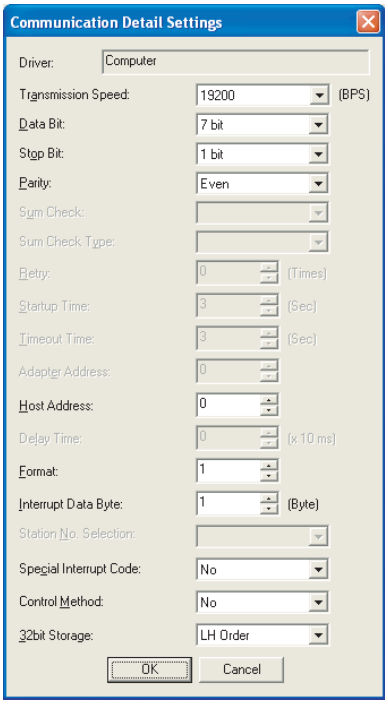
1 Set [1] to the channel No. used.

2 Set the driver to "Computer".

3 Perform the detailed settings for the driver.

(☞ 2 Communication detail settings)

2 Communication detail settings



Item		Description	Range
Transmission Speed		Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit		Set this item when change the data length used for communication with the connected equipment. <Default: 7bits>	7bits or 8bits
Stop Bit		Specify the stop bit length for communications. <Default: 1bit>	1bit or 2 bits
Parity		Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Host Address		Specify the host address (station No. of the GOT to which the microcomputer is connected) in the connected network. <Default: 0>	0 to 31
Format	GT16 GT15 GT11 Serial	Select the communication format. <Default: 1>	1 to 15
	GT10 5□ 4□ GT 24V 10 20 30	Select the communication format. <Default: 14>	1, 2, 14, 15
Interrupt Data Byte		Specify the number of bytes of interrupt data. <Default: 1byte>	1byte, 2byte, 4byte
Special Inturrupt Code		Set whether or not to output the special interrupt code. <Default: No>	Yes or No

Item	Description	Range
Control Method	Set this item when selecting the XON/XOFF control for the control method. <Default: No>	XON/XOFF, No
32bit Storage	Select the 2 words (32 bits data) storage order. <Default: LH Order>	LH Order/ HL Order

Point

(1) Special interrupt code output

The following shows the compatibility between the special interrupt codes and the event types.

Special interrupt code (Hex)	Event type
20H	Output when the screens are switched according to the change in the switching device values assigned to the Base Screen*1 and Overlap Window*1 1/2. *1 Base Screen or Overlap Window 1/2 switches independently without being interlocked. (Example of output) When all the switching device values assigned to the Base Screen and Overlap Window1/2 are changed, 3 special interrupt codes are output.
21H	Output when Numerical/Ascii Input is completed
22H	Output when Recipe data transfer (read-out, write-in) is completed
23H	Output when Bar code data has been imported into GOT

(2) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's [Communication setting] after downloading [Communication setting] of project data.

For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(3) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.

For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

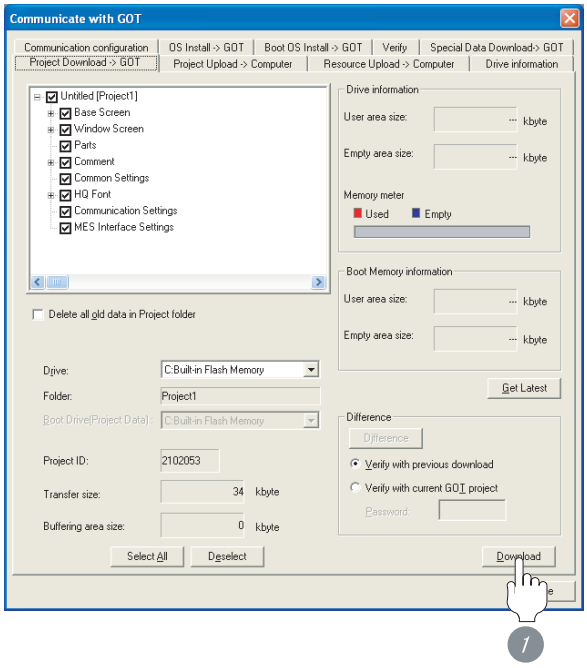
Communication settings can be changed on only GT Designer2.

28.6.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

28.6.5 Attaching communication unit and connecting cable

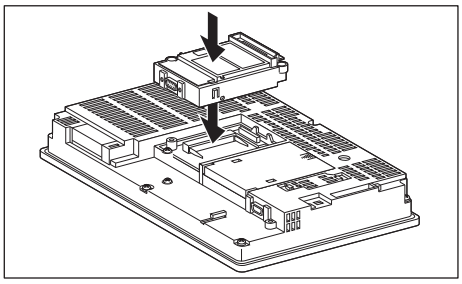
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

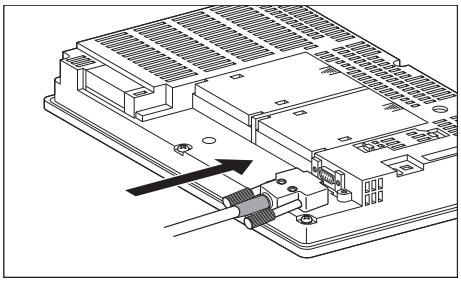
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

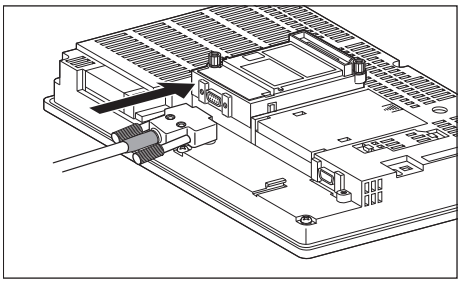
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



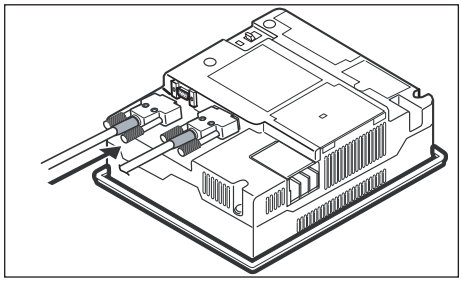
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



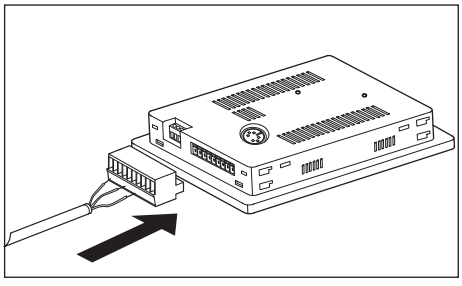
(b) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

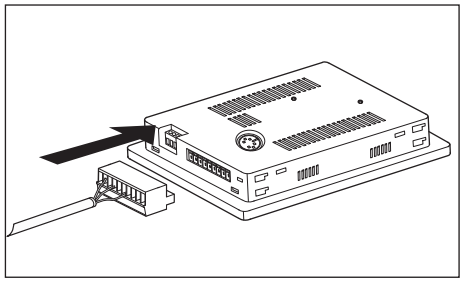


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

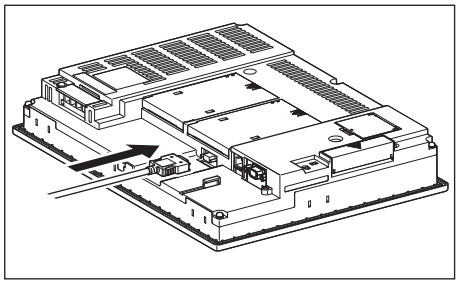


(2) How to connect the RS-422 cable

(a) For the GT16

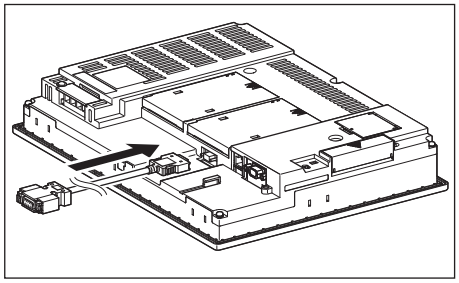
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

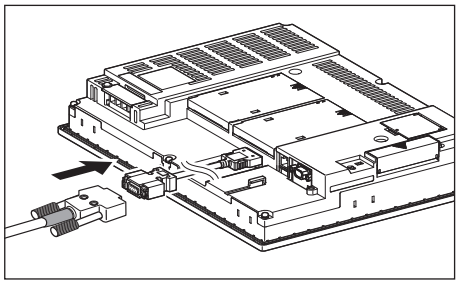


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

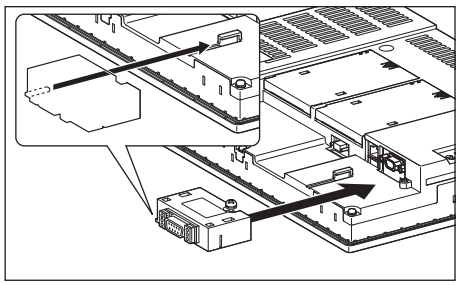


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

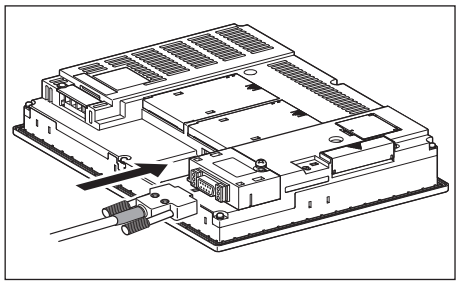


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

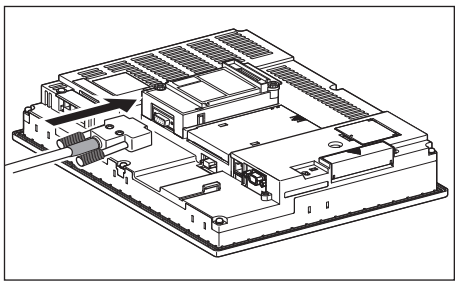


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

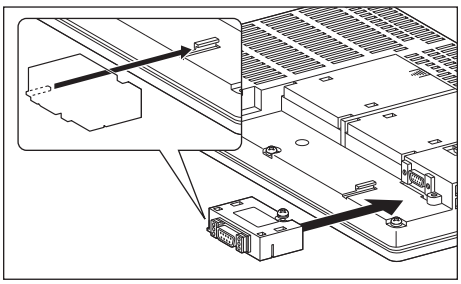
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



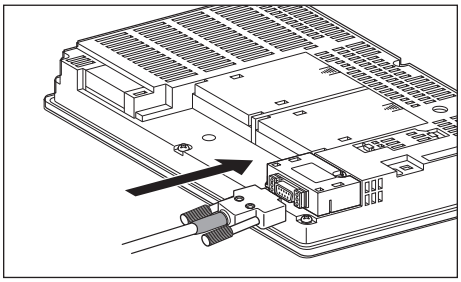
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155□)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

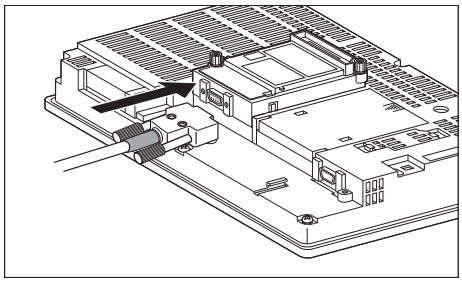


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

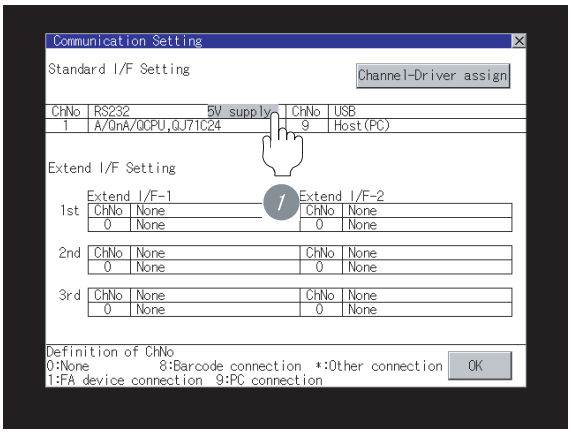
When using the RS-422 conversion unit

On "Communication settings" on the GOT utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the RS-422 conversion unit and the GOT utility, refer to the following manual:

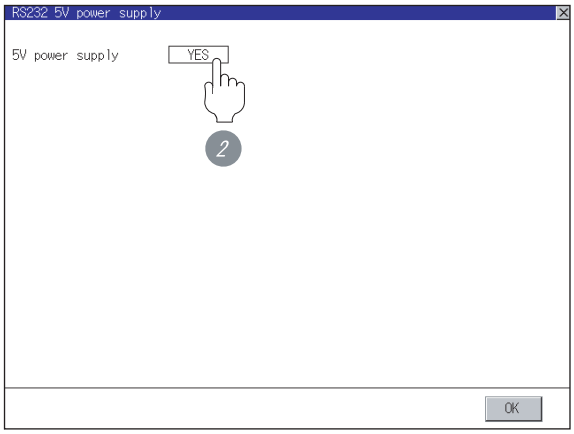
☞ GT15 Serial Communication Unit User's Manual

☞ GT ☐ User's Manual

1 Touch [5V supply].

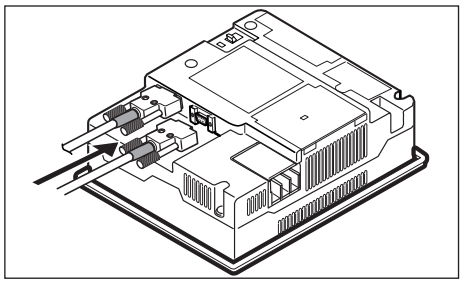


2 Set [5V power supply] to "YES".



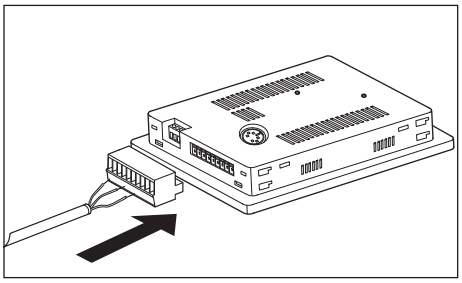
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

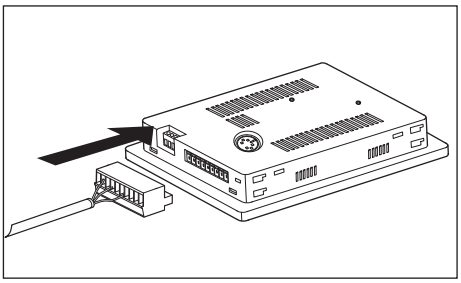


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



28.6.6 Verifying GOT recognizes controllers

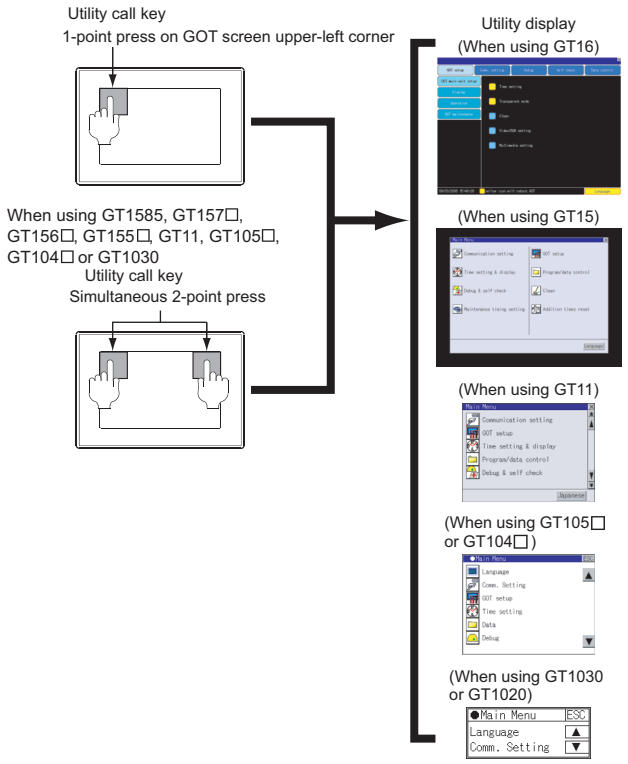
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16, GT1595 or GT1020

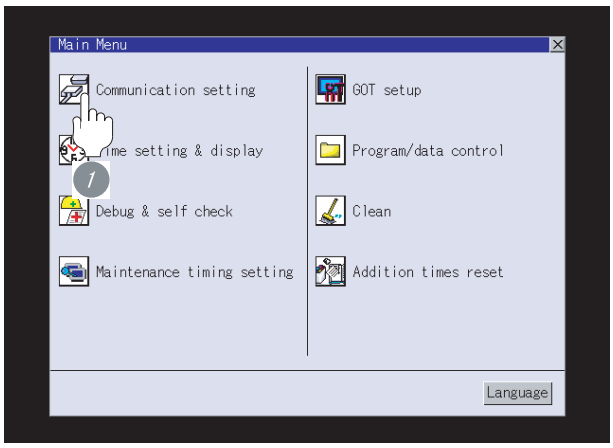


Point

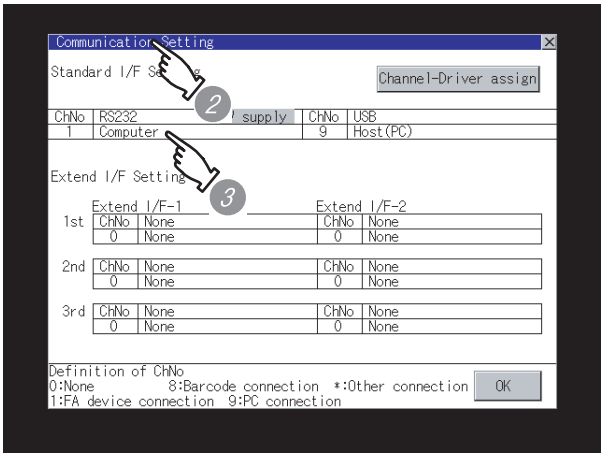
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: Computer

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 28.6 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.

For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

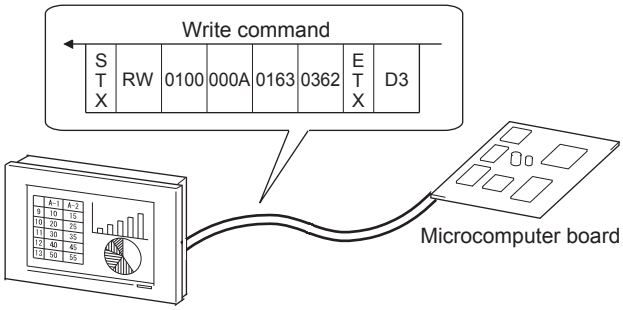
Communication settings can be changed on only GT Designer2.

28.6.7 Checking for normal monitoring

1 Write data to virtual devices inside GOT.

Send a message from the host to the GOT, and confirm that the values are stored in the virtual devices inside the GOT.

(☞ Section 28.7 System Configuration Examples)



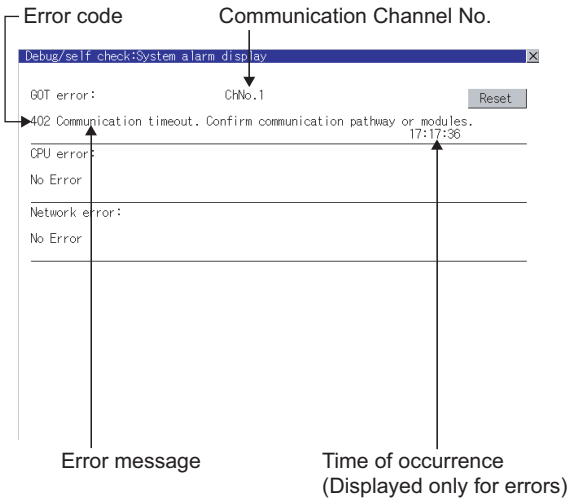
2 Check for errors occurring on the GOT. (GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

3 Communication monitoring function(for GT10)

The communication monitoring is a function that checks whether the microcomputer can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

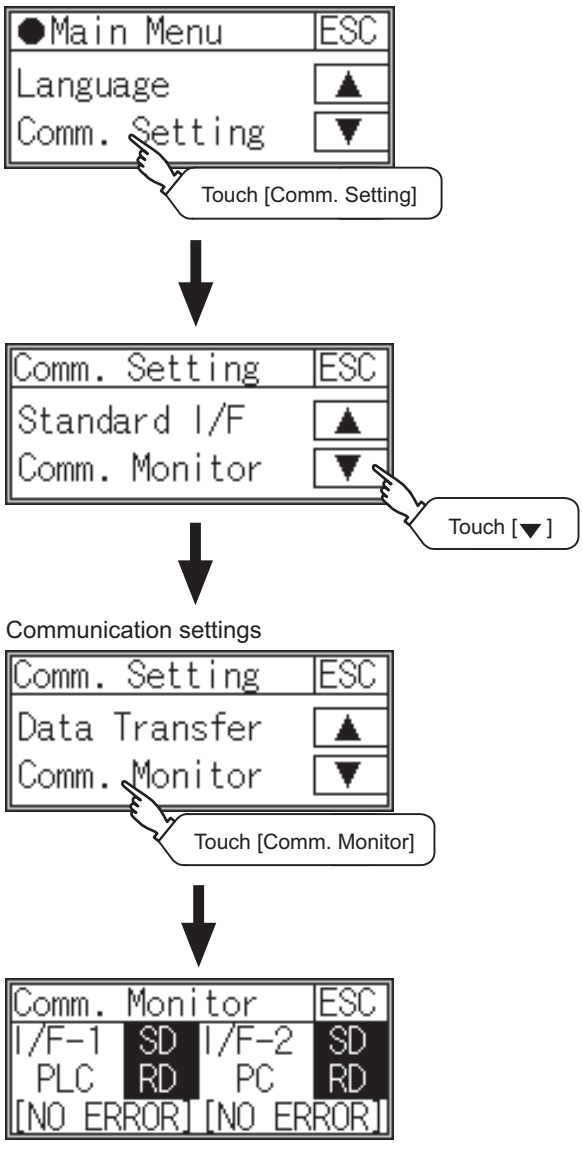
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



All settings related to communications are complete now.

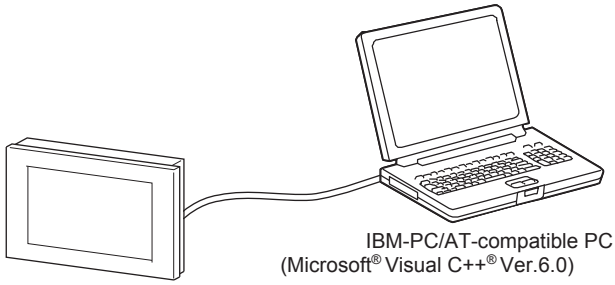
Create screens on GT Designer2 and download the project data again.

28.7 System Configuration Examples

The following shows a system configuration example in the case of the microcomputer connection.

1 System Configuration

The system configuration example illustrated below is explained in this section.



2 Communication settings on GOT side and monitor screen settings

(1) Transmission settings

Set the transmission settings of the GOT.
The transmission settings in the microcomputer connection are made at "Communication Details Settings" on GT Designer2

Section 28.6.3 Setting communication interface (Communication settings)

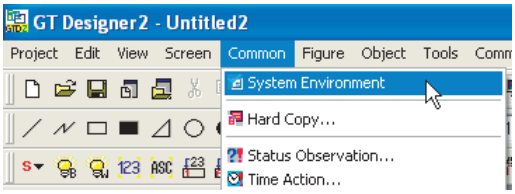
Setting item	Setting
Transmission speed	38400bps
Data length	8 bits
Stop bit	1 bit
Parity	Even
Interrupt Data Byte	1 byte
Host Address (0 to 31)	0
Format	1

(2) Monitor screen settings

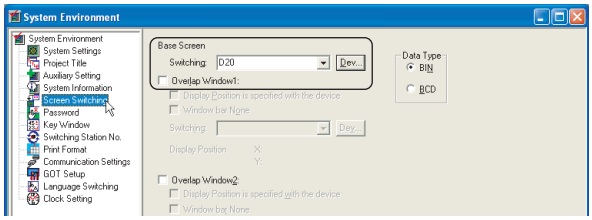
The following shows the monitor screen settings in this system configuration example.

(a) Common settings
Set D20 to the screen switching device (base screen).

1 Select [Common] → [System Environment] on GT Designer2, and display the [System Environment].

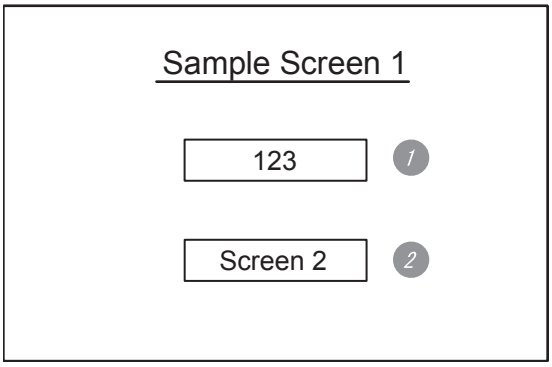


2 Set D20 to the screen switching device (base screen).



(b) Monitor screen image
Create the following screens by GT Designer2.

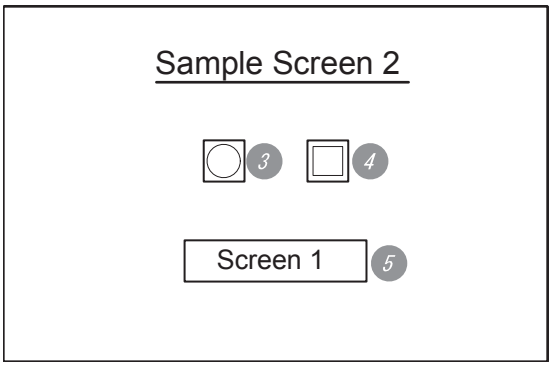
Base screen 1



1 Numerical value display function
By setting this with the numerical value display function, the device value of D21 can be monitored. The device value is incremented only while "Sample Screen 1" is displayed.

2 Touch switch 1
This is the screen switching switch to "Sample Screen 2". Touching this changes the base screen to "Sample Screen 2".

Base screen 2



3 Lamp display function
The device status of D22.b0 is displayed as a lamp.

4 Touch switch 2
This is an alternate switch for changing the state of D22.b0.

5 Touch switch 3
This is the screen switching switch to "Sample Screen 1".
Touching this changes the base screen to "Sample Screen 1".

Numerical value display function

No.	Basic setting	Display settings		
	Device	Display format	Display size	Number of display digits
1	D21, unsigned binary, 16 bits	Unsigned 16 bits	Arbitrary	4

Touch switch function

No.	Basic setting	Display setting	Operation setting				
			Action	Switch destination	Device	Data format	Action type
2	Arbitrary	Arbitrary	Base switching	Fixed value 2	—	—	—
			Word	—	D13	Signed binary	Fixed value 01
4	Arbitrary	Arbitrary	Bit	—	D22.b0	—	Bit ALT
5	Arbitrary	Arbitrary	Base switching	Fixed value 1	—	—	—
			Word	—	D13	Signed binary	Fixed value 255

Lamp display function

No.	Basic setting		Display method (bit)	
	Device	Graphic	ON	OFF
3	D22.b0, bit	Basic figure	Arbitrary	Arbitrary

3 Host side sample program

The sample program (written in C) on the host side is included in GT Designer2 and installed when GT Designer2 is installed.

The sample program "Mi_sample.c" is stored in the folder of "GTD2\Example1000\Micro\Source" on the personal computer with GT Designer2 installed.

4 Outline of system operation

The following describes the processing on the host side, display/processing on the GOT side, and data transfer packets.

Processing	Processing on host side		Packet used for data transfer	Display/ Processing on GOT side
Initial processing	Opens the port.		—	—
	Writes "1" to the screen switching device (D20).		Screen 1 batch switchingWrite packet*1	Displays base screen 1.
	Receives a response from the GOT.		—	—
	Judges whether or not there is an error in the response from the GOT.		—	—
	Writes an initial value to device (D21).		Batch numerical value displayWrite packet*2	Displays "0" on the numerical value display on base screen 1.
Reception of response/ interrupt from GOT	When receiving a response to writing to device (D21) from the GOT	Issues the current value acquisition request to device (D21).	Batch numerical value displayRead packet*3	Increments the numerical value displayed on base screen 1. (The host side repeats the processing on the left as long as base screen 1 is displayed.))
	When receiving a response to reading of device (D21) from the GOT	Creates the next device value (D21).	—	
		Calculates the sum check of the send packet.	—	
		Issues the update request of device (D21).	Batch numerical value display Write packet*2	
	When receiving an interrupt requesting the base screen switching from 1 to 2	Sets the state of the base screen to base screen 2.	Interrupt receive packet*6	Touch touch switch 1 to switch to base screen 2. Notify the host by an interrupt.
	When receiving an interrupt requesting the base screen switching from 2 to 1	Sets the state of the base screen to base screen 1.	Interrupt receive packet*6	Touch touch switch 3 to switch to base screen 1. Notify the host by an interrupt.
End processing (only when receiving an error response)	Close the port.		—	—

*1 Displays the send packet structure of the screen 1 batch switching write packet.

STX	Command		Address				Number of points		Data 1 (D20)				ETX	Sum Check	
	W	D	0	0	2	0	0	1	0	0	0	1		8	2
02H	57H	44H	30H	30H	32H	30H	30H	31H	30H	30H	30H	31H	03H	38H	32H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)		(H)	(L)

Sum check is performed in this range.

*2 Displays the send packet structure of the numerical value display batch write packet.

STX	Command		Address				Number of points		Data 1 (D21)	ETX	Sum check
	W	D	0	0	2	1	0	1			(Changes according to data section.)
02H	57H	44H	30H	30H	32H	31H	30H	31H	(any value)	03H	
	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H) – – (L)		(H) (L)

Sum check is performed in this range.

*3 Displays the send packet structure of the numerical value display batch read packet.

STX	Command		Address				Number of points		ETX	Sum Check	
	R	D	0	0	2	1	0	1		B	D
02H	52H	44H	30H	30H	32H	31H	30H	31H	03H	42H	44H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

*4 Displays the receive packet structure of the batch write response packet.

When normally operated

ACK
06H

When an error occurred

NAK
15H

*5 Displays the receive packet structure of the batch read response packet.

When normally operated

STX	Data	ETX	Sum check
02H	(any data)	03H	(Changes according to data section.)
	(H) – – (L)		(H) (L)

Sum check is performed in this range.

When an error occurred

NAK
15H

*6 Displays the receive packet structure of the interrupt receive packet.

Output value
Interrupt data (value of D13)

28.8 Precautions

1 GOT clock function

The settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled. Use the dedicated commands to set or read out the clock data of microcomputer.

28.9 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	MICROCOMPUTER CONNECTION	Supporting the followings • XON/XOFF control • special interrupt code	2.32J	Communication driver Computer [03.00.**]
GT24V1020 1030 GT5V1020	MICROCOMPUTER CONNECTION	Supporting the connection to GT1020	2.43V	Communication driver Computer [01.00.**]
GT24V1020 1030 GT5V1020	MICROCOMPUTER CONNECTION	Supporting the communication format 1, 2	2.47Z	Communication driver Computer [01.01.**]
GT24V1020 1030 GT5V1020	MICROCOMPUTER CONNECTION	Supporting the connection to GT1030	2.58L	Standard Monitor OS [01.03.**] Communication driver Computer [01.01.**]
GT16	MICROCOMPUTER CONNECTION	Supporting the connection to GT16	2.90U	Communication driver Computer [04.02.**]
GT1055 1045	MICROCOMPUTER CONNECTION	Supporting the connection to GT105□ Supporting the connections to GT104□		Standard Monitor OS [01.10.**] Communication driver Computer [01.05.**]

MODBUS(R) CONNECTION

Chapter 29 MODBUS(R)/RTU CONNECTION

Chapter 30 MODBUS(R)/TCP CONNECTION

MEMO

29

MODBUS(R)/RTU CONNECTION



29.1 System Configuration . . . . . page 29-2
This section describes devices and cables needed for MODBUS®/RTU connection.
Select a system suitable for your application.

29.2 Connection Cable . . . . . page 29-8
This section describes the specifications of the cables needed for MODBUS®/RTU connection.
Check the specifications of the connection cables.

29.3 Preparatory Procedures for Monitoring . . . . . page 29-23
This section describes the procedures to be followed before monitoring in MODBUS®/RTU connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

29.4 MODBUS/RTU Equipment Side Setting . . . . . page 29-34
MODBUS®/RTU equipment side settings for GOT connection are explained.
When checking the MODBUS®/RTU equipment side settings, refer to this section.

29.5 Precautions . . . . . page 29-38
This section describes precautions for MODBUS®/RTU connection.
Refer to this section without fail before starting MODBUS®/RTU connection.

29.6 List of Functions Added by Version Upgrade . . . . . page 29-39
This section describes the functions added by version upgrade of GT Designer2 or OS.

29.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

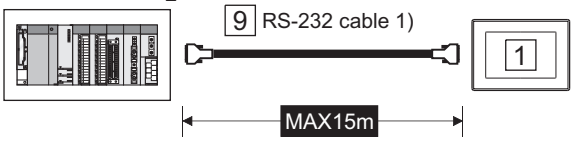
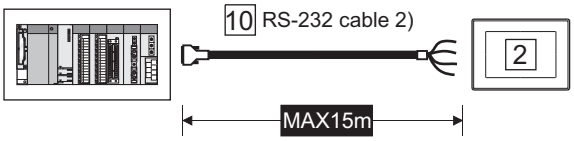
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

Communication driver
MODBUS/RTU

29.1.1 Connecting to MODBUS equipment

1 System configuration and connection conditions

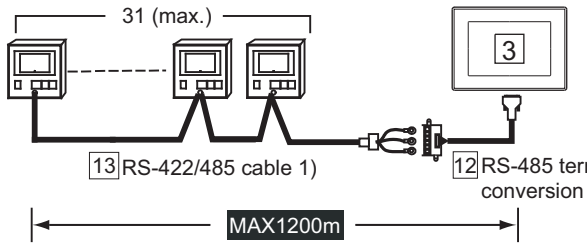
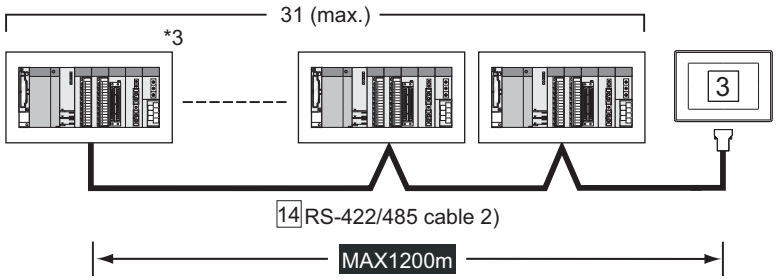
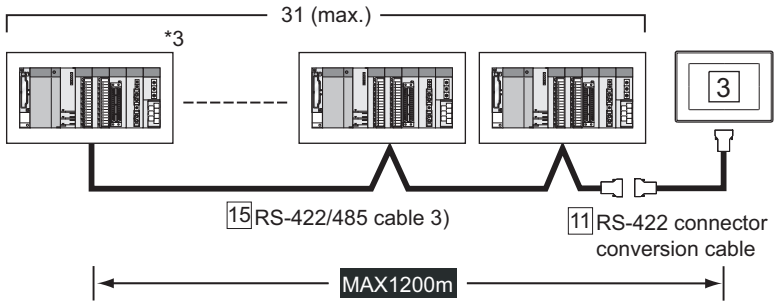
(1) RS-232 cable

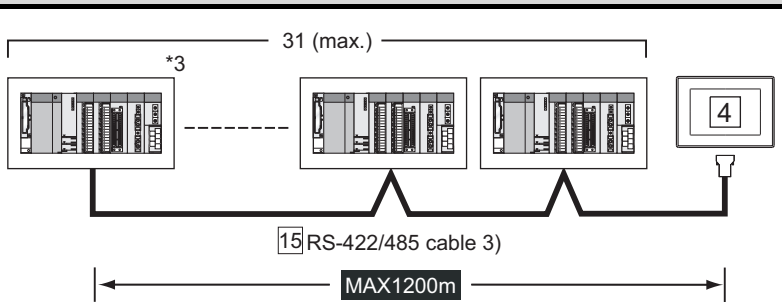
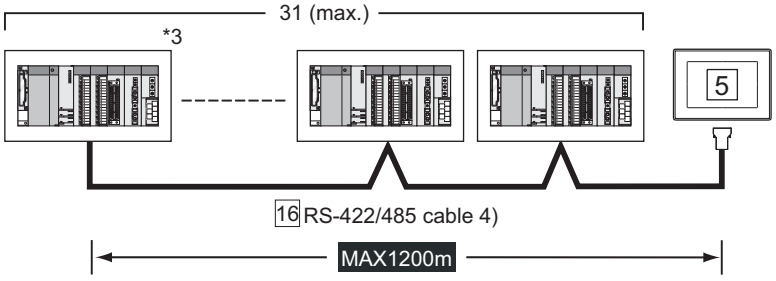
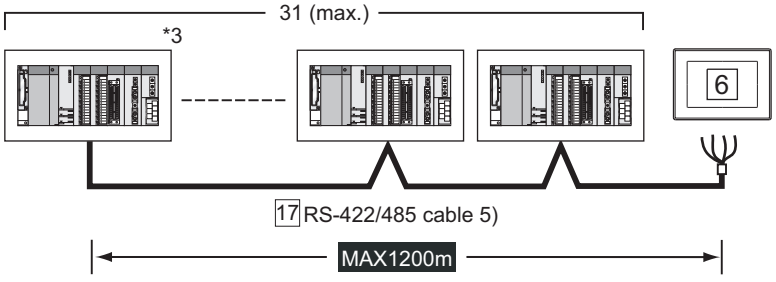
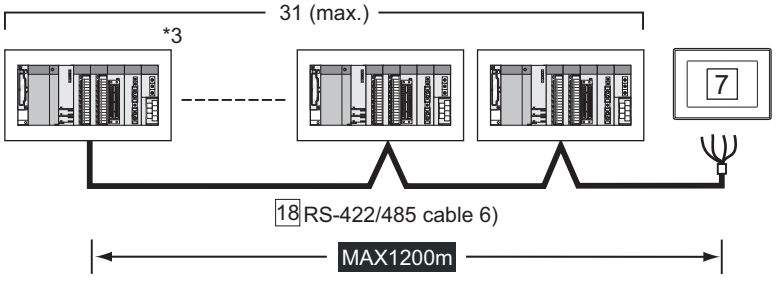
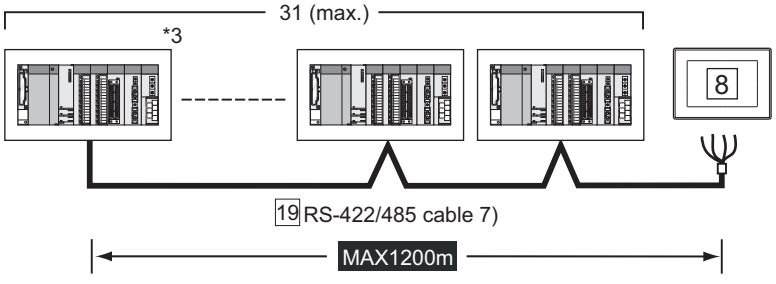
Connection conditions			System configuration	Model
Number of GOTs	Number of MODBUS equipments	distance		
1	1	15m or less*1	*2 	GT16 GT15 GT11 Serial GT10 5□ 4□
			*2 	GT 24V 10 20 30 (RS-232)

*1 When the specification on the MODBUS equipment side is shorter than 15m, the shortest specification on the MODBUS equipment side is prioritized.

*2 Only a MODBUS/RTU slave communication enabled device is applicable.

(2) RS-422/485 cable

Connection conditions			System configuration	Model
Number of GOTs	Number of MODBUS equipments	distance		
1	31 (max.)*1	1200m or less*2		GT16
				GT16
				GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of MODBUS equipments	distance		
1	31 (max.)*1	1200m or less*2		GT16 GT15
				GT11 Serial GT105□4□
				
				GT24V10 20 30 (RS-422)
				GT16 GT15

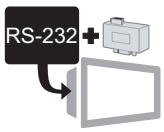
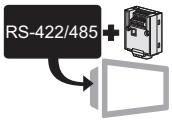
*1 When the specification on the MODBUS equipment side is less than 31 units, the smallest number of the maximum connectable units on the MODBUS equipment side will apply.

*2 When the specification on the MODBUS equipment side is shorter than 1200m, the shortest specification on the MODBUS equipment side is prioritized.

*3 Only a MODBUS/RTU slave communication enabled device is applicable.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT24V 10 20 30 (RS-232)
	3	RS-422/485 Communication Unit • For RS-422/485 communication	— (Built into GOT)	GT16
	4	RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422/485 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
	5	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□
	6	Connection Conversion Adapter *2 • RS-422 communication	GT10-9PT5S	GT11 Serial GT105□ 4□
	7	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT24V 10 20 30 (RS-422)
	8	RS-422/485 interface • For RS-485 communication	GT15-RS4-TE	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

*2 Connect it to the RS-422 interface (built into GOT).

Point

Compatible hardware version for the RS-422/485 connection

The following GOT models are compatible with the RS-422/485 connection.
For the confirming method of hardware version, refer to the following.

☞ GT16 User's Manual (Hardware)

☞ GT15 User's Manual

☞ GT11 User's Manual

☞ GT10 User's Manual

GOT	Hardware version	Standard monitor OS
GT16☐☐, GT15☐☐	version A or later	-
GT1155-QTBD	version C or later	
GT1155-QSBD	version F or later	
GT1150-QLBD	version F or later	
GT1055-QSBD, GT1050-QBBD	version C or later	Standard monitor OS[01.12.**]or later
GT1045-QSBD, GT1040-QBBD	version A or later	
GT1030-LBD, GT1030-LBDW	version B or later	
GT1020-LBD, GT1020-LBDW	version E or later	

(2) Cable

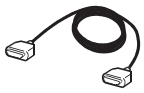
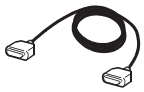
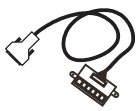
Image	No.	Name	Model name	Model
	9	RS-232 cable 1)	(To be prepared by the user. ☞ Section 29.2 Connection Cable)	GT16 GT15 GT11 Serial GT10 5☐ 4☐
	10	RS-232 cable 2)		GT24V10 20 30 (RS-232)
	11	RS-422 conversion cable	GT16-C02R4-9S(0.2m)	
	12	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	13	RS-422/485 cable 1)	(To be prepared by the user. ☞ Section 29.2 Connection Cable)	
	14	RS-422/485 cable 2)		
	15	RS-422/485 cable 3)		GT16 GT15

Image	No.	Name	Model name	Model
	16	RS-422/485 cable 4)	(To be prepared by the user. ☞ Section 29.2 Connection Cable)	GT11 Serial, GT105□4□
	17	RS-422/485 cable 5)		GT11 Serial, GT105□4□
	18	RS-422/485 cable 6)		GT24V1020 30 (RS-422)
	19	RS-422/485 cable 7)		GT16, GT15

12 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

29.2 Connection Cable

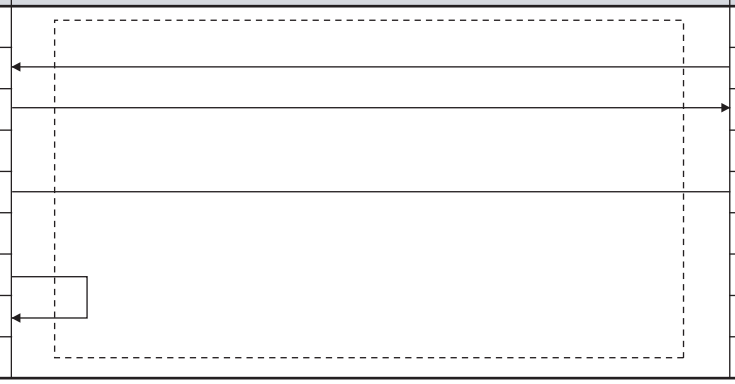
29.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a PLC.

1 Connection diagram

(1) RS-232 cable 1) (For GT16, GT15, GT11 Serial, GT105□, GT104□)

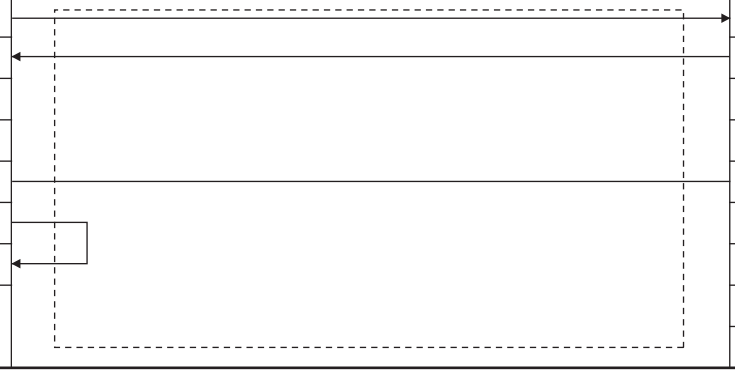
GOT side		Cable connection and signal direction	MODBUS equipment side *2
Signal name	Pin No.		Signal name
CD/NC*1	1		—
RD(RXD)	2		TxD
SD(TXD)	3		RxD
ER(DTR)	4		—
SG	5		SG
DR(DSR)	6		—
RS(RTS)	7		—
CS(CTS)	8		—
NC	9		—



* 1 GT16 : CD, GT15 : CD, GT11 : NC, GT105□: NC, GT104 □ : NC
* 2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

(2) RS-232 cable 2) (GT1030, GT1020)

GOT side	Cable connection and signal direction	MODBUS equipment side *2
Signal name		Signal name
SD		RxD
RD		TxD
ER		—
DR		—
SG		SG
RS		—
CS		—



*1 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Hardware version*1	Connector type	Model	Manufacturer
GT16	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-		17LE-23090-27(D4CK)	
GT1585V-S	-			
GT1585-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-			
GT1575V-S	-			
GT1575-STBA	B		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-			
GT1575-VTBA	D		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-			
GT1575-VN	-			
GT1572-VN	-			
GT1565-V	-			
GT1562-VN	-			
GT155☐	-			
GT1155-Q, GT1150-Q	-		17LE-23090-27(D3CC)	
GT1055-Q, GT1050-Q	-			
GT1045-Q, GT1040-Q	-			
GT1030, GT1020	-	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	-	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D3CC)	DDK Ltd

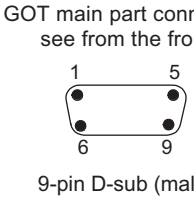
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1020 and GT1030.

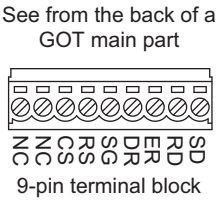
(b) Connector pin arrangement

GT16, GT15, GT11, GT105□, GT104□



9-pin D-sub (male)

GT1030, GT1020



9-pin terminal block

(2) MODBUS equipment side connector

Use the connector compatible with the MODBUS equipment side module.

For details, refer to the following manual.

☞ User's Manual for the MODBUS equipment.

3 Precautions when preparing a cable

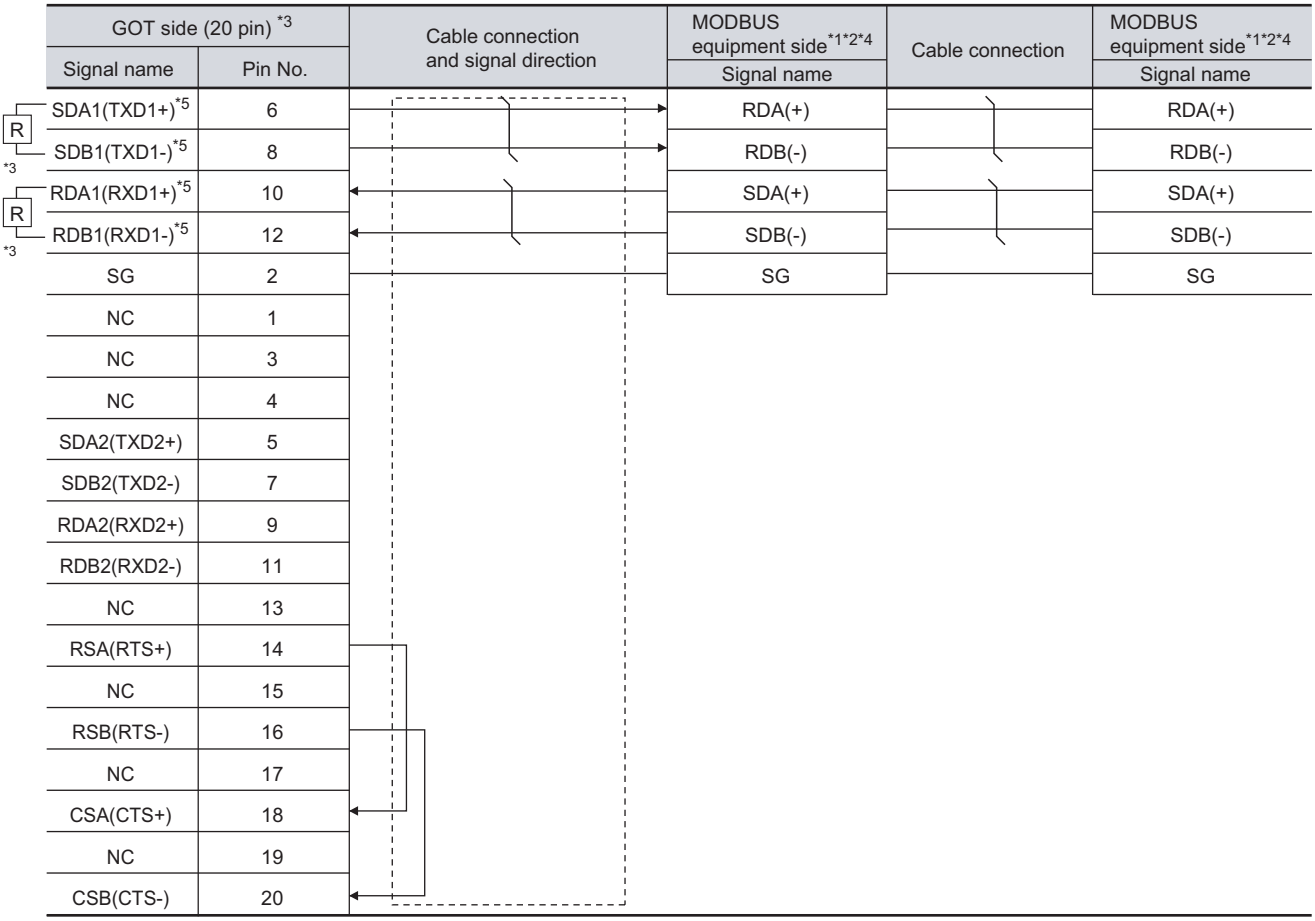
The length of the RS-232 cable must be 15m or less.

29.2.2 RS-422/485 cable

The following shows the connection diagrams and connector specifications of the RS-422/485 cable used for connecting the GOT to a PLC.

1 Connection diagram

(1) RS-422/485 cable 1) (2 pair wiring) (For GT16)



*1 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

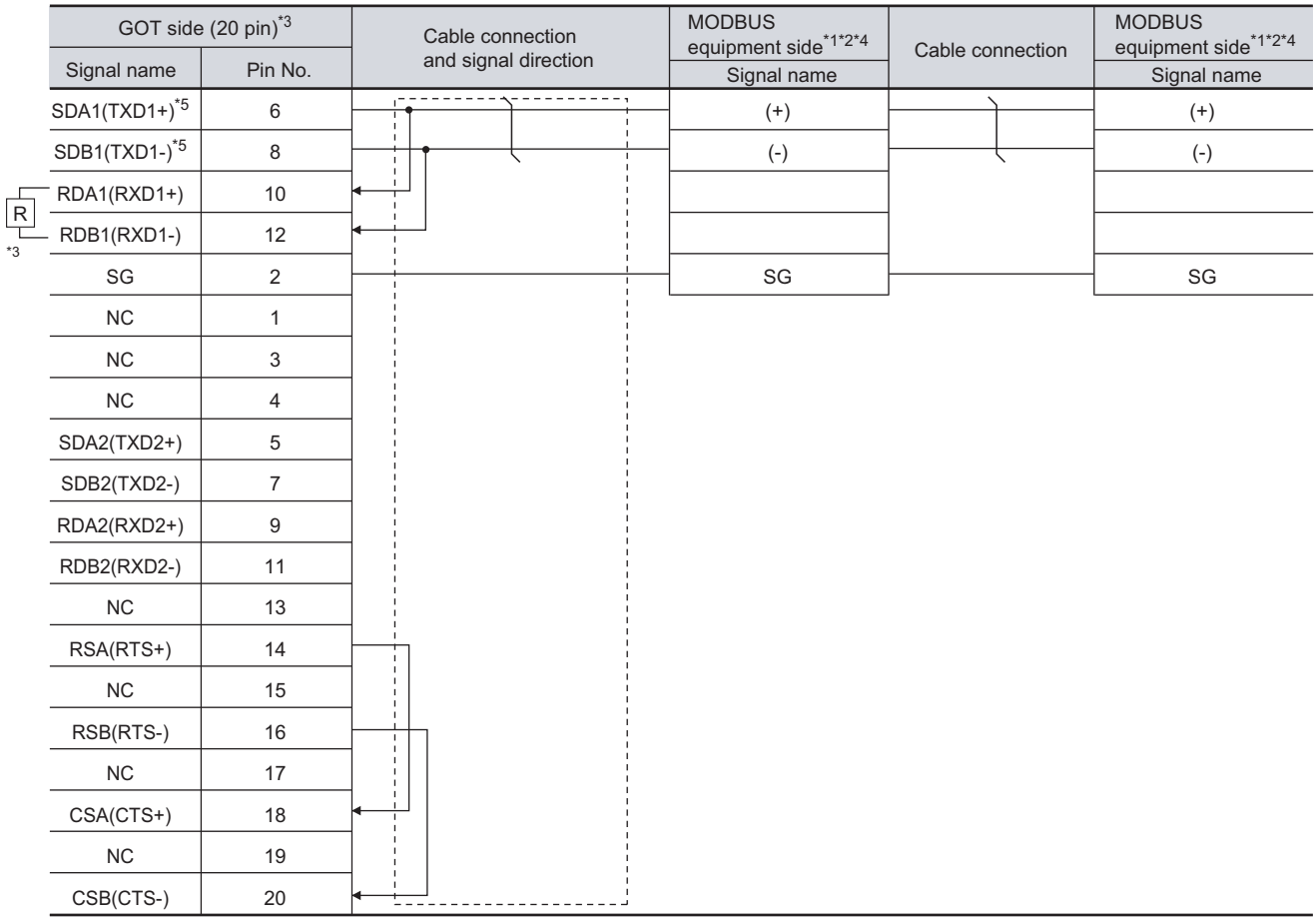
*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

*3 A terminating resistor is required.
Set the terminating resistor selector of the main unit to "No" and connect a 110Ω terminating resistor.

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1 and RDA1/RDB1.

(2) RS-422/485 cabel 1) (1 pair wiring) (GT16)



*1 The actual terminal layout on the MODBUS equipment may differ from the example shown above.
SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other.
Wire the terminals properly as described in the MODBUS equipment manual.

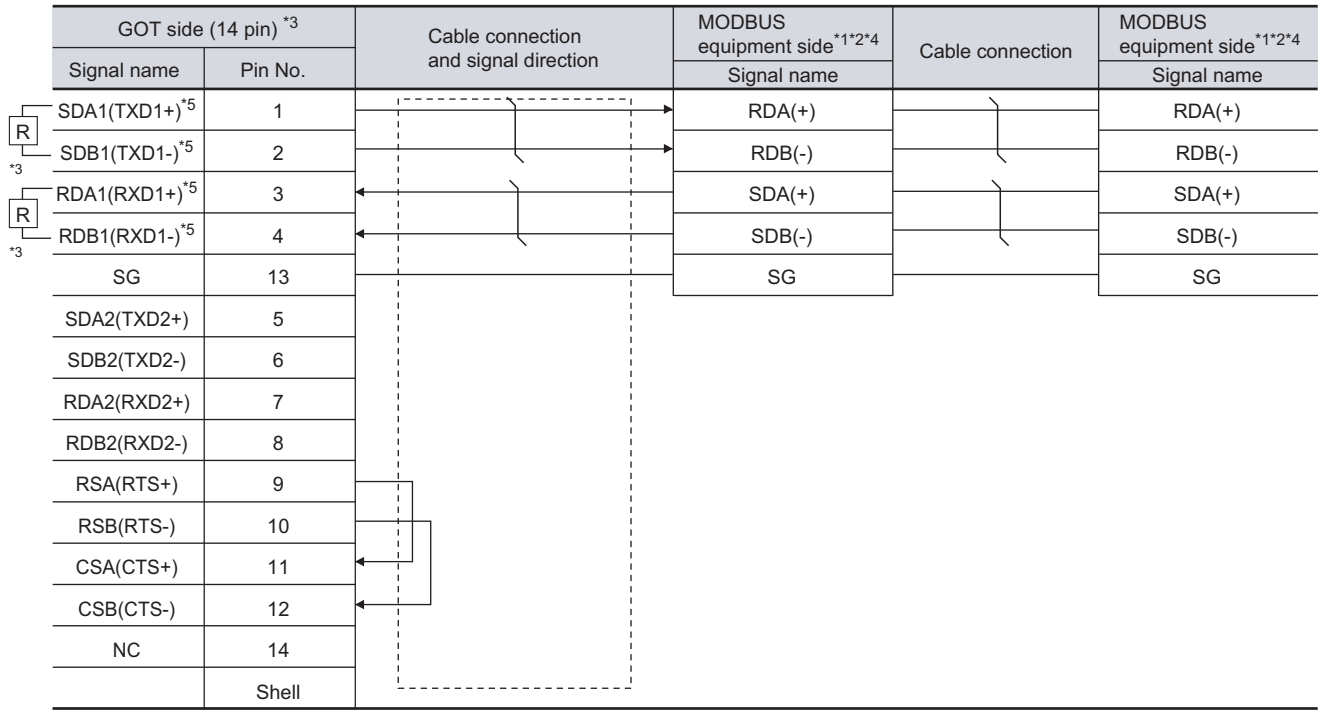
*2 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*3 A terminating resistor is required.
Set the terminating resistor selector of the main unit to "No" and connect a 110Ω terminating resistor.

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1.

(3) RS-422/485 cable 2) (2 pair wiring) (GT16)



GOT side (14 pin) *3		Cable connection and signal direction	MODBUS equipment side*1*2*4	Cable connection	MODBUS equipment side*1*2*4
Signal name	Pin No.		Signal name		Signal name
SDA1(TXD1+)*5	1		RDA(+)		RDA(+)
SDB1(TXD1-)*5	2		RDB(-)		RDB(-)
RDA1(RXD1+)*5	3		SDA(+)		SDA(+)
RDB1(RXD1-)*5	4		SDB(-)		SDB(-)
SG	13		SG		SG
SDA2(TXD2+)	5				
SDB2(TXD2-)	6				
RDA2(RXD2+)	7				
RDB2(RXD2-)	8				
RSA(RTS+)	9				
RSB(RTS-)	10				
CSA(CTS+)	11				
CSB(CTS-)	12				
NC	14				
	Shell				

R *3

R *3

*1 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

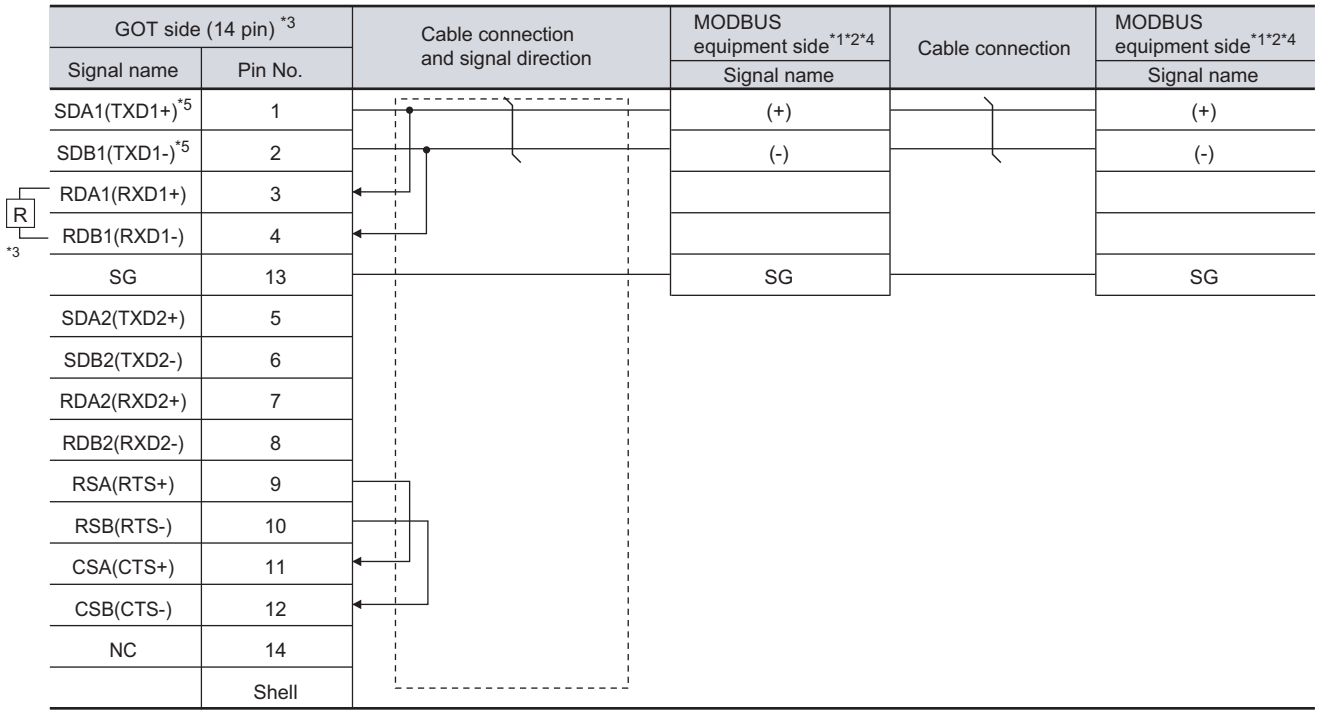
*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

*3 A terminating resistor is required.
Set the terminating resistor selector of the main unit to "No" and connect a 330Ω terminating resistor.

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1 and RDA1/RDB1.

(4) RS-422/485 cable 2) (1 pair wiring) (GT16)



GOT side (14 pin) *3		Cable connection and signal direction	MODBUS equipment side*1*2*4	Cable connection	MODBUS equipment side*1*2*4
Signal name	Pin No.		Signal name		Signal name
SDA1(TXD1+)*5	1		(+)		(+)
SDB1(TXD1-)*5	2		(-)		(-)
RDA1(RXD1+)	3				
RDB1(RXD1-)	4				
SG	13		SG		SG
SDA2(TXD2+)	5				
SDB2(TXD2-)	6				
RDA2(RXD2+)	7				
RDB2(RXD2-)	8				
RSA(RTS+)	9				
RSB(RTS-)	10				
CSA(CTS+)	11				
CSB(CTS-)	12				
NC	14				
	Shell				

R *3

*1 The actual terminal layout on the MODBUS equipment may differ from the example shown above.
SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other.
Wire the terminals properly as described in the MODBUS equipment manual.

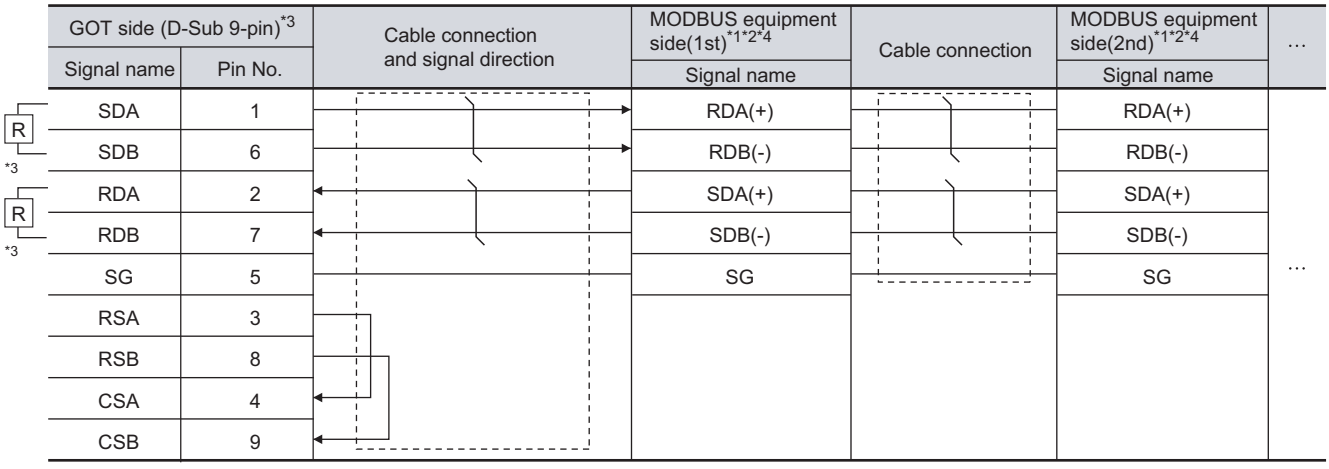
*2 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*3 A terminating resistor is required.
Set the terminating resistor selector of the main unit to "No" and connect a 110Ω terminating resistor.

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1.

(5) RS-422/485cable 3) (2 pair wiring) (GT16, GT15)



GOT side (D-Sub 9-pin)*3		Cable connection and signal direction	MODBUS equipment side(1st)*1*2*4	Cable connection	MODBUS equipment side(2nd)*1*2*4	…
Signal name	Pin No.		Signal name		Signal name	
SDA	1		RDA(+)		RDA(+)	
SDB	6		RDB(-)		RDB(-)	
RDA	2		SDA(+)		SDA(+)	
RDB	7		SDB(-)		SDB(-)	
SG	5		SG		SG	…
RSA	3					
RSB	8					
CSA	4					
CSB	9					

R *3

R *3

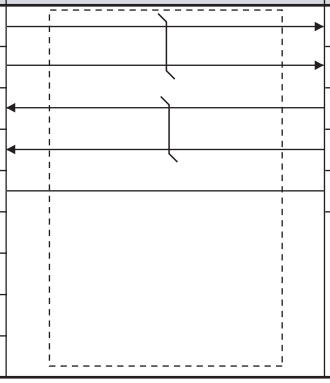
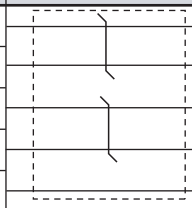
*1 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

*3 A terminating resistor is required.
For GT16, set the terminating resistor selector of the main unit to "No"and connect a 330Ω terminating resistor.
For GT15, connect a 330Ω terminating resistor.

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

(6) RS-422/485 cable 4) (2 pair wiring) (GT11 Serial, GT105□, GT104□)

GOT side (D-Sub 9-pin)*3		Cable connection and signal direction	MODBUS equipment side(1st)*1*2*4	Cable connection	MODBUS equipment side(2nd)*1*2*4	…
Signal name	Pin No.		Signal name		Signal name	
SDA	1		RDA(+)		RDA(+)	
SDB	6		RDB(-)		RDB(-)	
RDA	2		SDA(+)		SDA(+)	
RDB	7		SDB(-)		SDB(-)	
SG	5		SG		SG	…
RSA	3					
RSB	8					
CSA	4					
CSB	9					

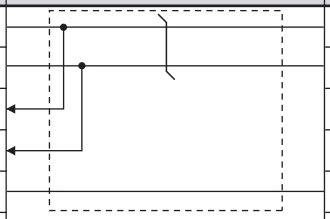
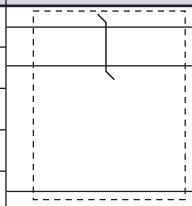
*1 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "330Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

(7) RS-422/485 cable 4) (1 pair wiring) (GT105□, GT104□)

GOT side (D-Sub 9-pin)*3		Cable connection and signal direction	MODBUS equipment side(1st)*1*2*4	Cable connection	MODBUS equipment side(2nd)*1*2*4	…
Signal name	Pin No.		Signal name		Signal name	
SDA	1		(+)		(+)	
SDB	6		(-)		(-)	
RDA	2					
RDB	7					
SG	5		SG		SG	…
RSA	3					
RSB	8					
CSA	4					
CSB	9					

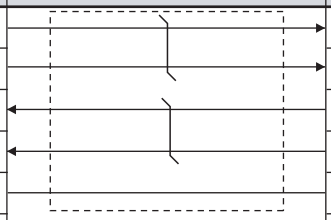
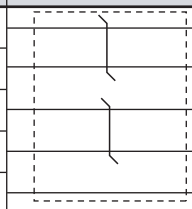
*1 The actual terminal layout on the MODBUS equipment may differ from the example shown above.
SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other.
Wire the terminals properly as described in the MODBUS equipment manual.

*2 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "110Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

(8) RS-422/485 cable 5) (2 pair wiring) (GT11, GT105□, GT104□)

GOT side (terminal block)*3	Cable connection and signal direction	MODBUS equipment side(1st)*1*2*4	Cable connection	MODBUS equipment side(2nd)*1*2*4	…
Signal name		Signal name		Signal name	
SDA		RDA(+)		RDA(+)	
SDB		RDB(-)		RDB(-)	
RDA		SDA(+)		SDA(+)	
RDB		SDB(-)		SDB(-)	
SG		SG		SG	…

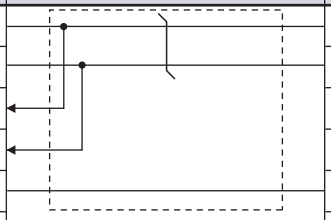
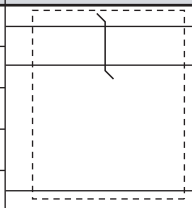
*1 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "330Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
Set the 1pair / 2pair signal selection switch to "2Pair" when using the connection conversion adapter.

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

(9) RS-422/485 cable 5) (1 pair wiring) (GT105□, GT104□)

GOT side (terminal block)*3	Cable connection and signal direction	MODBUS equipment side(1st)*1*2*4	Cable connection	MODBUS equipment side(2nd)*1*2*4	…
Signal name		Signal name		Signal name	
SDA		(+)		(+)	
SDB		(-)		(-)	
RDA					
RDB					
SG		SG		SG	…

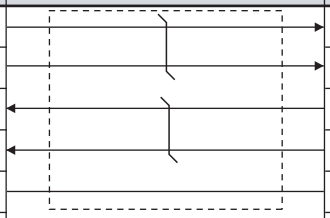
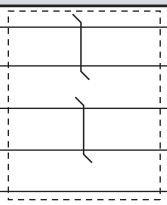
*1 The actual terminal layout on the MODBUS equipment may differ from the example shown above.
SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other.
Wire the terminals properly as described in the MODBUS equipment manual.

*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "110Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
Set the 1pair / 2pair signal selection switch to"1Pair" when using the connection conversion adapter.

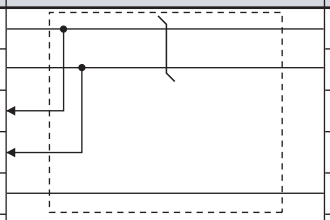
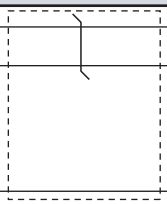
*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

(10) RS-422/485 cable 6) (2 pair wiring) (GT1030, GT1020)

GOT side (terminal block)*3	Cable connection and signal direction	MODBUS equipment side(1st)*1*2*4	Cable connection	MODBUS equipment side(2nd)*1*2*4	…
Signal name		Signal name		Signal name	
SDA		RDA(+)		RDA(+)	…
SDB		RDB(-)		RDB(-)	
RDA		SDA(+)		SDA(+)	
RDB		SDB(-)		SDB(-)	
SG		SG		SG	
RSA					
RSB					
CSA					
CSB					

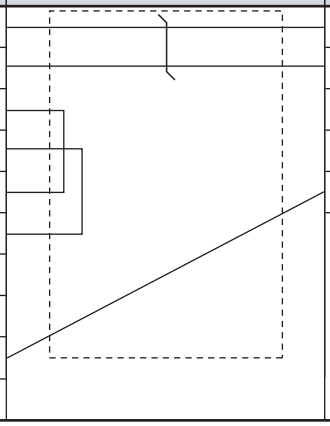
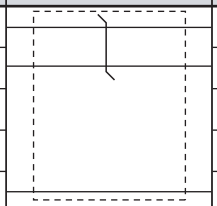
*1 Some MODBUS equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.
*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.
*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "330Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

(11) RS-422/485 cable 6) (1 pair wiring) (GT1030, GT1020)

GOT side (D-Sub 9-pin)*3		Cable connection and signal direction	MODBUS equipment side(1st)*1*2*4	Cable connection	MODBUS equipment side(2nd)*1*2*4	…
Signal name	Pin No.		Signal name		Signal name	
SDA	1		(+)		(+)	…
SDB	6		(-)		(-)	
RDA	2					
RDB	7					
SG	5		SG		SG	
RSA	3					
RSB	8					
CSA	4					
CSB	9					

*1 The actual terminal layout on the MODBUS equipment may differ from the example shown above.
SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other.
Wire the terminals properly as described in the MODBUS equipment manual.
*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.
*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "110Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

(12) RS-422/485 cable 7) (GT16, GT15)

GOT side (terminal block)[*3]		Cable connection and signal direction	MODBUS equipment side(1st)[*1*2*4]	Cable connection	MODBUS equipment side(2nd)[*1*2*4]	…
Signal name	Pin No.		Signal name		Signal name	
SDA1	1		(+)		(+)	
SDB1	2		(-)		(-)	
RDA1	3					
RDB1	4					
SDA2	5		SG		SG	…
SDB2	6					
RDA2	7					
RDB2	8					
SG	9					
FG	10					

*1 The actual terminal layout on the MODBUS equipment may differ from the example shown above.
SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other.
Wire the terminals properly as described in the MODBUS equipment manual.

*2 Some MODBUS equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS equipment manual.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "Yes".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "No".

*4 For the terminating resistor of MODBUS equipment, refer to the manual of MODBUS equipment to be used.

2 Connector specifications

(1) GOT side connector (RS-422/485)

Use the following as the RS-422/485 interface connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

GOT	Connector type	Model	Manufacturer
GT16*1	14-pin (female)	HDR-EC14LFDT1-SLE+	Honda Tsushin Kogyo Co., Ltd
GT11, GT105☐, GT104☐	9-pin D-sub (female)	17LE-13090-27(D3AC)	DDK Ltd.
GT1020, GT1030	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc
GT15-RS4-TE	—	SL-SMT3.5/10/90F BOX	Weidmuller interconnections inc.

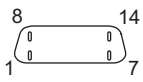
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product)of the cable side is packed together with the GT1030 and GT1020.

(b) Connector pin arrangement

GT16

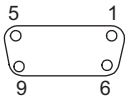
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105☐, GT104☐

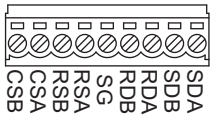
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



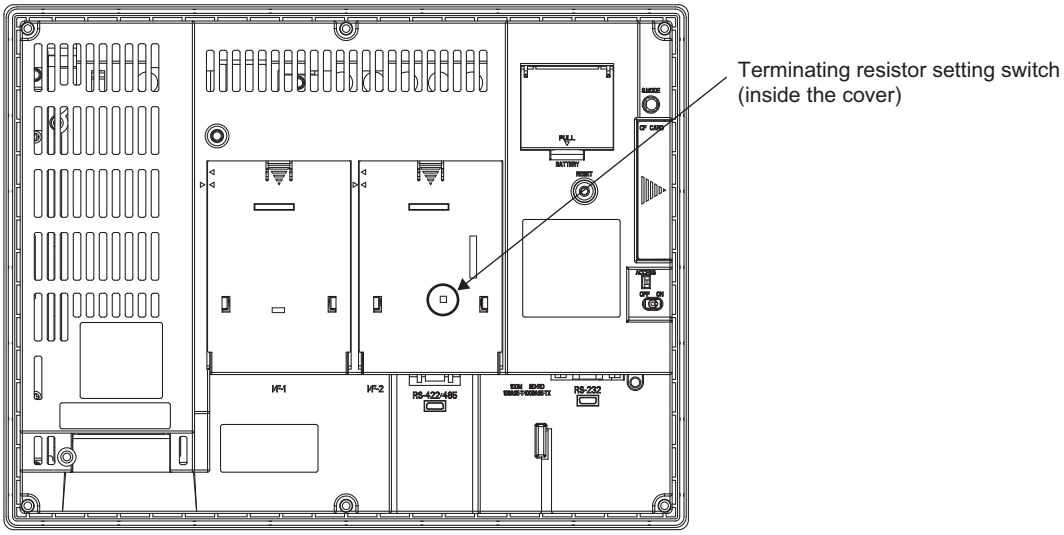
9-pin terminal block

3 Connecting terminating resistors

(1) GOT

Set the terminating resistor of GT16 or RS-422/485 communication unit, GT11, GT10 using the terminating resistor setting switch.

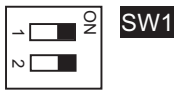
(a) For GT16

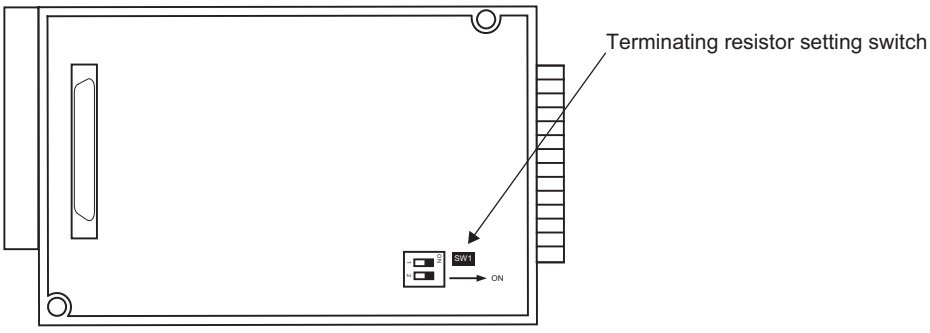


(b) For RS422/485 communication unit

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

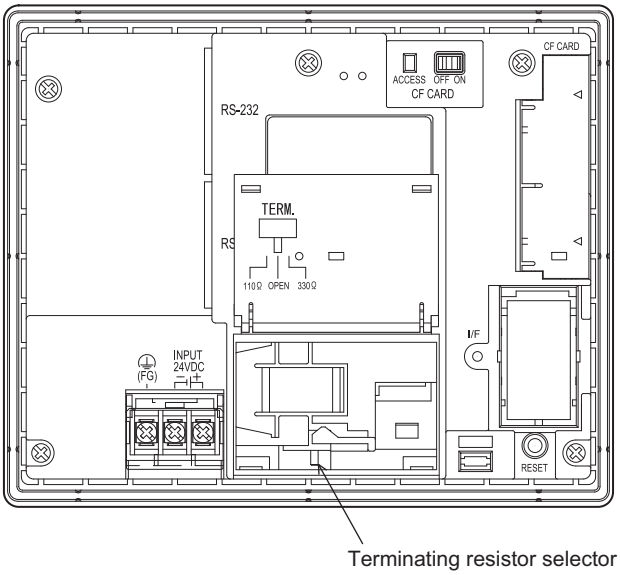
*1 The default setting is "Disable".



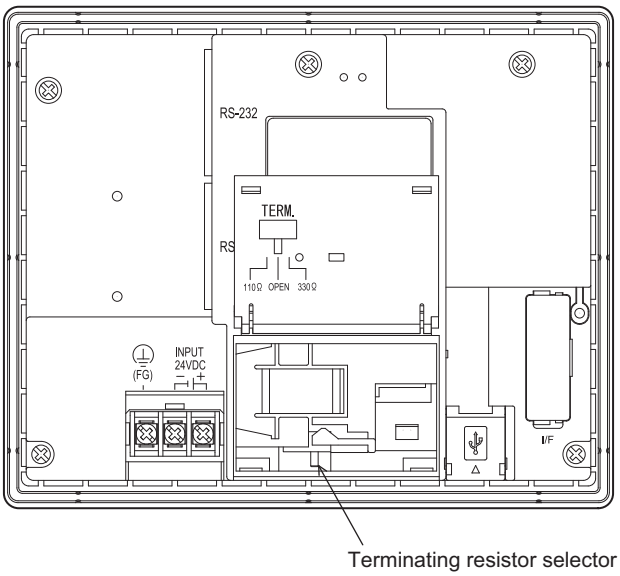


Rear view of RS-422/485 communication unit

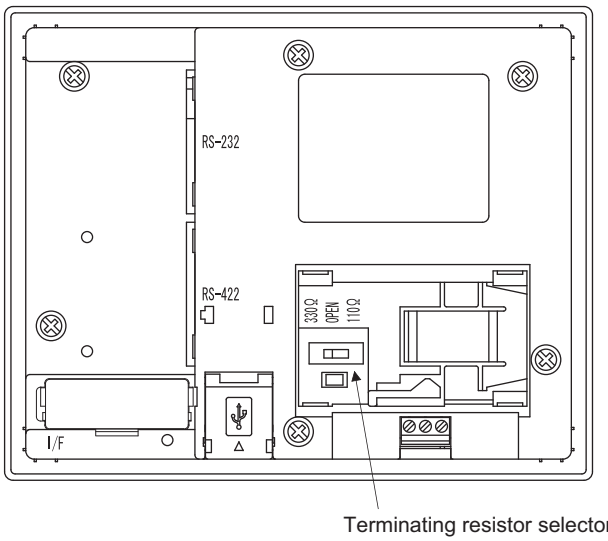
(c) GT11



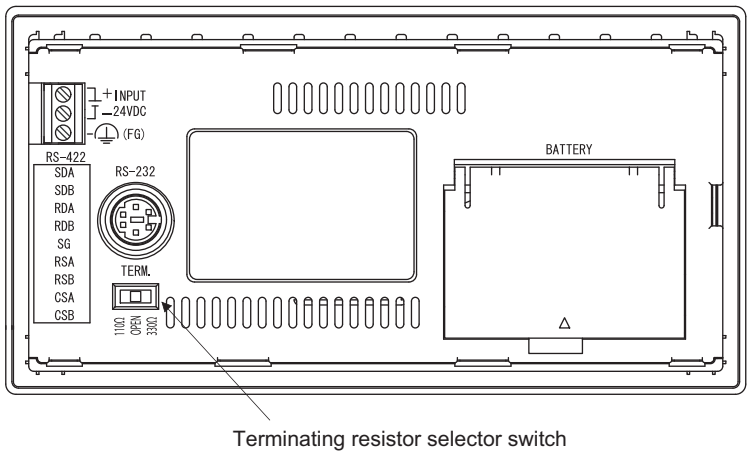
(d) GT105□



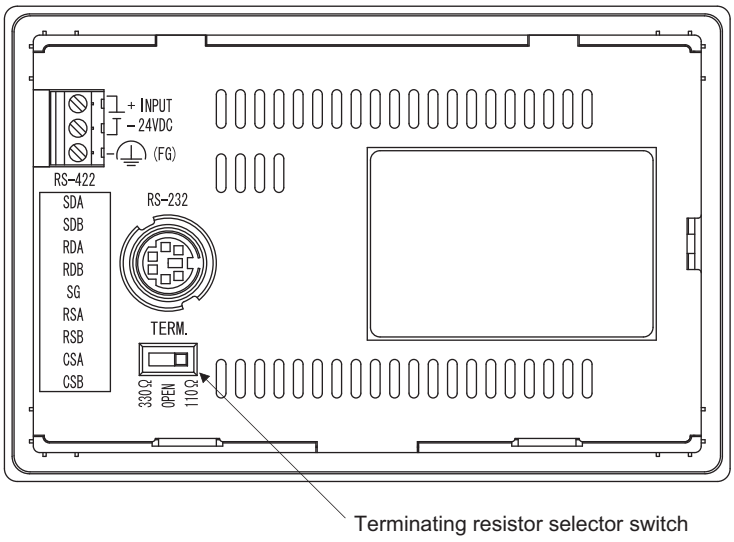
(e) GT104□



(f) GT1030



(g) GT1020



29.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 29.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 29.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 29.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 29.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 29.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 29.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

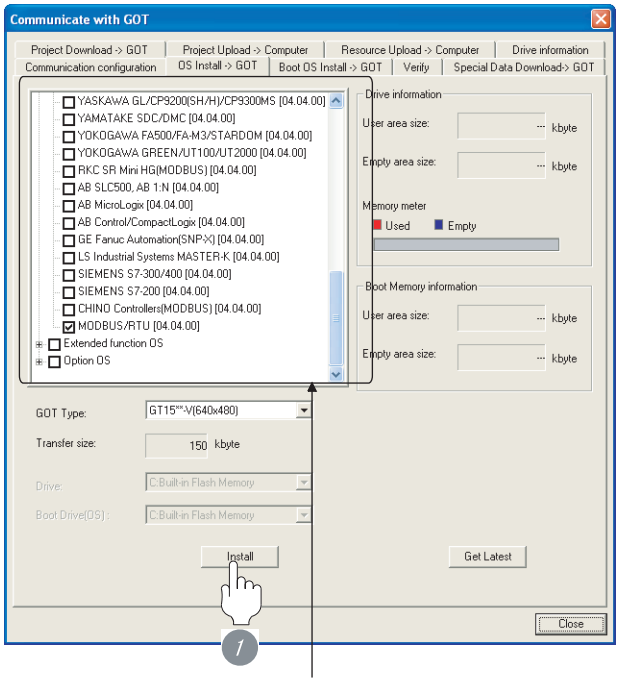
Section 29.3.7
Checking for normal monitoring

29.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check either of the following under the Communication driver.
• MODBUS/RTU

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

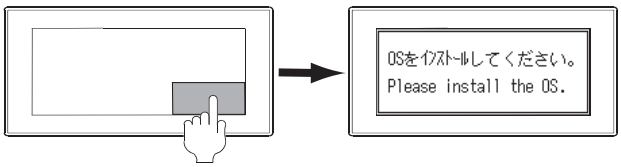
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

GT10 User's Manual

(Operating of transmission mode)



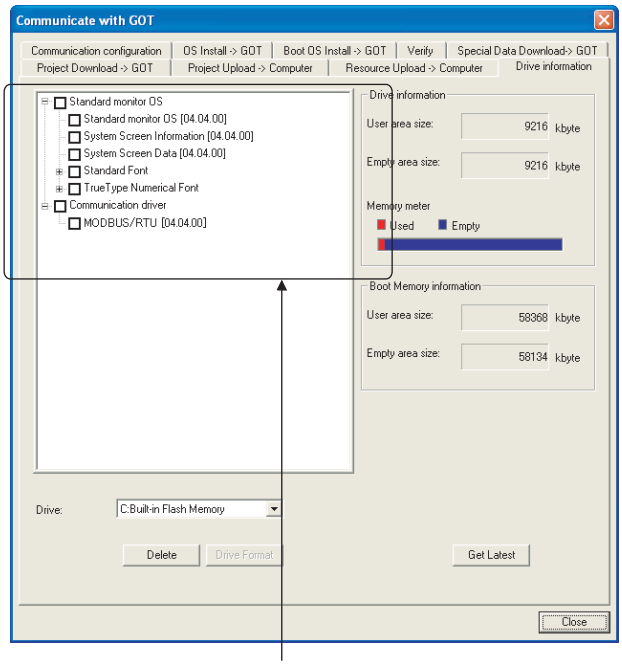
Turn on the GOT while the bottom right corner is touched.

29.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver : MODBUS/RTU

29.3.3 Setting communication interface (Communication settings)

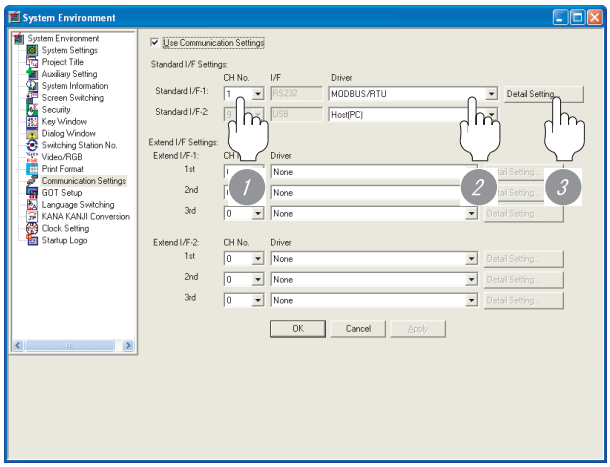
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

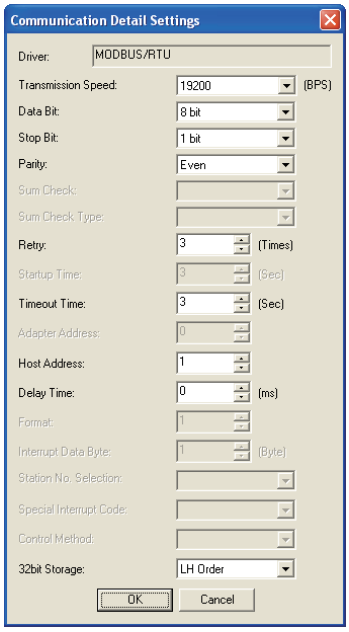


1 Set [1] to the channel No. used.

2 Set the driver to "MODBUS/RTU".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address in the connected network. <Default: 1>	1 to 247
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 3ms>	0 to 300 ms
32bit Storage	Select the 2 words (32 bits data) storage order. <Default: LH Order>	LH Order/ HL Order

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.

For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

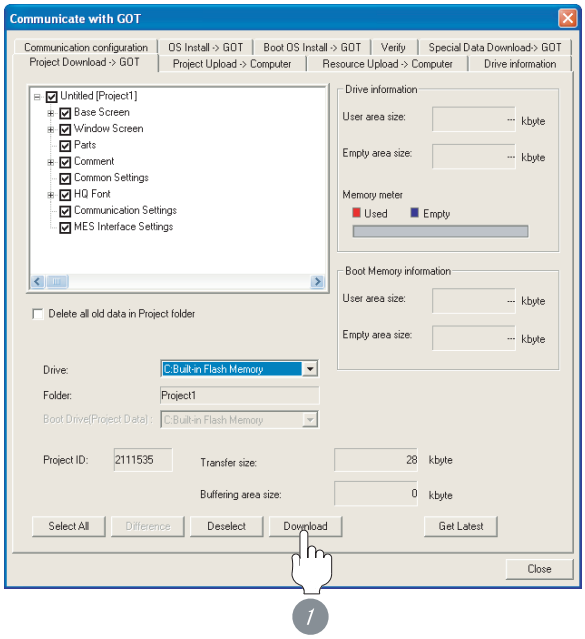
Communication settings can be changed on only GT Designer2.

29.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

29.3.5 Attaching communication unit and connecting cable

Point

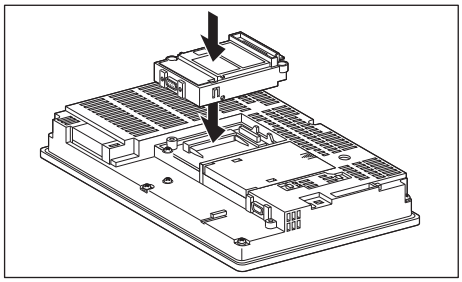
Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

(1) RS-422/485 communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-422/485 serial communication unit, refer to the following manual.

GT15 Serial Communication Unit User's Manual

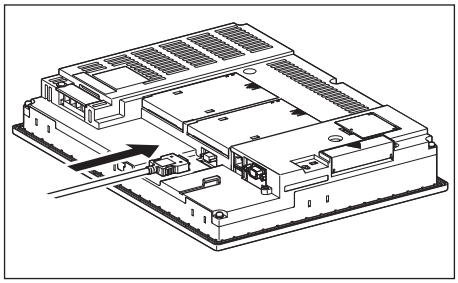
2 How to connect the cable

(1) How to connect the RS-422/485 cable

(a) For GT16

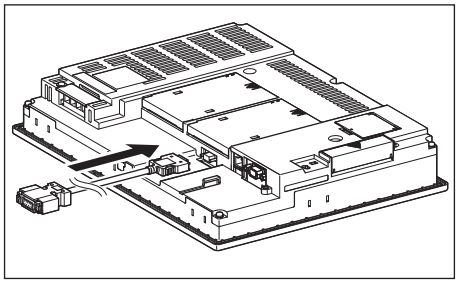
• Connection to the RS-422/485 interface

1 Connect the RS-422/485 cable to the RS-422/485 interface on the GOT.

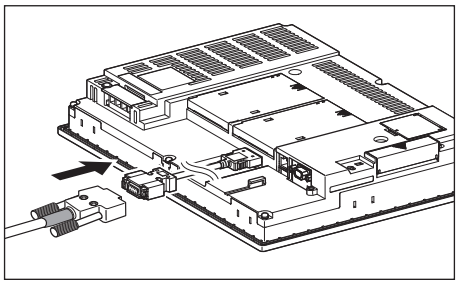


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

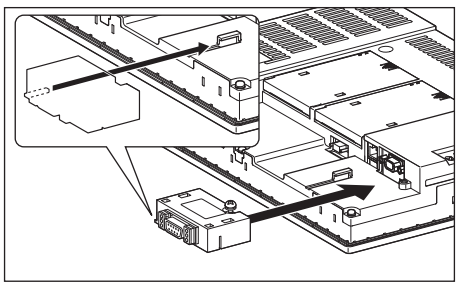


2 Connect the RS-422/485 cable to the RS-422 connector conversion cable.

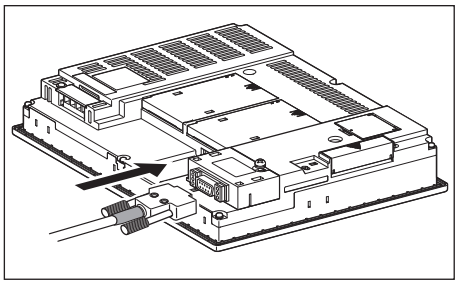


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

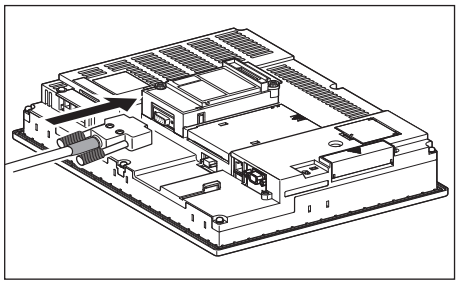


2 Connect the RS-422/485 cable to the RS-422 conversion unit.



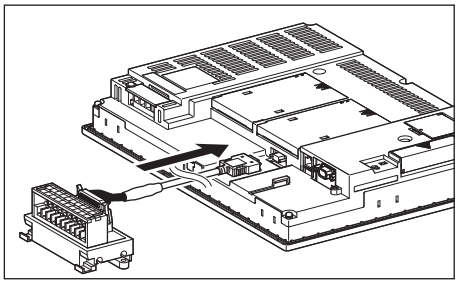
• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.

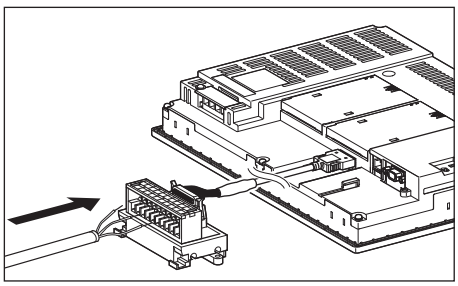


• Connection to the RS-422/485 interface with the RS-485 terminal block conversion modules

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

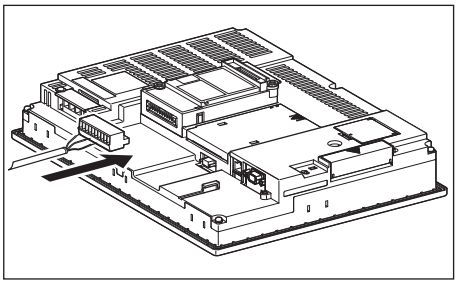


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

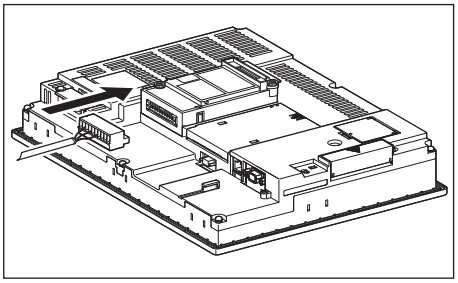


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



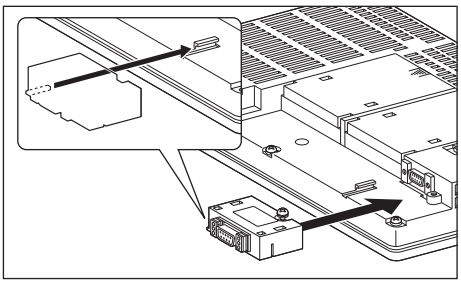
2 Connect the terminal block to the RS-422/485 communication unit on the GOT.



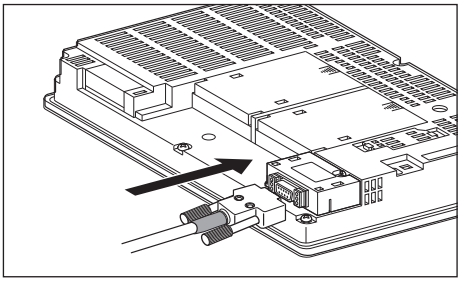
(b) For GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

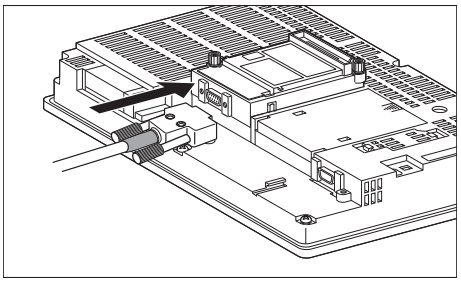


2 Connect the RS-422 cable to the RS-422 conversion unit.



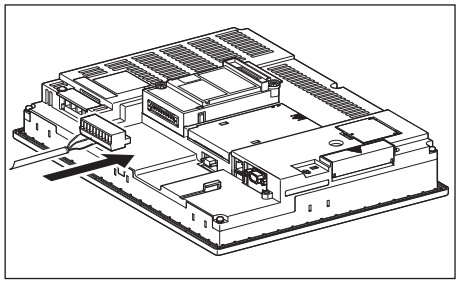
• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.

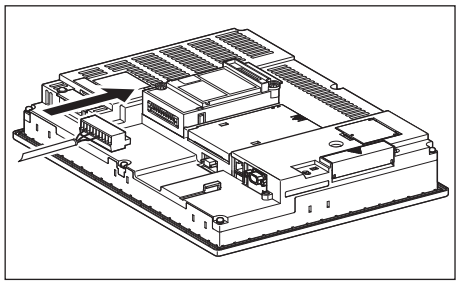


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



2 Connect the terminal block to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

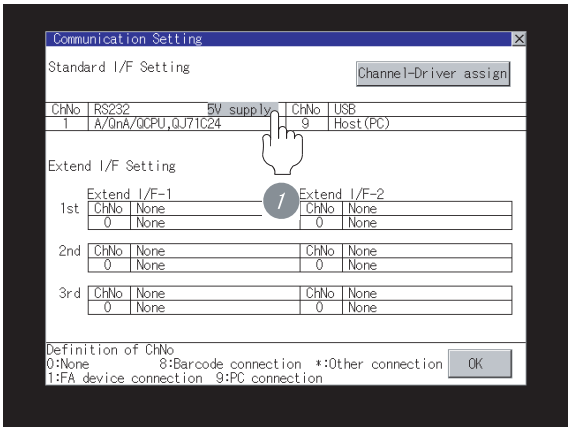
Point

When using the RS-422 conversion unit

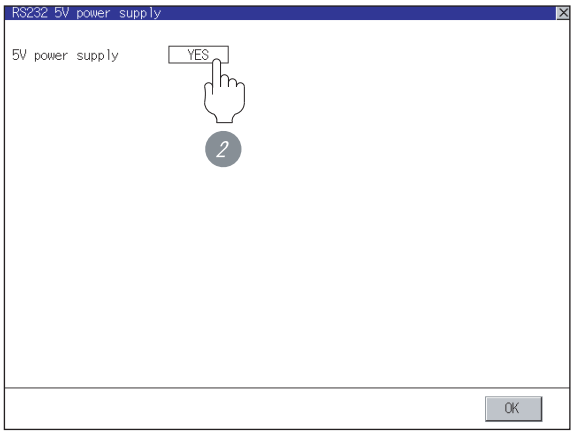
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

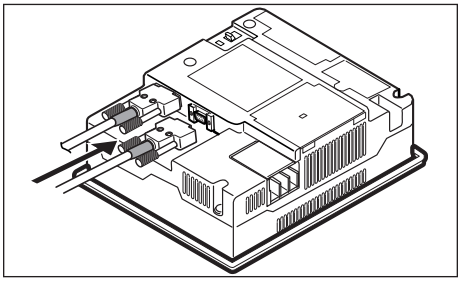


2 Set [5V power supply] to "YES".



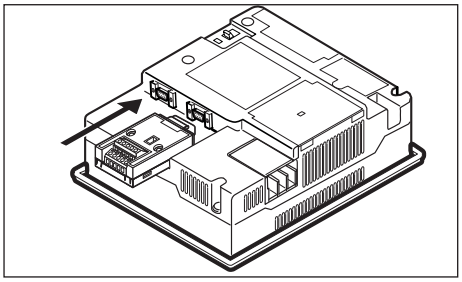
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

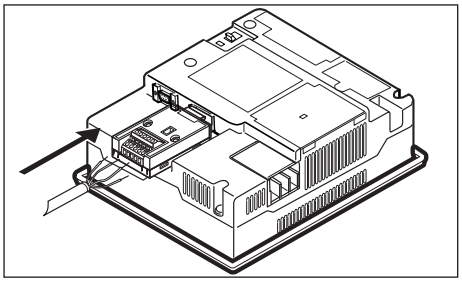


• Connection to the RS-422/485 interface with the connection conversion adapter.

1 Connect the connection conversion adapter to the RS-422/485 interface on the GOT.

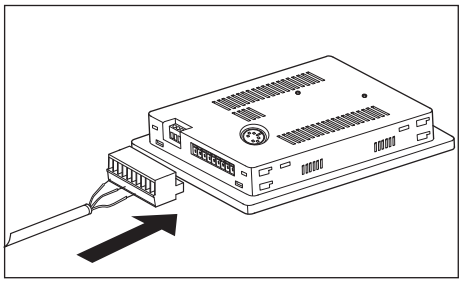


2 Connect the RS-485 cable to connection conversion adapter.

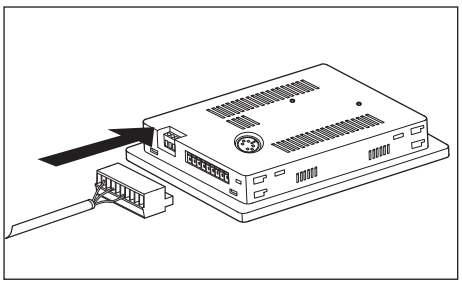


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



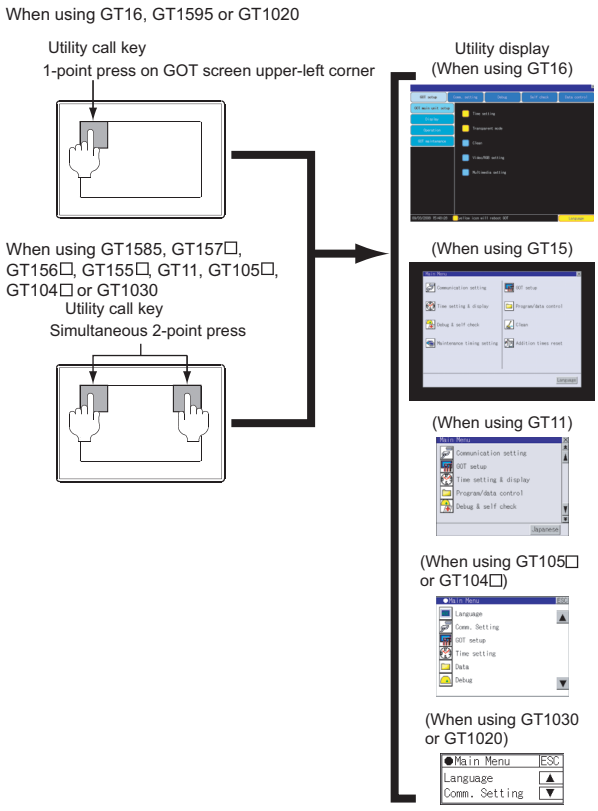
29.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

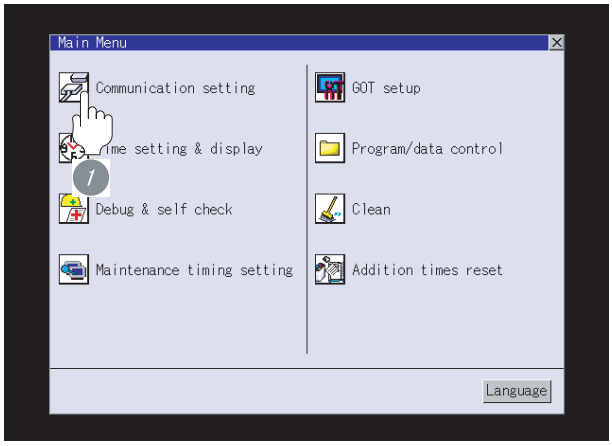


Point

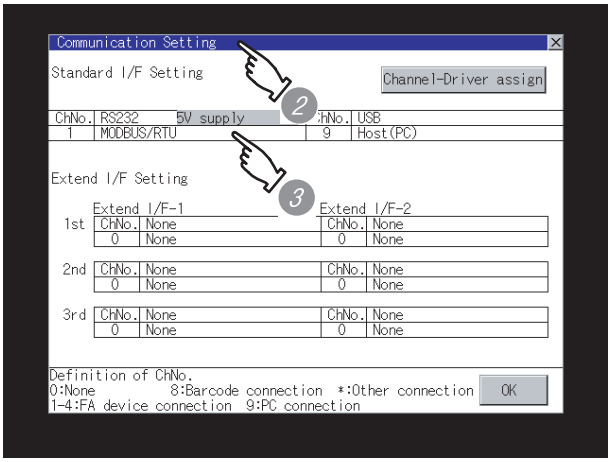
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
- Communication driver: MODBUS/RTU

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 29.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

29.3.7 Checking for normal monitoring

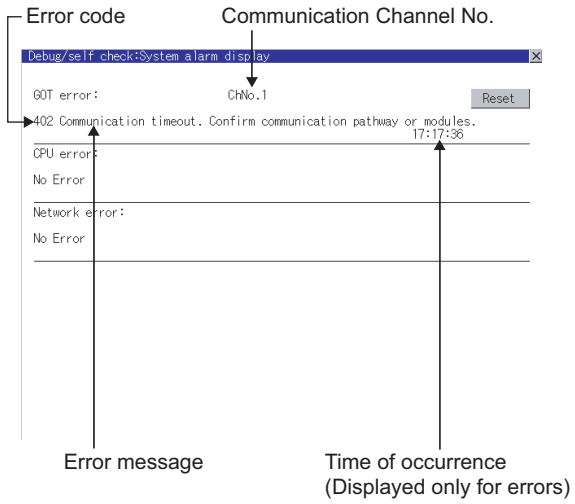
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the MODBUS/RTU equipment can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

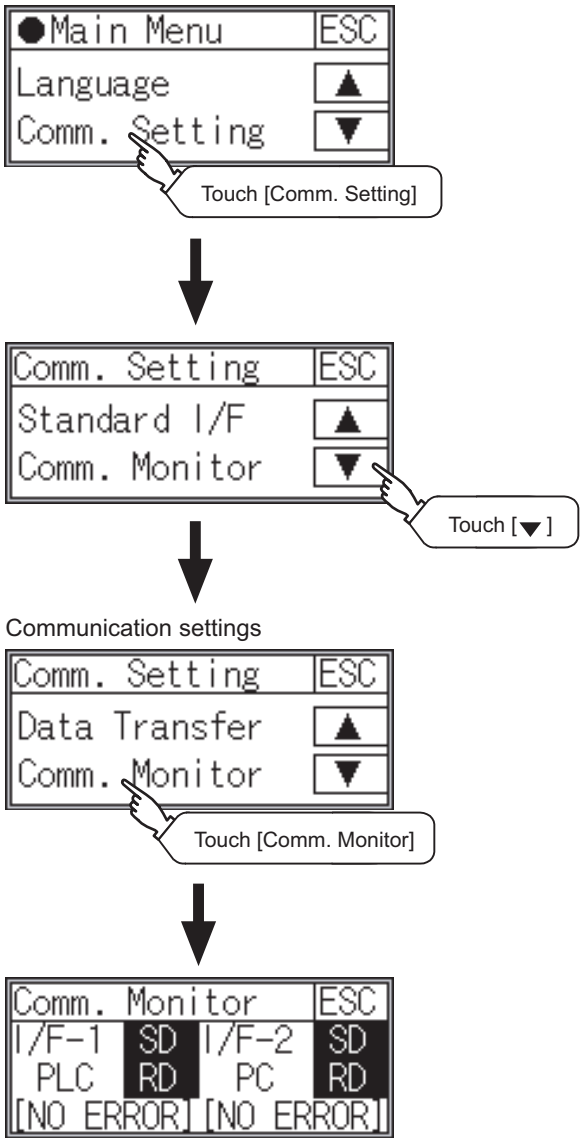
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor].

For details on the communication monitoring function, refer to the following manual:

GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



3 Confirming the MODBUS/RTU equipment side setting

When connecting the GOT, setting is required for the MODBUS/RTU equipment side.

Confirm if the MODBUS/RTU equipment side setting is correct.

☞ Section 29.4 MODBUS/RTU Equipment Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

29.4 MODBUS/RTU Equipment Side Setting

Point

MODBUS/RTU equipment

For details of the MODBUS/RTU equipment, refer to the manual of MODBUS/RTU equipment to be used.

29.4.1 Communication settings

1 Function Code

The GOT supports the following function codes.

Function Code	Function	Number of device that is accessible with one message [Unit: point(s)]
0x01	Read Coils	1 to 2000
0x02	Read Discrete Inputs	1 to 2000
0x03	Read Holding Registers	1 to 125
0x04	Read Input Registers	1 to 125
0x05	Write Single Coil	1
0x06	Write Single Register	1
0x0F	Write Multiple Coils	1 to 1968
0x10	Write Multiple Register	1 to 123
0x14	Read File Record	1 to 124
0x15	Write File Record	1 to 122

2 Adress

GT Desinger2 converts the device numbers into decimal format according to the address map of the MODBUS equipment to be used.

The table below shows the representations on the MODBUS/RTU communication protocol and GT Designer2.

MODBUS/RTU Communication protocol				Representation on GT Designer2
Device name	Function code to be used		Adress	
	Read	Write		
Coil	0x01	0x05 0x0F	0000 0001 to FFFE FFFF	000001 000002 to 065535 065536
Input relay	0x02	-	0000 0001 to FFFE FFFF	100001 100002 to 165535 165536
Input register	0x04	-	0000 0001 to FFFE FFFF	300001 300002 to 365535 365536
Holding register	0x03	0x06 0x10	0000 0001 to FFFE FFFF	400001 400002 to 465535 465536
Extension file register	0x14	0x15	0000 0001 to 270E 270F	600000 600001 to 609998 609999

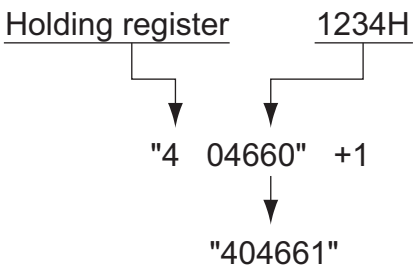
Point

Address conversion example

When monitoring the holding register's address "1234H," GT Designer2 displays "4*****" since GT Designer2 processes the internal conversion in decimal format as follows:

GT Designer2 converts the holding register's address "1234H" to "04660" in decimal format. Then, "+1" is added to this decimal address since the holding register's address on GT Designer2 always starts from "1."

Therefore, the holding register's address "1234H" is displayed as "404661" on GT Designer2.



3 MODBUS communication control function on the GS device

This function is to prevent the communication response delay that occurs because the devices on the MODBUS network differs from each other in network specification.

This function is effective for the MODBUS network conditions as described below:

- When only a part of function codes is supported (Example: "0F" is not supported)
- When the maximum transfer size of function code is small (Example: The maximum number of coil read times is 1000)

(1) GS device set value

The table below shows the settings for the GS device.

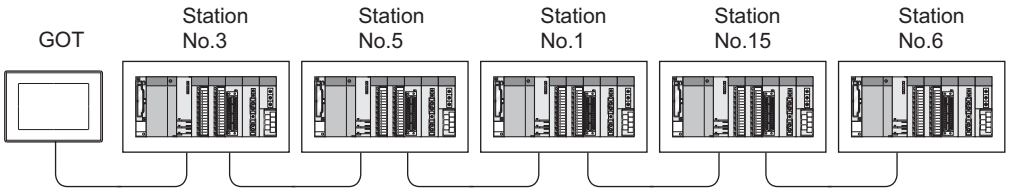
GS device*1	Description	Setting
GS570	Command selection	Bit0 : 0: Using Function Code "0F" 1: Not using Function Code "0F" Bit1 : 0: Using Function Code "10" 1: Not using Function Code "10"
GS571	Function Code "01" Specification for the max. number of coil read times	0 : 2000 1 to 2000 : Specify the maximum number. Other than above : 2000
GS572	Function Code "02" Specification for the max. number of input relay read times	0 : 2000 1 to 2000 : Specify the maximum number. Other than above : 2000
GS573	Function Code "03" Specification for the max. number of holding register read times	0 : 125 1 to 125 : Specify the maximum number. Other than above : 125
GS574	Function Code "04" Specification for the max. number of input register read times	0 : 125 1 to 125 : Specify the maximum number. Other than above : 125
GS575	Function Code "0F" Specification for the max. number of multiple-coil write times	0 : 800 1 to 1968 : Specify the maximum number. Other than above : 1968 When Bit0 of GS570 is "1", the function code "0F" is not used, and therefore the setting of GS575 will be disabled.
GS576	Function Code "10" Specification for the max. number of multiple-holding register write times	0 : 100 1 to 123 : Specify the maximum number. Other than above: 123 When Bit1 of GS570 is "1", the function code "10F" is not used, and therefore the setting of GS576 will be disabled.

(2) Precautions

- When the MODBUS/RTU communication driver is assigned to multiple channel numbers using the multi-channel function, the setting data is shared between the assigned multiple channel numbers.
- The GS device can be changed even in the middle of the operation.

29.4.2 Station number setting

In the MODBUS network, a maximum of 31 MODBUS equipment can be connected to one GOT.
Assign a non-overlapped station number ranging from 1 to 247 arbitrarily to each MODBUS equipment.
In the system configuration, the MODBUS equipment with the station number set with the host address must be included.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

29.5 Precautions

1 Station No. settings of the MODBUS equipment side

In the system configuration, the MODBUS equipment with the station number set with the host address must be included.For details of host address setting, refer to the following.

☞ Section 29.3.3 Setting communication interface (Communication settings)

2 GOT clock control function

The settings of "time adjusting" or "time broadcast" made on the GOT will be disabled on the PLC.

3 Disconnecting a part of multiple connected equipments

The GOT can disconnect some of multiple connected equipments by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipments.

For details of GOT internal device setting, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual (2.9.1 GOT internal devices)

29.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT16 GT15 GT11 Serial	MODBUS/RTU CONNECTION	Supporting the connections to MODBUS/RTU equipment	2.96A	Communication driver MODBUS/RTU [04.04.**]
GT105□ GT104□ GT24V10 20 30				Standard monitor OS [01.12.**] Communication driver MODBUS/RTU [01.07.**]

MEMO

30

MODBUS(R)/TCP CONNECTION



30.1 System Configuration . . . . . page 30-2

This section describes the equipment and cables needed when connecting to MODBUS®/TCP.
Select a system suitable for your application.

30.2 Preparatory Procedures for Monitoring . . . . . page 30-5

This section describes the procedures to be followed before monitoring in MODBUS®/TCP connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

30.3 PLC Side Setting . . . . . page 30-16

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

30.4 Precautions . . . . . page 30-18

This section describes the precautions on MODBUS®/TCP connection.
Be sure to read this when establishing MODBUS®/TCP connection.

30.5 List of Functions Added by Version Upgrade . . . . . page 30-19

This section describes the functions added by version upgrade of GT Designer2 or OS.

30.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

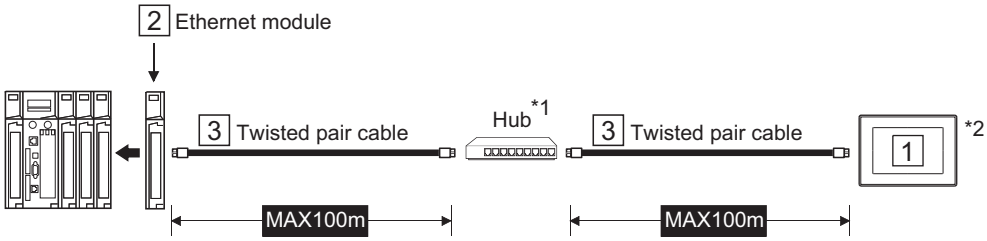
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

Communication driver

MODBUS/TCP

30.1.1 Connecting to SCHNEIDER PLC (Modicon Premium series and Modicon Quantum series)

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	distance	
64	100m or less*3	

*1 Connect the GOT to the Ethernet module via a hub.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

*2 When connecting GT16 to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in an environment where 10Mbps and 100Mbps can be mixed.

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) PLC

Image	No.	Name	Model name
	2	Ethernet module Modicon Premium Series	TSX ETY 4102, TSX ETY 5102
		Ethernet module Modicon Quantum Series	140 NOE 771 00, 140 NOE 771 10, 140 NWM 100 00

2 is the product manufactured by SCHNEIDER ELECTRIC SA. For details of the product, contact SCHNEIDER ELECTRIC SA.

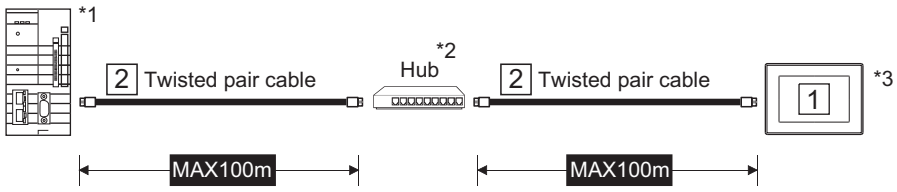
(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable*1	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

*1 Use the straight cable.

30.1.2 Connecting to YOKOGAWA PLC (STARDOM)

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	distance	
126	100m or less*4	

*1 When connecting STARDOM to MODBUS®/TCP, Modbus Communication Portfolio License is required. For details, refer to the following manual.

YOKOGAWA PLC Manual

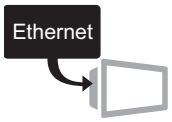
*2 When connect a GOT to a PLC, connect to the PCL Ethernet port via a hub.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

*3 When connecting GT16 to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in an environment where 10Mbps and 100Mbps can be mixed.

*4 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) Cable

Image	No.	Name	Model name
	2	Twisted pair cable*1	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

*1 Use the straight cable.

30.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 30.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 30.2.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 30.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 30.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 30.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 30.2.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 30.2.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

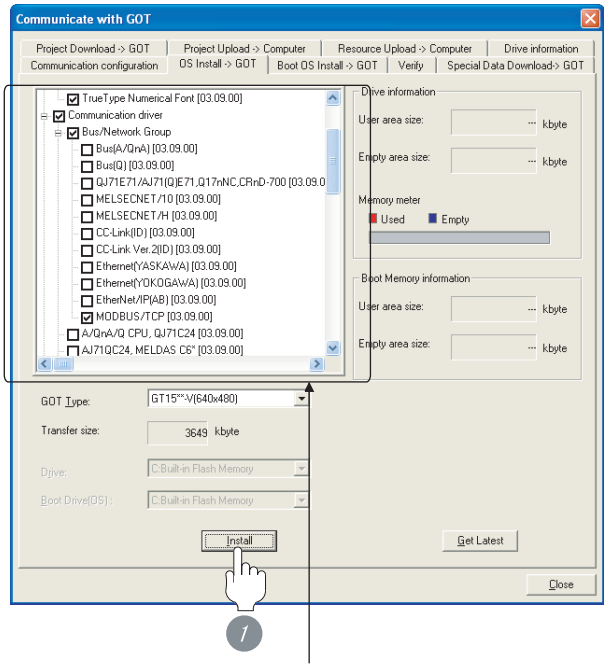
☞ Section 30.3 PLC Side Setting

30.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• MODBUS/TCP

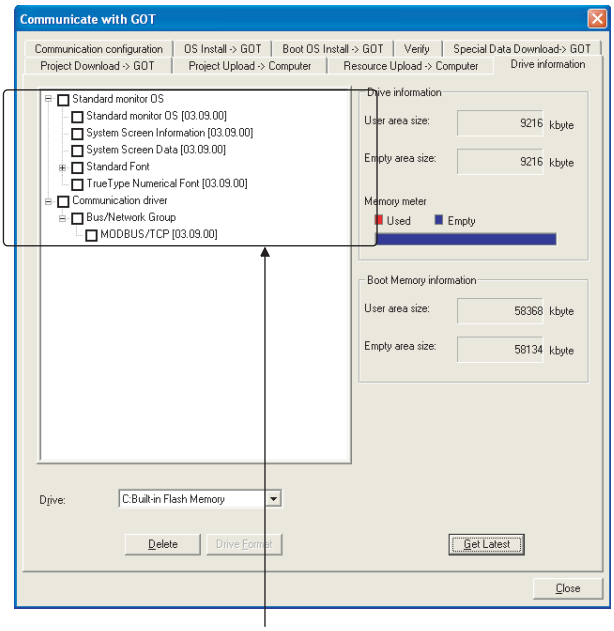
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

30.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: MODBUS/TCP

30.2.3 Setting communication interface (Communication settings)

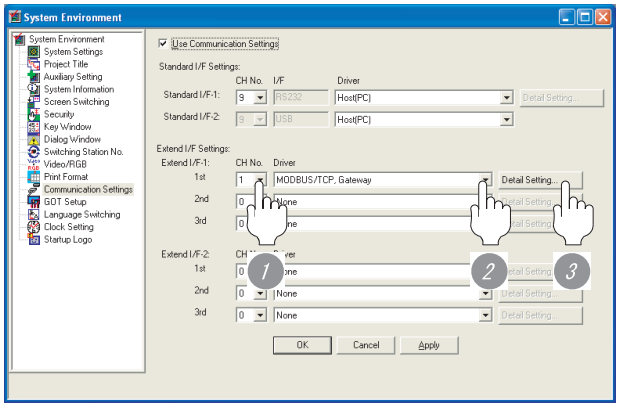
Make the GOT communication interface settings on [Communication setting] and [Ethernet] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication setting] and [Ethernet] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(For GT15)

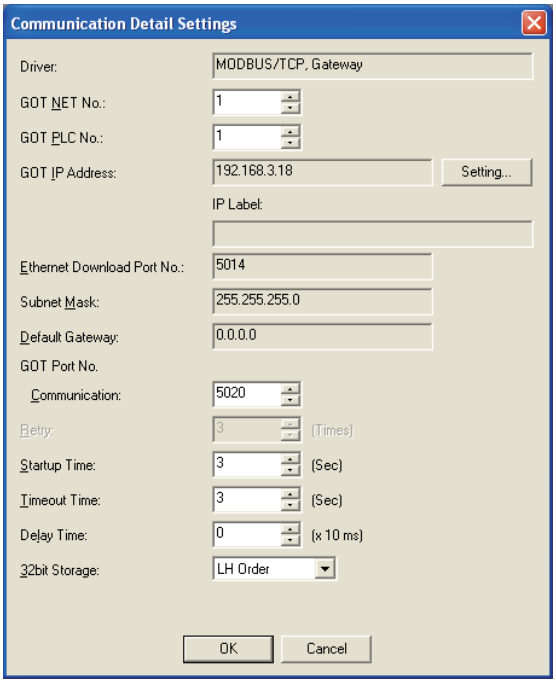
1 Set [1] to the channel No. used.

2 Set the driver to [MODBUS/TCP, Gateway].

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

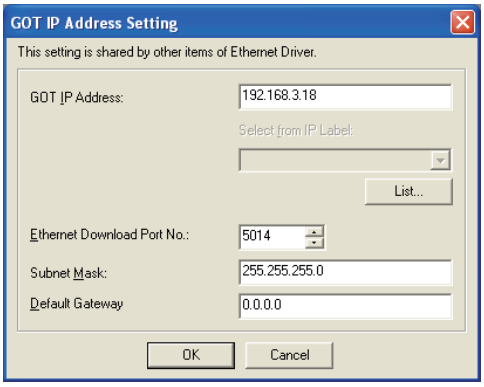
2 Communication detail settings

(1) GT16

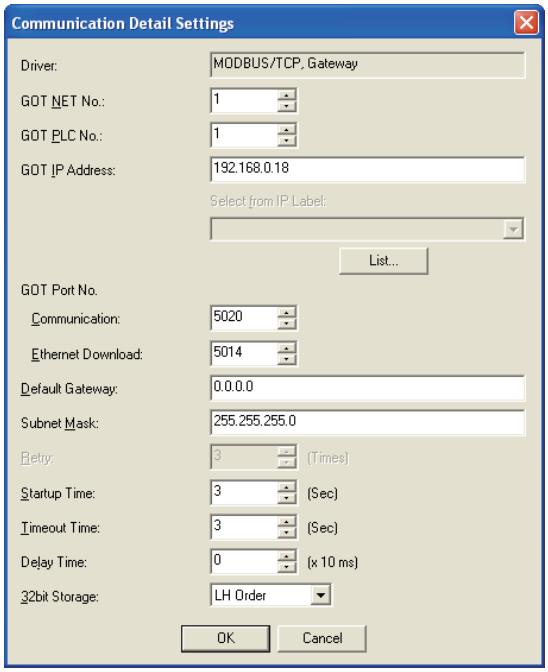


Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 247
GOT IP Address*1	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.*1	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*1	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*1	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5020>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10ms)
32bit Storage	Select the 2 words (32 bits data) storage order. (Default: LH Order)	LH Order/HL Order

*1 Click the Setting button and perform the setting in the [GOT IP Address Setting] screen.

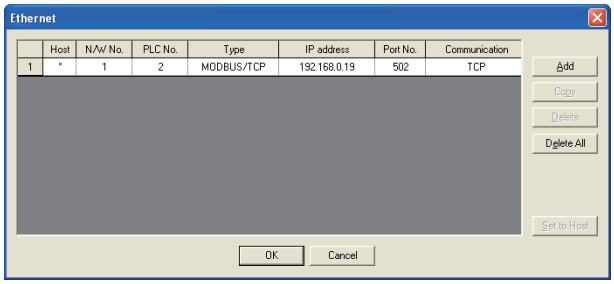


(2) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 247
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5020>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No. (Ethernet Download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)
32bit Storage	Select the 2 words (32 bits data) storage order. (Default: LH Order)	LH Order/HL Order

3 Ethernet setting



Item	Description	Range
Host	The host is displayed. (The host is indicated with an asterisk (*).)	-
N/W No.	Set the network No. of the connected Ethernet module. <Default: blank>	1 to 239
PLC No.	Set the station No. of the connected Ethernet module. <Default: blank>	1 to 247
Type*1	MODBUS/TCP (fixed)	MODBUS/TCP (fixed)
IP address	Set the IP address of the connected Ethernet module. <Default: blank>	PLC side IP address
Port No.	502 (fixed)	502 (fixed)
Communication	TCP (fixed)	TCP (fixed)

*1 Select [MODBUS/TCP] for [Type].
For the applicable Ethernet module, refer to the following.
☞ Section 30.1 System Configuration

Point

(1) Communication interface setting by Utility
The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
☞ GT ☐ User's Manual

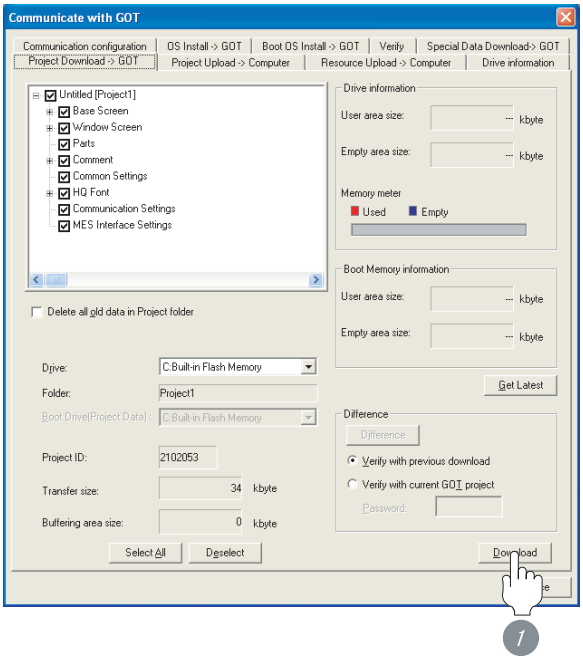
(2) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

30.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

30.2.5 Attaching communication unit and connecting cable

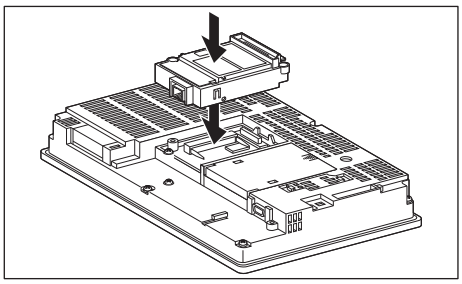
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

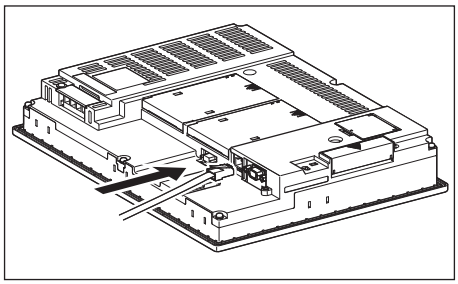
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet Communication Unit User's Manual

2 Connecting the cable

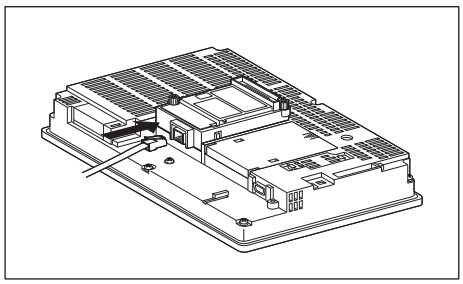
(1) For GT16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) For GT15

1 Connect the twisted pair cable to the Ethernet communication unit.



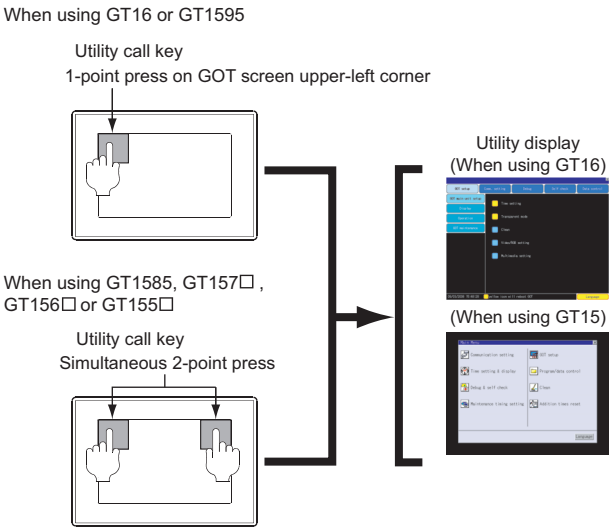
30.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)



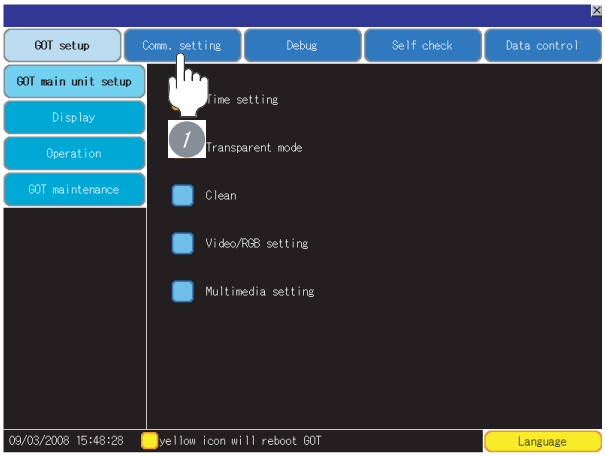
Point

When setting the utility call key to 1-point

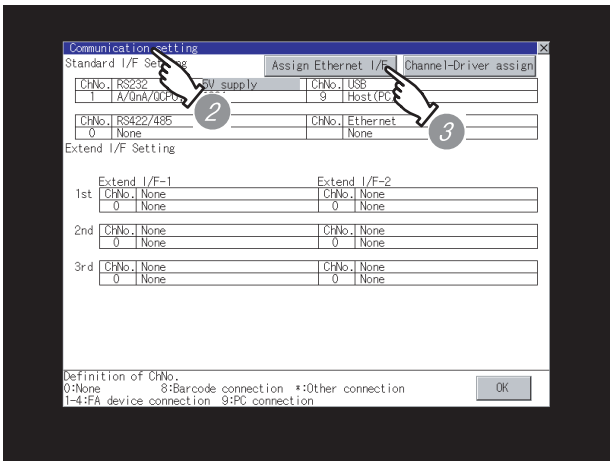
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual

(1) GT16

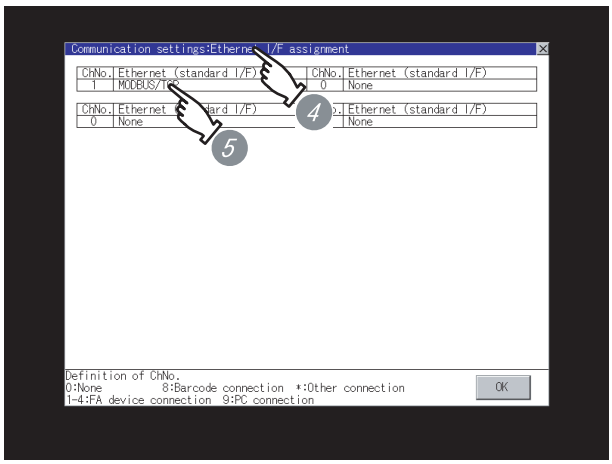


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet/IF].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver :MODBUS/TCP

6 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 30.2 Preparatory Procedures for Monitoring

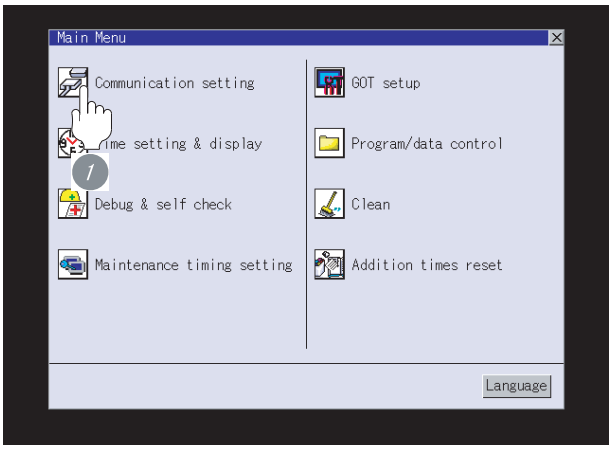
Point

When changing communication interface setting by Utility

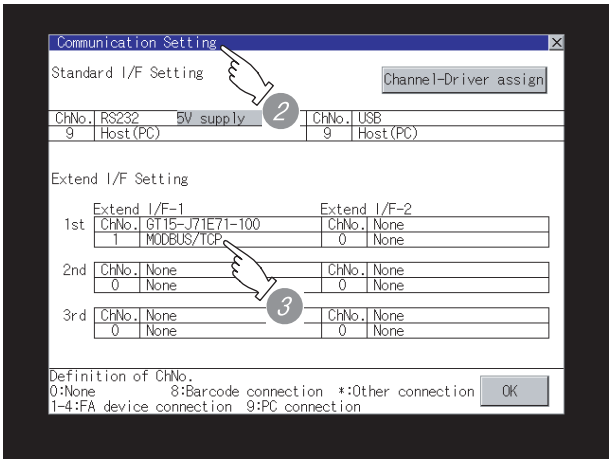
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility)

(2) GT15



1 After powering up the GOT, touch [Main Menu] → [Communication Settings] from the Utility.



2 The [Communication Settings] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver :MODBUS/TCP

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 30.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT15 User's Manual

30.2.7 Checking for normal monitoring

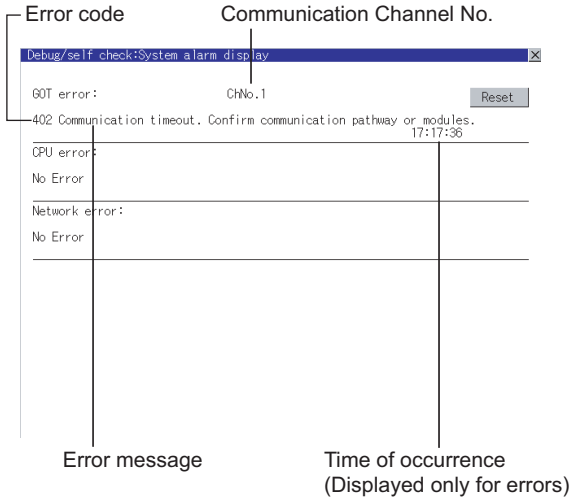
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT □ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version □ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication

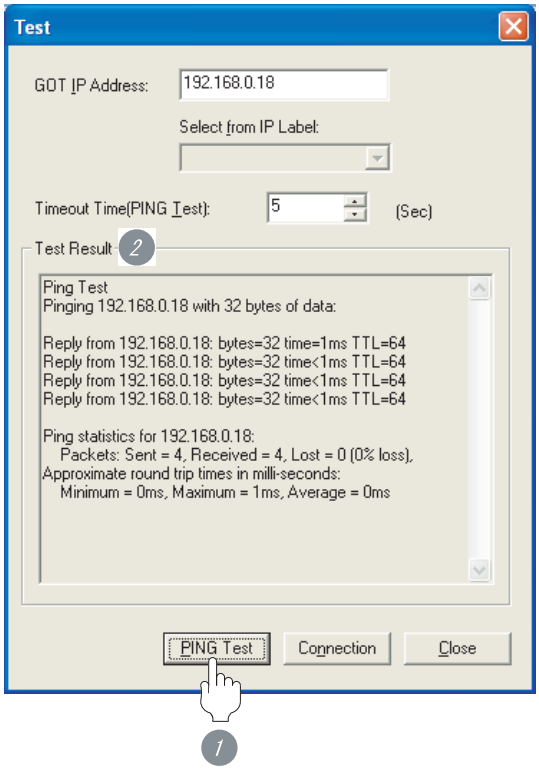
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication

C:\>Ping 192.168.0.18
Request timed out.

(2) When using the "PING Test" of GT Designer2

Select [Communication] → [Communication configuration] → "Ethernet" and [Test] to display "PING Test".



1 Specify the "GOT IP address" of the "PING Test" and click on the [PING Test] button.

2 The "Test Result" is displayed after the "PING Test" is finished.

(3) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of "Communication settings"
- IP address of GOT specified by Ping command

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 30.3 PLC Side Setting

4 Confirming the communication state to each station (station monitoring function)

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT.

When detecting the abnormal state, it is confirming the response by executing a Ping command to the faulty station.

The station monitoring state can be confirmed by using GOT internal device.

(1) Station monitoring state

(a) No. of faulty station (GS230)

Total No. of the faulty CPU are stored.
The station No. of faulty stations are stored to GS231 through GS238. (☞ (b)Faulty station information (GS231 to GS238))

Device	b15 to b8	b7 to b0
GS230	(00H fixed)	No. of faulty stations

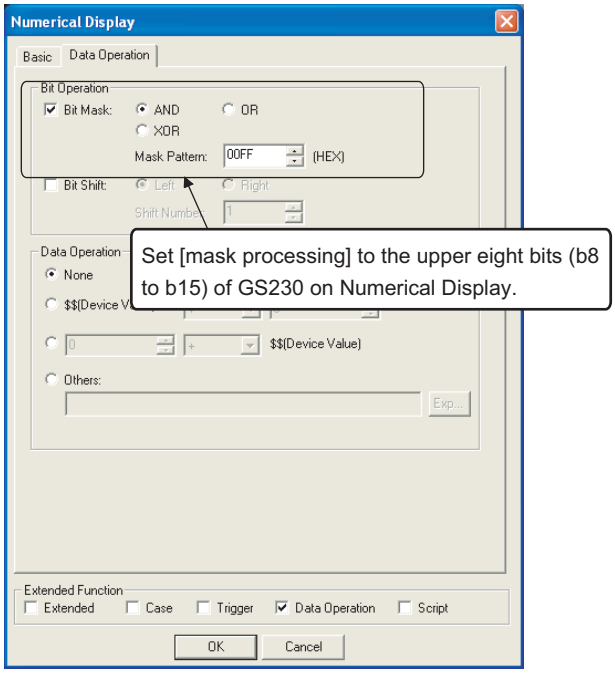
Point

When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.
For the data operation, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

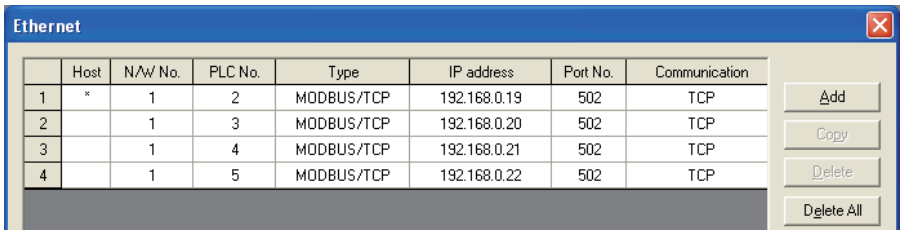
<Numerical Display (Data Operation tab) >



(b) Faulty station information (GS231 to GS238)

• The bit of the Ethernet setting No. corresponding to the faulty station is set.
  0: Normal
  1: Abnormal
• The bit is reset after the fault is recovered.

GS231 bit 0 · · ·
GS231 bit 1 · · ·
GS231 bit 2 · · ·
GS231 bit 3 · · ·



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

30.3 PLC Side Setting

Model name			Refer to
SCHNEIDER PLC Ethernet unit	Modicon Premium series	TSX ETY 4102, TSX ETY 5102	30.3.1
	Modicon Quantum series	140 NOE 771 00, 140 NOE 771 10, 140 NWM 100 00	
YOKOGAWA PLC (STARDOM)		NFCP100, NFJT100	30.3.2

30.3.1 Connecting to SCHNEIDER PLC (Modicon Premium series and Modicon Quantum series)

Point

SCHNEIDER PLC

For details of SCHNEIDER PLC, refer to the following manual.

☞ SCHNEIDER PLC manual

1 Parameter settings

Set the parameter settings with programming software for SCHNEIDER PLC.

(1) For Modicon Premium series

Set for PL7 Pro programming software.

Item	Set value
Processors	Connected CPU module
Memory cards	Memory card to be used
Module	Connected Ethernet module
IP Address	IP address for Ethernet module
Size of global address fields	Setting for device points Bits: Coil, Input Words: Input register, Maintenance register

(2) For Modicon Quantum series

Set for Concept programming software.

Item	Set value
PLC Selection	Connected CPU module
TCP/IP Ethernet	Numbers of unit
I/O Module Selection	Connected Ethernet module
Internet Address	IP address for Ethernet module

30.3.2 Connecting to YOKOGAWA PLC (STARDOM)

Set the communication settings as shown below. For details of the communication settings, refer to the following manual.

☞ Peripheral Software Manual for YOKOGAWA PLC

Point

Connection between STARDOM and the PC for communication settings

For the communication settings of STARDOM, STARDOM and the PC for communication settings are required to connect to Ethernet using the Resource Configurator (peripheral software).

1 Modbus Communication Portfolio License

To set the communication settings for STARDOM, an installation of Modbus Communication Portfolio License is required.

For details of the communication settings, refer to the following manual.

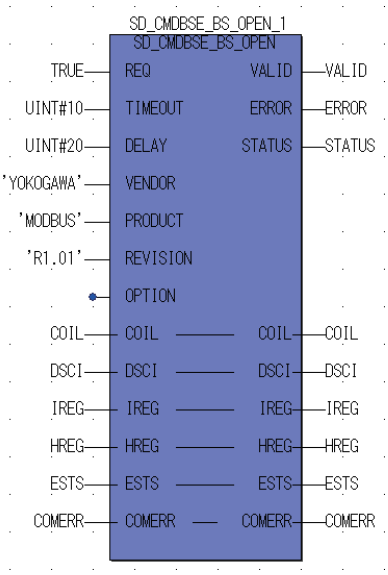
☞ STARDOM FCN/FCJ Guide

2 Defining Logic POU

Define Logic POU using Logic Designer (peripheral software), and download the project to STARDOM.

1. Start Logic Designer and create a new project using a template.
   Use [STARDOM Serial Communication] template.
2. Insert Firmware Library to the new project.
   The library path inserted in the procedures above is as follows.
   {Install Folder}\LogicDesigner\Mwt\Plc\Fw_lib\SD_FCXPLCE_LIB\SD_FCXPLCE_LIB.fwl
3. Insert User Library to the new project.
   The library path inserted in the procedures above is as follows.
   {Install Folder}\LogicDesigner\Libraries\SD_CMODBUSE_PF.mwt
   {Install Folder}\LogicDesigner\Libraries\SD_CUTIL_PF.mwt
   {Install Folder}\LogicDesigner\Libraries\SD_CMODBUSS_PF.mwt

4 Copy a sample project POU to the new project.
For the following terminals, set as shown below.



5 Set devices to be monitored by a GOT.
Set parameter devices for STARDOM project data to be monitored by the GOT.

6 Defining the instance
Instantiate Logic POU. Define an already defined instance to Task0.

7 Defining Target Setting
Define the IP address of STARDOM to set the communication settings.

8 Downloading the project
When the download is completed, start STARDOM.

30.4 Precautions

1 Device range for connecting to YOKOGAWA PLC

When performing monitoring with the GOT connected to a YOKOGAWA PLC and setting devices for objects, use devices within the device range of the YOKOGAWA PLC.
When a device outside the range is set on an object, an indefinite value is displayed on the object. (No error is displayed in the system alarm.)
For details on the device range of YOKOGAWA PLCs, refer to the following manual:

☞ User's Manual for the YOKOGAWA PLC

2 Connecting to STARDOM

(1) For dual-redundant configuration
When STARDOM is configured with a redundant system, the connection is not supported.

(2) Not communicating with GOT and STARDOM in a specified period
When the GOT does not communicate with STARDOM in a specified period during the GOT is turned on, STARDOM disconnects the line for the GOT. As the line is disconnected, the GOT displays an error when the GOT monitors STARDAM after the disconnection.
After the error displayed as the system alarm (No.402: timeout error) on the GOT, the normal communication is recovered and the GOT can monitor STARDOM.

3 When connecting to multiple GOTs

(1) Setting PLC No.

When connecting two or more GOTs in the MODBUS® /TCP network, set each [PLC No.] to the GOT.

☞ Section 30.2.3 Setting communication interface (Communication settings)

(2) Setting IP address
Do not use the IP address [192.168.0.18] when using multiple GOTs.
A communication error may occur on the GOT with the IP address.

4 When setting IP address

Do not use "0" and "255" at the end of an IP address.
(Numbers of *.*.*.0 and *.*.*.255 are used by the system.)
The GOT may not monitor the controller correctly with the above numbers.
Consult with the administrator of your network before setting an IP address to the GOT and controller.

5 When connecting to the multiple network equipments (including GOT) in a segment

By increasing the network load, the transmission speed between the GOT and PLC may be reduced.
The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

30.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
MODBUS®/ TCP connection	Supporting the MODBUS®/TCP connection	2.73B	Communication driver MODBUS/TCP [03.09.**]
MODBUS®/ TCP connection	Supporting the connections to GT16	2.90U	Communication driver MODBUS/TCP [04.02.**]

MEMO

TEMPERATURE CONTROLLER CONNECTIONS

Chapter 31 CONNECTION TO OMRON TEMPERATURE CONTROLLER

Chapter 32 CONNECTION TO SHINKO TECHNOS INDICATING CONTROLLER

Chapter 33 CONNECTION TO CHINO CONTROLLER

Chapter 34 CONNECTION TO FUJI SYS TEMPERATURE CONTROLLER

(Continued to next page)

Chapter 35 CONNECTION TO YAMATAKE TEMPERATURE CONTROLLER

Chapter 36 CONNECTION TO YOKOGAWA TEMPERATURE CONTROLLER

Chapter 37 CONNECTION TO RKC TEMPERATURE CONTROLLER

31

CONNECTION TO OMRON TEMPERATURE CONTROLLER



31.1 System configuration . . . . . page 31-2

This section describes the equipment and cables needed when connecting a GOT to a OMRON temperature controller. Select a system suitable for your application.

31.2 Connection Cable. . . . . page 31-11

This section describes the specifications of the cables needed when connecting a GOT to a OMRON temperature controller. Check the specifications of the connection cables.

31.3 Preparatory Procedures for Monitoring . . . . . page 31-21

This section provides the procedures to be followed before performing monitoring in connection to a OMRON temperature controller. The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

31.4 Temperature Controller Side Setting . . . . . page 31-29

The OMRON temperature controller side settings for GOT connection are explained. When checking the PLC side settings, refer to this section.

31.5 Precautions . . . . . page 31-31

This section describes the precautions about temperature controller connection. Refer to this section without fail before starting temperature controller connection.

31.6 List of Functions Added by Version Upgrade . . . . . page 31-32

This section describes the functions added by version upgrade of GT Designer2 or OS.

31.1 System configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

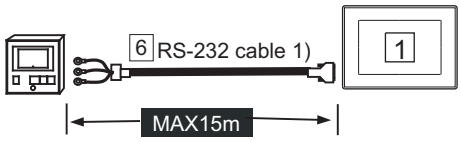
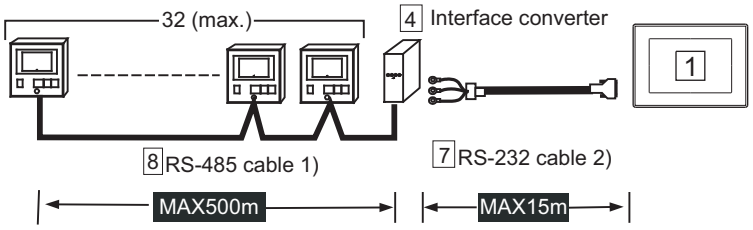
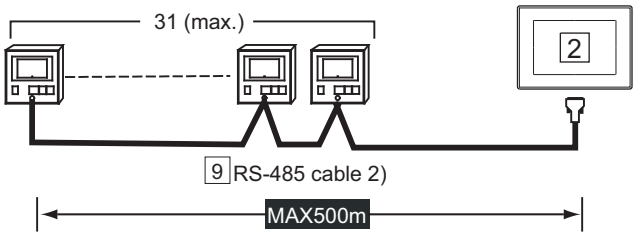
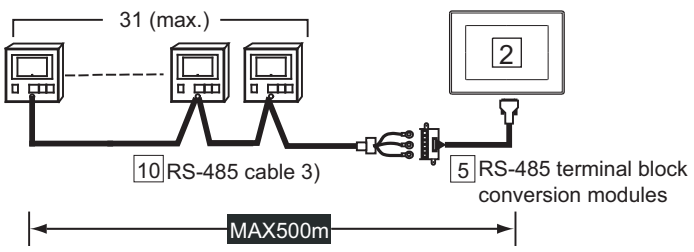
Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.

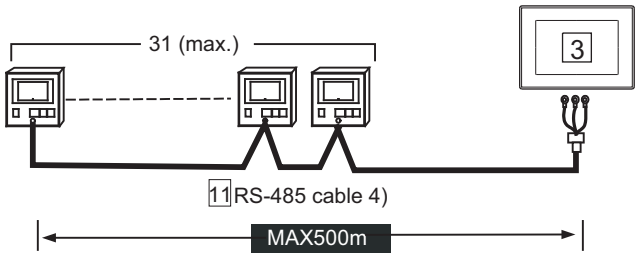
31.1.1 Connecting E5AN, E5EN

Communication driver

OMRON
THERMAC/INPANEL NEO

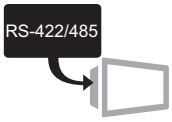
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	1	Between temperature controller and GOT 15m or less		GT16 GT15 GT11 Serial
1	32 (max.)	Between interface converter and GOT 15m or less Between temperature controller and interface converter 500m or less		
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

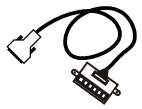
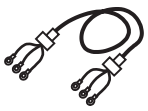
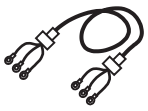
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	4	Interface converter	K3SC-10

4 is a product manufactured by OMRON. For details of this product, contact OMRON.

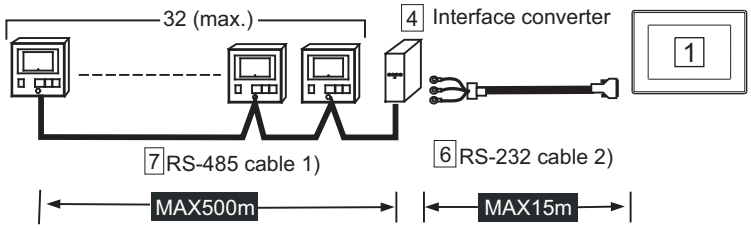
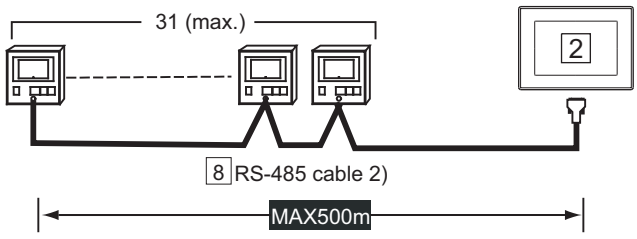
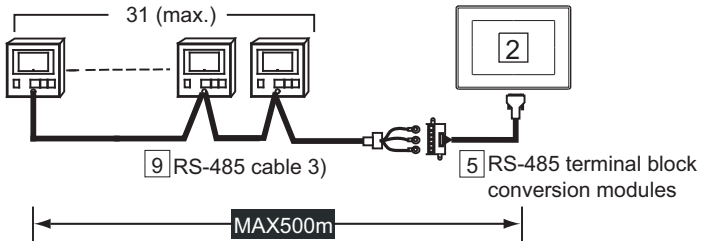
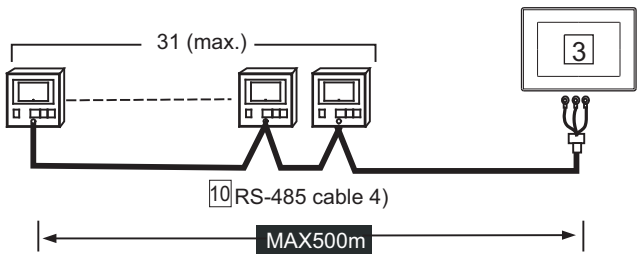
(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 1) • Between temperature controller and GOT	(To be prepared by the user. ☞ Section 31.2 Connection Cable)	GT16 GT15 GT11 Serial
	7	RS-232 cable 2) • Between interface converter and GOT		
	8	RS-485 cable 1) • Between temperature controller and GOT		
	9	RS-485 cable 2) • Between temperature controller and GOT		GT16
	10	RS-485 cable 3) • Between temperature controller and RS-485 terminal block conversion modules		
	11	RS-485 cable 4) • Between temperature controller and GOT		GT16 GT15

5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

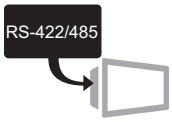
Communication driver
OMRON
THERMAC/INPANEL NEO

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	32 (max.)	Between interface converter and GOT 15m or less Between temperature controller and interface converter 500m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

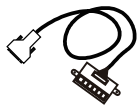
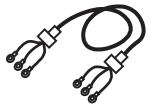
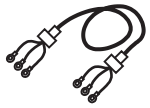
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	4	Interface converter	K3SC-10

4 is a product manufactured by OMRON. For details of this product, contact OMRON.

(3) Cable

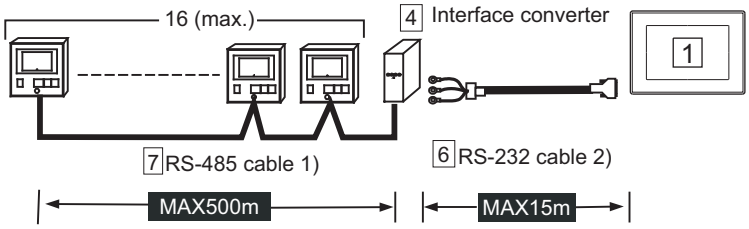
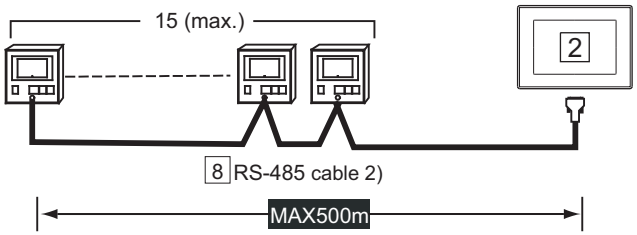
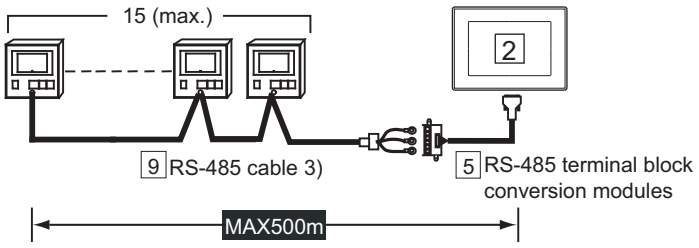
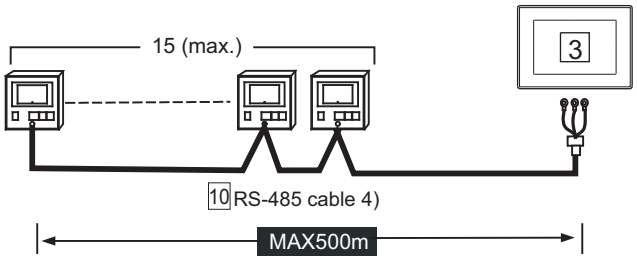
Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 2) • Between interface converter and GOT	(To be prepared by the user. ☞ Section 31.2 Connection Cable)	GT16 GT15 GT11 Serial
	7	RS-485 cable 1) • Between interface converter and temperature controller		
	8	RS-485 cable 2) • Between temperature controller and GOT		GT16
	9	RS-485 cable 3) • Between temperature controller and RS-485 terminal block conversion modules		
	10	RS-485 cable 4) • Between temperature controller and GOT		GT16 GT15

5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

31.1.3 Connecting to E5ZN

Communication driver
OMRON
THERMAC/INPANEL NEO

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	16 (max.)	Between interface converter and GOT 15m or less Between temperature controller and interface converter 500m or less		GT16 GT15 GT11 Serial
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

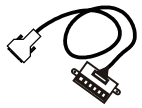
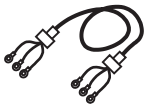
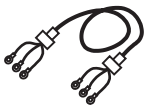
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 Communication Unit • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	4	Interface converter	K3SC-10

4 is a product manufactured by OMRON. For details of this product, contact OMRON.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 2) • Between interface converter and GOT	(To be prepared by the user. ☞ Section 31.2 Connection Cable)	GT16 GT15 GT11 Serial
	7	RS-485 cable 1) • Between interface converter and temperature controller		
	8	RS-485 cable 2) • Between temperature controller and GOT		GT16
	9	RS-485 cable 3) • Between temperature controller and RS-485 terminal block conversion modules		
	10	RS-485 cable 4) • Between temperature controller and GOT		GT16 GT15

5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

31.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞Section 31.2.1)

Model name		Connection cable
		GT16, GT15, GT11
Temperature controller	E5AN	RS-232 cable1), RS-232 cable2)
	E5EN	RS-232 cable1), RS-232 cable2)
	E5CN	RS-232 cable2)
	E5GN	RS-232 cable2)
	E5ZN	RS-232 cable2)
Interface converter	K3SC-10	RS-232 cable2)

2 RS-485 cable (☞Section 31.2.2)

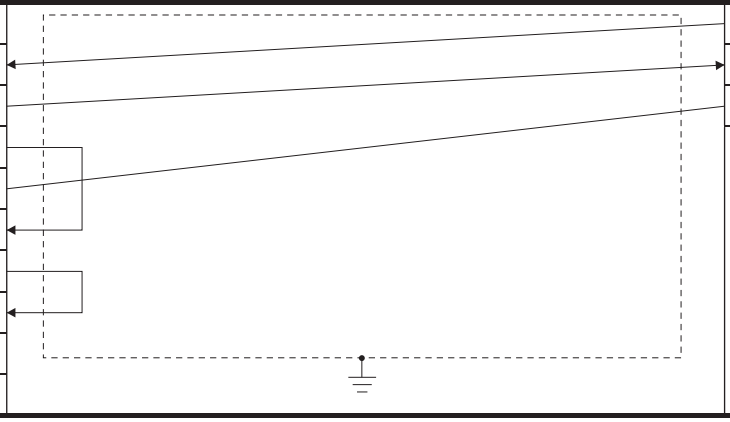
Model name		Connection cable		
		GT16	GT15	Interface converter
Temperature controller	E5AN	RS-485 cable2) RS-485 cable3) RS-485 cable4)	RS-485 cable4)	RS-485 cable1)
	E5EN			
	E5CN			
	E5GN			
	E5ZN			

31.2.1 RS-232 cable

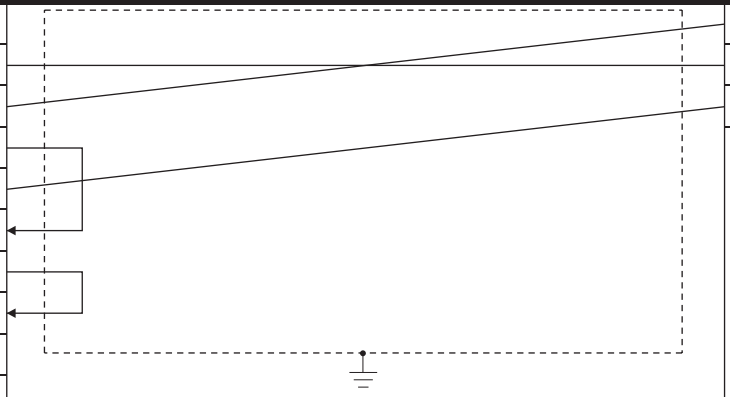
The following shows the connection diagrams and connector specifications of the RS-232 cable used for connectiong the GOT to a temperature controller.

1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	OMRON temperature controller side	
Signal name	Pin No.		Pin No.	Signal name
—	1		11	SD
RD(RXD)	2		12	RD
SD(TXD)	3		13	SG
ER(DTR)	4			
SG	5			
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
NC	9			
FG	—			

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	OMRON temperature controller side Interface converter (K3SC-10)	
Signal name	Pin No.		Pin No.	Signal name
—	1		5	SD
RD(RXD)	2		6	RD
SD(TXD)	3		3	SG
ER(DTR)	4			
SG	5			
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
NC	9			
FG	—			

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector type

9-pin D-sub (male) inch screw fixed type

(c) Connector model

GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-	17LE-23090-27(D3CC)	

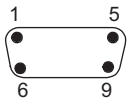
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(d) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) OMRON temperature controller side connector
Use the connector compatible with the OMRON temperature controller side.
For details, refer to the following manual.

☞ User's Manual for the OMRON temperature controller

3 Precautions when preparing cable

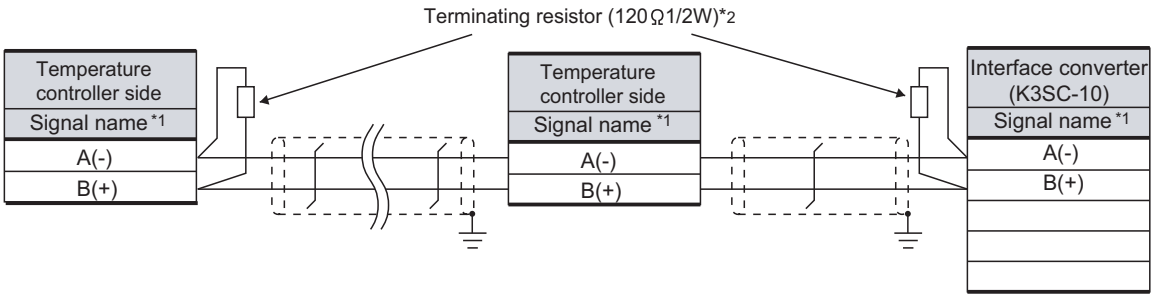
The length of the RS-232 cable must be 15m or less.

31.2.2 RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a temparature controller.

1 Connection diagram

(1) RS-485 cable1)

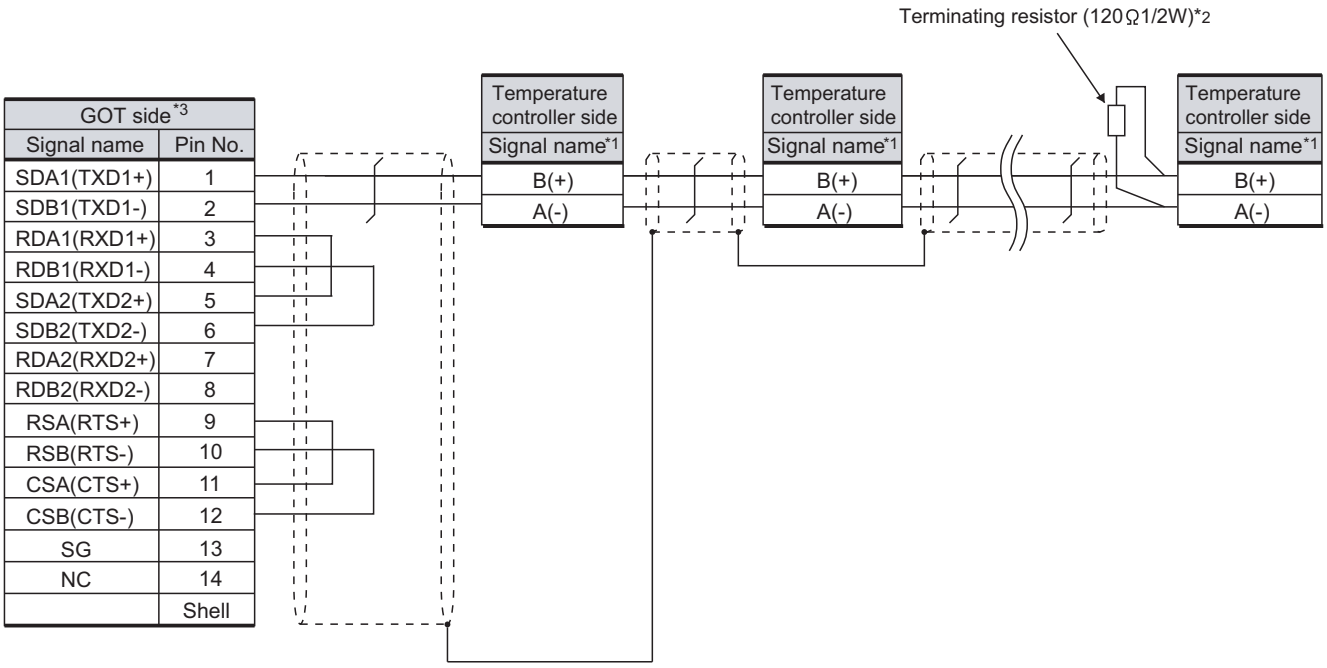


*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller			Interface converter (K3SC-10)
	E5AN E5EN E5CN	E5GN	E5ZN	
	Pin No.	Pin No.	Pin No.	Pin No.
A(-)	12	6	24	8
B(+)	11	5	23	11

*2 Terminating resistor should be provided for a temperature controller and an interface converter which will be terminals.

(2) RS-485 cable2)



*1 Pin No. of temperature controller differs depending on model. Refer to the following table.

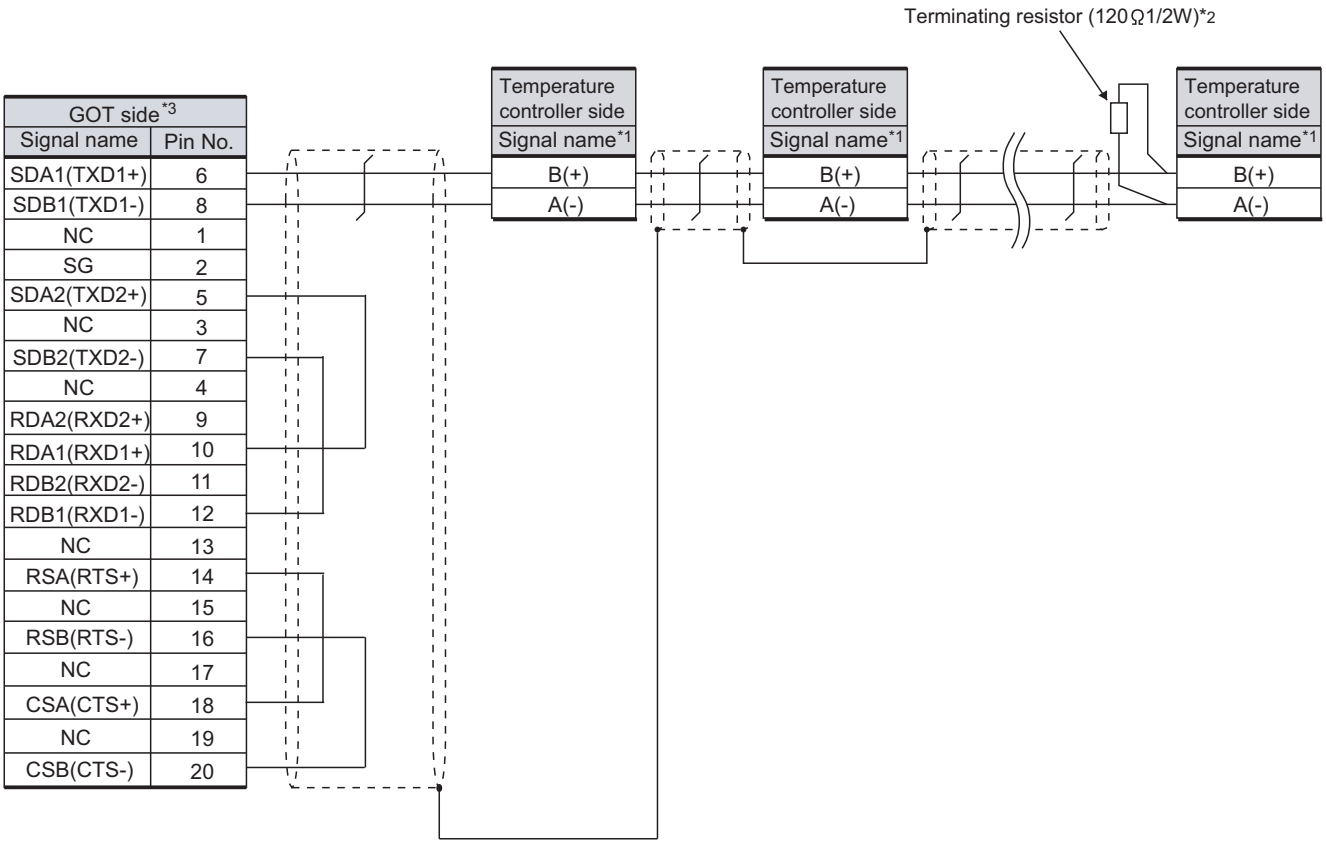
Signal name	Model of temperature controller		
	E5AN E5EN E5CN	E5GN	E5ZN
	Pin No.	Pin No.	Pin No.
B(+)	11	5	23
A(-)	12	6	24

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

☞ 4 Connecting terminating resistors

(3) RS-485 cable3)



*1 Pin No. of temperature controller differs depending on model. Refer to the following table.

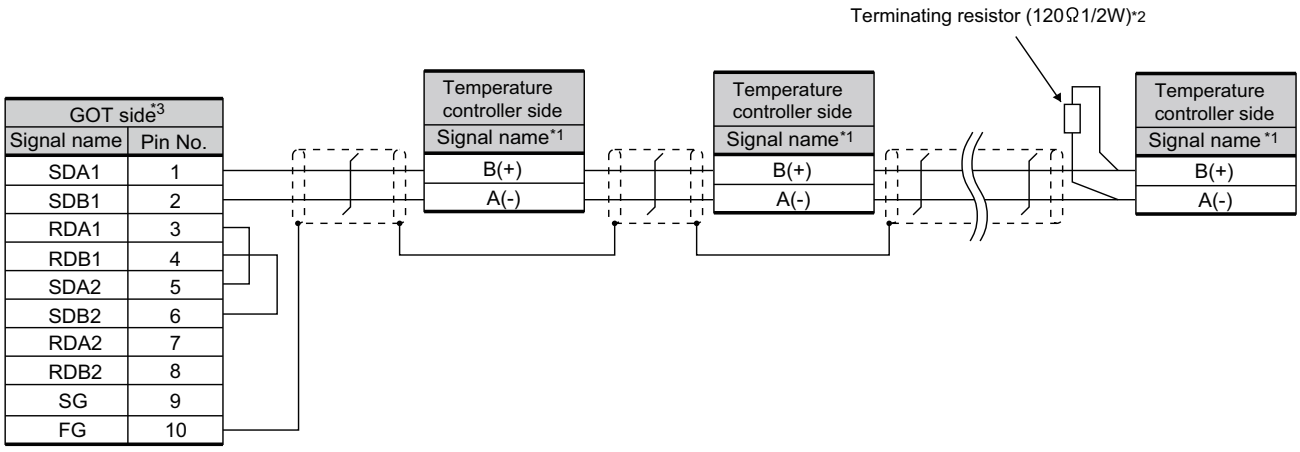
Signal name	Model of temperature controller		
	E5AN E5EN E5CN	E5GN	E5ZN
	Pin No.	Pin No.	Pin No.
B(+)	11	5	23
A(-)	12	6	24

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

4 Connecting terminating resistors

(4) RS-485 cable 4)



*1 Pin No. of temperature controller differs depending on model. Refer to the following table.

Signal name	Model of temperature controller		
	E5AN E5EN E5CN	E5GN	E5ZN
	Pin No.	Pin No.	Pin No.
B(+)	11	5	23
A(-)	12	6	24

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side, which will be a terminal, to ”Enable”.

☞ 4 Connecting terminating resistors

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

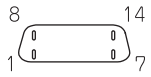
GOT	Connector model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT15-RS4-TE	SL-SMT3.5/10/90F BOX	—	Weidmuller interconnections inc.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

GOT main part connector
see from the front



14-pin (female)

(2) OMRON temperature controller side connector

Use the connector compatible with the OMRON temperature controller side module.
For details, refer to the following manual.

☞ User's Manual for the OMRON temperature controller

3 Precaution when preparing a cable

(1) The length of the RS-485 cable must be 500m or less.

4 Connecting terminating resistors

(1) OMRON temperature controller

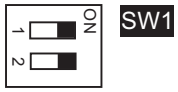
Connect the terminating resistor on the OMRON temperature controller side when connecting a GOT to a OMRON temperature controller.

☞ Section 31.4 Temperature Controller Side Setting

(2) GOT

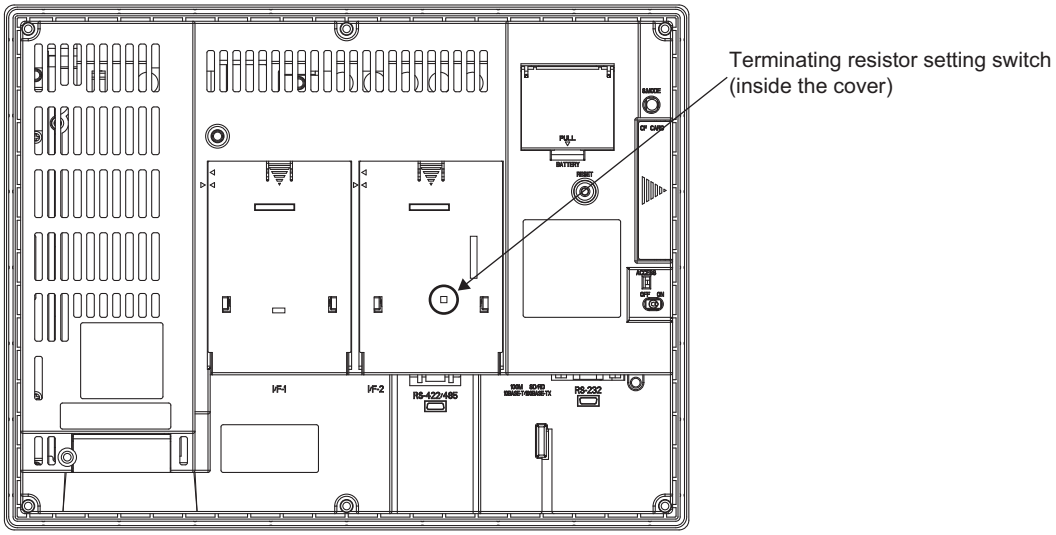
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

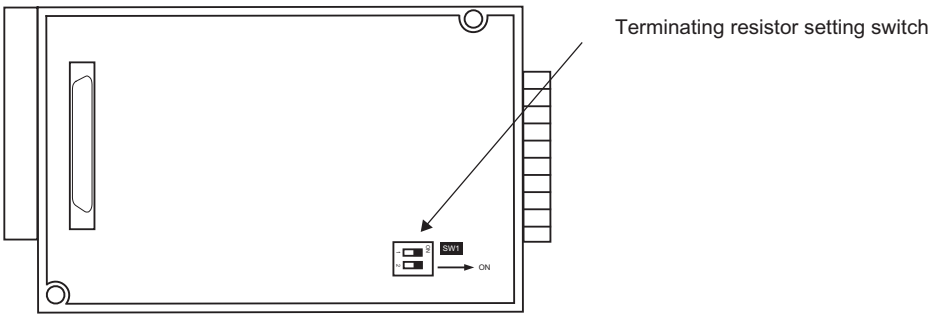


*1 The default setting is "Disable".

• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

31.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 31.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 31.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 31.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 31.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 31.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 31.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 31.3.7
Checking for normal monitoring

Point

Confirming the temperature controller side settng

This section explains the GOT side setting.
When confirming the temperature controller side setting, refer to the following.

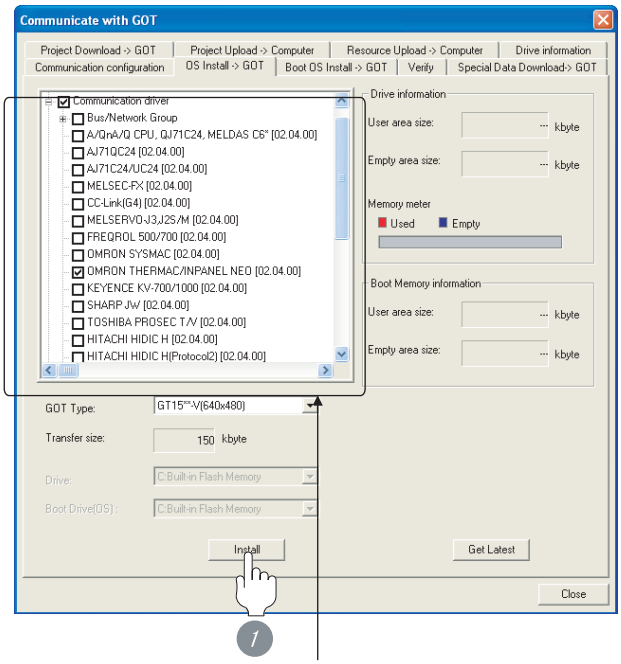
Section 31.4 Temperature Controller Side Setting

31.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• OMRON THERMAC/INPANEL NEO

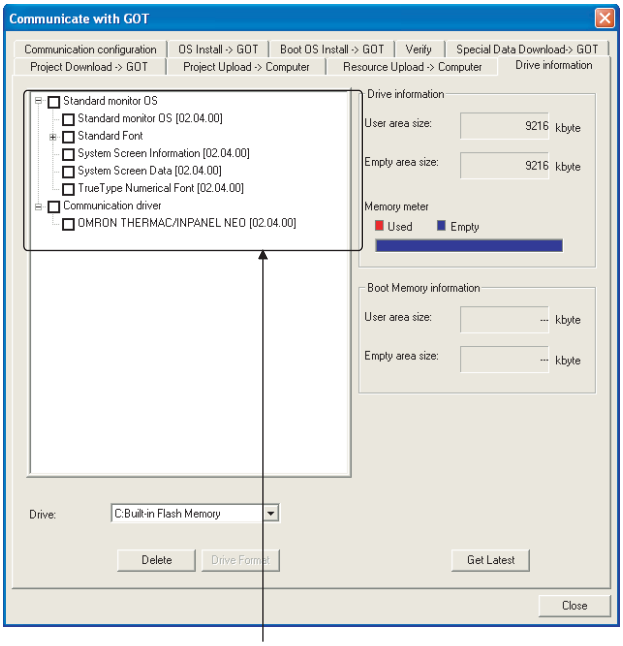
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

31.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: OMRON THERMAC/INPANEL NEO

31.3.3 Setting communication interface (Communication settings)

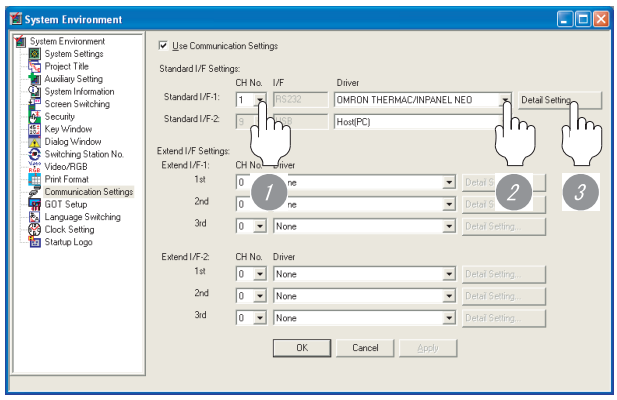
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



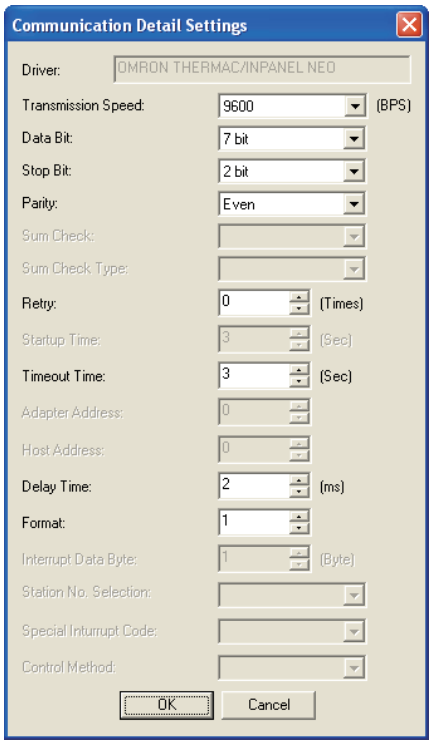
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "OMRON THERMAC/INPANEL NEO".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 7bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 2bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 2ms>	0 to 300 ms
Format	Select the communication format. <Default: 1> format 1: only continuous access format 2: continuous and random access	1 /2

Point

(1) Delay time

When connecting to the temperature controller E5ZN, set the delay time to 5ms or more.

(2) Format setting

The compatible format of temperature controller differs depending on models.

Model	Compatible format
E5AN, E5CN, E5EN, E5GN	Format 1 only
E5ZN	Format 1 or Format 2

For the continuous access and random access of the temperature controller, refer to the following manual.

☞ User's Manual for the OMRON temperature controller

(3) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(4) Precedence in communication settings

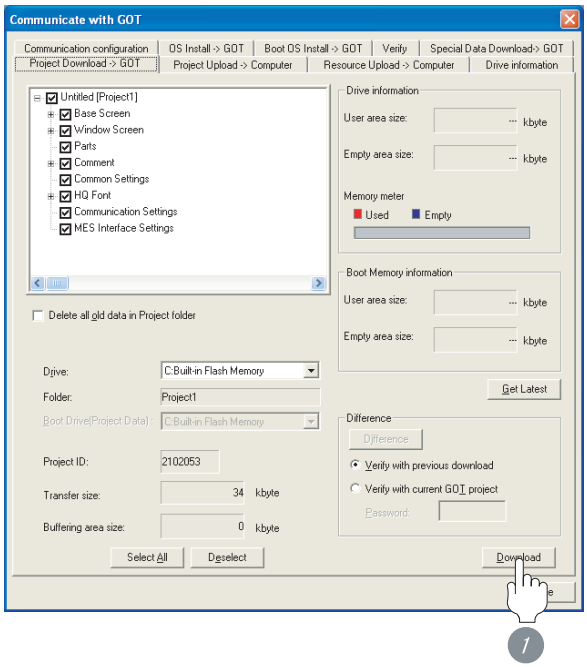
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

31.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

31.3.5 Attaching communication unit and connecting cable

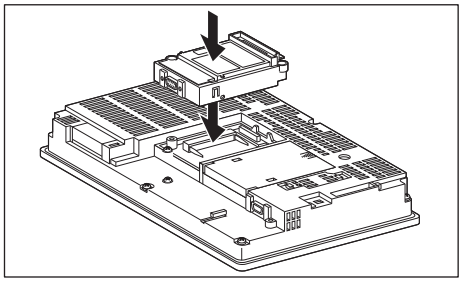
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

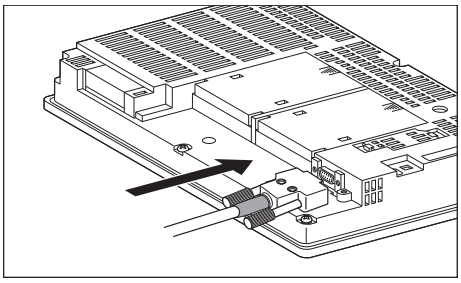
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

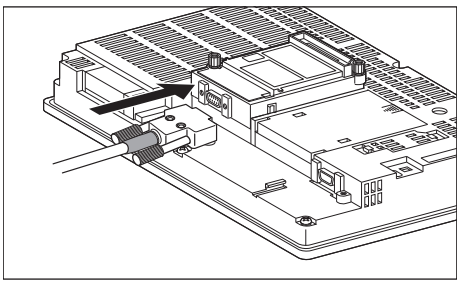
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



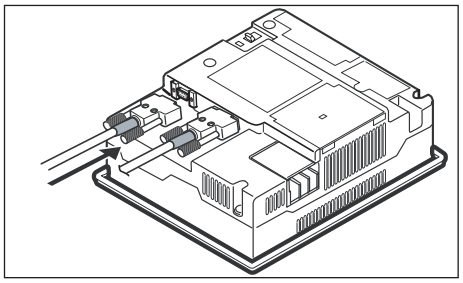
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

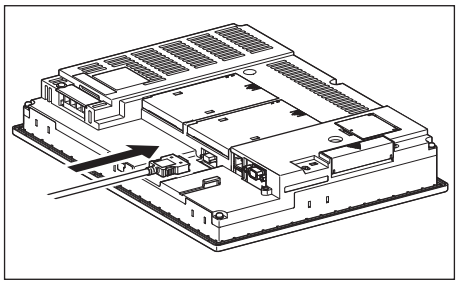


(2) How to connect the RS-485 cable

(a) For the GT16

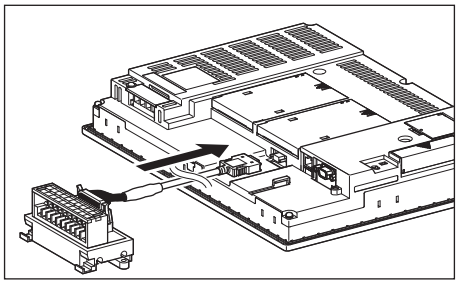
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

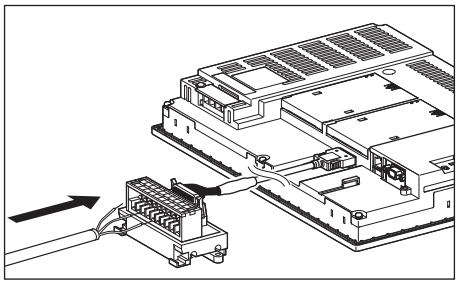


• Connection to the RS-422/485 interface with the RS-485 terminal block conversion modules

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

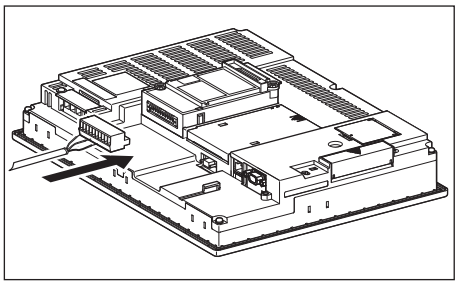


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

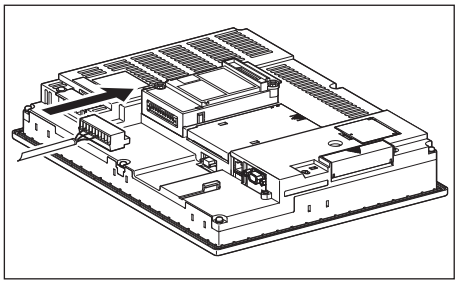


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.

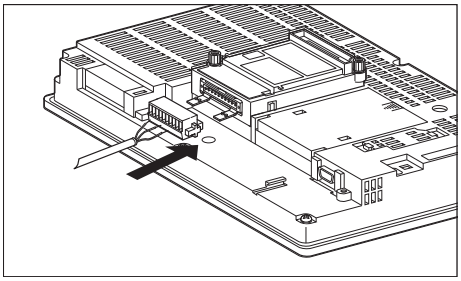


2 Connect the terminal block to theRS-422/485 communication unit on the GOT.

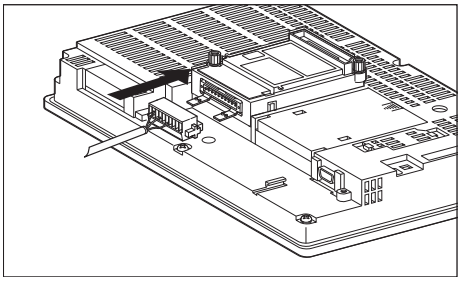


(b) For the GT15

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



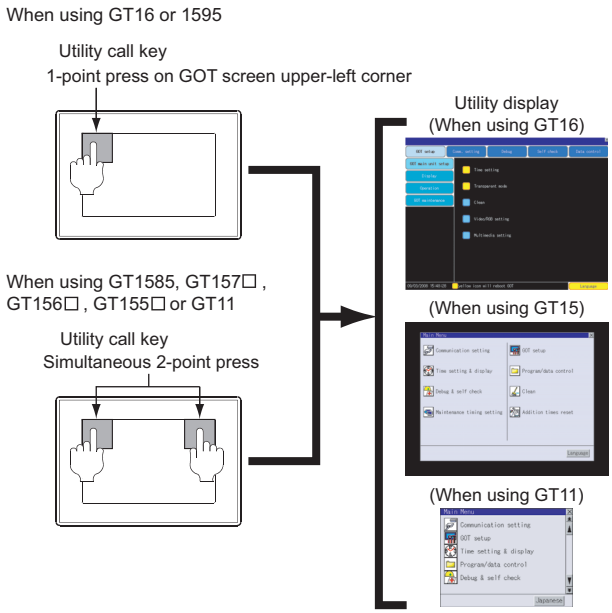
31.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

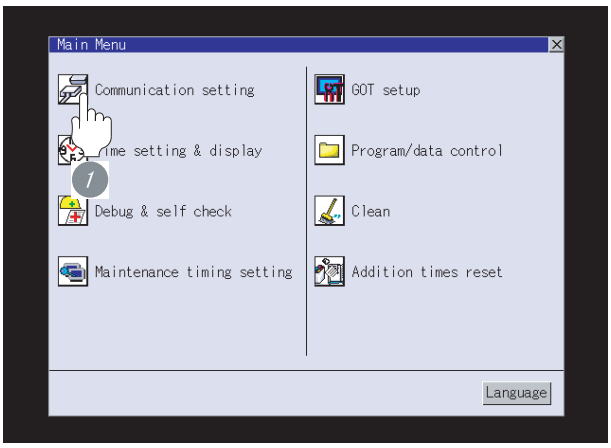


Point

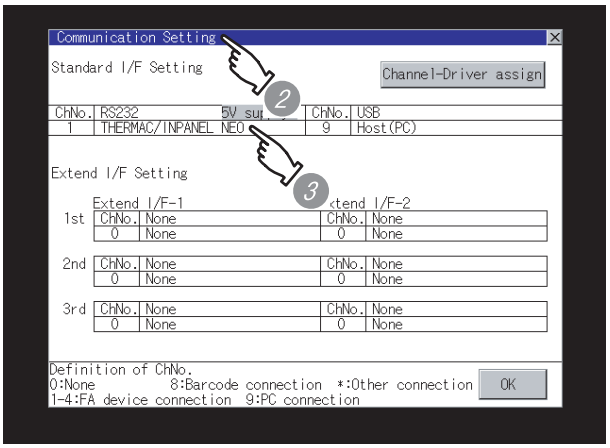
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  OMRON THERMAC/INPANEL NEO

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 31.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

31.3.7 Checking for normal monitoring

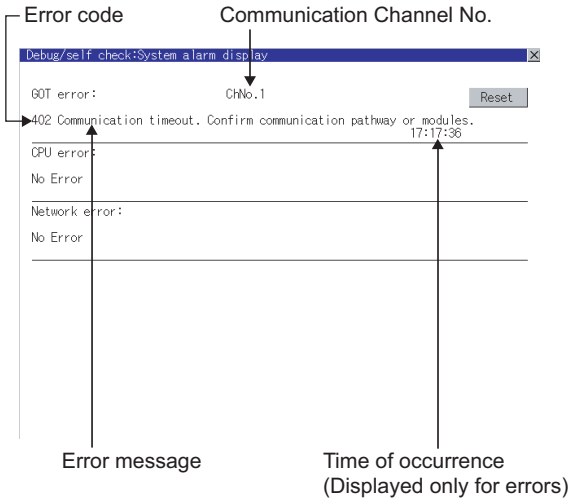
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

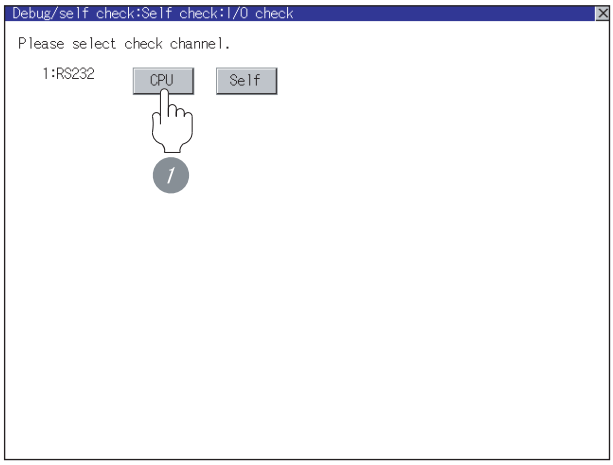
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

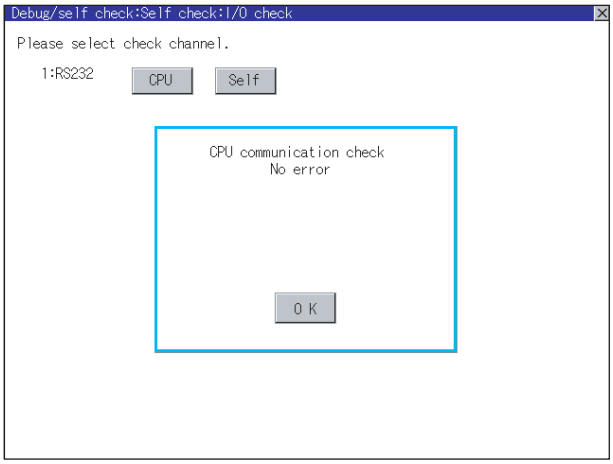
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check]→ [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected temperature controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the temperature controller side setting

When connecting the GOT, setting is required for the temperature controller side.

Confirm if the temperature controller side setting is correct.

Section 31.4 Temperature Controller Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

31.4 Temperature Controller Side Setting

Point

OMRON temperature controller

For details of OMRON temperature controller, refer to the following manual.

☞ User's Manual for the OMRON temperature controller

Model name		Reference
Temperature controller	E5AN, E5EN, E5CN, E5GN	Section 31.4.1
	E5ZN	Section 31.4.2
Interface converter	K3SC-10	Section 31.4.3

31.4.1 Connecting E5AN, E5EN, E5CN, E5GN

Set the communication data by operating the key of the temperature controller.

Setting items	Set value
Protocol	CompoWay/F (Sysway)
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits, 7 bits
Parity bit*1	Even, odd or none
Stop bit*1	1 bit, 2 bits
Communication unit NO.*2	0 to 99

*1 Make the same setting as that of the GOT side.
*2 Select the communication unit No. without overlapping with that of other units.

31.4.2 Connecting E5ZN

Set the communication data by operating the key of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps, 38400bps
Data length*1	8 bits, 7 bits
Parity bit*1	Even, odd, none
Stop bit*1	1 bit, 2 bits
Communication unit NO.*2	0 to 15

*1 Make the same setting as that of the GOT side.
*2 Select the communication unit No. without overlapping with that of other unit.

31.4.3 Connecting to interface converter (K3SC-10)

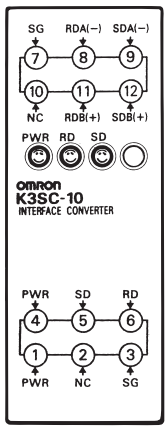
1 Communication settings

Make the communication settings by operating the DIP switch of the temperature controller.

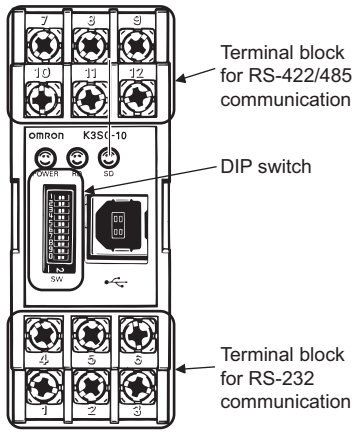
Item	Set value
Transmission speed*1	19200bps, 38400bps
Data length*1	7 bits, 8 bits
Parity bit*1	Odd, even, none
Stop bit*1	1 bit, 2 bits
Master/slave device	RS-232 ↔ RS485
Echoback*2	With, Without

*1 Make the same setting as that of GOT side.
*2 Set to “Without”

2 Settings by DIP switch



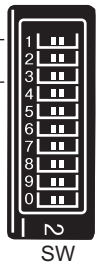
Front of K3SC-10 body



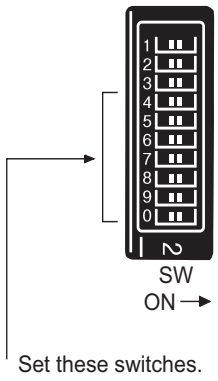
Inside of K3SC-10 body
(When removing the front cover)

(1) Transmission speed settings

Transmission speed(bps)	Switch No.		
	1	2	3
1200	ON	OFF	OFF
2400	OFF	ON	OFF
4800	ON	ON	OFF
9600	OFF	OFF	OFF
19200	ON	OFF	ON
38400	OFF	ON	ON



(2) Settings of data length, parity bit, stop bit, master/ slave device and echoback

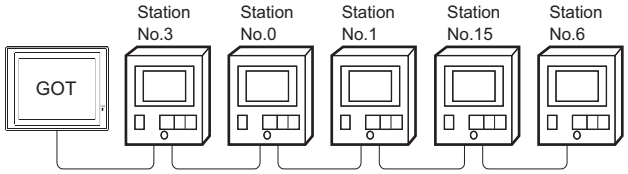


Setting item	Set value	Switch No.						
		4	5	6	7	8	9	0
Data length	7bits	0FF						
	8bits	ON						
Stop bit	2bits		0FF					
	1bits		ON					
Parity	Even			0FF	0FF			
	Odd			ON	0FF			
	None			0FF	ON			
Master/ slave device	RS232 ◄► RS422					0FF	ON	
	RS-232 ◄► RS485					0FF	0FF	
Echoback	Without							0FF
	With							ON

31.4.4 Station NO. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Model	Specification range
E5AN, E5EN, E5CN, E5GN	0 to 99
E5ZN	0 to 15

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).

When specifying the station No. from 100 to 155 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station NO.	Compatible device	Setting range
100	GD10	0 to 99: For E5AN, E5EN, E5CN or E5GN 0 to 15: For E5ZN For the setting other than the above, error (dedicated device is out of range) will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only one station will be a target.

31.5 Precautions

1 Station number setting of the temperature controller system

Make sure to establish temperature controller system with No.1 station.

2 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Disconnecting a part of multiple connected equipments

The GOT can disconnect some of multiple connected equipments by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipments.

For details of GOT internal device setting, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual (2.9.1 GOT internal devices)

31.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
OMRON temperature controller connection	Supporting the OMRON temperature controller connection	2.18U	Communication driver OMRON THERMAC/ INPANEL NEO [02.01.**]
	Supporting the following: • Disconnecting some of multiple connected equipments • Preventing the monitoring operation of the faulty station automatically	2.58L	Communication driver OMRON THERMAC/ INPANEL NEO [03.03.**]
	Supporting the connection to GT16	2.90U	Communication driver OMRON THERMAC/ INPANEL NEO [04.02.**]

32

CONNECTION TO SHINKO TECHNOS INDICATING CONTROLLER



32.1 System Configuration . . . . . page 32-2
This section describes the equipment and cables needed when connecting a GOT to a Shinko Technos indicating controller. Select a system suitable for your application.

32.2 Connection Cable . . . . . page 32-9
This section describes the specifications of the cables needed when connecting a GOT to a Shinko Technos indicating controller.
Check the specifications of the connection cables.

32.3 Preparatory Procedures for Monitoring . . . . . page 32-22
This section provides the procedures to be followed before performing monitoring in connection to a Shinko Technos indicating controller. The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

32.4 Indicating controller Side Setting . . . . . page 32-30
The Shinko Technos indicating controller side settings for GOT connection are explained. When checking the indicating controller side settings, refer to this section.

32.5 Precautions . . . . . page 32-32
This section describes the precautions about indicating controller connection. Refer to this section without fail before starting indicating controller connection.

32.6 List of Functions Added by Version Upgrade . . . . . page 32-33
This section describes the functions added by version upgrade of GT Designer2 or OS.

32.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

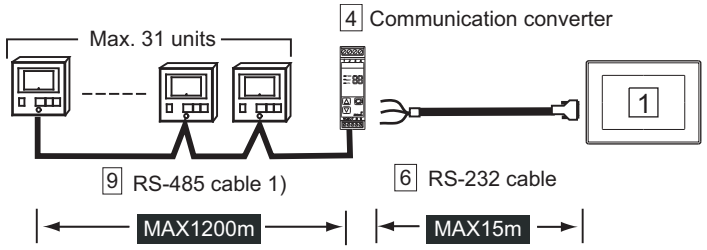
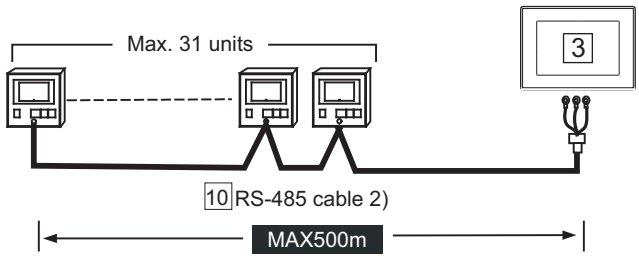
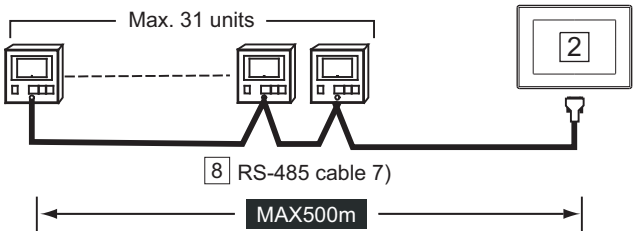
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

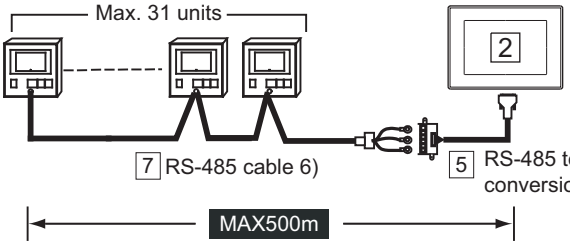
32.1.1 Connecting to ACS-13A, JC, JCM-33A, JIR-301-M, PCD-300 Series, PC-900 Series (PC-955-[ ]/M,C5, PC-935-[ ]/M,C5)

Communication driver

Shinko Technos Controller

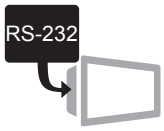
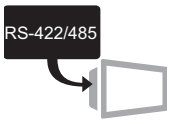
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of indicating controllers	Distance		
1	Max. 31 units	Between GOT and communication converter 15m or less Between communication converter and indicating controller 1200m or less		GT16 GT15 GT11 Serial
		Between GOT and indicating controller 500m or less		GT16 GT15
		Between GOT and indicating controller 500m or less		GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of indicating controllers	Distance		
1	Max. 31 units	Between GOT and indicating controller 500m or less		GT16

2 System equipment

(1) GOT

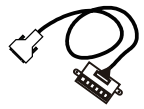
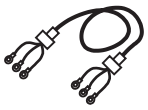
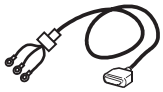
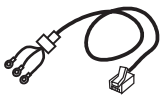
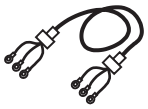
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Indicating controller

Image	No.	Name	Model name
	4	communication converter	IF-400

4 is manufactured by Shinko Technos Co., Ltd. For details of the product, contact Shinko Technos Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 1) • Between GOT and communication converter	RS-232C CFP-C2	GT16 GT15 GT11 Serial
	7	RS-485 cable 6) • Between indicating controller and RS-485 terminal block conversion modules	(To be prepared by the user. Section 32.2 Connection Cable)	GT16
	8	RS-485 cable 7) • Between indicating controller and GOT		
	9	RS-485 cable 1) • Between indicating controller and communication converter		GT16 GT15 GT11 Serial
	10	RS-485 cable 2) • Between indicating controller and GOT		GT16 GT15

5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

6 is manufactured by Shinko Technos Co., Ltd. For details of the product, contact Shinko Technos Co., Ltd.

32.1.2 Connecting to FCD-100, FCR-100, FCR-23A, FIR Series, PC-900 Series (PC-955-[ ]/M,C, PC-935-[ ]/M,C)

Communication driver

Shinko Technos Controller

1 System configuration and connection conditions

Connection conditions			System configuration
Number of GOTs	Number of indicating controllers	Distance	
1	1	Between GOT and indicating controller 15m or less	* 2 RS-232 cable 1) 1 MAX15m

* Only the indicating controller equipped with RS-232 communication function can be connected.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

(2) Cable

Image	No.	Name	Model name
	2	RS-232 cable 1) *1 • Between indicating controller and GOT	GT09-C30R21401-4T (3m)

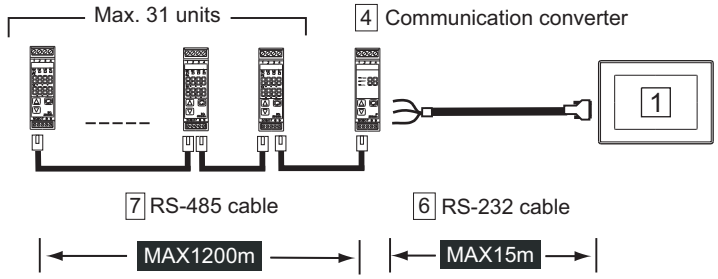
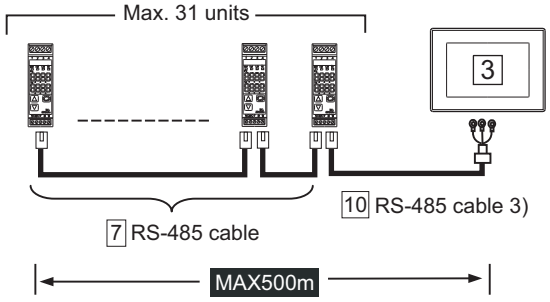
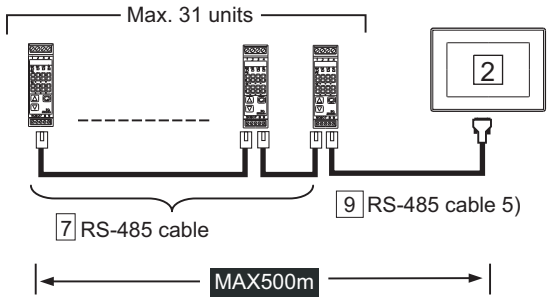
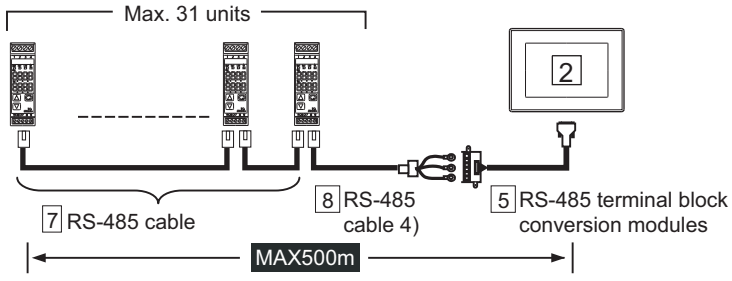
*1 The RS-232 cable can be prepared by the user. (Section 32.2 Connection Cable)

32.1.3 Connecting to DCL-33A Series

Communication driver

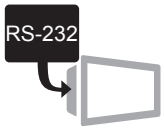
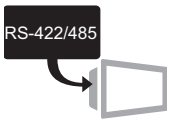
Shinko Technos Controller

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and communication converter 15m or less Between communication converter and indicating controller 1200m or less		GT16 GT15 GT11 Serial
		Between GOT and indicating controller 500m or less		GT16 GT15
		Between GOT and indicating controller 500m or less		GT16
		Between GOT and indicating controller 500m or less		GT16

2 System equipment

(1) GOT

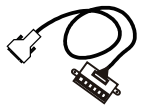
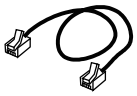
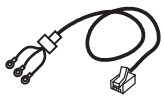
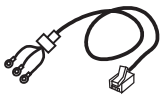
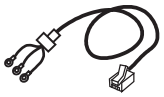
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Indicating controller

Image	No.	Name	Model name
	4	communication converter	IF-400

4 is manufactured by Shinko Technos Co., Ltd. For details of the product, contact Shinko Technos Co., Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable • Between GOT and communication converter	RS-232C CFP-C2	GT16 GT15 GT11 Serial
	7	RS-485 cable • Between indicating controller and communication converter • Between indicating controllers	RS-485 CPP	
	8	RS-485 cable 4) • Between indicating controller and RS-485 terminal block conversion modules	(To be prepared by the user. Section 32.2 Connection Cable)	GT16
	9	RS-485 cable 5) • Between indicating controller and GOT		
	10	RS-485 cable 3) • Between indicating controller and GOT		GT16 GT15

5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

6 7 is manufactured by Shinko Technos Co., Ltd. For details of the product, contact Shinko Technos Co., Ltd.

32.2 Connection Cable

The RS-232 cable or RS-485 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞Section 32.2.1)

Model name		Connection cable
		GT16, GT15, GT11
indicating controller*1	FCD-100, FCR-100, FCR-23A, FIR Series, PC-900 Series (PC-955-☐/M,C, PC-935-☐/M,C)	RS-232 cable 1)
communication converter	IF-400	RS-232 cable 1)

2 RS-232 cable (☞Section 32.2.2)

Model name		Connection cable		
		GT16	GT15	Communication converter
indicating controller*1	ACS-13A, JC, JCM-33A, JIR-301-M, PCD-300 Series, PC-900 Series (PC-955-☐/M,C5, PC-935-☐/M,C5)	RS-485 cable 2) RS-485 cable 6) RS-485 cable 7)	RS-485 cable 2)	RS-485 cable 1)
	DCL-33A Series	RS-485 cable 3) RS-485 cable 4) RS-485 cable 5)	RS-485 cable 3)	-

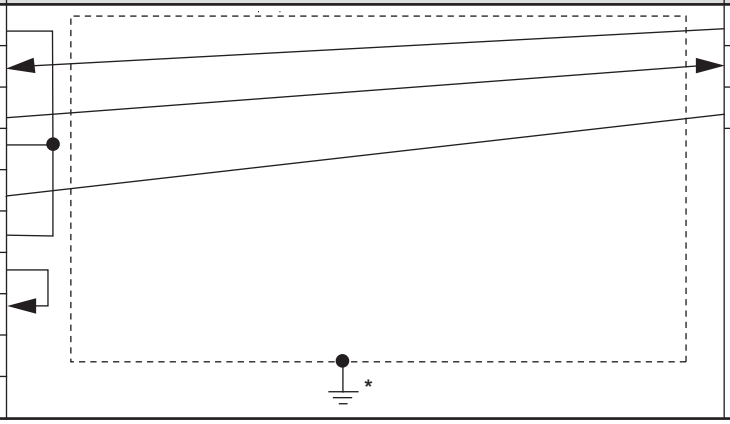
*1 Select a model with the RS-232/RS-485 communication function.
For details of the models, refer to the following manual.
☞ User's Manual for the Shinko Technos indicating controller controller

32.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a indicating controller.

1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	Indicating controller side
Signal name	Pin No.		Signal name
CD	1		TX
RD(RXD)	2		RX
SD(TXD)	3		COM
ER(DTR)	4		
SG	5		
DR(DSR)	6		
RS(RTS)	7		
CS(CTS)	8		
NC	9		
FG	—		

* Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

9-pin D-sub (male) inch screw fixed type

(b) Connector model

GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-	17LE-23090-27(D3CC)	

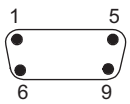
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) Shinko Technos indicating controller controller side connector
Use the connector compatible with the Shinko Technos indicating controller controller side.
For details, refer to the following manual.

☞ User's Manual for the Shinko Technos indicating controller controller

3 Precautions when preparing cable

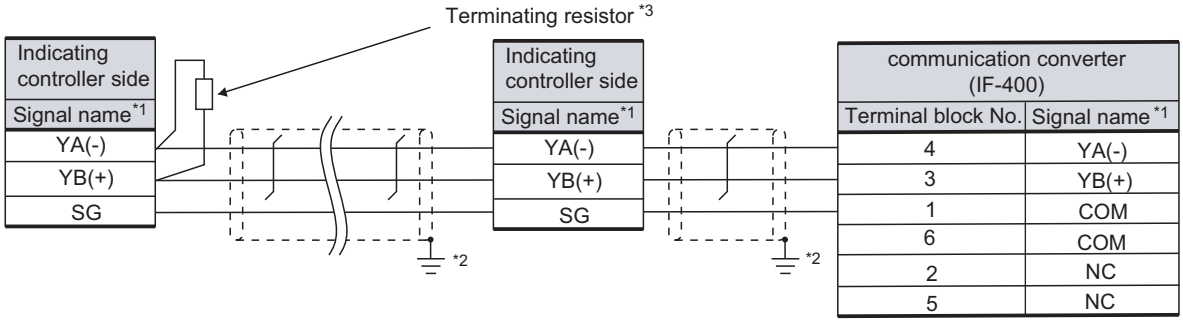
The length of the RS-232 cable must be 15m or less.

32.2.2 RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a temparature controller.

1 Connection diagram

(1) RS-485 cable 1)



*1 Pin No. of communication converter differs depending on the model.
Refer to the following table.

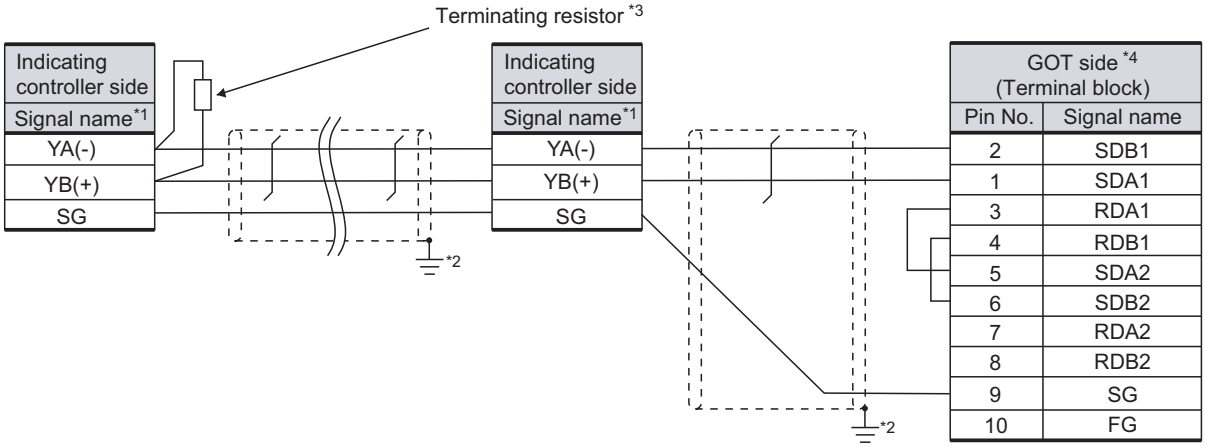
Signal name	Model of indicating controller								
	JCS-33A	JCR-33A	JCD-33A	JCM-33A	JIR-301-M	ACS-13A	PCD-33A	PC-955	PC-935
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
YA(-)	13	11	11	10	11	16	11	11	11
YB(+)	14	14	14	13	14	17	14	12	12
SG	15	17	17	14	17	18	17	16	16

*2 Connect FG grounding to the appropriate part of a cable shield line.

*3 For details of the terminating resistor specifications, refer to the following manual.

☞ User's Manual for the Shinko Technos indicating controller controller

(2) RS-485 cable 2)



*1 Pin No. of communication converter differs depending on the model.
Refer to the following table.

Signal name	Model of indicating controller								
	JCS-33A	JCR-33A	JCD-33A	JCM-33A	JIR-301-M	ACS-13A	PCD-33A	PC-955	PC-935
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
YA(-)	13	11	11	10	11	16	11	11	11
YB(+)	14	14	14	13	14	17	14	12	12
SG	15	17	17	14	17	18	17	16	16

*2 Connect FG grounding to the appropriate part of a cable shield line.

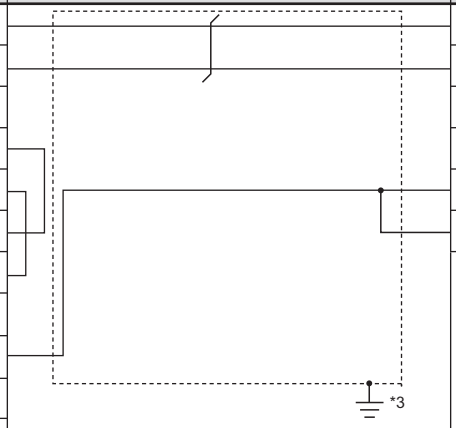
*3 For details of the terminating resistor specifications, refer to the following manual.

☞ User's Manual for the Shinko Technos indicating controller controller

*4 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

☞ 4 Connecting terminating resistors

(3) RS-485 cable 3)

GOT side *1 (Terminal block)		Cable connection and signal direction	Shinko technos indicating controller side (Modular connector)	
Signal name	Pin No.		Pin No.	Signal name
SDB1	2		4	YA(-)
SDA1	1		3	YB(+)
RDA1	3		2	NC
RDB1	4		5	NC
SDA2	5		1	COM
SDB2	6		6	COM
RDA2	7			
RDB2	8			
SG	9			
FG	10			

Pin assignment *2

*1 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

4 Connecting terminating resistors

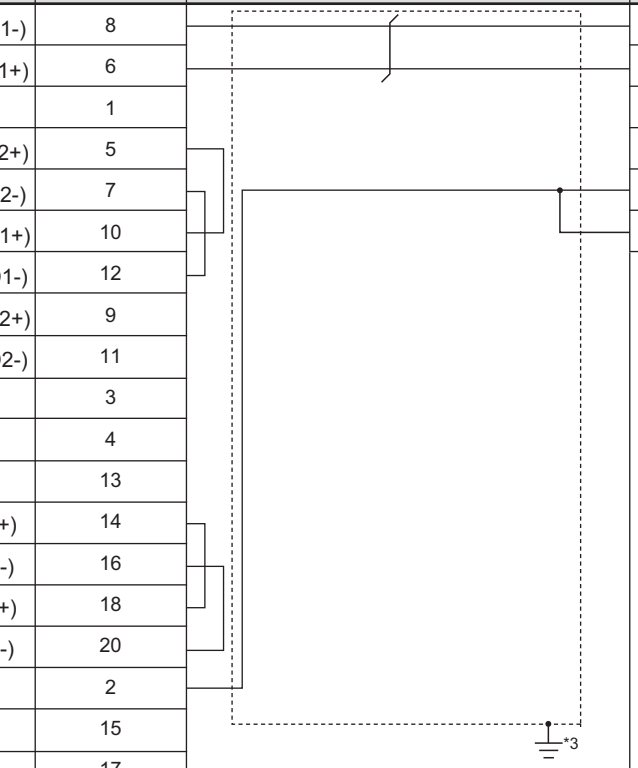
*2 For details of the pin assignment, refer to the following manual.

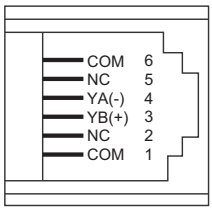
User's Manual for the Shinko Technos indicating controller controller

*3 Connect FG grounding to the appropriate part of a cable shield line.

(4) RS-485 cable 4)

GOT side *1 (Terminal block)		Cable connection and signal direction	Shinko technos indicating controller side (Modular connector)	
Signal name	Pin No.		Signal name	Pin No.
SDB1(TXD1-)	8		4	YA(-)
SDA1(TXD1+)	6		3	YB(+)
NC	1		2	NC
SDA2(TXD2+)	5		5	NC
SDB2(TXD2-)	7		1	COM
RDA1(RXD1+)	10		6	COM
RDB1(RXD1-)	12			
RDA2(RXD2+)	9			
RDB2(RXD2-)	11			
NC	3			
NC	4			
NC	13			
RSA(RTS+)	14			
RSB(RTS-)	16			
CSA(CTS+)	18			
CSB(CTS-)	20			
SG	2			
NC	15			
NC	17			
NC	19			





Pin assignment *2

*1 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

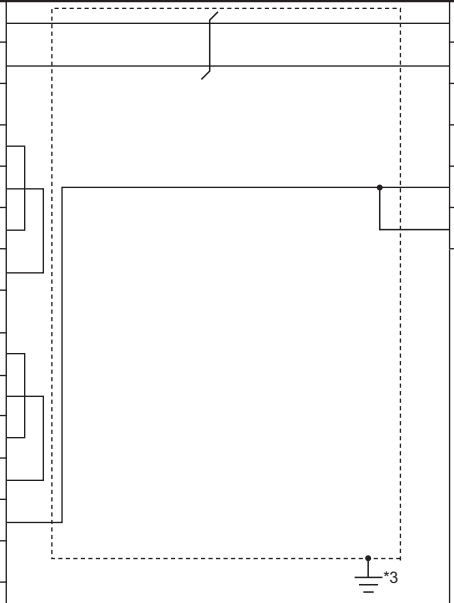
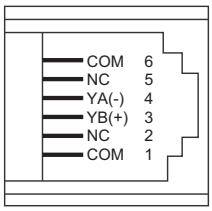
4 Connecting terminating resistors

*2 For details of the pin assignment, refer to the following manual.

User's Manual for the Shinko Technos indicating controller controller

*3 Connect FG grounding to the appropriate part of a cable shield line.

(5) RS-485 cable 5)

GOT side *1 (Terminal block)		Cable connection and signal direction	Shinko technos indicating controller side (Modular connector)	
Signal name	Pin No.		Signal name	Pin No.
SDB1(TXD1-)	2		4	YA(-)
SDA1(TXD1+)	1		3	YB(+)
RDA2(RXD2+)	7		2	NC
RDA1(RXD1+)	3		5	NC
RDB1(RXD1-)	4		1	COM
SDA2(TXD2+)	5		6	COM
SDB2(TXD2-)	6			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
Shell				

Pin assignment *2

*1 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

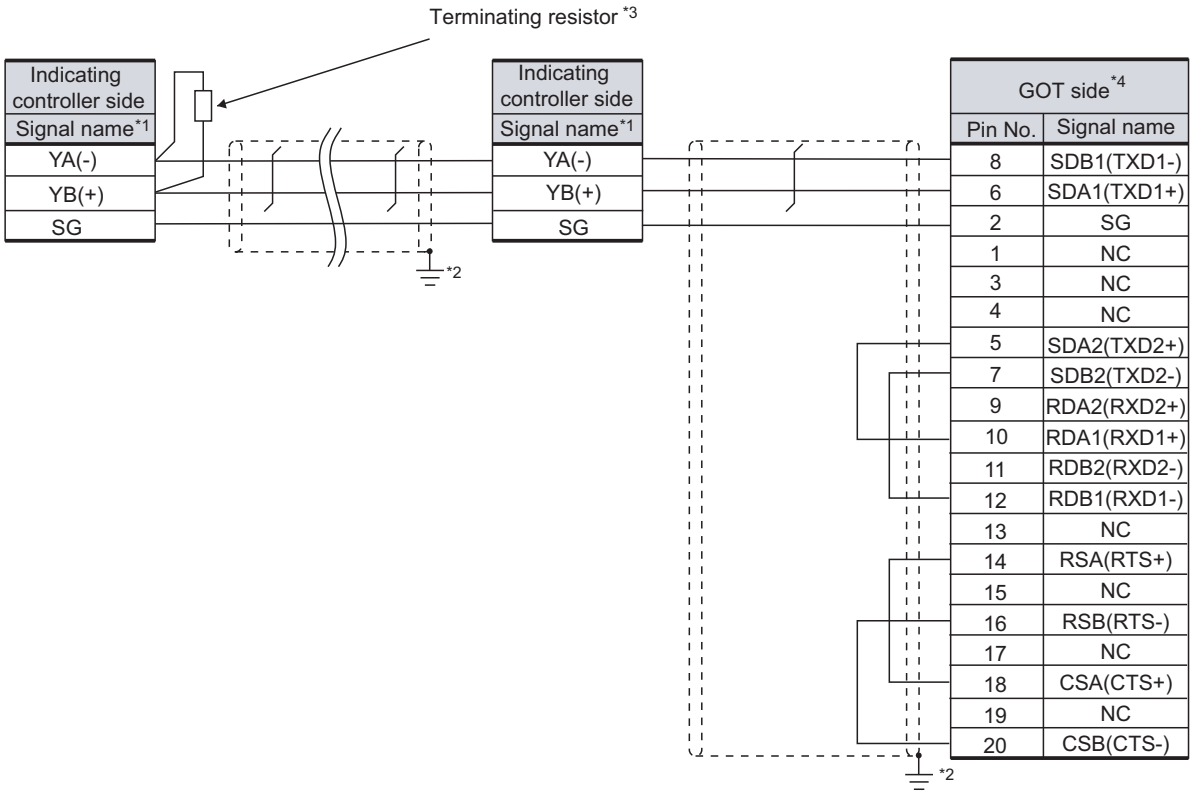
4 Connecting terminating resistors

*2 For details of the pin assignment, refer to the following manual.

User's Manual for the Shinko Technos indicating controller controller

*3 Connect FG grounding to the appropriate part of a cable shield line.

(6) RS-485 cable 6)



*1 Pin No. of communication converter differs depending on the model.
Refer to the following table.

Signal name	Model of indicating controller								
	JCS-33A	JCR-33A	JCD-33A	JCM-33A	JIR-301-M	ACS-13A	PCD-33A	PC-955	PC-935
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
YA(-)	13	11	11	10	11	16	11	11	11
YB(+)	14	14	14	13	14	17	14	12	12
SG	15	17	17	14	17	18	17	16	16

*2 Connect FG grounding to the appropriate part of a cable shield line.

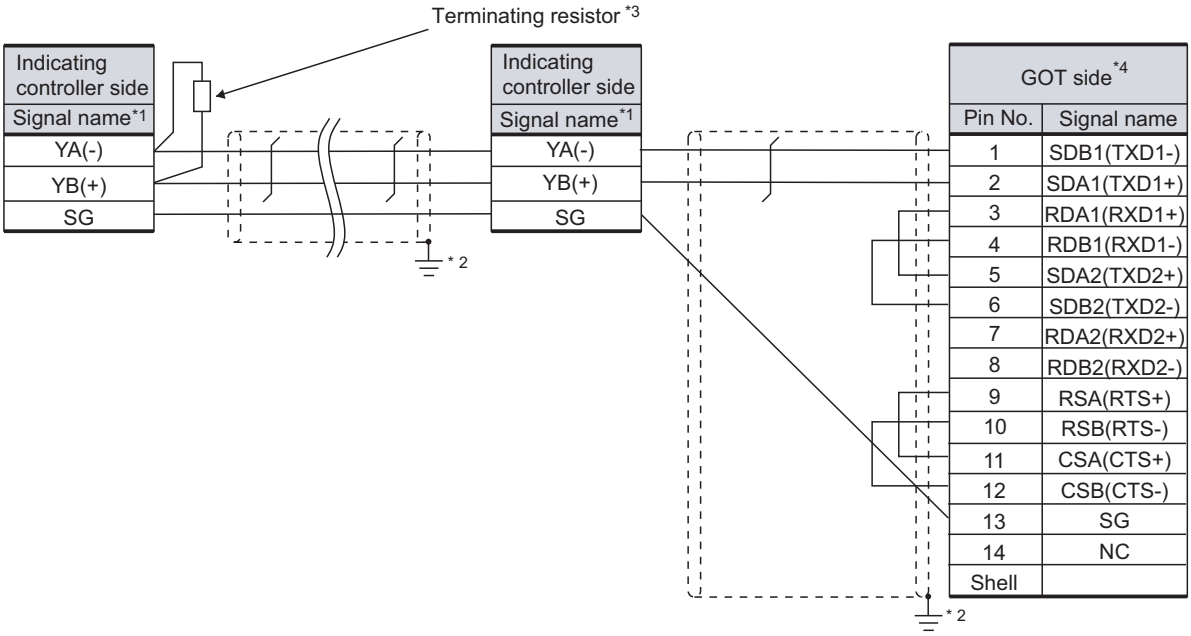
*3 For details of the terminating resistor specifications, refer to the following manual.

☞ User's Manual for the Shinko Technos indicating controller controller

*4 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

☞ 4 Connecting terminating resistors

(7) RS-485 cable 7)



*1 Pin No. of communication converter differs depending on the model.
Refer to the following table.

Signal name	Model of indicating controller								
	JCS-33A	JCR-33A	JCD-33A	JCM-33A	JIR-301-M	ACS-13A	PCD-33A	PC-955	PC-935
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
YA(-)	13	11	11	10	11	16	11	11	11
YB(+)	14	14	14	13	14	17	14	12	12
SG	15	17	17	14	17	18	17	16	16

*2 Connect FG grounding to the appropriate part of a cable shield line.

*3 For details of the terminating resistor specifications, refer to the following manual.

☞ User's Manual for the Shinko Technos indicating controller controller

*4 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

☞ *4* Connecting terminating resistors

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

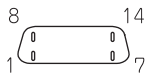
GOT	Model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT15-RS4-TE	SL-SMT3.5/10/90F BOX	-	Widmuller interconnections inc.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

GOT main part connector
see from the front



14-pin (female)

(2) Shinko Technos indicating controller controller side connector

Use the connector compatible with the Shinko Technos indicating controller controller side.
For details, refer to the following manual.

☞ User's Manual for the Shinko Technos indicating controller controller

3 Precaution when preparing a cable

(1) The length of the RS-485 cable must be 1200m or less.

(2) The length of the RS-485 cable must be 500m or less.

4 Connecting terminating resistors

(1) GOT

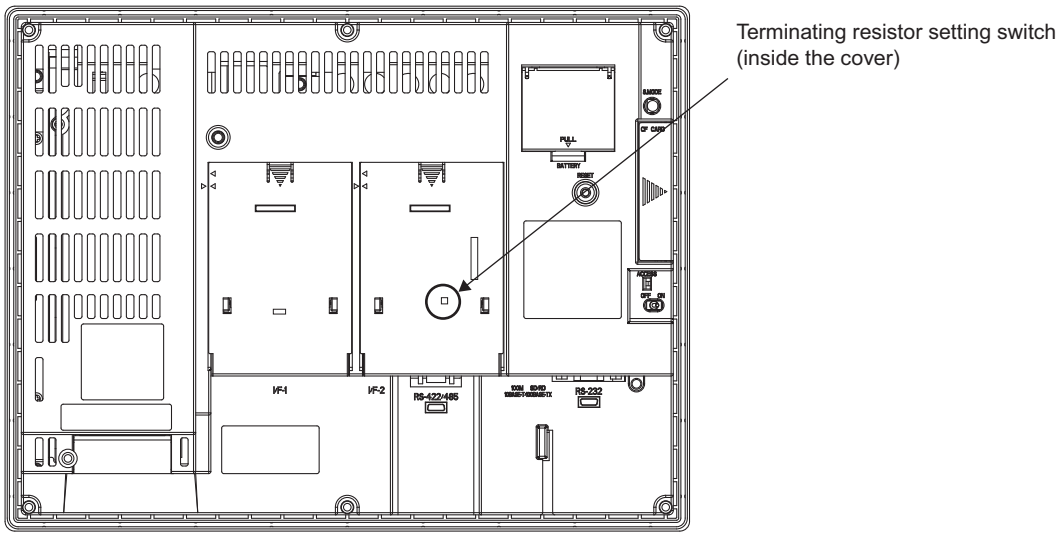
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

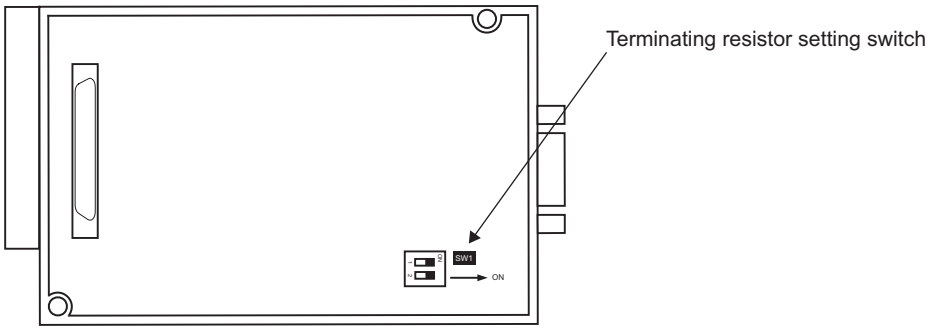
*1 The default setting is "Disable".



• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear view of RS-422/485 communication unit.

32.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 32.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 32.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 32.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 32.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 32.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 32.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 32.3.7
Checking for normal monitoring

Point

Confirming the indicating controller side setting

This section explains the GOT side setting.
When confirming the indicating controller side setting, refer to the following.

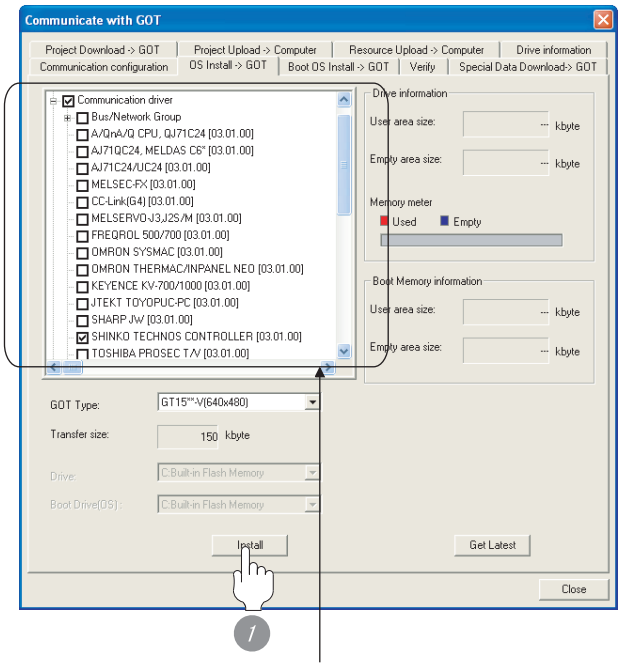
☞ Section 32.4 Indicating controller Side Setting

32.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
•Shinko Technos Controller

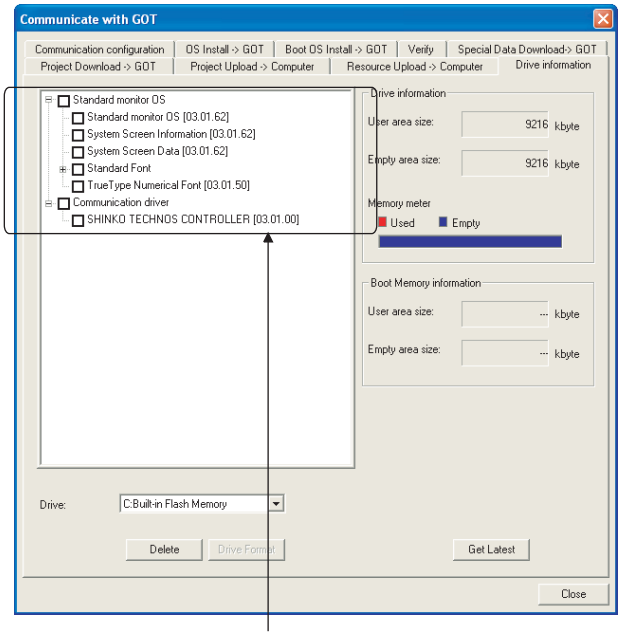
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

32.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: Shinko Technos Controller

32.3.3 Setting communication interface (Communication settings)

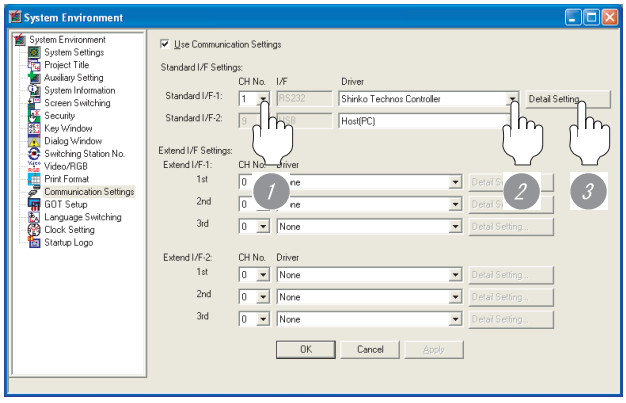
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



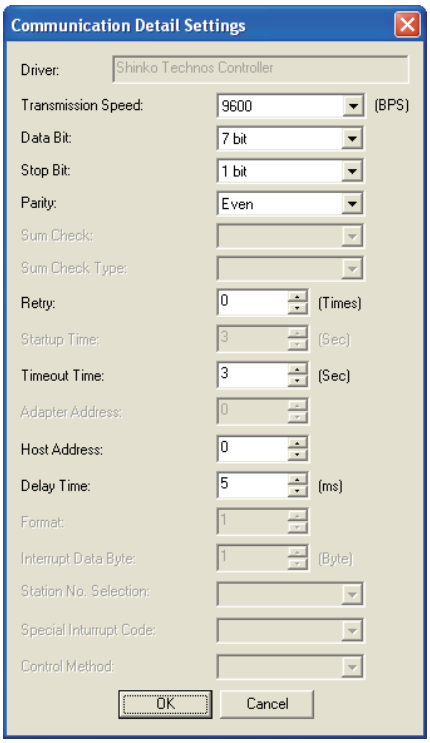
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "Shinko Technos Controller".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 7bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the GOT to which the temperature controller is connected) in the connected network. <Default: 0>	0 to 94
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 5ms>	0 to 300 ms

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

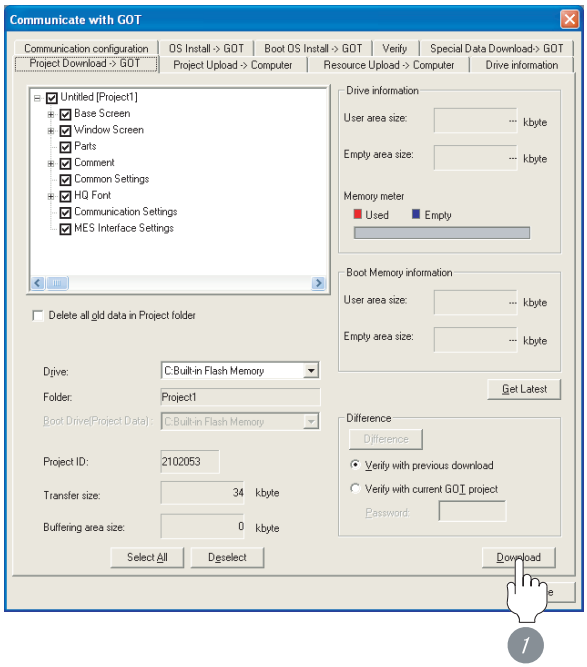
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

32.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

32.3.5 Attaching communication unit and connecting cable

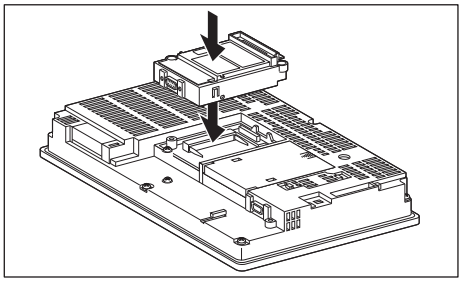
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

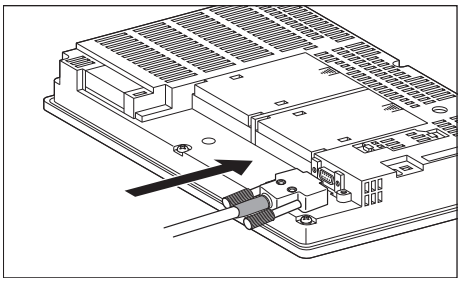
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

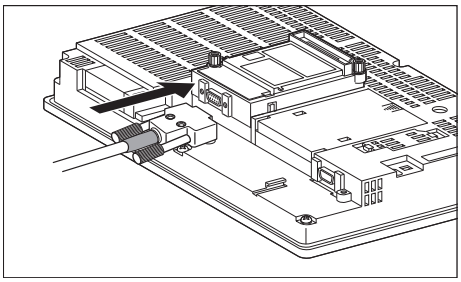
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



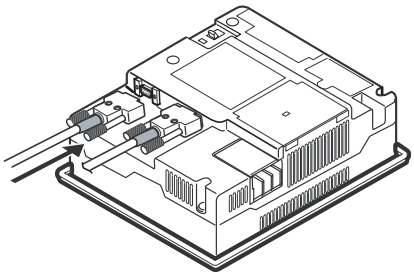
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

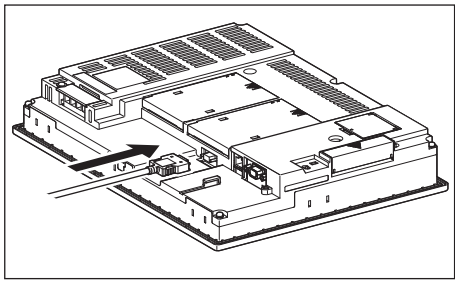


(2) How to connect the RS-485 cable

(a) For the GT16

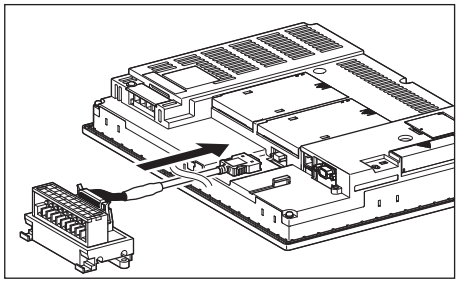
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

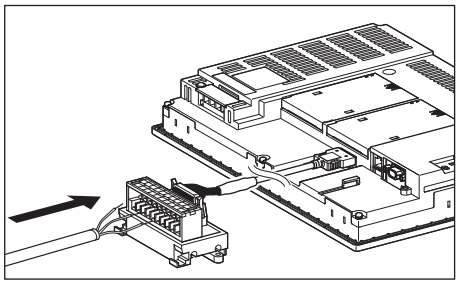


• Connection to the RS-422/485 interface with the RS-485 terminal block conversion modules

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

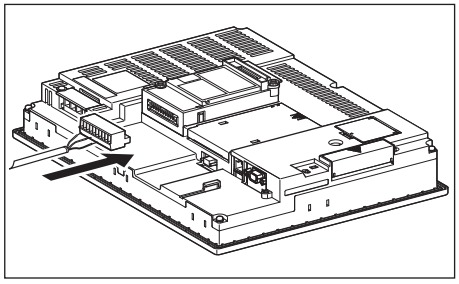


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

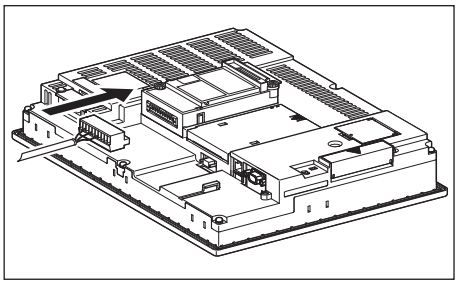


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.

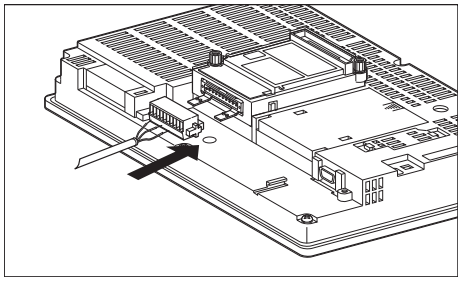


2 Connect the terminal block to theRS-422/485 communication unit on the GOT.

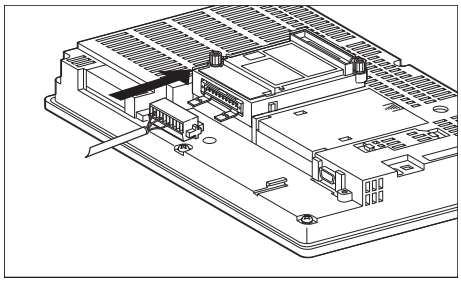


(b) For the GT15

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



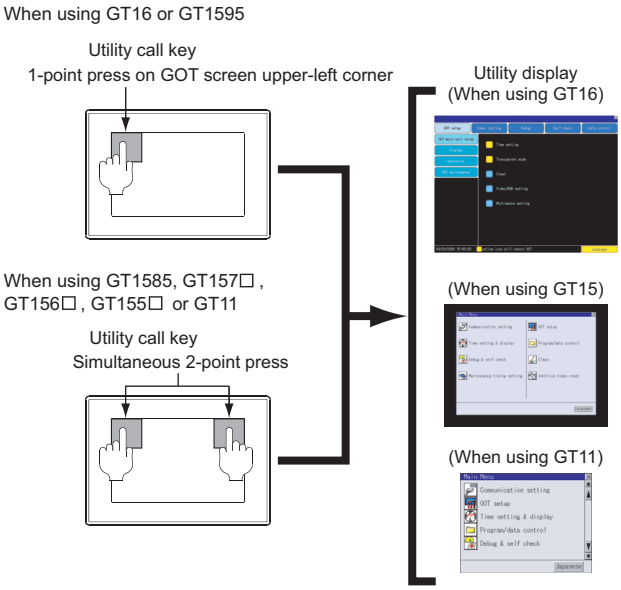
32.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

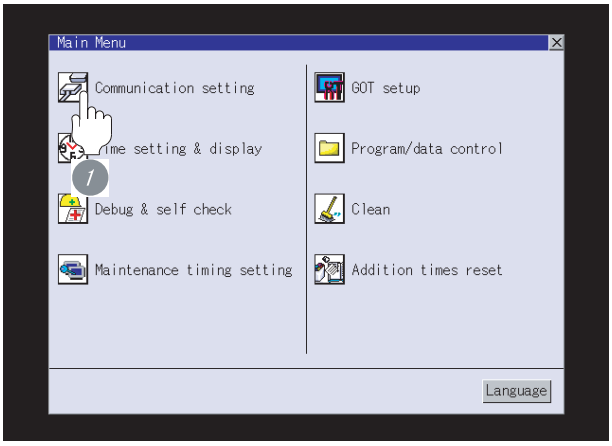


Point

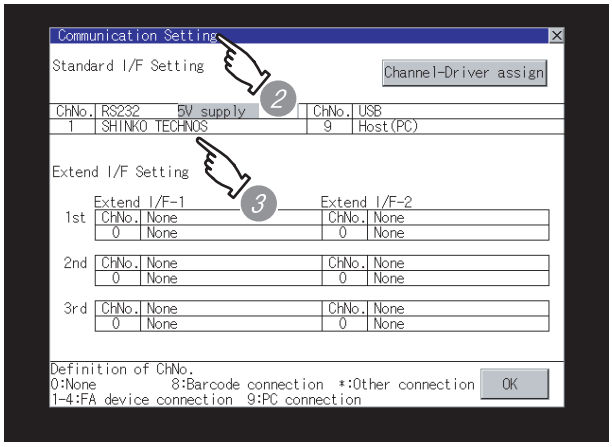
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:Shinko Technos

When the communication driver name is not displayed normally, carry out the following procedure again.

Section 32.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

32.3.7 Checking for normal monitoring

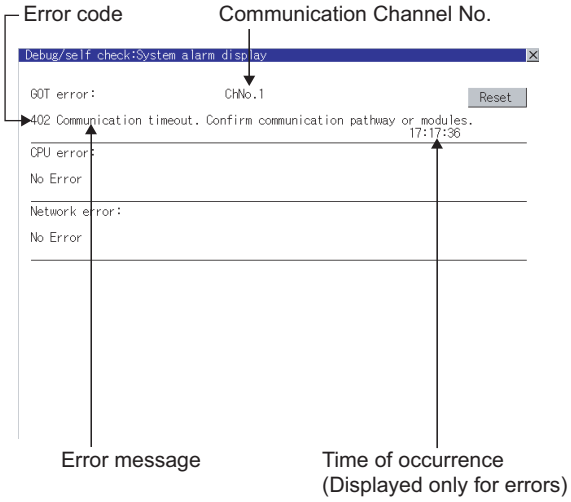
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

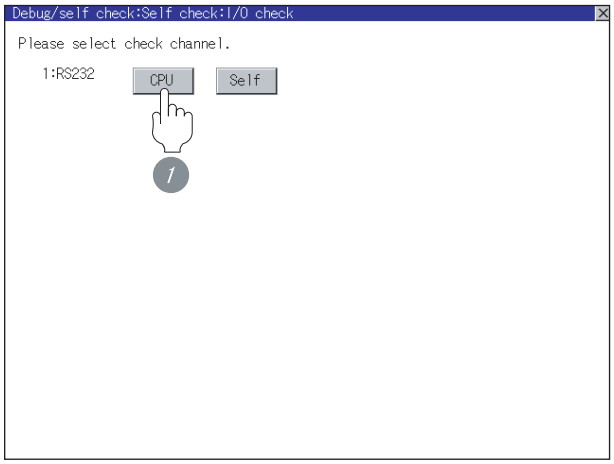
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

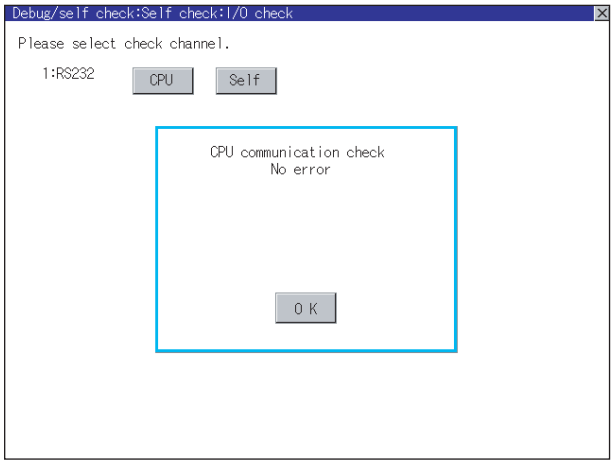
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected temperature controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the temperature controller side setting

When connecting the GOT, setting is required for the temperature controller side.

Confirm if the temperature controller side setting is correct.

☞ Section 32.4 Indicating controller Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

32.4 Indicating controller Side Setting

Point

(1) Shinko Technos indicating controller
For details of Shinko Technos indicating controller, refer to the following manual.
☞ User's Manual for the Shinko Technos indicating controller

(2) Communication converter
For details on communication settings of the communication converter, refer to the following manual.
☞ User's Manual for communication converter

Model name		Reference
Indicating controller	ACS-13A, DCL-33A, JC, JCM-33A, JIR-301-M, PCD-300 Series, PC-900 Series (PC-955-□/M,C5, PC-935-□/M, C5)	Section 32.4.1
	FCD-100, FCR-100, FCR-23A, FIR Series, PC-900 Series (PC-955-□/M,C, PC-935-□/M,C)	Section 32.4.2
communication converter	IF-400	Section 32.4.1

32.4.1 Connecting to ACS-13A, DCL-33A, JC, JCM-33A, JIR-301-M, PCD-300 Series, PC-900 Series (PC-955-[ ]/M,C5, PC-935-[ ]/M,C5)

1 Communication settings

Make the communication settings by operating the key of the indicating controller.

Item	Set value
Transmission speed*1	9600, 19200 bps
Data length	7 bits (fixed)
Parity bit	Even (fixed)
Stop bit	1 bit (fixed)
Station No.*2*3	0 to 95
Communication protocol	Shinko protocol

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 When setting the station No. to "95", the read-out of data cannot be performed.

32.4.2 Connecting to FCD-100, FCR-100, FCR-23A, FIR Series, PC-900 Series (PC-955-[ ]/M,C, PC-935-[ ]/M,C)

1 Communication settings

Make the communication settings by operating the key of the indicating controller.

Item	Set value
Transmission speed*1	9600, 19200 bps
Data length	7 bits (fixed)
Parity bit	Even (fixed)
Stop bit	1 bit (fixed)
Station No.*1*2	0 to 95
Communication protocol	Shinko protocol

*1 Adjust the settings with GOT settings.
*2 When setting the "95" to the station No., the read-out of data cannot be performed.

32.4.3 Connecting to communication converter (IF-400)

1 Communication settings

Make the communication settings by operating the key of the communication converter.

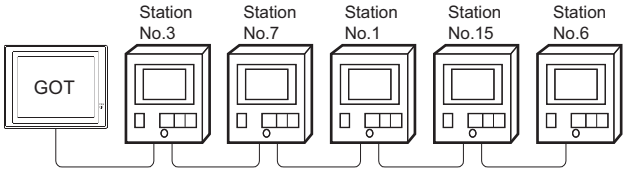
Item	Set value
Transmission speed*1	9600, 19200 bps
Sending/Receiving switching period*2	1 character, 2 character

*1 Adjust the settings with GOT and the indicating controller settings.
*2 The setting of 1 character is recommended.

32.4.4 Station NO. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the indicating controller of which data is to be changed.

Specification range
0 to 94

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).

When specifying the station No. from 100 to 115 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the indicating controller.

Specification station NO.	Compatible device	Setting range
100	GD10	0 to 94 For the setting other than the above, error (dedicated device is out of range) will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
  In the WORD BIT write-in operation, only the indicating controller whose station No. is the the same as host address is applicable.
  For details of host address setting, refer to the following.
  ☞ Section 32.3.3 Setting communication interface (Communication settings)
- In the read-out operation, only the indicating controller whose station No. is the the same as host address is applicable. For details of host address setting, refer to the following.
  ☞ Section 32.3.3 Setting communication interface (Communication settings)

32.5 Precautions

1 Station number settings of indicating controller

In the system configuration, the indicating controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Section 32.3.3 Setting communication interface (Communication settings)

2 GOT clock function

Since the indicating controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Disconnecting a part of multiple connected equipments

The GOT can disconnect some of multiple connected equipments by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipments.

For details of GOT internal device setting, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual (2.9.1 GOT internal devices)

32.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Connecting to the Shinko Technos indicating controller	Supporting the Shinko Technos indicating controller connection	2.43V	Communication driver Shinko Technos Controller [03.01.**]
	Supporting the following: • Disconnecting some of multiple connected equipments • Preventing the monitoring operation of the faulty station automatically	2.58L	Communication driver Shinko Technos Controller [03.03.**]
	Supporting the RS-485 connection to ACS-13A, JC, JCM-33A, JIR-301-M, PC-900 series (PC-955-□/M,C5, PC-935-□/M,C5)	2.90U	Communication driver Shinko Technos Controller [04.02.**]
	Supporting the connection to PCD-300 series		
	Supporting the connections to GT16		

MEMO

33

CONNECTION TO CHINO CONTROLLER



33.1 System Configuration . . . . . page 33-2
This section describes the equipment and cables needed when connecting a GOT to a CHINO controller. Select a system suitable for your application.

33.2 Connection Cable . . . . . page 33-12
This section describes the specifications of the cables needed when connecting a GOT to a CHINO controller.
Check the specifications of the connection cables.

33.3 Preparatory Procedures for Monitoring . . . . . page 33-28
This section provides the procedures to be followed before performing monitoring in connection to a CHINO controller. The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

33.4 Controller Side Setting . . . . . page 33-38
The CHINO controller side settings for GOT connection are explained. When checking the emperature controller side settings, refer to this section.

33.5 Precautions . . . . . page 33-41
This section describes the precautions about controller connection. Refer to this section without fail before starting controller connection.

33.6 List of Functions Added by Version Upgrade . . . . . page 33-42
This section describes the functions added by version upgrade of GT Designer2 or OS.

33.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

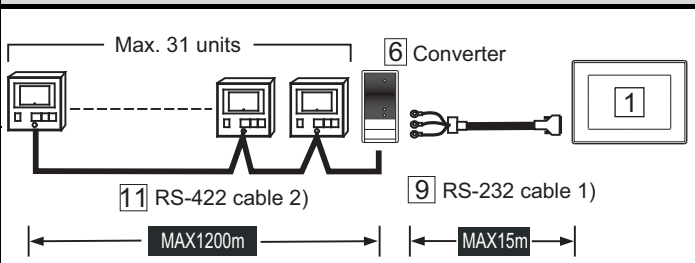
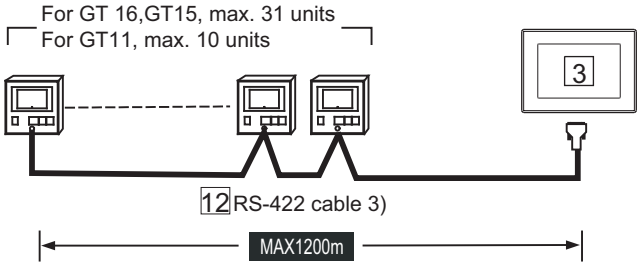
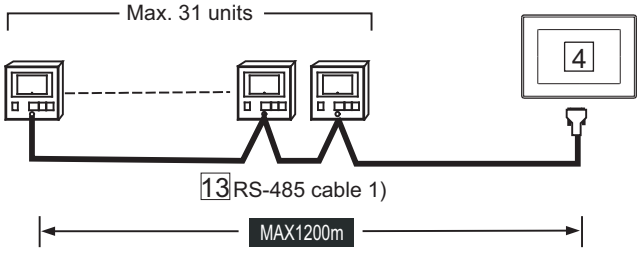
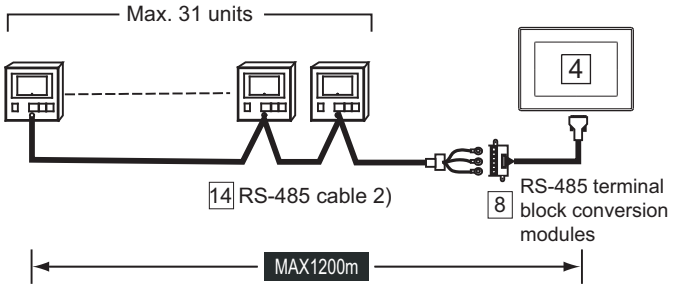
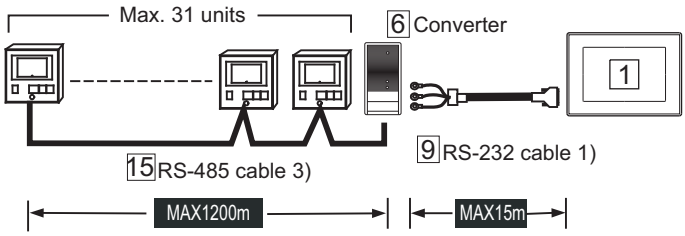
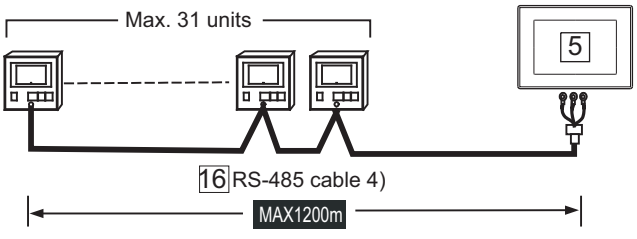
33.1.1 Connecting to LT300, LT400, DZ1000 or DZ2000 series

Communication driver

CHINO Controllers(MODBUS)

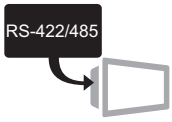
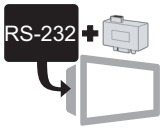
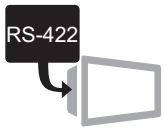
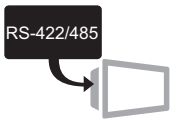
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of controllers	Distance		
1	1	Between GOT and controller 15m or less	9 RS-232 cable 1), 1, MAX15m	GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and controller 1200m or less	Max. 31 units, 2, 10 RS-422 cable 1), MAX1200m	GT16
1	Max. 31 units	Between GOT and controller 1200m or less	Max. 31 units, 2, 12 RS-422 cable 3), 7 RS-422 connector conversion cable, MAX1200m	

Connection conditions			System configuration	Model
Number of GOTs	Number of controllers	Distance		
1	Max. 31 units	Between GOT and converter 15m or less Between converter and controller 1200m or less		GT16 GT15 GT11 Serial
1	GT16, GT15: Max. 31 units GT10: Max. 10 units	Between GOT and controller 1200m or less		
1	Max. 31 units	Between GOT and controller 1200m or less		GT16
1	Max. 31 units	Between GOT and controller 1200m or less		
1	Max. 31 units	Between GOT and converter 15m or less Between converter and controller 1200m or less		GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and controller 1200m or less		GT16 GT15

2 System equipment

(1) GOT

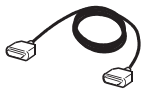
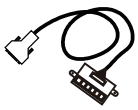
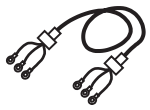
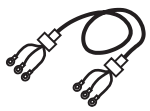
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 Communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 Communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 Communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 Communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 Communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 Communication	— (Built into GOT)	GT11 Serial
	4	RS-422/485 interface • For RS-485 Communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 Communication	GT15-RS4-TE	GT16 GT15

(2) Controller

Image	No.	Name	Model name
	6	converter	SC8-10

6 is manufactured by CHINO corporation. For details of the product, contact CHINO corporation.

(3) Cable

Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	8	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	9	RS-232 cable 1) • Between converter and GOT • Between controller and GOT	(To be prepared by the user. Section 33.2 Connection Cable)	GT16 GT15 GT11 Serial
	10	RS-422 cable 1) • Between controller and GOT		GT16
	11	RS-422 cable 2) • Between controller and converter		GT16 GT15 GT11 Serial
	12	RS-422 cable 3) • Between controller and RS-422 connector conversion cable • Between controller and GOT		
	13	RS-485 cable 1) • Between controller and GOT		GT16
	14	RS-485 cable 2) • Between controller and RS-485 terminal block conversion modules		
	15	RS-485 cable 3) • Between controller and converter		GT16 GT15 GT11 Serial
	16	RS-485 cable 4) • Between controller and GOT		GT16 GT15

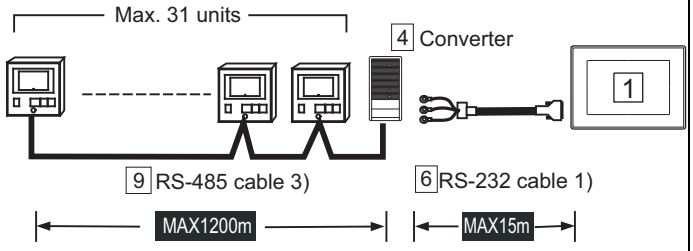
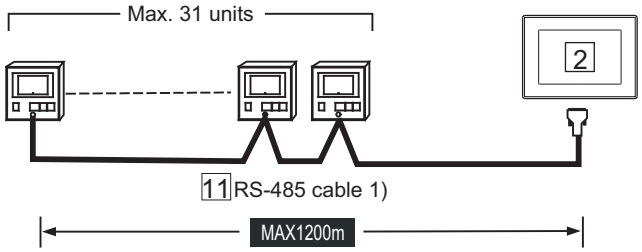
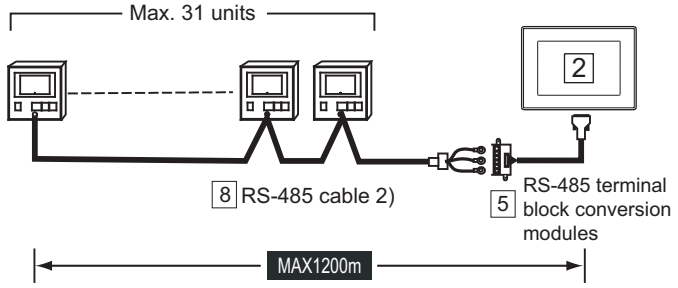
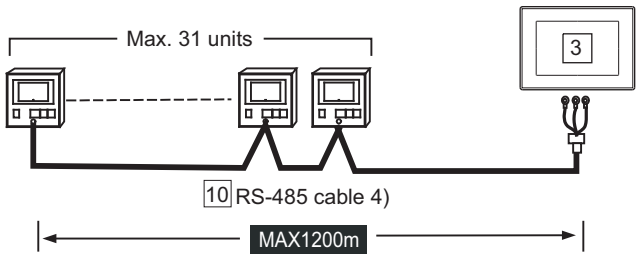
8 is manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For details of the product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

33.1.2 Connecting to LT230, LT830

Communication driver

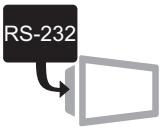
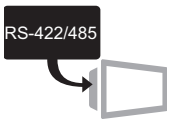
CHINO Controllers(MODBUS)

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of controllers	Distance		
1	Max. 31 units	Between GOT and converter 15m or less Between converter and controller 1200m or less		GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and controller 1200m or less		GT16
1	Max. 31 units	Between GOT and controller 1200m or less		
1	Max. 31 units	Between GOT and controller 1200m or less		GT16 GT15

2 System equipment

(1) GOT

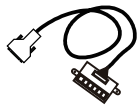
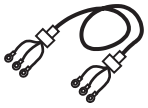
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Controller

Image	No.	Name	Model name
	4	Converter	SC8-10

4 is manufactured by CHINO corporation. For details of the product, contact CHINO corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 1) • Between converter and GOT	(To be prepared by the user. Section 33.2 Connection Cable)	GT16 GT15 GT11 Serial
	7	RS-485 cable 1) • Between controller and GOT		GT16
	8	RS-485 cable 2) • Between controller and RS-485 terminal block conversion modules		GT16
	9	RS-485 cable 3) • Between controller and converter		GT16 GT15 GT11 Serial
	10	RS-485 cable 4) • Between controller and GOT		GT16 GT15

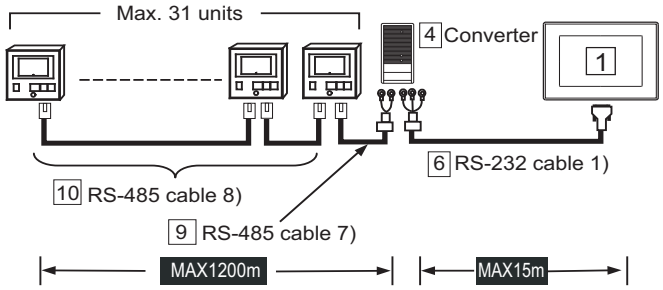
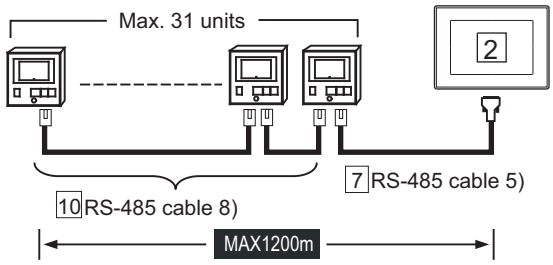
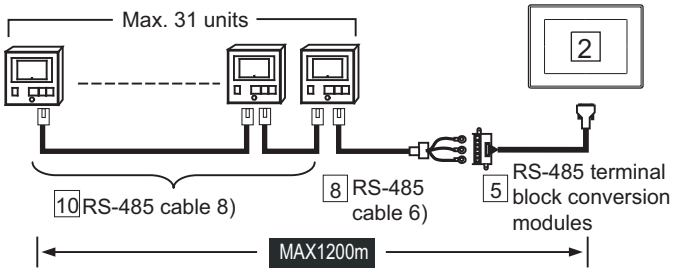
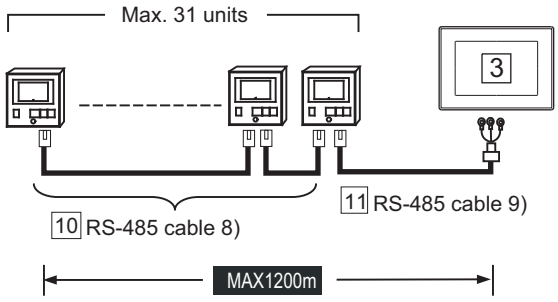
5 is manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For details of the product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

33.1.3 Connecting to GT120

Communication driver

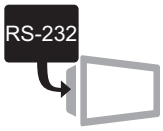
CHINO Controllers(MODBUS)

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of controllers	Distance		
1	Max. 31 units	Between GOT and converter 15m or less Between converter and controller 1200m or less		GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and controller 1200m or less		GT16
1	Max. 31 units	Between GOT and controller 1200m or less		
1	Max. 31 units	Between GOT and controller 1200m or less		GT16 GT15

2 System equipment

(1) GOT

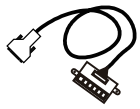
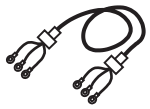
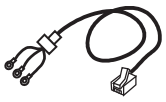
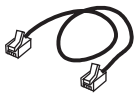
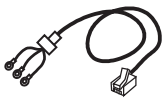
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Controller

Image	No.	Name	Model name
	4	Converter	SC8-10

4 is manufactured by CHINO corporation. For details of the product, contact CHINO corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 1) • Between GOT and converter	(To be prepared by the user. Section 33.2 Connection Cable)	GT16 GT15 GT11 Serial
	7	RS-485 cable 5) • Between controller and GOT		GT16
	8	RS-485 cable 6) • Between controller and RS-485 terminal block conversion modules		
	9	RS-485 cable 7)*1 • Between controller and converter	GT8-CDM (3m)	GT16 GT15 GT11 Serial
	10	RS-485 cable 8)*1 • Between controller and controller	GT8-CDD (60mm)	
	11	RS-485 cable 9) • Between controller and GOT	(To be prepared by the user. Section 33.2 Connection Cable)	GT16 GT15

5 is manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For details of the product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

9, 10 is manufactured by CHINO corporation. For details of the product, contact CHINO corporation.

*1 The RS-485 cable can be prepared by the user. (Section 33.2 Connection Cable)

33.2 Connection Cable

The RS-232 cable / RS-422 cable / RS-485 cable used for connecting the GOT to the PLC should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ section 33.2.1)

Model name		Connection cable
		GT16, GT15, GT11
Controller	LT300, LT400, DZ1000, DZ2000 Series*1	RS-232 cable 1)
Converter	SC8-10	RS-232 cable 1)

2 RS-422 cable (☞ section 33.2.2)

Model name		Connection cable		
		GT16	GT15, GT11	Converter (SC8-10)
Controller	LT300, LT400, DZ1000, DZ2000 Series*1	RS-422 cable 1) RS-422 cable 3)	RS-422 cable 3)	RS-422 cable 2)

3 RS-485 cable (☞ section 33.2.3)

Model name		Connection cable		
		GT16	GT15, GT11	Converter (SC8-10)
Controller	LT300, LT400, DZ1000, DZ2000 Series*1	RS-485 cable 1) RS-485 cable 2) RS-485 cable 4)	RS-485 cable 4)	RS-485 cable 3)
	LT230, LT830*1			
	GT120*1	RS-485 cable 5) RS-485 cable 6) RS-485 cable 9)	RS-485 cable 9)	RS-485 cable 7) RS-485 cable 8)

*1 Select the model that support MODBUS communication function.
For details of the models, refer to the following manual.
☞ User's Manual for the CHINO controller

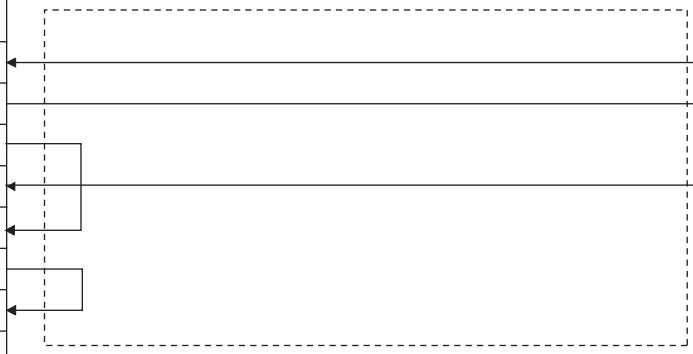
33.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	CHINO controller side, converter
Signal name	Pin No.		Signal name*1
CD	1		-
RD(RXD)	2		SD
SD(TXD)	3		RD
ER(DTR)	4		-
SG	5		SG
DR(DSR)	6		
RS(RTS)	7		
CS(CTS)	8		
-	9		
FG	-		



*1 Terminal number of the controller and the converter may differ for each model. Refer to the table below.

Signal name	Controller type			Converter type
	LT300	LT400	DZ1000, DZ2000	SC8-10
	Terminal No.	Terminal No.	Terminal No.	Terminal No.
SD	11	11	19	2
RD	13	13	21	1
SG	15	15	23	3

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

9-pin D-sub (male) inch screw fixed type

(b) Connector model

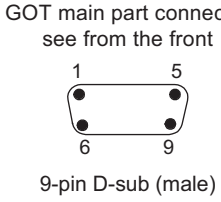
GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-		

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11



9-pin D-sub (male)

3 Precautions when preparing cable

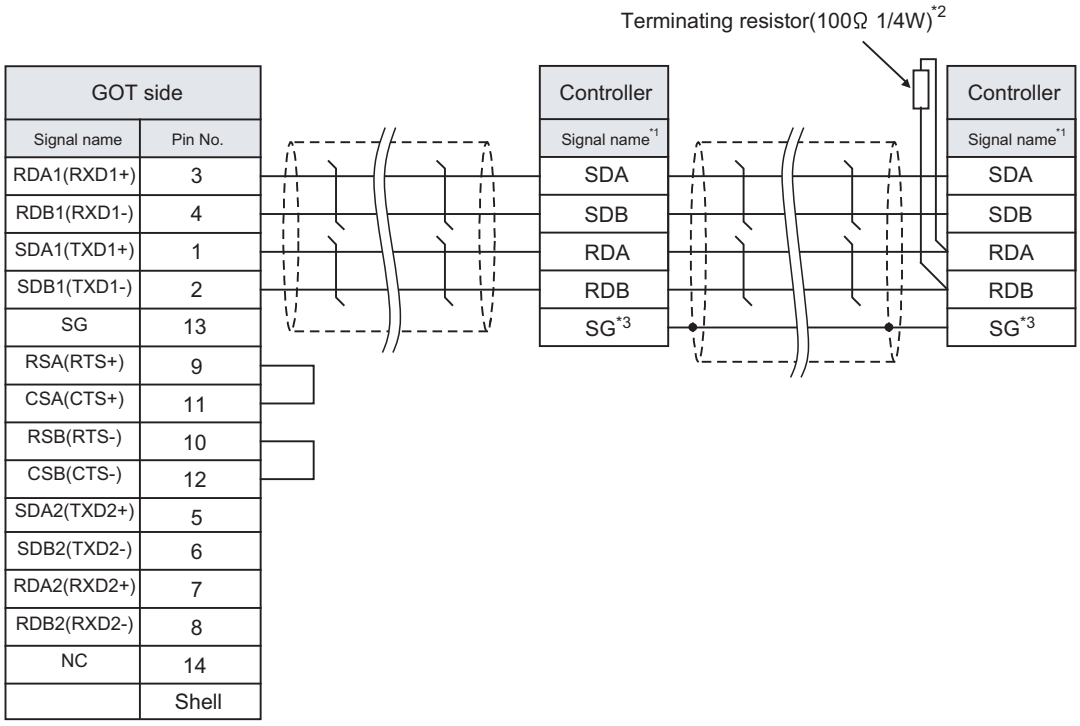
The length of the RS-232 cable must be 15m or less.

33.2.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a temparature controller.

1 Connection diagram

(1) RS-422 cable 1)



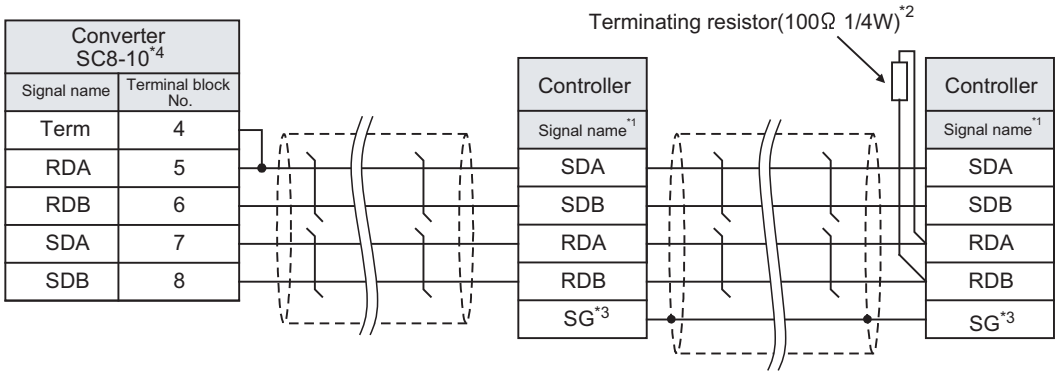
*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Controller type		
	LT300	LT400	DZ1000,DZ2000
	Terminal No.	Terminal No.	Terminal No.
SDA	11	11	19
SDB	12	12	20
RDA	13	13	21
RDB	14	14	22
SG	15	15	23

*2 Terminating resistor should be provided for a controller which will be a terminal.

*3 Do not connect SG of the controller and SG of the GOT.

(2) RS-422 cable 2)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

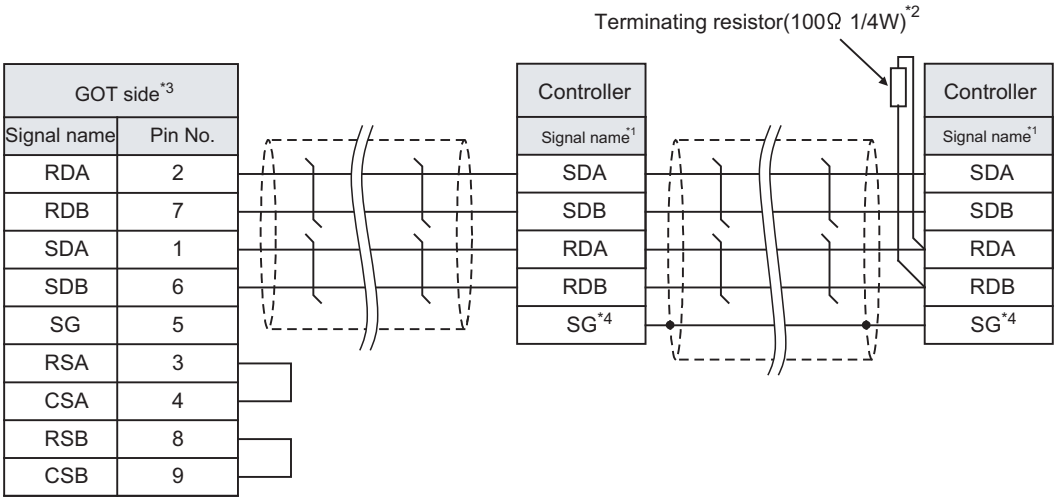
Signal name	Controller type		
	LT300	LT400	DZ1000,DZ2000
	Terminal No.	Terminal No.	Terminal No.
SDA	11	11	19
SDB	12	12	20
RDA	13	13	21
RDB	14	14	22
SG	15	15	23

*2 Terminating resistor should be provided for a controller which will be a terminal.

*3 Do not connect SG of the controller and SG of the GOT.

*4 Set the Communication Type switch of the converter to RS-422.

(3) RS-422 cable 3)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Controller type		
	LT300	LT400	DZ1000,DZ2000
	Terminal No.	Terminal No.	Terminal No.
SDA	11	11	19
SDB	12	12	20
RDA	13	13	21
RDB	14	14	22
SG	15	15	23

*2 Terminating resistor should be provided for a controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Disable”.

(☞ 4 Connecting terminating resistors)

*4 Do not connect SG of the controller and SG of the GOT.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

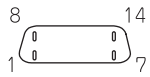
GOT	Connector model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

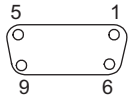
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

3 Precautions when preparing a cable

The length of the RS-422 cable must be 1200m or less

4 Connecting terminating resistors

(1) GOT

Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

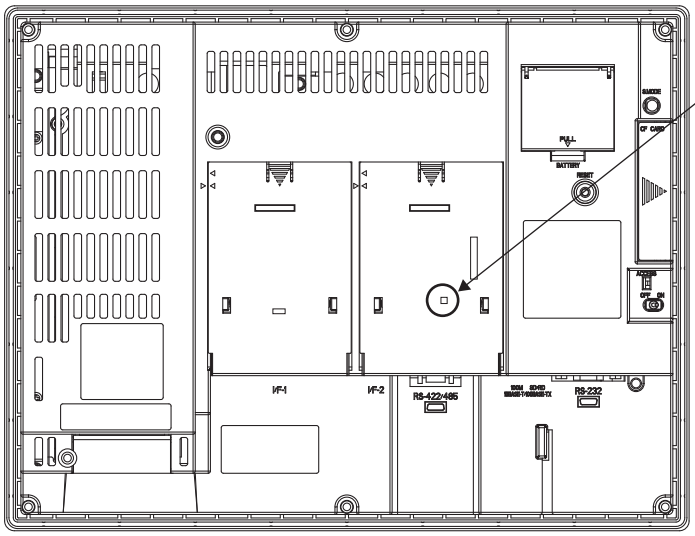
Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF



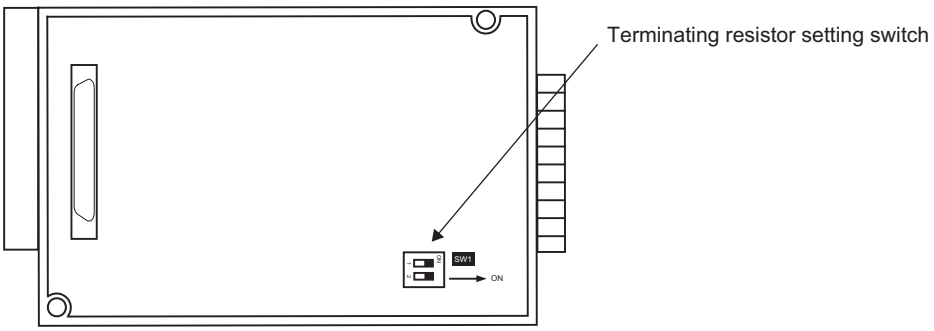
SW1

*1 The default setting is “Disable”.

• For GT16



• For RS422/485 communication unit



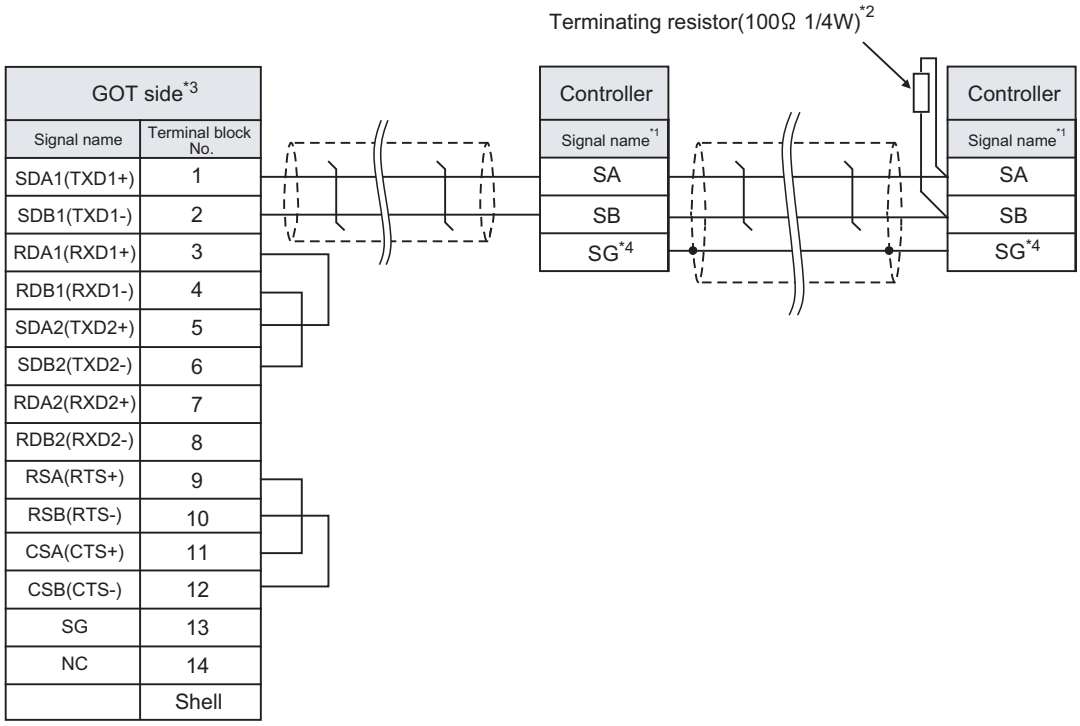
Rear View of RS-422/485 communication unit

33.2.3 RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a temparature controller.

1 Connection diagram

(1) RS-485 cable 1) (For GT16)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model name				
	LT230	LT300	LT400	LT830	DZ1000, DZ2000
	terminal No.	terminal No.	terminal No.	terminal No.	terminal No.
SA	6	11	11	6	19
SB	7	12	12	7	20
SG	8	15	15	8	23

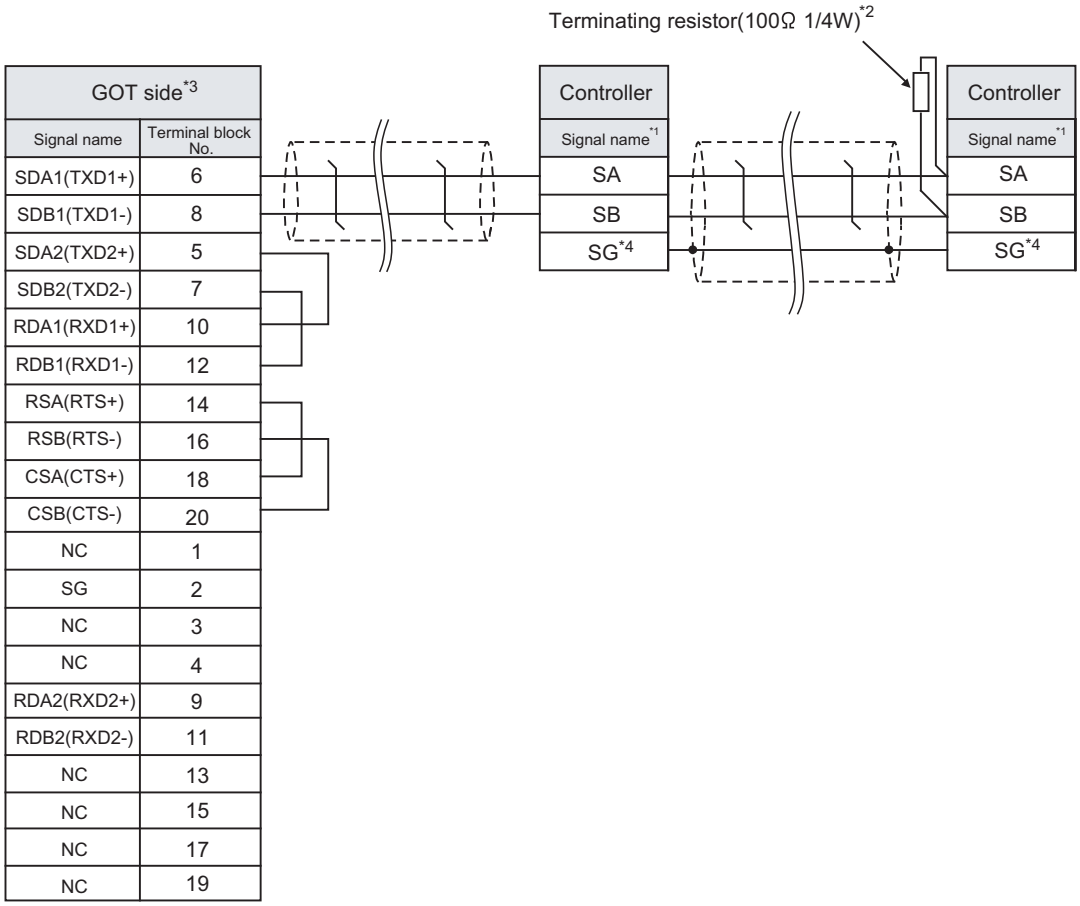
*2 Terminating aresistor should be provided for a controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Disable”.

(☞ 4 Connecting terminating resistors)

*4 Do not connect SG of the controller and SG of the GOT.

(2) RS-485 cable 2) (For GT16)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model name				
	LT230	LT300	LT400	LT830	DZ1000, DZ2000
	terminal No.	terminal No.	terminal No.	terminal No.	terminal No.
SA	6	11	11	6	19
SB	7	12	12	7	20
SG	8	15	15	8	23

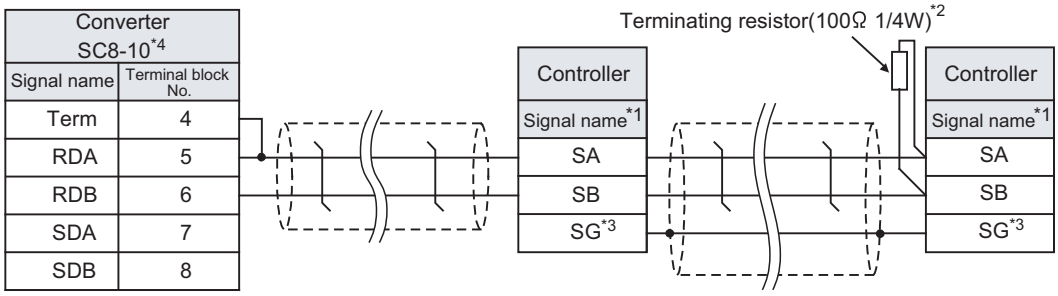
*2 Terminating aresistor should be provided for a controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Disable”.

(☞ 4 Connecting terminating resistors)

*4 Do not connect SG of the controller and SG of the GOT.

(3) RS-485 cable 3)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

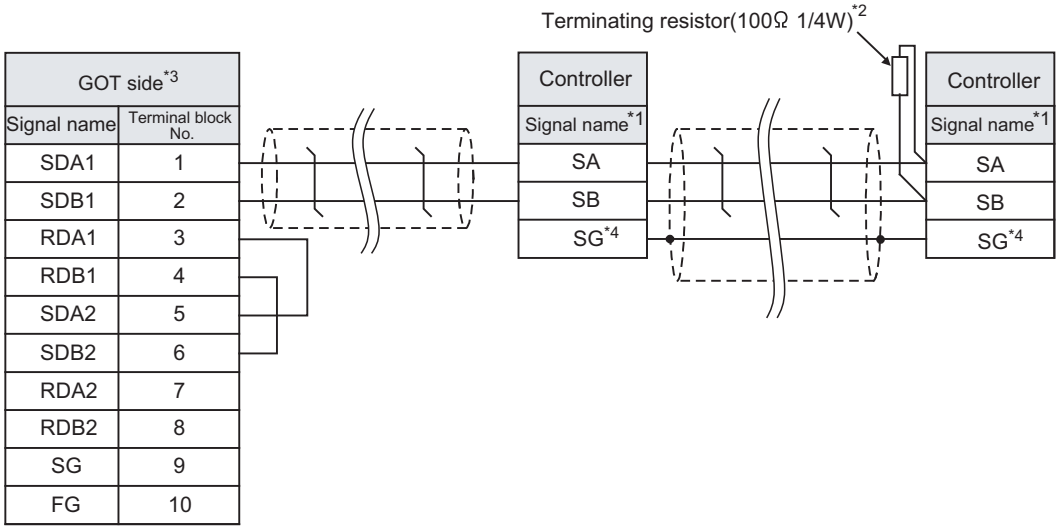
Signal name	Model name				
	LT230	LT300	LT400	LT830	DZ1000, DZ2000
	terminal No.	terminal No.	terminal No.	terminal No.	terminal No.
SA	6	11	11	6	19
SB	7	12	12	7	20
SG	8	15	15	8	23

*2 Terminating aresistor should be provided for a controller which will be a terminal.

*3 Do not connect SG of the controller and SG of the GOT.

*4 Set the Communication Type switch of the converter to RS-485.

(4) RS-485 cable 4) (For GT16, GT15)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

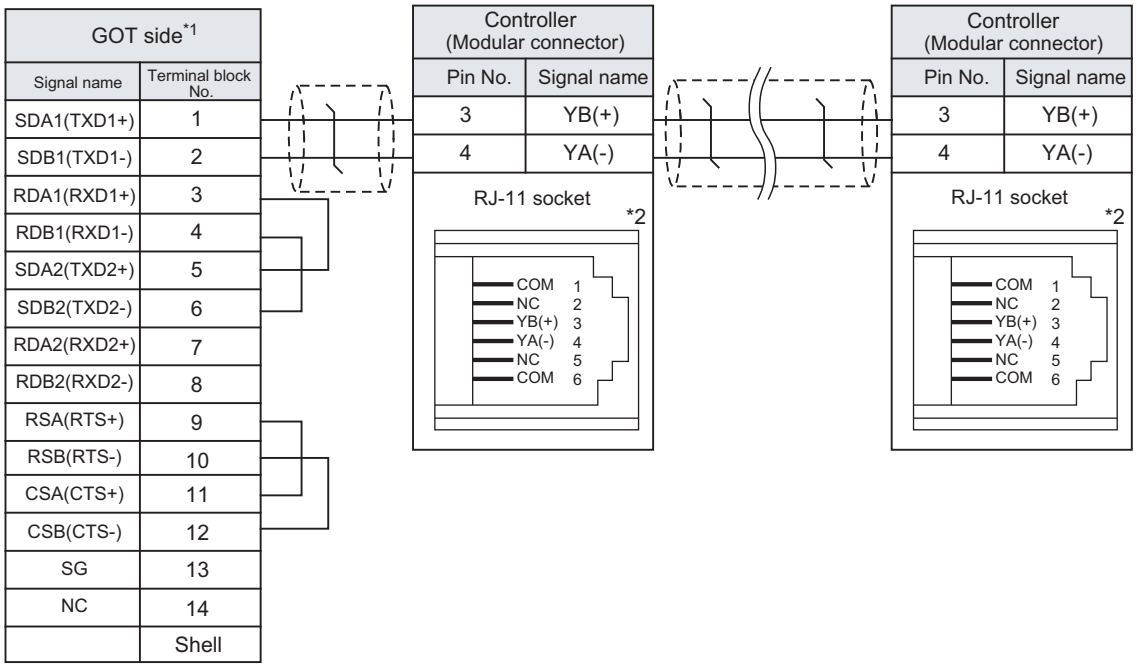
Signal name	Model name				
	LT230	LT300	LT400	LT830	DZ1000, DZ2000
	terminal No.	terminal No.	terminal No.	terminal No.	terminal No.
SA	6	11	11	6	19
SB	7	12	12	7	20
SG	8	15	15	8	23

*2 Terminating resistor should be provided for a controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Disable”.
(☞ 4 Connecting terminating resistors)

*4 Do not connect SG of the controller and SG of the GOT.

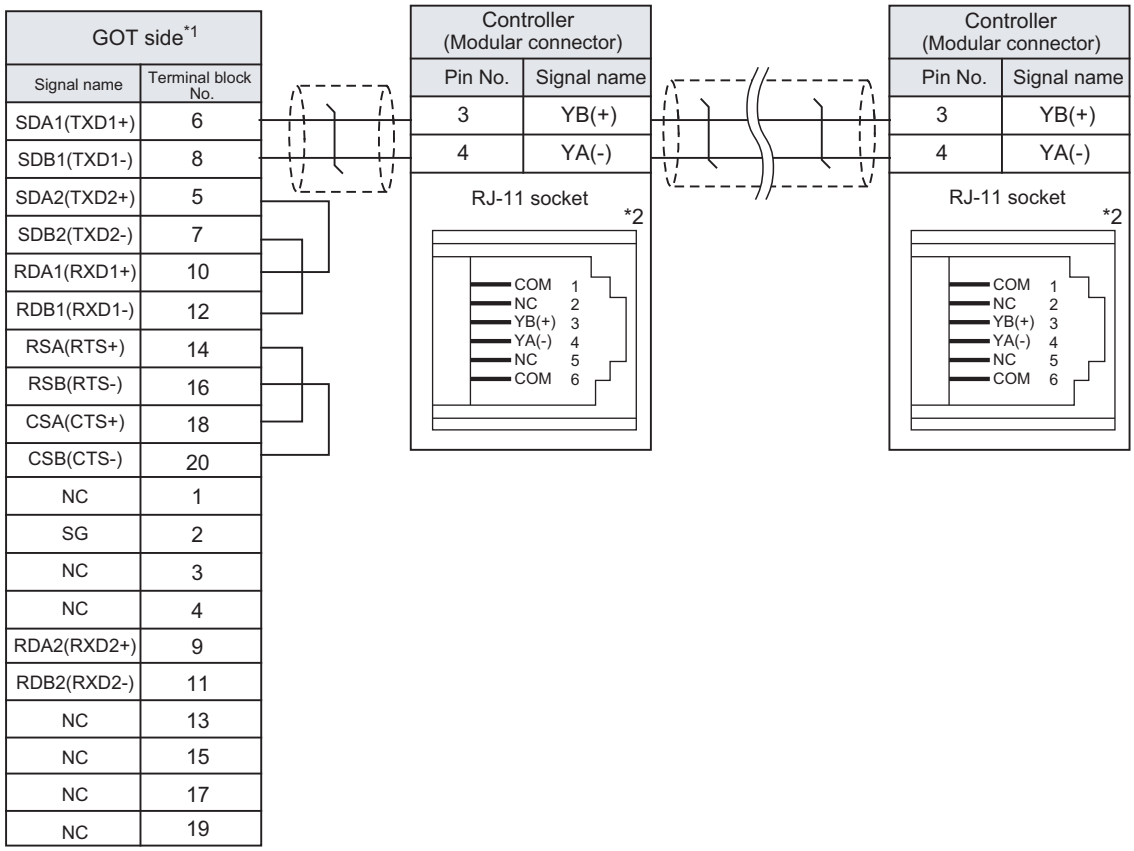
(5) RS-485 cable 5) (For GT16)



*1 Set the terminating resistor of GOT side to “Disable”.
(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.
☞ User's Manual for the CHINO controller

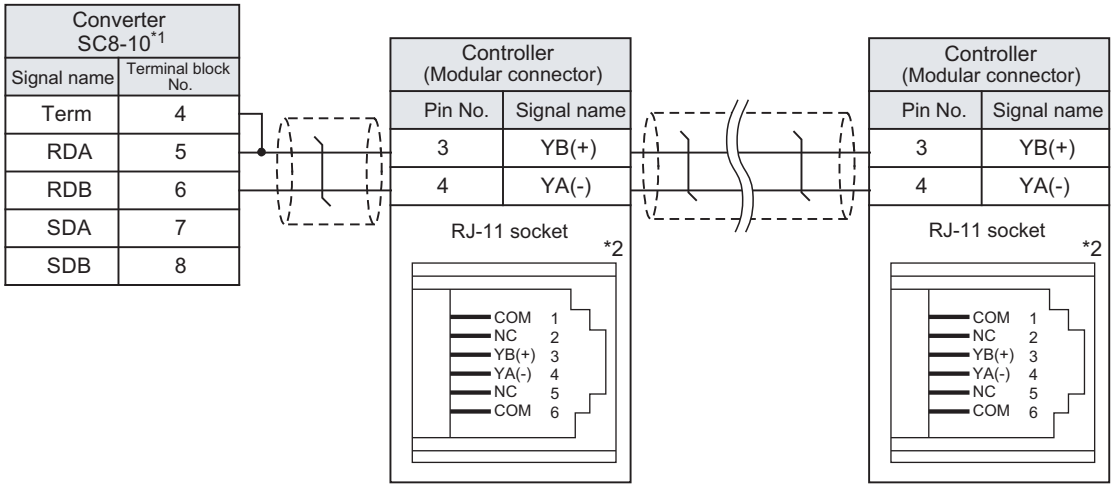
(6) RS-485 cable 6) (For GT16)



*1 Set the terminating resistor of GOT side to “Disable”.
(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.
☞ User's Manual for the CHINO controller

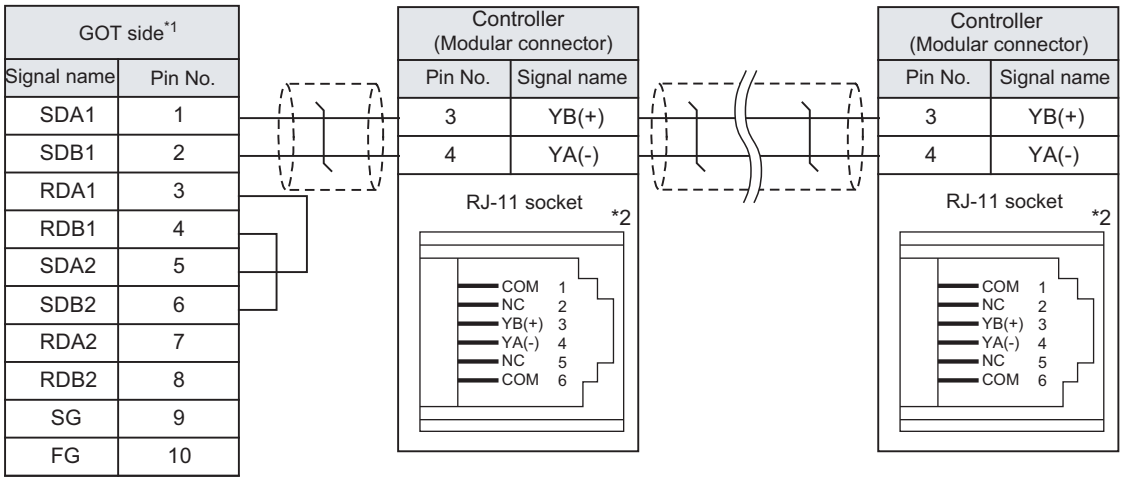
(7) RS-485 cable 7)



*1 Set the Communication Type switch of the converter to RS-485.

*2 For details of the pin assignment, refer to the following manual.
☞ User's Manual for the CHINO controller

(8) RS-485 cable 8) (For GT16, GT15)



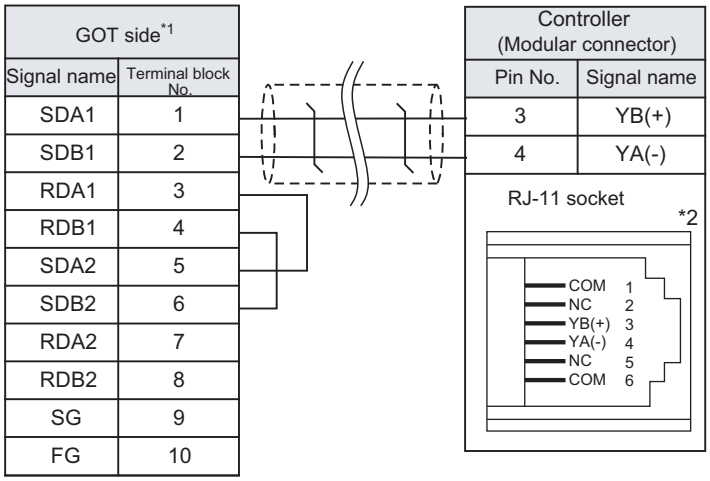
*1 Set the terminating resistor of GOT side to “Disable”.

(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the CHINO controller

(9) RS-485 cable 9) (For GT16, GT15)



*1 Set the terminating resistor of GOT side to “Disable”.

(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the CHINO controller

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 interface and RS422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

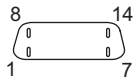
GOT	Connector model	Connector type	Manufacturer
GOT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT15-RS4-TE	SL-SMT3.5/10/90F BOX	—	Weidmuller interconnections inc.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

GOT main part connector
see from the front



14-pin (female)

(2) CHINO controller side connector

Use the connector compatible with the CHINO controller side module.

For details, refer to the following manual.

☞ User's Manual for the CHINO controller

3 Precaution when preparing a cable

(1) The length of the RS-485 cable must be 1200m or less.

4 Connecting terminating resistors

(1) GOT

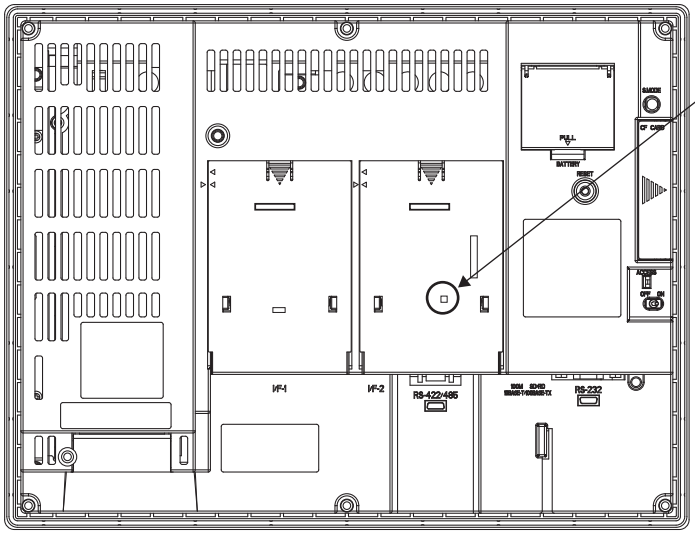
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

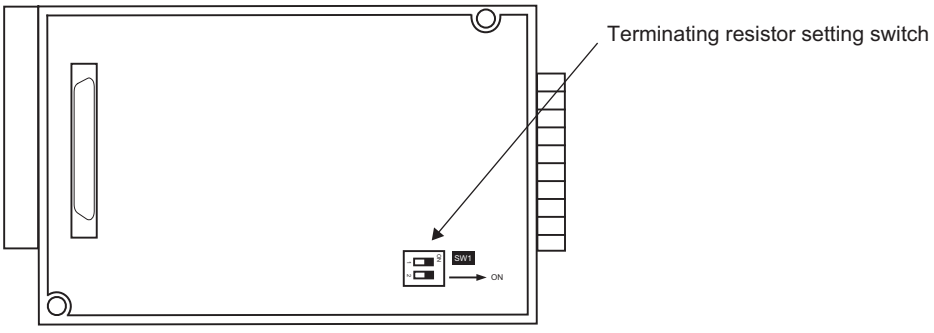
*1 The default setting is "Disable".



• For GT16



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

33.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 33.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 33.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 33.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 33.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 33.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 33.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 33.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

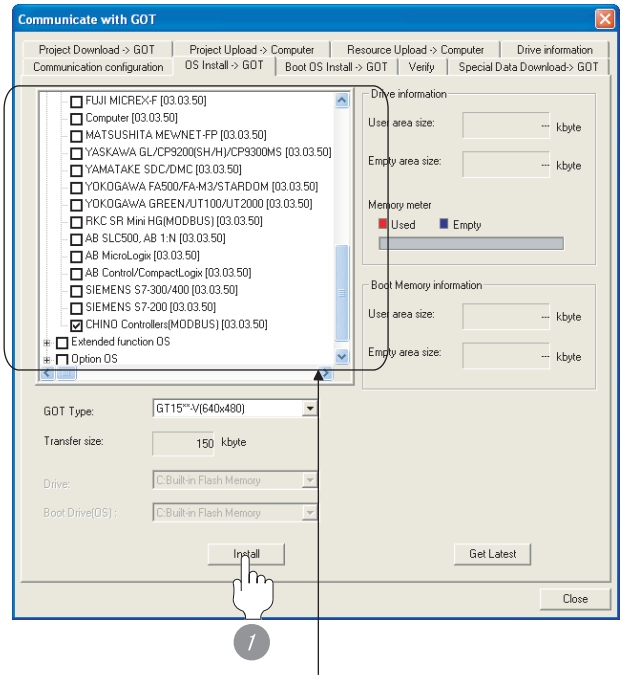
Section 33.4 Controller Side Setting

33.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• CHINO Controllers(MODBUS)

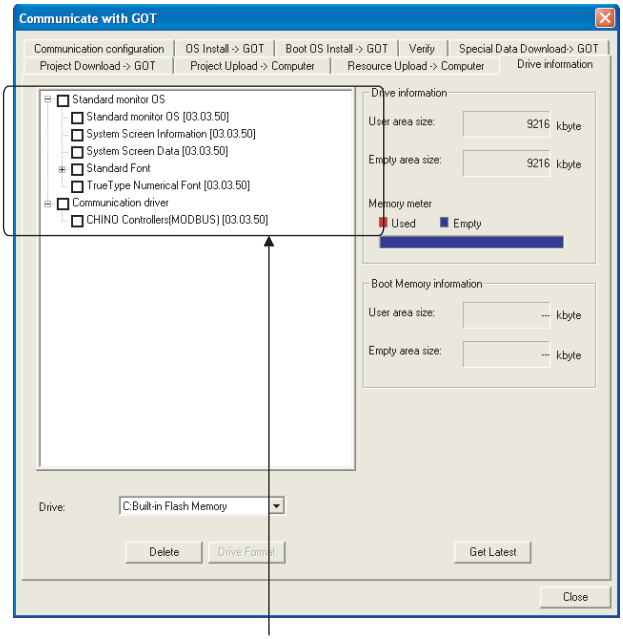
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

33.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: CHINO Controllers(MODBUS)

33.3.3 Setting communication interface (Communication settings)

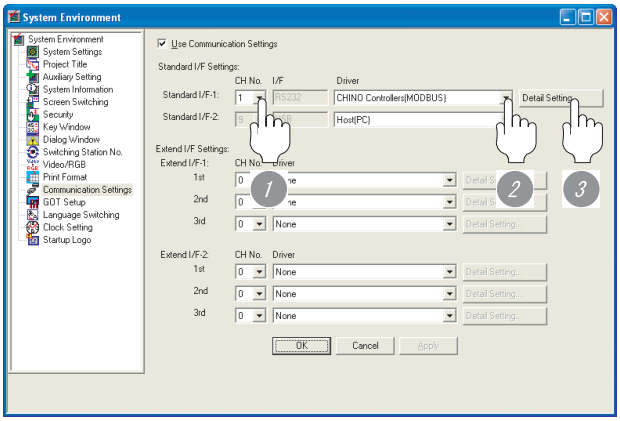
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



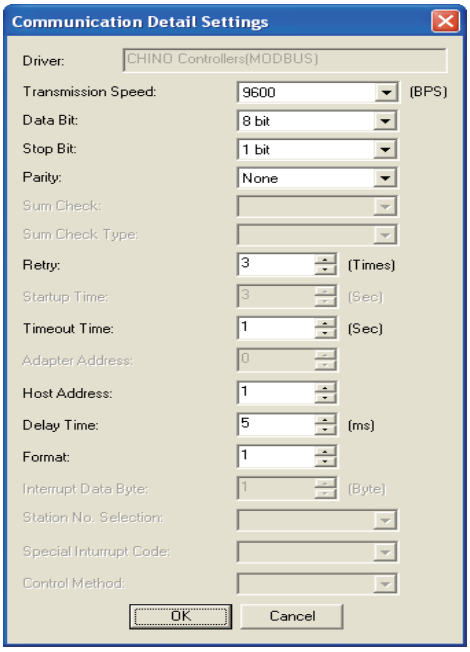
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "CHINO Controllers(MODBUS)".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: None>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 1 Sec>	1 to 30 Sec
Host Address	Specify the host address (station No. of the GOT to which the temperature controller is connected) in the connected network. <Default: 1>	1 to 99
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 5ms>	0 to 300 ms
Format	Select the communication format. <Default: 1> format 1: Accessible to LT230/300/400/830,DZ1000/2000 Not accessible to GT120 format 2: Accessible to GT120	1/2

Point

(1) Format

When connecting to GT120, specify format 2.

(2) Delay time

To connect the following models, set the send delay time to 30ms or more.

Model name
DZ1000, DZ2000

(3) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(4) Precedence in communication settings

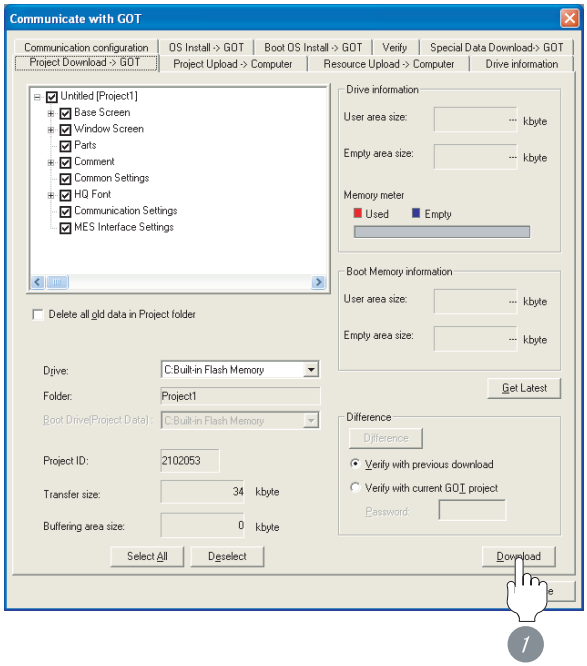
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

33.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

33.3.5 Attaching communication unit and connecting cable

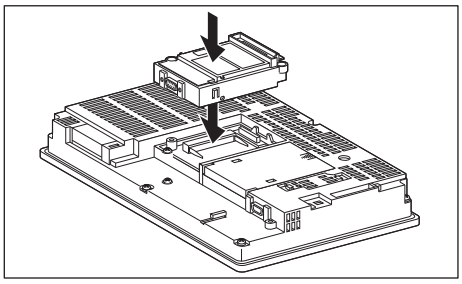
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

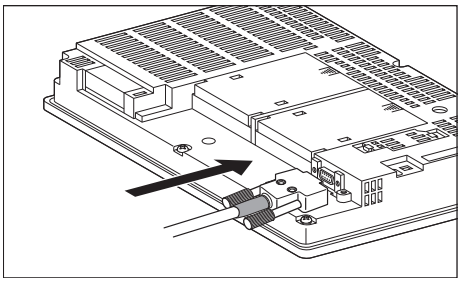
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

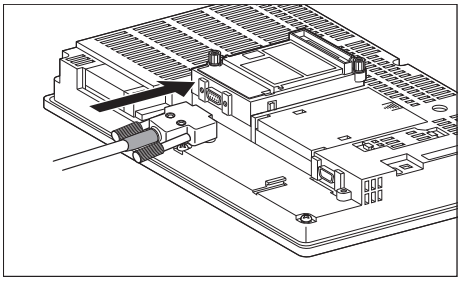
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



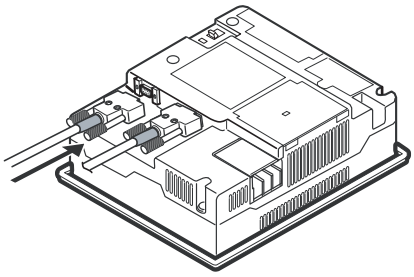
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

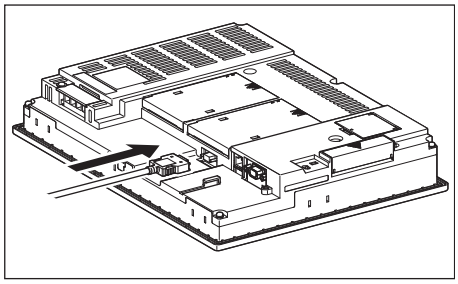


(2) How to connect the RS-422 cable

(a) For GT16

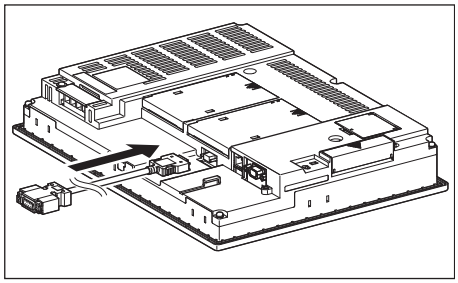
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

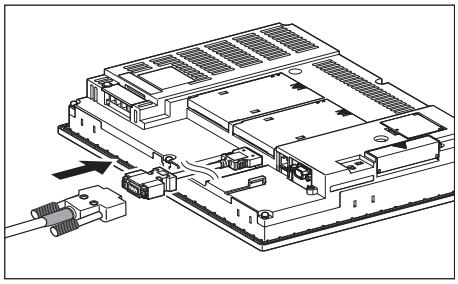


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

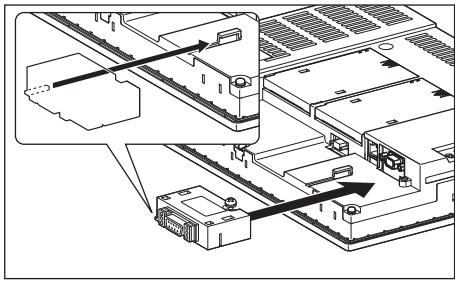


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

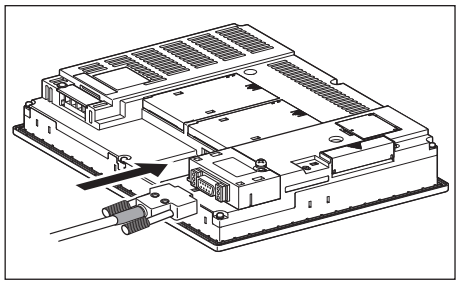


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

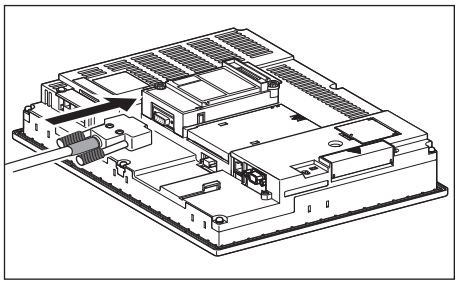


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

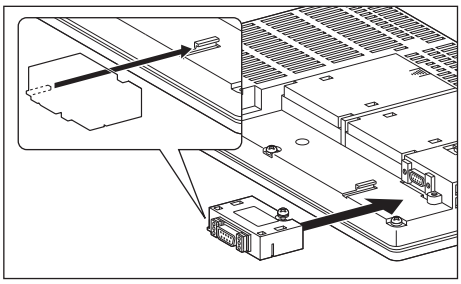
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



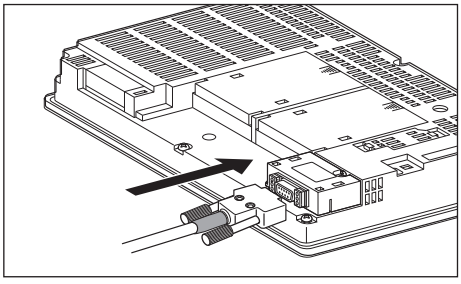
(b) For GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

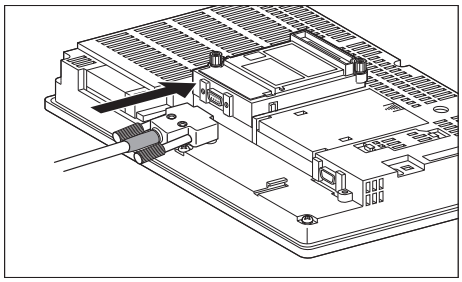


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.

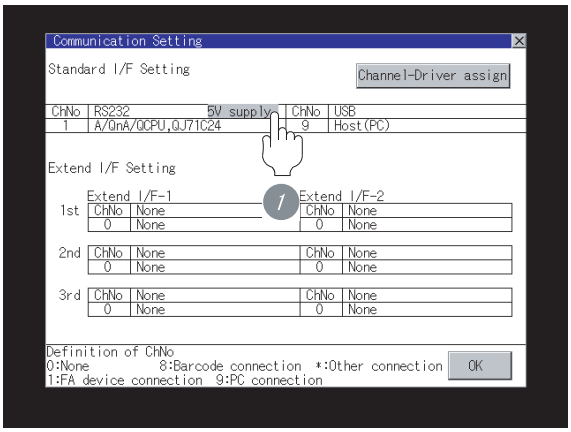


Point

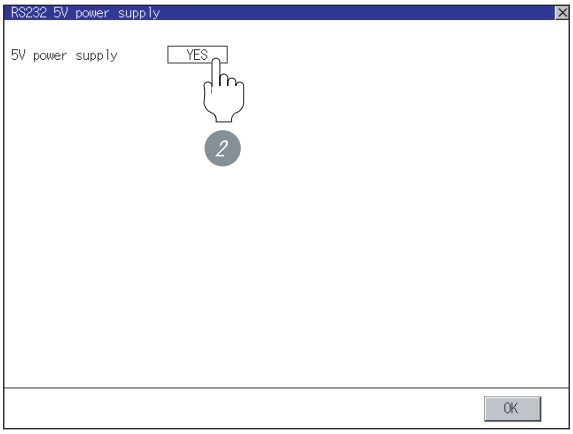
When using the RS-422 conversion unit

On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:
GT ☐ User's Manual

1 Touch [5V supply].

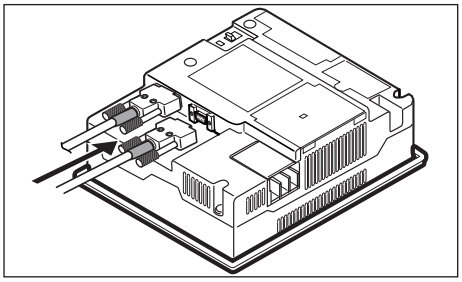


2 Set [5V power supply] to "YES".



(c) For GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

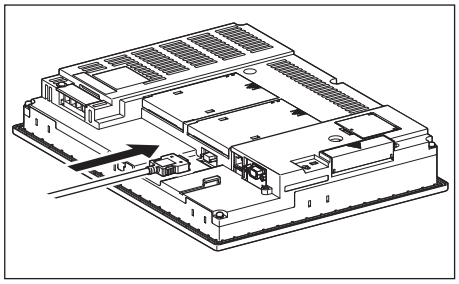


(3) How to connect the RS-485 cable

(a) For GT16

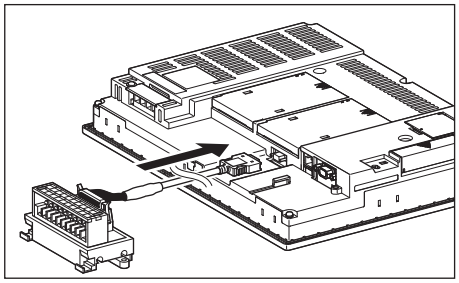
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

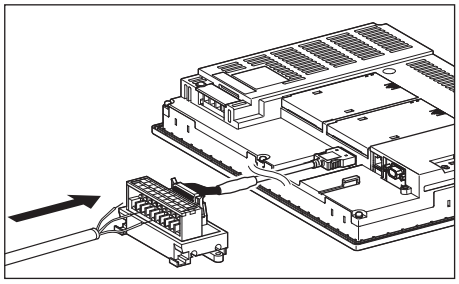


• Connection to the RS-422/485 interface with the RS-485 terminal block conversion modules

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

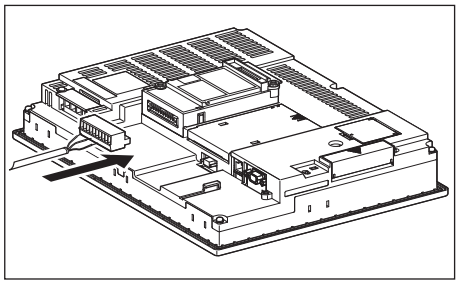


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

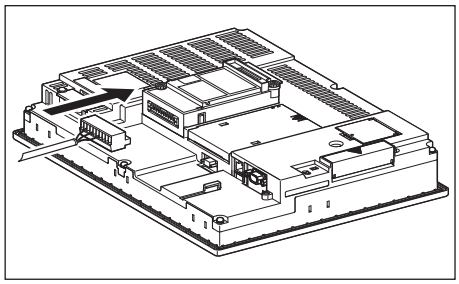


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.

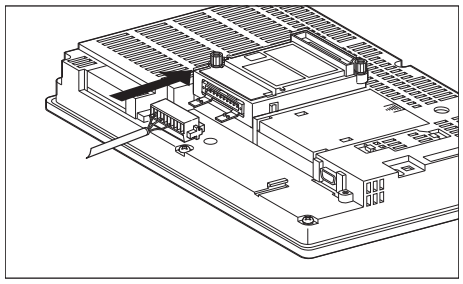


2 Connect the terminal block to the RS-422/485 communication unit on the GOT.

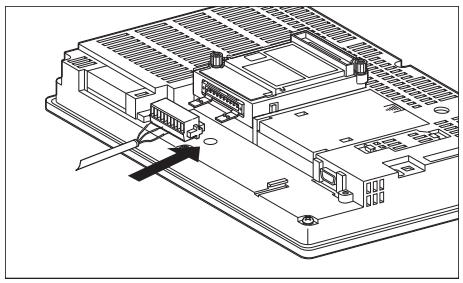


(b) For GT15

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



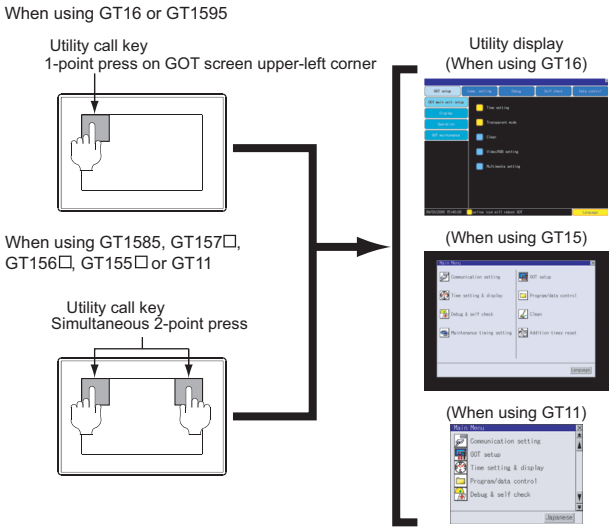
33.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

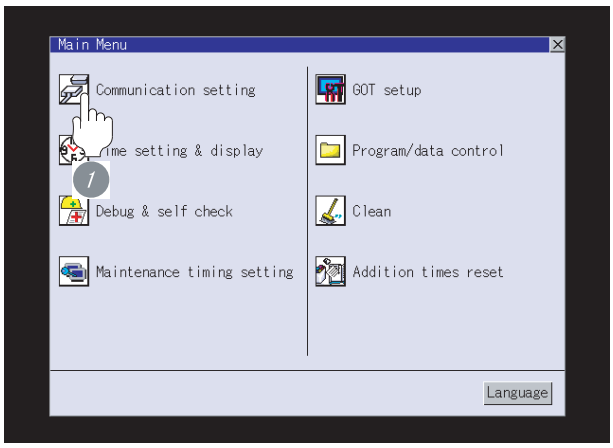


Point

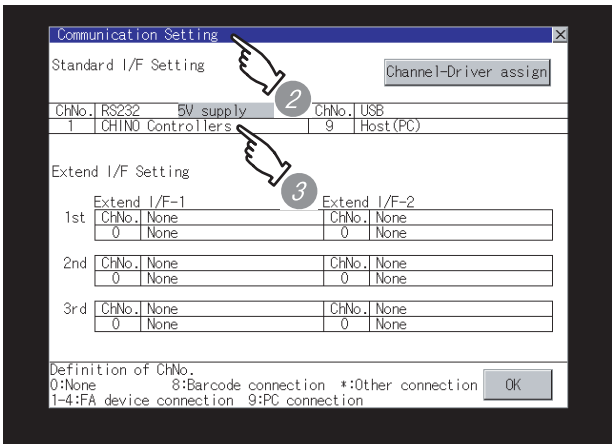
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
- Communication driver: CHINO Controllers

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 33.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

33.3.7 Checking for normal monitoring

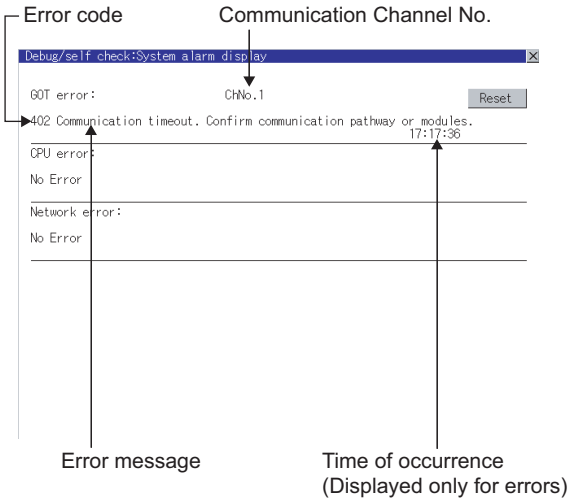
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the controller can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

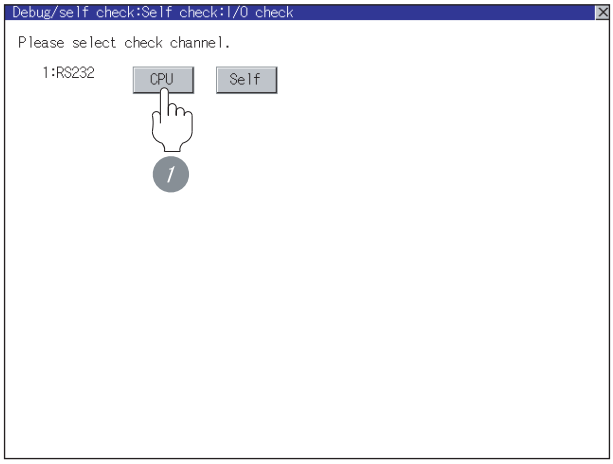
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

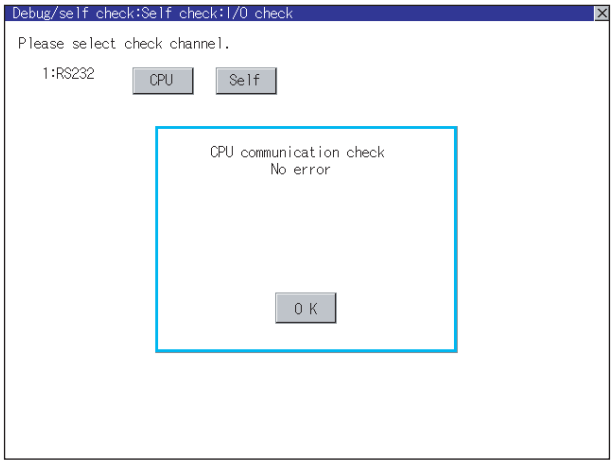
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the system alarm, refer to the following manual.

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the controller side setting

When connecting the GOT, setting is required for the controller side.

Confirm if the controller side setting is correct.

☞ Section 33.4 Controller Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

33.4 Controller Side Setting

Point

(1) CHINO controller
For details of CHINO controller, refer to the following manual.
☞ User's Manual for the CHINO controller

(2) Converter
For details on communication settings of the converter, refer to the following manual.
☞ User's Manual for converter

Model name		Reference
Controlle	LT230, LT300	Section 33.4.1
	LT400, LT830	Section 33.4.2
	DZ1000, DZ2000	Section 33.4.3
	GT120	Section 33.4.4
RS232C/RS485 converter	SC8-10	Section 33.4.4

33.4.1 Connecting to LT230, LT300 Series

1 Key Lock setting

To write the Digital and the Analog parameters, set the Key Lock setting to Lock 4.

2 Communication settings

Set the communication settings with controller key operation.

Setting items	Set value
Protocol	rtU : MODBUS RTU
Function	Com : Upper communication
Instrument No.*1	1 to 99
Transmission speed*2	9600bps, 19200bps
Character*2 (Bit length, Parity bit, Stop bit)	5: 8bit, None, 1bit 6: 8bit, None, 2bit 7: 8bit, Even, 1bit 8: 8bit, Even, 2bit 9: 8bit, Odd, 1bit 10: 8bit, Odd, 2bit

*1 Avoid duplication of the address with any of the other units.
*2 Adjust the settings with GOT settings.

33.4.2 Connecting to LT400, LT830 Series

1 Key Lock setting

To write the Digital and the Analog parameters, set thefollowing Key Lock setting
• LT400 : Lock4
• LT830 : Lock3

2 Communication settings

Set the communication settings with controller key operation

Setting items	Set value
Protocol	rtU : MODBUS RTU
Function	Com : Upper communication
Instrument No.*1	1 to 99
Transmission speed*2	9600bps, 19200bps
Character*2 (Bit length, Parity bit, Stop bit)	8N1: 8bit, None, 1bit 8N2: 8bit, None, 2bit 8E1: 8bit, Even, 1bit 8E2: 8bit, Even, 2bit 8O1: 8bit, Odd, 1bit 8O2: 8bit, Odd, 2bit

*1 Avoid duplication of the address with any of the other units.
*2 Adjust the settings with GOT settings.

33.4.3 Connecting to DZ1000, DZ2000 Series

1 Key Lock setting

To write the Digital and the Analog parameters, set the Key Lock setting to Lock 2.

2 Communication settings

Set the communication settings with controller key operation.

Setting items	Set value
Protocol	rtU : MODBUS RTU
Function	Com : Upper communication
Instrument No.*1	1 to 31
Transmission speed*2	9600bps, 19200bps
Data length	8bit (fixed)
Stop bit	1bit (fixed)
Parity bit	None (fixed)

*1 Avoid duplication of the address with any of the other units.
*2 Adjust the settings with GOT settings.

33.4.4 Connecting to GT120 Series

1 Key Lock setting

To write the Digital and the Analog parameters, set the Key Lock setting to Lock 2.

2 Communication settings

Release the controller lock function in advance and set the following communication settings.

After completing the communication settings, set the Key Lock setting to Lock 3.

Setting items	Set value
Key lock	Loc3 : Lock3
Protocol	comr : MODBUS RTU
Instrument No.*1	1 to 95
Transmission speed*2	96: 9600bps 192: 19200bps
Data length	8bit
Stop bit*2	1bit, 2bit
Parity bit*2	nonE: None EVEn: Even odd: Odd

*1 Avoid duplication of the address with any of the other units.

*2 Adjust the settings with GOT settings.

33.4.5 Connecting SC8-10

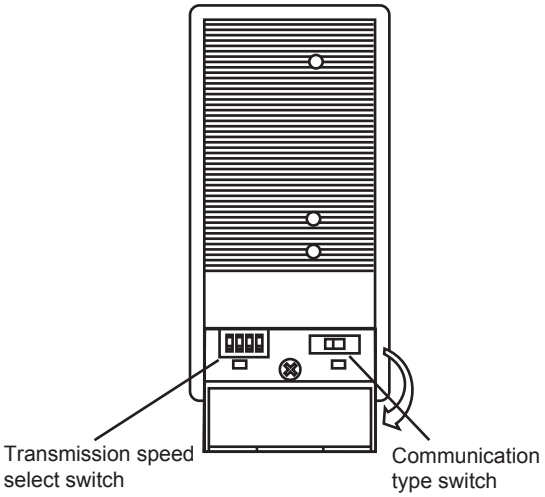
1 Communication settings

Make the communication settings by operating the swithes.

Setting item	Set value
Transmission speed select switch*1	9600bps, 19200bps
Communication type switch	RS-485, RS-422

*1 Adjust the settings with GOT and controller settings.

2 Switch settings



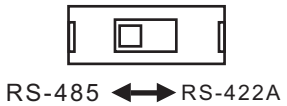
(1) Transmission speed setting

Setting item	Set value	Switch No. 1	2	3	4
Transmis-sion speed	9600 bps	OFF	ON	OFF	OFF
	19200 bps	OFF	OFF	ON	OFF



(2) Communication type setting

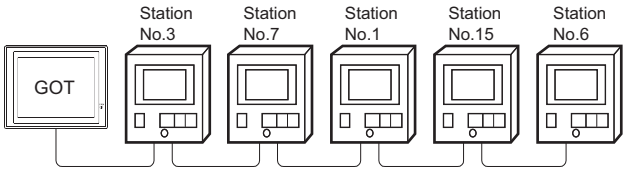
Setting item
RS-485/RS-422



33.4.6 Station NO. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the controller of which data is to be changed.

Model	Specification range
LT230, LT300, LT400, LT830	1 to 99
DZ1000, DZ2000	1 to 31
GT120	1 to 95

(2) Indirect specification

When setting the device, indirectly specify the station number of the controller of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).

When specifying the station No. from 100 to 115 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the controller.

Specification station NO.	Compatible device	Setting range
100	GD10	1 to 99 : LT230, LT300, LT400, LT830 1 to 31 : DZ1000, DZ2000 1 to 95 : GT120 For the setting other than the above, error (dedicated device is out of range) will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only one station will be a target.

33.5 Precautions

1 Station number settings of temperature controller

In the system configuration, the controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Section 33.3.4 Downloading project data

2 GOT clock function

Since the controller does not have a clock function, the settings of [time adjusting] or [time broad cast] by GOT clock control will be disabled.

3 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller.
For example, faulty station that has communication timeout can be cut from the system.
For details of the setting contents of GOT internal device, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual
Section 2.9.1 GOT internal device

33.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Connecting to the CHINO controller	Supporting the following: • Supporting the CHINO controller connection • Cut the portion of multiple connection of the controller. • Automatically avoid the monitoring operation of the faulty station.	2.58L	Communication driver CHINO controllers (MODBUS) [03.03.**]
	Supporting the connections to GT16	2.90U	Communication driver CHINO controllers (MODBUS) [04.02.**]

34

CONNECTION TO FUJI SYS TEMPERATURE CONTROLLER



34.1 System Configuration . . . . . page 34-2
This section describes the equipment and cables needed when connecting a GOT to a FUJI SYS temperature controller. Select a system suitable for your application.

34.2 Connection Cable . . . . . page 34-8
This section describes the specifications of the cables needed when connecting a GOT to a FUJI SYS temperature controller. Check the specifications of the connection cables.

34.3 Preparatory Procedures for Monitoring . . . . . page 34-20
This section provides the procedures to be followed before performing monitoring in connection to a FUJI SYS temperature controller. The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

34.4 Temperature Controller Side Setting . . . . . page 34-29
The FUJI SYS temperature controller side settings for GOT connection are explained. When checking the emperature controller side settings, refer to this section.

34.5 Precautions . . . . . page 34-35
This section describes the precautions about temperature controller connection. Refer to this section without fail before starting temperature controller connection.

34.6 List of Functions Added by Version Upgrade . . . . . page 34-36
This section describes the functions added by version upgrade of GT Designer2 or OS.

34.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

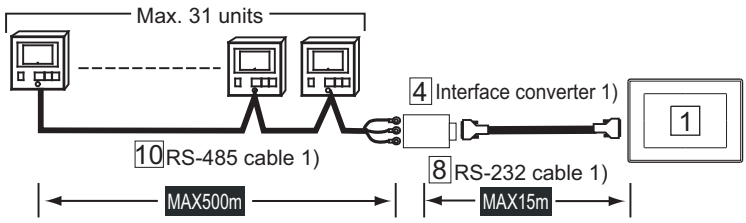
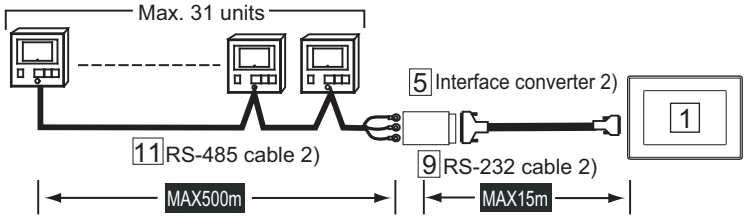
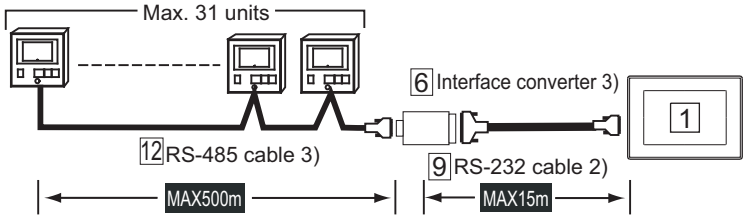
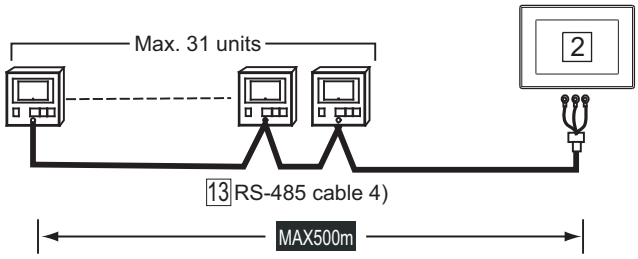
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

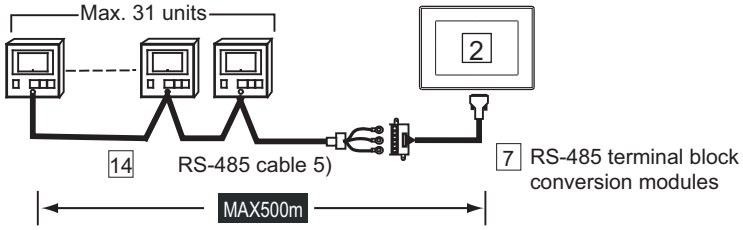
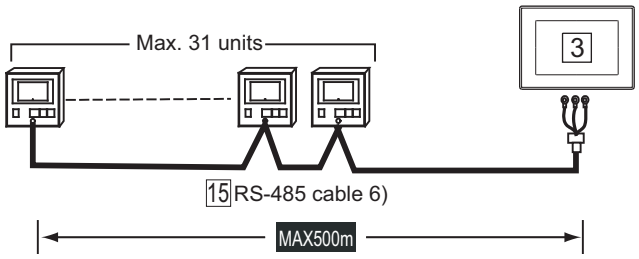
34.1.1 Connecting to PXR3, PXR4, PXR5 or PXR9

Communication driver

FUJI PXR/PXG/PXH

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and interface converter 15m or less Between interface converter and temperature		GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and interface converter 15m or less Between interface converter and temperature		
1	Max. 31 units	Between GOT and interface converter 15m or less Between interface converter and temperature		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16

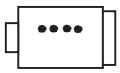
Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16 GT15

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Interface converter

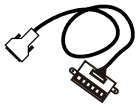
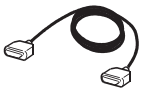
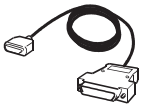
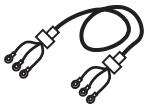
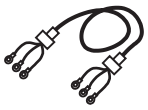
Image	No.	Name	Model name
	4	Interface converter 1)	RC-77
	5	Interface converter 2)	SI-30A
	6	Interface converter 3)	KS-485

4 is manufactured by SYSMEXRA CO., LTD. For details of the product, contact SYSMEXRA CO., LTD.

5 is manufactured by LINEEYE CO., LTD. For details of the product, contact LINEEYE CO., LTD.

6 is manufactured by System Sacom corp. For details of the product, contact System Sacom corp.

(3) Cable

Image	No.	Name	Model name	Model
	7	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	8	RS-232 cable 1) • Between GOT and interface converter	(To be prepared by the user. Section 34.2 Connection Cable)	
	9	RS-232 cable 2) • Between GOT and interface converter		
	10	RS-485 cable 1) • Between temperature controller and interface converter		GT16 GT15 GT11 Serial
	11	RS-485 cable 2) • Between temperature controller and interface converter		
	12	RS-485 cable 3) • Between temperature controller and interface converter		
	13	RS-485 cable 4) • Between temperature controller and GOT		GT16
	14	RS-485 cable 5) • Between temperature controller and RS-485 terminal block conversion modules		
	15	RS-485 cable 6) Between temperature controller and GOT		GT16 GT15

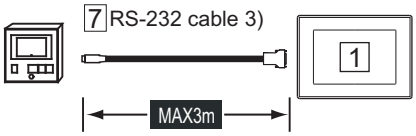
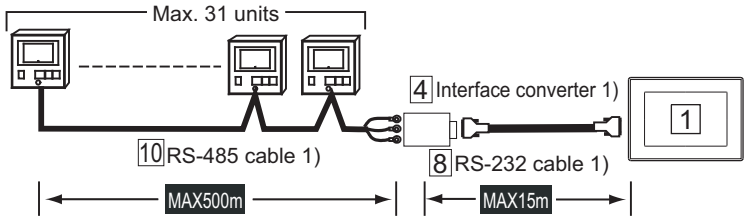
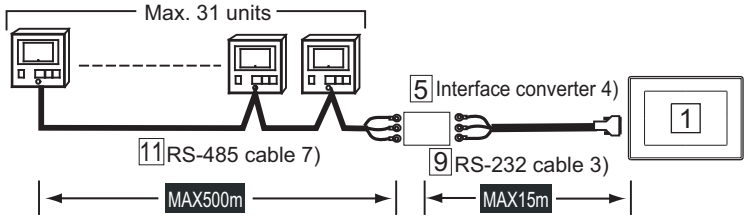
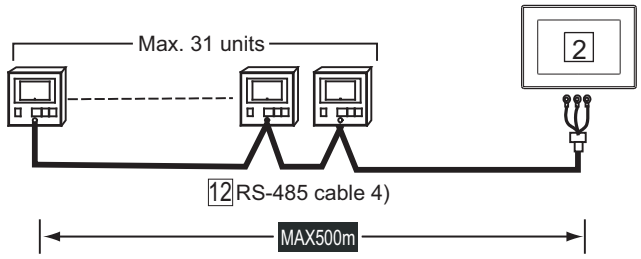
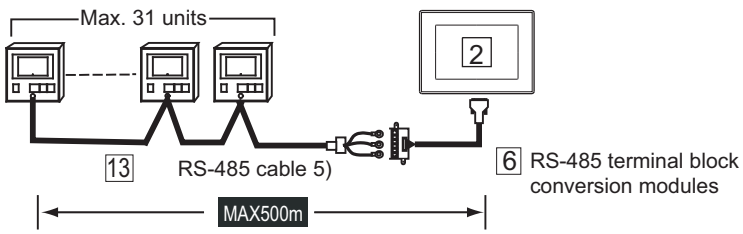
7 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

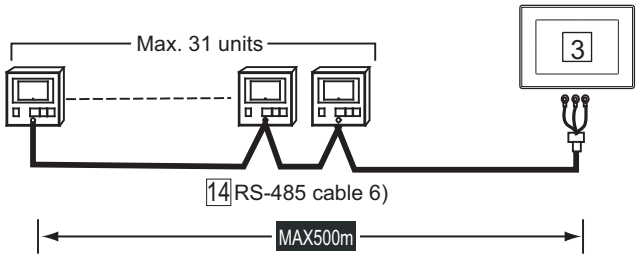
34.1.2 Connecting to PXG4, PXG5, PXG9 or PXH9

Communication driver

FUJI PXR/PXG/PXH

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	1	Between GOT and temperature controller 3m or less		GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and interface converter 15m or less Between interface converter and temperature		
1	Max. 31 units	Between GOT and interface converter 15m or less Between interface converter and temperature		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16 GT15

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

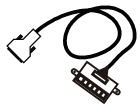
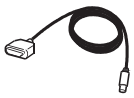
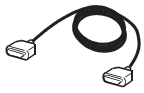
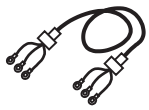
(2) Temperature controller

Image	No.	Name	Model name
	4	Interface converter 1)	RC-77
	5	Interface converter 4)	K3SC-10

4 is manufactured by SYSMEXRA CO., LTD. For details of the product, contact SYSMEXRA CO., LTD.

5 is manufactured by OMRON Corporation. For details of the product, contact OMRON Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	7	RS-232 cable • Between GOT and temperature controller	ZZPPXH1*TK4H4563	
	8	RS-232 cable 1) • Between GOT and interface converter	(To be prepared by the user. Section 34.2 Connection Cable)	
	9	RS-232 cable 3) • Between GOT and interface converter		GT16 GT15 GT11 Serial
	10	RS-485 cable 1) • Between temperature controller and interface converter		
	11	RS-485 cable 7) • Between temperature controller and interface converter		
	12	RS-485 cable 4) • Between temperature controller and GOT		GT16
	13	RS-485 cable 5) • Between temperature controller and RS-485 terminal block conversion modules		
	14	RS-485 cable 6) • Between temperature controller and GOT		GT16 GT15

6 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

7 is manufactured by FUJI SYS CO., LTD. For details of the product, contact FUJI SYS CO., LTD.

34.2 Connection Cable

The RS-232 cable or RS-485 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable(☞Section 34.2.1)

Model name		Connection cable
		GT16, GT15, GT11
Interface converter	RC-77	RS-232 cable 1)
	SI-30A	RS-232 cable 2)
	KS-485	
	K3SC-10	RS-232 cable 3)

2 RS-485 cable(☞Section 34.2.2)

Model name		Connection cable		
		GT16	GT15	Interface converter
Temperature controller	PXR3 *1, PXR4 *1, PXR5 *1, PXR9 *1	RS-485 cable 4) RS-485 cable 5) RS-485 cable 6)	RS-485 cable 6)	RS-485 cable 1) RS-485 cable 2) RS-485 cable 3)
	PXG4 *2, PXG5 *2, PXG9 *2			RS-485 cable 1) RS-485 cable 7)
	PXH9 *2			

*1 For PXR3, PXR4, PXR5 and PXR9, select a model to support the RS-485 MODBUS communication function.

*2 When carrying out RS-485 communication with the GOT, select a model to support the RS-485 function for PXG4, PXG5, PXG9 and PXH9.

For details of the models, refer to the following manual.

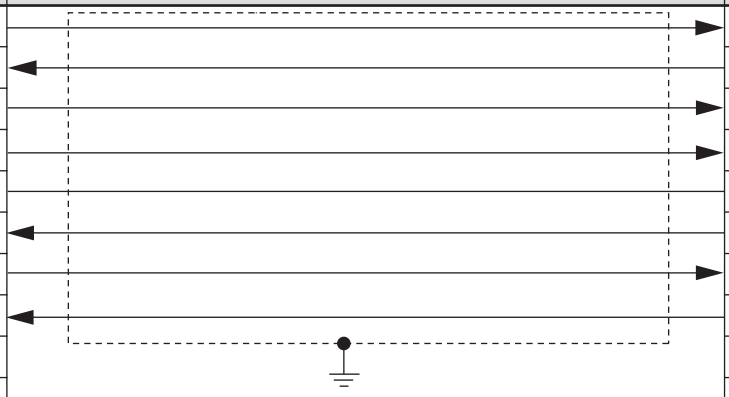
☞ User's Manual for the FUJI SYS temperature controller

34.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a controller.

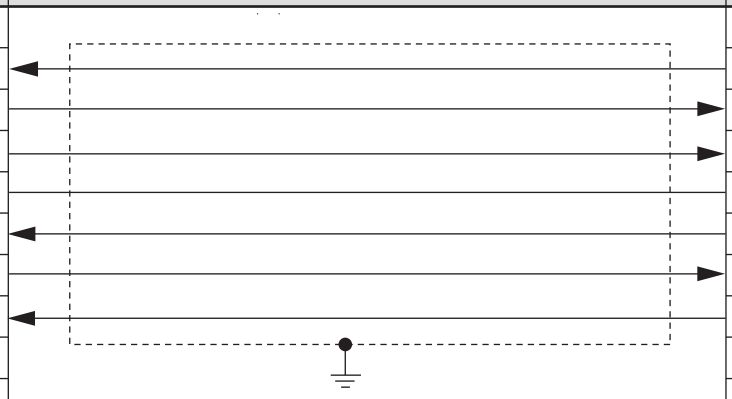
1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	Interface converter side (RC-77*)	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	CD
RD(RXD)	2		2	RXD
SD(TXD)	3		3	TXD
ER(DTR)	4		4	DTR
SG	5		5	SG
DR(DSR)	6		6	DSR
RS(RTS)	7		7	RTS
CS(CTS)	8		8	CTS
NC	9		9	NC
FG	—			

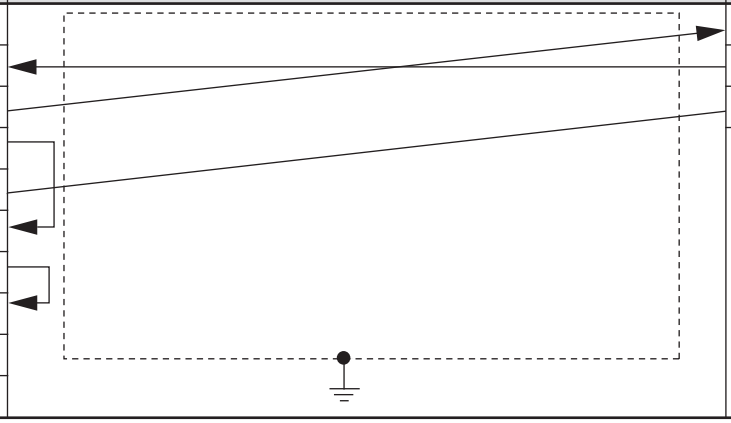
* Use the interface converter in the DCE mode.

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	Interface converter side (SI-30A *, KS-485)	
Signal name	Pin No.		Pin No.	Signal name
NC	1		1	FG
RD(RXD)	2		3	RXD
SD(TXD)	3		2	TXD
ER(DTR)	4		20	DTR
SG	5		7	SG
DR(DSR)	6		6	DSR
RS(RTS)	7		4	RTS
CS(CTS)	8		5	CTS
NC	9		9	NC
FG	—		Other than above	NC

* Use the interface converter in the DCE mode.

(3) RS-232 cable 3)

GOT side		Cable connection and signal direction	Interface converter side (K3SC-10)	
Signal name	Pin No.		Pin No.	Signal name
—	1		5	SD
RD(RXD)	2		6	RD
SD(TXD)	3		3	SG
ER(DTR)	4			
SG	5			
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
NC	9			
FG	—			

2 Connector specifications

(1) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

9-pin D-sub (male) inch screw fixed type

(b) Connector model

GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-	17LE-23090-27(D3CC)	

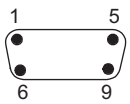
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

GT15 User's Manual

(c) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) FUJI SYS temperature controller side connector
Use the connector compatible with the FUJI SYS temperature controller side.
For details, refer to the following manual.

☞ User's Manual for the FUJI SYS temperature controller

3 Precautions when preparing cable

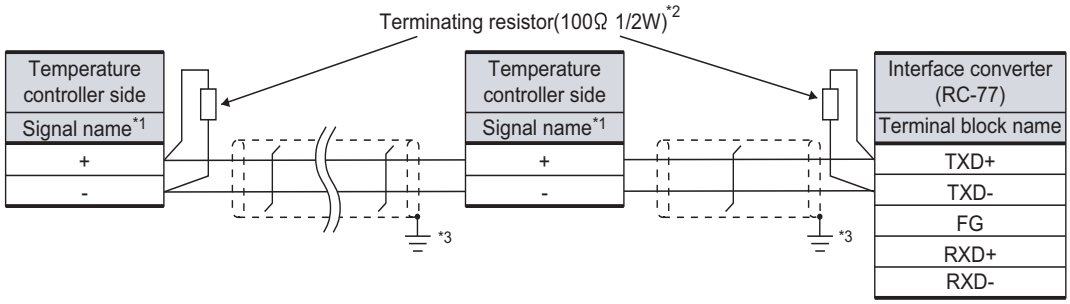
The length of the RS-232 cable must be 15m or less.

34.2.2 RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a temparature controller.

1 Connection diagram

(1) RS-485 cable 1)



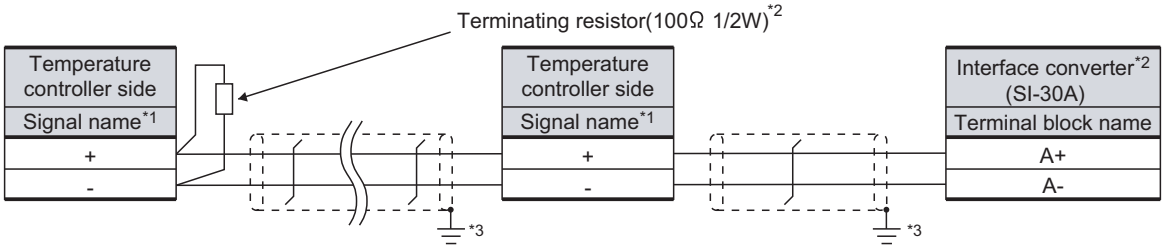
*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/9	PXG4	PXG5/9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
+	15	7	1	7	1	14
-	14	8	2	8	2	16

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.
Terminating resistor should be provided outside for a interface converter which will be a terminal, with the terminating switch turned OFF.

*3 Connect FG grounding to the appropriate part of a cable shield line.

(2) RS-485 cable 2)



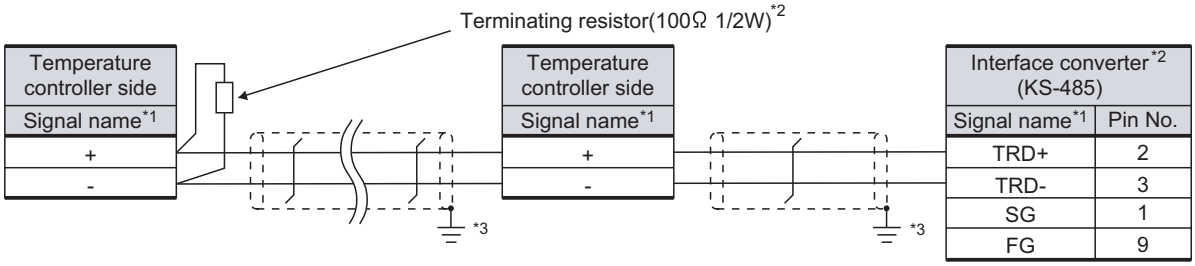
*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/9	PXG4	PXG5/9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
+	15	7	1	7	1	14
-	14	8	2	8	2	16

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.
Turn ON the terminating switch of an interface converter which will be a terminal.

*3 Connect FG grounding to the appropriate part of a cable shield line.

(3) RS-485 cable 3)



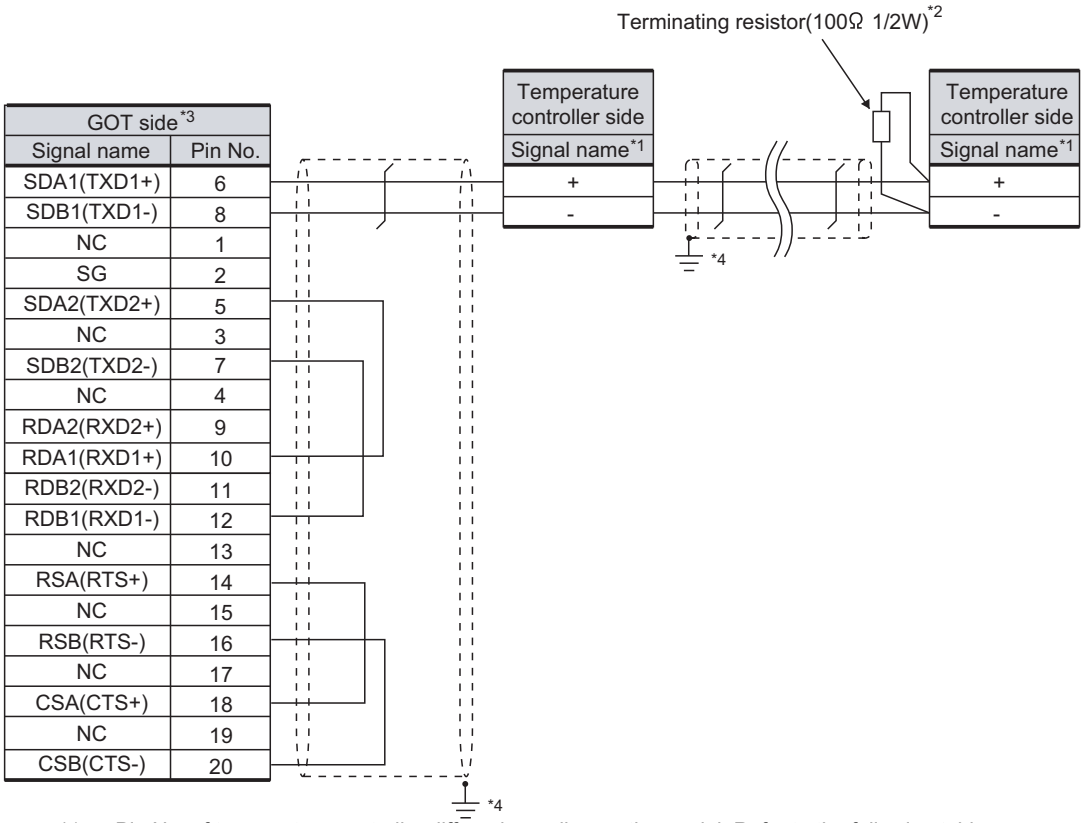
*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/9	PXG4	PXG5/9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
+	15	7	1	7	1	14
-	14	8	2	8	2	16

*2 Terminating resistor should be provided for a temperature controller which will be a terminal. Turn ON the terminating switch of a interface converter which will be a terminal.

*3 Connect FG grounding to the appropriate part of a cable shield line.

(4) RS-485 cable 5)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/9	PXG4	PXG5/9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
+	15	7	1	7	1	14
-	14	8	2	8	2	16

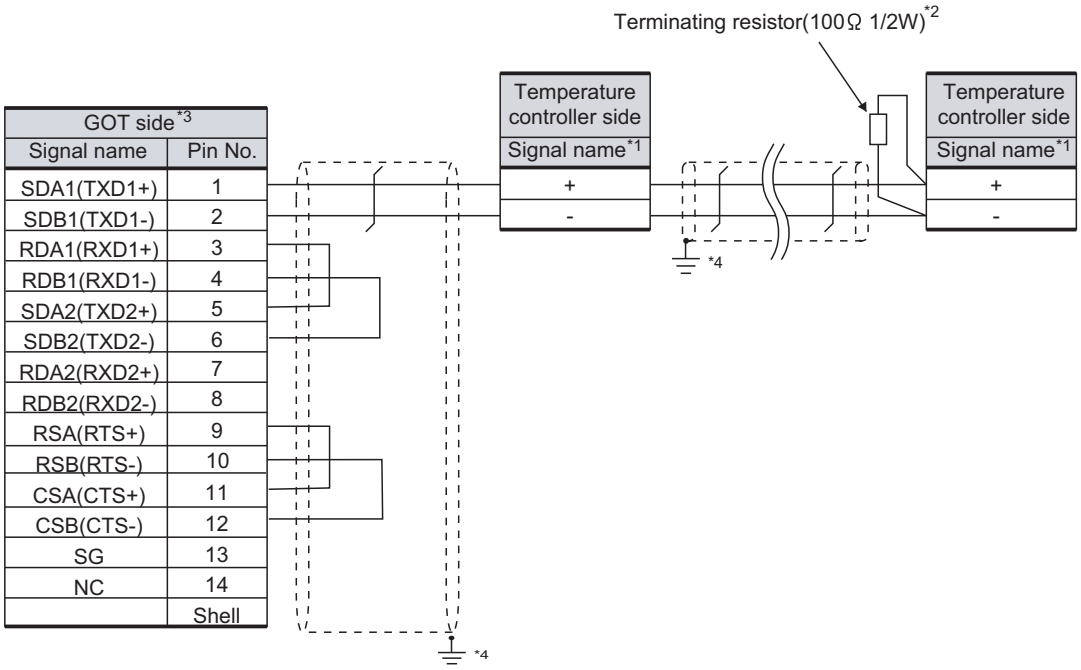
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(5) RS-485 cable 4)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/9	PXG4	PXG5/9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
+	15	7	1	7	1	14
-	14	8	2	8	2	16

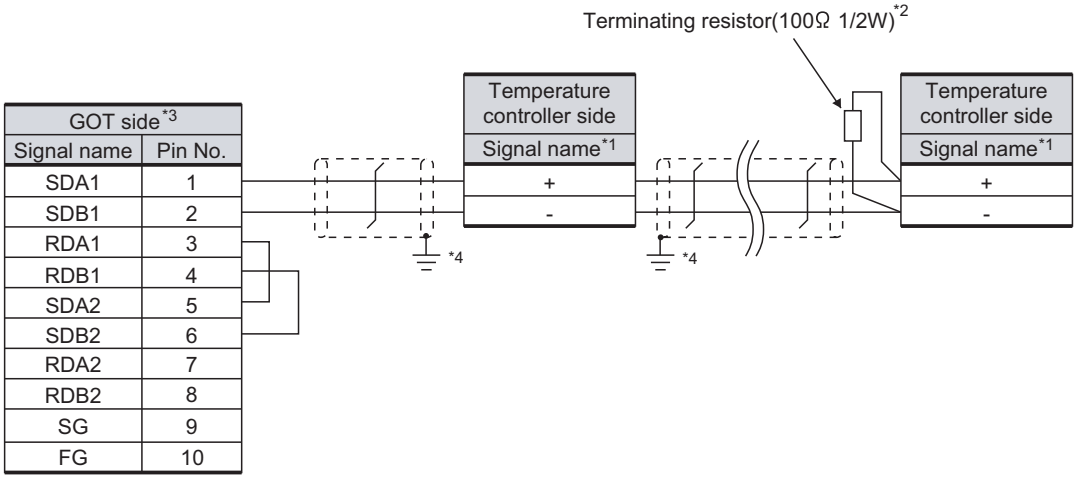
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

☞ 4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(6) RS-485 cable 6)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/9	PXG4	PXG5/9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
+	15	7	1	7	1	14
-	14	8	2	8	2	16

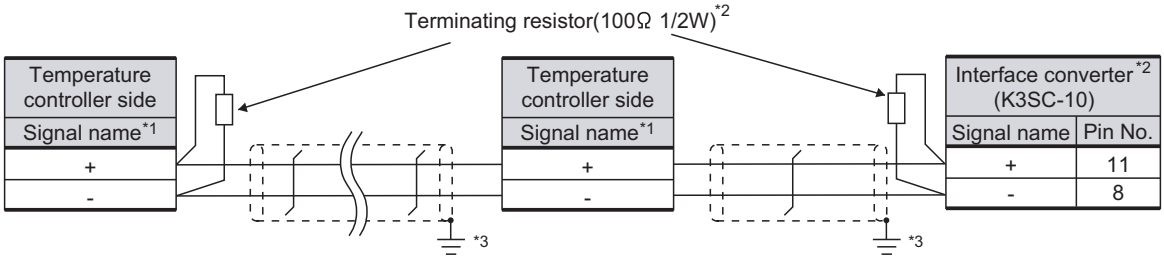
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(7) RS-485 cable 7)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/9	PXG4	PXG5/9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
+	15	7	1	7	1	14
-	14	8	2	8	2	16

*2 Terminating resistor should be provided for an interface converter and a temperature controller which will be terminals.

*3 Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

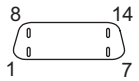
GOT	Connector model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT15-RS4-TE	SL-SMT3.5/10/90F BOX	—	Weidmuller interconnections inc.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

GOT main part connector
see from the front



14-pin (female)

(2) FUJI SYS temperature controller side connector

Use the connector compatible with the FUJI SYS temperature controller side module.
For details, refer to the following manual.

☞ User's Manual for the FUJI SYS temperature controller

3 Precaution when preparing a cable

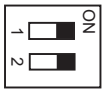
(1) The length of the RS-485 cable must be 500m or less.

4 Connecting terminating resistors

(1) GOT

Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

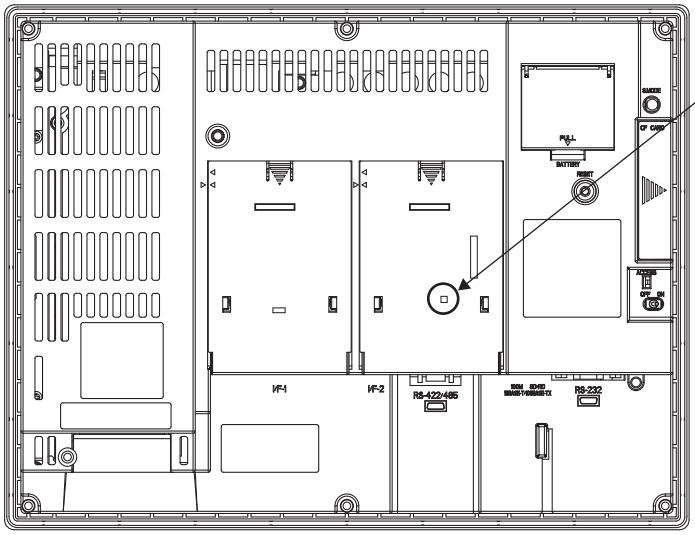
Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF



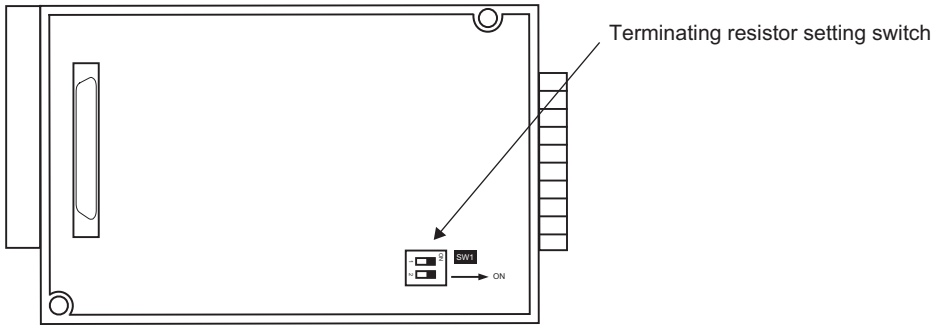
SW1

*1 The default setting is "Disable".

• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

34.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 34.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 34.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 34.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 34.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 34.3.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 34.3.6
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 34.3.7
Checking for normal monitoring

Point

Comfirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side setting, refer to the following.

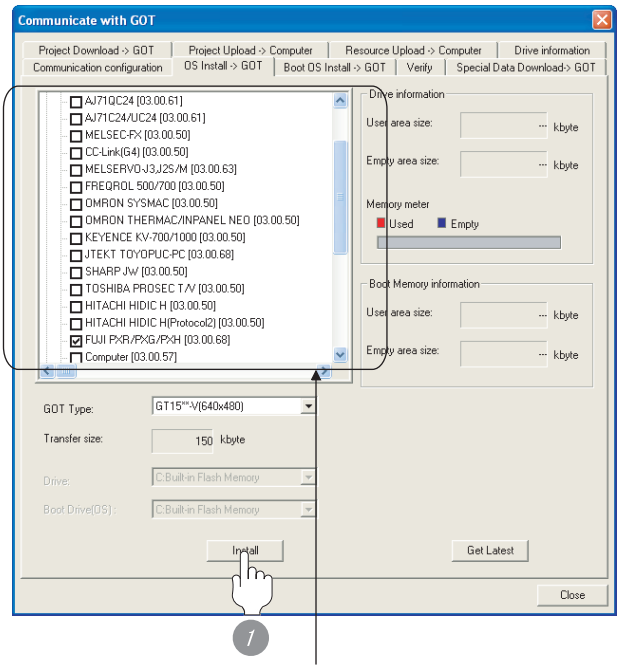
Section 34.4 Temperature Controller Side Setting

34.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• FUJI PXR/PXG/PXH

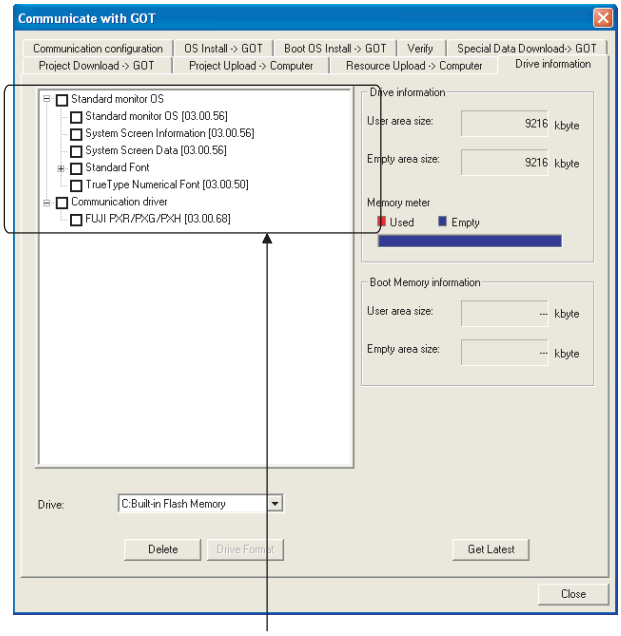
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

34.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: FUJI PXR/PXG/PXH

34.3.3 Setting communication interface (Communication settings)

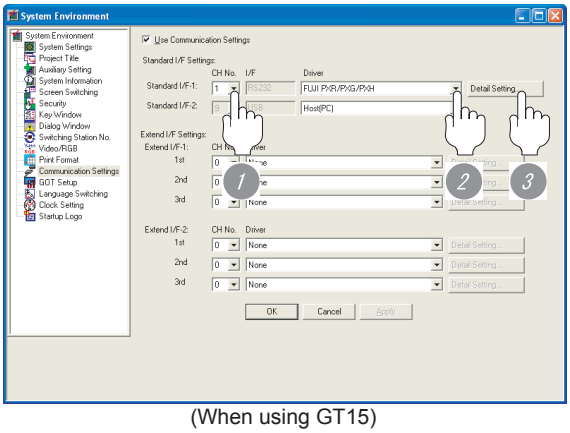
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



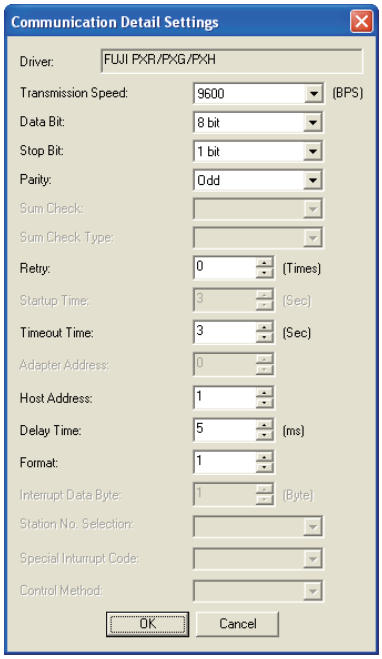
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "FUJI PXR/PXG/PXH".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Odd>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the GOT to which the temperature controller is connected) in the connected network. <Default: 1>	1 to 255
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 5ms>	0 to 300 ms
Format	Select the communication format. <Default: 1> format 1: Accessible to PXR/PXG/PXH format 2: Accessible to PXR/PXG, Not accessible to PXH	1/2

Point

(1) Host address

Do not specify a number between 200 and 215.

(2) Format

- When connecting to PXH, specify the format 1.
- When connecting to only PXR/PXG, specifying the format 2 is recommended.

(3) Delay time

Set the delay time to 5ms or more.

(4) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(5) Precedence in communication settings

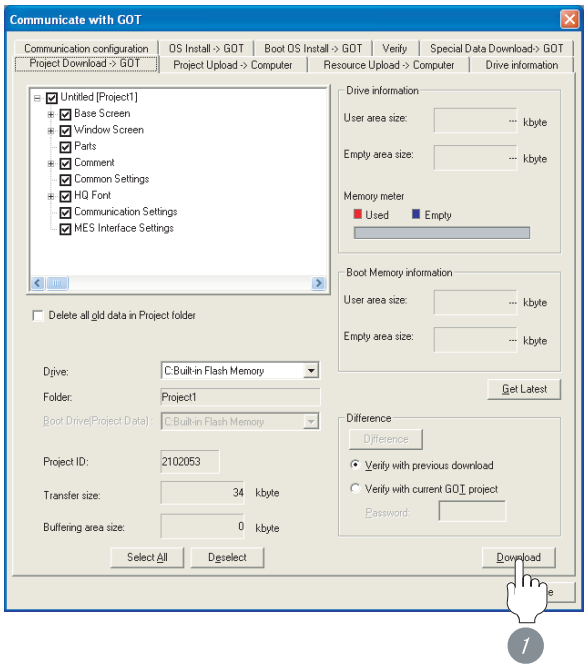
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

34.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

34.3.5 Attaching communication unit and connecting cable

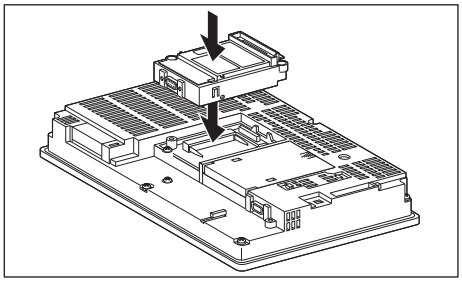
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

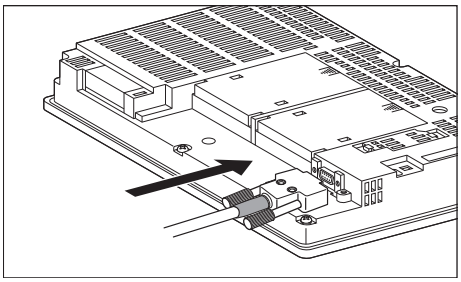
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

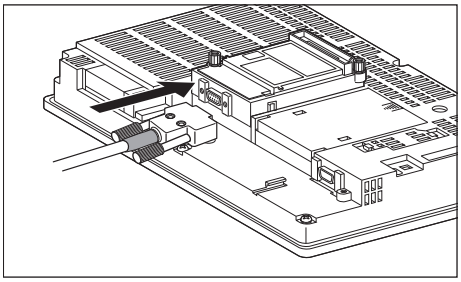
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



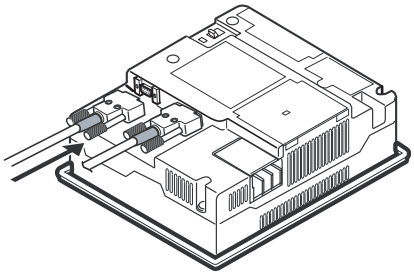
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

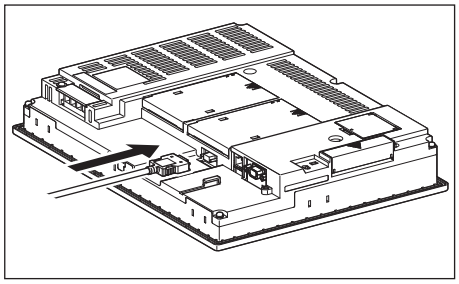


(2) How to connect the RS-485 cable

(a) For the GT16

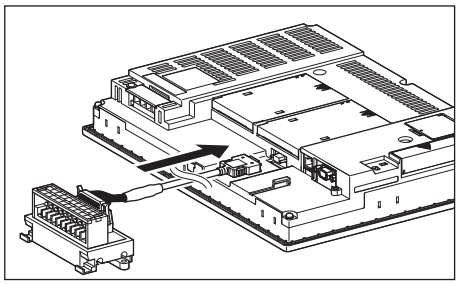
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

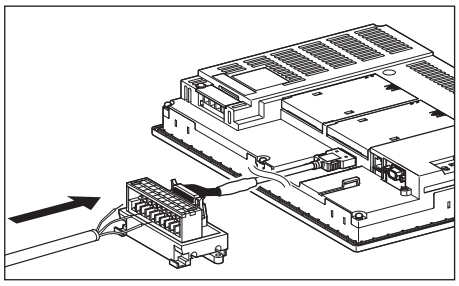


• Connection to the RS-422/485 interface with the RS-485 terminal block conversion modules

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

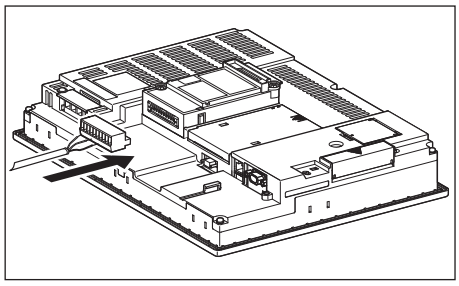


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

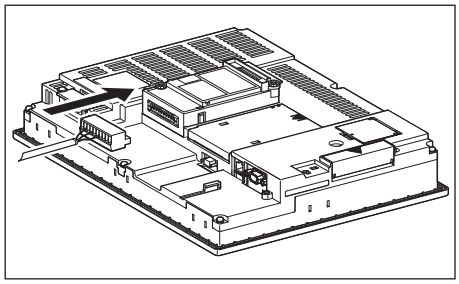


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.

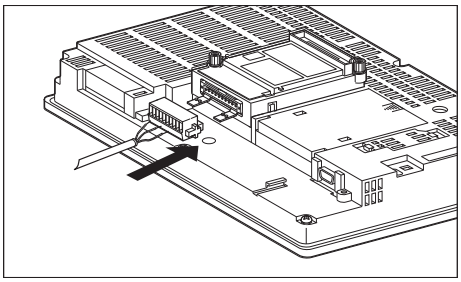


2 Connect the terminal block to theRS-422/485 communication unit on the GOT.

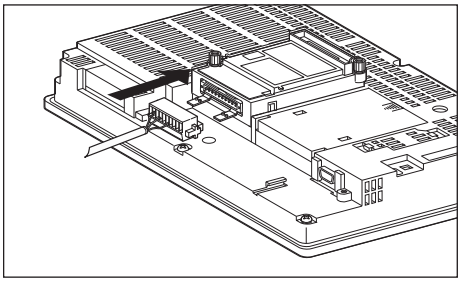


(b) For the GT15

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



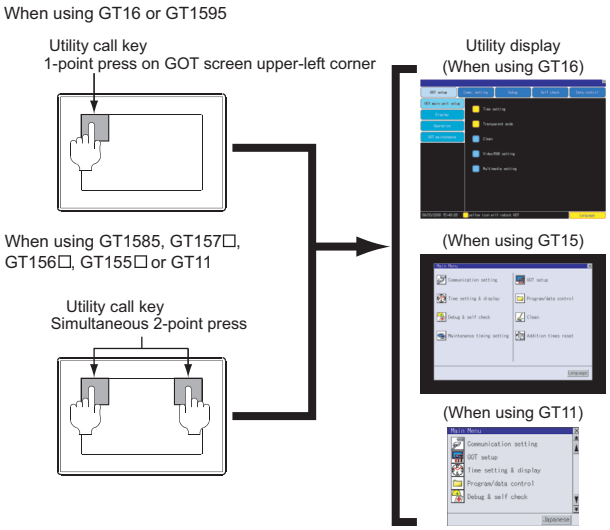
34.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

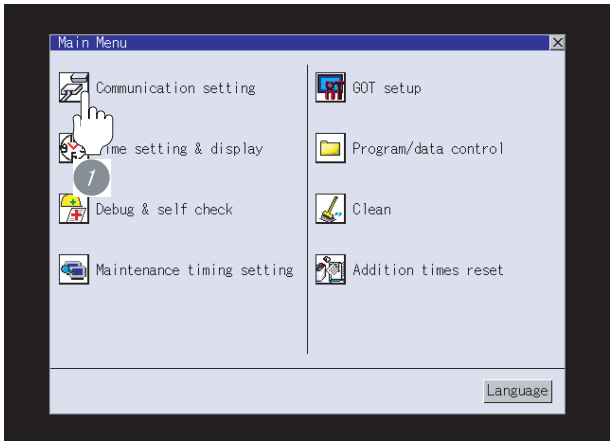


Point

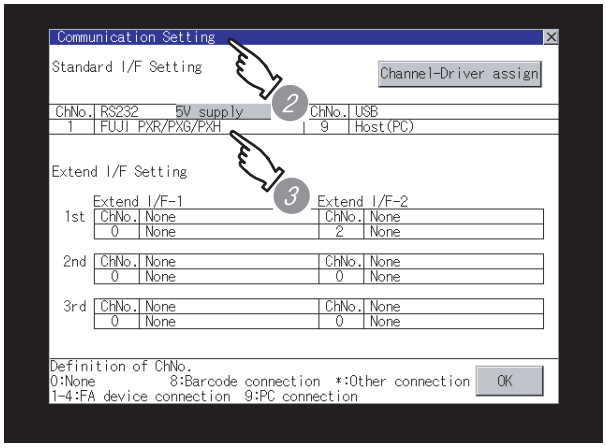
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: FUJI PXR/PXG/PXH

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 34.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

34.3.7 Checking for normal monitoring

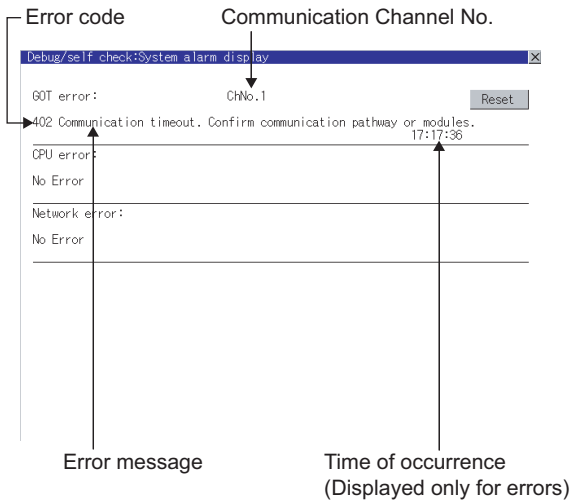
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version☐ Screen Design Manual

2 Perform an I/O check

Whether the temperature controller can communicate with the GOT or not can be detected by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

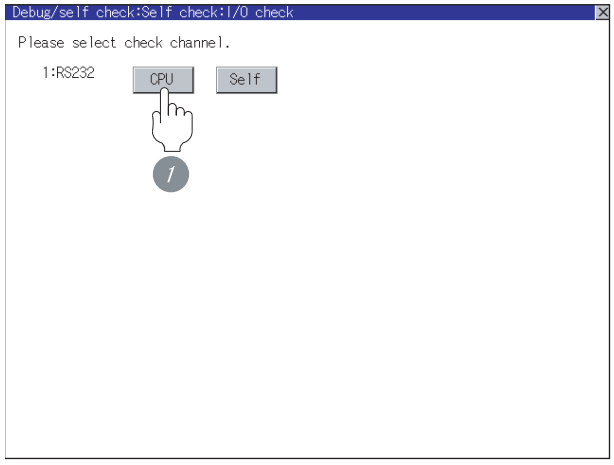
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

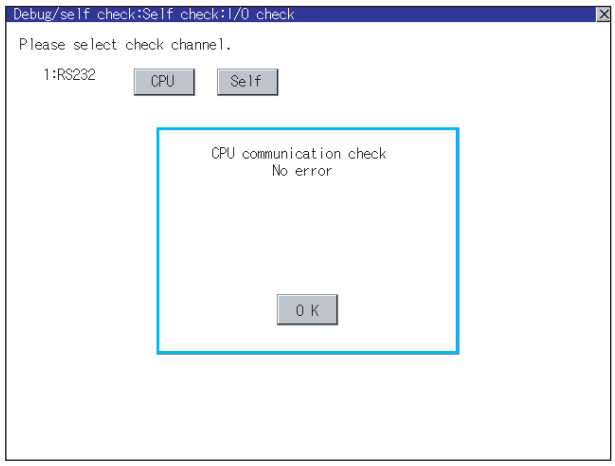
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual.

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected temperature controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the temperature controller side setting

When connecting the GOT, setting is required for the temperature controller side.

Confirm if the temperature controller side setting is correct.

☞ Section 34.4 Temperature Controller Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

34.4 Temperature Controller Side Setting

Point

(1) FUJI SYS temperature controller

For details of FUJI SYS temperature controller, refer to the following manual.

☞ User's Manual for the FUJI SYS temperature controller

(2) Interface converter

For details on communication settings of the interface converter, refer to the following manual.

☞ User's Manual for interface converter

Model name		Reference
Temperature controller	PXR3, PXR4, PXR5, PXR9	Section 34.4.1
	PXG4, PXG5, PXG9	Section 34.4.2
	PXH9	Section 34.4.3
Interface converter	RC-77	Section 34.4.4
	SI-30A	Section 34.4.5
	KS-485	Section 34.4.6
	K3SC-10	Section 34.4.7

34.4.1 Connecting to PXR3/4/5/9

1 Communication settings

Make the communication settings by operating the key of the temperature controller.

Item	Set value
Transmission speed	9600bps (fixed)
Data length	8 bits (fixed)
Parity bit*1	Even, odd or none
Stop bit	1 bit (fixed)
Station No.*2	1 to 255
Communication protocol	MODBUS

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.

34.4.2 Connecting to PXG4, PXG5 or PXG9.

1 Communication settings

Make the communication settings by operating the key of the temperature controller.

(1) RS-485 communication settings

Item	Set value
Transmission speed*1	9600bps, 19200bps
Data length	8 bits (fixed)
Parity bit*1	Even, odd or none
Stop bit	1 bit (fixed)
Station No.*2	1 to 255
Communication permissions*3	Read only permission or read and overwrite permission

*1 Adjust with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 Set if required.

(2) RS-232 communication settings (PC loader communication)

Item	Set value
Transmission speed	9600bps (fixed)
Data length	8 bits (fixed)
Parity bit	None (fixed)
Stop bit	1 bit (fixed)

34.4.3 Connecting to PXH9

1 Communication settings

Make the communication settings by operating the key of the temperature controller.

(1) RS-485 communication settings

Item	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length	8 bits (fixed)
Parity bit*1	Even, odd or none
Stop bit	1 bits (fixed)
Station No.*2	1 to 255

*1 Adjust with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.

(2) RS-232 communication settings (PC loader communication)

Item	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length	8 bits (fixed)
Parity bit*1	Even, odd or none
Stop bit	1 bits (fixed)
Station No.	1 (fixed)

*1 Adjust with GOT settings.

34.4.4 Connecting to interface converter (RC-77)

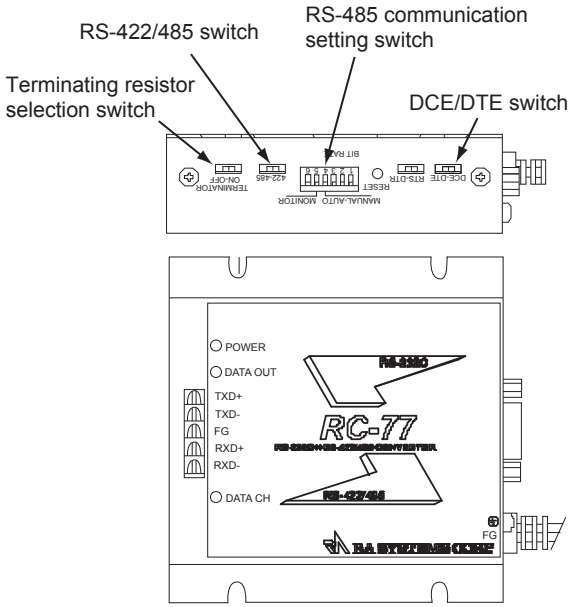
1 Communication settings

Make the communication settings using a setting switch.

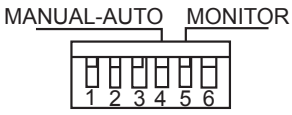
Item	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
MANUAL-AUTO	AUTO
DCE/DTE switching	DCE
RS-422/485 switching	RS-485
Terminating resistor selection	OFF

*1 Adjust with GOT and temperature controller settings.

2 Settings by switch



(1) Settings of transmission speed and MANUAL-AUTO

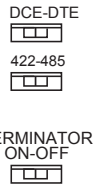


BIT RATE

Item	Set value	Switch No.			
		1	2	3	4
Transmission speed	9600bps	ON	ON	OFF	
	19200bps	OFF	OFF	ON	
	38400bps	ON	OFF	ON	
MANUAL-AUTO	AUTO				ON

(2) Settings of DCE/DTE, RS-422/485 and terminating resistor selection

Item	Set value
DCE/DTE	DCE
RS-422/485	RS-485
Terminating resistor selection	OFF



34.4.5 Connecting to interface converter (SI-30A)

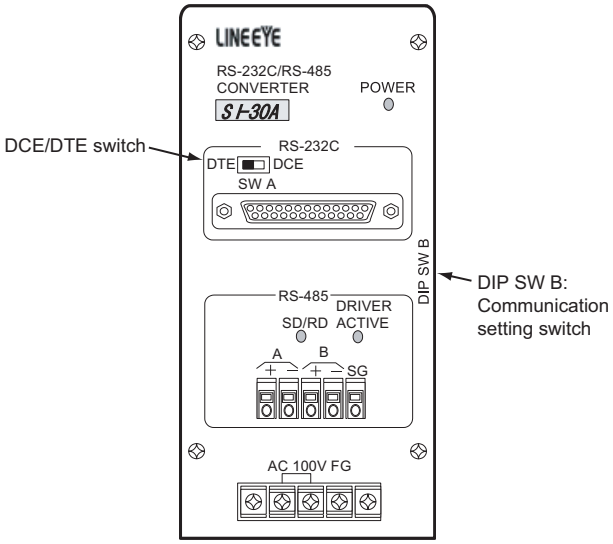
1 Communication settings

Make the communication settings using a setting switch.

Item	Set value
Transmission speed	9600bps
MANUAL-AUTO	AUTO
DCE/DTE switching	DCE
Terminating resistor selection*1	ON/OFF

*1 Set if required.

2 Settings by switch



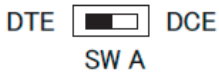
(1) Settings of transmission speed, Auto-Manual, terminating resistor selection

Item	Set value	Switch No. of DIP SWB				
		1	2	3	ÇS	5
Transmission speed	9600bps	ON	ON	OFF		
MANUAL-AUTO	AUTO				ON	
Terminating resistor selection*1	Enable					ON
	Disable					OFF

*1 Set if required.

(2) Setting of DCE/DTE switching

Item	Set value
DCE/DTE	DCE



34.4.6 Connecting to interface converter (KS-485)

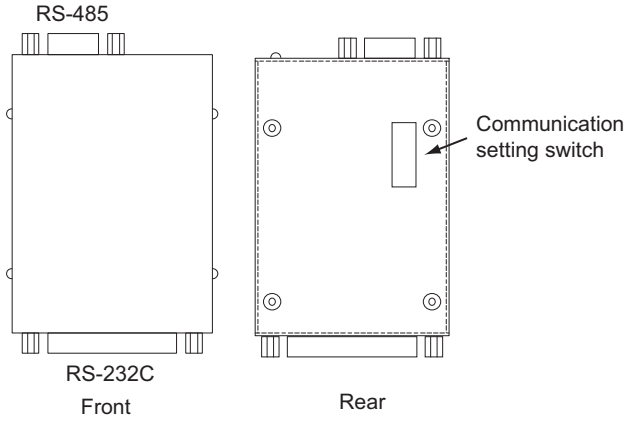
1 Communication settings

Make the communication settings using a setting switch.

Item	Set value
Transmission speed	9600bps
Terminating resistor selection*1	ON/OFF

*1 Set if required.

2 Settings by switch



(1) Settings of transmission speed and terminating resistor selection

Item	Set value	Switch No.							
		1	2	3	4*2	5	6*2	7	8
Transmission speed	9600 bps	ON	OFF	ON	-	ON	-		
Terminating resistor selection*1	Enable							ON	ON
	Disable							OFF	OFF

*1 Set if required.
*2 Disabled.

34.4.7 Connecting to interface converter (K3SC-10)

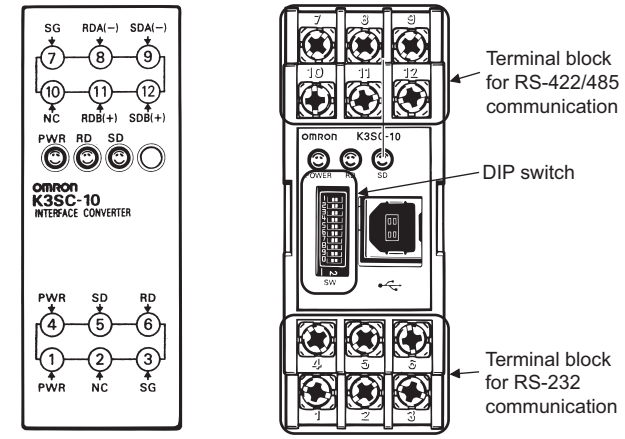
1 Communication settings

Make the communication settings by operating the DIP switch of the temperature controller.

Item	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length*1	8 bits
Parity bit*1	Odd, even, none
Stop bit*1	1 bit
Master/slave device	RS-232 ◄► RS485
Echoback*2	Without

*1 Make the same setting as that of GOT side.

2 Settings by DIP switch

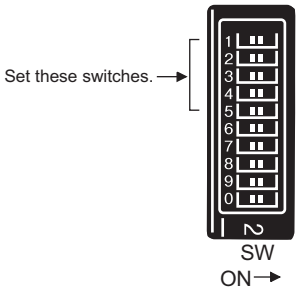


Front of K3SC-10 body

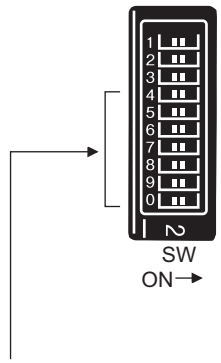
Inside of K3SC-10 body (When removing the front cover)

(1) Transmission speed settings

Transmission speed(bps)	Switch No.		
	1	2	3
9600	OFF	OFF	OFF
19200	ON	OFF	ON
38400	OFF	ON	ON



(2) Settings of data length, parity bit, stop bit, master/ slave device and echoback



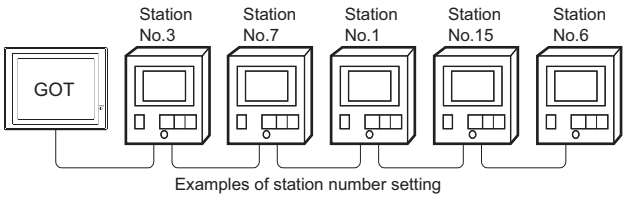
Set these switches.

Item	Set value	Switch No.						
		4	5	6	7	8	9	0
Data length	8 bits	ON						
Stop bit	1 bits		ON					
Parity	Even			OFF	OFF			
	Odd			ON	OFF			
	None			OFF	ON			
Master/ slave device	RS-232 ◄► RS485					OFF	OFF	
Echoback	Without							OFF

34.4.8 Station NO. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Specification range
1 to 199
216 to 255

Point

Specifying a station No. between 200 and 215

(Example of specifying the station No. 215)

1. Set the station No. to "200".
2. Input "215" to the internal device GD10.
3. The station No. 215 is specified.
   For details, refer to (2) Indirect specification shown below.

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).

When specifying the station No. from 200 to 215 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station NO.	Compatible device	Setting range
200	GD10	1 to 255 For the setting other than the above, error (dedicated device is out of range) will occur.
201	GD11	
202	GD12	
203	GD13	
204	GD14	
205	GD15	
206	GD16	
207	GD17	
208	GD18	
209	GD19	
210	GD20	
211	GD21	
212	GD22	
213	GD23	
214	GD24	
215	GD25	

34.5 Precautions

1 Station number settings of temperature controller

In the system configuration, the temperature controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Section 34.3.3 Setting communication interface (Communication settings)

2 FIX processing of temperature controller

The temperature controller power must not be turned off during the FIX processing. Otherwise, data within the non-volatile memory will corrupt and the temperature controller will be unavailable.

3 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

4 Disconnecting a part of multiple connected equipments

The GOT can disconnect some of multiple connected equipments by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipments.

For details of GOT internal device setting, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual (2.9.1 GOT internal devices)

34.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Connecting to the FUJI SYS temperature controller	Supporting the FUJI SYS temperature controller connection	2.32J	Communication driver FUJI PXR/PXG/PXH [03.00.**]
	Supporting the following: • Disconnecting a part of multiple connected equipments • Preventing the monitoring operation of the faulty station automatically	2.58L	Communication driver FUJI PXR/PXG/PXH [03.03.**]
	Supporting the connections to GT16	2.90U	Communication driver FUJI PXR/PXG/PXH [04.02.**]

35

CONNECTION TO YAMATAKE TEMPERATURE CONTROLLER



35.1 System Configuration . . . . . page 35-2

This section describes the equipment and cables needed when connecting a GOT to a YAMATAKE temperature controller.
Select a system suitable for your application.

35.2 Connection Cable . . . . . page 35-17

This section describes the specifications of the cables needed when connecting a GOT to a YAMATAKE temperature controller.
Check the specifications of the connection cables.

35.3 Preparatory Procedures for Monitoring . . . . . page 35-33

This section provides the procedures to be followed before performing monitoring in connection to a YAMATAKE temperature controller.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

35.4 Temperature Controller Side Setting . . . . . page 35-42

The YAMATAKE temperature controller side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

35.5 Precautions . . . . . page 35-45

This section describes the precautions about temperature controller connection.
Refer ti this section without fail before starting temperature controller connection.

35.6 List of Functions Added by Version Upgrade . . . . . page 35-46

This section describes the functions added by version upgrade of GT Designer2 or OS.

35.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

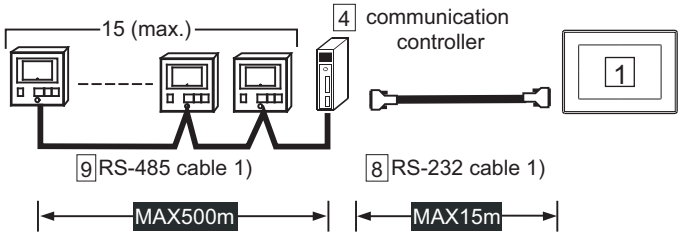
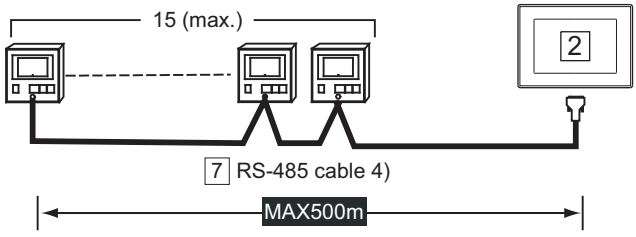
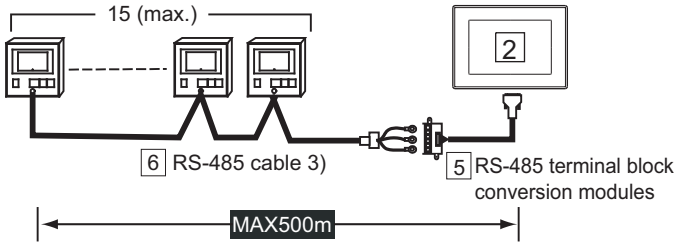
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

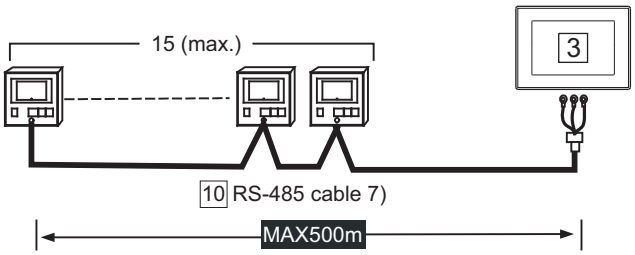
35.1.1 Connecting to DMC10

Communication driver

YAMATAKE SDC/DMC

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	15 (max.)	Between communication controller and GOT 15m or less Between temperature controller and communication controller 500m or less		GT16 GT15 GT11 Serial
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

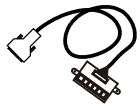
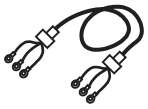
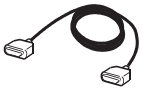
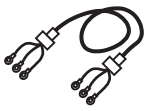
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	4	communication controller	CMC10L

4 is a product manufactured by Yamatake Corporation. For details of this product, contact Yamatake Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	6	RS-485 cable 3) • Between temperature controller and RS-485 terminal block conversion modules		GT16
	7	RS-485 cable 4) • Between temperature controller and GOT		
	8	RS-232 cable 1) • Between communication controller and GOT	(To be prepared by the user. Section 35.2 Connection Cable)	GT16 GT15 GT11 Serial
	9	RS-485 cable 1) • Between temperature controller and communication controller		
	10	RS-485 cable 7) • Between temperature controller and GOT		GT16 GT15

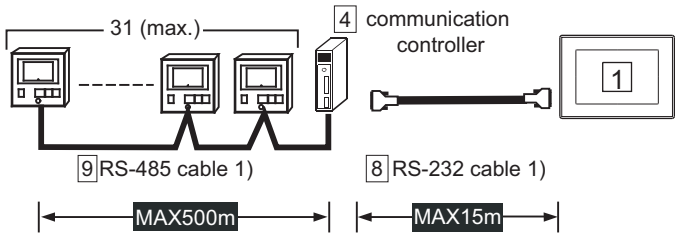
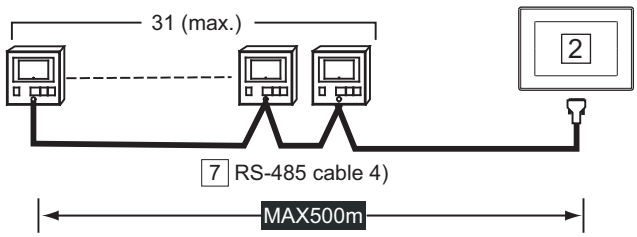
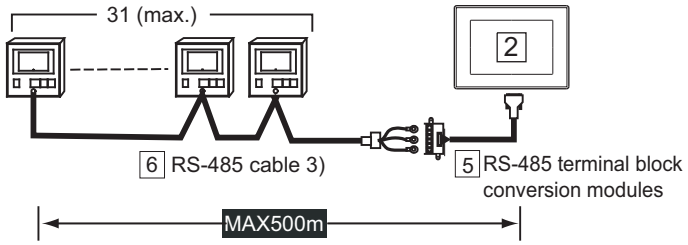
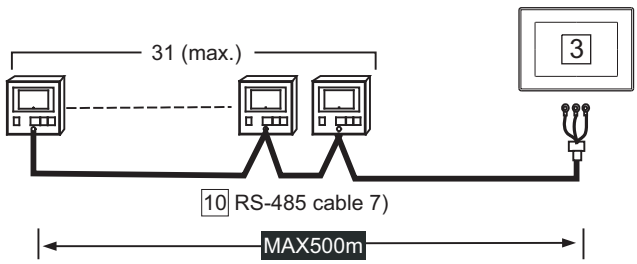
5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

35.1.2 Connecting to SDC15, SDC25/26 or SDC35/36

Communication driver

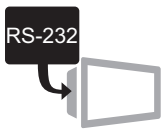
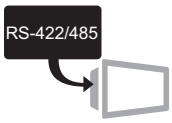
YAMATAKE SDC/DMC

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	31 (max.)	Between communication controller and GOT 15m or less Between temperature controller and communication controller 500m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

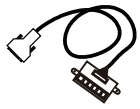
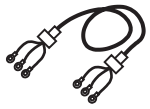
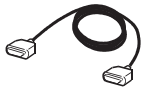
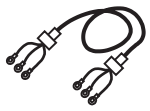
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	4	communication controller	CMC10L

4 is a product manufactured by Yamatake Corporation. For details of this product, contact Yamatake Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	6	RS-485 cable 3) • Between temperature controller and RS-485 terminal block conversion modules	(To be prepared by the user. Section 35.2 Connection Cable)	GT16
	7	RS-485 cable 4) • Between temperature controller and GOT		
	8	RS-232 cable 1) • Between communication controller and GOT		GT16 GT15 GT11 Serial
	9	RS-485 cable 1) • Between temperature controller and communication controller		
	10	RS-485 cable 7) • Between temperature controller and GOT		GT16 GT15

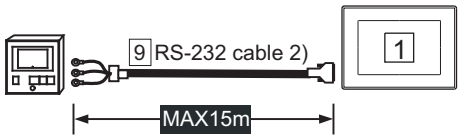
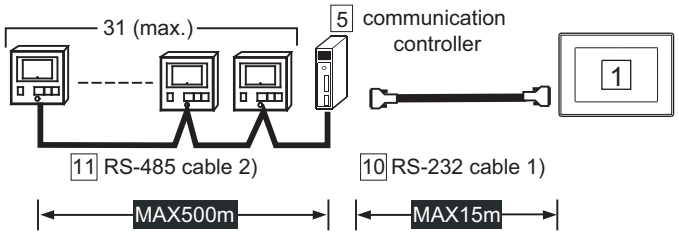
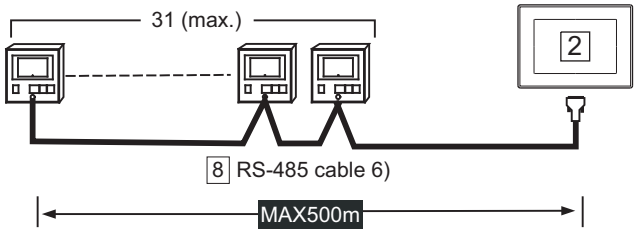
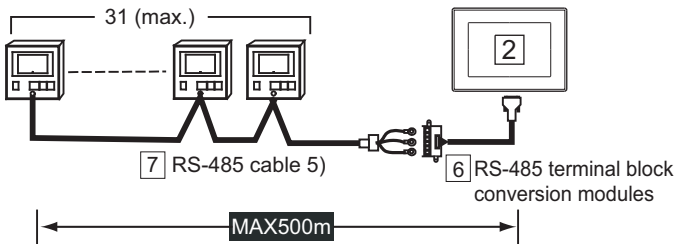
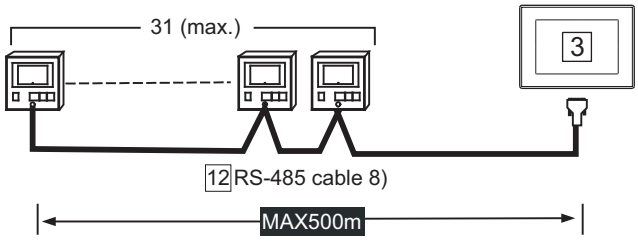
5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

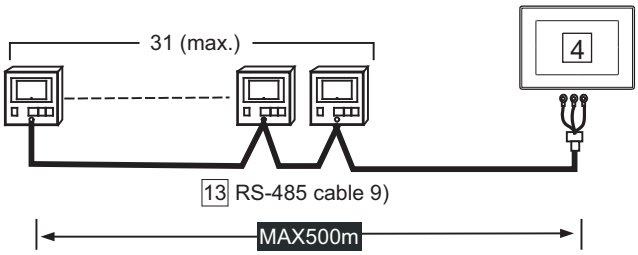
35.1.3 Connecting to SDC20/21

Communication driver

YAMATAKE SDC/DMC

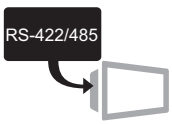
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	1	Between temperature controller and GOT 15m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between communication controller and GOT 15m or less Between temperature controller and communication controller 500m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

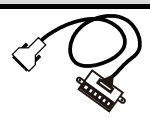
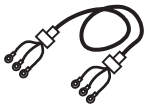
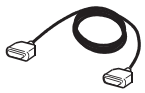
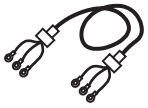
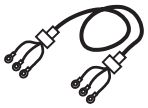
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422 interface • For RS-485 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
	4	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	5	communication controller	CMC10L

5 is a product manufactured by Yamatake Corporation. For details of this product, contact Yamatake Corporation.

(3) Cable

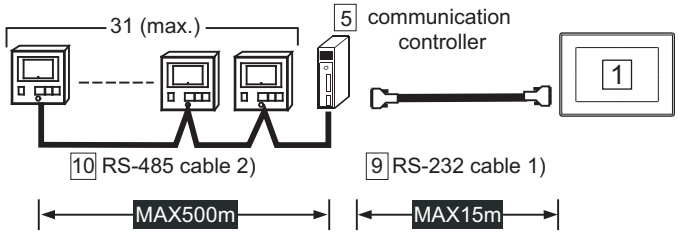
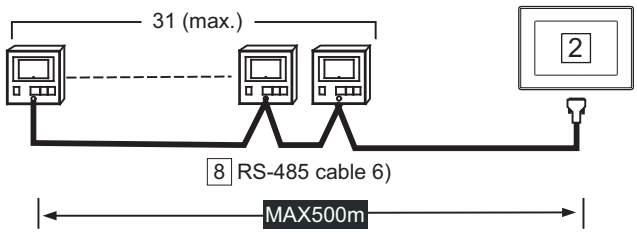
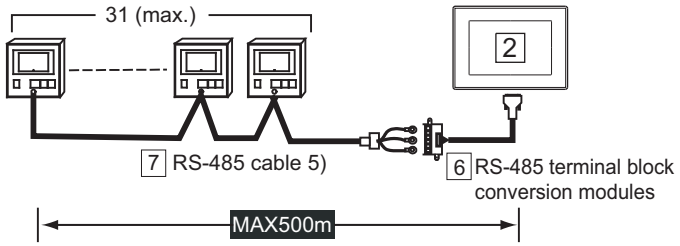
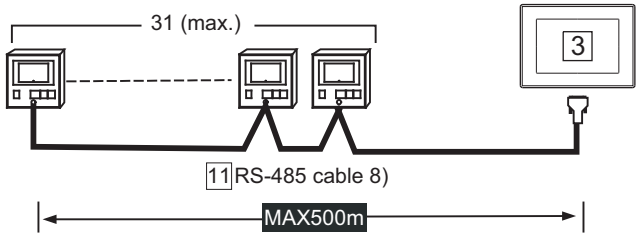
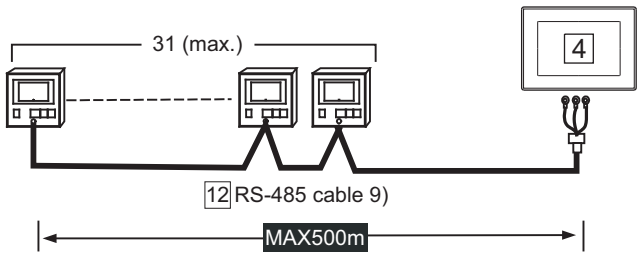
Image	No.	Name	Model name	Model
	6	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	7	RS-485 cable 5) • Between temperature controller and RS-485 terminal block conversion modules	(To be prepared by the user. Section 35.2 Connection Cable)	GT16
	8	RS-485 cable 6) • Between temperature controller and GOT		
	9	RS-232 cable 2) • Between temperature controller and GOT		
	10	RS-232 cable 1) • Between communication controller and GOT		GT16 GT15 GT11 Serial
	11	RS-485 cable 2) • Between temperature controller and communication controller		
	12	RS-485 cable 8) • Between temperature controller and GOT		
	13	RS-485 cable 9) • Between temperature controller and GOT		GT16 GT15

6 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

Communication driver

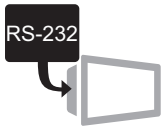
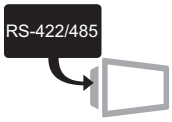
YAMATAKE SDC/DMC

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	31 (max.)	Between communication controller and GOT 15m or less Between temperature controller and communication controller 500m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

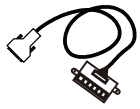
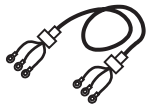
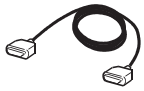
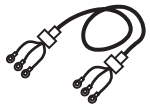
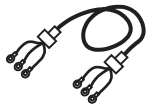
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422 interface • For RS-485 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
	4	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	5	communication controller	CMC10L

5 is a product manufactured by Yamatake Corporation. For details of this product, contact Yamatake Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	7	RS-485 cable 5) • Between temperature controller and RS-485 terminal block conversion modules	(To be prepared by the user. Section 35.2 Connection Cable)	GT16
	8	RS-485 cable 6) • Between temperature controller and GOT		
	9	RS-232 cable 1) • Between communication controller and GOT		GT16 GT15 GT11 Serial
	10	RS-485 cable 2) • Between temperature controller and communication controller		
	11	RS-485 cable 8) • Between temperature controller and GOT		
	12	RS-485 cable 9) • Between temperature controller and GOT		GT16 GT15

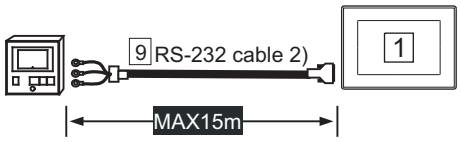
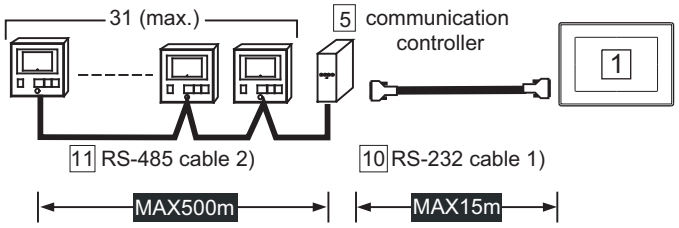
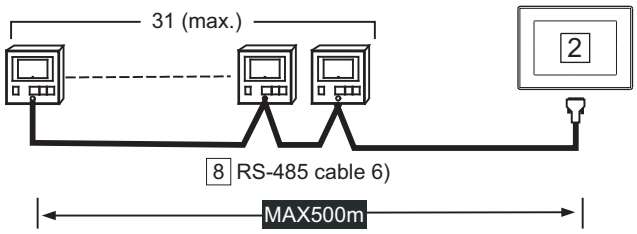
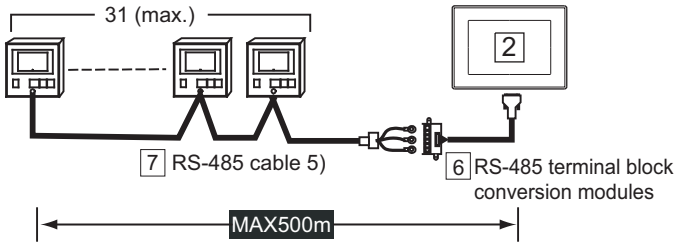
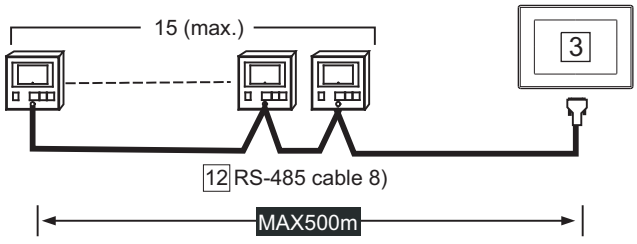
6 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

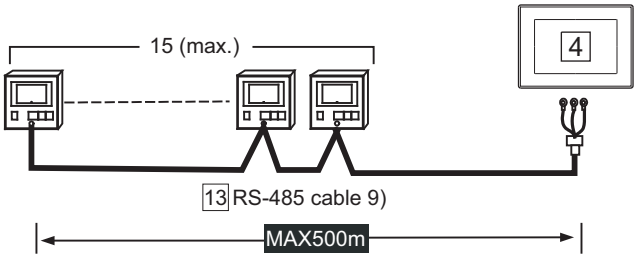
35.1.5 Connecting to SDC40A/40B/40G

Communication driver

YAMATAKE SDC/DMC

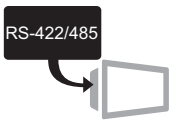
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	1	Between temperature controller and GOT 15m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between communication controller and GOT 15m or less Between temperature controller and communication controller 500m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	31 (max.)	Between temperature controller and GOT 500m or less		GT16
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	15 (max.)	Between temperature controller and GOT 500m or less		GT16 GT15

2 System equipment

(1) GOT

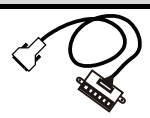
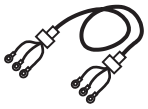
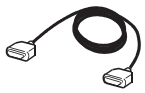
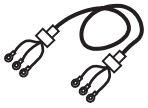
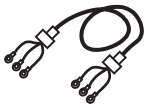
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422 interface • For RS-485 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
	4	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	5	communication controller	CMC10L

5 is a product manufactured by Yamatake Corporation. For details of this product, contact Yamatake Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	7	RS-485 cable 5) • Between temperature controller and RS-485 terminal block conversion modules	(To be prepared by the user. Section 35.2 Connection Cable)	GT16
	8	RS-485 cable 6) • Between temperature controller and GOT		
	9	RS-232 cable 2) • Between temperature controller and GOT		
	10	RS-232 cable 1) • Between communication controller and GOT		GT16 GT15 GT11 Serial
	11	RS-485 cable 2) • Between temperature controller and communication controller		
	12	RS-485 cable 8) • Between temperature controller and GOT		
	13	RS-485 cable 9) • Between temperature controller and GOT		GT16 GT15

6 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

35.2 Connection Cable

The RS-232 cable or RS-485 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ Refer to Section 35.2.1)

Model name		Connection cable
		GT16, GT15, GT11
Temperature controller*1	SDC20/21	RS-232 cable 2)
	SDC40A/40B/40G	
Communication controller	CMC10L	RS-232 cable 1)

*1 Select a temperature controller with communication function

2 RS-485 cable (☞ Refer to Section 35.2.2)

Model name		Connection cable			
		GT16	GT15	GT11	Communication controller
Temperature controller*1	DMC10	RS-485 cable 3) RS-485 cable 4) RS-485 cable 7)	RS-485 cable 7)	—	RS-485 cable 1)
	SDC15, SDC25/26, SDC35/36				
	SDC20/21	RS-485 cable 5) RS-485 cable 6) RS-485 cable 8) RS-485 cable 9)	RS-485 cable 8) RS-485 cable 9)	RS-485 cable 8)	RS-485 cable 2)
	SDC30/31				
	SDC40A/40B/40G				

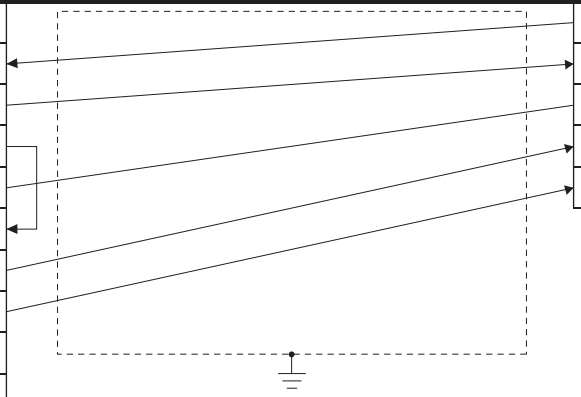
*1 Select a temperature controller with communication function

35.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a temperature controller.

1 Connection diagram

(1) RS-232 cable 1)

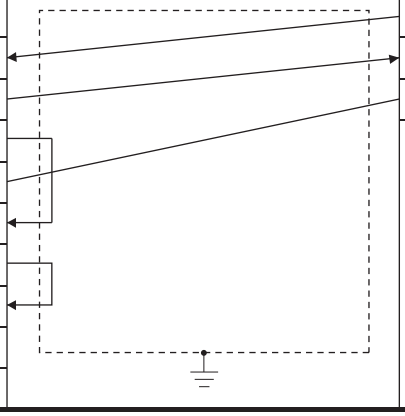
GOT side		Cable connection and signal direction	YAMATAKE temperature controller side Interface converter(CMC10L)	
			TERMINAL Mode *1	Signal name
Signal name	Pin No.		Pin No.	
—	1		3	SD
RD(RXD)	2		2	RD
SD(TXD)	3		5	SG
ER(DTR)	4		9	CS
SG	5		8	RS
DR(DSR)	6			
RS(RTS)	7			
CS(CTS)	8			
NC	9			
FG	—			

*1 For details on the setting method of the TERMINAL mode, refer to the following.

Section 35.4.5 Connecting CMC10L

(2) RS-232 cable 2)

Pin No. of temperature controller differs depending on model and optional function model. Refer to the following table. The numbers in ( ) of the following table correspond to optional function models.

GOT side		Cable connection and signal direction	YAMATAKE temperature controller side				
			Model of temperature controller				Signal name
			SDC20		SDC21	SDC40A SDC40B SDC40G	
			(03, 05)	(10)	(04, 07, 09)		
Signal name	Pin No.		Pin No.	Pin No.	Pin No.	Pin No.	
—	1		17	16	27	60	SD
RD(RXD)	2		18	17	28	59	RD
SD(TXD)	3		5	5	29	61	SG
ER(DTR)	4						
SG	5						
DR(DSR)	6						
RS(RTS)	7						
CS(CTS)	8						
NC	9						
FG	—						

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector type

9-pin D-sub (male) inch screw fixed type

(c) Connector model

GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-	17LE-23090-27(D3CC)	

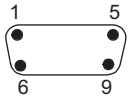
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(d) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) YAMATAKE temperature controller side connector
Use the connector compatible with the YAMATAKE temperature controller side module.
For details, refer to the following manual.

☞ User's Manual for the YAMATAKE temperature controller

3 Precautions when preparing a cable

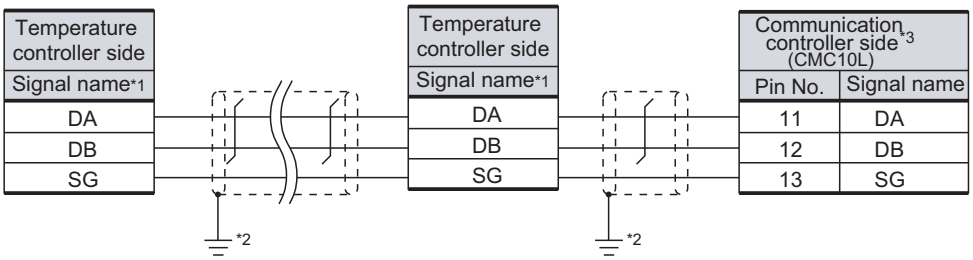
The length of the RS-232 cable must be 15m or less.

35.2.2 RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a temperature controller.

1 Connection diagram

(1) RS-485 cable 1)



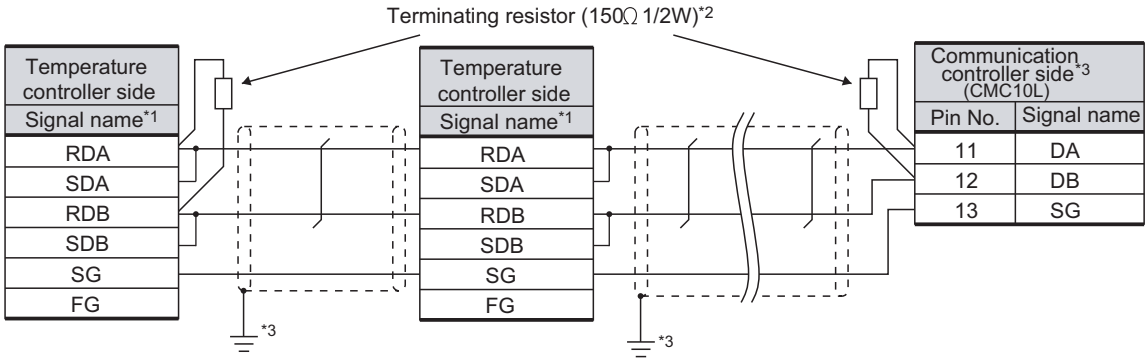
*1 Pin No. of temperature controller differs depending on model. Refer to the following table.

Signal name	Model of temperature controller		
	DMC10	SDC15	SDC25/26 SDC35/36
	Pin No.	Pin No.	Pin No.
DA	4	16	22
DB	5	17	23
SG	6	18	24

*2 Connect FG grounding to the single-sided end of a cable shield line.

*3 Set the terminal resister to “Disable”.
For details of terminating resistor settings, refer to the following.
☞ Section 35.4.5 Connecting CMC10L

(2) RS-485 cable 2)



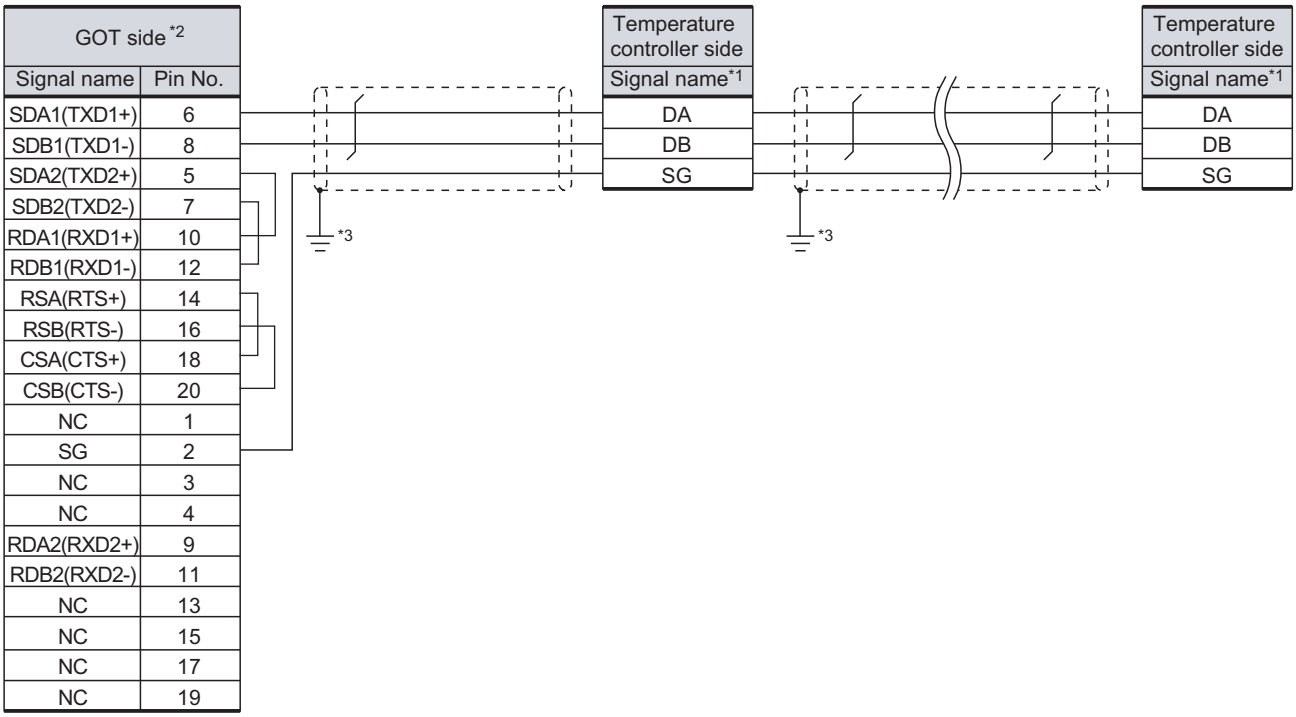
*1 Pin No. of temperature controller differs depending on model or optional function model. Refer to the following table. The numbers in ( ) of the following table correspond to optional function models.

Signal name	Model of temperature controller						
	SDC20		SDC21	SDC30	SDC31		SDC40A/40B/40G
	(02, 04)	(09)	(03,08)	(040, 041)	(045)	(446, 546)	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA	17	18	27	18	18	27	59
RDB	18	19	28	19	19	28	60
SDA	15	16	25	16	16	25	57
SDB	16	17	26	17	17	26	58
SG	5	5	29	5	5	29	61
FG	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3

*2 Terminating resistor should be provided for a communication controller and a temperature controller which will be terminals.

*3 Connect FG grounding to the single-sided end of a cable shield line.

(3) RS-485 cable 3)



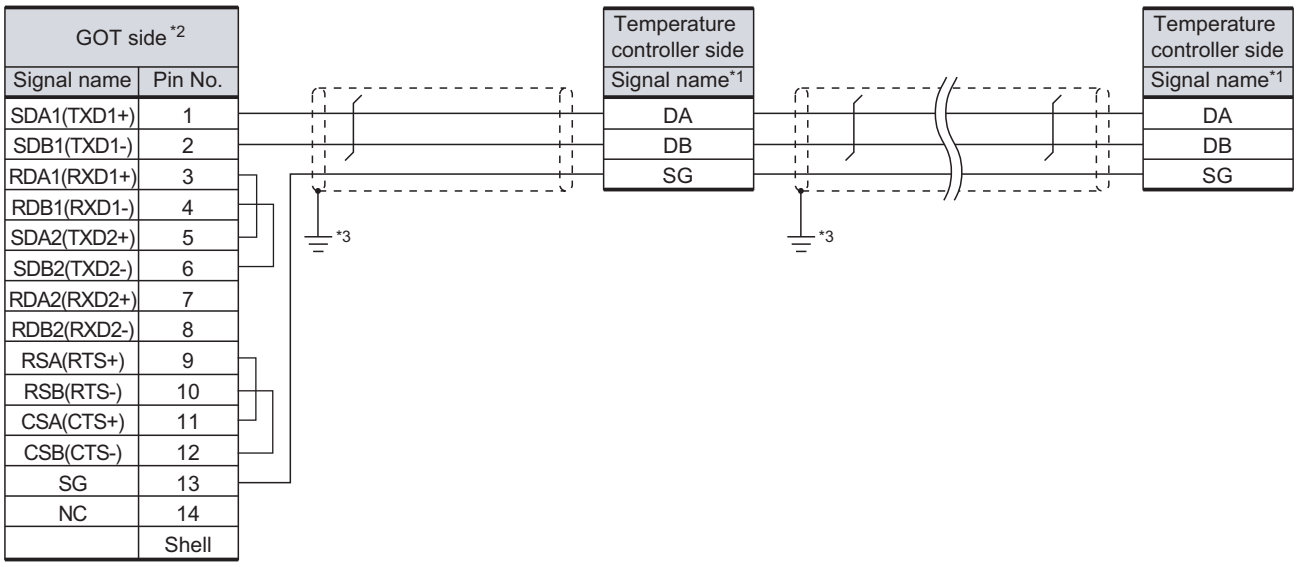
*1 Pin No. of temperature controller differs depending on model. Refer to the following table.

Signal name	Model of temperature controller		
	DMC10	SDC15	SDC25/26 SDC35/36
	Pin No.	Pin No.	Pin No.
DA	4	16	22
DB	5	17	23
SG	6	18	24

*2 Set the terminating resistor of GOT side to “Disable”. (4 Connecting terminating resistors)

*3 Connect FG grounding to the single-sided end of a cable shield line.

(4) RS-485 cable 4)



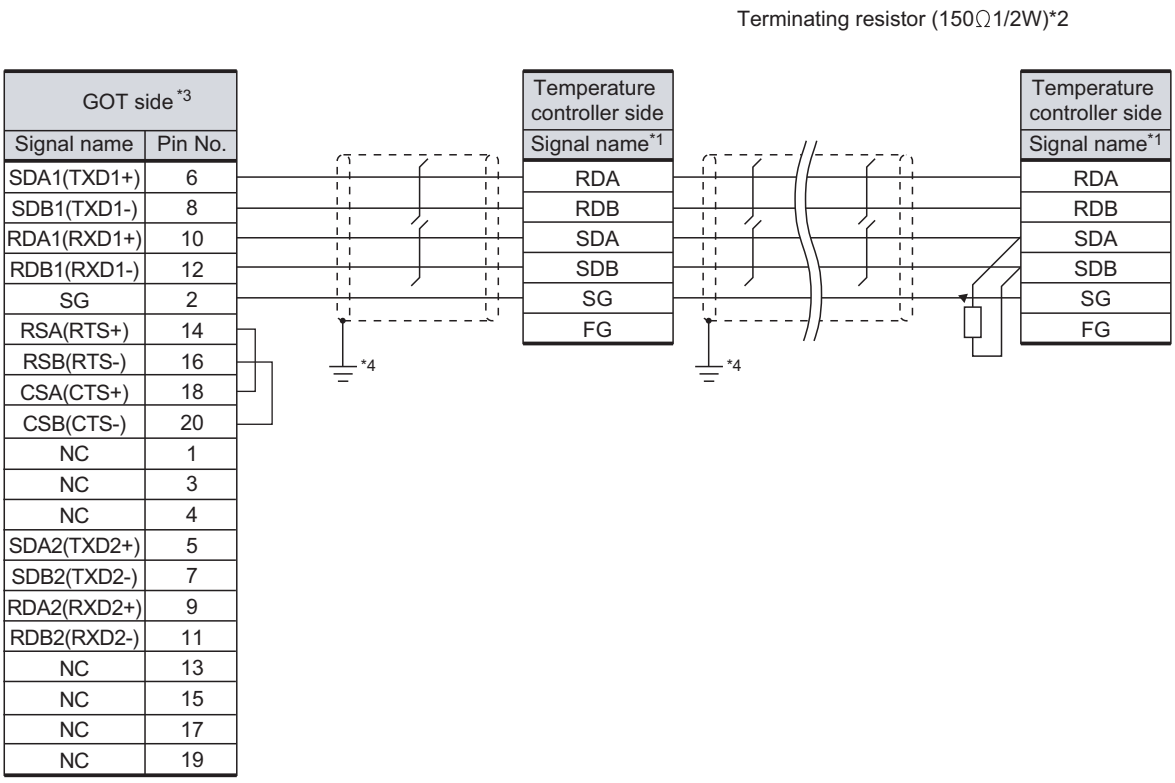
*1 Pin No. of temperature controller differs depending on model. Refer to the following table.

Signal name	Model of temperature controller		
	DMC10	SDC15	SDC25/26 SDC35/36
	Pin No.	Pin No.	Pin No.
DA	4	16	22
DB	5	17	23
SG	6	18	24

*2 Set the terminating resistor of GOT side to “Disable”. (☞ 4 Connecting terminating resistors)

*3 Connect FG grounding to the single-sided end of a cable shield line.

(5) RS-485 cable 5)



*1 Pin No. of temperature controller differs depending on model or optional function model. Refer to the following table. The numbers in ( ) of the following table correspond to optional function models.

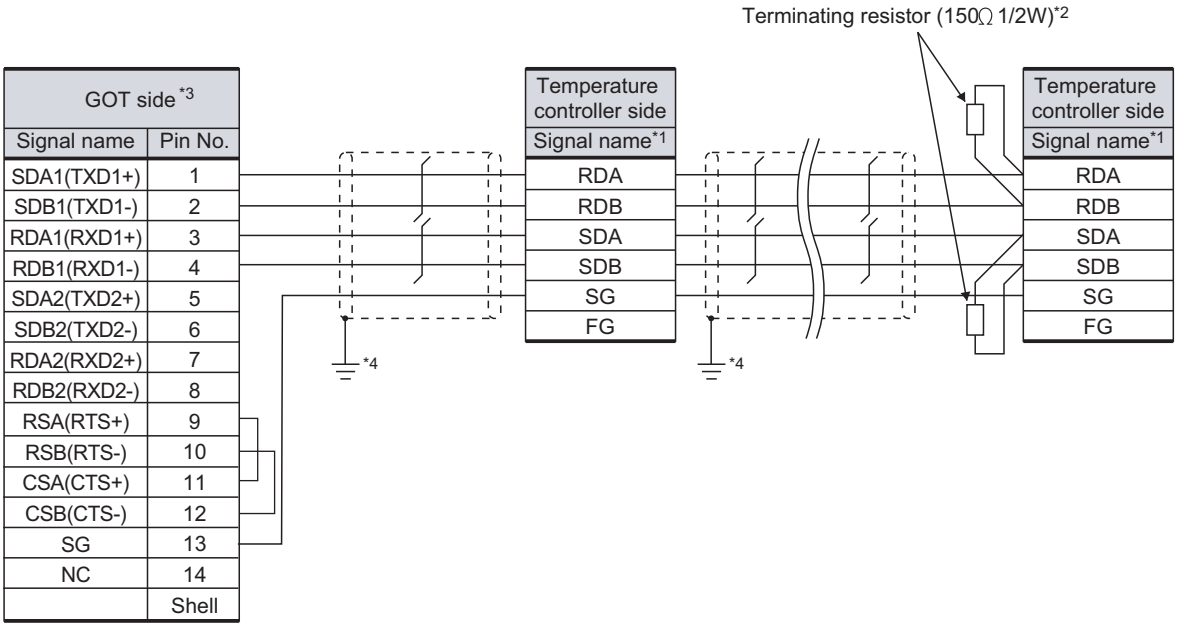
Signal name	Model of temperature controller						
	SDC20		SDC21	SDC30	SDC31		SDC40A/40B/40G
	(02, 04)	(09)	(03, 08)	(040, 041)	(045)	(446, 546)	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA	17	18	27	18	18	27	59
RDB	18	19	28	19	19	28	60
SDA	15	16	25	16	16	25	57
SDB	16	17	26	17	17	26	58
SG	5	5	29	5	5	29	61
FG	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Enable”. (☞ 4 Connecting terminating resistors)

*4 Connect FG grounding to the single-sided end of a cable shield line.

(6) RS-485 cable 6)



*1 Pin No. of temperature controller differs depending on model or optional function model. Refer to the following table. The numbers in ( ) of the following table correspond to optional function models.

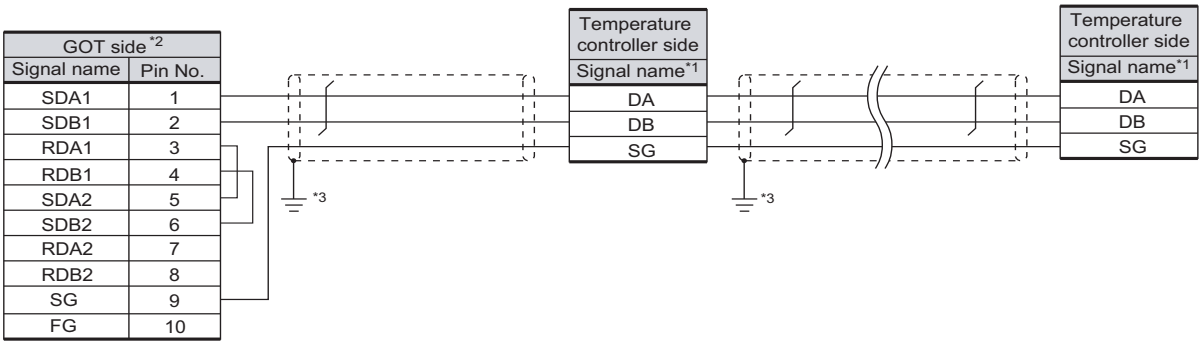
Signal name	Model of temperature controller						
	SDC20		SDC21	SDC30	SDC31		SDC40A/40B/40G
	(02, 04)	(09)	(03, 08)	(040, 041)	(045)	(446, 546)	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA	17	18	27	18	18	27	59
RDB	18	19	28	19	19	28	60
SDA	15	16	25	16	16	25	57
SDB	16	17	26	17	17	26	58
SG	5	5	29	5	5	29	61
FG	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Enable”. (4 Connecting terminating resistors)

*4 Connect FG grounding to the single-sided end of a cable shield line.

(7) RS-485 cable 7)



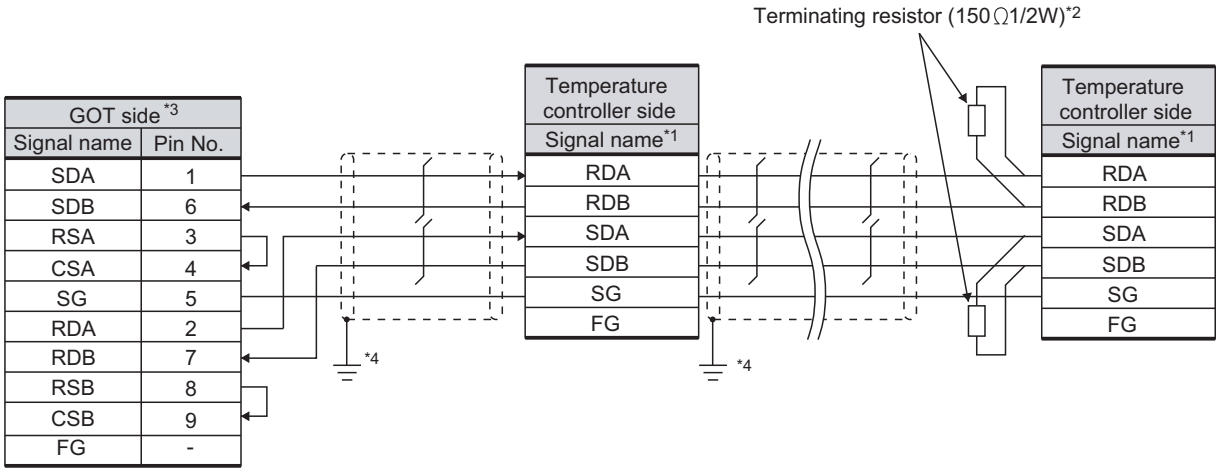
*1 Pin No. of temperature controller differs depending on model. Refer to the following table.

Signal name	Model of temperature controller		
	DMC10	SDC15	SDC25/26 SDC35/36
	Pin No.	Pin No.	Pin No.
DA	4	16	22
DB	5	17	23
SG	6	18	24

*2 Set the terminating resistor of GOT side to “Disable”. (☞ 4 Connecting terminating resistors)

*3 Connect FG grounding to the single-sided end of a cable shield line.

(8) RS-485 cable 8)



*1 Pin No. of temperature controller differs depending on model or optional function model. Refer to the following table. The numbers in ( ) of the following table correspond to optional function models.

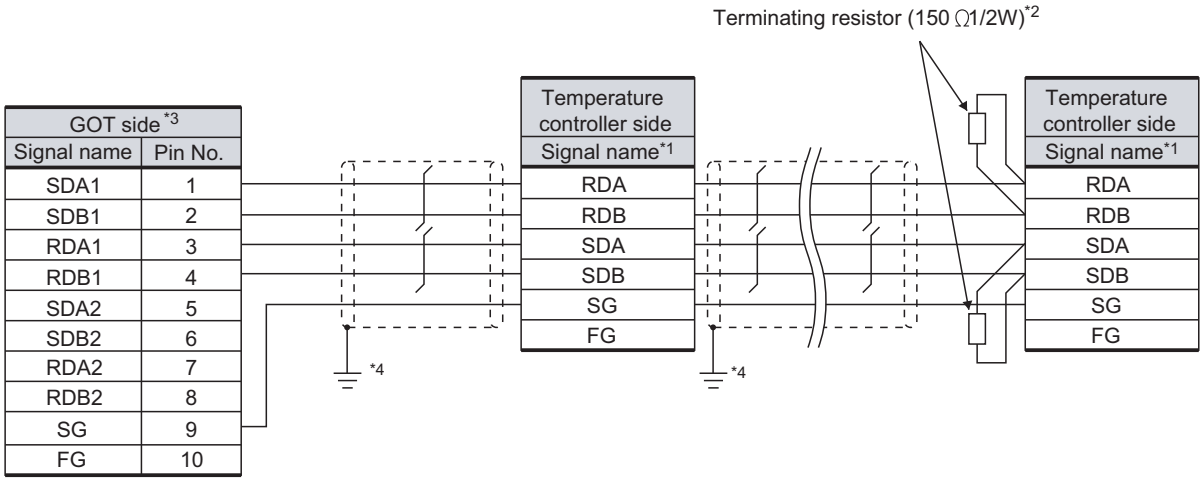
Signal name	Model of temperature controller						
	SDC20		SDC21	SDC30	SDC31		SDC40A/40B/40G
	(02, 04)	(09)	(03, 08)	(040, 041)	(045)	(446, 546)	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA	17	18	27	18	18	27	59
RDB	18	19	28	19	19	28	60
SDA	15	16	25	16	16	25	57
SDB	16	17	26	17	17	26	58
SG	5	5	29	5	5	29	61
FG	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Enable”. (4 Connecting terminating resistors)

*4 Connect FG grounding to the single-sided end of a cable shield line.

(9) RS-485 cable 9)



*1 Pin No. of temperature controller differs depending on model or optional function model. Refer to the following table. The numbers in ( ) of the following table correspond to optional function models.

Signal name	Model of temperature controller						
	SDC20		SDC21	SDC30	SDC31		SDC40A/40B/40G
	(02, 04)	(09)	(03, 08)	(040, 041)	(045)	(446, 546)	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA	17	18	27	18	18	27	59
RDB	18	19	28	19	19	28	60
SDA	15	16	25	16	16	25	57
SDB	16	17	26	17	17	26	58
SG	5	5	29	5	5	29	61
FG	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to “Enable”.(4 Connecting terminating resistors)

*4 Connect FG grounding to the single-sided end of a cable shield line.

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422/485 interface and the RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

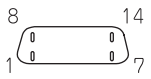
GOT	Connector model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-TE	SL-SMT3.5/10/90F BOX	terminal block type	Weidmuller interconnections inc.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

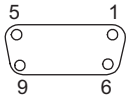
GOT main part connector see from the front



14-pin (female)

GT15, GT11

GOT main part connector see from the front



9-pin D-sub (female)

(2) YAMATAKE temperature controller side connector

Use the connector compatible with the YAMATAKE temperature controller side module.
For details, refer to the following manual.

☞ User's Manual for the YAMATAKE temperature controller

3 Precautions when preparing a cable

The length of the RS-485 cable must be 500m or less

4 Connecting terminating resistors

(1) YAMATAKE temperature controller

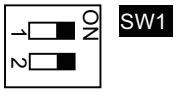
Connect the terminating resistor on the YAMATAKE temperature controller side when connecting a GOT to a YAMATAKE temperature controller.

☞ Section 35.4 Temperature Controller Side Setting

(2) GOT

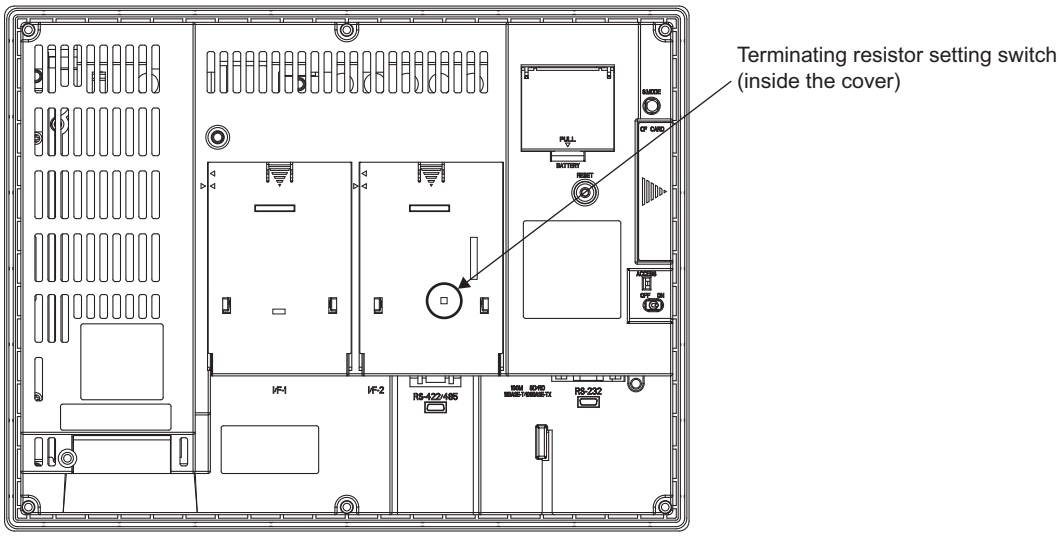
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

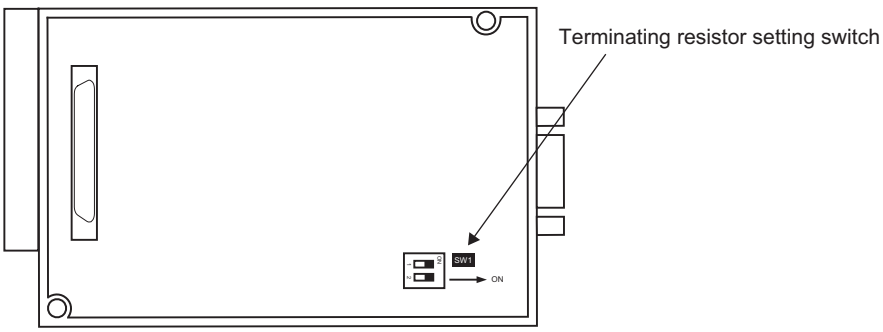


*1 The default setting is "Disable".

• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Refer view of RS-422/485 communication unit

35.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 35.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 35.3.2
Checking OS installation on GOT

⇩

Set the communication interface. (Communication settings)

☞ Section 35.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 35.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 35.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 35.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 35.3.7
Checking for normal monitoring

Point

Confirming the temperature controller side setting

This section explains the GOT side setting.
When confirming the temperature controller side setting, refer to the following.

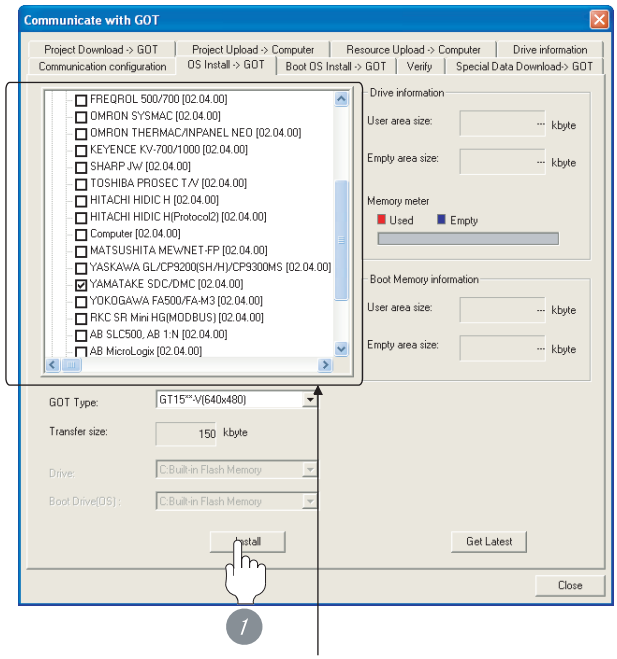
☞ Section 35.4 Temperature Controller Side Setting

35.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• YAMATAKE SDC/DMC

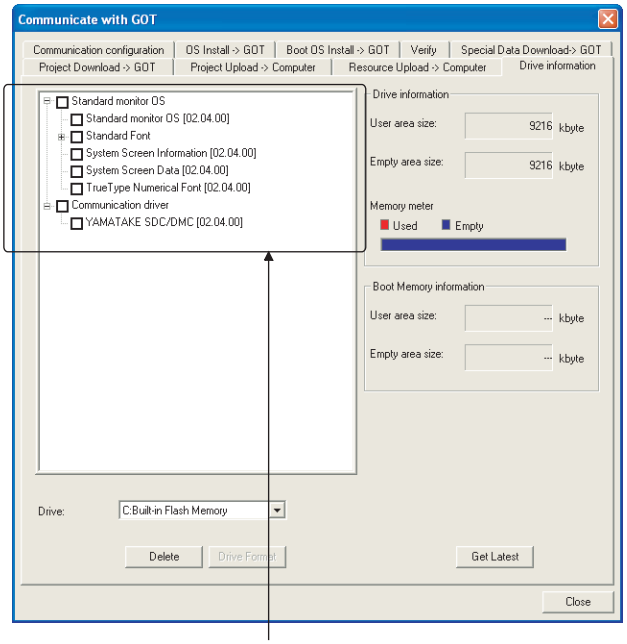
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

35.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: YAMATAKE SDC/DMC

35.3.3 Setting communication interface (Communication settings)

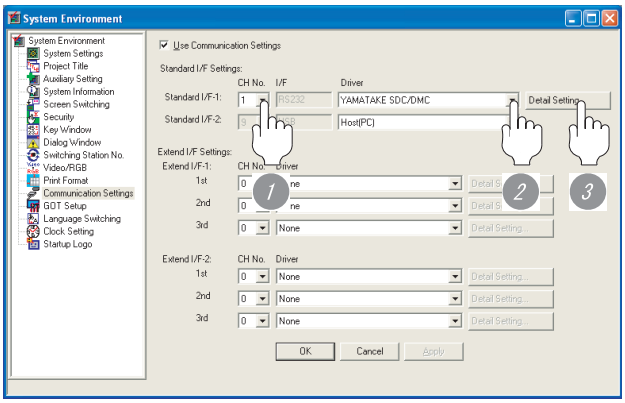
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



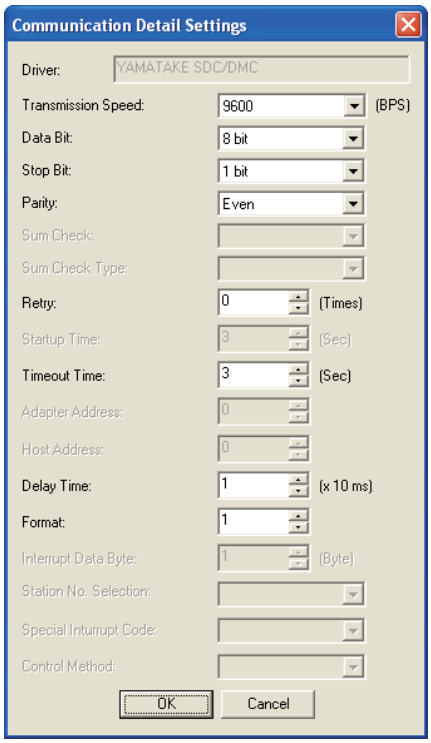
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "YAMATAKE SDC/DMC".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 1ms>	0 to 300 ms
Format	Select the communication format. <Default: 1> format 1: only continuous access format 2: continuous and random access	1 /2

*1 Do not specify “0”

Point

Format setting

The compatible format of temperature controller differs depending on model.

Model	Compatible format
SDC20/21, SDC30/31, SDC40A/40B/40G	Format 1 only
DMC10, SDC15, SDC25/26, SDC35/36	Format 1 or Format 2

For the continuous access and random access of the temperature controller, refer to the following manual.

☞ User's Manual for the YAMATAKE temperature controller

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

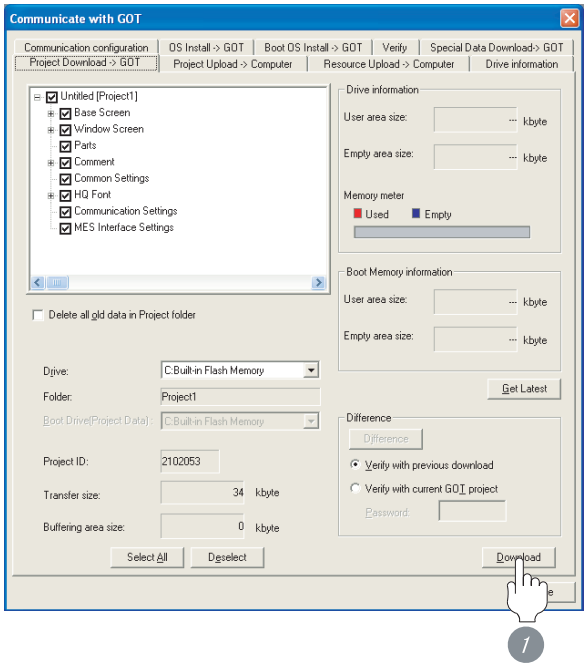
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

35.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

35.3.5 Attaching communication unit and connecting cable

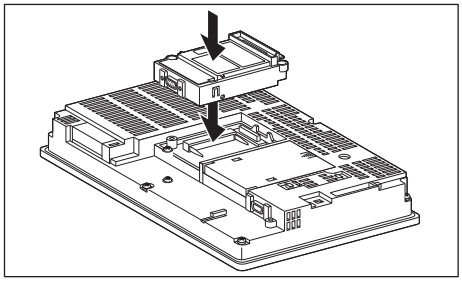
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communicaation unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication units

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

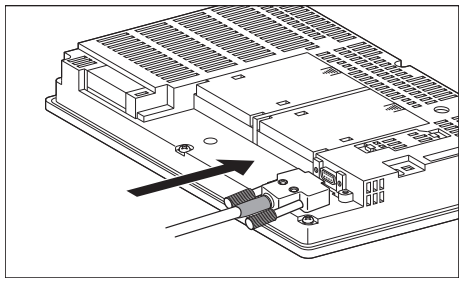
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

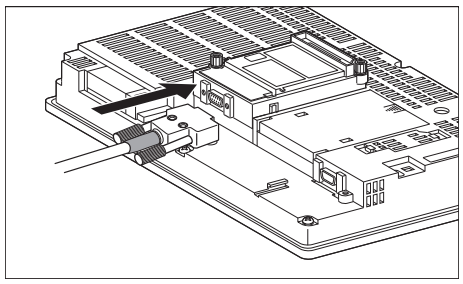
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT



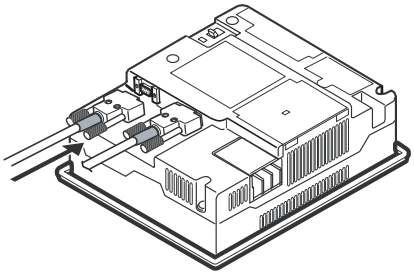
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

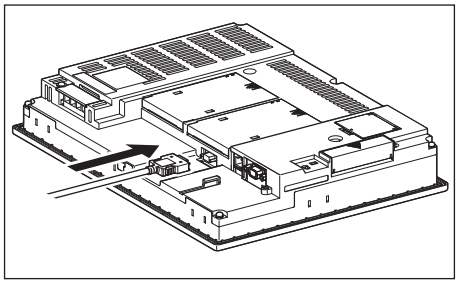


(2) How to connect the RS-485 cable

(a) For the GT16

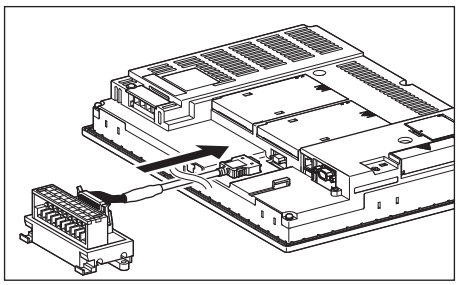
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

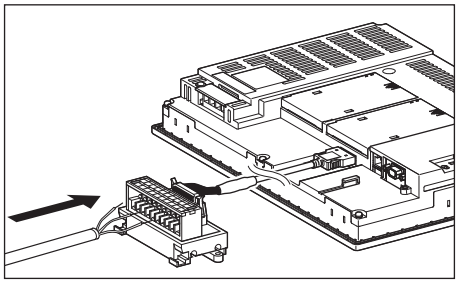


• Connection to the RS-422/485 interface with the RS-485 terminal block converter module

1 Connect the RS-485 terminal block converter module to the RS-422/485 interface on the GOT.

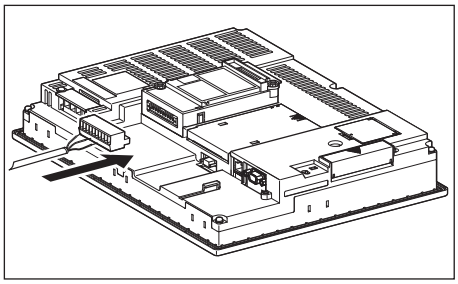


2 Connect the RS-485 cable to the RS-485 terminal block converter module.

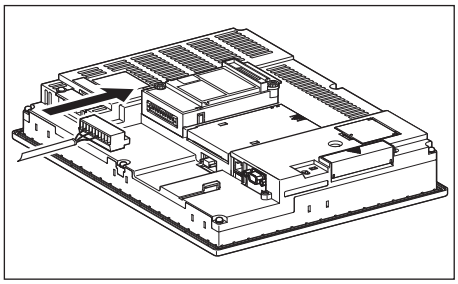


• Connection to the RS-422/485 communication unit (model:GT15-RS4-9TE)

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



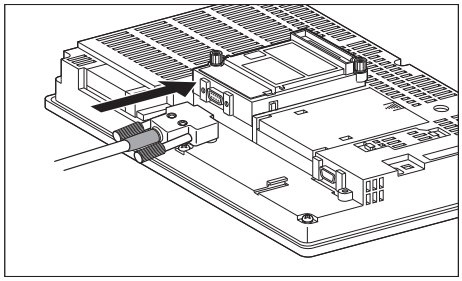
2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



(b) For the GT15

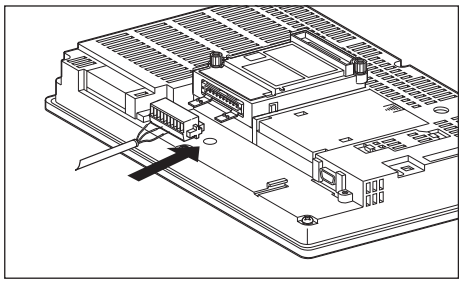
• Connection to the RS-422/485 communication unit (model:GT15-RS4-9S)

1 Connect the RS-485 cable to the RS-422/485 communication unit on the GOT.

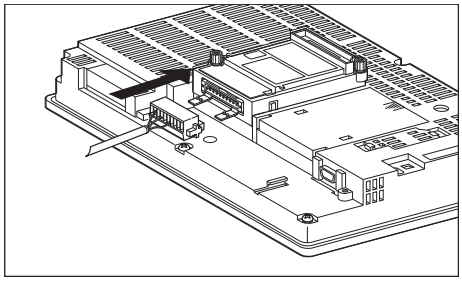


• Connection to the RS-422/485 communication unit (model:GT15-RS4-9TE)

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.

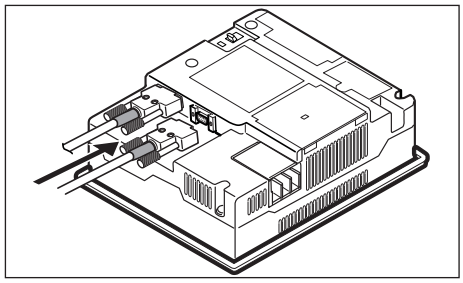


2 Connect the terminal block to the RS-422/485 communication unit on the GOT.



(c) For the GT11

1 Connect the RS-485 cable to the RS-422 interface on the GOT.



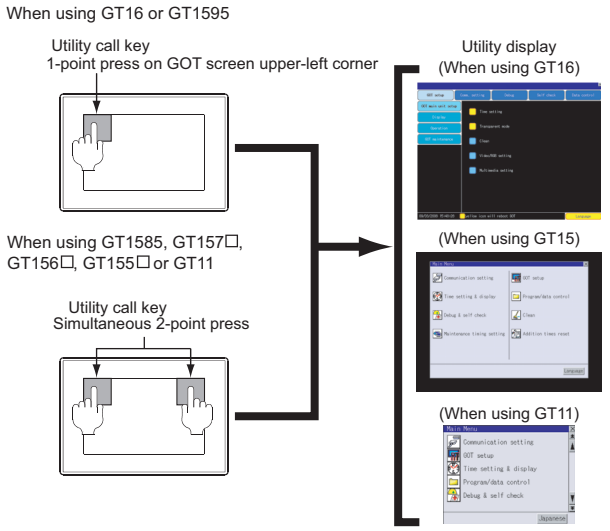
35.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

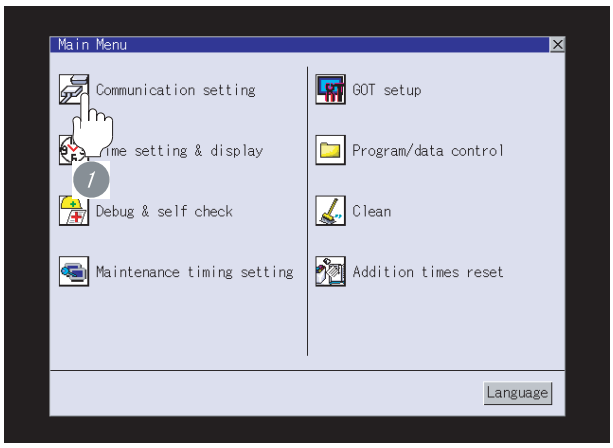


Point

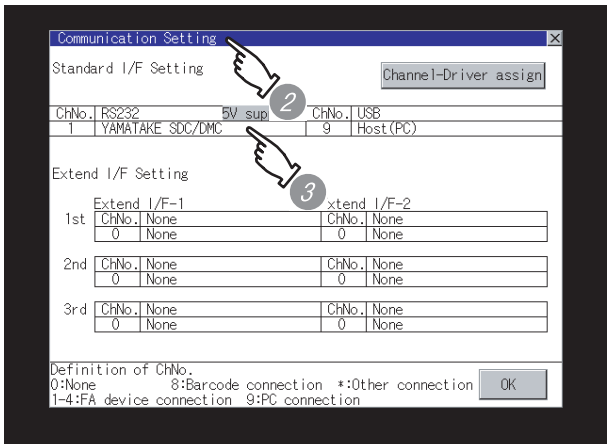
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: YAMATAKE SDC/DMC

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 35.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

35.3.7 Checking for normal monitoring

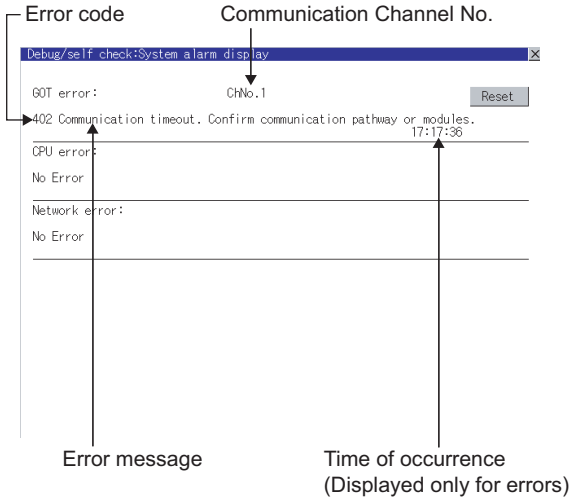
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the temperature controller can communicate with the GOT or not can be detected by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

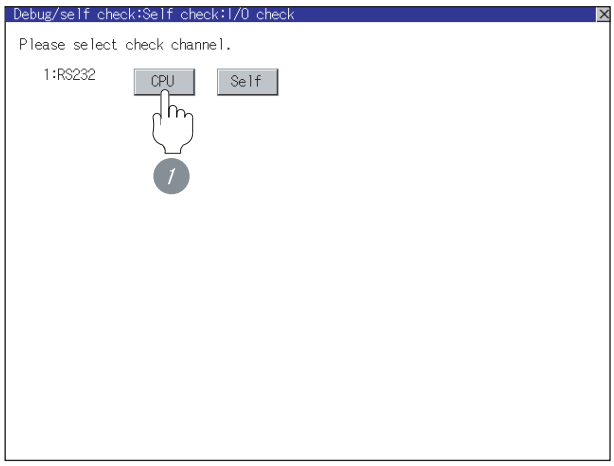
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

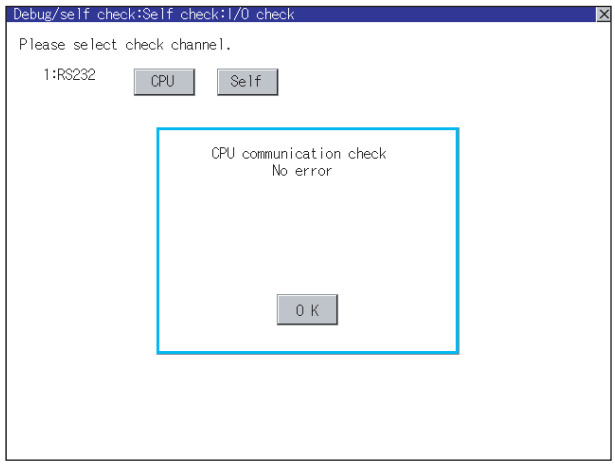
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual.

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected temperature controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the temperature controller side setting

When connecting the GOT, setting is required for the temperature controller side.

Confirm if the temperature controller side setting is correct.

☞ Section 35.4 Temperature Controller Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

35.4 Temperature Controller Side Setting

Point

YAMATAKE temperature controller

For details of YAMATAKE temperature controller, refer to the following manual.

☞ User's Manual for the YAMATAKE temperature controller

Model name		Reference
Temperature controller	DMC10	Section 35.4.1
	SDC15, SDC25/26, SDC35/36	Section 35.4.3
	SDC20/21	Section 35.4.4
	SDC30/31	Section 35.4.4
	SDC40A/40B/40G	Section 35.4.2
Interface converter	CMC10L	Section 35.4.5

35.4.1 Connecting to DMC10

1 Communication settings

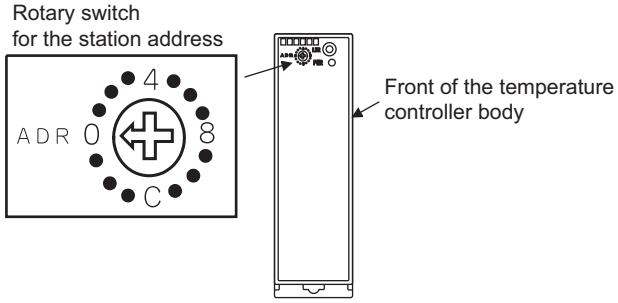
Make the communication settings by operating the Smart Loader Package (SLP-D10) of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps, 19200bps
Communication mode*2	CPL
Data length	8 bits
Parity bit*1	Even, none
Stop bit	2 bits
Communication minimum response time	1ms, 10ms, 100ms, 200ms
Station address*3*4	0 to F

*1 Set the transmission speed according to the GOT side.
*2 Set to CPL.
*3 Do not set to “0”.
*4 Select the station address without overlapping with that of other units.

2 Station address setting

Set the station address using the rotary switch for the station address.



35.4.2 Connecting SDC40A/40B/40G

1 Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps
Data length	8 bits
Parity bit*1	Even, none
Stop bit	1bits, 2bits
Station address*2*3	0 to 127

*1 Set the transmission speed according to the baud rate of the GOT side.
*2 Do not set to “0”.
*3 Select the station address without overlapping with that of other unit.

35.4.3 Connecting SDC15, SDC25/26, SDC35/36

1 Communication settings

Make the communication settings by operating the key or Smart Loader Package (SLP-C35) of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps, 19200bps
Communication mode*2	CPL
Data length*1	7bits, 8bits
Parity bit*1	Odd, even, none
Stop bit*1	1bits, 2bits
Communication minimum response time	1 to 250ms
Station address*3*4	0 to 127

*1 Set the transmission speed according to the baud rate of the GOT side.
*2 Set to CPL.
*3 Do not set to “0”.
*4 Select the station address without overlapping with that of other units.

35.4.4 Connecting SDC20/21, SDC30/31

1 Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps
Data length	8 bits
Parity bit	None
Stop bit	2 bits
Station address*2*3	0 to 127

*1 Set the transmission speed according to the baud rate of the GOT side.
*2 Do not set to "0".
*3 Select the station address without overlapping with that of other unit.

35.4.5 Connecting CMC10L

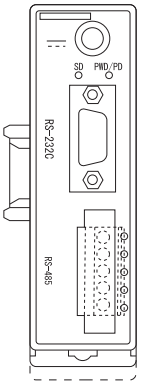
1 Communication settings

Make the communication settings by operating the DIP switch of the temperature controller.

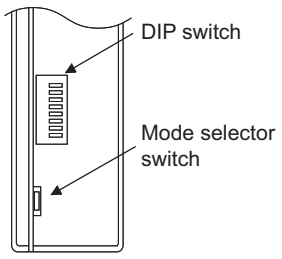
Setting items	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Frame length*2	9 to 15 bits

*1 Set the transmission speed according to the baud rate of the GOT side.
*2 The sum of data length, parity bit and stop bit

2 Settings by switch



Front view of CMC10L body



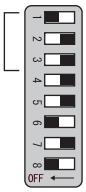
Rear view of CMC10L body

(1) DIP switch settings

(a) Transmission speed settings

Transmission speed(bps)	Switch No.		
	1	2	3
9600	ON	OFF	ON
19200	OFF	ON	ON
38400	ON	ON	ON

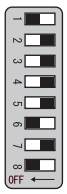
Set these switches →



(b) Frame length settings

Frame length	Switch No.		
	4	5	6
8 bits	OFF	OFF	OFF
9 bits	ON	OFF	OFF
10 bits	OFF	ON	OFF
11 bits	ON	ON	OFF
12 bits	OFF	OFF	ON
13 bits	ON	OFF	ON
14 bits	OFF	ON	ON
15 bits	ON	ON	ON

Set these switches →



(c) Terminating resistor settings

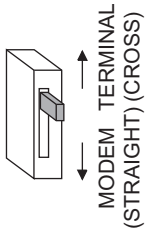
Terminating resistor	Switch No.
	8
Enable	ON
Disable	OFF

Set these switches →



(2) Mode selector switch settings

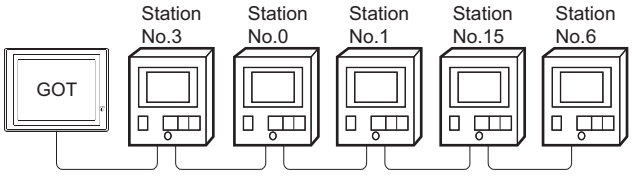
Set the switch to "TERMINAL".



35.4.6 Station NO. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Model	Specification range
SDC40A/40B/40G, SDC15, SDC25/26, SDC35/36, SDC20/21, SDC30/31	0 to 127
DMC10	0 to 15

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD 25).

When specifying the station No. from 200 to 215 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station NO.	Compatible device	Setting range
200	GD10	0 to 127:For SDC40A/40B/40G, SDC15, SDC25/26, SDC35/36, SDC20/21, SDC30/31 0 to 15 :For DMC10 For the setting other than the above, error (dedicated device is out of range) will occur.
201	GD11	
202	GD12	
203	GD13	
204	GD14	
205	GD15	
206	GD16	
207	GD17	
208	GD18	
209	GD19	
210	GD20	
211	GD21	
212	GD22	
213	GD23	
214	GD24	
215	GD25	

35.5 Precautions

1 Station number setting of the temperature controller system

Make sure to establish temperature controller system with No.1 station.

2 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Disconnecting some of multiple connected equipments

The GOT can disconnect some of multiple connected equipments by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipments.

For details of GOT internal device setting, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual (2.9.1 GOT internal devices)

35.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

item	Description	Version of GT Designer2	Version of OS
YAMATAKE temperature controller	Supporting the YAMATAKE temperature controller connection	2.18U	Communication driver YAMATAKE SDC/DMC [02.01.**]
	Supporting the following: • Disconnecting some of multiple connected equipments • Preventing the monitoring operation of the faulty station automatically	2.58L	Communication driver YAMATAKE SDC/DMC [03.03.**]
	Supporting the connections to GT16	2.90U	Communication driver YAMATAKE SDC/DMC [04.02.**]

36

CONNECTION TO YOKOGAWA TEMPERATURE CONTROLLER



36.1 System Configuration . . . . . page 36-2

This section describes the equipment and cables needed when connecting a GOT to a YOKOGAWA temperature controller. Select a system suitable for your application.

36.2 Connection Cable . . . . . page 36-16

This section describes the specifications of the cables needed when connecting a GOT to a YOKOGAWA temperature controller.
Check the specifications of the connection cables.

36.3 Preparatory Procedures for Monitoring . . . . . page 36-39

This section provides the procedures to be followed before performing monitoring in connection to a YOKOGAWA temperature controller. The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

36.4 Temperature Controller Side Setting . . . . . page 36-49

The YOKOGAWA temperature controller side settings for GOT connection are explained. When checking the temperature controller side settings, refer to this section.

36.5 Precautions . . . . . page 36-54

This section describes the precautions about temperature controller connection. Refer to this section without fail before starting temperature controller connection.

36.6 List of Functions Added by Version Upgrade . . . . . page 36-55

This section describes the functions added by version upgrade of GT Designer2 or OS.

36.1 System Configuration

The series names of connectable temperature controllers are as follows.

Series name	Model name
GREEN	UT320, UT321, UT350, UT351, UT420, UT450, UT520, UT550, UT551, UT750
	UP350, UP351, UP550, UP750
	UM330, UM331, UM350, UM351
	US1000
UT100	UT130, UT150, UT152, UT155
	UP150
UT2000	UT2400, UT2800

Select a system configuration suitable for your application.

Point

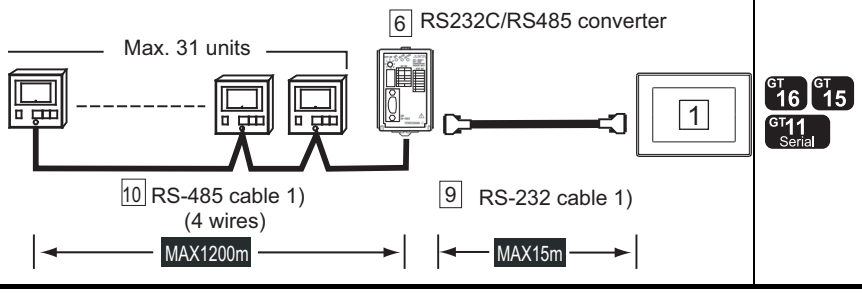
Conventions used in this section

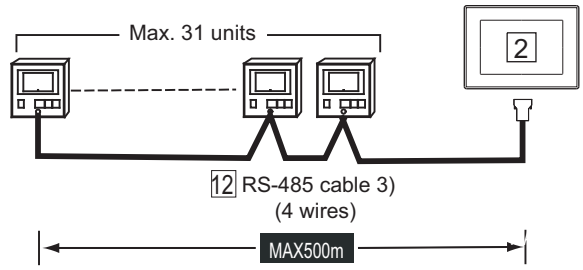
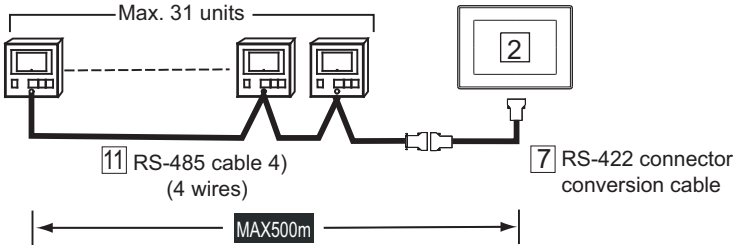
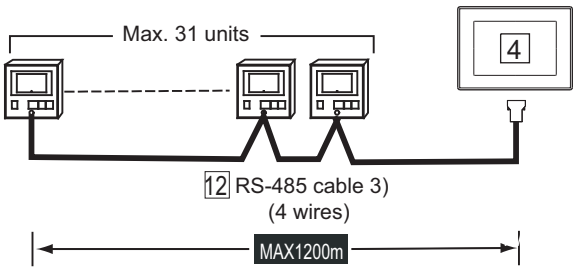
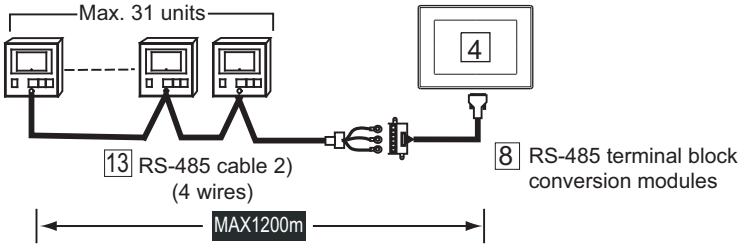
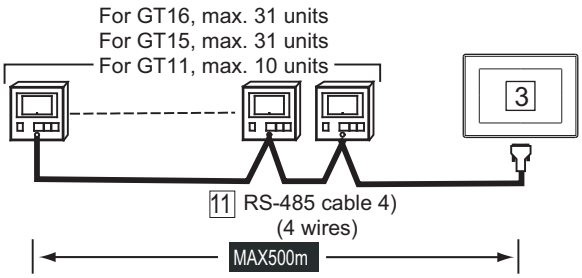
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

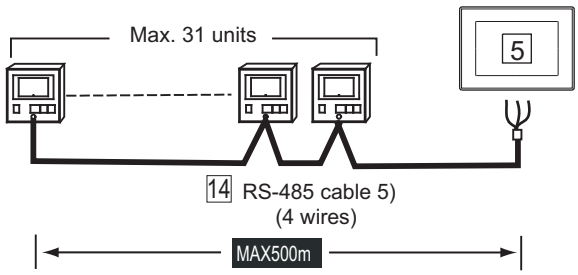
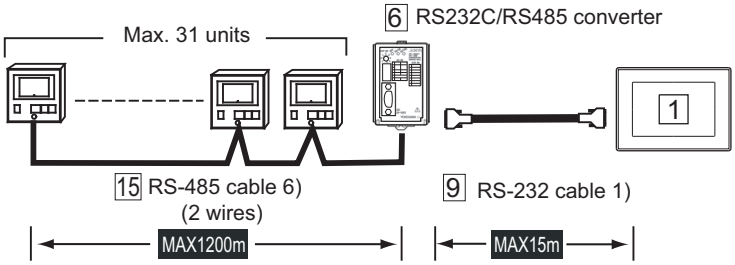
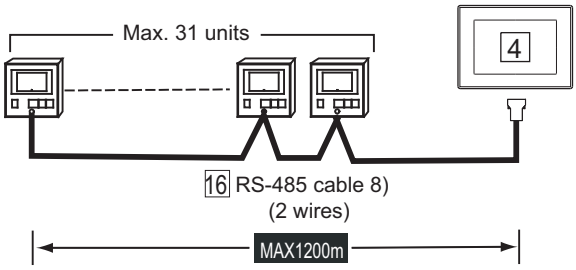
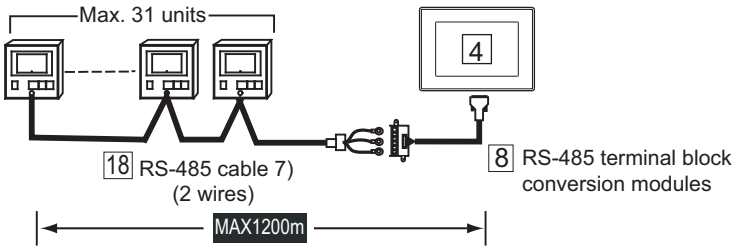
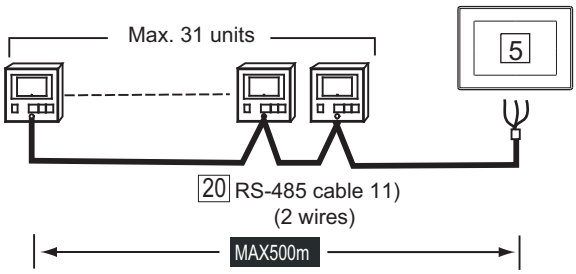
36.1.1 Connecting to GREEN Series

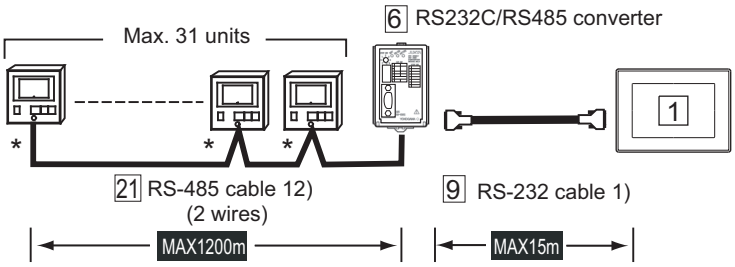
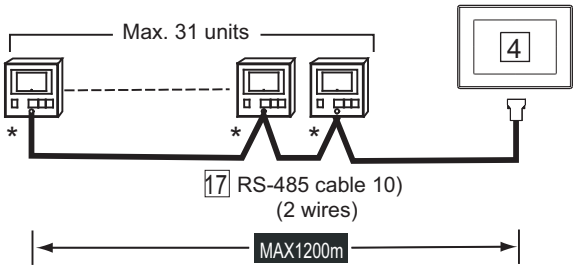
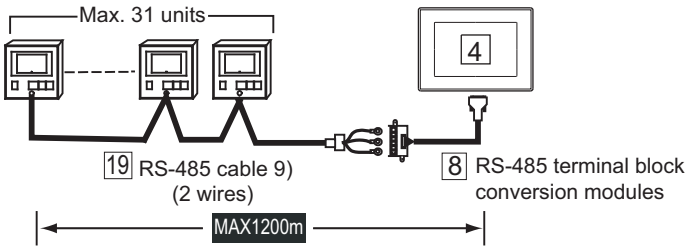
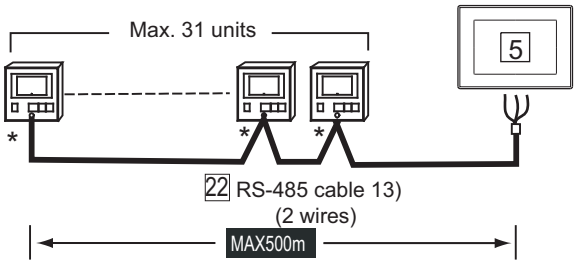
Communication driver
YOKOGAWA
GREEN/UT100/UT2000

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and RS232C/RS485 converter 15m or less Between RS232C/RS485 converter and temperature controller 1200m or less		GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16
1	Max. 31 units	Between GOT and temperature controller 500m or less		
1	Max. 31 units	Between GOT and temperature controller 1200m or less		
1	Max. 31 units	Between GOT and temperature controller 1200m or less		
1	GT16, GT15: Max. 31 units GT11: Max. 10 units	Between GOT and temperature controller 500m or less		GT16 GT15 GT11 Serial

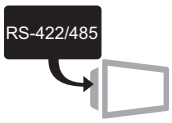
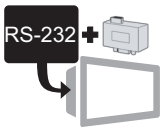
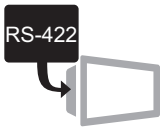
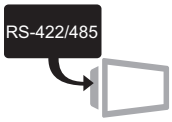
Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16 GT15
1	Max. 31 units	Between GOT and RS232C/RS485 converter 15m or less		GT16 GT15 GT11 Serial
		Between RS232C/ RS485 converter and temperature controller 1200m or less		
1	Max. 31 units	Between GOT and temperature controller 1200m or less		GT16
1	Max. 31 units	Between GOT and temperature controller 1200m or less		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16 GT15

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and RS232C/RS485 converter 15m or less Between RS232C/RS485 converter and temperature controller 1200m or less		GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and temperature controller 1200m or less		GT16
1	Max. 31 units	Between GOT and temperature controller 1200m or less		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16 GT15

* For only UP750, UT750, connect the RS-485 cable to the terminal block for High performance RS-485 communication.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 Communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 Communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 Communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 Communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 Communication	— (Built into GOT)	GT11 Serial
	4	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 Communication	GT15-RS4-TE	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Temperature controller

Image	No.	Name	Model name
	6	RS232C/RS485 converter	ML2-□

6 is manufactured by Yokogawa Electric Corporation. For details of the product, contact Yokogawa Electric Corporation.

(3) Cable

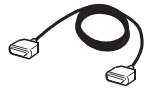
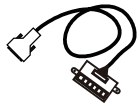
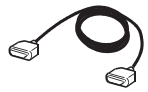
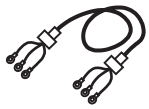
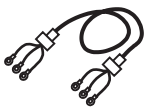
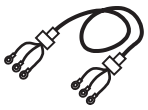
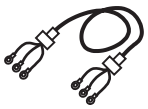
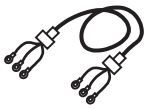
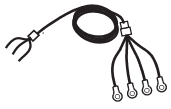
Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	9	RS-232 cable 1) *1 • Between GOT and RS232C/RS485 converter	GT09-C30R20304-9S (3m)	
	10	RS-485 cable 1) • Between temperature controller and RS232C/RS485 converter	(To be prepared by the user. Section 36.2 Connection Cable)	GT16 GT15 GT11 Serial
	11	RS-485 cable 4) *1 • Between temperature controller and RS-422 connector conversion cable • Between GOT and temperature controller	GT09-C30R40303-6T (3m) GT09-C100R40303-6T (10m) GT09-C200R40303-6T (20m) GT09-C300R40303-6T (30m)	

Image	No.	Name	Model name	Model
	12	RS-485 cable 3) • Between GOT and temperature controller	(To be prepared by the user. ☞ Section 36.2 Connection Cable)	GT16
	13	RS-485 cable 2) • Between temperature controller and RS-485 terminal block conversion modoules		
	14	RS-485 cable 5) • Between GOT and temperature controller		GT16 GT15
	15	RS-485 cable 6) • Between temperature controller and RS232C/ RS485 converter		GT16 GT15 GT11 Serial
	16	RS-485 cable 8) • Between GOT and temperature controller		GT16
	17	RS-485 cable 10) • Between GOT and temperature controller		
	18	RS-485 cable 7) • Between temperature controller and RS232C/ RS485 converter		
	19	RS-485 cable 9) • Between temperature controller and RS232C/ RS485 converter		
	20	RS-485 cable 11) • Between GOT and temperature controller		GT16 GT15
	21	RS-485 cable 12) • Between temperature controller and RS232C/ RS485 converter		GT16 GT15 GT11 Serial
	22	RS-485 cable 13) • Between GOT and temperature controller		GT16 GT15

*1 The RS-232 and RS-485 cable can be prepared by the user. (☞ Section 36.2 Connection Cable)

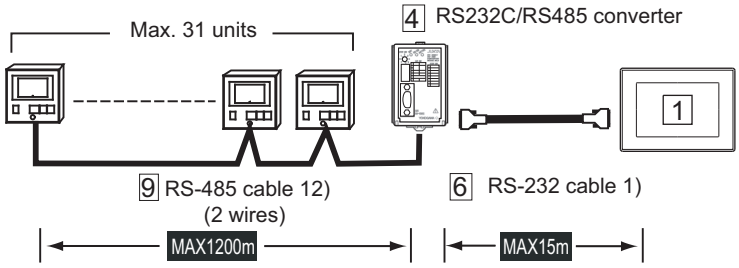
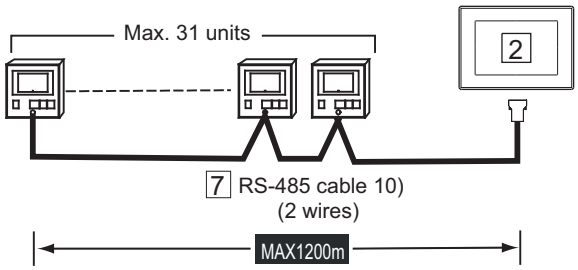
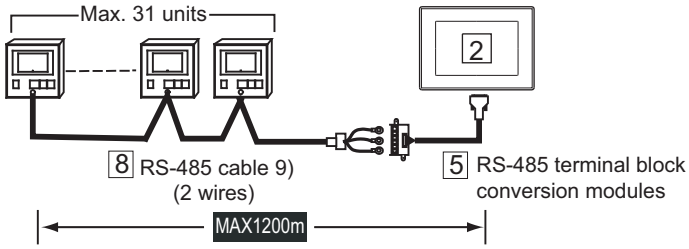
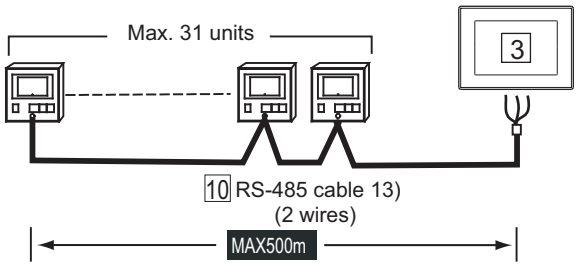
8 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

36.1.2 Connecting to UT100 Series

Communication driver

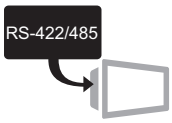
YOKOGAWA GREEN/UT100/UT2000

1 System configuration and connection conditions

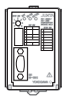
Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and RS232C/RS485 converter 15m or less Between RS232C/RS485 converter and temperature controller 1200m or less		GT16 GT15 GT11 Serial
1	Max. 31 units	Between GOT and temperature controller 1200m or less		GT16
1	Max. 31 units	Between GOT and temperature controller 1200m or less		
1	Max. 31 units	Between GOT and temperature controller 500m or less		GT16 GT15

2 System equipment

(1) GOT

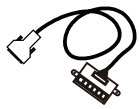
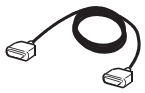
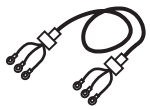
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 Communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 Communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 Communication	GT15-RS4-TE	GT16 GT15

(2) Interface converter

Image	No.	Name	Model name
	4	RS232C/RS485 converter	ML2-☐

4 is manufactured by Yokogawa Electric Corporation. For details of the product, contact Yokogawa Electric Corporation.

(3) Cable

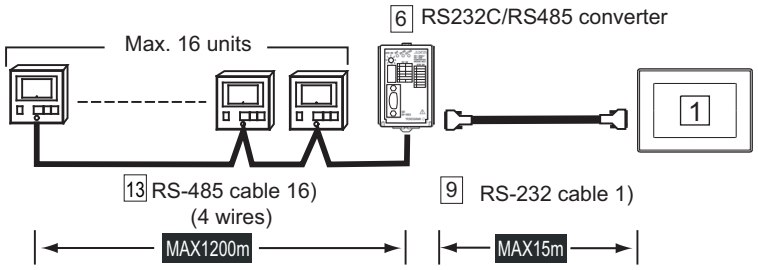
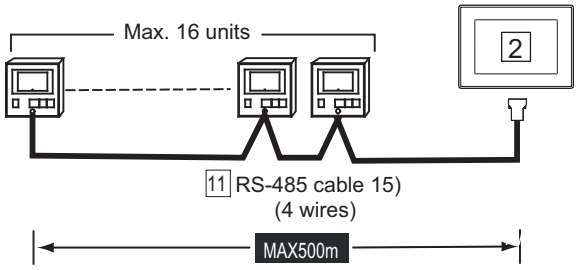
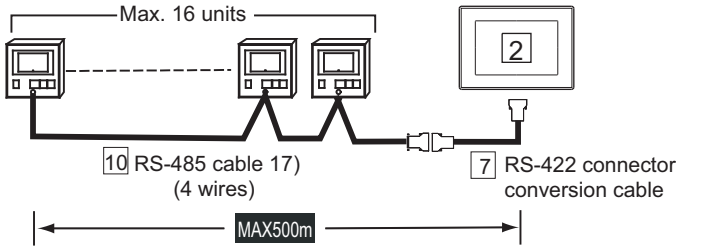
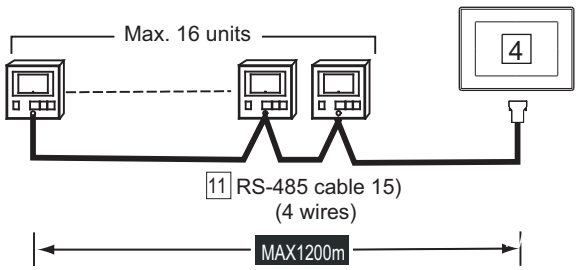
Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 1) • Between GOT and RS232C/RS485 converter	(To be prepared by the user. Section 36.2 Connection Cable)	GT16 GT15 GT11 Serial
	7	RS-485 cable 10) • Between GOT and temperature controller		GT16
	8	RS-485 cable 9) • Between temperature controller and RS-485 terminal block conversion modules		
	9	RS-485 cable 12) • Between temperature controller and RS232C/RS485 converter		GT16 GT15 GT11 Serial
	10	RS-485 cable 13) • Between GOT and temperature controller		GT16 GT15

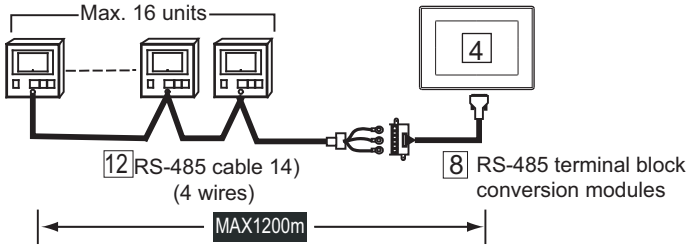
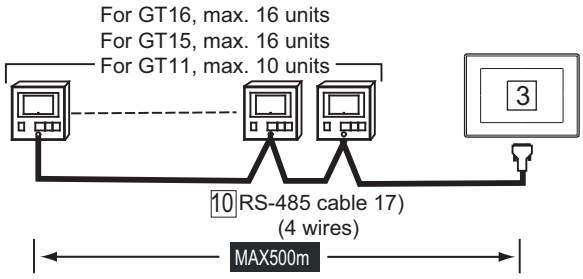
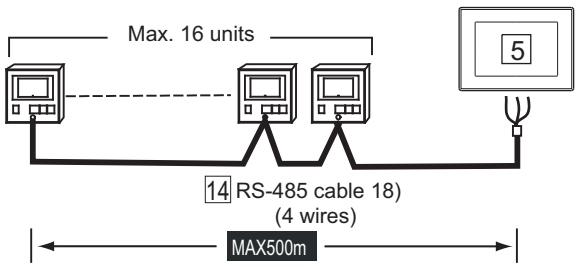
5 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

36.1.3 Connecting to UT2000 Series

Communication driver
YOKOGAWA
GREEN/UT100/UT2000

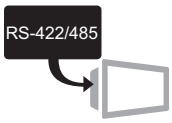
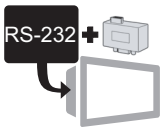
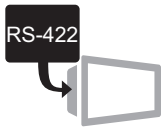
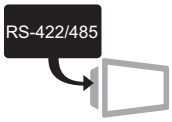
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 16 units	Between GOT and RS232C/RS485 converter 15m or less Between RS232C/RS485 converter and temperature controller 1200m or less		GT16 GT15 GT11 Serial
1	Max. 16 units	Between GOT and temperature controller 500m or less		GT16
1	Max. 16 units	Between GOT and temperature controller 500m or less		
1	Max. 16 units	Between GOT and temperature controller 1200m or less		

Connection conditions			System configuration	Model
Number of GOTs	Number of temperature controllers	Distance		
1	Max. 31 units	Between GOT and temperature controller 1200m or less		GT16
1	GT16, GT15: Max. 16 units GT11: Max. 10 units	Between GOT and temperature controller 500m or less		GT16 GT15 GT11 Serial
1	Max. 16 units	Between GOT and temperature controller 500m or less		GT16 GT15

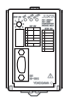
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 Communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 Communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 Communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 Communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 Communication	— (Built into GOT)	GT11 Serial
	4	RS-422/485 interface • For RS-485 communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 Communication	GT15-RS4-TE	GT16 GT15

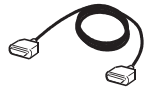
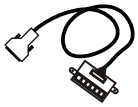
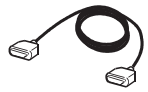
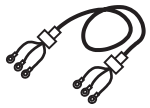
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Temperature controller

Image	No.	Name	Model name
	6	RS232C/RS485 converter	ML2-□

6 is manufactured by Yokogawa Electric Corporation. For details of the product, contact Yokogawa Electric Corporation.

(3) Cable

Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	8	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	
	9	RS-232 cable 1) *1 Between GOT and RS232C/RS485 converter	GT09-C30R20304-9S (3m)	GT16 GT15 GT11 Serial
	10	RS-485 cable 17) *1 • Between temperature controller and RS-422 connector conversion cable • Between GOT and temperature controller	GT09-C30R40304-6T (3m) GT09-C100R40304-6T (10m) GT09-C200R40304-6T (20m) GT09-C300R40304-6T (30m)	
	11	RS-485 cable 15) • Between GOT and temperature controller	(To be prepared by the user. Section 36.2 Connection Cable)	GT16
	12	RS-485 cable 14) • Between temperature controller and RS-485 terminal block conversion modules		
	13	RS-485 cable 16) • Between temperature controller and RS232C/RS485 converter		GT16 GT15 GT11 Serial
	14	RS-485 cable 18) • Between GOT and temperature controller		GT16 GT15

*1 The RS-232 and RS-422 cable can be prepared by the user. (Section 36.2 Connection Cable)

8 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

36.2 Connection Cable

The RS-232 cable or RS-485 cable used for connecting the GOT to the PLC should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable(☞Section 36.2.1)

Model name		Connection cable
		GT16, GT15, GT11
RS232C/RS485 converter	ML2-□	RS-232 cable 1)

2 RS-485 cable(☞Section 36.2.2)

Model name		Connection cable			
		GT16	GT15	GT11	RS232C/RS485 converter
Temperature controller*1	GREEN Series	RS-485 cable 2) RS-485 cable 3) RS-485 cable 4) RS-485 cable 5) RS-485 cable 7) RS-485 cable 8) RS-485 cable 9) RS-485 cable 10) RS-485 cable 11) RS-485 cable 13)	RS-485 cable 4) RS-485 cable 5) RS-485 cable 11) RS-485 cable 13)	RS-485 cable 4)	RS-485 cable 1) RS-485 cable 6) RS-485 cable 12)
	UT100 Series	RS-485 cable 9) RS-485 cable 10) RS-485 cable 13)	RS-485 cable 13)	-	RS-485 cable 12)
	UT2000 Series	RS-485 cable 14) RS-485 cable 15) RS-485 cable 17) RS-485 cable 18)	RS-485 cable 17) RS-485 cable 18)	RS-485 cable 17)	RS-485 cable 16)

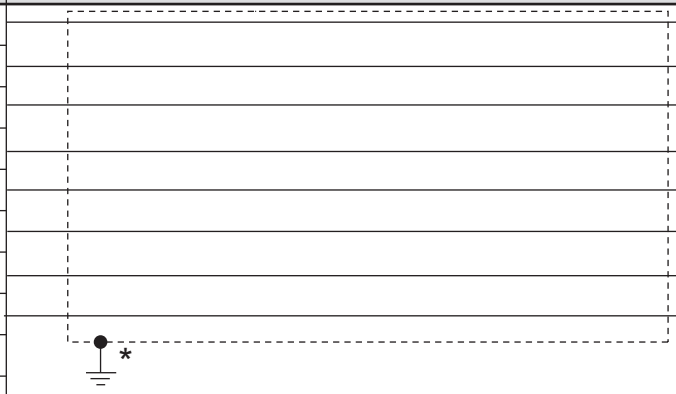
*1 Select a model equipped with the RS-485 communication interface.
For details of the models, refer to the following manual.
☞ User's Manual for the YOKOGAWA temperature controller

36.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a temperature controller.

1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	RS232C/RS485 converter side (ML2-☐)	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	CD
RD(RXD)	2		2	RD
SD(TXD)	3		3	SD
ER(DTR)	4		4	ER
SG	5		5	SG
DR(DSR)	6		6	DR
RS(RTS)	7		7	RS
CS(CTS)	8		8	CS
NC	9		9	—
FG	—			

* Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector type

9-pin D-sub (male) inch screw fixed type

(c) Connector model

GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-	17LE-23090-27(D3CC)	

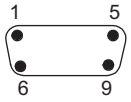
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(d) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) YOKOGAWA temperature controller side connector
Use the connector compatible with the YOKOGAWA temperature controller side.
For details, refer to the following manual.

☞ User's Manual for the YOKOGAWA temperature controller

3 Precautions when preparing cable

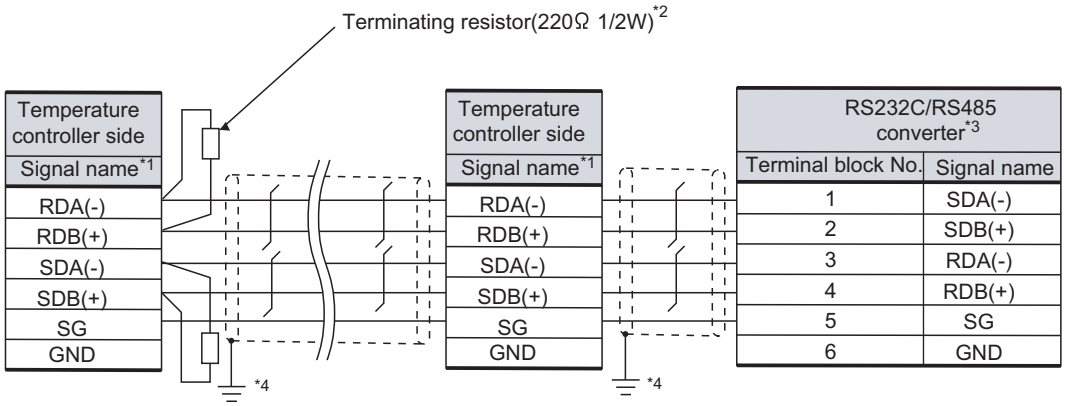
The length of the RS-232 cable must be 15m or less.

36.2.2 RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a temparature controller.

1 Connection diagram

(1) RS-485 cable 1)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

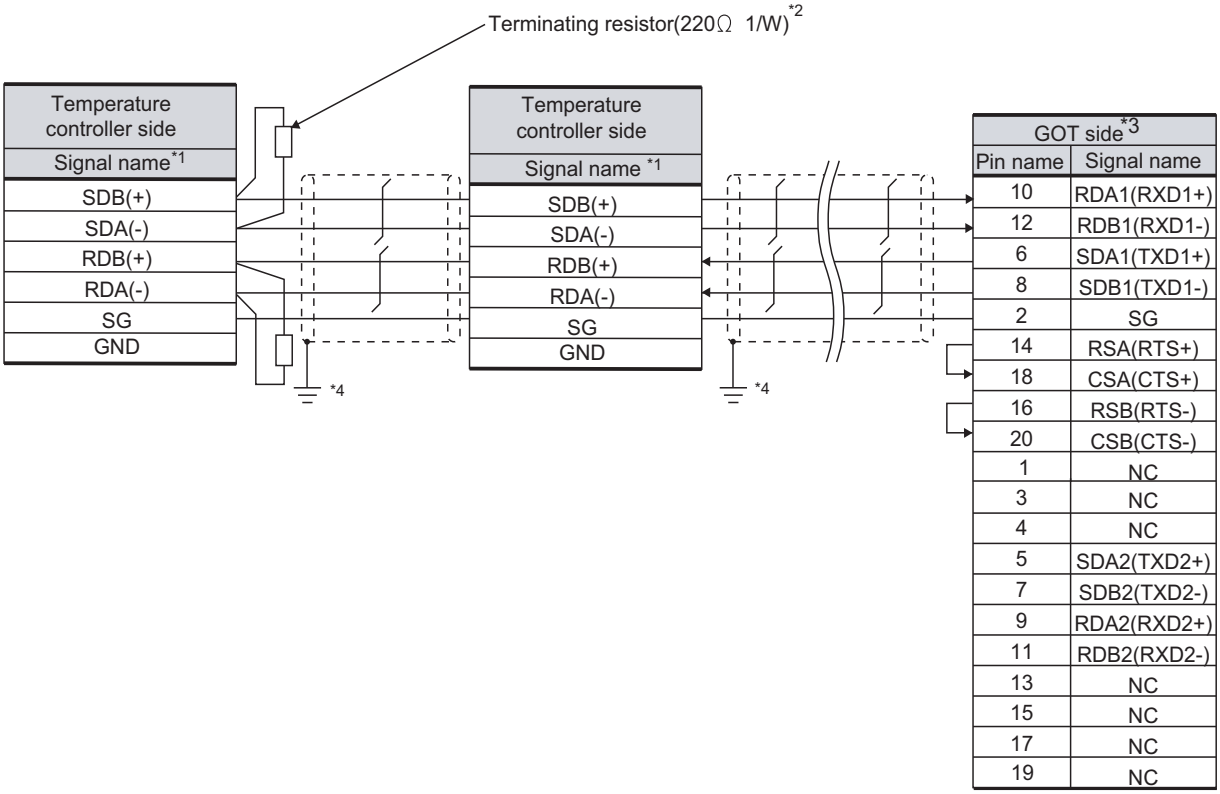
Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
RDA (-)	26	24
RDB (+)	25	23
SDB (-)	23	21
SDA (+)	24	22
SG	27	25

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Turn on the terminating switch on the RS232C/RS485 converter at the end.

*4 Connect FG grounding to the appropriate part of a cable shield line.

(2) RS-485 cable 2)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

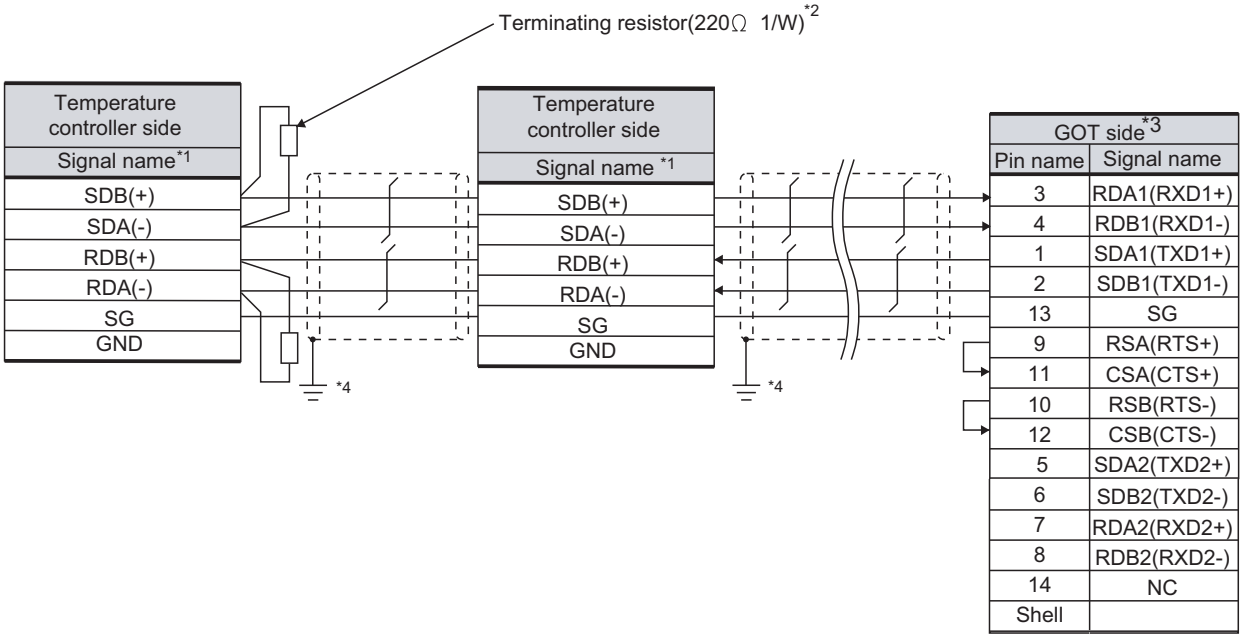
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(3) RS-485 cable 3)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

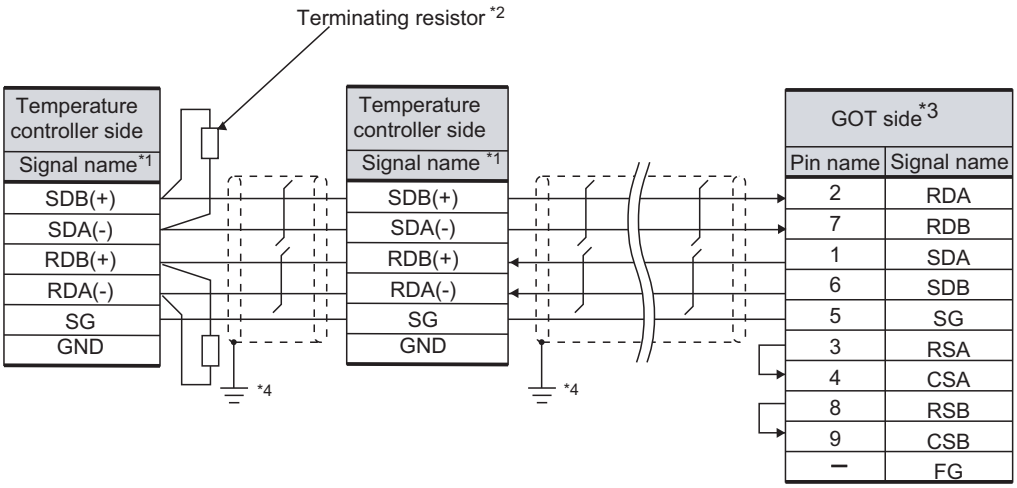
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(4) RS-485 cable 4)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

*2 Terminating resistor should be provided for a temperature controller which will be a terminal. The value of terminating resistor varies between GT15 and GT11.

For the GT15 :100Ω 1/2W

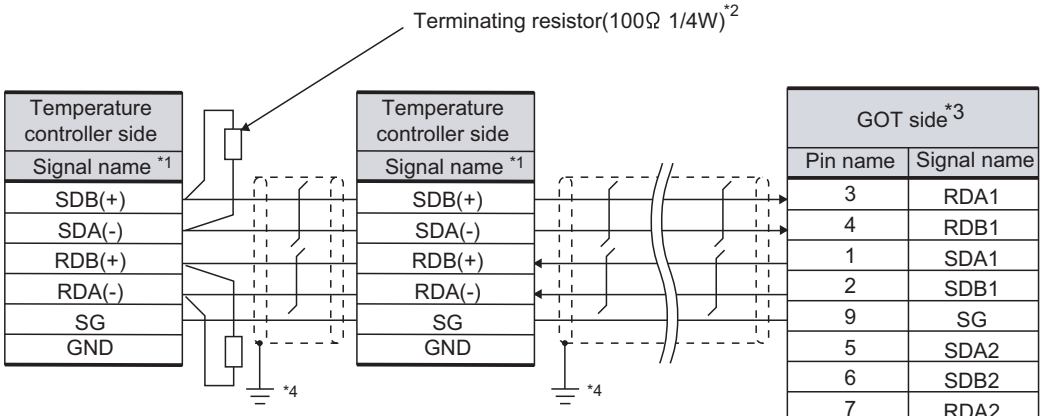
For the GT11 :220Ω 1/4W

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(5) RS-485 cable 5)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

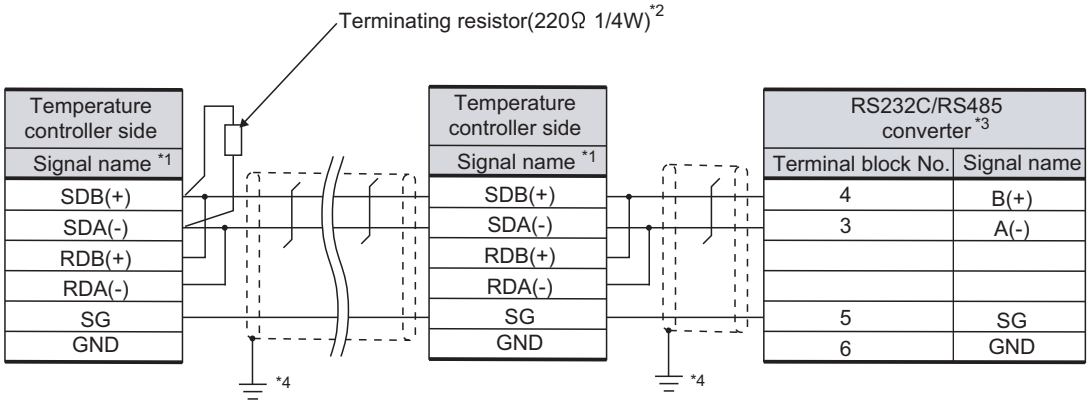
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(6) RS-485 cable 6)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

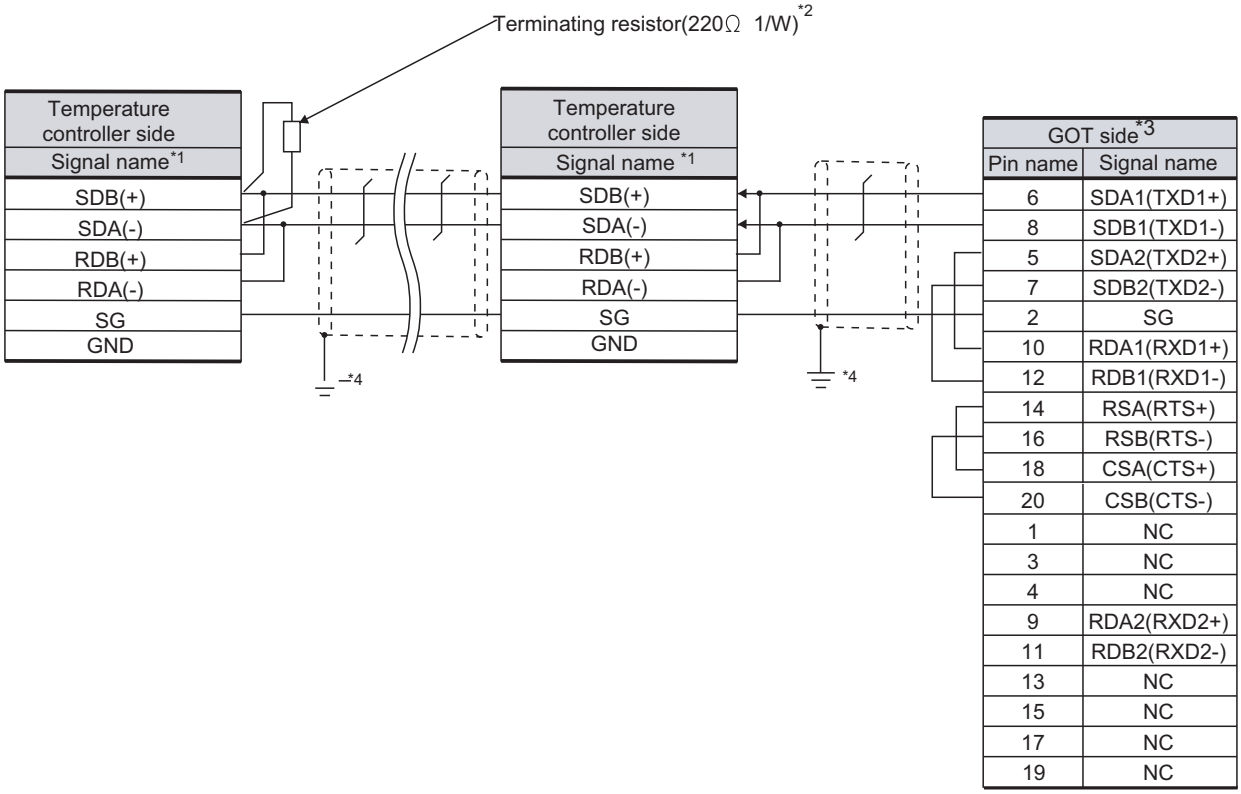
Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Turn on the terminating switch on the RS232C/RS485 converter at the end.

*4 Connect FG grounding to the appropriate part of a cable shield line.

(7) RS-485 cable 7)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

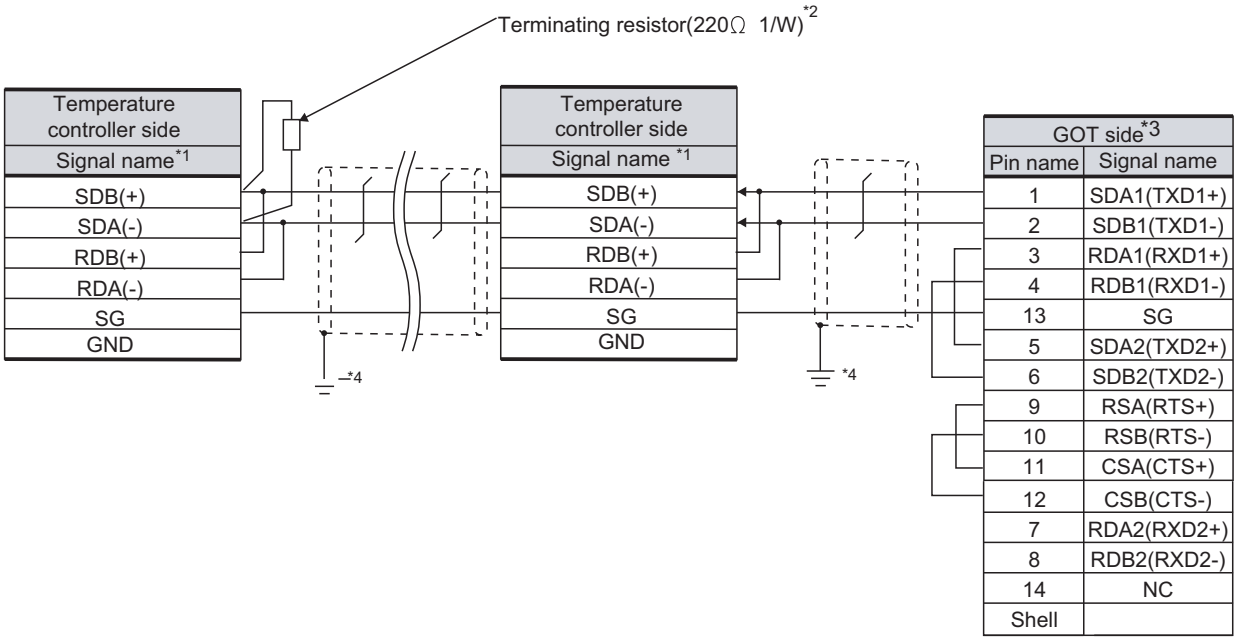
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

☞ 4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(8) RS-485 cable 8)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

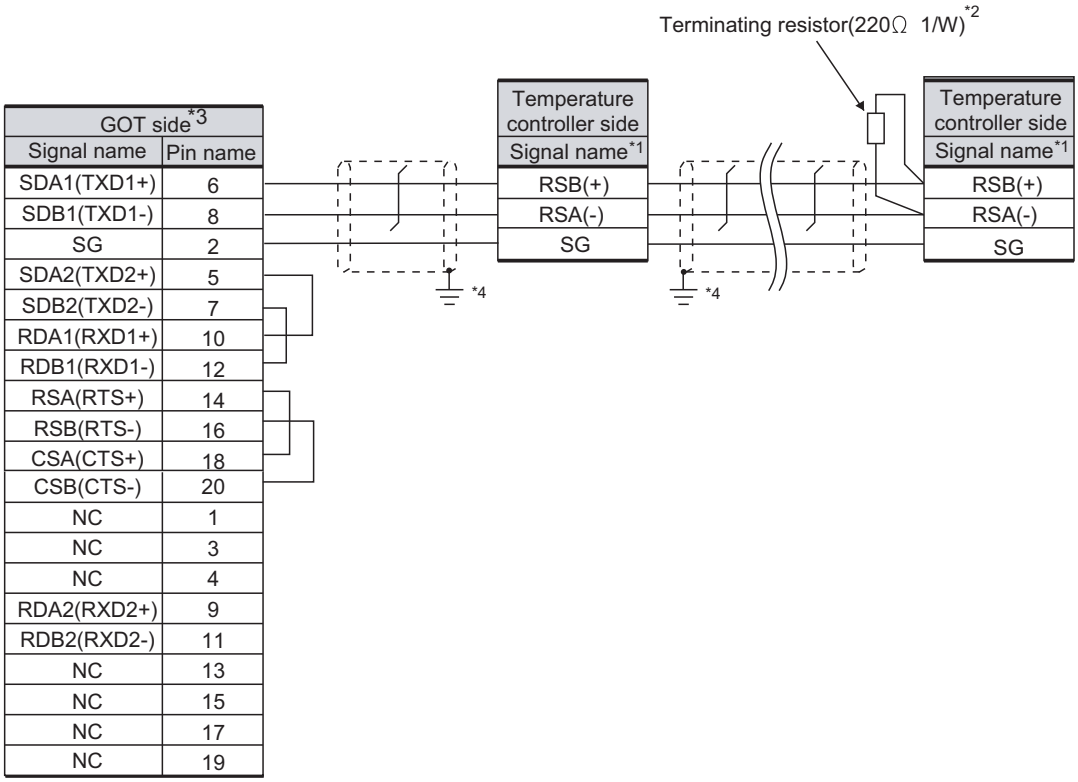
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(9) RS-485 cable 9)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller		
	GREEN Series UT750/UP750	UT100 Series UT130/UT150/UP150	UT100 Series UT152/UT155
	Pin No.	Pin No.	Pin No.
RSB (+)	28	3	26
RSA (-)	29	4	27
SG	30	5	28

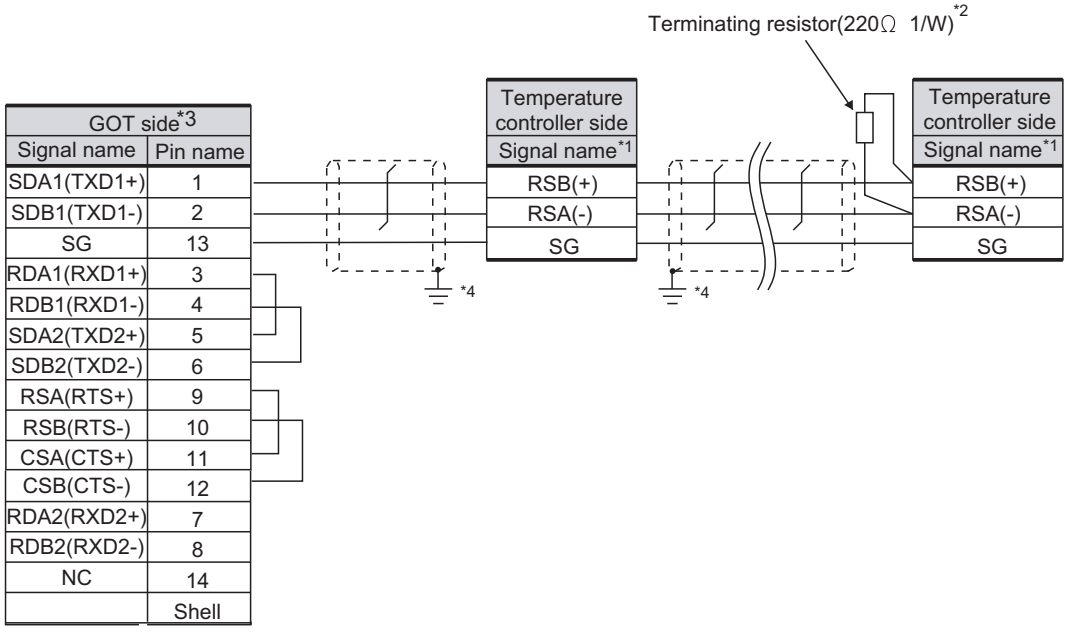
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

☞ 4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(10) RS-485 cable 10)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller		
	GREEN Series UT750/UP750	UT100 Series UT130/UT150/UP150	UT100 Series UT152/UT155
	Pin No.	Pin No.	Pin No.
RSB (+)	28	3	26
RSA (-)	29	4	27
SG	30	5	28

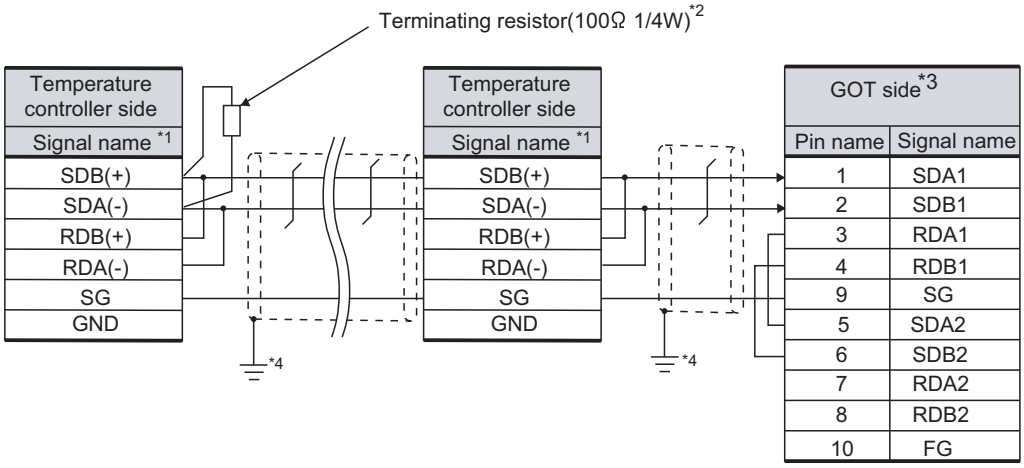
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

☞ 4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(11) RS-485 cable 11)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller	
	GREEN Series UT/UP/UM	GREEN Series US
	Pin No.	Pin No.
SDB (+)	23	21
SDA (-)	24	22
RDB (+)	25	23
RDA (-)	26	24
SG	27	25

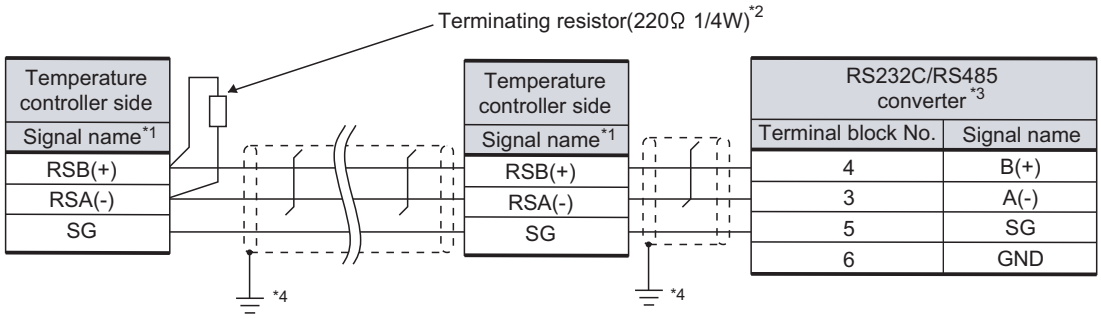
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

☞ 4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(12) RS-485 cable 12)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

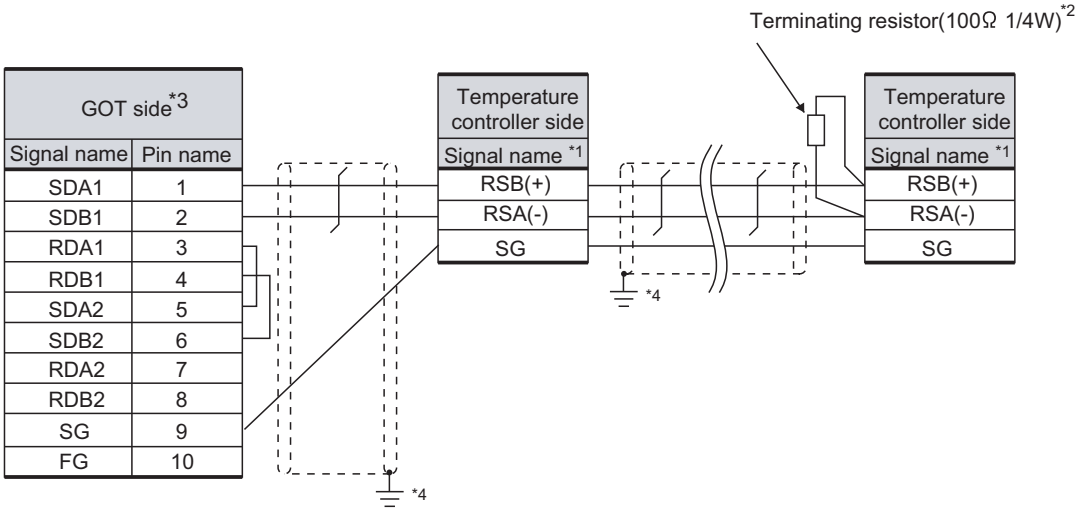
Signal name	Model of temperature controller		
	GREEN Series UT750/UP750	UT100 Series UT130/UT150/UP150	UT100 Series UT152/UT155
	Pin No.	Pin No.	Pin No.
RSB (+)	28	3	26
RSA (-)	29	4	27
SG	30	5	28

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Turn on the terminating switch on the RS232C/RS485 converter at the end.

*4 Connect FG grounding to the appropriate part of a cable shield line.

(13) RS-485 cable 13)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller		
	GREEN Series UT750/UP750	UT100 Series UT130/UT150/UP150	UT100 Series UT152/UT155
	Pin No.	Pin No.	Pin No.
RSB (+)	28	3	26
RSA (-)	29	4	27
SG	30	5	28

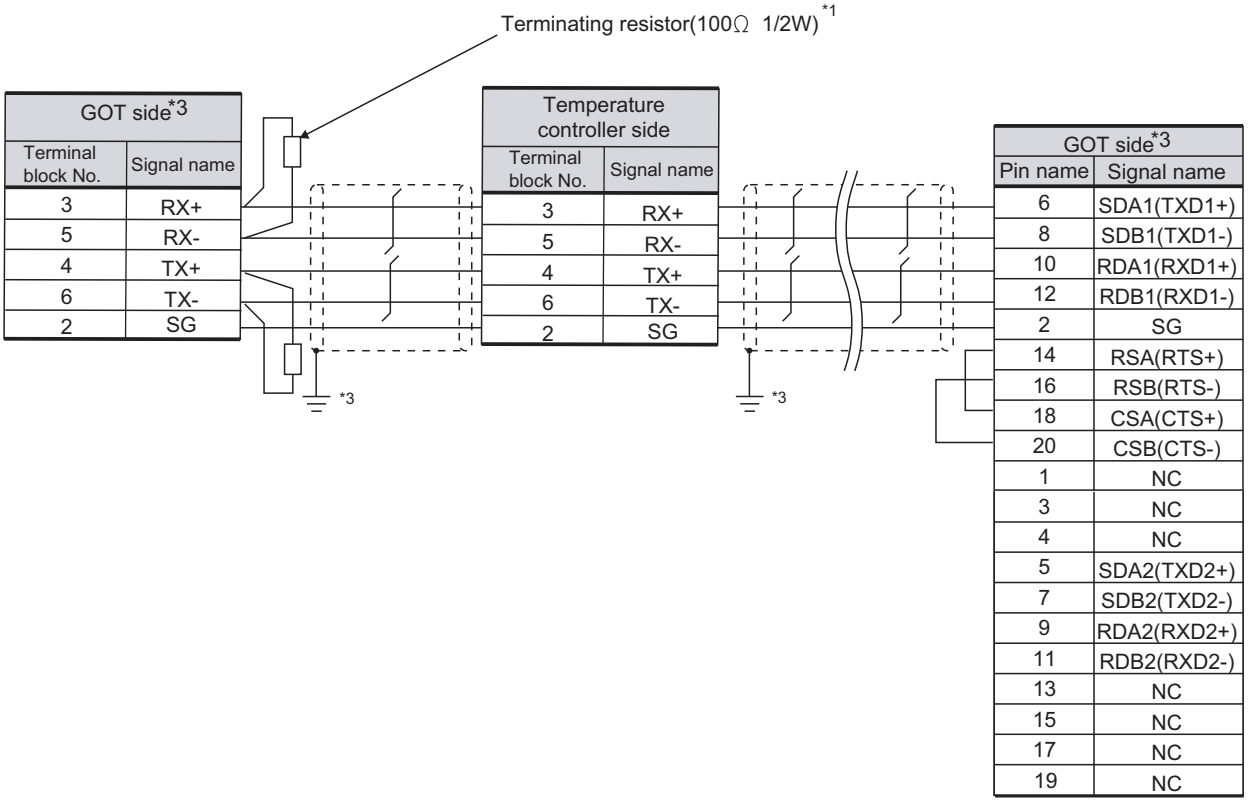
*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*4 Connect FG grounding to the appropriate part of a cable shield line.

(14) RS-485 cable 14)



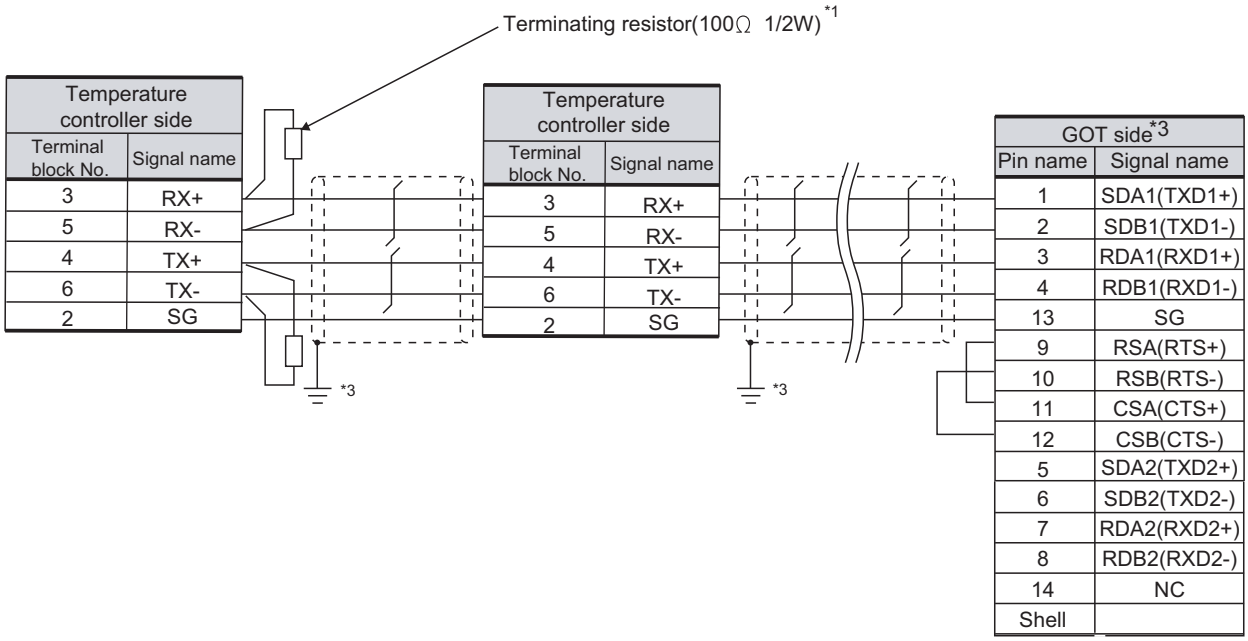
*1 Terminating resistor should be provided for a temperature controller which will be a terminal.

*2 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

(15) RS-485 cable 15)



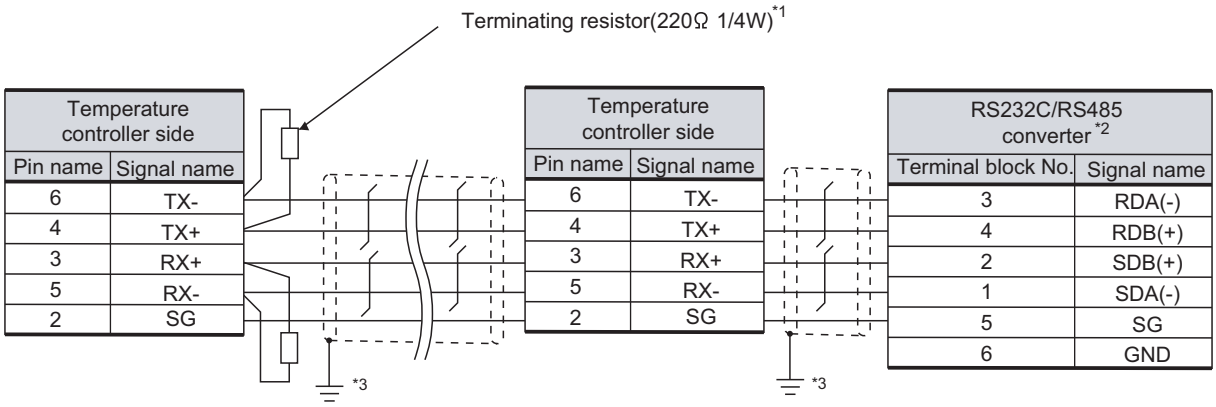
*1 Terminating resistor should be provided for a temperature controller which will be a terminal.

*2 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

(16) RS-485 cable 16)

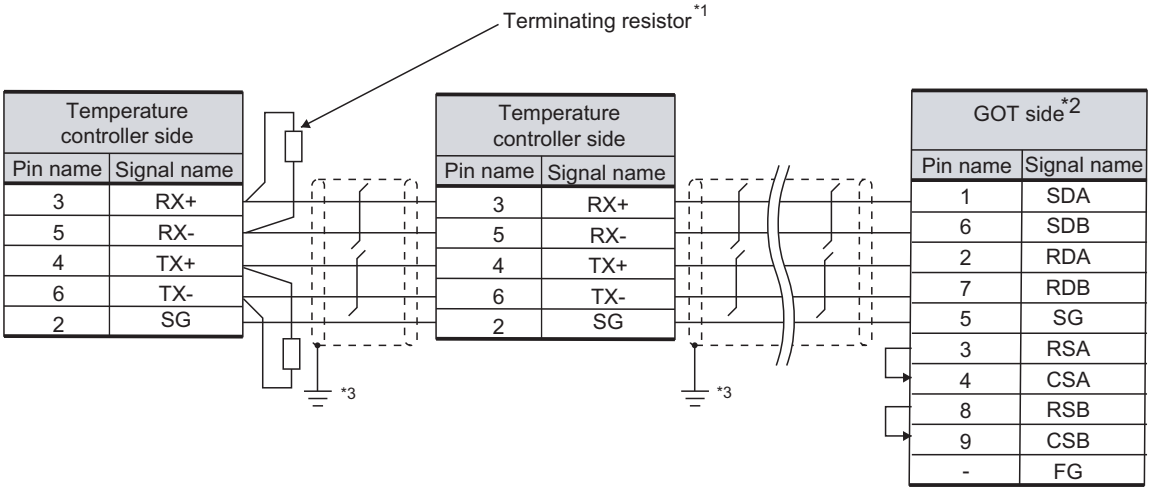


*1 Terminating resistor should be provided for a temperature controller which will be a terminal.

*2 Turn on the terminating switch on the RS232C/RS485 converter at the end.

*3 Connect FG grounding to the appropriate part of a cable shield line.

(17) RS-485 cable 17)



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.
The value of terminating resistor varies between GT15 and GT11.

For the GT15 :100Ω 1/2W

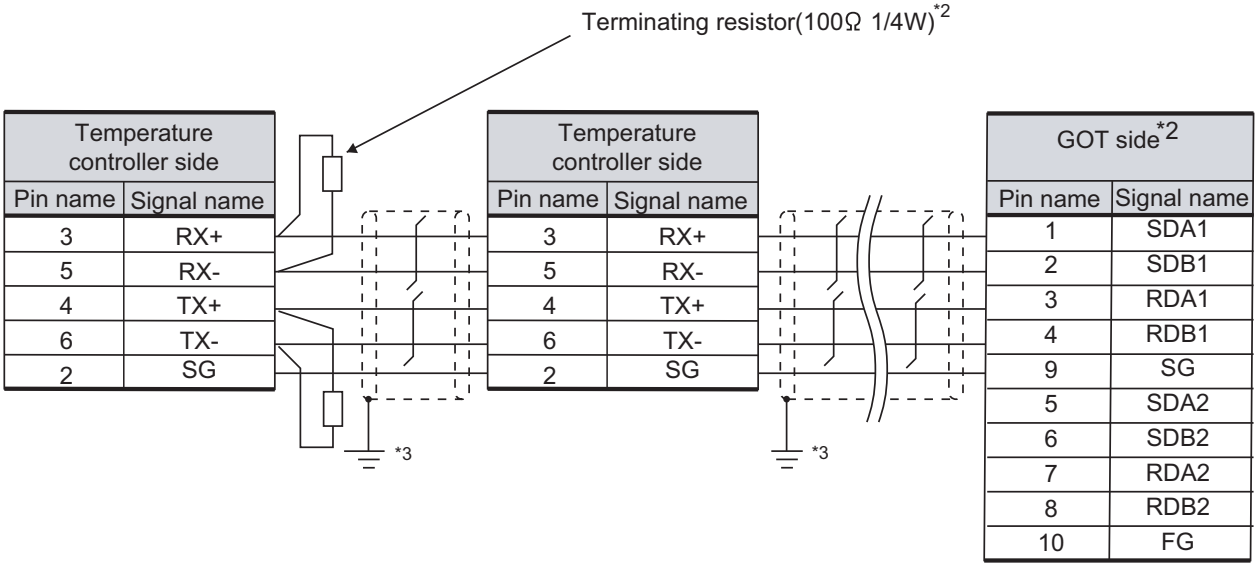
For the GT11 :220Ω 1/4W

*2 Set the terminating resistor of GOT side to "Enable".

☞ 4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

(18) RS-485 cable 18)



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.

*2 Set the terminating resistor of GOT side to "Enable".

4 Connecting terminating resistors

*3 Connect FG grounding to the appropriate part of a cable shield line.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use a connector and connector cover applicable to the GOT connector.

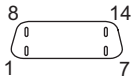
GOT	Connector model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT15-RS4-TE	SL-SMT3.5/10/90F BOX	—	Weidmuller interconnections inc.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(a) Connector pin arrangement

GT16

GOT main part connector
see from the front



14-pin (female)

(2) YOKOGAWA temperature controller side connector

Use the connector compatible with the YOKOGAWA temperature controller side module.
For details, refer to the following manual.

☞ User's Manual for the YOKOGAWA temperature controller

3 Precaution when preparing a cable

When connecting a RS-485 cable to the GOT, the length of the RS-485 cable must be 500m or less.

4 Connecting terminating resistors

(1) GOT

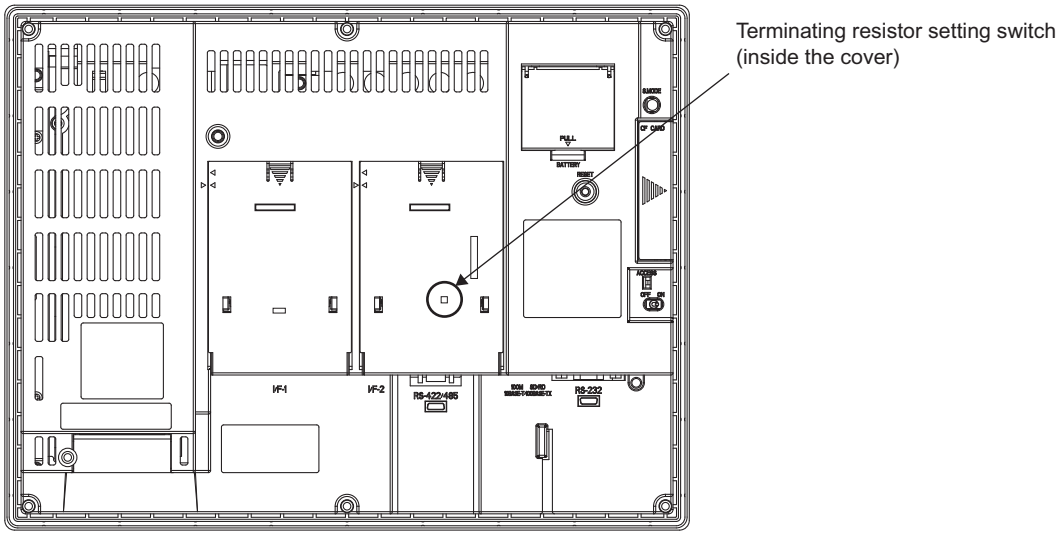
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

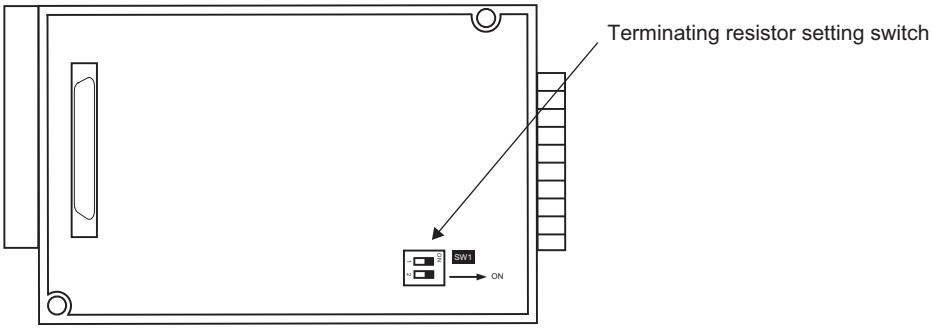


*1 The default setting is "Disable".

• For GT16



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

36.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 36.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 36.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 36.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 36.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 36.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 36.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 36.3.7
Checking for normal monitoring

Point

Comfirming the temperature controller side setting

This section explains the GOT side setting.
When confirming the temperature controller side setting, refer to the following.

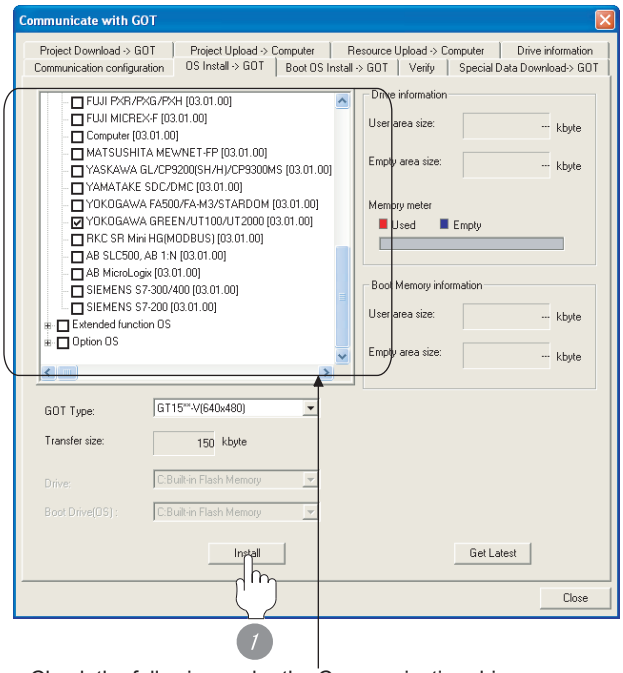
☞ Section 36.4 Temperature Controller Side Setting

36.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version □ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• YOKOGAWA GREEN/UT100/UT2000

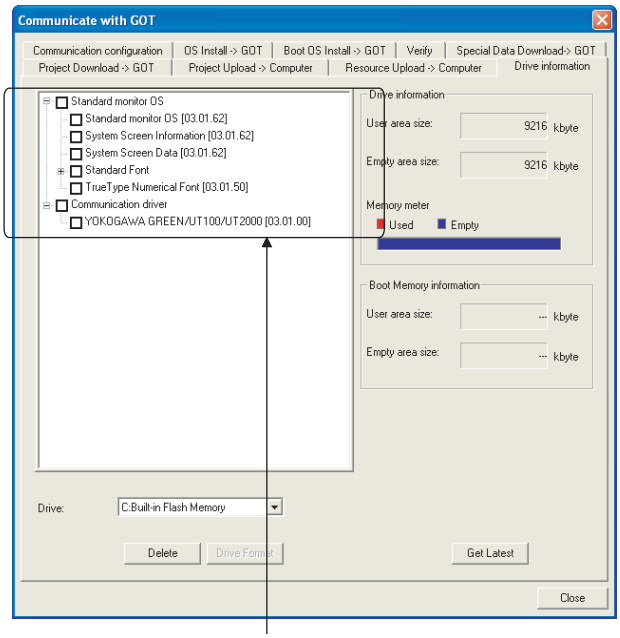
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

36.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: YOKOGAWA GREEN/UT100/UT2000

36.3.3 Setting communication interface (Communication settings)

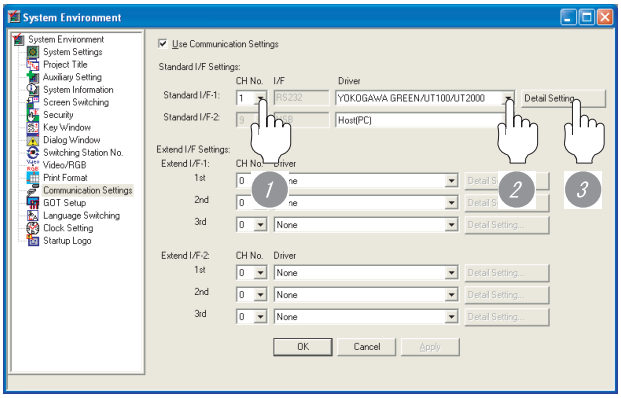
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

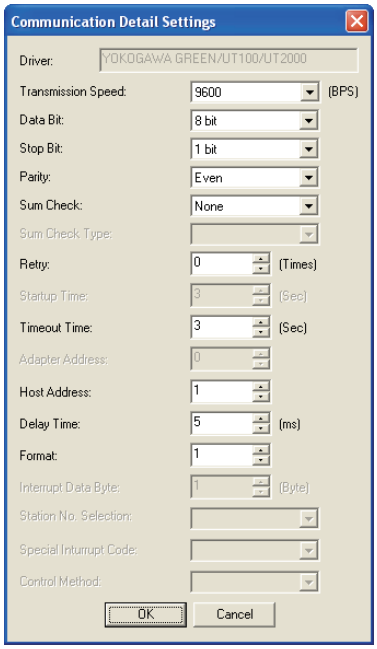
1 Communication settings



(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to "YOKOGAWA GREEN/UT100/UT2000".
3. Perform the detailed settings for the driver. (☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Odd>	None Even Odd
Sum check	Set whether or not to perform a sum check during communication. <Default: None>	Done, None
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Address	Specify the host address (station No. of the GOT to which the temperature controller is connected) in the connected network. <Default: 1>	1 to 99
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 5ms>	0 to 300 ms
Format	Select the communication format. <Default: 1> format 1: Accessible to GREEN/UT100/UT2000 Series format 2: Accessible to GREEN/UT2000 Series, Not accessible to UT100 Series.	1/2

Point

(1) Format

- When connecting to UT100 Series, specify the format 1.
- When connecting to only GREEN/UT2000 Series, specifying the format 2 is recommended.

(2) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT □ User's Manual

(3) Precedence in communication settings

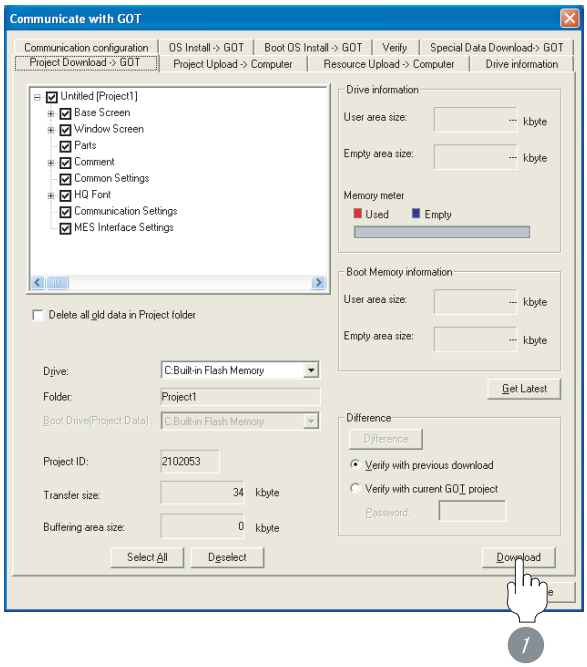
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

36.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

36.3.5 Attaching communication unit and connecting cable

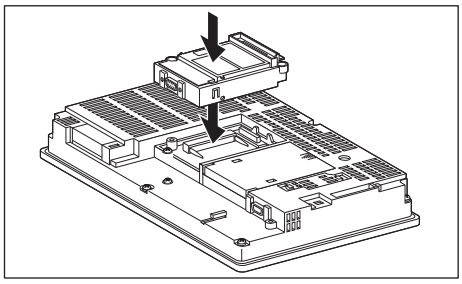
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

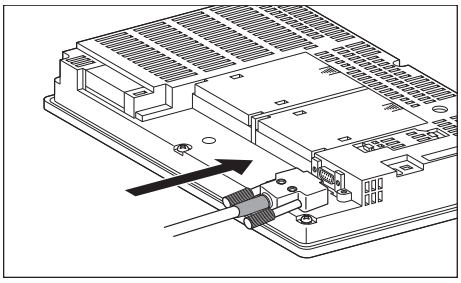
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

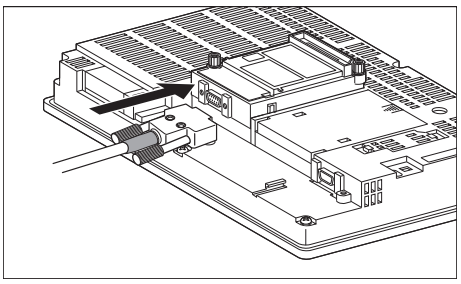
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



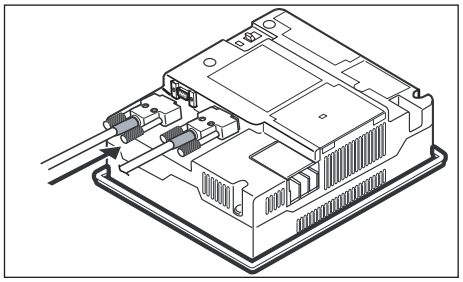
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

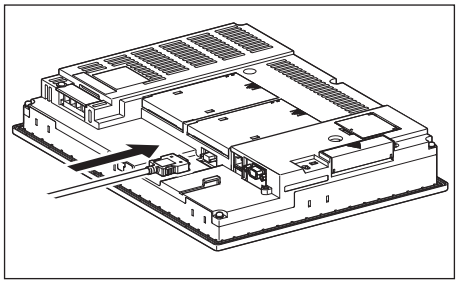


(2) How to connect the RS-422 cable

(a) For the GT16

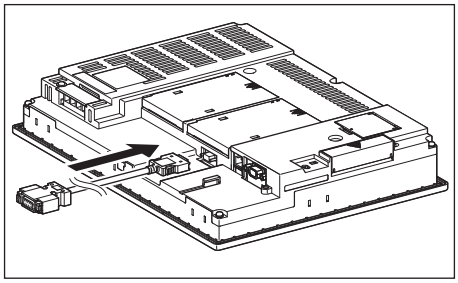
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

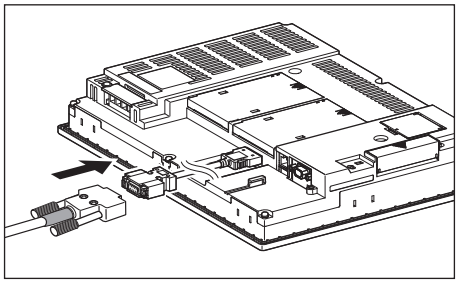


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

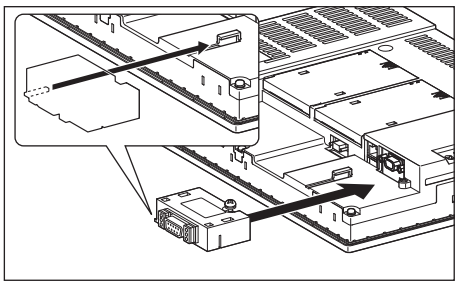


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

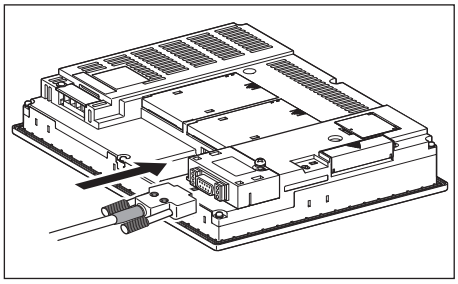


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

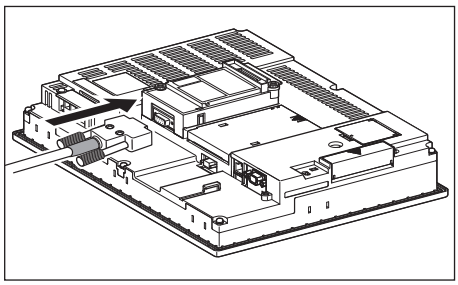


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

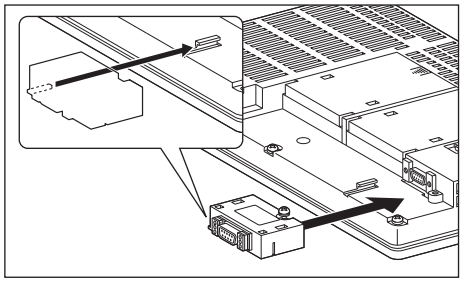
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



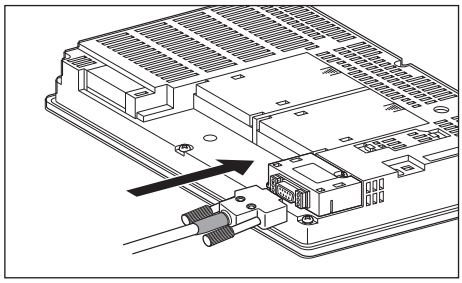
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

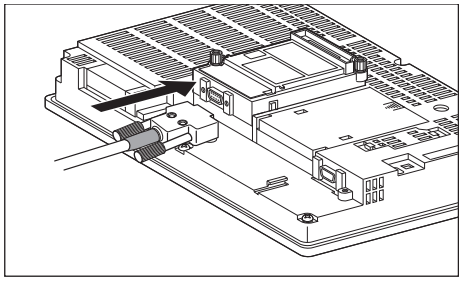


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

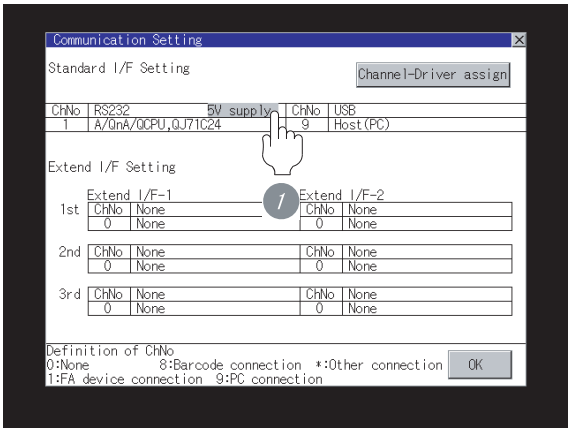
Point

When using the RS-422 conversion unit

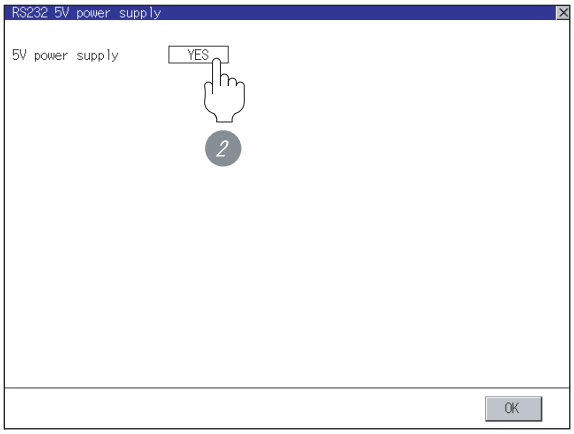
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT.
For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

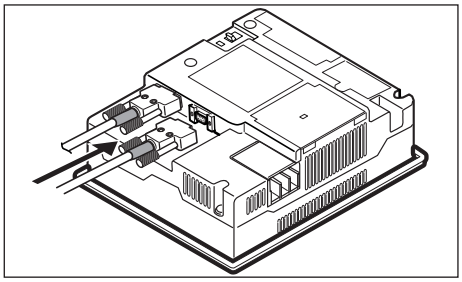


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

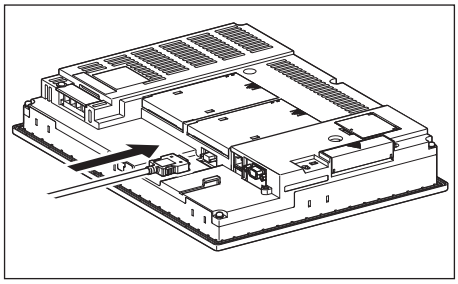


(3) How to connect the RS-485 cable

(a) For the GT16

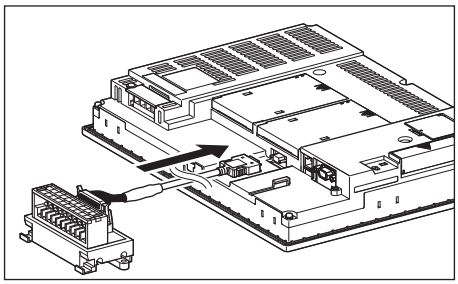
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

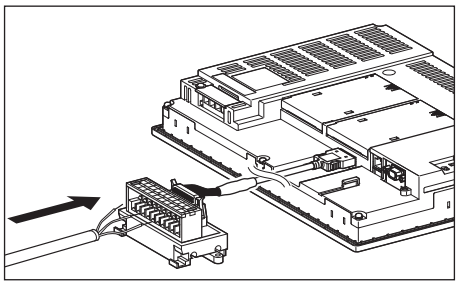


• Connection to the RS-422/485 interface with the RS-485 terminal block conversion modules

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

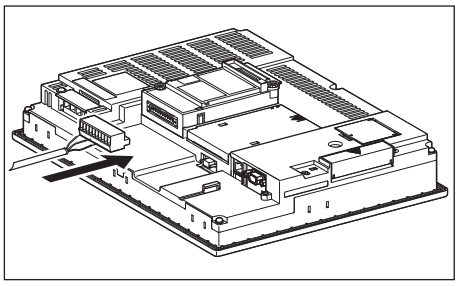


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

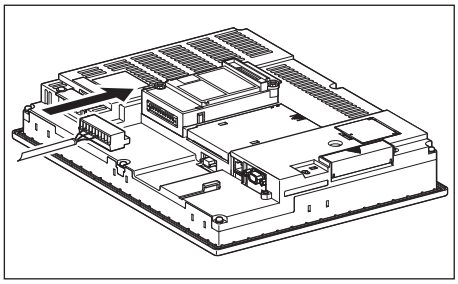


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



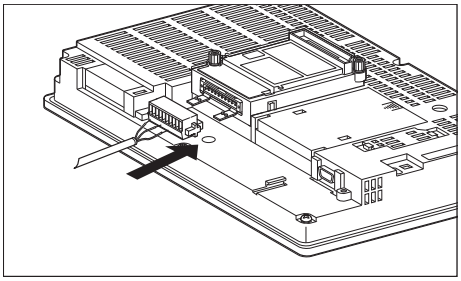
2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



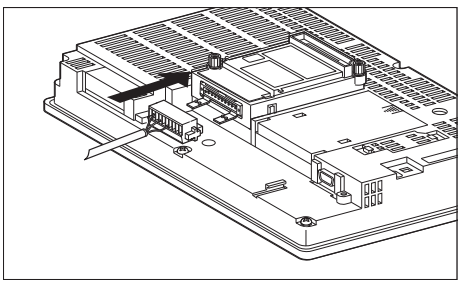
(b) For the GT15

• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



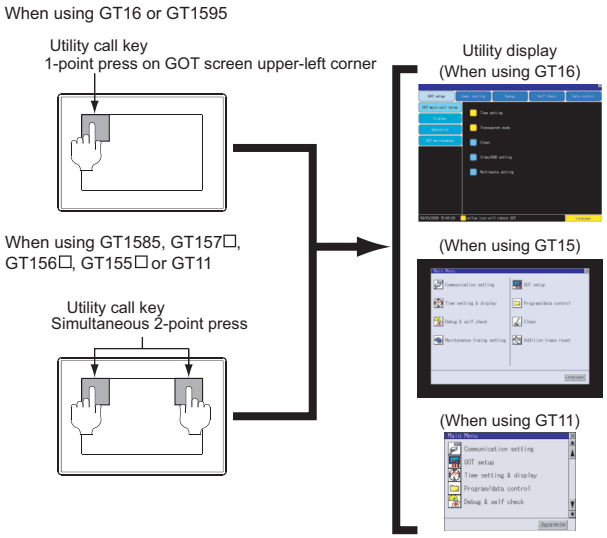
36.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

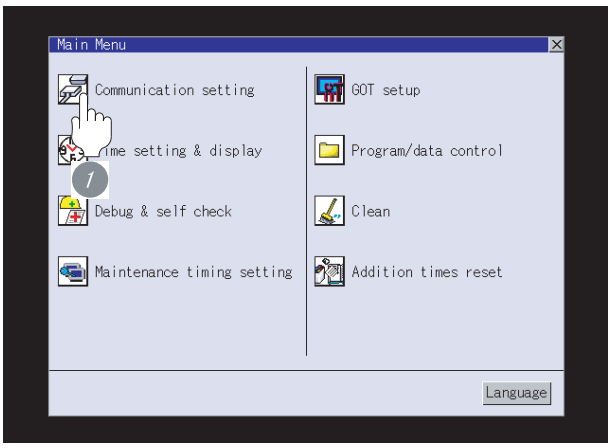


Point

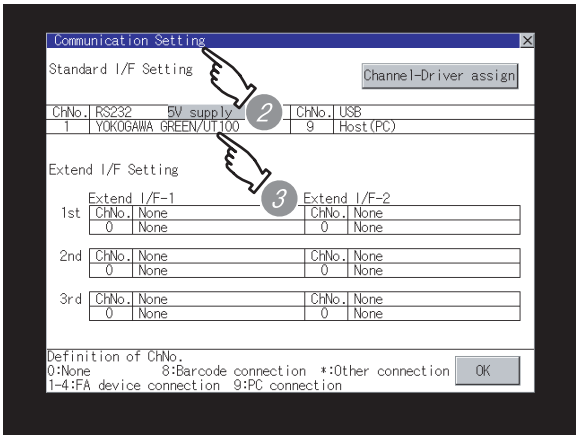
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: YOKOGAWA GREEN/UT100

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 36.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT □ User's Manual

36.3.7 Checking for normal monitoring

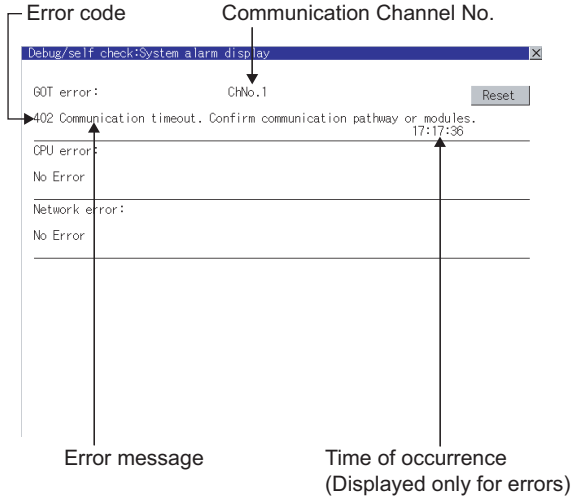
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

2 Perform an I/O check

Whether the temperature controller can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

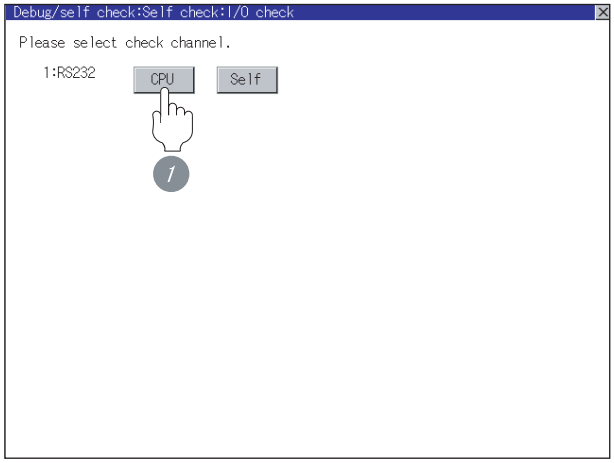
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

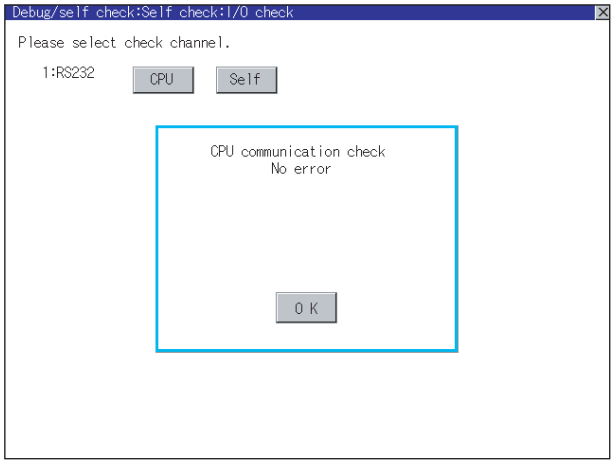
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected temperature controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the temperature controller side setting

When connecting the GOT, setting is required for the temperature controller side.

Confirm if the temperature controller side setting is correct.

☞ Section 36.4 Temperature Controller Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

36.4 Temperature Controller Side Setting

Point

(1) YOKOGAWA temperature controller
For details of YOKOGAWA temperature controller, refer to the following manual.
☞ User's Manual for the YOKOGAWA temperature controller

(2) RS232C/RS485 converter
For details on communication settings of the RS232C/RS485 converter, refer to the following manual.
☞ User's Manual for RS232C/RS485 converter

Model name		Reference
Temperature controller	GREEN	Section 36.4.1
	UT100	Section 36.4.2
	UT2000	Section 36.4.3
RS232C/RS485 converter	ML2-☐	Section 36.4.4

36.4.1 Connecting to GREEN Series

1 Communication settings

Make the communication settings by operating the key of the temperature controller.

(1) For the UT☐/UP☐/UM☐/US100 (except UT750, UP750)

Item	Set value
Transmission speed	9600bps (fixed)
Data length*1	7 bits, 8bits
Parity bit*1	Even, Odd, None
Stop bit*1	1 bit, 2bits
Address*2*3	1 to 99
Protocol selection *1	0:PC link communication (without sum check) 1:PC link communication (with sum check)

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the address with any of the other units.

(2) For the UT750, UP750

Item	Set value	
Transmission speed*1	RS-485 communication	9600bps (fixed)
	High performance RS-485 communication	9600bps, 19200bps, 38400bps
Data length*1	7 bits, 8bits	
Parity bit*1	Even, Odd, None	
Stop bit*1	1 bit, 2bits	
Address*2*3	1 to 99	
Protocol selection *1	RS-485 communication	0:PC link communication (without sum check) 1:PC link communication (with sum check)
	High performance RS-485 communication	0:PC link communication (without sum check) 1:PC link communication (with sum check)

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the address with any of the other units.

36.4.2 Connecting to UT100 Series

1 Communication settings

Make the communication settings by operating the key of the temperature controller.

Item	Set value
Transmission speed	9600bps
Data length*1	7 bits, 8bits
Parity bit*1	Even, Odd, None
Stop bit*1	1 bit, 2bits
Address*2*3	1 to 99
Protocol selection *1	0:PC link communication (without sum check) 1:PC link communication (with sum check)

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the address with any of the other units.

36.4.3 Connecting to UT2000 Series

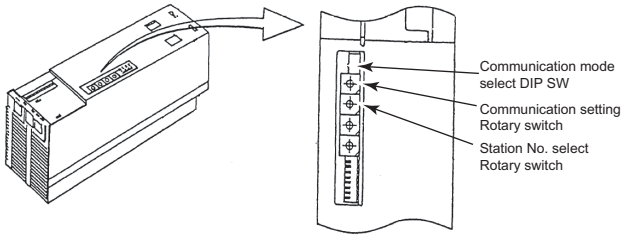
1 Communication settings

Make the communication settings using setting switches.

Item	Set value
Transmission speed	9600bps
Data length	8bits (fixed)
Parity bit*1	Even, Odd, None
Stop bit	1 bit (fixed)
Station No. *2	1 to 16
Communication mode	PC link communication mode

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.

2 Settings by switch



(1) Settings of the transmission speed and the parity

Make those settings by operating the communication setting Rotary switch.

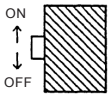
Switch positions	Transmission speed	Parity
0	9600bps	None
1		Odd
2		Even



(2) A setting of the communication mode

Make this setting by operating the communication mode select DIP SW.

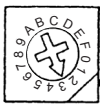
Switch positions	communication mode
ON	PC link communication mode



(3) A setting of the station No.

Make this setting by operating the station No. select Rotary switch.

Switch positions	Station No.
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
A	11
B	12
C	13
D	14
E	15
F	16



36.4.4 Connecting to RS232C/ RS485 converter

1 Communication settings

Make the communication settings using setting switches.

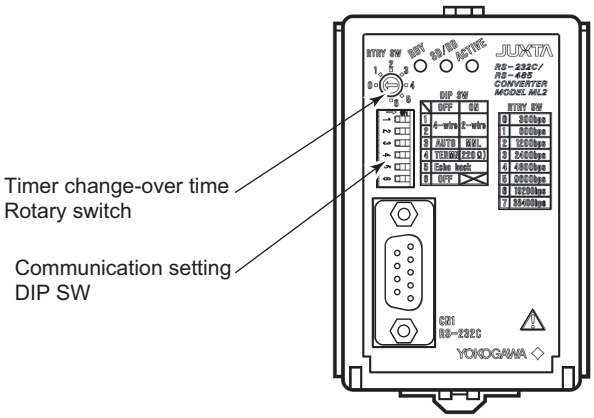
Item	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Setting (2-wire/4-wire)*2	2-wire, 4-wire
Terminating resistor*2	with, without
Echo back	OFF
RS-485 driver-active control	AUTO

*1 Adjust the settings with GOT settings.

*2 Refer to the following connection diagram for setting.

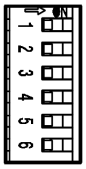
☞ 36.2.2RS-485 cable

2 Settings by switch



(1) Settings of the setting (2-wire/4-wire), the RS-485 driver-active control, the terminating resistor, the echo back

Make those settings by operating the communication setting DIP SW.



Item	Set value	Switch No.					
		1	2	2	3	5	6
Setting (2-wire/4-wire)	4-wire	0FF	0FF				-
	2-wire	ON	ON				
RS-485 driver-active control	AUTO			0FF			
Terminating resistor	with				ON		
	without				0FF		
Echo back	OFF					0FF	

(2) A setting of the transmission speed

Make this setting by operating the timer change-over time Rotary switch.

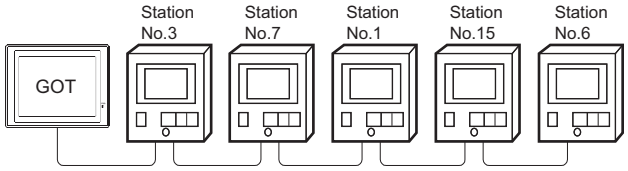
Switch positions	Transmission speed
5	9600bps
6	19200bps
7	38400bps



36.4.5 Station NO. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Specification range
1 to 99

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).

When specifying the station No. from 100 to 115 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station NO.	Compatible device	Setting range
100	GD10	0 to 99 For the setting other than the above, error (dedicated device is out of range) will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
  In the WORD BIT write-in operation, only the indicating controller whose station No. is the the same as host address is applicable.
  For details of host address setting, refer to the following.
  ☞ Section 36.3.3 Setting communication interface (Communication settings)
- In the read-out operation, only the indicating controller whose station No. is the the same as host address is applicable. For details of host address setting, refer to the following.
  ☞ Section 36.3.3 Setting communication interface (Communication settings)

Point

The all station specification can be set for the following temperature controllers only.
UT420, UT450, UT520, UT550, UT551, UT750,
UP550, UP750,
US1000

36.5 Precautions

1 Station number settings of temperature controller

In the system configuration, the temperature controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Section 36.3.3 Setting communication interface (Communication settings)

2 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Disconnecting some of multiple connected equipments

The GOT can disconnect some of multiple connected equipments by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipments.

For details of GOT internal device setting, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual (2.9.1 GOT internal devices)

36.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Connecting to the YOKOGAWA temperature controller	Supporting the YOKOGAWA temperature controller connection	2.43V	Communication driver YOKOGAWA GREEN/UT100/ UT2000 [03.01.**]
	Supporting the following: • Disconnecting some of multiple connected equipments • Preventing the monitoring operation of the faulty station automatically	2.58L	Communication driver YOKOGAWA GREEN/UT100/ UT2000 [03.03.**]
	Supporting the connections to GT16	2.90U	Communication driver YOKOGAWA GREEN/UT100/ UT2000 [04.02.**]

MEMO

37

CONNECTION TO RKC TEMPERATURE CONTROLLER



37.1 System Configuration . . . . . page 37-2

This section describes the equipment and cables needed when connecting a GOT to a RKC temperature controller. Select a system suitable for your application.

37.2 Connection Cable. . . . . page 37-22

This section describes the specifications of the cables needed when connecting a GOT to a RKC temperature controller. Check the specifications of the connection cables.

37.3 Preparatory Procedures for Monitoring . . . . . page 37-46

This section provides the procedures to be followed before performing monitoring in connection to a RKC temperature controller.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

37.4 Temperature Controller Side Setting . . . . . page 37-56

The RKC temperature controller side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

37.5 Precautions . . . . . page 37-63

This section describes the precautions about temperature controller connection.
Refer to this section without fail before starting temperature controller connection.

37.6 List of Functions Added by Version Upgrade . . . . . page 37-64

This section describes the functions added by version upgrade of GT Designer2 or OS.

37.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

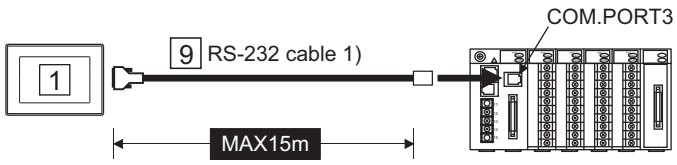
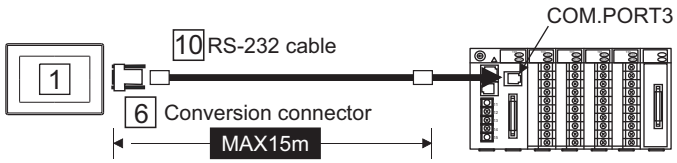
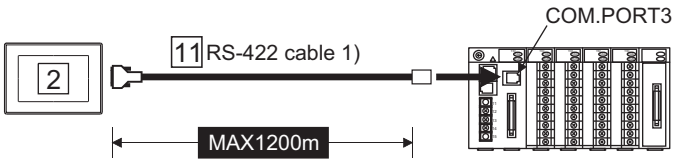
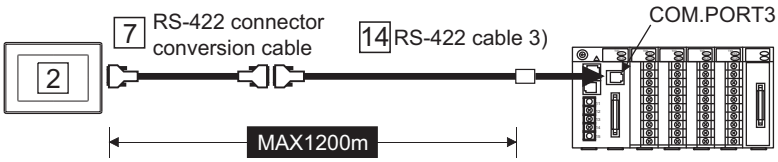
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

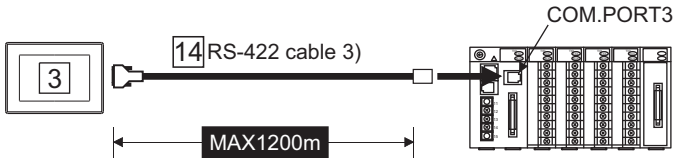
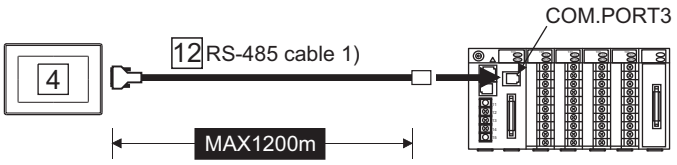
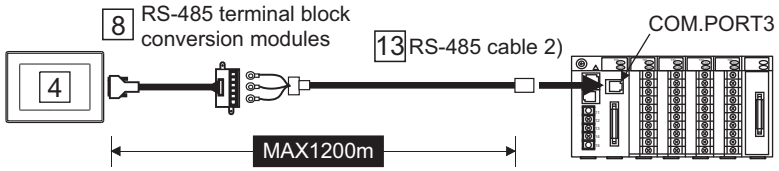
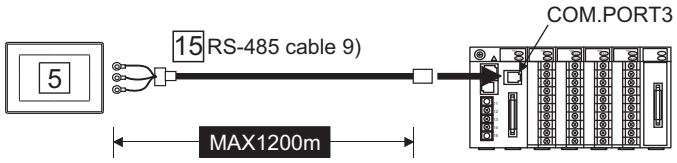
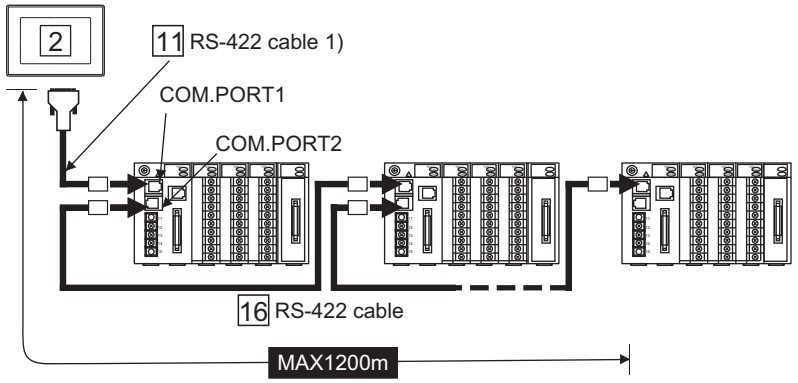
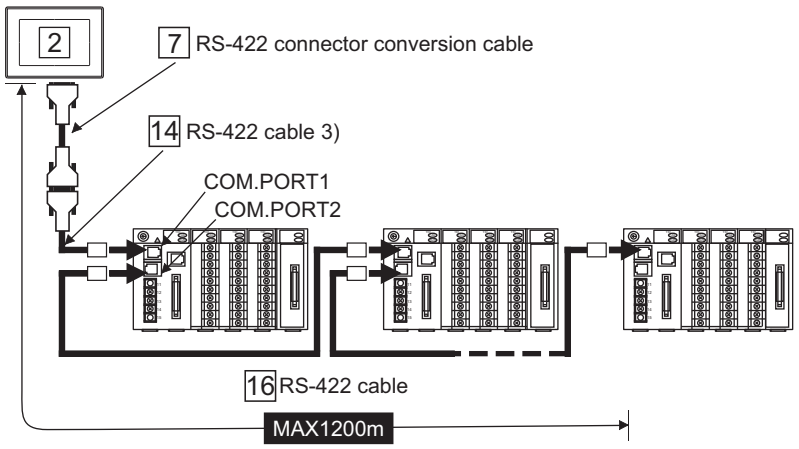
37.1.1 Connecting to H-PCP-J

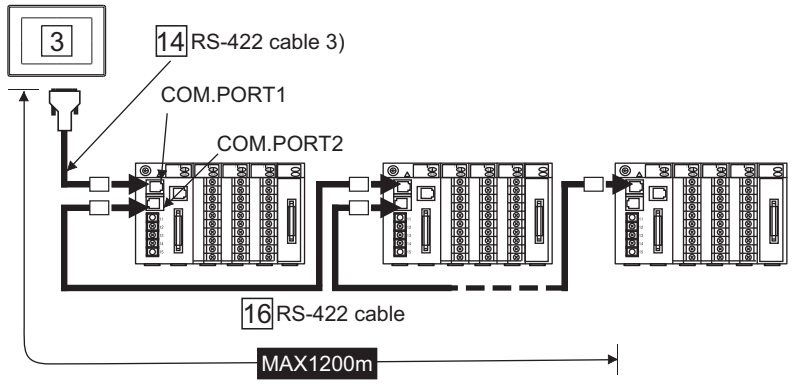
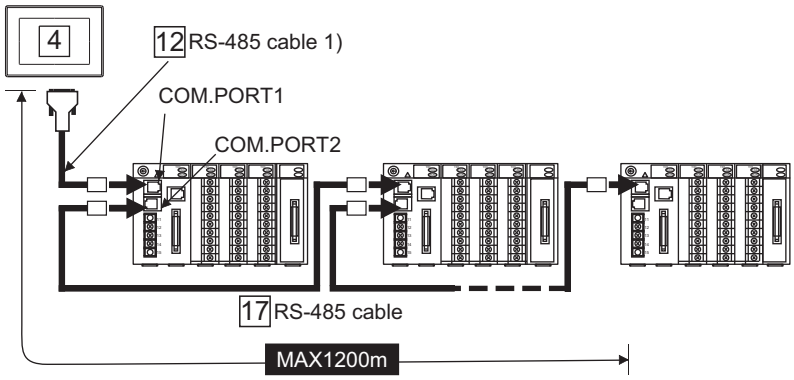
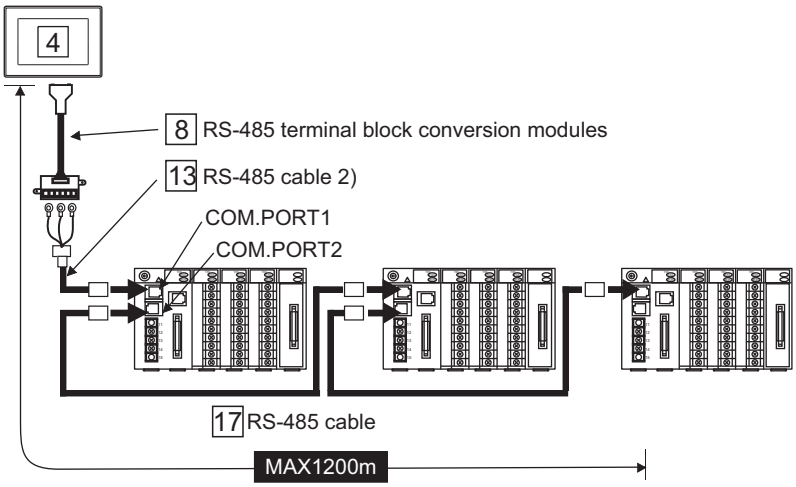
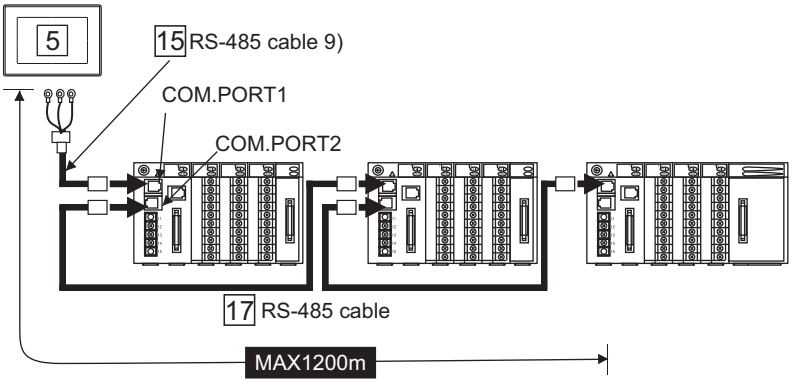
Communication driver

RKC
SR Mini HG(MODBUS)

1 System configuration and connection conditions

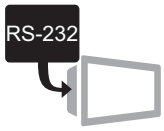
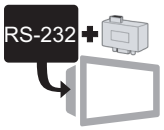
Connection conditions			System configuration	Model
Numbe of GOTs	Numbe of Temperatur controllers	Distance		
1	1	15m or less		GT16 GT15 GT11 Serial
1	1	15m or less		GT16 GT15 GT11 Serial
1	1	1200m or less		GT16
1	1	1200m or less		GT16

Connection conditions			System configuration	Model
Numbe of GOTs	Numbe of Temperatur controllers	Distance		
1	1	1200m or less		GT16 GT15 GT11 Serial
1	1	1200m or less		GT16
1	1	1200m or less		GT16
1	1	1200m or less		GT16 GT15
1	16 (max.)	1200m or less		GT16
1	16 (max.)	1200m or less		GT16

Connection conditions			System configuration	Model
Numbe of GOTs	Numbe of Temperatur controllers	Distance		
1	16 (max.)	1200m or less		GT16 GT15 GT11 Serial
1	16 (max.)	1200m or less		GT16
1	16 (max.)	1200m or less		GT16
1	16 (max.)	1200m or less		GT16 GT15

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 Communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 Communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 Communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 Communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 Communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 Communication	— (Built into GOT)	GT11 Serial
	4	RS-422/485 interface • For RS-485 Communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 Communication	GT15-RS4-TE	GT16 GT15

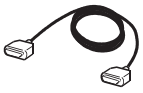
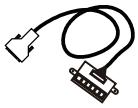
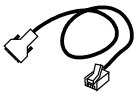
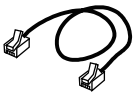
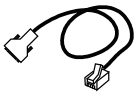
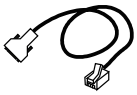
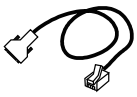
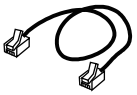
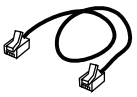
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Temperature controller

Image	No.	Name	Model name
	6	Conversion connector	FAX067

6 is a product manufactured by RKC. For details of this product, contact RKC.

(3) Cable

Image	No.	Name	Model name	Model
	7	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	8	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	9	RS-232 cable 1)*1 • Between temperature controller and GOT	W-BF-28-0500(0.5m), W-BF-28-1000(1m), W-BF-28-3000(3m)	GT16 GT15 GT11 Serial
	10	RS-232 cable • Between conversion connector and temperature controller	W-BF-02-0500(0.5m), W-BF-02-1000(1m), W-BF-02-3000(3m)	GT16 GT15 GT11 Serial
	11	RS-422 cable 1) • Between temperature controller and GOT	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16
	12	RS-485 cable 1) • Between temperature controller and GOT		GT16
	13	RS-485 cable 2) • Between temperature controller and RS-485 terminal block conversion modules		GT16
	14	RS-422 cable 3) • Between temperature controller and GOT • Between temperature controller and RS-422 connector conversion cable	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16 GT15 GT11 Serial
	15	RS-485 cable 9)*1*2 • Between temperature controller and GOT	W-BF-01-0500(0.5m), W-BF-01-1000(1m), W-BF-01-3000(3m)	GT16 GT15
	16	RS-422 cable • Between temperature controllers	W-BF-02-0500(0.5m), W-BF-02-1000(1m), W-BF-02-3000(3m)	GT16 GT15 GT11 Serial
	17	RS-485 cable • Between temperature controllers		GT16 GT15

*1 The RS-232 cable and RS-485 cable can be prepared by the user. (☞ Section 37.2 Connection Cable)

*2 To use the dedicated cable, conversion of the cable may be necessary.

9, 10, 15, 16, 17, are products manufactured by RKC. For details of these products, contact RKC.

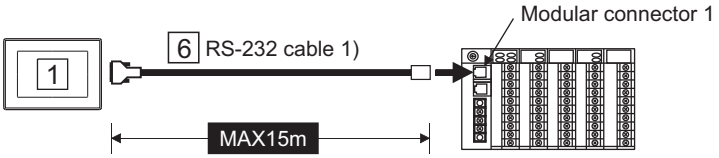
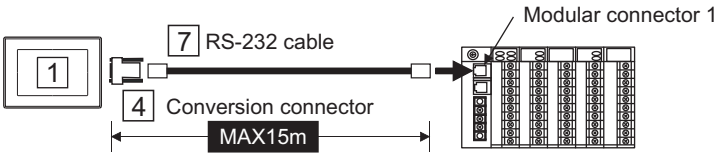
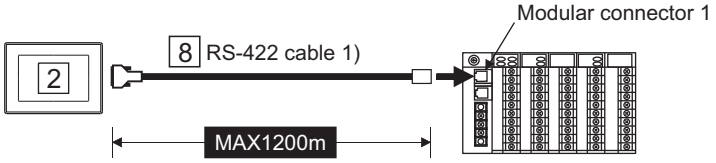
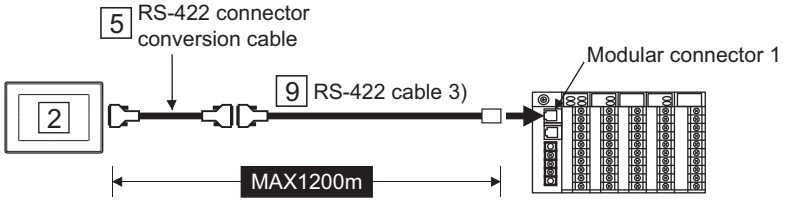
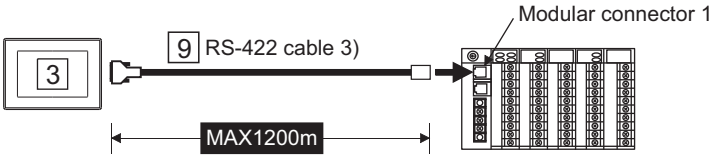
8 is manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For details of the product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

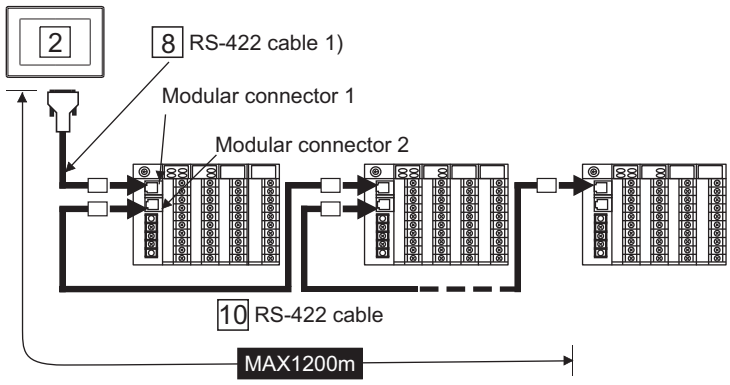
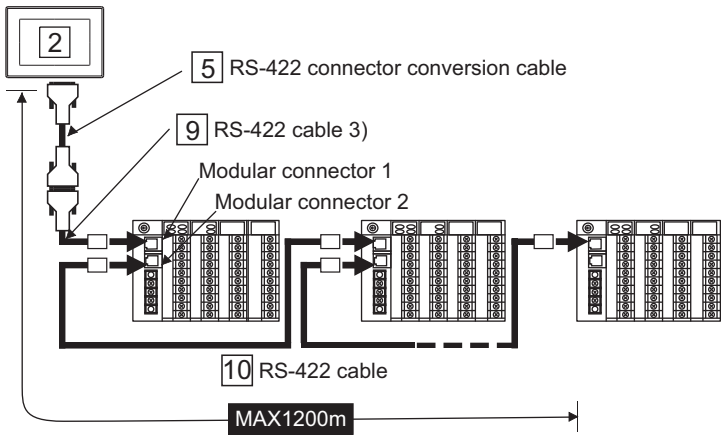
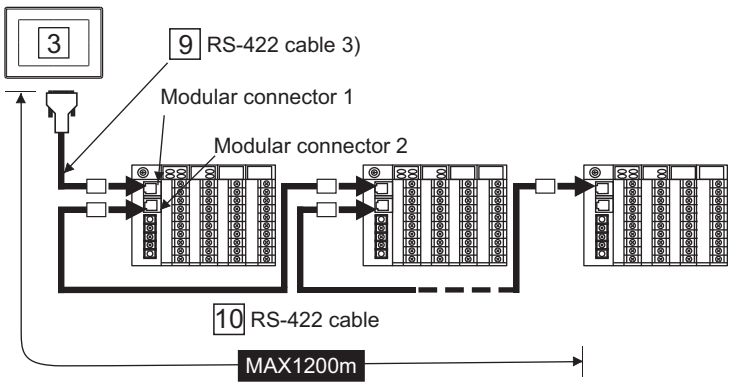
37.1.2 Connecting to H-PCP-A or H-PCP-B

Communication driver

RKC
SR Mini HG(MODBUS)

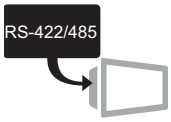
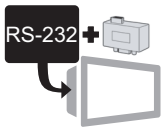
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOT	Number of Temperature controllers	Distance		
1	1	15m or less		GT16 GT15 GT11 Serial
1	1	15m or less		GT16 GT15 GT11 Serial
1	1	1200m or less		GT16
1	1	1200m or less		GT16
1	1	1200m or less		GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
Number of GOT	Number of Temperature controllers	Distance		
1	16 (max.)	1200m or less		GT16
1	16 (max.)	1200m or less		GT16
1	16 (max.)	1200m or less		GT16 GT15 GT11 Serial

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 Communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

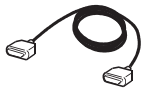
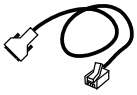
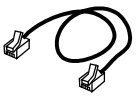
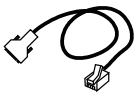
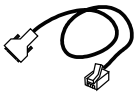
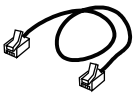
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Temperature controller

Image	No.	Name	Model name
	4	Conversion connector	FAX067

4 is a product manufactured by RKC. For details of this product, contact RKC.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	6	RS-232 cable 1)*1 • Between temperature controller and GOT	W-BF-28-0500(0.5m), W-BF-28-1000(1m), W-BF-28-3000(3m)	GT16 GT15 GT11 Serial
	7	RS-232 cable • Between conversion connector and temperature controller	W-BF-02-0500(0.5m), W-BF-02-1000(1m), W-BF-02-3000(3m)	GT16 GT15 GT11 Serial
	8	RS-422 cable 1) • Between temperature controller and GOT	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16
	9	RS-422 cable 3) • Between temperature controller and GOT • Between temperature controller and RS-422 connector conversion cable	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16 GT15 GT11 Serial
	10	RS-422 cable • Between temperature controller and GOT	W-BF-02-0500(0.5m), W-BF-02-1000(1m), W-BF-02-3000(3m)	GT16 GT15 GT11 Serial

*1 The RS-232 cable and RS-422 cable can be prepared by the user. (☞ Section 37.2 Connection Cable)

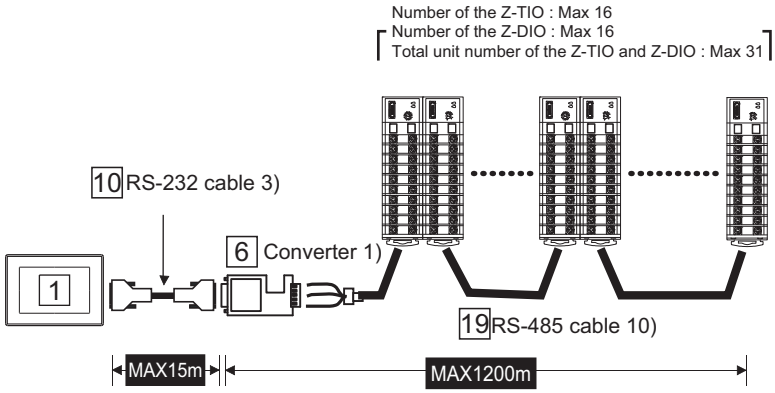
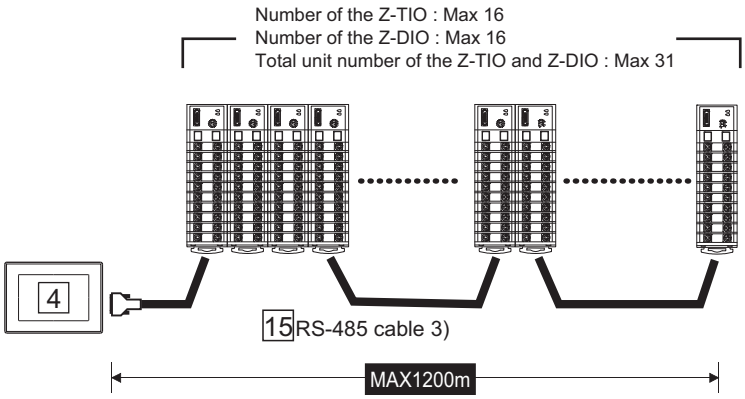
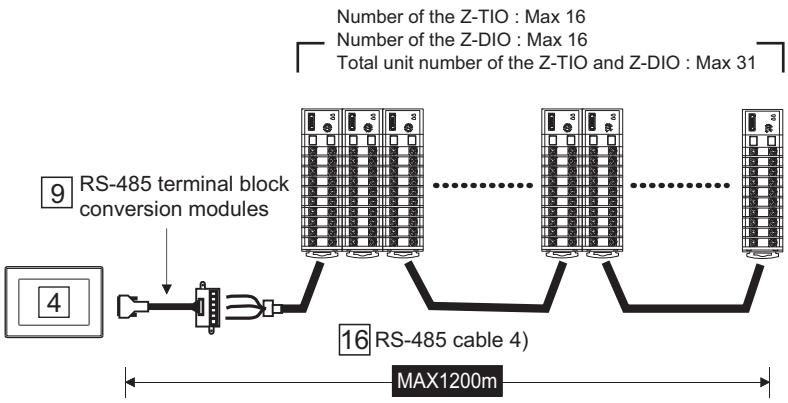
6, 7, 10 are products manufactured by RKC. For details of these products, contact RKC.

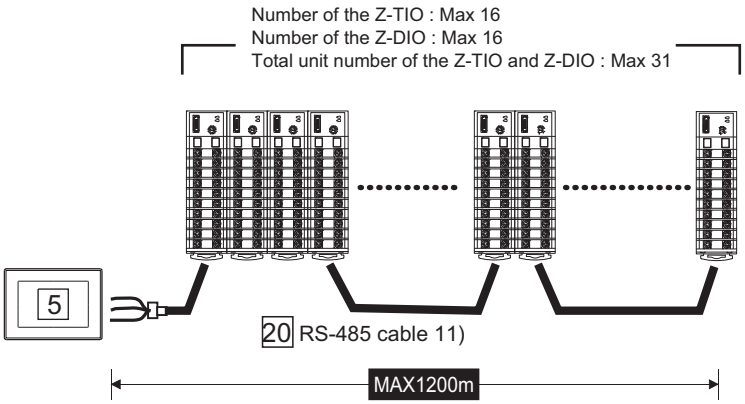
37.1.3 Connecting to SRZ

Communication driver
RKC
SR Mini HG(MODBUS)

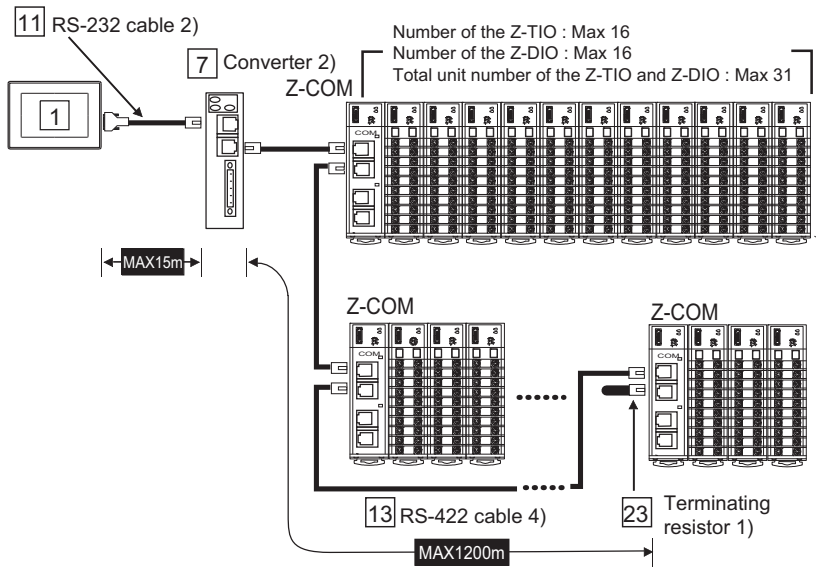
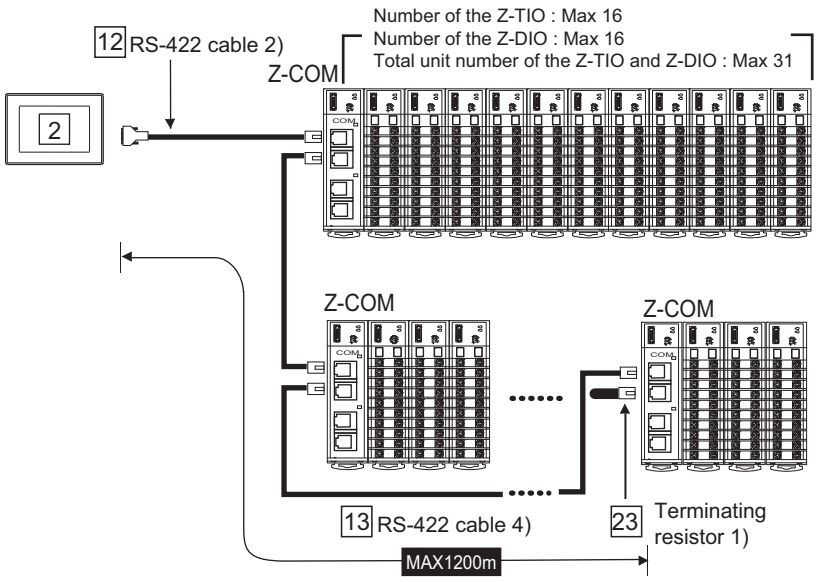
1 System configuration and connection conditions

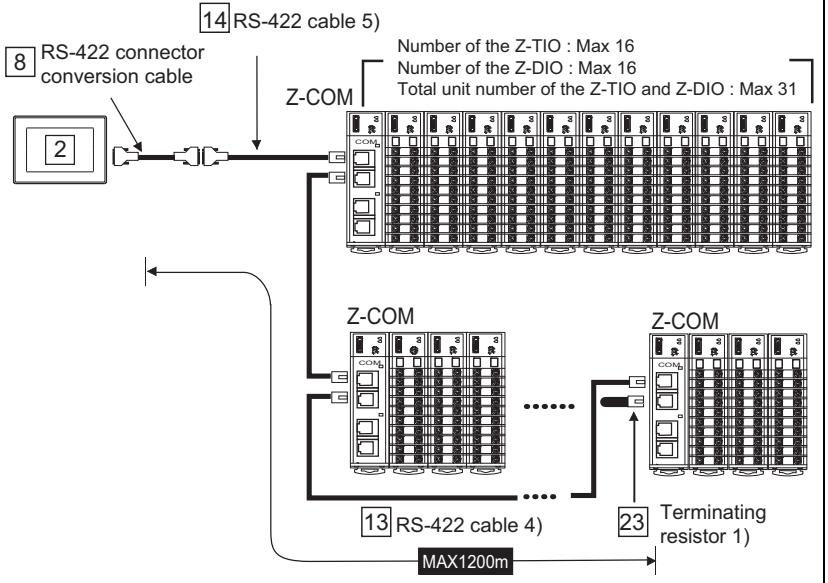
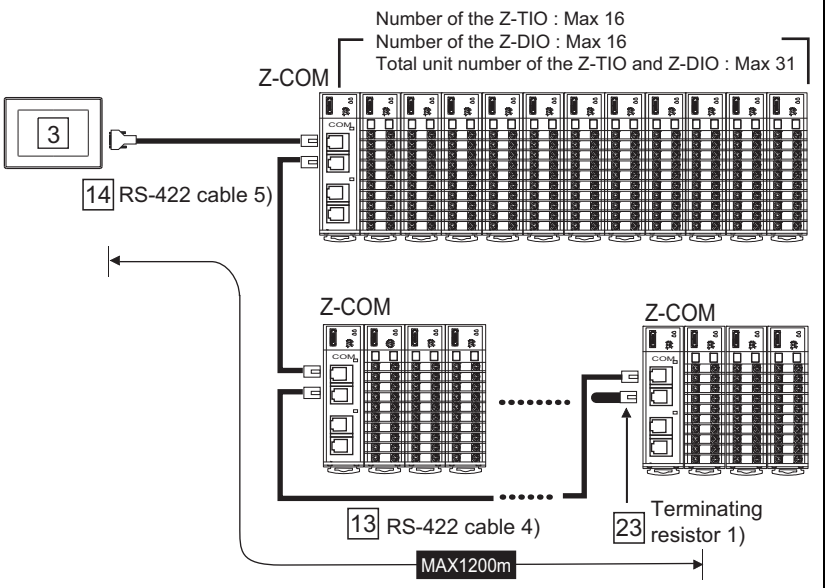
Temperature control module (Z-TIO)

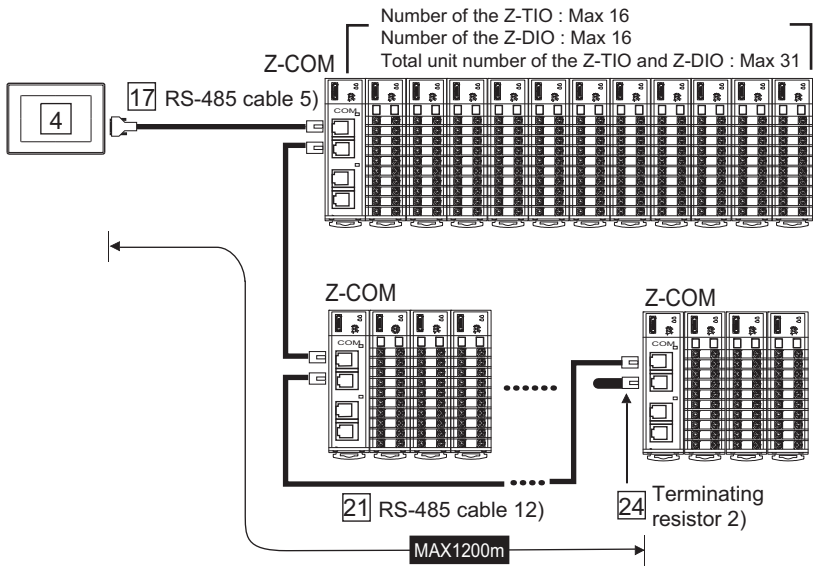
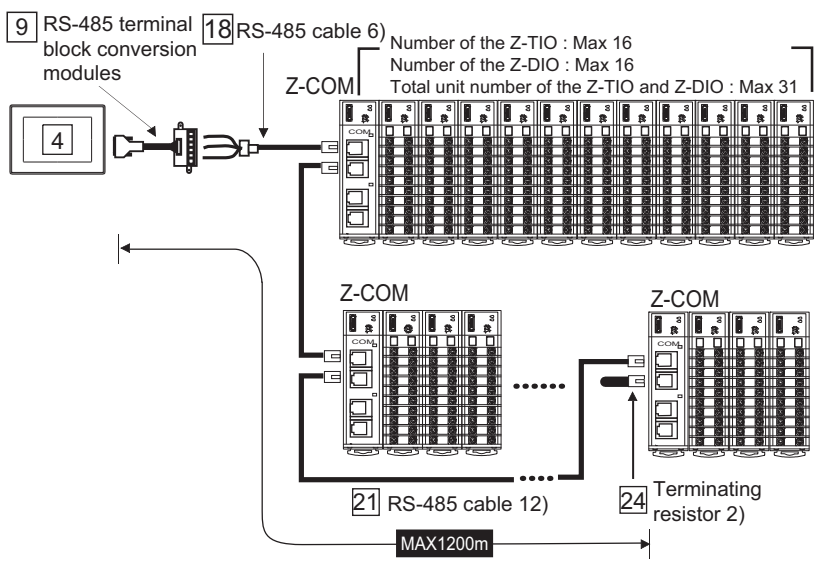
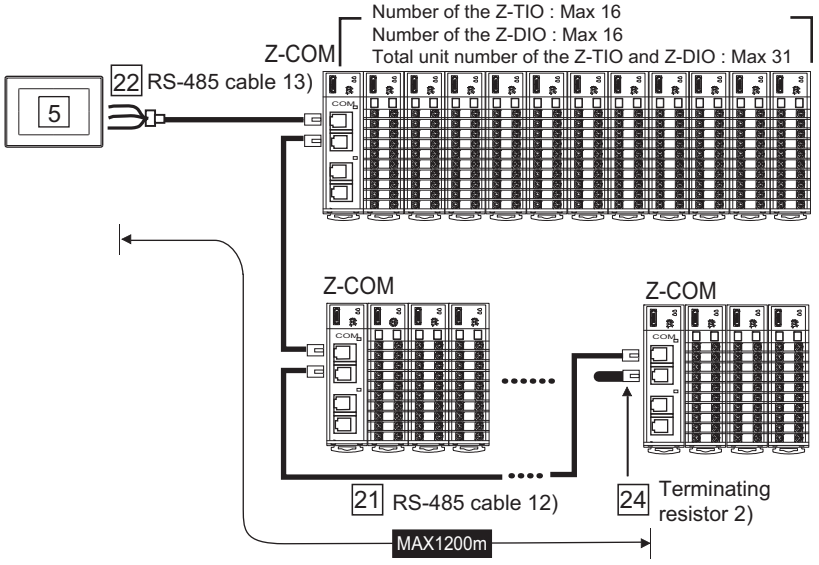
Connection conditions			System configuration	Model
Number of GOT	Number of Temperature controllers	Distance		
1	31 (max.)	Between converter and temperature controller 1200m or less		GT16 GT15 GT11 Serial
1	31 (max.)	Between GOT and temperature controller 1200m or less		GT16
1	31 (max.)	Between GOT and temperature controller 1200m or less		GT16

Connection conditions			System configuration	Model
Number of GOT	Number of Temperature controllers	Distance		
1	31 (max.)	Between GOT and temperature controller 1200m or less		GT16 GT15

Communication extension module (Z-COM)

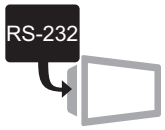
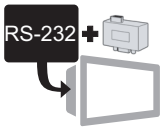
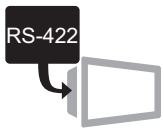
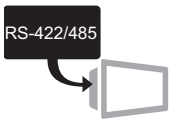
Connection conditions			System configuration	Model
Number of GOT	Number of Temperature controllers	Distance		
1	16 (max.)	Between GOT and converter 15m or less Between converter and Z-COM 1200m or less		GT16 GT15 GT11 Serial
1	16 (max.)	Between GOT and Z-COM 1200m or less		GT16

Connection conditions			System configuration	Model
Number of GOT	Number of Temperature controllers	Distance		
1	16 (max.)	Between GOT and Z-COM 1200m or less		GT16
1	GT16, GT15: 16 (max.) GT11: 10 (max.)	Between GOT and Z-COM 1200m or less		GT16 GT15 GT11 Serial

Connection conditions			System configuration	Model
Number of GOT	Number of Temperature controllers	Distance		
1	16 (max.)	Between GOT and Z-COM 1200m or less		GT 16
1	16 (max.)	Between GOT and Z-COM 1200m or less		GT 16
1	16 (max.)	Between GOT and Z-COM 1200m or less		GT 16 GT 15

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 Communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 Communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 Communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit*1 • For RS-422 Communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 Communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 Communication	— (Built into GOT)	GT11 Serial
	4	RS-422/485 interface • For RS-485 Communication	— (Built into GOT)	GT16
	5	RS-422/485 Communication Unit • For RS-485 Communication	GT15-RS4-TE	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□

(2) Temperature controller

Image	No.	Name	Model name
	6	Converter 1)	CD485/V
	7	Converter 2)	COM-A

6 is a product manufactured by DATA LINK Co.,Ltd. For details of this product, contact DATA LINK Co.,Ltd.

7 is a product manufactured by RKC. For details of this product, contact RKC.

(3) Cable

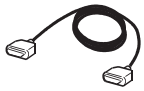
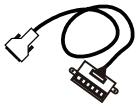
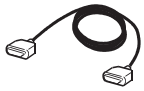
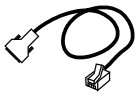
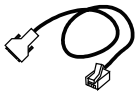
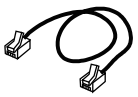
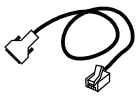
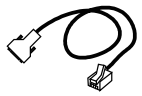
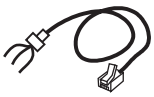
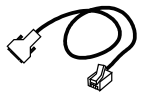
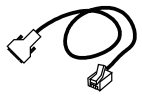
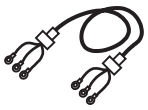
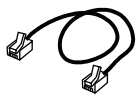
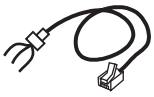
Image	No.	Name	Model name	Model
	8	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	9	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	10	RS-232 cable 3) • Between converter 1) and GOT	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16 GT15 GT11 Serial
	11	RS-232 cable 2) • Between converter 2) and GOT	W-BF-28-0500(0.5m), W-BF-28-1000(1m), W-BF-28-3000(3m)	GT16 GT15 GT11 Serial
	12	RS-422 cable 2) • Between temperature controller and GOT	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16
	13	RS-422 cable 4)*1 • Between Z-COM and Z-COM	W-BF-02-0500(0.5m), W-BF-02-1000(1m), W-BF-02-3000(3m)	GT16 GT15 GT11 Serial
	14	RS-422 cable 5) • Between temperature controller and GOT	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16 GT15 GT11 Serial

Image	No.	Name	Model name	Model
	15	RS-485 cable 3) • Between temperature controller and GOT	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16
	16	RS-485 cable 4) • Between temperature controller and RS-485 terminal block conversion modules		
	17	RS-485 cable 5) • Between temperature controller and GOT		
	18	RS-485 cable 6) • Between temperature controller and RS-485 terminal block conversion modules		
	19	RS-485 cable 10) • Between temperature controller and converter • Between temperature controller and temperature controller	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16 GT15
	20	RS-485 cable 11) • Between temperature controller and GOT • Between temperature controller and temperature controller		
	21	RS-485 cable 12)*1 • Between Z-COM and Z-COM	W-BF-02-0500(0.5m), W-BF-02-1000(1m), W-BF-02-3000(3m)	
	22	RS-485 cable 13) • Between GOT and Z-COM	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	
	23	Terminating resister 1)	W-BW-02 (RS-422)	GT16 GT15 GT11 Serial
	24	Terminating resister 2)	W-BW-01 (RS-485)	GT16 GT15

*1 The RS-232 cable and RS-422 cable can be prepared by the user. (☞ Section 37.2 Connection Cable)

11, 13, 21, 23, 24 are products manufactured by RKC. For details of these products, contact RKC.

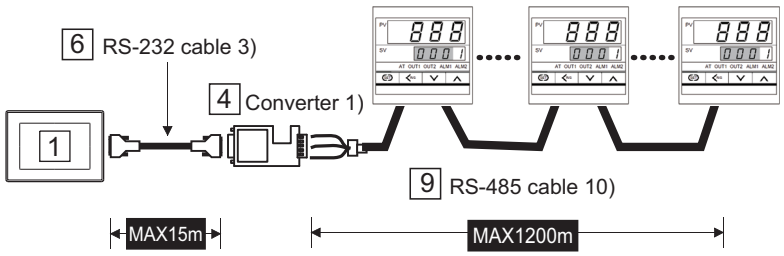
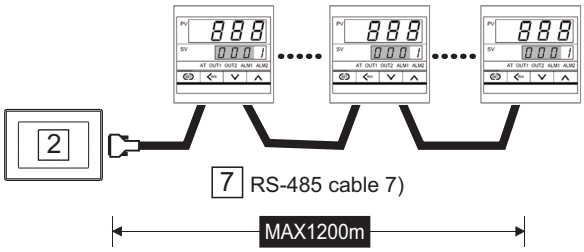
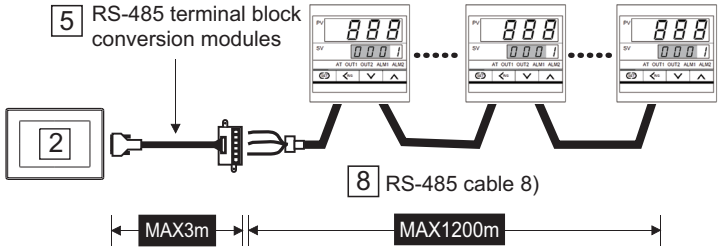
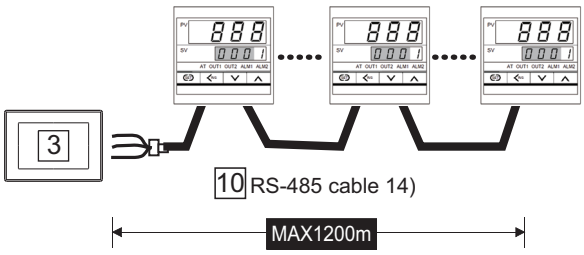
9 is manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For details of the product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

37.1.4 Connecting to CB Series (CB100, CB400, CB500, CB700, CB900)

Communication driver

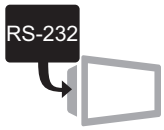
RKC
SR Mini HG(MODBUS)

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Numbe of GOTs	Numbe of Temperatur controllers	Distance		
1	31	1200m or less		GT16 GT15 GT11 Serial
1	31	1200m or less		GT16
1	31	1200m or less		GT16
1	31	1200m or less		GT16 GT15

2 System equipment

(1) GOT

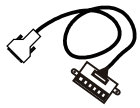
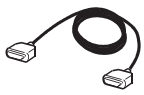
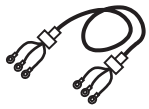
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 Communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 Communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-485 Communication	— (Built into GOT)	GT16
	3	RS-422/485 Communication Unit • For RS-485 Communication	GT15-RS4-TE	GT16 GT15

(2) Temperature controller

Image	No.	Name	Model name
	4	Converter 1)	CD485/V

4 is a product manufactured by DATA LINK Co.,Ltd. For details of this product, contact DATA LINK Co.,Ltd.

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16
	6	RS-232 cable 3) • Between converter and GOT	(To be prepared by the user. ☞ Section 37.2 Connection Cable)	GT16 GT15 GT11 Serial
	7	RS-485 cable 7) • Between temperature controller and GOT		GT16
	8	RS-485 cable 8) • Between temperature controller and RS-485 terminal block conversion modules • Between temperature controllers		GT16
	9	RS-485 cable 10) • Between converter and temperature controller • Between temperature controllers		GT16 GT15 GT11 Serial
	10	RS-485 cable 14) • Between temperature controller and GOT • Between temperature controllers		GT16 GT15

*1 The RS-232 cable and RS-485 cable can be prepared by the user. (☞ Section 37.2 Connection Cable)

*2 To use the dedicated cable, conversion of the cable may be necessary.

5 is manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For details of the product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

37.2 Connection Cable

The RS-232 cable or RS-422 cable, or RS-485 cable used for connecting the GOT to the temperature controller should be prepared by the user. The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ Section 37.2.1)

Model name		Connection cable		
		GT16	GT15	GT11
Temperature controller	H-PCP-J*1	RS-232 cable 1)		
	H-PCP-A*2, H-PCP-B*2			
Converter	CD485/V	RS-232 cable 3)		
	COM-A	RS-232 cable 2)		

2 RS-422 cable (☞ Section 37.2.2)

Model name		Connection cable			
		GT16	GT15	GT11	Converter/ Temperature controller
Temperature controller	H-PCP-J*1	RS-422 cable 1) RS-422 cable 3)	RS-422 cable 3)	RS-422 cable 3)	—
	H-PCP-A*2, H-PCP-B*2	RS-422 cable 1) RS-422 cable 3)	RS-422 cable 3)	RS-422 cable 3)	—
	SRZ*3	RS-422 cable 2) RS-422 cable 5)	RS-422 cable 5)	RS-422 cable 5)	RS-422 cable 4)

3 RS-485 cable (☞ Section 37.2.3)

Model name		Connection cable		
		GT16	GT15	Converter/Temperature controller
Temperature controller	H-PCP-J*1	RS-485 cable 1) RS-485 cable 2) RS-485 cable 9)	RS-485 cable 9)	—
	SRZ*3	RS-485 cable 3) RS-485 cable 4) RS-485 cable 5) RS-485 cable 6) RS-485 cable 11) RS-485 cable 13)	RS-485 cable 11) RS-485 cable 13)	RS-485 cable 10) RS-485 cable 12)
	CB Series	RS-485 cable 7) RS-485 cable 8) RS-485 cable 14)	RS-485 cable 14)	—

*1 For H-PCP-J, select the following models.

Connector	Communication format	Models
COM.PORT1 COM.PORT2	RS-422	H-PCP-J-□4□-D *□□-□□□
	RS-485	H-PCP-J-□5□-D *□□-□□□
COM.PORT3	RS-232	H-PCP-J-□□1-D *□□-□□□
	RS-422	H-PCP-J-□□4-D *□□-□□□
	RS-485	H-PCP-J-□□5-D *□□-□□□

*2 For H-PCP-A and H-PCP-B, select the following models.

Connector	Communication format	Models
Modular connector1	RS-232	H-PCP-A-□1N-□*□□ Z-1021 H-PCP-B-□1N-□*□□ Z-1021
	RS-422	H-PCP-A-□4N-□*□□ Z-1021 H-PCP-B-□4N-□*□□ Z-1021

*3 For SRZ, select the following models.

Module name	Connector	Communication format	Models
Temperature control module (Z-TIO)	Terminal	RS-485	Z-TIO-A-□-□□□□/□
			Z-TIO-B-□-□□/□□□
Digital input/output modules (Z-DIO)			Z-DIO-A-□-□□/□
Communication extension module (Z-COM)	COM1 COM.PORT1 COM.PORT2	RS-422	Z-COM-A-4□/□□□
		RS-485	Z-COM-A-5□/□□□
	COM2 COM.PORT3 COM.PORT4	RS-422	Z-COM-A-□4/□□□
		RS-485	Z-COM-A-□5/□□□

For details of the models, refer to the following manual.

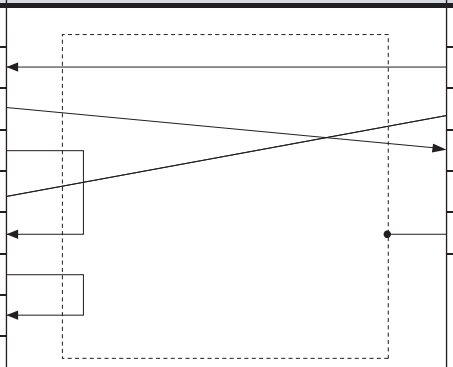
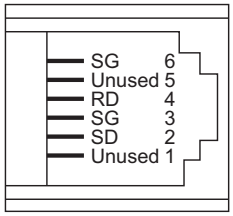
☞ User's Manual for the RKC temperature controller

37.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a temperature controller.

1 Connection diagram

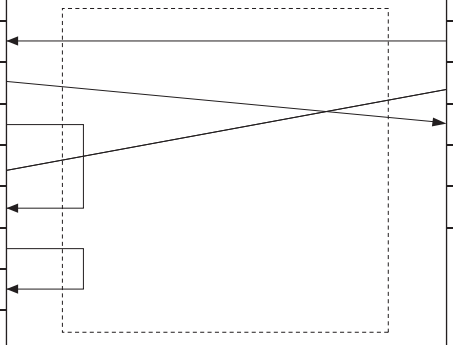
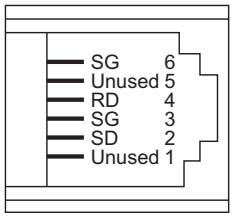
(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*1
CD	1		1	NC	
RD(RXD)	2		2	SD	
SD(TXD)	3		3	SG	
ER(DTR)	4		4	RD	
SG	5		5	NC	
DR(DSR)	6		6	SG	
RS(RTS)	7				
CS(CTS)	8				
—	9				

*1 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*1
CD	1		1	NC	
RD(RXD)	2		2	SD	
SD(TXD)	3		3	SG	
ER(DTR)	4		4	RD	
SG	5		5	NC	
DR(DSR)	6		6	CS	
RS(RTS)	7				
CS(CTS)	8				
—	9				

(Converter (COM-A))

*1 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(3) RS-232 cable 3)

GOT side		Cable connection and signal direction	Converter (CD485/V) side	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		1	CD
RD(RXD)	2		2	RXD
SD(TXD)	3		3	TXD
ER(DTR)	4		4	DTR
SG	5		5	GND
DR(DSR)	6		6	DSR
RS(RTS)	7		7	RTS
CS(CTS)	8		8	CTS
N.C.	9		9	RI

*1 GT16: CD, GT15: CD, GT11: NC

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector type

9-pin D-sub (male) inch screw fixed type

(c) Connector model

GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-	17LE-23090-27(D3CC)	

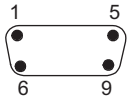
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(d) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) RKC temperature controller side connector
Use the connector compatible with the RKC temperature controller side module.
For details, refer to the following manual.

☞ User's Manual for the RKC temperature controller

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

37.2.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a temperature controller.

Point

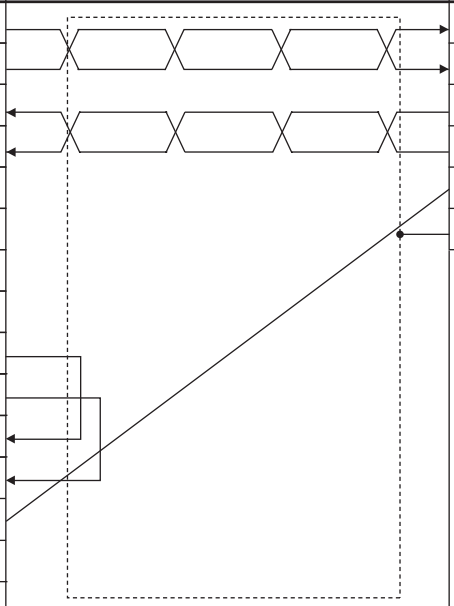
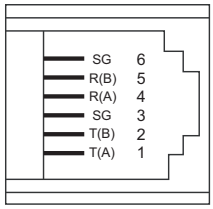
Differences in polarity between GOT and RKC temperature controllers

The polarity of poles A and B in signal names is reversed between GOT and RKC temperature controllers.

1 Connect a cable according to the following connection diagrams.

1 Connection diagram

(1) RS-422 cable 1)

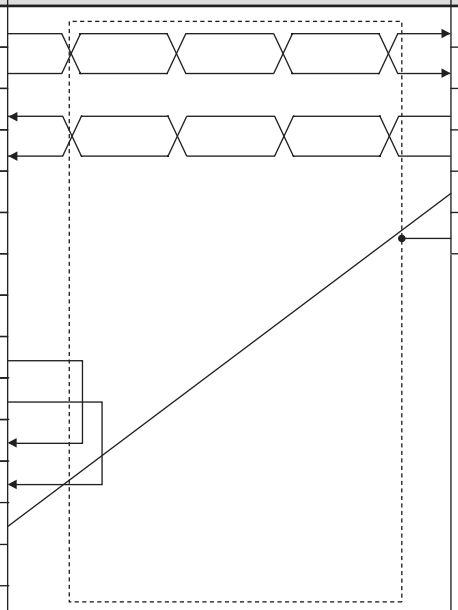
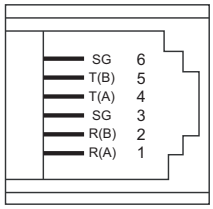
GOT side*1		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*2
SDA1(TXD1+)	1		2	T(B)	
SDB1(TXD1-)	2		1	T(A)	
RDA1(RXD1+)	3		5	R(B)	
RDB1(RXD1-)	4		4	R(A)	
SDA2(TXD2+)	5		3	SG	
SDB2(TXD2-)	6		6	SG	
RDA2(RXD2+)	7				
RDB2(RXD2-)	8				
RSA(RTS+)	9				
RSB(RTS-)	10				
CSA(CTS+)	11				
CSB(CTS-)	12				
SG	13				
NC	14				
	Shell				

*1 Set the terminating resistor of GOT side to “Disable”.(*4* Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

User's Manual for the RKC temperature controller

(2) RS-422 cable 2)

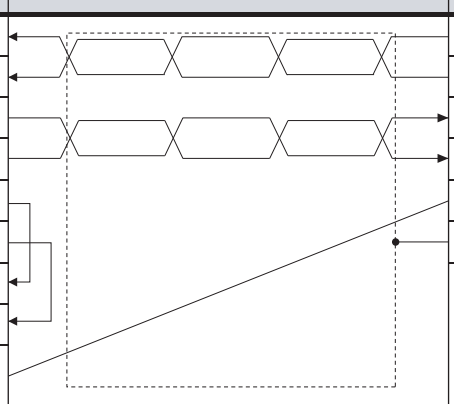
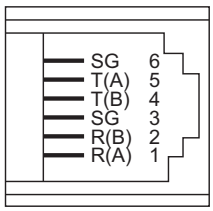
GOT side*1		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*2
SDA1(TXD1+)	1		2	R(B)	
SDB1(TXD1-)	2		1	R(A)	
RDA1(RXD1+)	3		5	T(B)	
RDB1(RXD1-)	4		4	T(A)	
SDA2(TXD2+)	5		3	SG	
SDB2(TXD2-)	6		6	SG	
RDA2(RXD2+)	7				
RDB2(RXD2-)	8				
RSA(RTS+)	9				
RSB(RTS-)	10				
CSA(CTS+)	11				
CSB(CTS-)	12				
SG	13				
NC	14				
	Shell				

*1 Set the terminating resistor of GOT side to "Disable".(4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

User's Manual for the RKC temperature controller

(3) RS-422 cable 3)

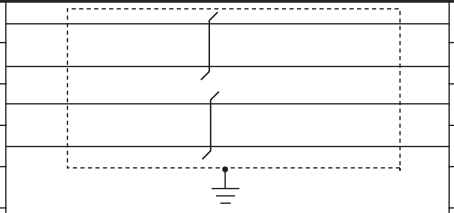
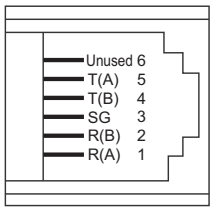
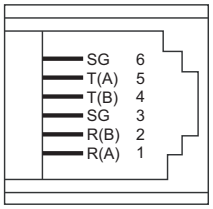
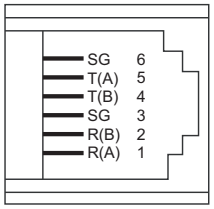
GOT side*1		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*2
RDA	2		4	T(B)	
RDB	7		5	T(A)	
SDA	1		2	R(B)	
SDB	6		1	R(A)	
RSA	3		3	SG	
RSB	8		6	SG	
CSA	4				
CSB	9				
SG	5				
FG	—				

*1 Set the terminating resistor of GOT side to "Disable".(4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

User's Manual for the RKC temperature controller

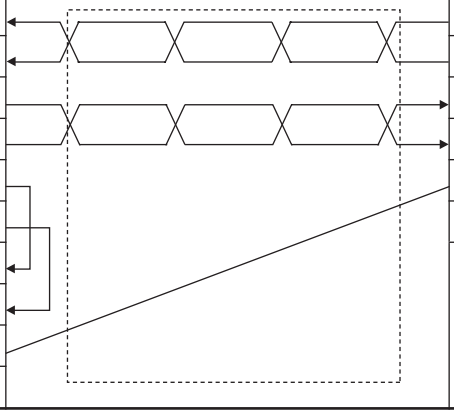
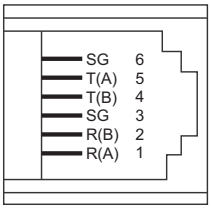
(4) RS-422 cable 4)

RKC temperature controller side (Modular connector)		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*1
R(A)	1		1	R(A)	 (Level converter(COM-A))
R(B)	2		2	R(B)	
SG	3		3	SG	
T(B)	4		4	T(B)	
T(A)	5		5	T(A)	
SG/N.C.	6		6	SG/N.C.	
 (Communication extension module(Z-COM))					 (Communication extension module(Z-COM))

*1 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(5) RS-422 cable 5)

GOT side*1		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*2
RDA	2		4	T(B)	 (Communication extension module(Z-COM))
RDB	7		5	T(A)	
SDA	1		2	R(B)	
SDB	6		1	R(A)	
RSA	3		3	SG	
RSB	8		6	SG	
CSA	4				
CSB	9				
SG	5				
FG	—				

*1 Set the terminating resistor of GOT side to "Disable".(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422/485 communication unit connector on the GOT.
For the GOT side of the RS-422 cable, use a connector or connector cover applicable to the GOT connector.

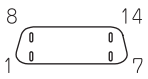
GOT	Connector model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT16	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S			

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(b) Connector pin arrangement

GT16

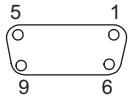
GOT main part connector
see from the front



14-pin (female)

GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (female)

3 Precautions when preparing a cable

The length of the RS-422 cable must be 1200m or less.

4 Connecting terminating resistors

(1) GOT

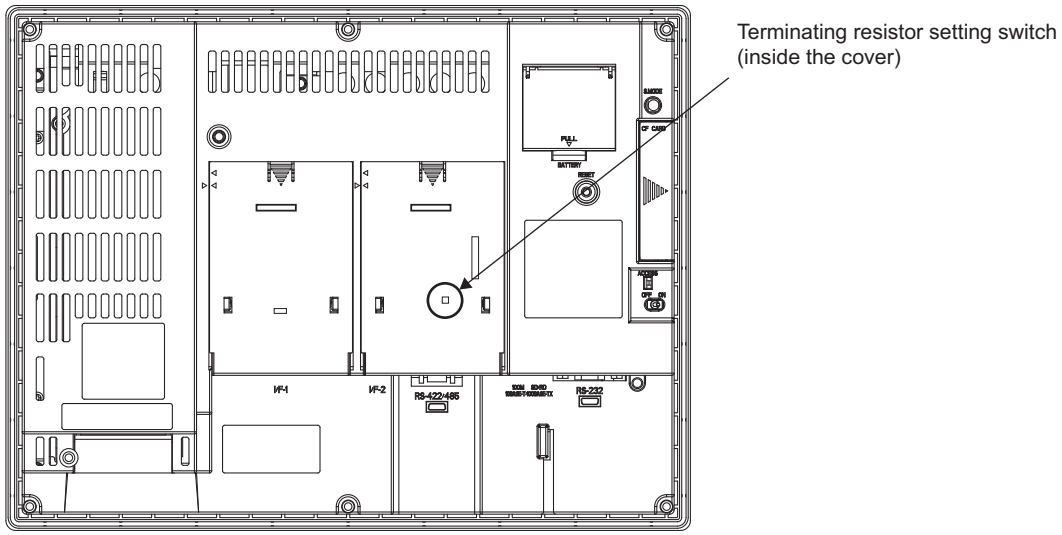
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

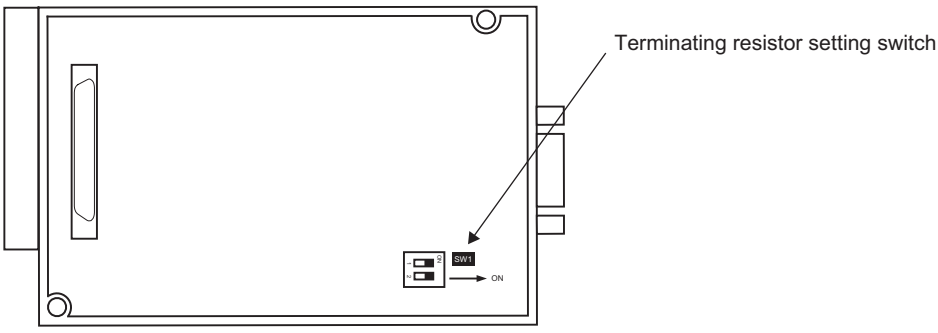


*1 The default setting is “Disable”.

• For GT16 (GT1685M-S)



• For RS422/485 communication unit



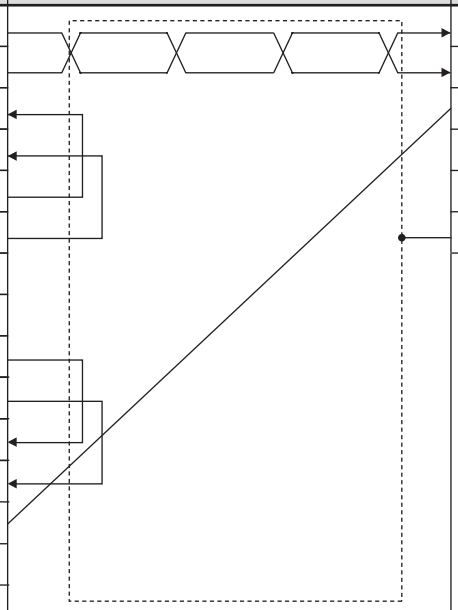
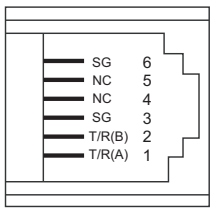
Rear view of RS-422/485 communication unit

37.2.3 RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the GOT to a temperature controller.

1 Connection diagram

(1) RS-485 cable 1)

GOT side*1		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*2
SDA1(TXD1+)	1		2	T/R(B)	
SDB1(TXD1-)	2		1	T/R(A)	
RDA1(RXD1+)	3		3	SG	
RDB1(RXD1-)	4		4	NC	
SDA2(TXD2+)	5		5	NC	
SDB2(TXD2-)	6		6	SG	
RDA2(RXD2+)	7				
RDB2(RXD2-)	8				
RSA(RTS+)	9				
RSB(RTS-)	10				
CSA(CTS+)	11				
CSB(CTS-)	12				
SG	13				
NC	14				
	Shell				

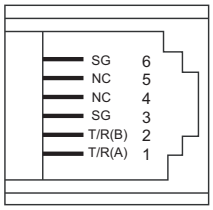
*1 Set the terminating resistor of GOT side to “Enable”.(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(2) RS-485 cable 2)

GOT side*1 (Terminal block)		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*2
SDA1(TXD1+)	6		2	T/R(B)	
SDB1(TXD1-)	8		1	T/R(A)	
NC	1		3	SG	
SG	2		4	NC	
NC	3		5	NC	
NC	4		6	SG	
SDA2(TXD2+)	5				
SDB2(TXD2-)	7				
RDA2(RXD2+)	9				
RDA1(RXD1+)	10				
RDB2(RXD2-)	11				
RDB1(RXD1-)	12				
NC	13				
RSA(RTS+)	14				
NC	15				
RSB(RTS-)	16				
NC	17				
CSA(CTS+)	18				
NC	19				
CSB(CTS-)	20				



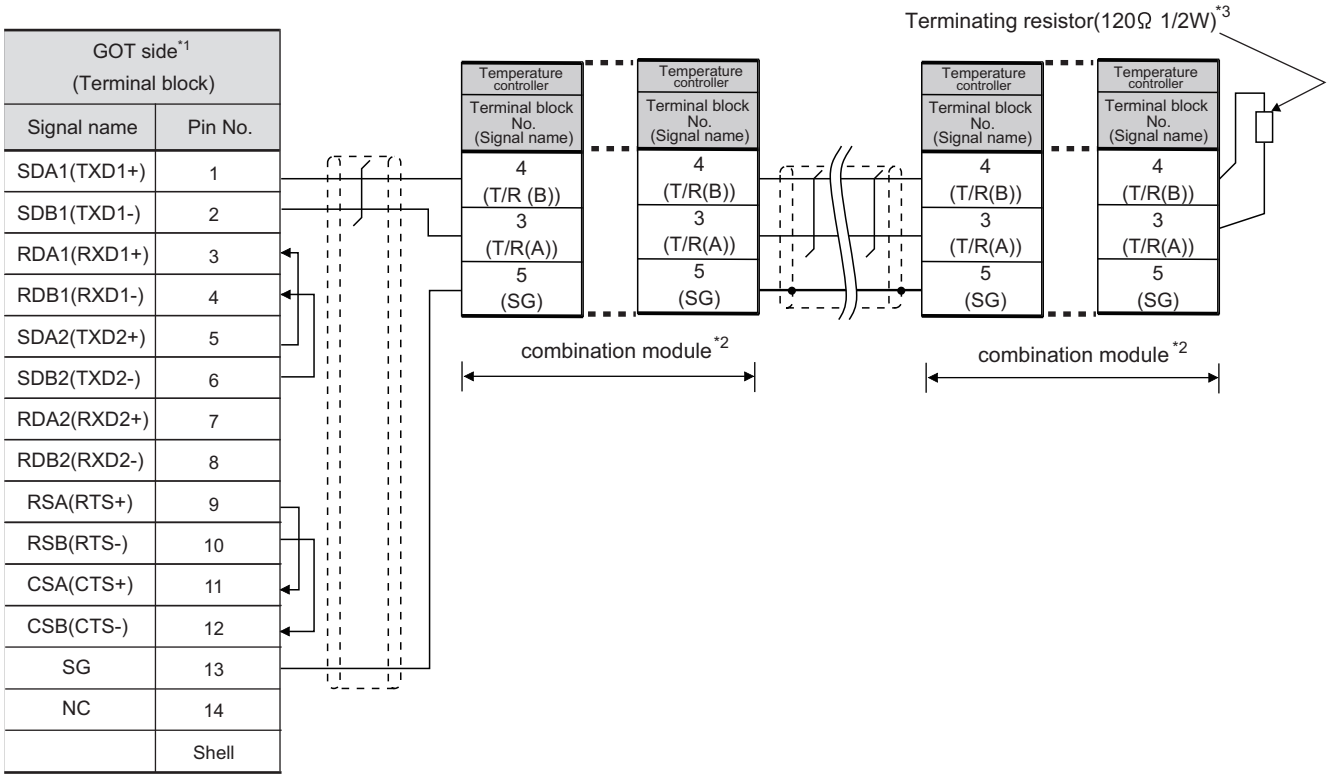
*1 Set the terminating resistor of GOT side to “Enable”.(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(3) RS-485 cable 3)

GOT side*1 (Terminal block)	
Signal name	Pin No.
SDA1(TXD1+)	1
SDB1(TXD1-)	2
RDA1(RXD1+)	3
RDB1(RXD1-)	4
SDA2(TXD2+)	5
SDB2(TXD2-)	6
RDA2(RXD2+)	7
RDB2(RXD2-)	8
RSA(RTS+)	9
RSB(RTS-)	10
CSA(CTS+)	11
CSB(CTS-)	12
SG	13
NC	14
	Shell



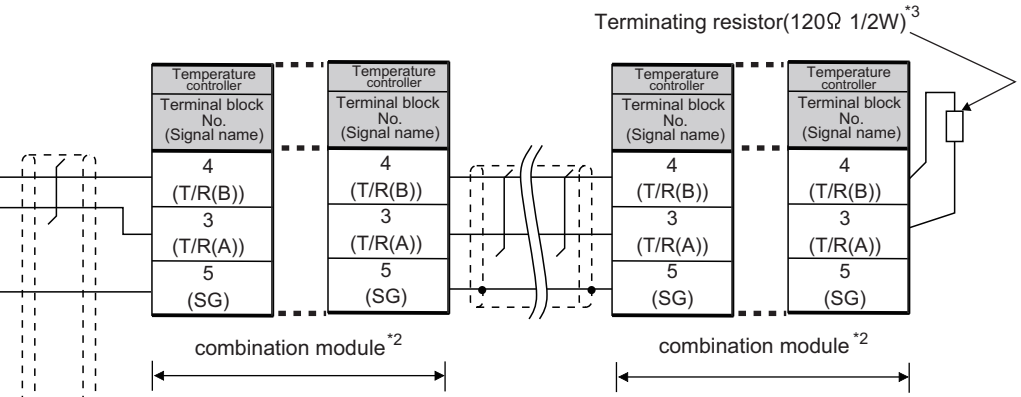
*1 Set the terminating resistor of GOT side to "Enable".(☞ 4 Connecting terminating resistors)

*2 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

*3 Provide the terminating resistor to the terminating temperature controller. When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).

(4) RS-485 cable 4)

GOT side*1 (Terminal block)	
Signal name	Pin No.
SDA1(TXD1+)	6
SDB1(TXD1-)	8
NC	1
SG	2
NC	3
NC	4
SDA2(TXD2+)	5
SDB2(TXD2-)	7
RDA2(RXD2+)	9
RDA1(RXD1+)	10
RDB2(RXD2-)	11
RDB1(RXD1-)	12
NC	13
RSA(RTS+)	14
NC	15
RSB(RTS-)	16
NC	17
CSA(CTS+)	18
NC	19
CSB(CTS-)	20



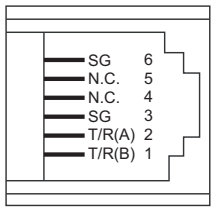
*1 Set the terminating resistor of GOT side to “Enable”.(☞ 4 Connecting terminating resistors)

*2 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

*3 Provide the terminating resistor to the terminating temperature controller. When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).

(5) RS-485 cable 5)

GOT side*1		Cable connection and signal direction	RKC temperature controller side (Modular connector)	
Signal name	Pin No.		Pin No.	Signal name
SDA1(TXD1+)	1		1	T/R(B)
SDB1(TXD1-)	2		2	T/R(A)
RDA1(RXD1+)	3		3	SG
RDB1(RXD1-)	4		4	N.C.
SDA2(TXD2+)	5		5	N.C.
SDB2(TXD2-)	6		6	SG
RDA2(RXD2+)	7			
RDB2(RXD2-)	8			
RSA(RTS+)	9			
RSB(RTS-)	10			
CSA(CTS+)	11			
CSB(CTS-)	12			
SG	13			
NC	14			
	Shell			



Pin assignment*2
Communication extension module
(Z-COM)

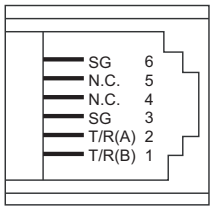
*1 Set the terminating resistor of GOT side to "Enable".(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(6) RS-485 cable 6)

GOT side*1 (Terminal block)		Cable connection and signal direction	RKC temperature controller side (Modular connector)	
Signal name	Pin No.		Pin No.	Signal name
RDA2(RXD2+)	6		2	T/R(A)
SDB1(TXD1-)	8		1	T/R(B)
NC	1		3	SG
SG	2		4	N.C.
NC	3		5	N.C.
NC	4		6	SG
SDA2(TXD2+)	5			
SDA1(TXD1+)	7			
SDB2(TXD2-)	9			
RDA1(RXD1+)	10			
RDB2(RXD2-)	11			
RDB1(RXD1-)	12			
NC	13			
RSA(RTS+)	14			
NC	15			
RSB(RTS-)	16			
NC	17			
CSA(CTS+)	18			
NC	19			
CSB(CTS-)	20			



Pin assignment*2
Communication extension module
(Z-COM)

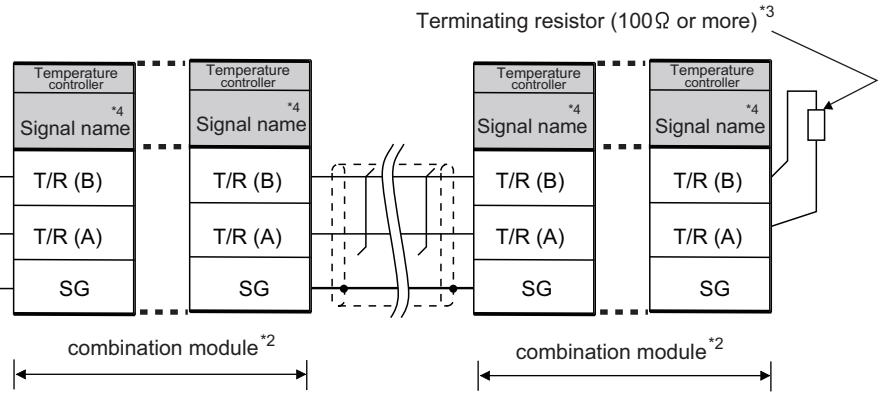
*1 Set the terminating resistor of GOT side to “Enable”.(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(7) RS-485 cable 7)

GOT side*1 (Terminal block)	
Signal name	Pin No.
SDA1(TXD1+)	1
SDB1(TXD1-)	2
RDA1(RXD1+)	3
RDB1(RXD1-)	4
SDA2(TXD2+)	5
SDB2(TXD2-)	6
RDA2(RXD2+)	7
RDB2(RXD2-)	8
RSA(RTS+)	9
RSB(RTS-)	10
CSA(CTS+)	11
CSB(CTS-)	12
SG	13
NC	14
	Shell



*1 Set the terminating resistor of GOT side to "Enable".(☞ 4 Connecting terminating resistors)

*2 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

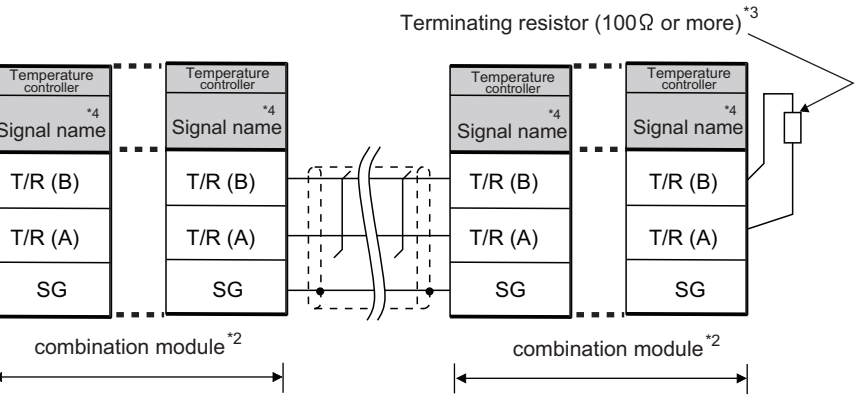
*3 Provide the terminating resistor to the terminating temperature controller. When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).

*4 For the terminal number for connecting to CB series, refer to the table below.

Signal name	Terminal block No.	
	CB100/CB400/CB500/CB90	CB700
SG	13	7
T/R(A)	14	8
T/R(B)	15	9

(8) RS-485 cable 8)

GOT side*1 (Terminal block)	
Signal name	Pin No.
SDA1(TXD1+)	6
SDB1(TXD1-)	8
NC	1
SG	2
NC	3
NC	4
SDA2(TXD2+)	5
SDB2(TXD2-)	7
RDA2(RXD2+)	9
RDA1(RXD1+)	10
RDB2(RXD2-)	11
RDB1(RXD1-)	12
NC	13
RSA(RTS+)	14
NC	15
RSB(RTS-)	16
NC	17
CSA(CTS+)	18
NC	19
CSB(CTS-)	20



*1 Set the terminating resistor of GOT side to “Enable”.(☞ 4 Connecting terminating resistors)

*2 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

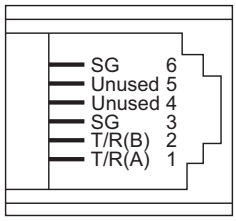
*3 Provide the terminating resistor to the terminating temperature controller. When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).

*4 For the terminal number for connecting to CB series, refer to the table below.

Signal name	Terminal block No.	
	CB100/CB400/CB500/CB90	CB700
SG	13	7
T/R(A)	14	8
T/R(B)	15	9

(9) RS-485 cable 9)

GOT side*1 (Terminal block)		Cable connection and signal direction	RKC temperature controller side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin assignment*2
SDA1	1		2	T/R(B)	
SDB1	2		1	T/R(A)	
RDA1	3		3	SG	
RDB1	4		4	NC	
SDA2	5		5	NC	
SDB2	6		6	SG	
RDA2	7				
RDB2	8				
SG	9				
FG	10				

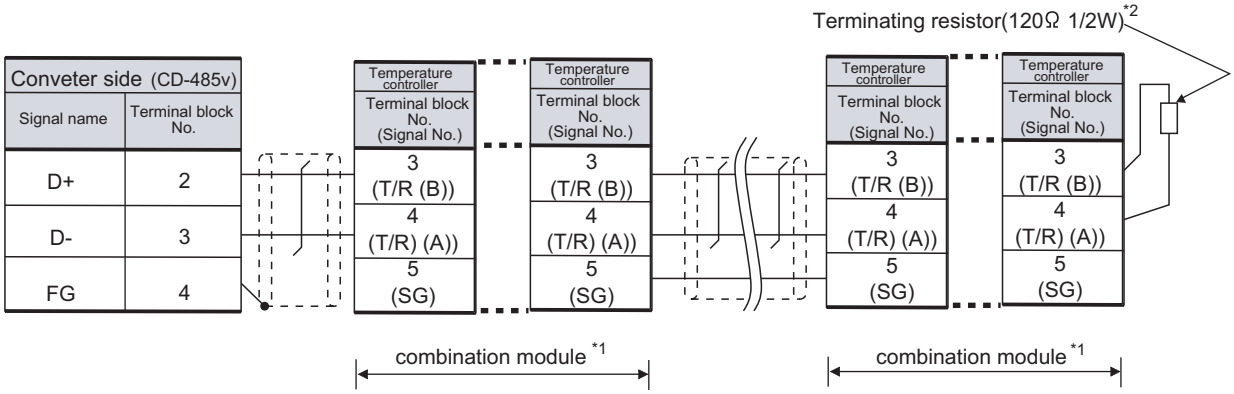


*1 Set the terminating resistor of GOT side to “Enable”.(☞ 4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

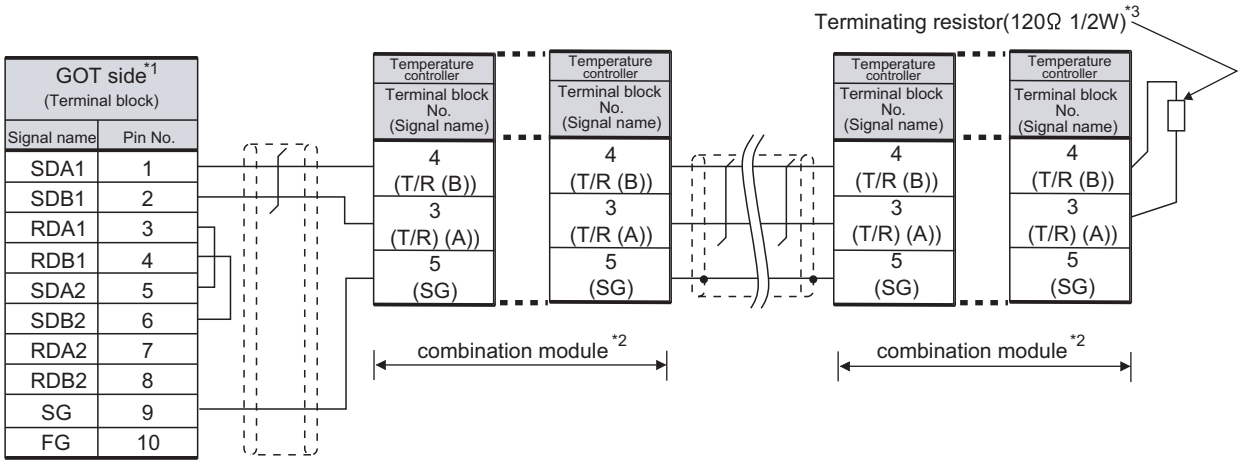
(10) RS-485 cable 10)



*1 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

*2 Provide the terminating resistor to the terminating temperature controller. When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).

(11) RS-485 cable 11)

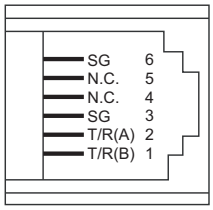
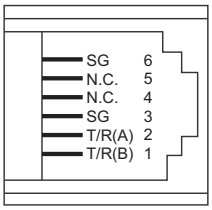


*1 Set the terminating resistor of GOT side to "Enable".(4 Connecting terminating resistors)

*2 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

*3 Provide the terminating resistor to the terminating temperature controller. When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).

(12) RS-485 cable 12)

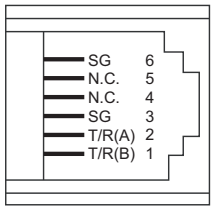
GOT side *1 (Terminal block)		Cable connection and signal direction	RKC temperature controller side (Modular connector)	
Signal name	Pin No.		Pin No.	Signal name
T/R(B)	1		1	T/R(B)
T/R(A)	2		2	T/R(A)
SG	3		3	SG
N.C.	4		4	N.C.
N.C.	5		5	N.C.
SG	6		6	SG
				
Pin assignment *1 (Communication extension module) (Z-COM)			Pin assignment *1 (Communication extension module) (Z-COM)	

*1 For details of the pin assignment, refer to the following manual.

User's Manual for the RKC temperature controller

(13) RS-485 cable 13)

GOT side *1 (Terminal block)		Cable connection and signal direction	RKC temperature controller side (Module connector)	
Signal name	Pin No.		Pin No.	Signal name
SDA1	1		1	T/R(B)
SDB1	2		2	T/R(A)
RDA1	3		3	SG
RDB1	4		4	N.C.
SDA2	5		5	N.C.
SDB2	6		6	SG
RDA2	7			
RDB2	8			
SG	9			
FG	10			



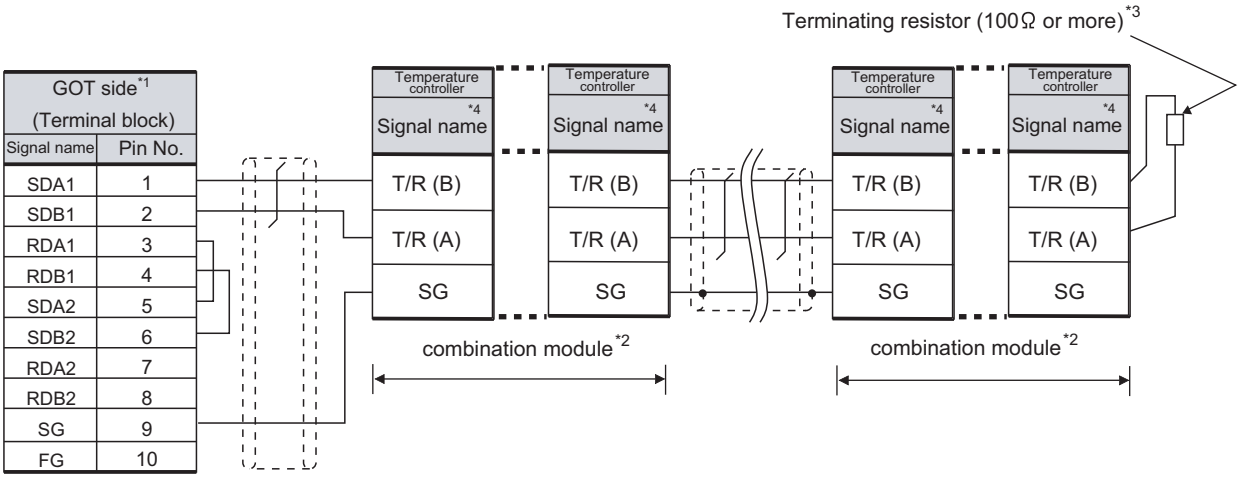
Pin assignment *2
(Communication extension module)
(Z-COM)

*1 Set the terminating resistor of GOT side to "Disable".(4 Connecting terminating resistors)

*2 For details of the pin assignment, refer to the following manual.

User's Manual for the RKC temperature controller

(14) RS-485 cable 14)



*1 Set the terminating resistor of GOT side to “Enable”.(4 Connecting terminating resistors)

*2 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

*3 Provide the terminating resistor to the terminating temperature controller. When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).

*4 For the terminal number for connecting to CB series, refer to the table below.

Signal name	Terminal block No.	
	CB100/CB400/CB500/CB90	CB700
SG	13	7
T/R(A)	14	8
T/R(B)	15	9

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-485 cable, use the terminal block packed together with the RS-422/485 communication unit.

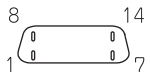
GOT	Connector model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT15-RS4-TE	SL-SMT3.5/10/90F BOX	—	Weidmuller interconnections inc.

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

(a) Connector pin arrangement

GT16

GOT main part connector
see from the front



14-pin (female)

(2) RKC temperature controller side connector

Use the connector compatible with the RKC temperature controller side module.

For details, refer to the following manual.

☞ User's Manual for the RKC temperature controller

3 Precautions when preparing a cable

The length of the RS-485 cable must be 1200m or less.

4 Connecting terminating resistors

(1) GOT

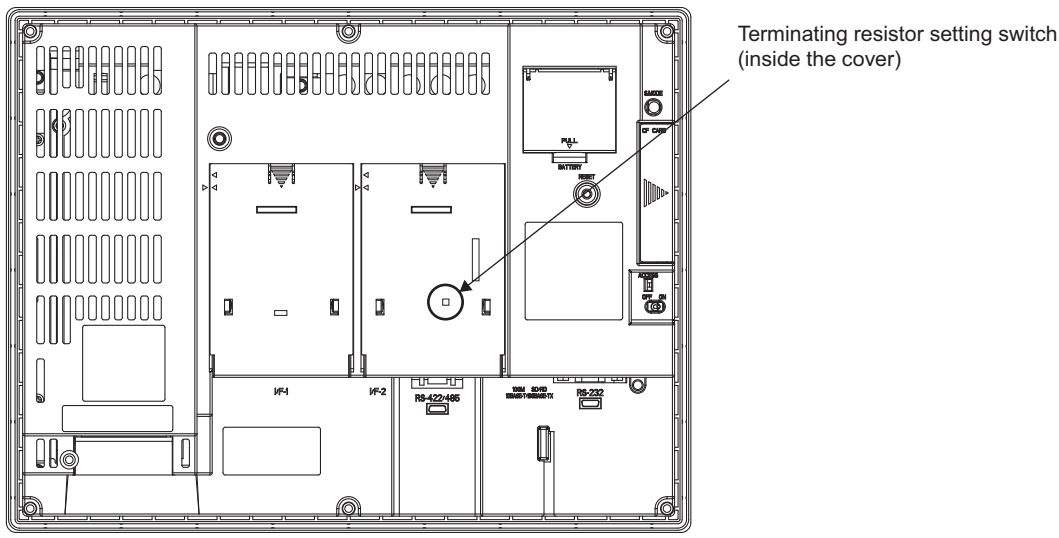
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

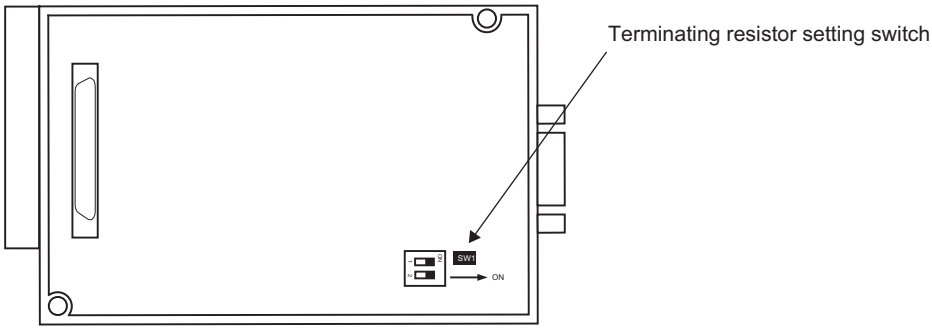
*1 The default setting is “Disable”.



• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear View of RS-422/485 communication unit

37.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 37.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 37.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 37.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 37.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 37.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 37.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 37.3.7
Checking for normal monitoring

Point

Confirming the temperature controller side setting

This section explains the temperature controller side setting.
When confirming the temperature controller side setting, refer to the following.

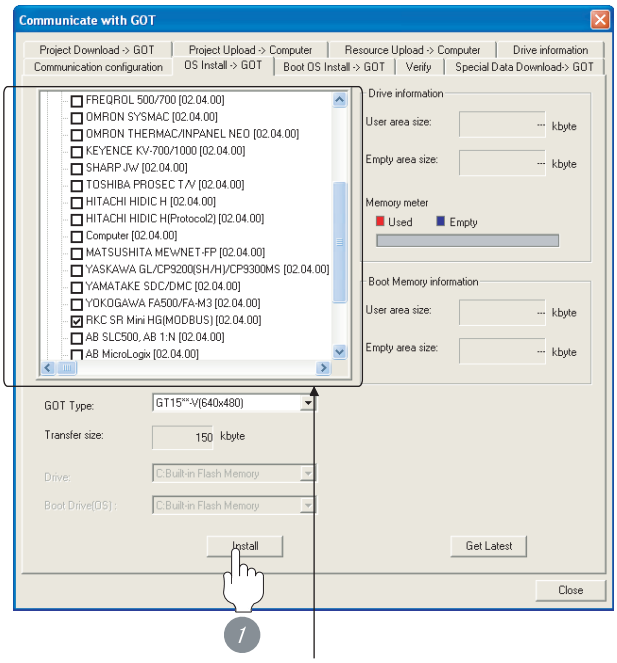
☞ Section 36.4 Temperature Controller Side Setting

37.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• RKC SR Mini HG(MODBUS)

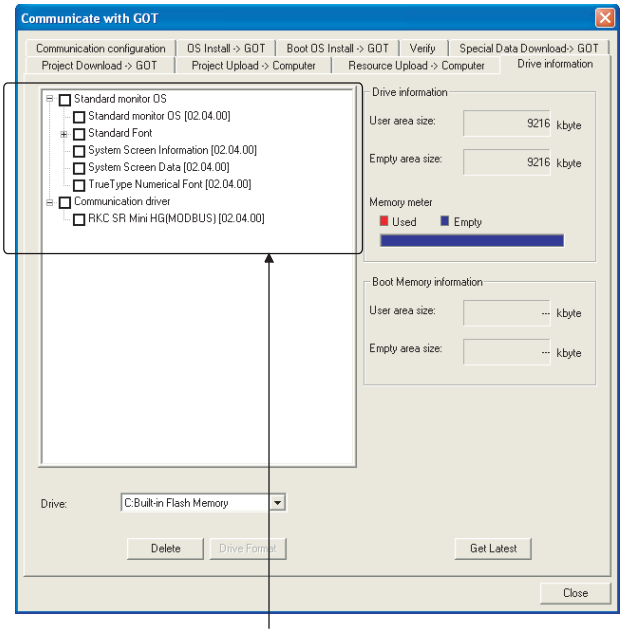
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

37.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Satndard monitor OS
2) Communication driver: RKC SR Mini HG(MODBUS)

37.3.3 Setting communication interface (Communication settings)

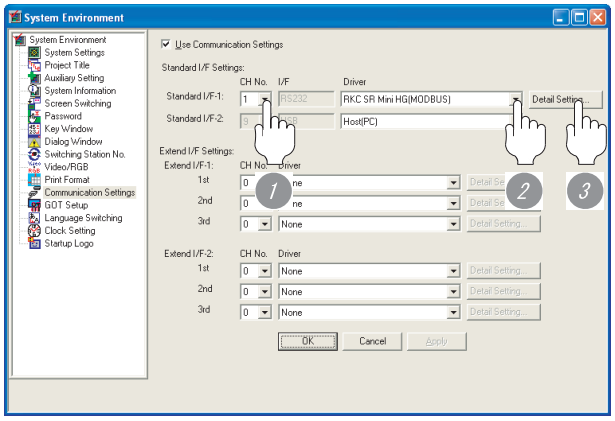
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



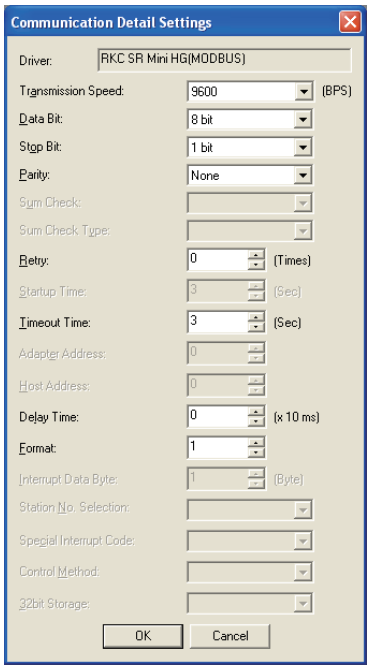
(When using GT15)

1 Set "1" to the channel No. used.

2 Set the driver to "RKC SR Mini HG(MODBUS)".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: None>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0ms>	0 to 300 ms
Format	Select the communication format. <Default: 1> format 1: Accessible to H-PCP-J, H-PCP-A, H-PCP-B and SRZ format 2: Accessible to CB series	1/2

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

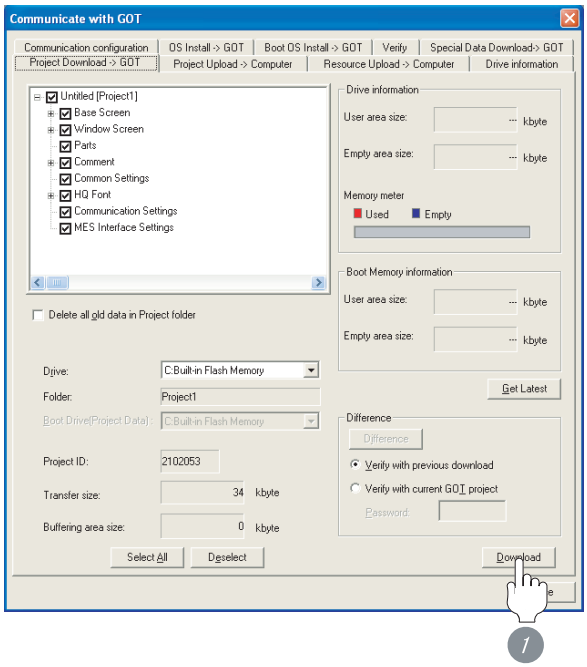
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

37.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

37.3.5 Attaching communication unit and connecting cable

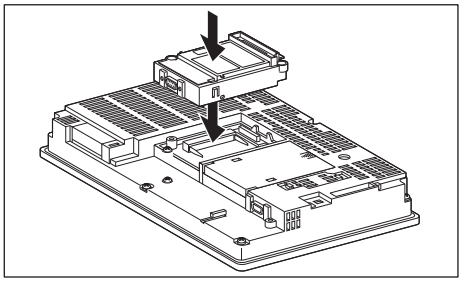
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

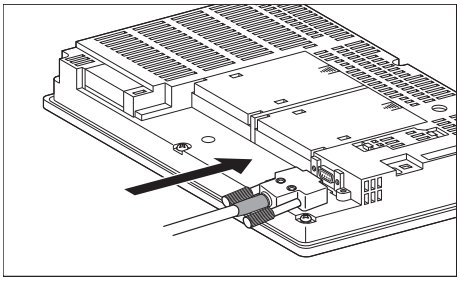
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

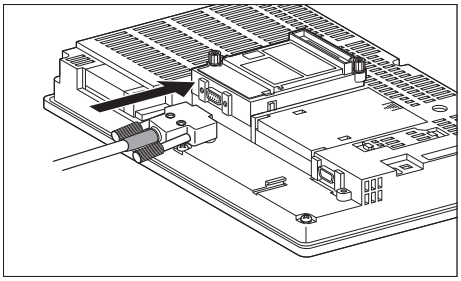
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



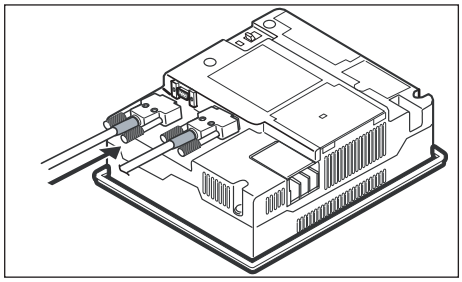
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

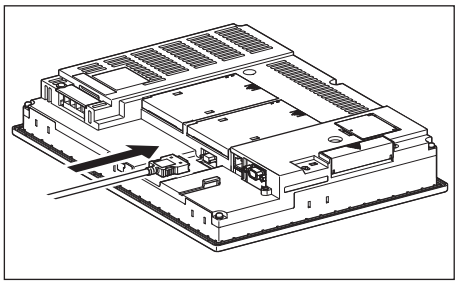


(2) How to connect the RS-422 cable

(a) For the GT16

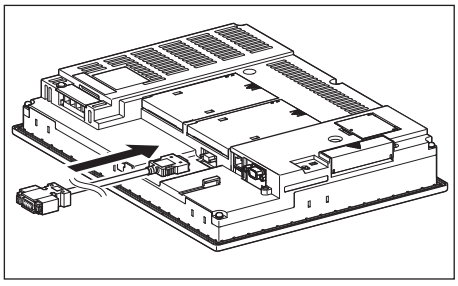
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

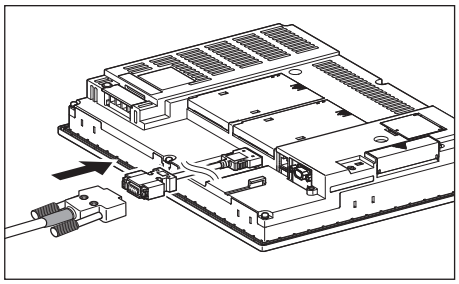


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

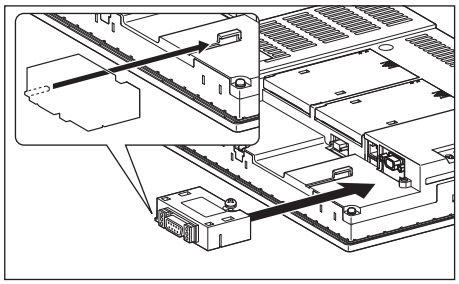


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

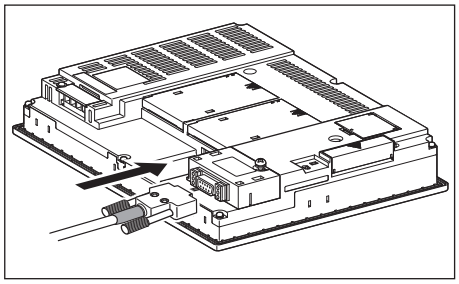


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

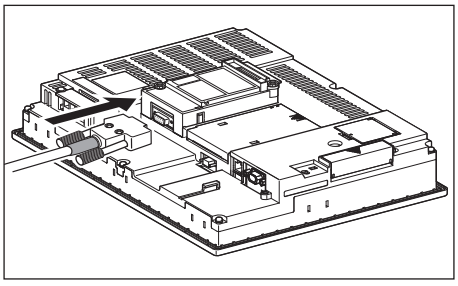


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

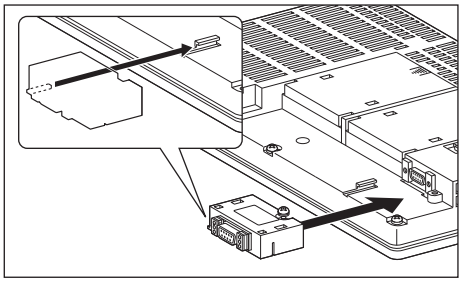
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



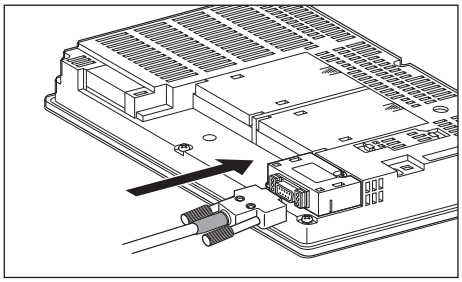
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

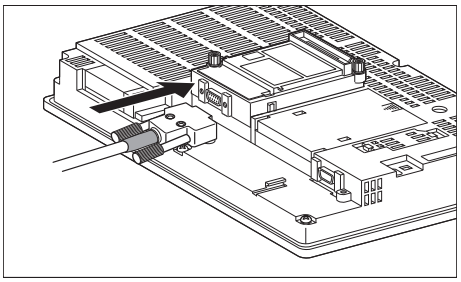


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

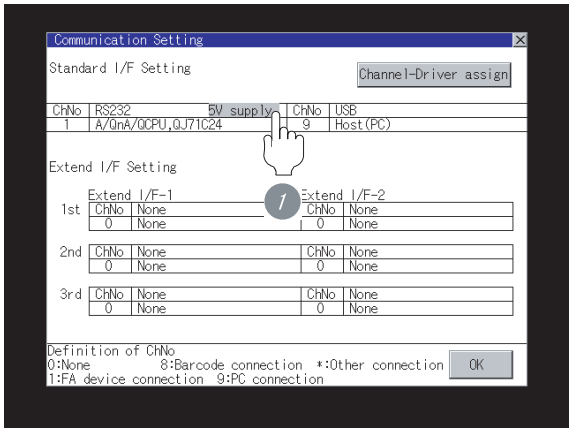
Point

When using the RS-422 conversion unit

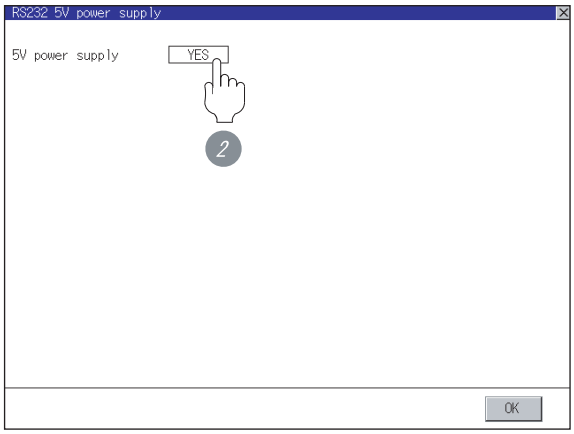
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

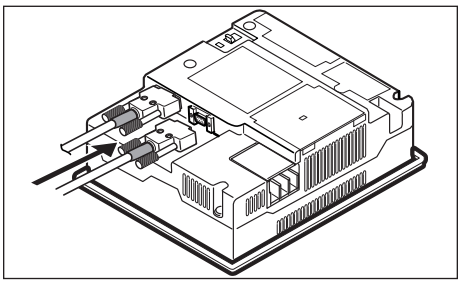


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

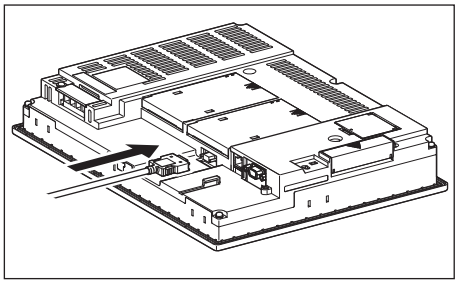


(3) How to connect the RS-485 cable

(a) For the GT16

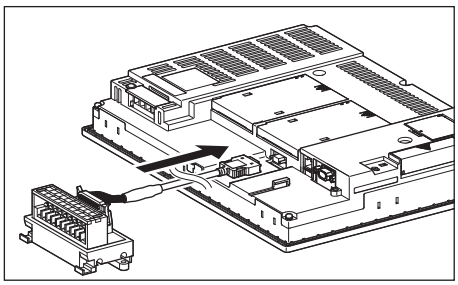
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

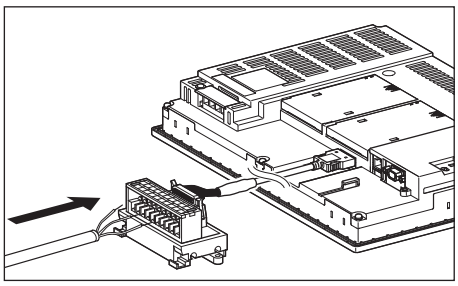


• Connection to the RS-422/485 interface with the RS-485 terminal block converter module

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

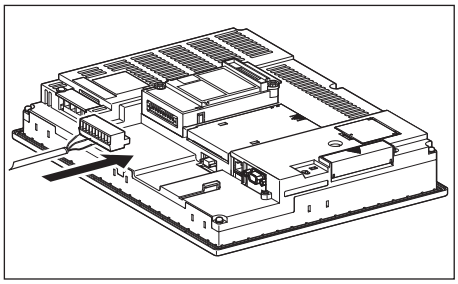


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

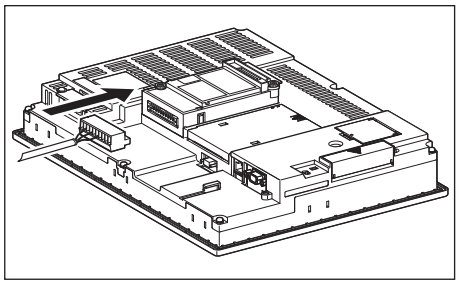


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



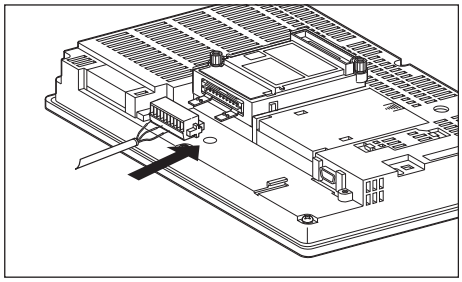
2 Connect the terminal block to the RS-422/485 communication unit on the GOT.



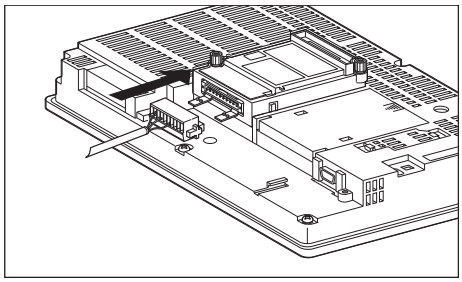
(b) For the GT15

• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.



2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



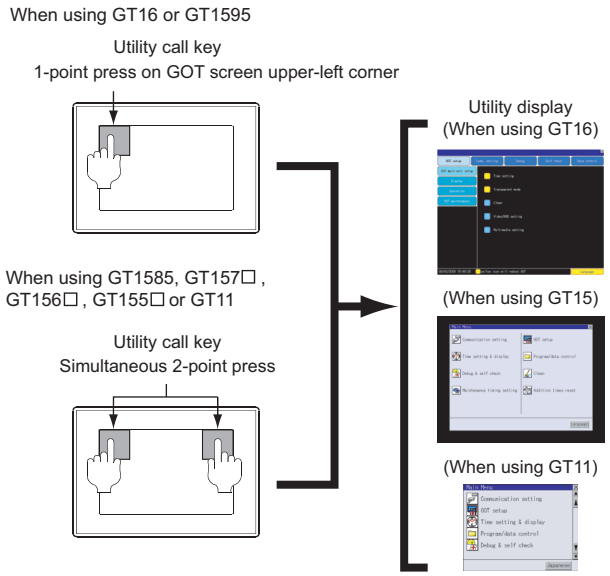
37.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

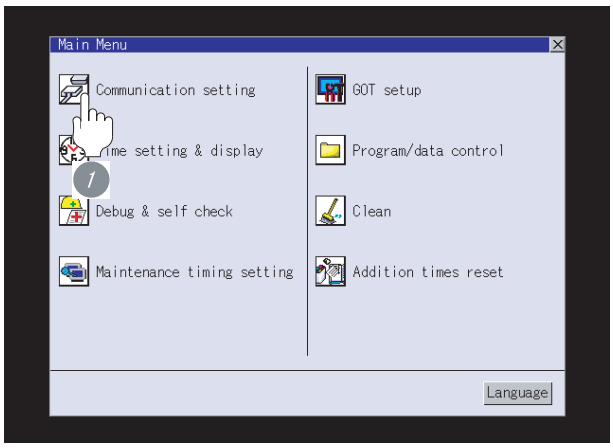


Point

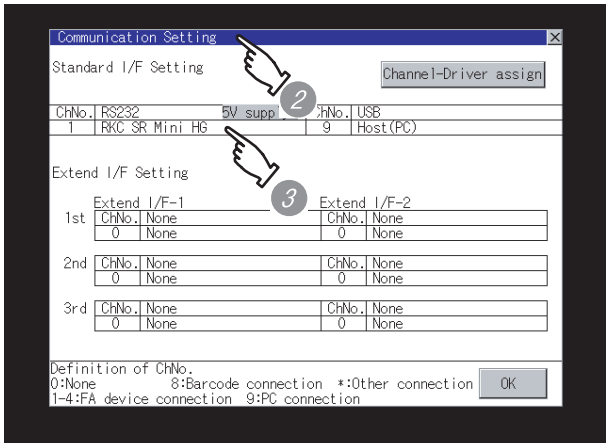
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  RKC SR Mini HG(MODBUS)

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 37.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

37.3.7 Checking for normal monitoring

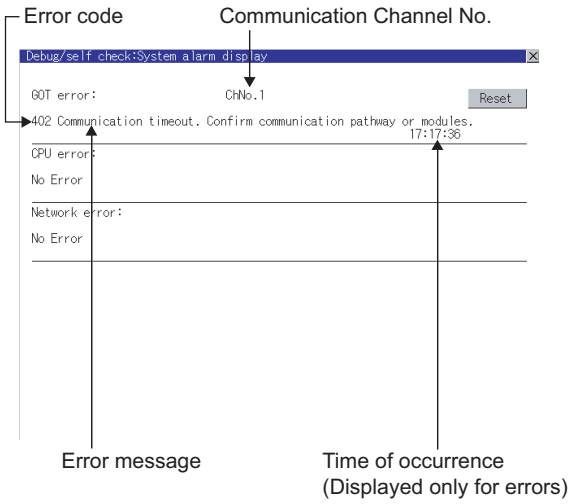
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check

Whether the temperature controller can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

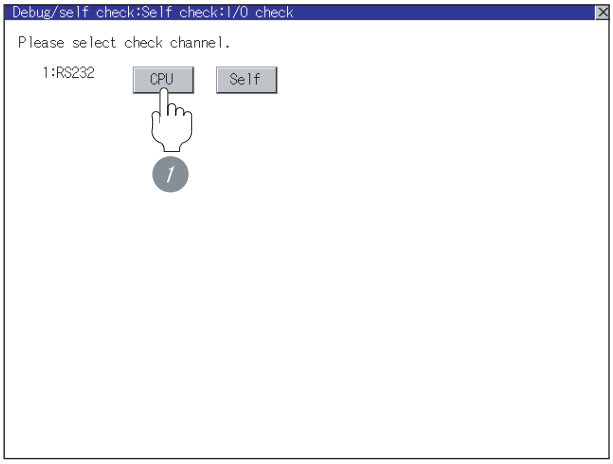
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

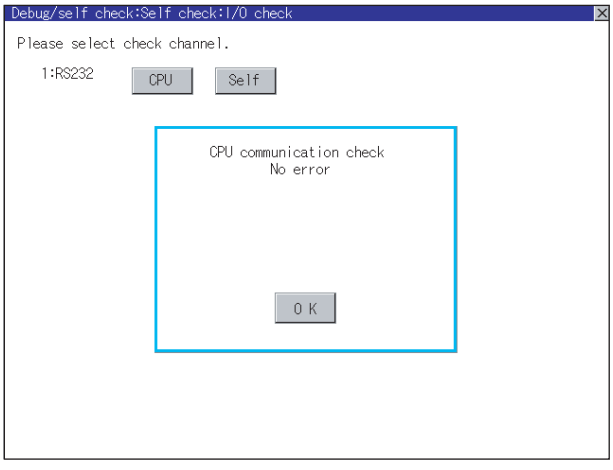
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected controller.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Confirming the Temperature Controller side setting

When connecting the GOT, setting is required for the temperature controller side.

Confirm if the temperature controller side setting is correct.

☞ Section 37.4 Temperature Controller Side Setting

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

37.4 Temperature Controller Side Setting

Point

RKC temperature controller

For details of RKC temperature controller, refer to the following manual.

☞ User's Manual for the RKC temperature controller

Model name		Reference
Temperature controller	H-PCP-J	Section 37.4.1
	H-PCP-A, H-PCP-B	Section 37.4.2
	Z-TIO module, Z-DIO module	Section 37.4.3
	Z-COM module	Section 37.4.4

37.4.1 Connecting to H-PCP-J

1 Communication settings

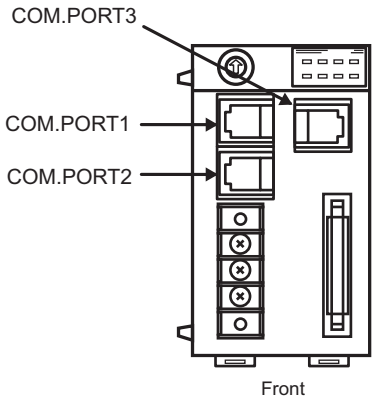
Make the communication settings of the temperature controller.

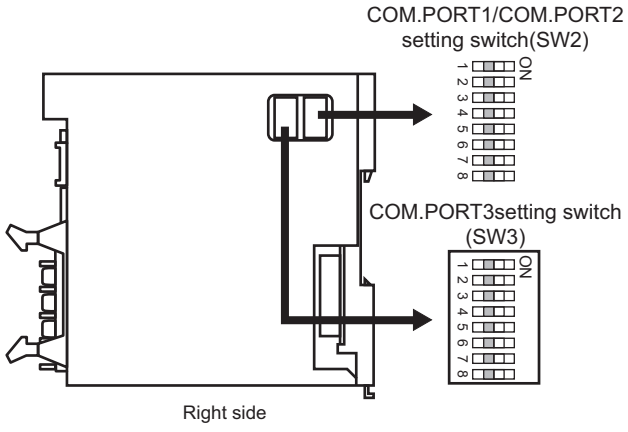
Setting item	Setting range
Transmission speed*1	9600bps, 19200bps, 38400bps
Communication mode	MODBUS
Data length	8bits
Parity bit	None
Stop bit	1bit
Unit address*2	0 to F

*1 Make the same setting as that of the GOT side.
*2 Select the unit address without overlapping with that of other units.

2 Settings by DIP switch

Make the settings of transmission speed, communication mode, data length, parity bit and stop bit.





(1) Transmission speed settings

(a) COM.PORT1/COM.PORT2

SW2		Communication speed
3	4	
OFF	OFF	9600bps
ON	OFF	19200bps
OFF	ON	38400bps

(b) COM.PORT3

SW3		Communication speed
3	4	
OFF	OFF	9600bps
ON	OFF	19200bps
OFF	ON	38400bps

(2) Communication mode settings

(a) COM.PORT1/COM.PORT2

SW2				Communication protocol
5	6	7	8	
ON	OFF	OFF	OFF	MODBUS protocol

(b) COM.PORT3

SW3	Communication protocol
5	
ON	MODBUS protocol

(3) Settings of data length, parity bit, and stop bit

(a) COM.PORT1/COM.PORT2

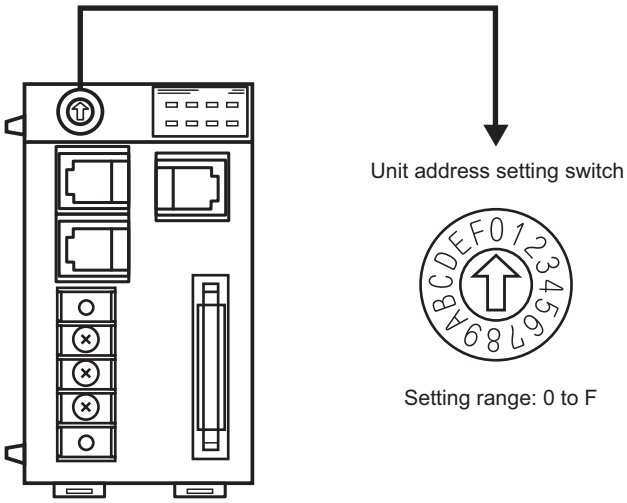
SW2		Data bit configuration
1	2	
OFF	OFF	Data 8-bit, Non parity, Stop 1 bit

(b) COM.PORT3

SW3		Data bit configuration
1	2	
OFF	OFF	Data 8-bit, Non parity, Stop 1 bit

3 Unit address settings

Set the unit address using the unit address setting switch.



37.4.2 Connecting to H-PCP-A, H-PCP-B

1 Communication settings

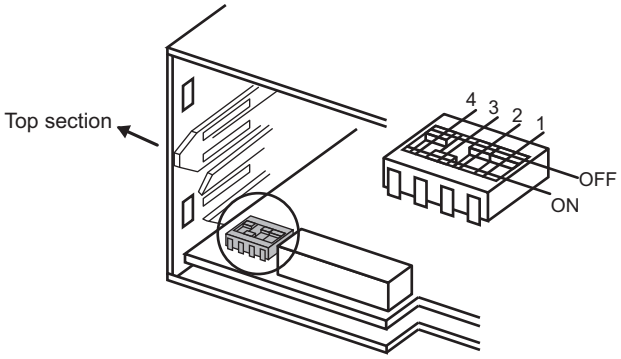
Make the communication settings of the temperature controller.

Setting item	Set value
Transmission speed*1	9600bps, 19200bps
Data length	8bits
Parity bit	None
Unit address*2	0 to F

*1 Make the same setting as that of the GOT side.
*2 Select the unit address without overlapping with that of other units.

2 Settings by DIP switch

Make the settings of transmission speed, data length, parity bit, and stop bit.



Rear view of module mainframe with mother block removed

(1) Transmission speed

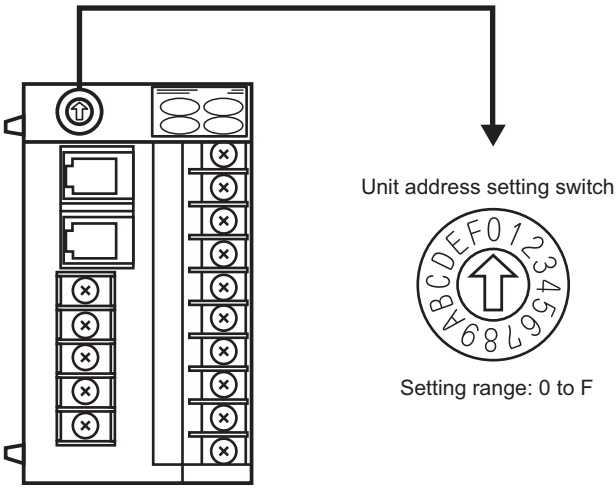
3	4	Communication speed
OFF	ON	9600bps
ON	ON	19200bps

(2) Settings of data length and parity bit

1	2	Data bit configuration
OFF	OFF	Data 8-bit, Non parity

3 Unit address settings

Set the unit address using the unit address setting switch.



37.4.3 Connecting to Z-TIO, Z-DIO

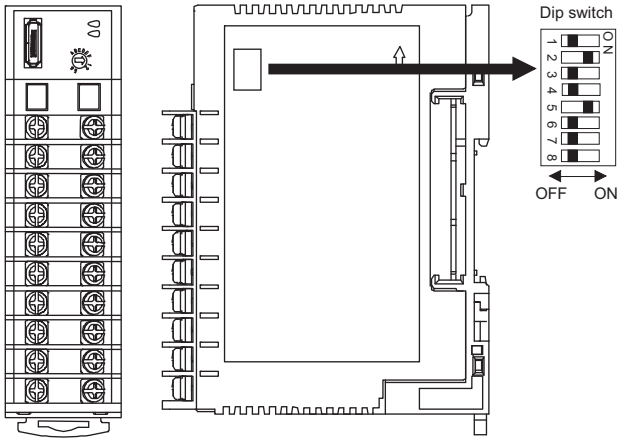
1 Communication settings

Setting item	Set value
Communication speed*1	9600bps, 19200bps, 38400bps
Communication protcol	MODBUS
Data bit configuration	Data length : 8bit, Parity : None
	Data length : 8bit, Parity : Even
	Data length : 8bit, Parity : Odd
	Stop bit : 1bit (fixed)
Module address*2	0 to F

*1 Make the same setting as that of the GOT side.
*2 Select the module address without overlapping with that of other units.

2 Settings by DIP switch

Make the settings of transmission speed, data bit configuration, communication protocol

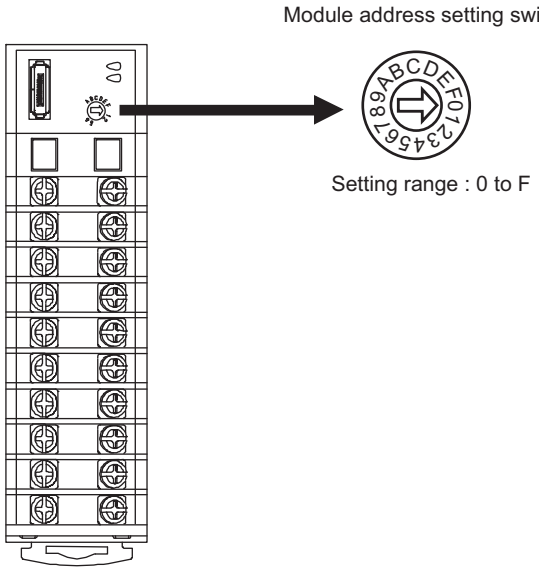


Front side Right side

Setting item	Set value	Switch No					
		1	2	3	4	5	6
Communi-cation speed	9600bps	ON	OFF				
	19200bps	OFF	ON				
	38400bps	ON	ON				
Data bit configuration	Data length : 8bit, Parity : None			OFF	OFF	ON	
	Data length : 8bit, Parity : Even			OFF	ON	ON	
	Data length : 8bit, Parity : Odd			ON	ON	ON	
Communi-cation protcol	MODBUS						ON

3 Unit address settings

Set the unit address using the unit address setting switch.



37.4.4 Connecting to Z-COM

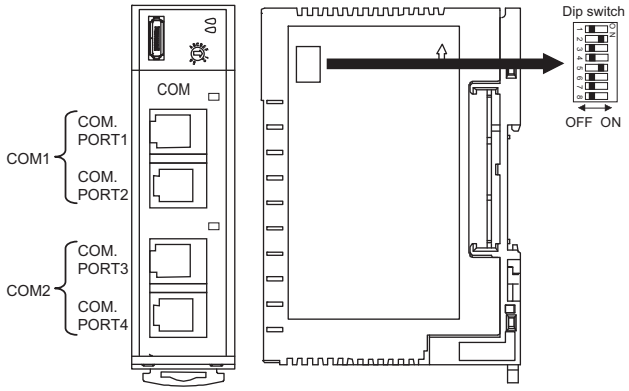
1 Communication settings

Setting item	Set value
Communication speed*1	9600bps, 19200bps, 38400bps
Communication protcol	Host (MODBUS)
Data bit configuration	Data length : 8bit, Parity : None, Stop bit : 1bit (fixed)
Unit address*2	0 to F
Dip switch settings valid / invalid	valid

*1 Make the same setting as that of the GOT side.
*2 Select the module address without overlapping with that of other units.

2 Settings by DIP switch

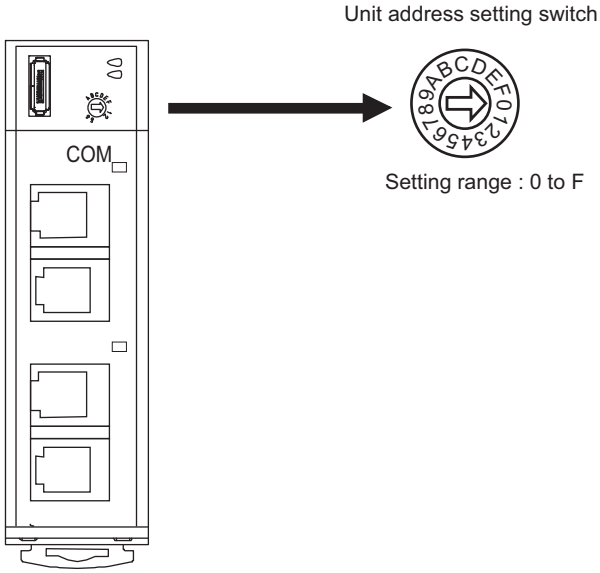
Make the settings of transmission speed, data bit configuration, communication protocol.



Setting item	Set value	Switch No							
		1	2	3	4	5	6	7	8
Communication speed (COM1)	9600bps	ON	OFF						
	19200bps	OFF	ON						
	38400bps	ON	ON						
Communication protcol (COM1)	Host (MODBUS)			ON					
Communication speed (COM2)	9600bps				OFF				
	19200bps				ON				
Communication protcol (COM2)	Host (MODBUS)					ON	OFF	OFF	
Dip switch settings valid / invalid	valid								OFF

3 Unit address settings

Set the unit address using the unit address setting switch.



37.4.5 Connecting to CB Series

(1) Communication settings

Setting item	Set value
Device address*1	1 to 99
Communication speed*2	2: 9600bps 3: 19200bps
Data bit configuration	0: 8/1/None 6: 8/1/Even 7: 8/1/Odd
Interval time	0 to 150

*1 When the setting value is set to 0, a communication is not made.

*2 Make the same setting as that of the GOT side.

(2) Communication setting mode

Set the communication setting mode using the operation panel of the CB series main unit.

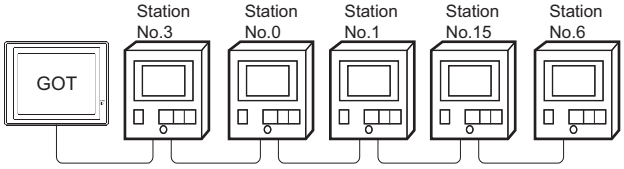
For details of the communication setting mode, refer to the following.

☞ CB series "Communication Instruction Manual"

37.4.6 Station No. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

The station number setting range of the temperature controller side differs from that of the GOT side. Specify the station No. of the temperature controller to be changed when setting devices referring the following table.

• H-PCP-J, H-PCP-A, H-PCP-B, Z-TIO, Z-COM

	Specification range			Refer to
Module/Unit address setting of temperature controller side	0	1 to E	F	Section 37.4.1 Section 37.4.2 Section 37.4.3 Section 37.4.4
Station number setting of GOT side when setting devices	1	2 to 15	16	-

• Z-DIO

	Specification range			Refer to
Module address setting of temperature controller side	0	1 to E	F	Section 37.4.3
Station number setting of GOT side when setting devices	17	18 to 31	32	-

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).

When specifying the station No. from 100 to 155 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station NO.	Compatible device	Setting range
100	GD10	1 to 99 For the setting other than the above, error (dedicated device is out of range) will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

37.5 Precautions

1 Station number setting of the temperature controller system

Make sure to establish temperature controller system with No.01 station.

2 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock function will be disabled.

3 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller.
For example, faulty station that has communication timeout can be cut from the system.
For details of the setting contents of GOT internal device, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual
Section 2.9.1 GOT internal device

37.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
RKC connection	Supporting the RKC temperature controller connection	2.18U	Communication driver RKC SR HG(MODBUS) [02.01.**]
RKC connection	Supporting the CHINO controller connection Cut the portion of multiple connection of the controller. Automatically avoid the monitoring operation of the faulty station.	2.58L	Communication driver RKC SR HG(MODBUS) [03.03.**]
RKC connection	Supporting the connections to GT16	2.90U	Communication driver RKC SR HG(MODBUS) [04.02.**]
	Supporting the connection to CB series		

OTHER CONNECTIONS

Chapter 38 INVERTER CONNECTION

Chapter 39 SERVO AMPLIFIER CONNECTION

Chapter 40 ROBOT CONTROLLER CONNECTION

Chapter 41 CNC CONNECTION

Chapter 42 GOT MULTI-DROP CONNECTION

(Continued to next page)

Chapter 43 CONNECTION TO SOUND OUTPUT UNIT

Chapter 44 CONNECTION TO EXTERNAL I/O DEVICE

Chapter 45 FINGERPRINT AUTHENTICATION DEVICE CONNECTION

Chapter 46 BAR CODE READER CONNECTION

Chapter 47 VIDEO/RGB CONNECTION

Chapter 48 MULTIMEDIA CONNECTION

Chapter 49 PRINTER CONNECTION

Chapter 50 REMOTE PERSONAL COMPUTER OPERATION CONNECTION

Chapter 51 RFID CONNECTION

38

INVERTER CONNECTION



38.1 System Configuration . . . . . page 38-2

This section describes the equipment and cables needed when connecting a GOT to a FREQOL SERIES INVERTER. Select a system suitable for your application.

38.2 Connection Cable . . . . . page 38-23

This section describes the specifications of the cables needed when connecting a GOT to a FREQOL SERIES INVERTER. Check the specifications of the connection cables.

38.3 Preparatory Procedures for Monitoring . . . . . page 38-35

This section provides the procedures to be followed before performing monitoring in connection to a FREQOL SERIES INVERTER. The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

38.4 FREQROL Series Inverter Side Settings . . . . . page 38-44

The FREQOL SERIES INVERTER side settings for GOT connection are explained. When checking the PLC side settings, refer to this section.

38.5 Precautions . . . . . page 38-54

This section describes the precautions about FREQROL SERIES INVERTER connection. Refer to this section without fail before starting servo FREQROL SERIES INVERTER.

38.6 List of Functions Added by Version Upgrade . . . . . page 38-55

This section describes the functions added by version upgrade of GT Designer2 or OS.

38.1 System Configuration

Select a system configuration suitable for your application.

Point

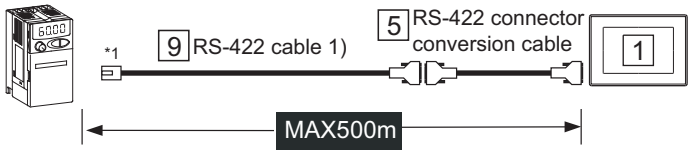
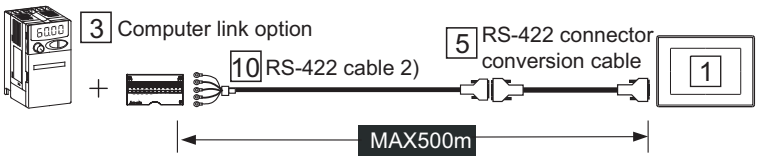
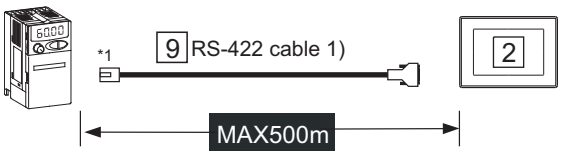
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

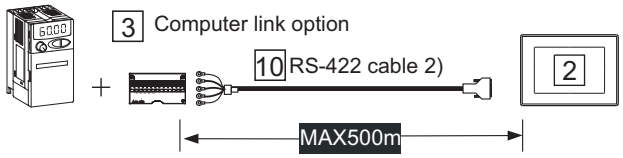
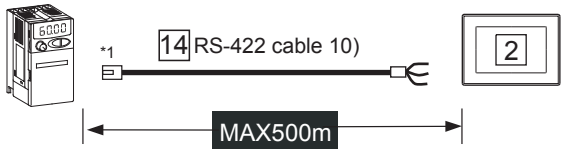
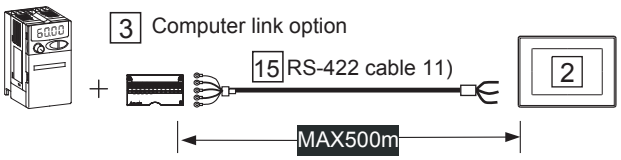
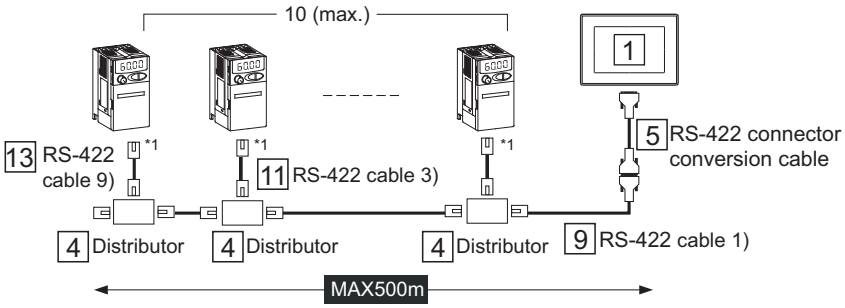
38.1.1 Connecting to FREQROL A500/A500L/F500/F500L/V500/V500L

Communication driver
FREQROL 500/700

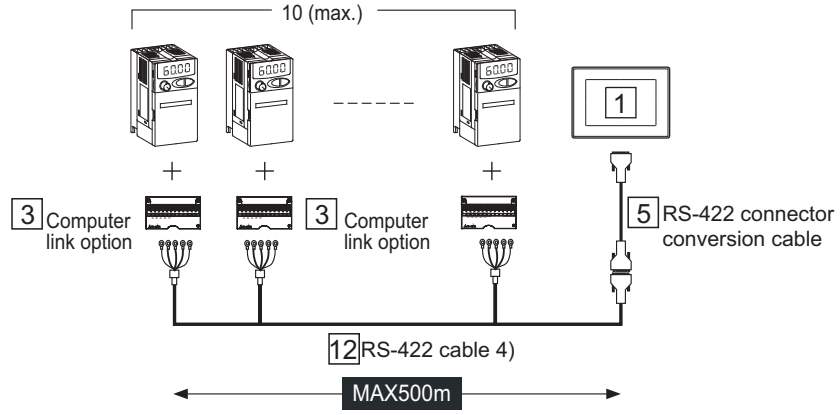
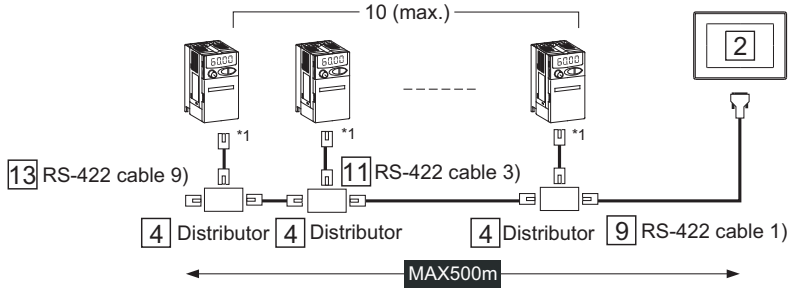
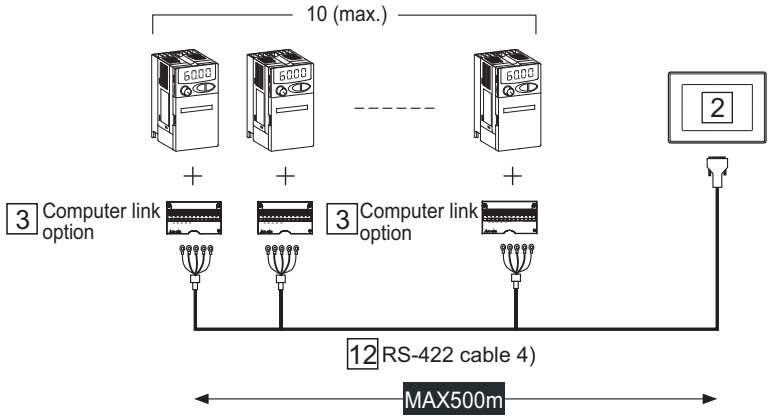
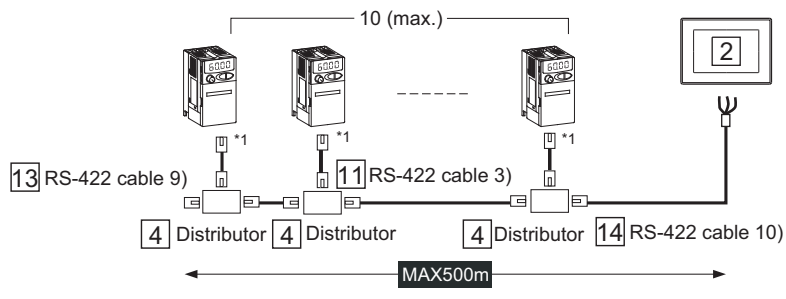
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	1	500m or less		GT16
				GT16
				GT16 GT15 GT11 Serial GT105□ 4□

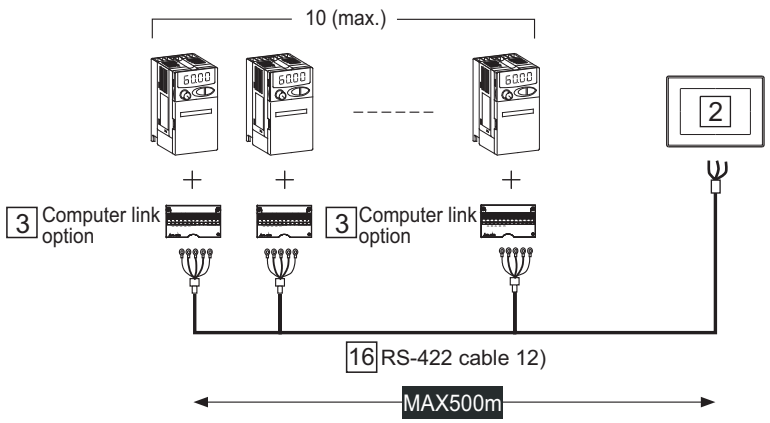
*1 Connect to the PU port of the inverter.

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	1	500m or less		GT16 GT15 GT11 Serial GT105□4□
				GT24V 10 20 30 (RS-422)
				GT24V 10 20 30 (RS-422)
	10 (max.)			GT16

*1 Connect to the PU port of the inverter.

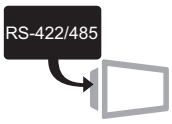
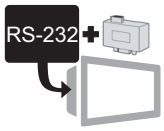
Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	10 (max.)	500m or less		GT16
	10 (max.)			GT16 GT15 GT11 Serial GT10 5□ 4□
				GT16 GT15 GT11 Serial GT10 5□ 4□
				GT24V10 20 30 (RS-422)

*1 Connect to the PU port of the inverter.

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	10 (max.)	500m or less		GT 24V 10 20 30 (RS-422)

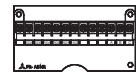
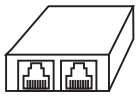
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT 16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT 16 GT 15
	2	RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT 16 GT 15
	2	RS-422 interface • For RS-422 communication	— (Built into GOT)	GT 11 Serial GT 10 5□ 4□ GT 24V 10 20 30 (RS-422)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Inverter

Image	No.	Name	Model name
	3	Computer link option	FR-A5NR
	4	Distributor	BMJ-8 (Recommended)

4 is a product manufactured by HACHIKO ELECTRIC CO., LTD.
For details of this product, contact HACHIKO ELECTRIC CO., LTD.

(3) Cable

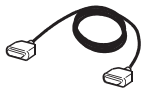
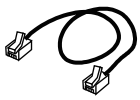
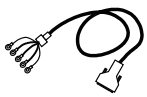
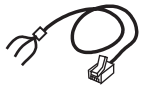
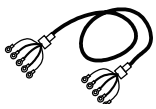
Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	9	RS-422 cable 1) • Between inverter and RS-422 connector conversion cable • Between distributor and RS-422 connector conversion cable • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. ☞ Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□
	10	RS-422 cable 2) • Between FR-A5NR and RS-422 connector conversion cable • Between FR-A5NR and GOT		
	11	RS-422 cable 3) • Between distributor and inverter • Between distributors	To be prepared by the user. ☞ Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□ GT24V10 20 30 (RS-422)
	12	RS-422 cable 4) • Between FR-A5NR and RS-422 connector conversion cable • Between FR-A5NR and GOT • Between FR-A5NR and FR-A5NR	To be prepared by the user. ☞ Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□

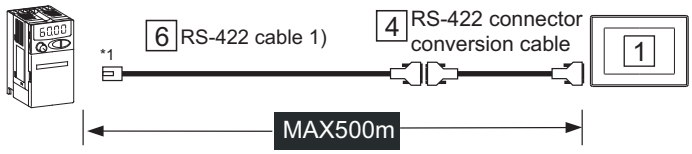
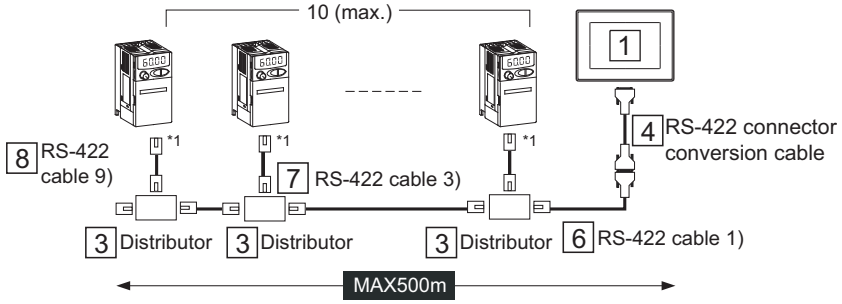
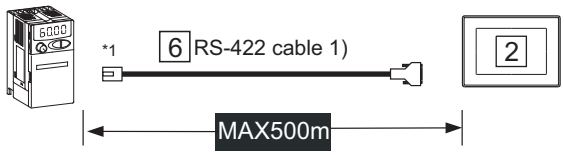
Image	No.	Name	Model name	Model
	13	RS-422 cable 9) • Mounting a terminating resistor	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
	14	RS-422 cable 10) • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. Section 38.2 Connection Cable	GT24V 10 20 30 (RS-422)
	15	RS-422 cable 11) • Between FR-A5NR and GOT		
	16	RS-422 cable 12) • Between FR-A5NR and GOT • Between FR-A5NR and FR-A5NR		

38.1.2 Connecting to FREQROL E500/S500/S500E/F500J/D700

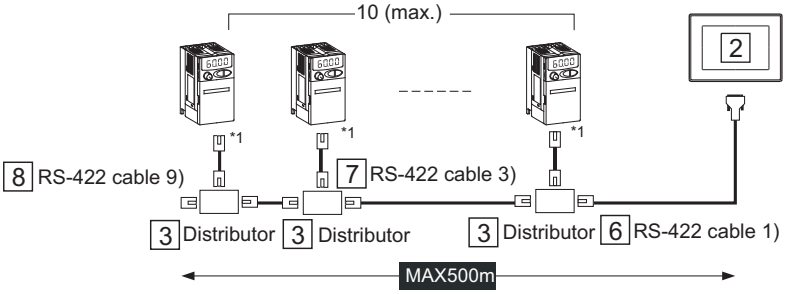
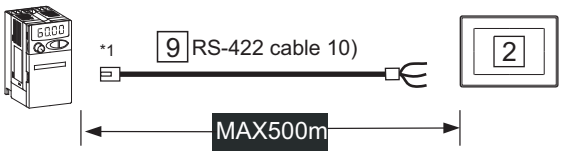
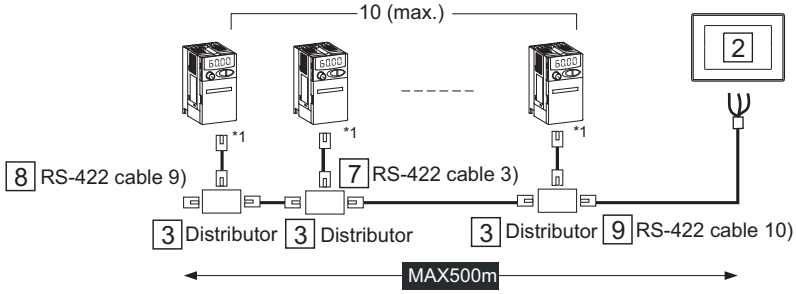
Communication driver

FREQROL 500/700

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	1	500m or less		GT16
	10 (max.)			GT16
	1			GT16 GT15 GT11 Serial GT10

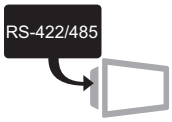
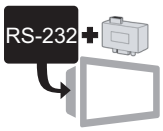
*1 Connect to the PU port of the inverter.

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	10 (max.)	500m or less		GT16 GT15 GT11 Serial GT105□ 4□
	1			GT24V 10 20 30 (RS-422)
	10 (max.)			GT24V 10 20 30 (RS-422)

*1 Connect to the PU port of the inverter.

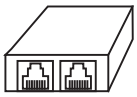
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V1020 30 (RS-422)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Inverter

Image	No.	Name	Model name
	3	Distributor	BMJ-8 (Recommended)

3 is a product manufactured by HACHIKO ELECTRIC CO., LTD.
For details of this product, contact HACHIKO ELECTRIC CO., LTD.

(3) Cable

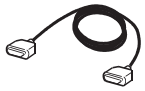
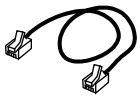
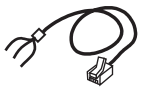
Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	6	RS-422 cable 1) • Between inverter and RS-422 connector conversion cable • Between distributor and RS-422 connector conversion cable • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT105□ 4□

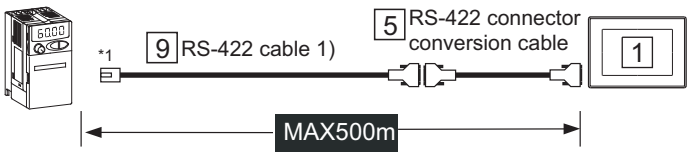
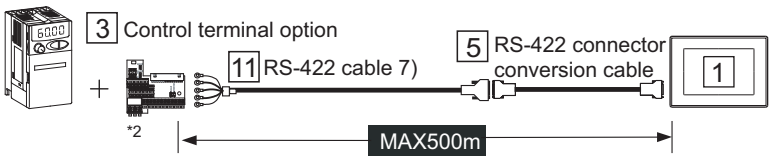
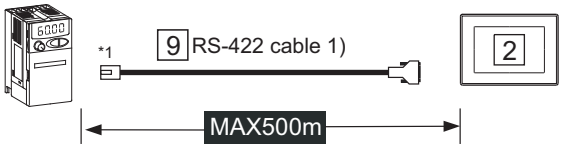
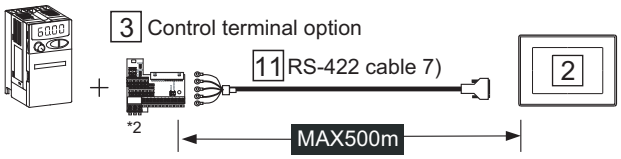
Image	No.	Name	Model name	Model
	7	RS-422 cable 3) • Between distributor and inverter • Between distributors	To be prepared by the user. ☞ Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 1030 (RS-422)
	8	RS-422 cable 9) • Mounting a terminating resistor		
	9	RS-422 cable 10) • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. ☞ Section 38.2 Connection Cable	GT24V1020 1030 (RS-422)

38.1.3 Connecting to FREQROL E700

Communication driver

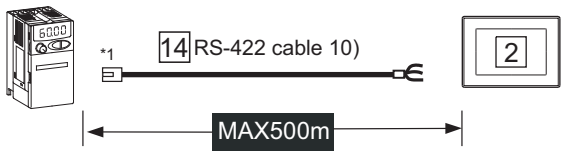
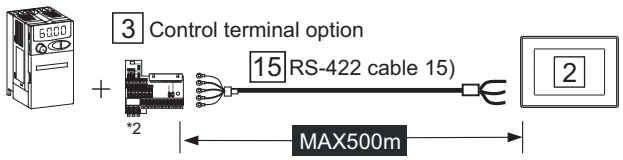
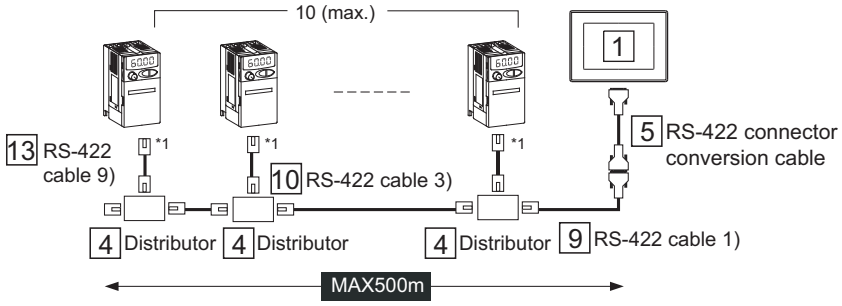
FREQROL 500/700

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	1	500m or less		GT16
				GT16
				GT16 GT15 GT11 Serial GT105□ GT104□
				

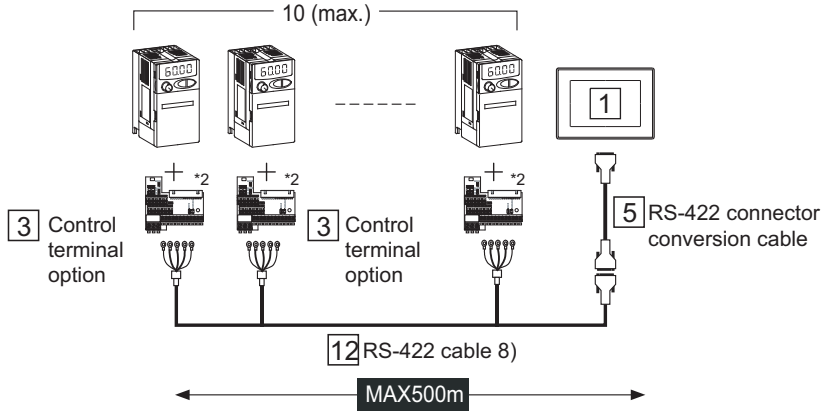
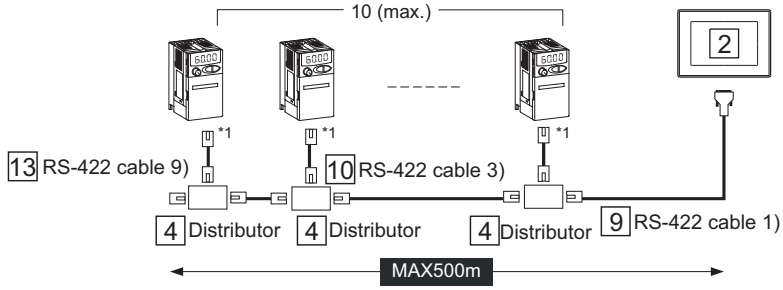
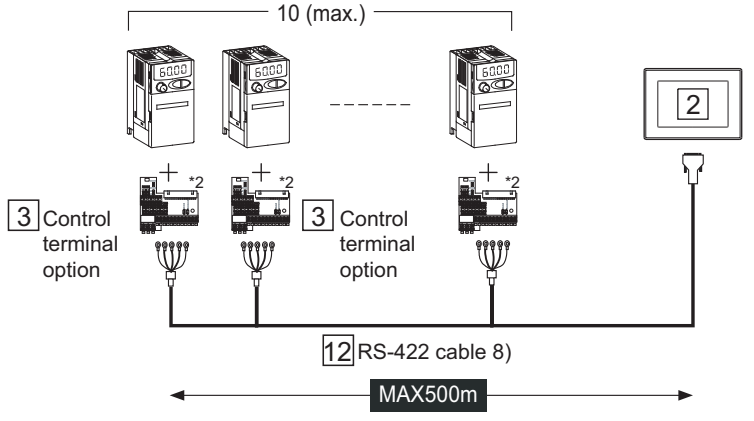
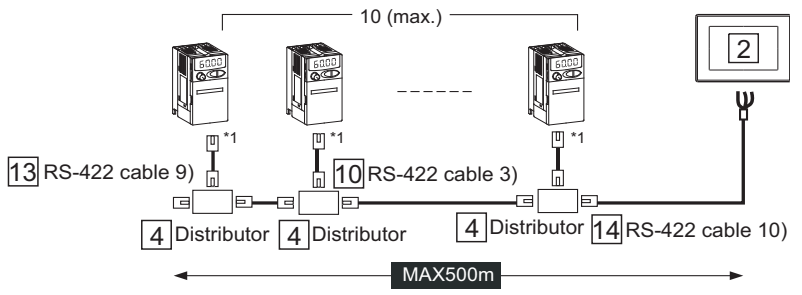
*1 Connect to the PU port of the inverter.

*2 The control terminal option and the PU port cannot be used at the same time.

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	1	500m or less		GT 24V 10 20 30 (RS-422)
				
	10 (max.)			GT 16

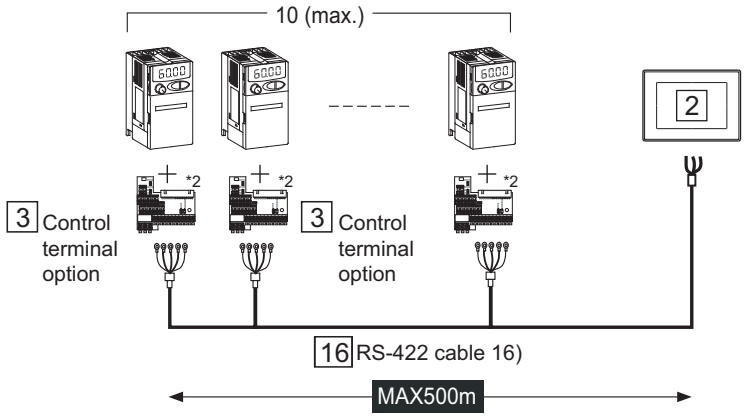
*1 Connect to the PU port of the inverter.

*2 The control terminal option and the PU port cannot be used at the same time.

Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	10 (max.)	500m or less		GT16
				GT16 GT15 GT11 Serial GT105□4□
				
				GT24V10 20 30 (RS-422)

*1 Connect to the PU port of the inverter.

*2 The control terminal option and the PU port cannot be used at the same time.

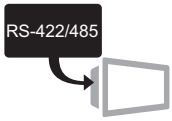
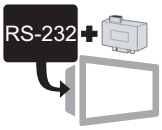
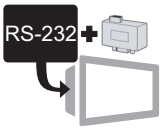
Connection conditions			System configuration	Model
Number of GOTs	Number of inverters	Distance		
1	10 (max.	500m or less		GT 24V 10 20 30 (RS-422)

*1 Connect to the PU port of the inverter.

*2 The control terminal option and the PU port cannot be used at the same time.

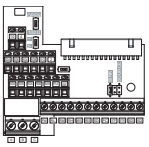
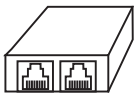
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT 16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT 16 GT 15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT 16 GT 15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT 11 Serial GT 10 5□ 4□ GT 24V 10 20 30 (RS-422)

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Inverter

Image	No.	Name	Model name
	3	Control terminal option	FR-E7TR
	4	Distributor	BMJ-8 (Recommended)

4 is a product manufactured by HACHIKO ELECTRIC CO., LTD.
For details of this product, contact HACHIKO ELECTRIC CO., LTD.

(3) Cable

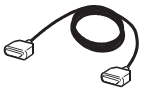
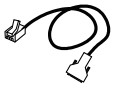
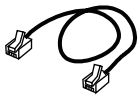
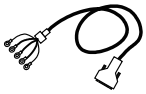
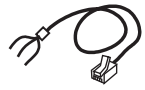
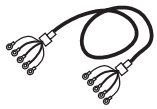
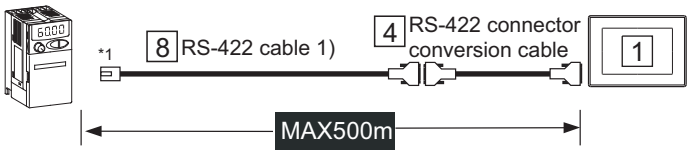
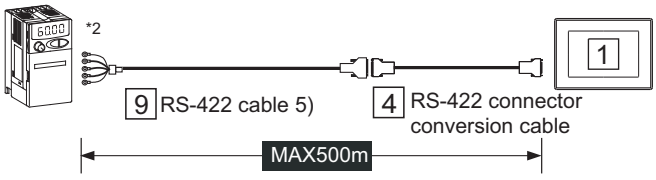
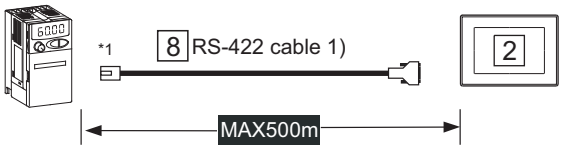
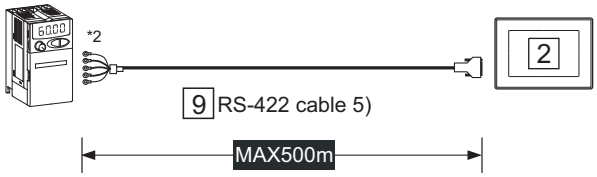
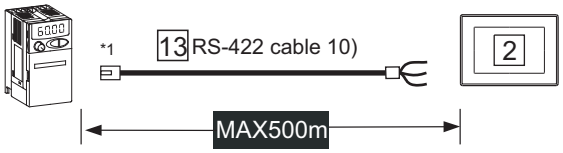
Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	9	RS-422 cable 1) • Between inverter and RS-422 connector conversion cable • Between distributor and RS-422 connector conversion cable • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT105□4□
	10	RS-422 cable 3) • Between distributor and inverter • Between distributors	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
	11	RS-422 cable 7) • Between FR-E7TR and RS-422 connector conversion cable • Between FR-E7TR and GOT	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial (RS-422)
	12	RS-422 cable 8) • Between FR-E7TR and GOT • Between FR-E7TRs		

Image	No.	Name	Model name	Model
	13	RS-422 cable 9) • Mounting a terminating resistor	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT105□4□ GT24V 10 20 30 (RS-422)
	14	RS-422 cable 10) • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. Section 38.2 Connection Cable	GT24V 10 20 30 (RS-422)
	15	RS-422 cable 15) • Between FR-E7TR and GOT		
	16	RS-422 cable 16) • Between FR-E7TR and GOT • Between FR-E7TRs		

38.1.4 Connecting to FREQROL A700/F700

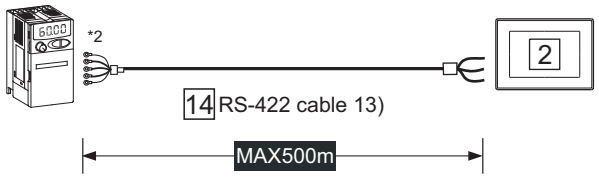
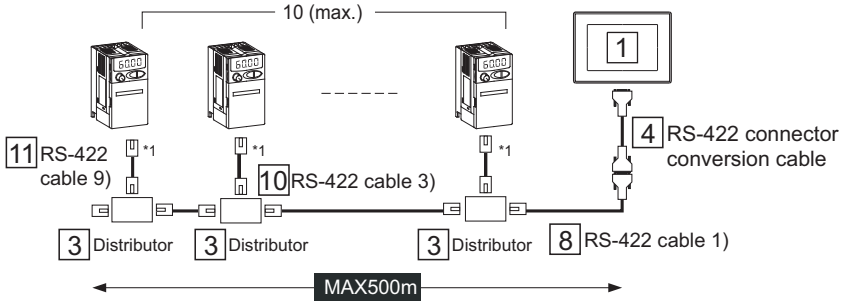
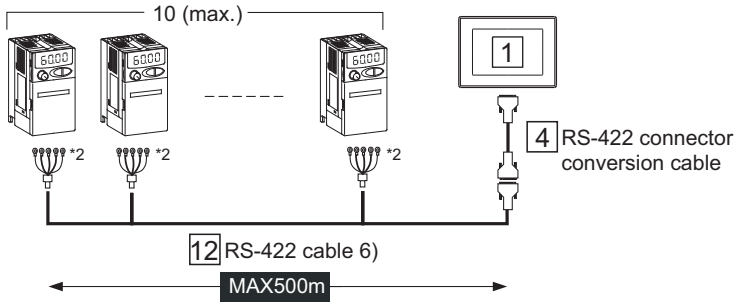
Communication driver
FREQROL 500/700

1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOT	Number of inverters	Distance		
1	1	500m or less		GT16
				GT16
				GT16 GT15 GT11 Serial GT105□ GT104□
				GT16 GT15 GT11 Serial GT105□ GT104□
				GT24V10 GT2V20 GT2V30 (RS-422)

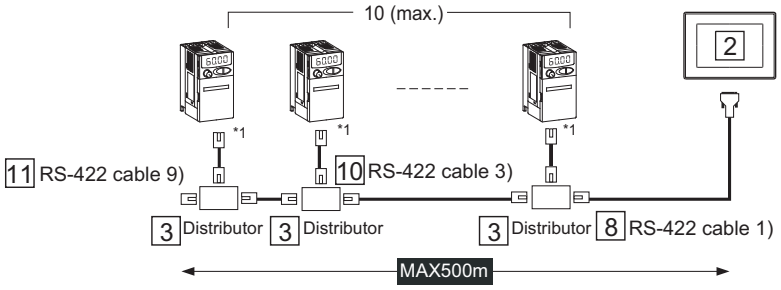
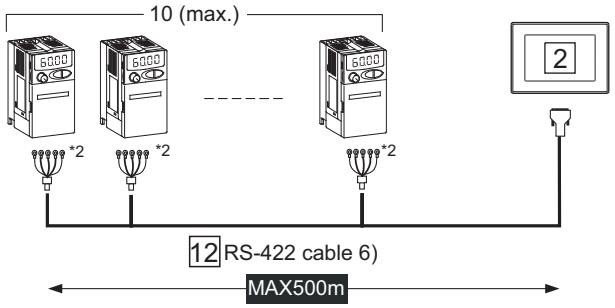
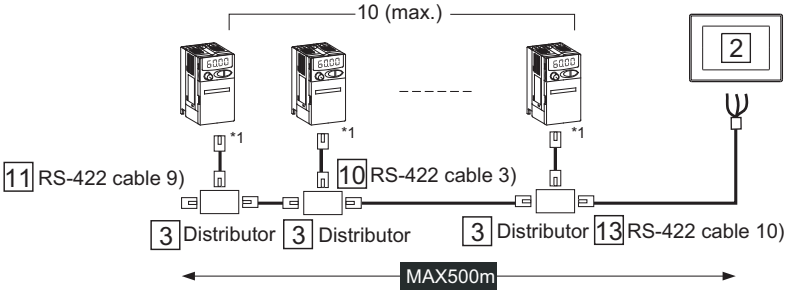
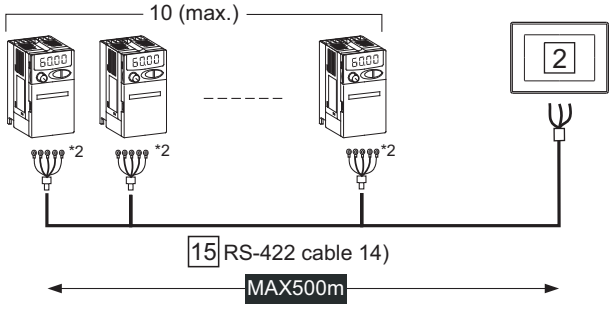
*1 Connect to the PU port of the inverter.

*2 Connect to the RS485 terminal block (built into inverter).

Connection conditions			System configuration	Model
Number of GOT	Number of inverters	Distance		
1	1	500m or less		GT 24V 10 20 30 (RS-422)
	10 (max.)			GT 16
				

*1 Connect to the PU port of the inverter.

*2 Connect to the RS485 terminal block (built into inverter).

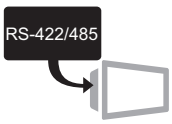
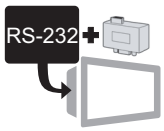
Connection conditions			System configuration	Model
Number of GOT	Number of inverters	Distance		
1	10 (max.)	500m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
				GT16 GT15 GT11 Serial GT10 5□ 4□
				GT24V10 20 30 (RS-422)
				GT24V10 20 30 (RS-422)

*1 Connect to the PU port of the inverter.

*2 Connect to the RS485 terminal block (built into inverter).

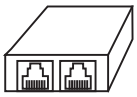
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	2	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V10 20 30 (RS-422)

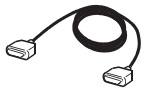
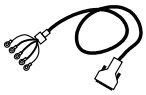
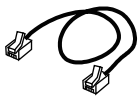
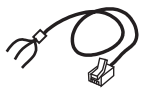
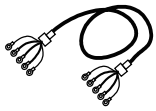
*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Inverter

Image	No.	Name	Model name
	3	Distributor	BMJ-8 (Recommended)

3 is a product manufactured by HACHIKO ELECTRIC CO., LTD.
For details of this product, contact HACHIKO ELECTRIC CO., LTD

(3) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	8	RS-422 cable 1) • Between inverter and RS-422 connector conversion cable • Between distributor and RS-422 connector conversion cable • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□
	9	RS-422 cable 5) • Between inverter and RS-422 connector conversion cable • Between inverter and GOT		
	10	RS-422 cable 3) • Between distributor and inverter • Between distributors	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□ GT24V10 20 30 (RS-422)
	11	RS-422 cable 9) • Mounting a terminating resistor		
	12	RS-422 cable 6) • Between inverter and RS-422 connector conversion cable • Between inverter and GOT • Between inverters	To be prepared by the user. Section 38.2 Connection Cable	GT16 GT15 GT11 Serial GT10 5□ 4□
	13	RS-422 cable 10) • Between inverter and GOT • Between distributor and GOT	To be prepared by the user. Section 38.2 Connection Cable	GT24V10 20 30 (RS-422)
	14	RS-422 cable 13) • Between inverter and GOT		
	15	RS-422 cable 14) • Between inverter and GOT • Between inverters		

38.2 Connection Cable

The RS-422 cable used for connecting the GOT to the inverter should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-422 cable (☞ Section 38.2.1)

Model name		Connection	Connection cable	
			GT16, GT15, GT11, GT105□, GT104□	GT1020, GT1030
FREQROL	A500/A500L/F500/ F500L/V500/V500L	Between PU port and GOT	RS-422 cable 1)	RS-422 cable 10)
	E500/F500J/S500/ S500E/D700	Between PU port and GOT	RS-422 cable 1)	RS-422 cable 10)
	E700	Between PU port and GOT	RS-422 cable 1)	RS-422 cable 10)
	A700/F700	Between PU port and GOT	RS-422 cable 1)	RS-422 cable 10)
		Between RS485 terminal block and RS485 terminal block	RS-422 cable 5) RS-422 cable 6)	RS-422 cable 13) RS-422 cable 14)
Distributor	BMJ-8	Between BMJ-8s	RS-422 cable 1)	RS-422 cable 10)
		Between BMJ-8 and BMJ-8	RS-422 cable 3)	RS-422 cable 3)
		Between FREQROLs		
Computer link option	FR-A5NR	Between FR-A5NRs	RS-422 cable 2) RS-422 cable 4)	RS-422 cable 11) RS-422 cable 12)
Control terminal option	FR-E7TR	Between FR-E7TRs	RS-422 cable 7) RS-422 cable 8)	RS-422 cable 15) RS-422 cable 16)
terminating resister	—	—	RS-422 cable 9)	RS-422 cable 9)

38.2.1 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to an inverter.

1 Connection diagram

(1) RS-422 cable 1) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	Inverter or Distributor side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin layout*1
RDA	2	←	5	SDA	PU port 1 8 RJ-45 plug(male)
RDB	7	←	4	SDB	
SDA	1	→	3	RDA	
SDB	6	→	6	RDB	
RSA	3		2	P5S	
RSB	8		8	P5S	
CSA	4	←	—	—	
CSB	9	←	—	—	
SG	5		1	SG	
FG	—				

*1 The connector figure shows the engagement face.

(2) RS-422 cable 2) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	FR-A5NR side (Terminal block)
Signal name	Pin No.		Signal name
RDA	2	←	SDA
RDB	7	←	SDB
SDA	1	→	RDA
SDB	6	→	RDB
RSA	3		RDR
RSB	8		
CSA	4	←	
CSB	9	←	
SG	5		SG
FG	—		

*1

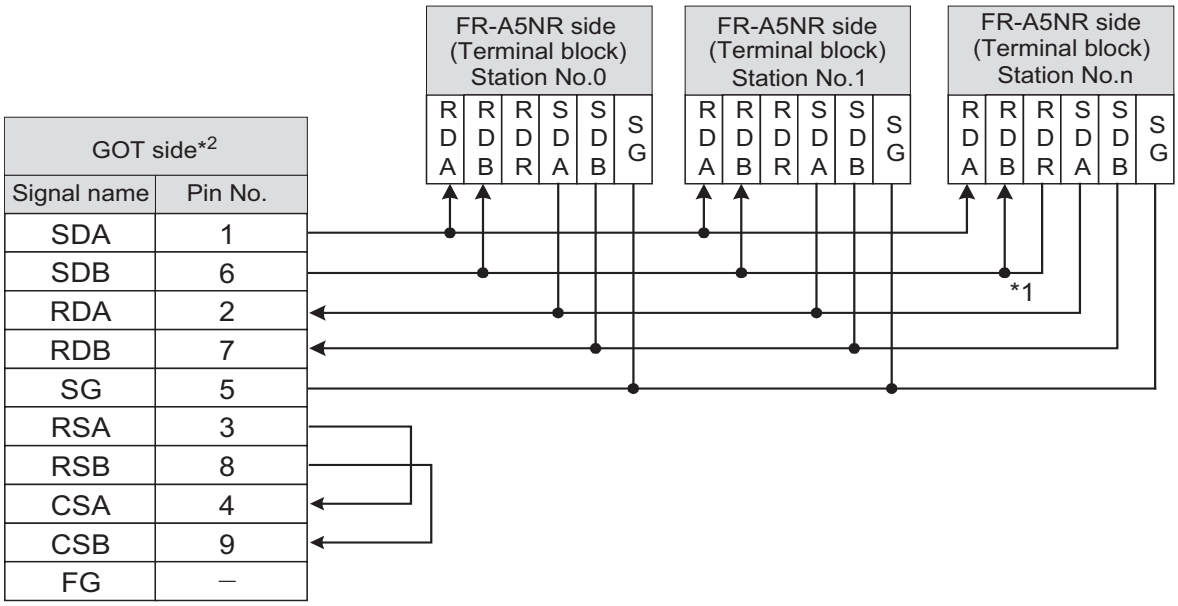
*1 Connect a terminating resistor jumper to RDB and RDR. The terminating resister jumper is packed together with the FR-A5NR.

(3) RS-422 cable 3)

Distributor side (Modular connector)			Cable connection and signal direction	inverter side or distributor side (Modular connector)		
Pin layout*1	Signal name	Pin No.		Pin No.	Signal name	Pin layout*1
PU port 1 8 RJ-45 plug(male)	SDA	5		5	SDA	PU port 1 8 RJ-45 plug(male)
	SDB	4		4	SDB	
	RDA	3		3	RDA	
	RDB	6		6	RDB	
	P5S	2		2	P5S	
	P5S	8		8	P5S	
	SG	1		1	SG	

*1 The connector figure shows the engagement face.

(4) RS-422 cable 4) (For GT16, GT15, GT11, GT105□, GT104□)



*1 Connect a terminating resistor jumper to RDB and RDR which are assigned in the FR-A5NR of the inverter located farthest from the GOT.
The terminating resister jumper is packed together with the FR-A5NR.

*2 Set the terminating resistor of GOT side, which will be a terminal, to "Enable".

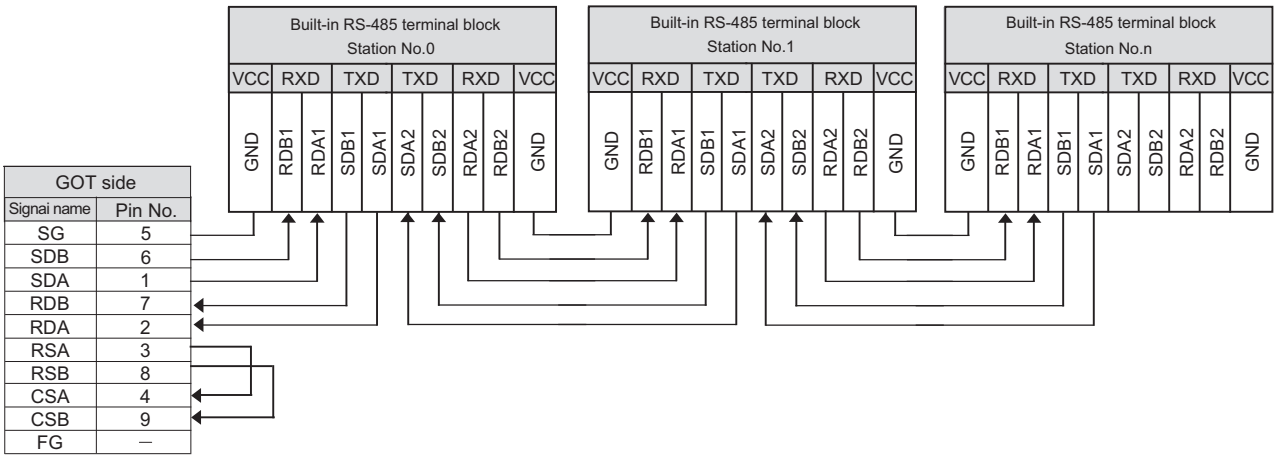
4 Connecting terminating resistors

(5) RS-422 cable 5) (For GT16, GT15, GT11, GT105□,GT104□)

GOT side		Cable connection and signal direction	Inverter side RS485 terminal block(built into the inverter)	
Signal name	Pin No.		Terminal name	Terminal block name
RDA	2	←	SDA1(TXD1+)	TXD
RDB	7	←	SDB1(TXD1-)	
SDA	1	→	RDA1(RXD1+)	RXD
SDB	6	→	RDB1(RXD1-)	
RSA	3		—	—
RSB	8		—	—
CSA	4		—	—
CSB	9		—	—
SG	5		SG(GND)	VCC
FG	—			

• RDA2, RDB2, SDA2 and SDB2 terminals of the RS485 terminal block (built into the inverter) cannot be used.

(6) RS-422 cable 6) (For GT16, GT15, GT11, GT105□, GT104□)



• Set the terminator switch built in the farthest inverter from the GOT to ON (100Ω).
• Set the terminating resistor of GOT side, which will be a terminal, to “Enable”.

☞ 4 Connecting terminating resistors

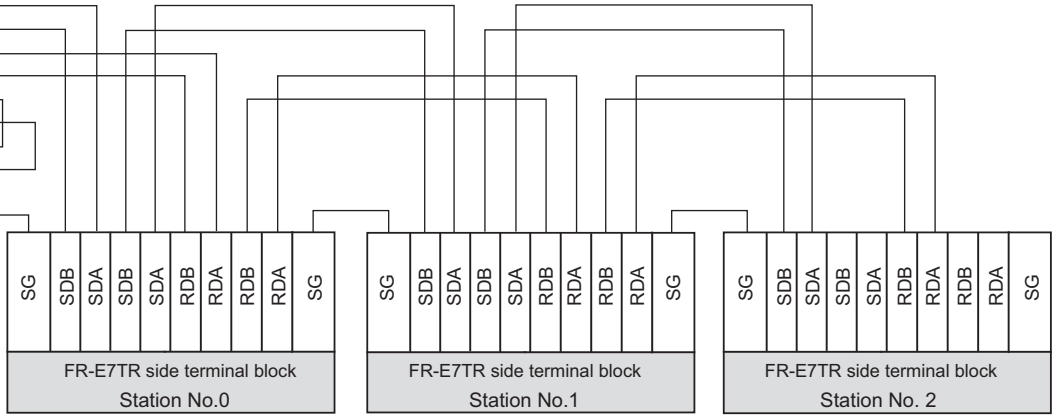
(7) RS-422 cable 7) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side		Cable connection and signal direction	FR-E7TR (Terminal block)
Signal name	Pin No.		Signal name
RDA	2	←	SDA
RDB	7	←	SDB
SDA	1	→	RDA
SDB	6	→	RDB
RSA	3		RDR
RSB	8		
CSA	4	←	
CSB	9	←	
SG	5	—	SG
FG	-		

• Turn ON (100Ω) the terminator switch for the FR-E7TR.

(8) RS-422 cable 8) (For GT16, GT15, GT11, GT105□, GT104□)

GOT side	
Signal name	Pin No.
RDA	2
RDB	7
SDA	1
SDB	6
RSA	3
RSB	8
CSA	4
CSB	9
SG	5
FG	-



• Turn ON (100Ω) the terminator switch for the most distant FR-E7TR from the GOT1000.
• Set the terminating resistor of GOT side, which will be a terminal, to “Enable”.

☞ 4 Connecting terminating resistors

(9) RS-422 cable 9)

Distributor side			Cable connection and signal direction
Pin layout*1	Signal name	Pin No.	
PU port 1 8 RJ-45 plug (male)	SDA	5	Terminating resistor 100Ω1/2W
	SDB	4	
	RDA	3	
	RDB	6	
	P5S	2	
	P5S	8	
	SG	1	

*1 The connector figure shows the engagement face.

(10) RS-422 cable 10) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	Inverter side or distributor side (Modular connector) Pin No.	Signal name	Pin layout*1
SDA		3	RDA	PU port 1 8 RJ-45 plug (male)
SDB		6	RDB	
RDA		5	SDA	
RDB		4	SDB	
SG		1	SG	
RSA		2	P5S	
RSB		7	SG	
CSA		8	P5S	
CSB				

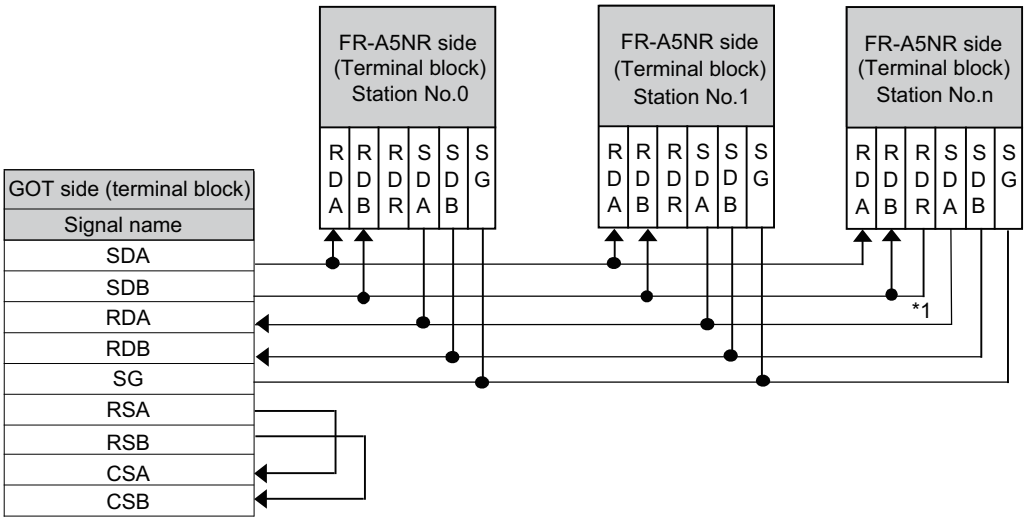
*1 The connector figure shows the engagement face.

(11) RS-422 cable 11) (For GT1030, GT1020)

GOT side (terminal block) Signal name	Cable connection and signal direction	FR-A5NR (Terminal block) Signal name
SDA		RDA
SDB	*1	RDB
RDA		RDR
RDB		SDA
SG		SDB
RSA		SG
RSB		
CSA		
CSB		

*1 Connect a terminating resistor jumper to RDB and RDR. The terminating resister jumper is packed together with the FR-A5NR.

(12) RS-422 cable 12) (For GT1030, GT1020)

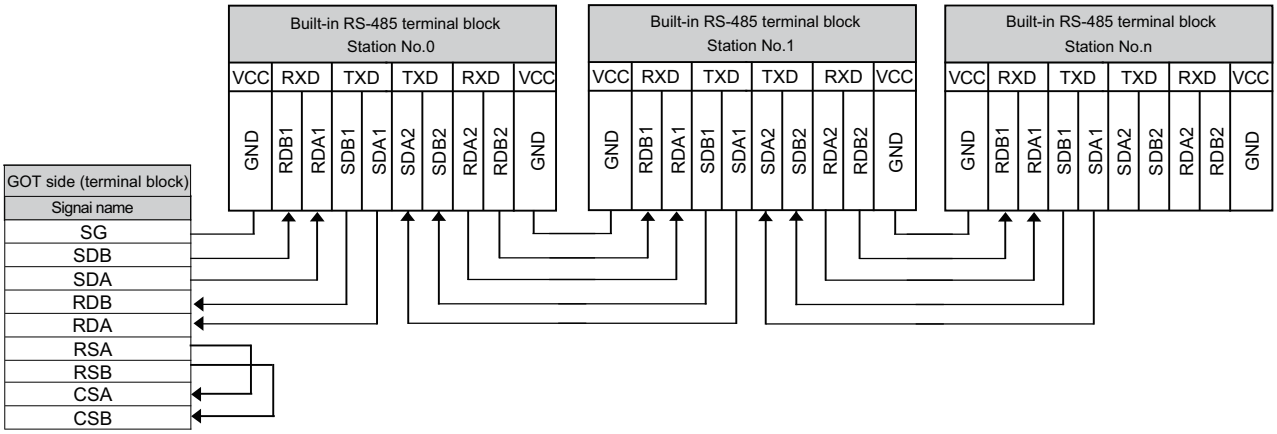


*1 Connect a terminating resistor jumper to RDB and RDR which are assigned in the FR-A5NR of the inverter located farthest from the GOT.
The terminating resister jumper is packed together with the FR-A5NR.

(13) RS-422 cable 13) (For GT1030, GT1020)

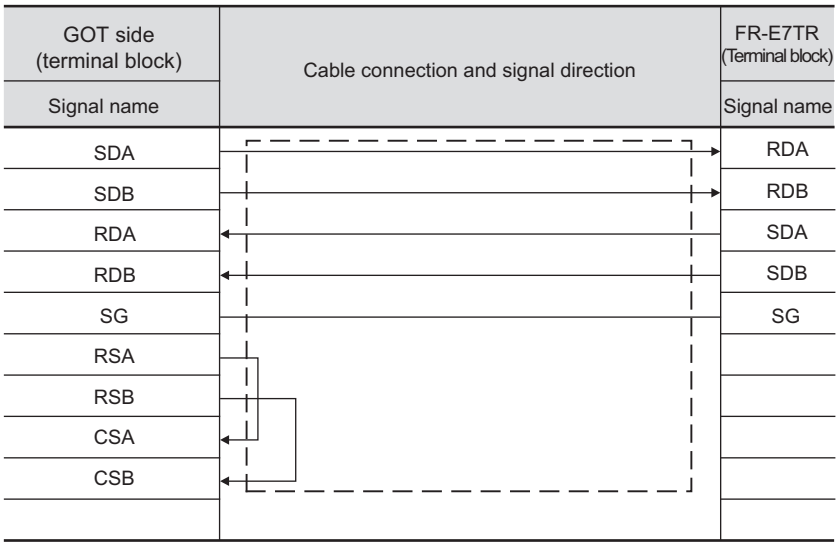
GOT side (terminal block)	Cable connection and signal direction	Inverter side RS485 terminal block(built into the inverter)	
Signal name		Terminal name	Terminal block name
SDA		SDA1(TXD1+)	RXD
SDB		SDB1(TXD1-)	
RDA		RDA1(RXD1+)	TXD
RDB		RDB1(RXD1-)	
SG		SG(GND)	VCC
RSA			
RSB			
CSA			
CSB			

(14) RS-422 cable 14) (For GT1030, GT1020)

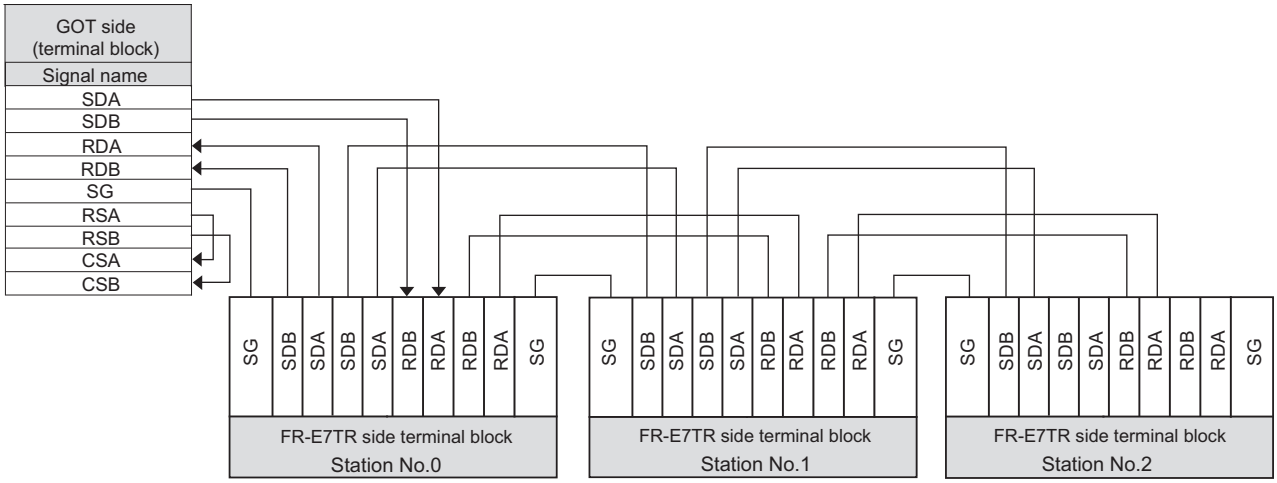


• Set the terminator switch built in the farthest inverter from the GOT to ON (100Ω).

(15) RS-422 cable 15) (For GT1030, GT1020)



(16) RS-422 cable 16) (For GT1030, GT1020)



• Turn ON (100Ω) the terminator switch for the most distant FR-E7TR from the GOT.

2 Connector specifications

(1) GOT side connector

Use the following as the RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector specifications

GOT	Connector model	Connector type	Manufacturer
RS-422 conversion unit	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT16 *1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q			
GT1045-Q, GT1040-Q			
GT1030, GT1020	9-pin Terminal block *2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc
GT15-RS4-9S	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.

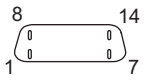
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product)of the cable side is packed together with the GT1030 and GT1020.

(b) Connector pin arrangement

GT16

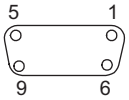
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

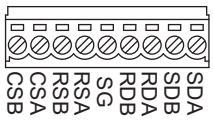
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part

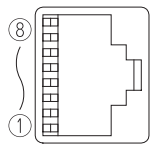


9-pin terminal block

(2) Inverter connector specifications

(a) Pin layout in the PU port

When seen from the front of the inverter (receptacle side)



Modular jack

Pin No.	Signal name	Remark
1	GND (SG)	
2	(P5S)	Not used
3	RXD+ (RDA)	
4	TXD- (SDB)	
5	TXD+ (SDA)	
6	RXD- (RDB)	
7	GND (SG)	
8	(P5S)	Not used

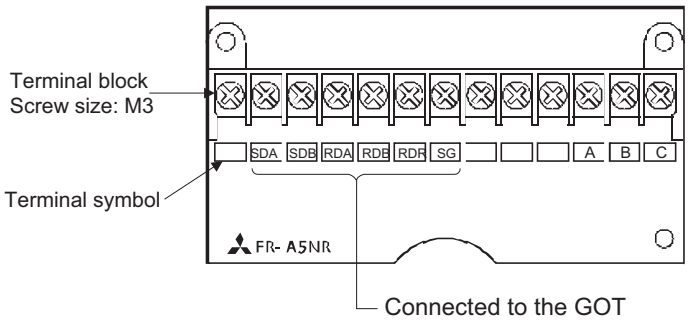
The contents inside ( ) indicate symbols described in the inverter manual.
The pins number 2 and 8 (P5S) are connected to the power supply for an operation panel or a parameter unit. Do not use them in RS-422 communication.

(b) Connector of cable between FREQROL Series inverters

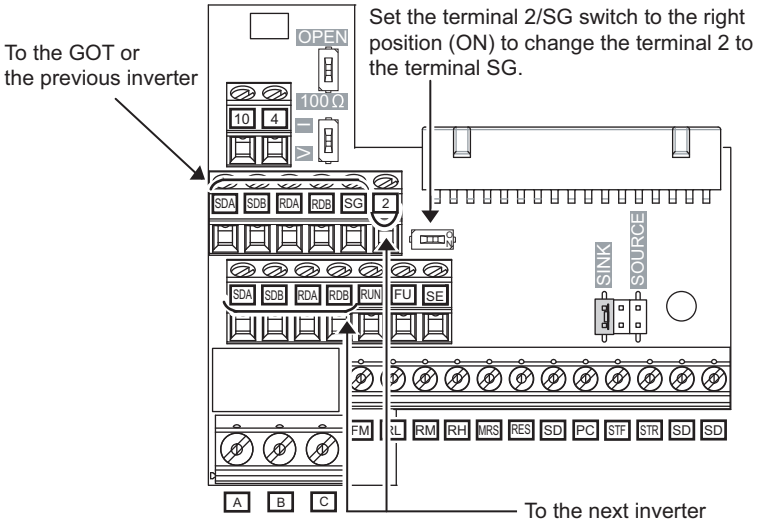
Use the commercial connectors and cables shown in the table below or the comparable products. (Refer to the manual for the inverter.)
Introduced products (as of October, 2005)

Name	Model name	Specifications	Manufacture
Connector	5-554720-3	RJ45 conector	Tyco International, Ltd
Modular ceiling rossette	BMJ-8		HACHIKO ELECTRIC CO.,LTD.
Cable	SGLPEV 0.5mm × 4P	Cable conforming to EIA568 (such as cable 10BASE-T)	MITSUBISHI CABLE INDUSTRIES, LTD.

(3) Terminal block layout in the FR-A5NR computer link option
Attach this option to the A500 and F500 Series.



(4) Terminal block layout in the FR-E7TR control terminal option
Mount the FR-E7TR to the E700 series



3 Precations when preparing a cable

The length of the RS-422 cable must be 1200m or less.

4 Connecting terminating resistors

(1) GOT

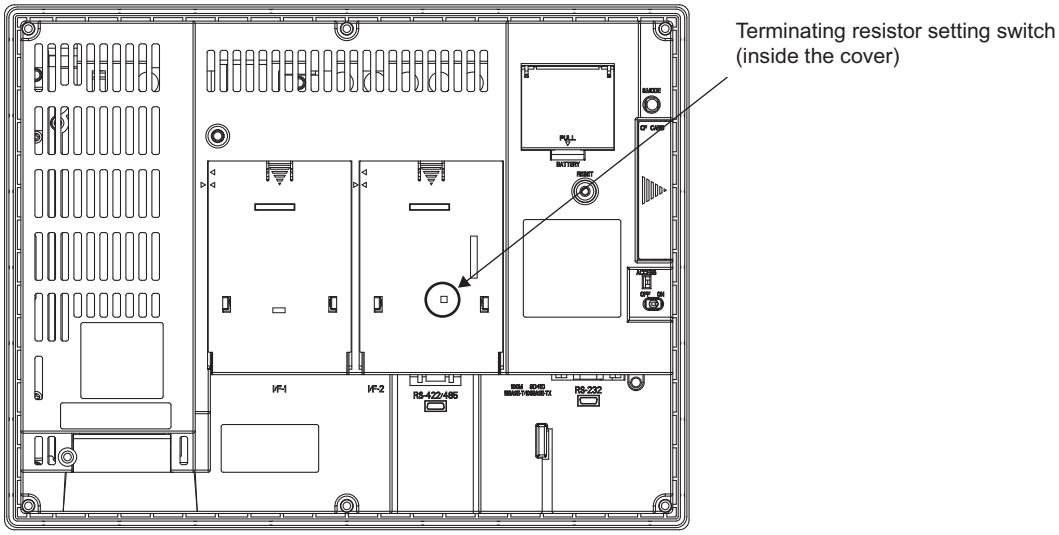
Set the terminating resistor of GT16 or RS-422/485 communication unit using the terminating resistor setting switch.

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

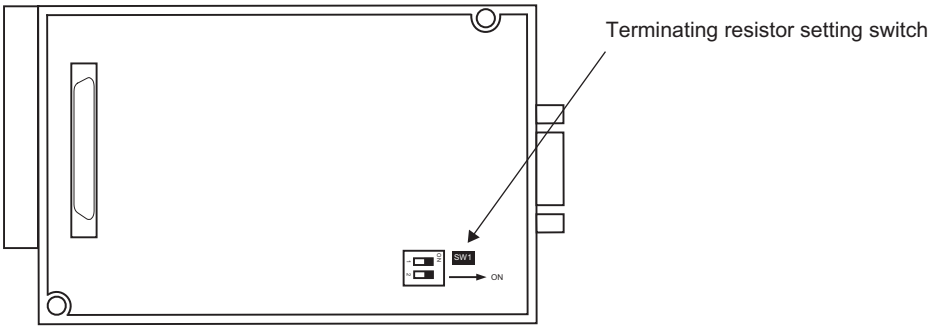
*1 The default setting is "Disable".



• For GT16 (GT1685M-S)



• For RS422/485 communication unit



Rear view of RS-422/485 communication unit

38.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 38.3.1
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 38.3.2
Checking OS installation on GOT

↓

Set the communication interface.
(Communication settings)

☞ Section 38.3.3
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 38.3.4
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 38.3.5
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 38.3.6
Verifying GOT recognizes controllers

↓

Make sure that monitoring is performed normally.

☞ Section 38.3.7
Checking for normal monitoring

Point

Confirming the inverter side setting

This section explains the GOT side setting.
When confirming the inverter side setting, refer to the following.

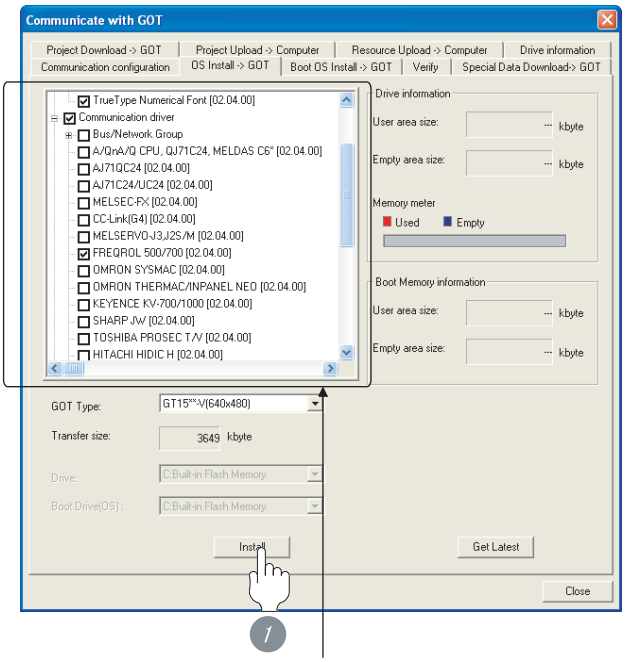
☞ Section 38.4 FREQROL Series Inverter Side Settings

38.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• FREQROL 500/700

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

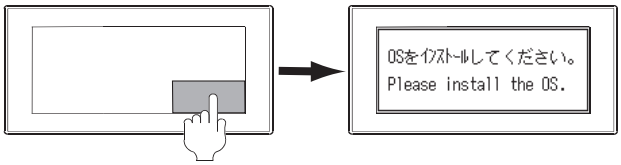
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

☞ GT10 User's Manual

(Operating of transmission mode)



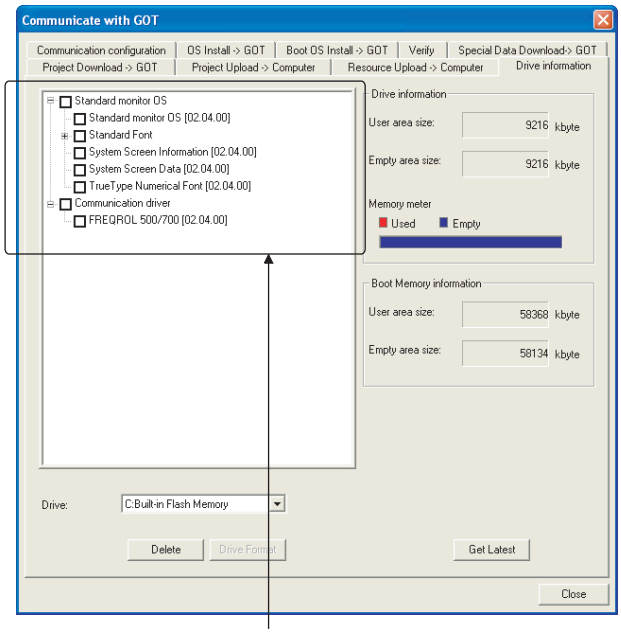
Turn on the GOT while the bottom right corner is touched.

38.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: FREQROL 500/700

38.3.3 Setting communication interface (Communication settings)

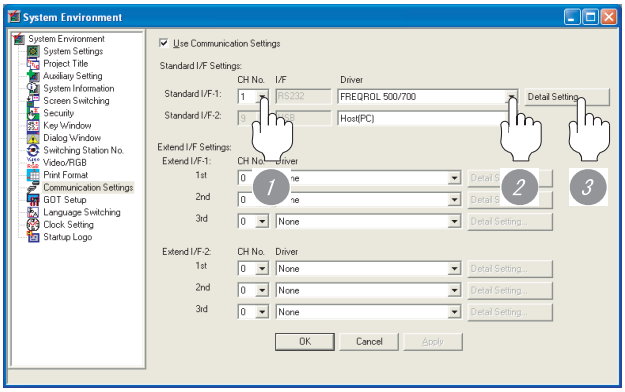
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



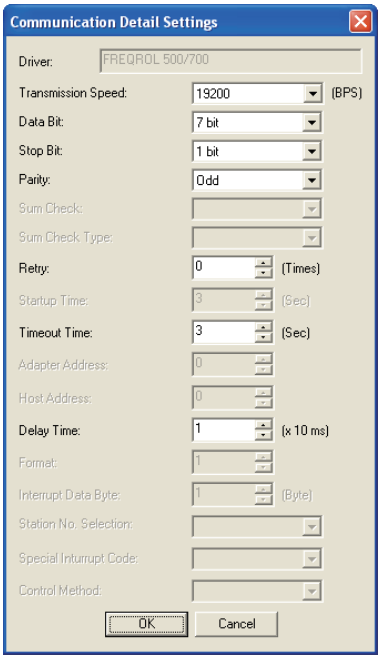
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to "FREQROL 500/700".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 7bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Odd>	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	1 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 10 ms>	0 to 30 (× 10 ms)

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

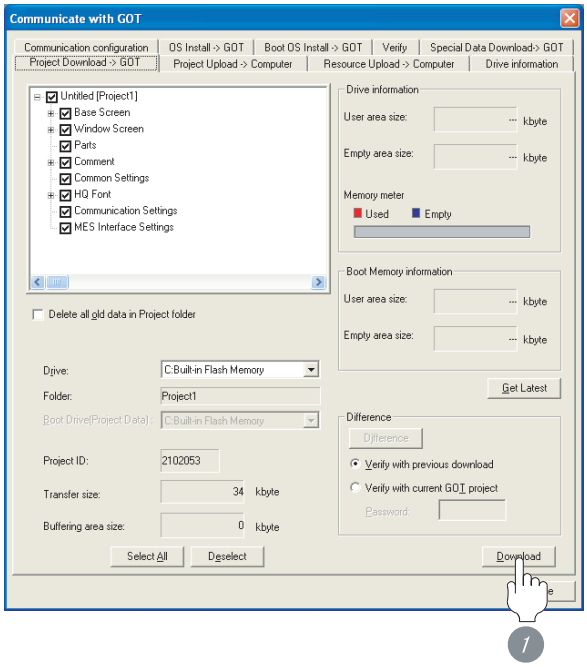
Communication settings can be changed on only GT Designer2.

38.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

38.3.5 Attaching communication unit and connecting cable

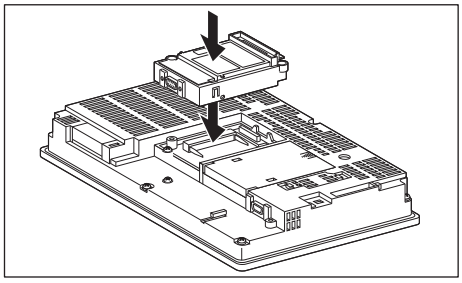
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

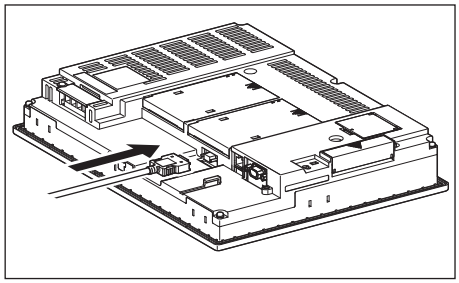
2 How to connect the cable

(1) How to connect the RS-422 cable

(a) For the GT16

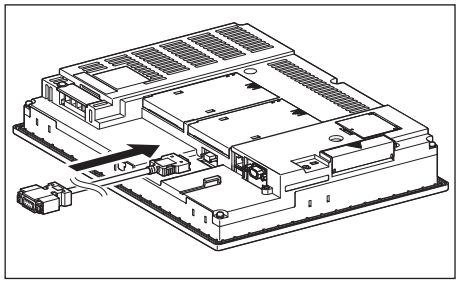
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

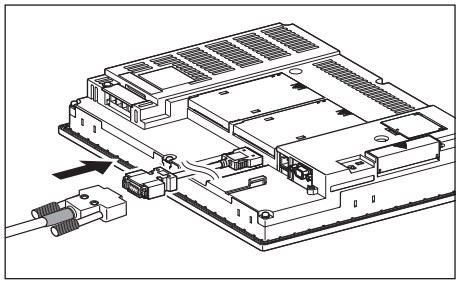


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

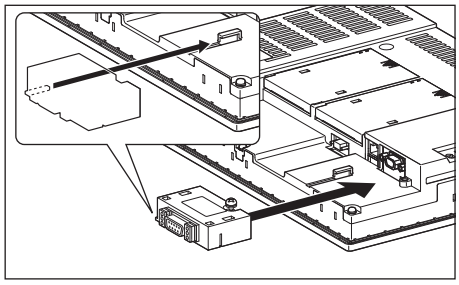


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

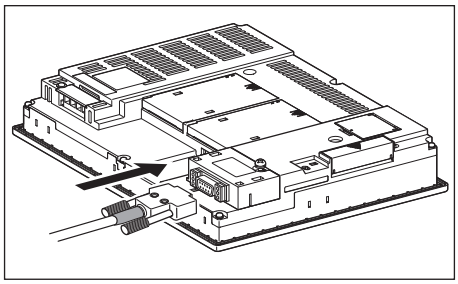


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

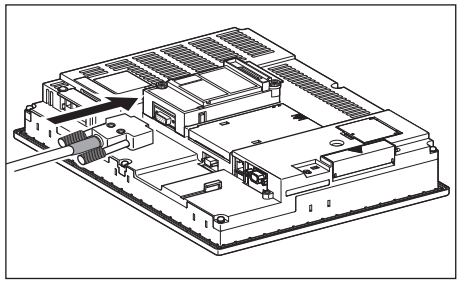


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

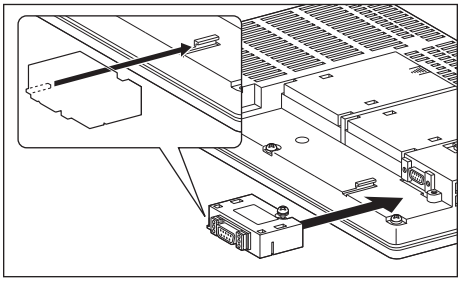
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



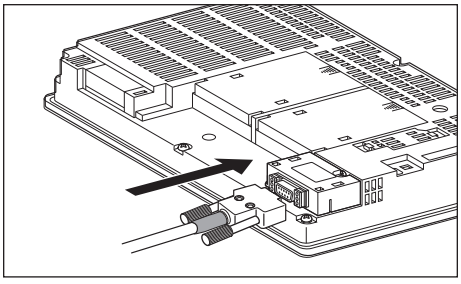
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

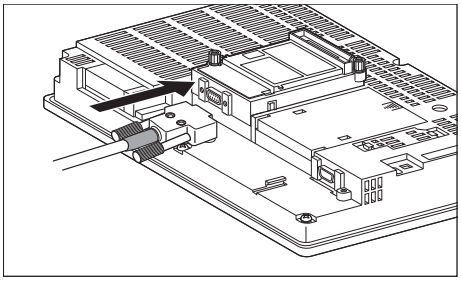


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

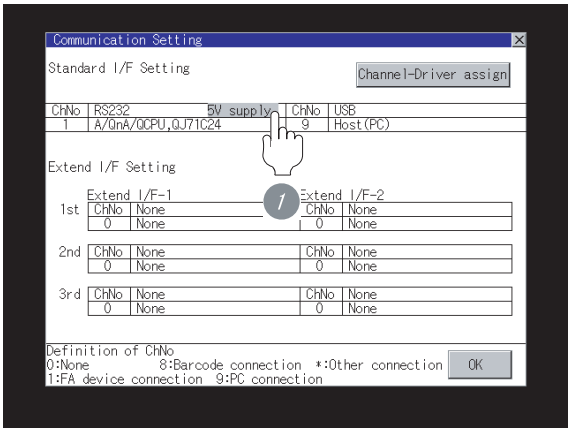
Point

When using the RS-422 conversion unit

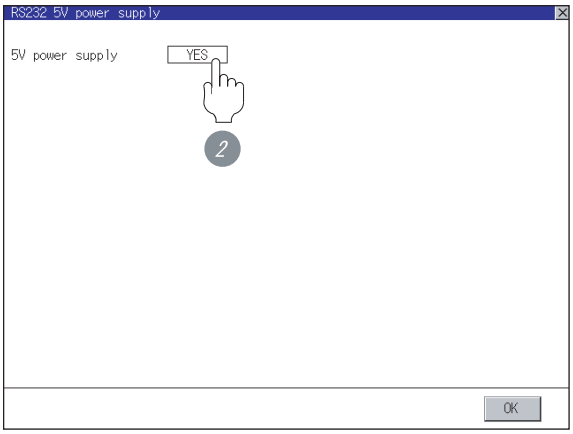
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

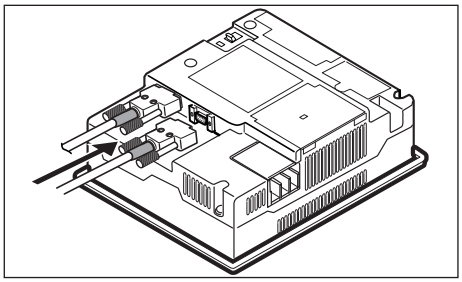


2 Set [5V power supply] to "YES".



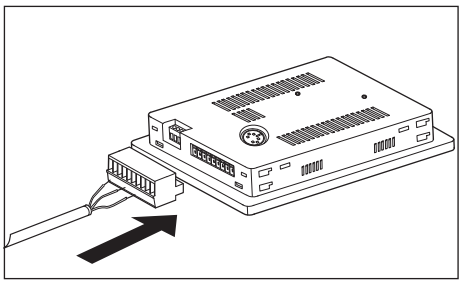
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

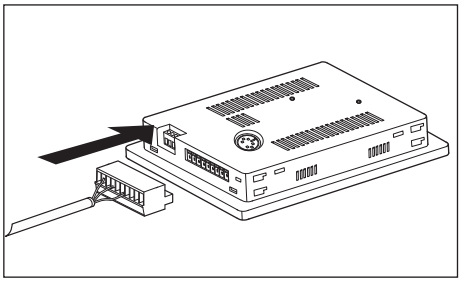


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



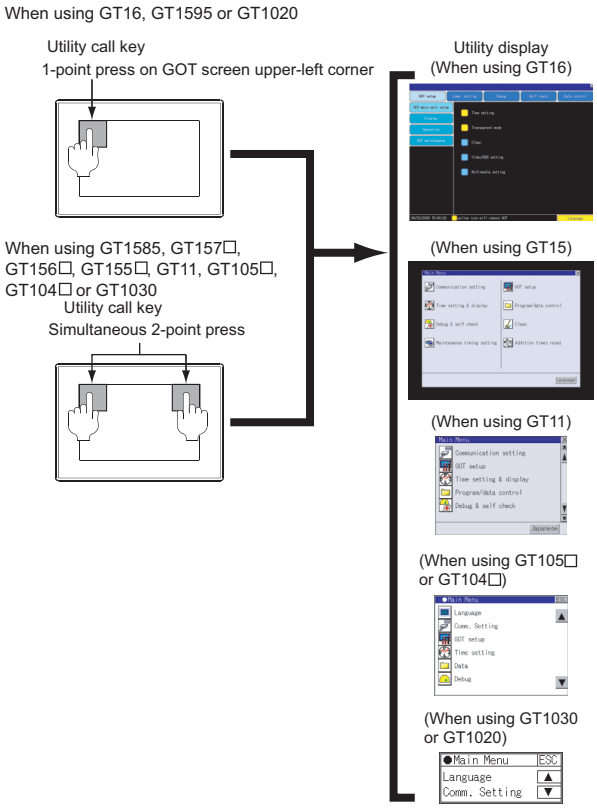
38.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

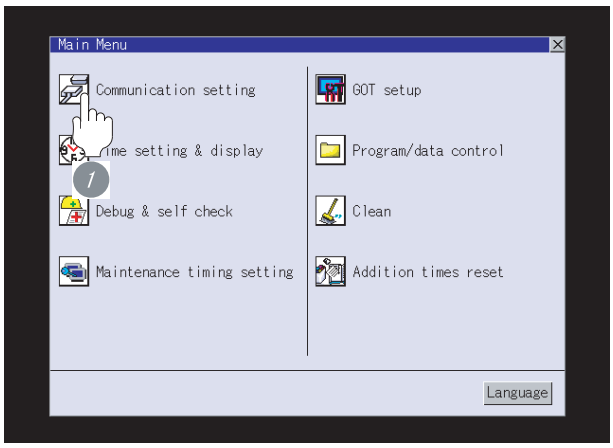


Point

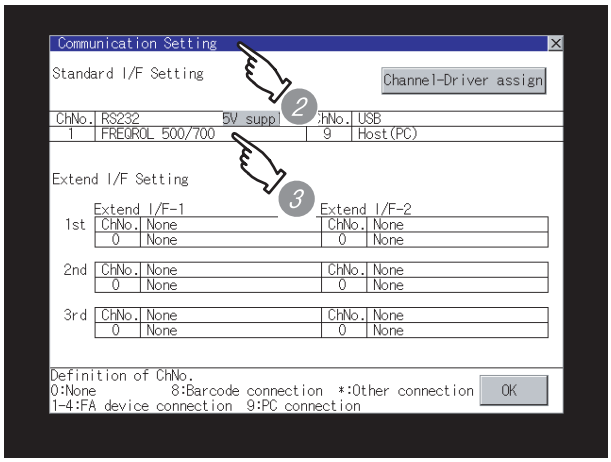
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: FREQROL 500/700

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 38.3 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

Communication settings can be changed on only GT Designer2.

38.3.7 Checking for normal monitoring

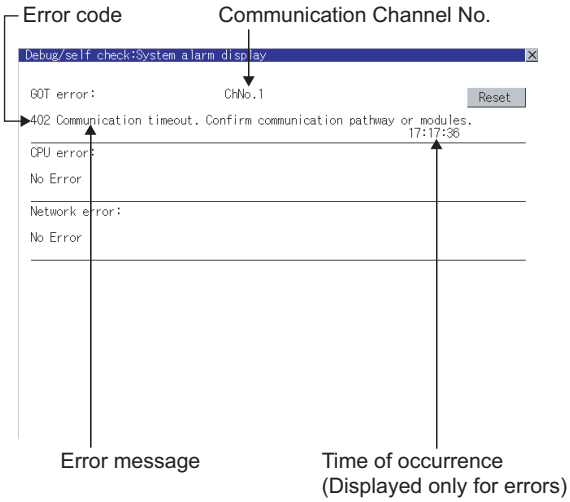
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

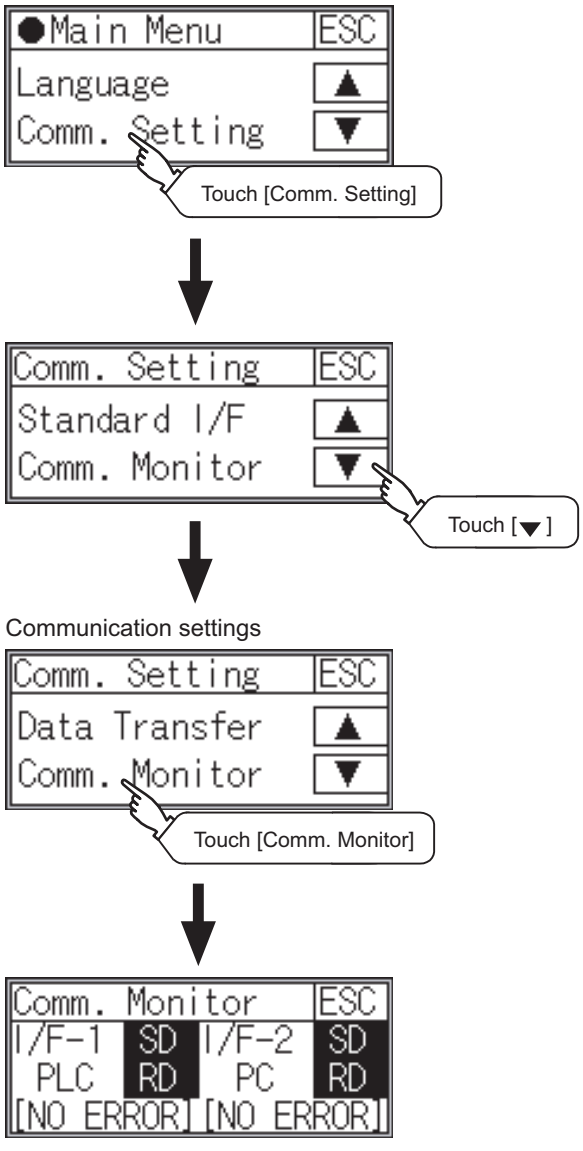
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



38.4 FREQROL Series Inverter Side Settings

For details of the inverter, refer to the manual of each series.

38.4.1 Connecting FREQROL-S500, S500E, F500J series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
RS-485 port	Pr.79, n1 to n7, n10 to n12

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.30 (Extended function selection) to 1 "With display" before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.*4	Set value	Contents of setting
Communication station number	n1 (331)	0 to 31	☞ Section 38.4.10
Communication speed*2	n2 (332)	192*3	19200bps
Stop bit length*2	n3 (333)	10	Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	n4 (334)	1	Odd
Number of communication retries	n5 (335)	--- (65535)	The inverter will not come to an alarm stop.
Communication check time interval	n6 (336)	---	Communication check suspension
Wait time setting	n7 (337)	0	0ms
CR▪LF selection	n11 (341)	1*3	With CR, without LF
Protocol selection*5	—	—	—
Operation mode selection	Pr.79	0*3	External operation mode at power on
Link start mode selection	n10 (340)	1	Computer link operation
E^2PROM write selection	n12 (342)	0*3	Written to RAM and E^2PROM

*1 Setting items are parameter names described in the manual of FREQROL-S500, S500E, and F500J series.

*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.

*3 Inverter default values (No need to change)

*4 When being monitored from the GOT, the parameter n1 through n7 correspond with Pr.331 through Pr.337, and the parameter n10 through n12 correspond with Pr.340 through Pr.342.
Numbers in brackets show the parameter number when the parameter unit is in use.

*5 There is no Protocol selection setting on the inverter side.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.146, Pr.342

(2) Communication settings of inverter
Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.	Set value	Contents of setting
Communication station number	Pr.117	0 to 31	Section 38.4.10
Communication speed*2	Pr.118	192*3	19200bps
Stop bit length*2	Pr.119	10	Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	1	Odd
Number of communication retries	Pr.121	9999 (65535)	The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	9999	Communication check suspension
Wait time setting	Pr.123	0	0ms
CR▪LF presence/ absence selection	Pr.124	1*3	With CR, without LF
Protocol selection*4	—	—	—
Operation mode selection	Pr.79	1*3	PU operation mode
Link startup mode selection*4	—	—	—
E^2PROM write selection	Pr.342	0*3	Written to RAM and E^2PROM
Frequency setting command selection*5	Pr.146	9999	Built-in frequency setting potentiometer invalid

*1 Setting items are parameter names described in the manual of FREQROL-E500 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 There is no Protocol selection setting on the inverter side.
*5 The setting is required for Frequency setting command selection.

38.4.3 Connecting FREQROL-F500, F500L series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124
FR-A5NR (Option unit)	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (user group read selection) to 0 "All parameters can be accessed for reading and writing." before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	FR-A5NR			
Communication station number	Pr.117	Pr.331	0 to 31		Section 38.4.10
Communication speed*2	Pr.118	Pr.332	192*4		19200bps
Stop bit length/data length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	Pr.334	1		Odd
Number of communication retries	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	Pr.336	9999		Communication check suspension
Waiting time setting	Pr.123	Pr.337	0		0ms
CR・LF presence/ absence selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection*5	—	—	—		—
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			FR-A5NR	0*3	External operation mode at power on
Link startup mode selection*6	—	Pr.340	1		Computer link operation
E^2PROM write yes/no*6	—	Pr.342	0*3		Written to RAM and E^2PROM

*1 Setting items are parameter names described in the manual of FREQROL-F500 and F500L series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.
*5 There is no Protocol selection setting on the inverter side.
*6 The setting is required on the inverter side when FR-A5NR is used.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.342
FR-A5NR (Option unit)	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342

(2) Communication settings of inverter
Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	FR-A5NR			
Communication station number	Pr.117	Pr.331	0 to 31		Section 38.4.10
Communication speed*2	Pr.118	Pr.332	192*4		19200bps
Stop bit length/data length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	Pr.334	1		Odd
Number of communication retries	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	Pr.336	9999		Communication check suspension
Waiting time setting	Pr.123	Pr.337	0		0ms
CR▪LF presence/ absence selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection*5	—	—	—		—
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			FR-A5NR	0*3	External operation mode at power on
Link startup mode selection*6	—	Pr.340	1		Computer link operation
E^2PROM write yes/no	Pr.342		0*3		Written to RAM and E^2PROM

*1 Setting items are parameter names described in the manual of FREQROL-A500 and A500L series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.
*5 There is no Protocol selection setting on the inverter side.
*6 The setting is required on the inverter side when FR-A5NR is used.

38.4.5 Connecting FREQROL-V500, V500L series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.342
FR-A5NR (Option unit)	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (Extended function display selection) to 1 "All parameters are accessible." before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	FR-A5NR			
Communication station number	Pr.117	Pr.331	0 to 31		Section 38.4.10
Communication speed*2	Pr.118	Pr.332	192*4		19200bps
Stop bit length/data length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	Pr.334	1		Odd
Number of communication retries	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	Pr.336	9999		Communication check suspension
Waiting time setting	Pr.123	Pr.337	0		0ms
CR・LF presence/ absence selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection*5	—	—	—		—
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			FR-A5NR	0*3	External operation mode at power on
Link startup mode selection*6	—	Pr.340	1		Computer link operation
E^2PROM write selection	Pr.342		0*3		Written to RAM and E^2PROM

*1 Setting items are parameter names described in the manual of FREQROL-V500 and V500L series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.
*5 There is no Protocol selection setting on the inverter side.
*6 The setting is required on the inverter side when FR-A5NR is used.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342, Pr.549
FR-E7TR (RS-485 terminal block)	

(2) Communication settings of inverter
Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.	Set value	Contents of setting
PU communication station number	Pr.117	0 to 31	☞ Section 38.4.10
PU communication speed*2	Pr.118	192*3	19200bps
PU communication stop bit length*2	Pr.119	10	Data length: 7bit Stop bit length: 1bit
PU communication parity check*2	Pr.120	1	Odd
Number of PU communication retries	Pr.121	9999	The inverter will not come to an alarm stop.
PU communication check time interval	Pr.122	9999	Communication check suspension
PU communication wait time setting	Pr.123	0	0ms
PU communication CR/LF selection	Pr.124	1*3	With CR, without LF
Protocol selection	Pr.549	0*3	Mitsubishi inverter protocol
Operation mode selection	Pr.79	0*3	PU operation mode
Communication startup mode selection	Pr.340	1	Network operation mode.
Communication EEPROM write selection	Pr.342	0*3	Written to RAM and E^2PROM

*1 Setting items are parameter names described in the manual of FREQROL-E700 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)

38.4.7 Connecting FREQROL-D700 series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342, Pr.549

(2) Communication settings of inverter
Set the following parameters using the PU (parameter unit).
Set Pr.160 (User group read selection) to 0 "The simple mode and extended parameters can be displayed" before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.	Set value	Contents of setting
PU communication station number	Pr.117	0 to 31	Section 38.4.10
PU communication speed*2	Pr.118	192*3	19200bps
PU communication stop bit length*2	Pr.119	10	Data length: 7bit Stop bit length: 1bit
PU communication parity check*2	Pr.120	1	Odd
Number of PU communication retries	Pr.121	9999	The inverter will not come to an alarm stop.
PU communication check time interval	Pr.122	9999	Communication check suspension
PU communication wait time setting	Pr.123	0	0ms
PU communication CR/LF selection	Pr.124	1*3	With CR, without LF
Protocol selection	Pr.549	0*3	Mitsubishi inverter protocol
Operation mode selection	Pr.79	0*3	PU operation mode
Communication startup mode selection	Pr.340	1	Network operation mode.
Communication EEPROM write selection	Pr.342	0*3	Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-D700 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342
RS-485 terminal	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (User group read selection) to 0 "The simple mode and extended parameters can be displayed" before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	RS-485			
PU communication station number/ RS-485 communication station number	Pr.117	Pr.331	0 to 31		Section 38.4.10
PU communication speed/ RS-485 communication speed*2	Pr.118	Pr.332	192*4		19200bps
PU communication stop bit length/ RS-485 communication stop bit length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
PU communication parity check/ RS-485 communication parity check*2	Pr.120	Pr.334	1		Odd
Number of PU communication retries/ RS-485 communication retry count	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
PU communication check time interval/ RS-485 communication check time interval	Pr.122	Pr.336	9999*4		Communication check suspension
PU communication waiting time setting/ RS-485 communication waiting time setting	Pr.123	Pr.337	0		0ms
PU communication CR/LF selection/ RS-485 communication CR/LF selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection	—	Pr.549	0*3		Mitsubishi inverter protocol
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			RS-485	0*3	External operation mode at power on
Link startup mode selection	Pr.340		PU connector	0*3	Refer to Pr.79 settings.
			RS-485	1	Network operation mode.
Communication EEPROM write selection	Pr.342		0*3		Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-F700 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.

38.4.9 Connecting FREQROL-A700 series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342
RS-485 terminal	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	RS-485			
PU communication station number/ RS-485 communication station number	Pr.117	Pr.331	0 to 31		Section 38.4.10
PU communication speed/ RS-485 communication speed*2	Pr.118	Pr.332	192*4		19200bps
PU communication stop bit length/ RS-485 communication stop bit length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
PU communication parity check/ RS-485 communication parity check*2	Pr.120	Pr.334	1		Odd
Number of PU communication retries/ RS-485 communication retry count	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
PU communication check time interval/ RS-485 communication check time interval	Pr.122	Pr.336	9999*4		Communication check suspension
PU communication waiting time setting/ RS-485 communication waiting time setting	Pr.123	Pr.337	0		0ms
PU communication CR/LF selection/ RS-485 communication CR/LF selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection	—	Pr.549	0*3		Mitsubishi inverter protocol
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			RS-485	0*3	External operation mode at power on
Link startup mode selection	Pr.340		PU connector	0*3	Refer to Pr.79 settings.
			RS-485	1	Network operation mode.
Communication EEPROM write selection	Pr.342		0*3		Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-A700 series.

*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.

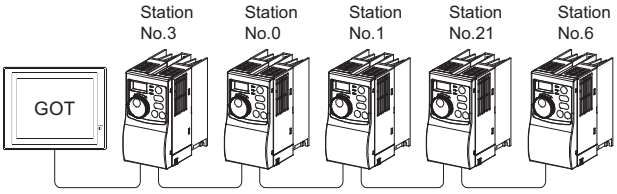
*3 Inverter default values (No need to change)

*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.

38.4.10 Station No. settings

Set each station number while making sure that one station number is used only once.

(1) The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(2) Direct specification
When setting the device, specify the station number of the inverter of which data is to be changed.

Specification range
0 to 31

(3) Indirect specification
When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 155 on GT Designer2, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the inverter.

Specification station NO.	Compatible device	Setting range
100	GD10	0 to 31 For the setting other than the above, error (dedicated device is out of range) will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

38.5 Precautions

1 Station No. of inverter system

Make sure to establish inverter system with No.0 station.

2 Number of inverter

Up to 10 inverters can be connected.

3 Parameter setting

(1) Do not make any change for each communication parameter of the inverter side from GOT. If changed, the communication to the inverter cannot be made.

(2) When setting “8888” or “9999” to the parameter (Pr) of the inverter
“8888” and “9999” are numerical values which have special roles. When specifying from the GOT, it will be as follows.

Set value of inverter side	Value specified by GOT
8888	65520
9999	65535

4 Screen switching devices and system information devices

When the GOT is connected to only the inverter, make sure to use GD for screen switching and system information devices.

5 GOT clock control

Since the inverter does not have a clock function, the settings of “time adjusting” or “time broad cast” by GOT clock control will be disabled.

38.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT16 GT15 GT11 Serial	Inverter connection	Supporting the inverter connection	2.18U	Communication driver FREQROL 500/700 [02.01.**]
GT16 GT15 GT11 Serial	Inverter connection	Changing the range of Timeout Time	2.43V	Communication driver FREQROL 500/700 [03.01.**]
GT16 GT15 GT11 Serial	Inverter connection	Supporting connection to FREQROL-V500/ V500L/ E700 series	2.63R	Communication driver FREQROL 500/700 [03.07.**]
GT24V 10 20 30	Inverter connection	Supporting the connections to GT10	2.73B	Standard monitor OS [01.07.**] Communication driver FREQROL 500/700 [01.00.**]
GT16	Inverter connection	Supporting the connections to GT16	2.90U	Communication driver FREQROL 500/700 [04.02.**]
GT 10 5□ 4□	Inverter connection	Supporting the connections to GT105□ Supporting the connections to GT104□		Standard monitor OS [01.10.**] FREQROL 500/700 [01.00.**] [01.05.**]
GT16 GT15 GT11 Serial	Inverter connection	Supporting connection to FREQROL-D700 series	2.91V	Communication driver FREQROL 500/700 [04.03.**]
GT 10 5□ 4□ GT24V 10 20 30	Inverter connection			Standard monitor OS [01.11.**] FREQROL 500/700 [01.00.**] [01.07.**]

MEMO

39

SERVO AMPLIFIER CONNECTION



39.1 System Configuration . . . . . page 39-2

This section describes devices and cables needed for servo amplifier connection.
Refer to this section to select the desired system.

39.2 Connection Cable . . . . . page 39-15

This section describes the specifications of the cables needed for servo amplifier connection.
Refer to this section to check the specifications of the connection cable to be used.

39.3 Preparatory Procedures for Monitoring . . . . . page 39-25

This section describes the preparatory procedures for the monitoring in the servo amplifier connection.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

39.4 Setting on Servo Amplifier Side . . . . . page 39-35

This section describes the servo amplifier setting for connection with the GOT.
Refer to this section to check the servo amplifier setting.

39.5 Precautions . . . . . page 39-38

This section describes the precautions about servo amplifier connection.
Refer to this section without fail before starting servo amplifier connection.

39.6 List of Functions Added by Version Upgrade . . . . . page 39-39

This section describes the functions added by version upgrade of GT Designer2 or OS.

39.1 System Configuration

The series names of connectable servo amplifiers are as follows.

Series name	Model name
MELSERVO-J2-Super	MR-J2S- □ A, MR-J2S- □ CP, MR-J2S-□CL
MELSERVO-J2M	MR-J2M-P8, MR-J2M- □ DU
MELSERVO-J3	MR-J3- □ A, MR-J3- □ T

Select a system configuration suitable for your application.

Point

Conventions used in this section

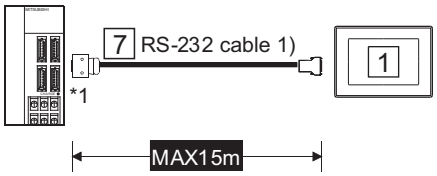
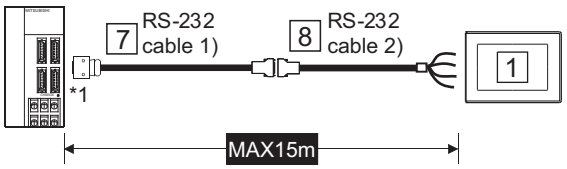
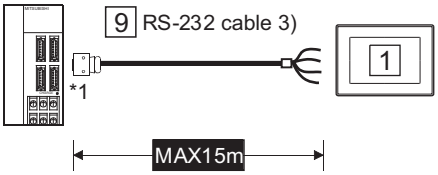
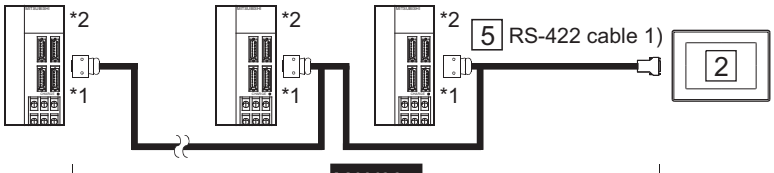
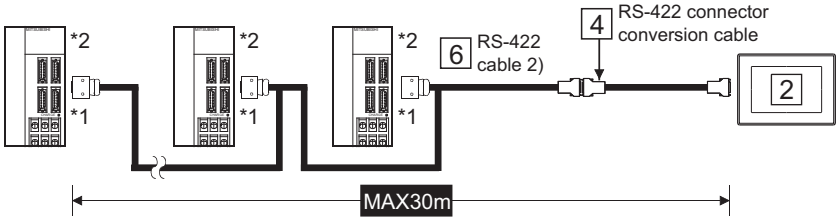
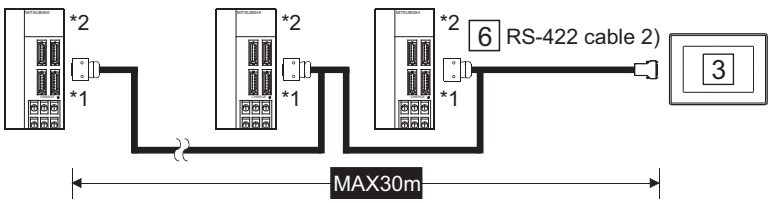
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

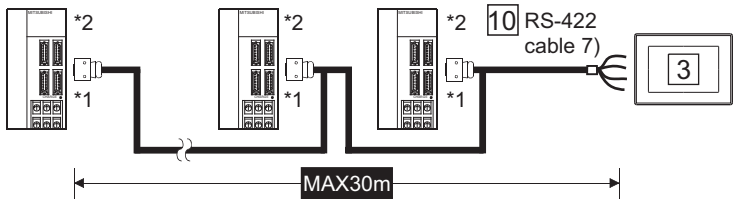
39.1.1 Connecting to the MELSERVO-J2-Super series

Communication driver

MELSERVO-J3, J2S/M

1 System configuration and connection conditions

Connection conditions		System Configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
	15m or less		GT 24V 10 20 30 (RS-232)
	15m or less		GT 24V 10 20 30 (RS-232)
	30m or less		GT16
			
			GT16 GT15 GT11 Serial GT10 5□ 4□

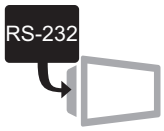
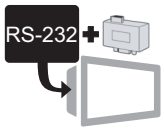
Connection conditions		System Configuration	Model
Number of GOTs	Distance		
1	30m or less		GT 24V 10 20 30 (RS-422)

*1 Connect the connector of the servo amplifier to CN3.

*2 Multi-drop communication (Up to 32 axes can be connected.)

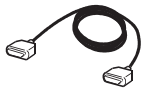
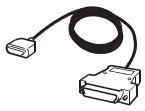
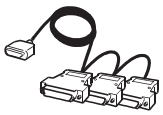
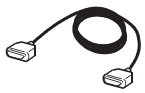
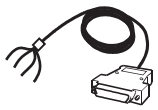
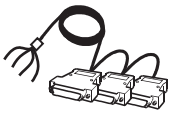
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	5	RS-422 cable 1) • Between servo amplifier and GOT	(To be prepared by the user. Section 39.2 Connection Cable)	
	6	RS-422 cable 2) • Between servo amplifier and RS-422 connector conversion cable • Between servo amplifier and GOT		GT16 GT15 GT11 Serial GT10 5□ 4□
	7	RS-232 cable 1)*1	MR-CPCATCBL3M(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□ GT 24V 10 20 30 (RS-232)
	8	RS-232 cable 2)	(To be prepared by the user. Section 39.2 Connection Cable)	GT 24V 10 20 30 (RS-232)
	9	RS-232 cable 3)		GT 24V 10 20 30 (RS-232)
	10	RS-422 cable 7) • Between distributor and GOT		GT 24V 10 20 30 (RS-422)

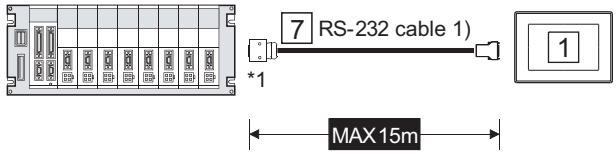
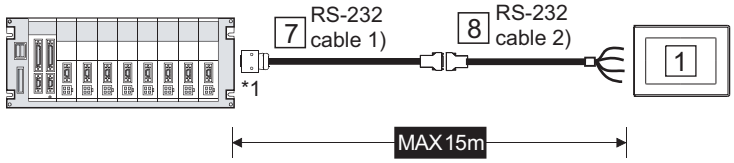
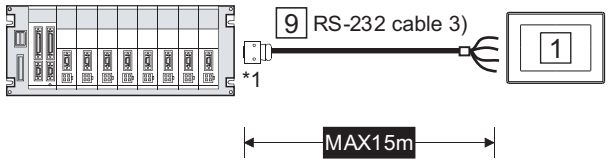
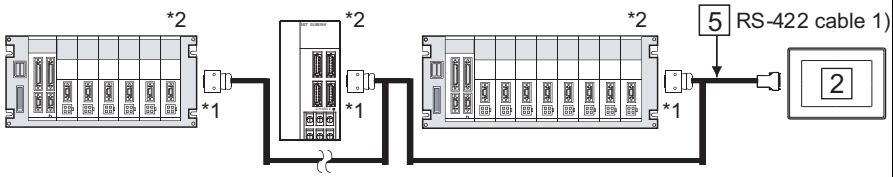
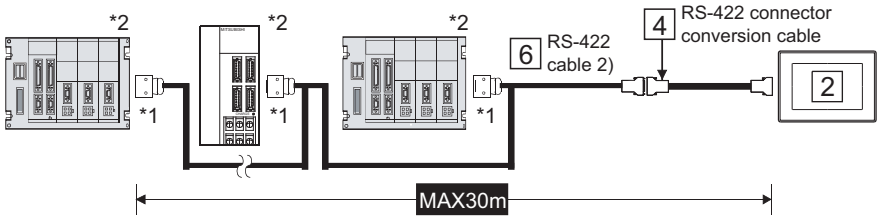
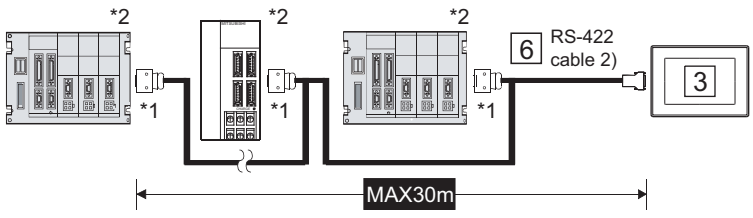
*1 The RS-232 cable can be prepared by the user. (See Section 39.2 Connection Cable)

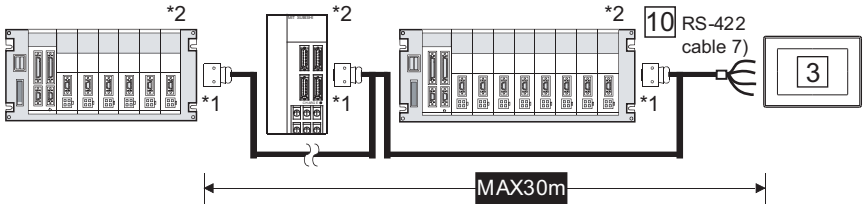
39.1.2 Connecting to the MELSERVO-J2M series

Communication driver

MELSERVO-J3, J2S/M

1 System configuration and connection conditions

Connection conditions		System Configuration	Model
Number of GOTs	Distance		
1	15m or less		GT16 GT15 GT11 Serial GT10 5□ 4□
			GT 24V 10 20 30 (RS-232)
			GT 24V 10 20 30 (RS-232)
	30m or less		GT16
			
			GT16 GT15 GT11 Serial GT10 5□ 4□

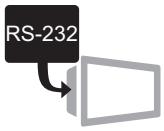
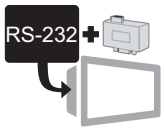
Connection conditions		System Configuration	Model
Number of GOTs	Distance		
1	30m or less		GT 24V 10 20 30 (RS-422)

*1 Connect the connector of servo amplifier to CN3.

*2 Installation of 20 to 31 interface unit or drive unit stations is available.

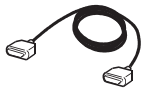
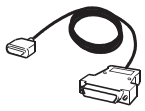
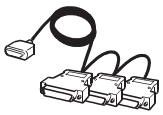
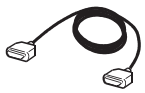
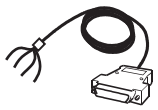
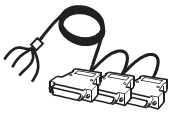
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V 10 20 30 (RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V 10 20 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	5	RS-422 cable 1) • Between servo amplifier and GOT	(To be prepared by the user. Section 39.2 Connection Cable)	
	6	RS-422 cable 2) • Between servo amplifier and RS-422 connector conversion cable • Between servo amplifier and GOT		GT16 GT15 GT11 Serial GT10 5□ 4□
	7	RS-232 cable 1)*1	MR-CPCATCBL3M(3m)	GT16 GT15 GT11 Serial GT10 5□ 4□ GT 24V 10 20 30 (RS-232)
	8	RS-232 cable 2)	(To be prepared by the user. Section 39.2 Connection Cable)	GT 24V 10 20 30 (RS-232)
	9	RS-232 cable 3)		GT 24V 10 20 30 (RS-232)
	10	RS-232 cable 7)		GT 24V 10 20 30 (RS-422)

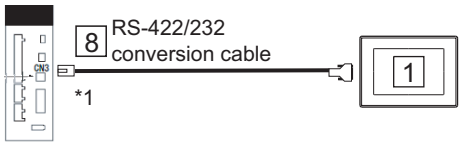
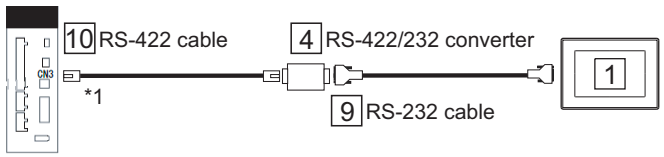
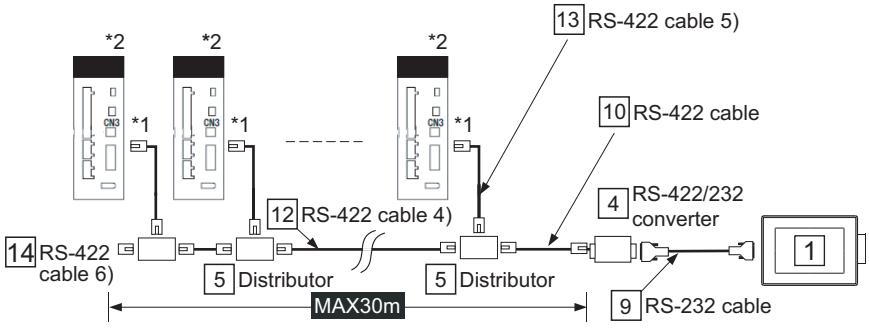
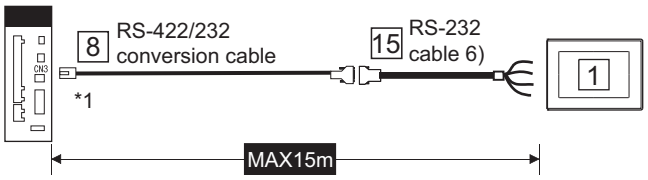
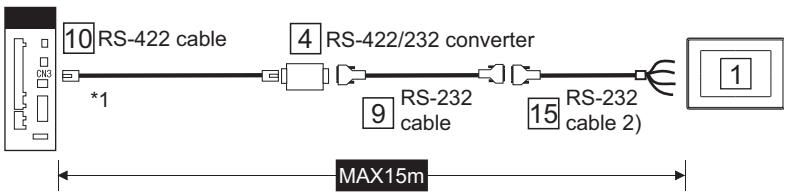
*1 The RS-232 cable can be prepared by the user. (See Section 39.2 Connection Cable)

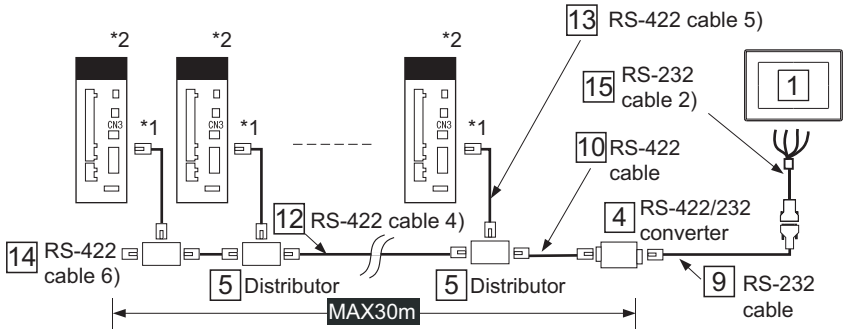
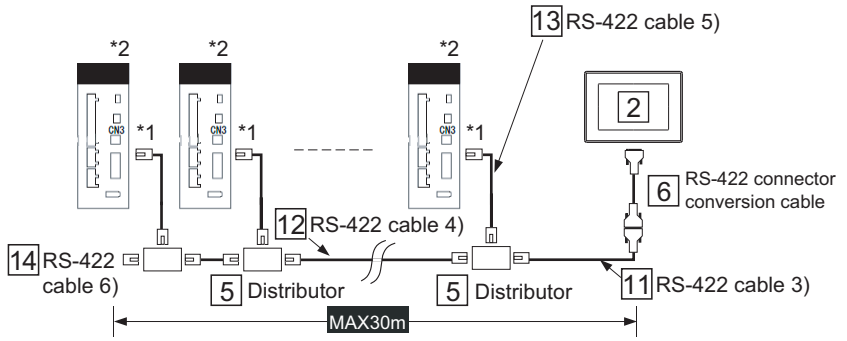
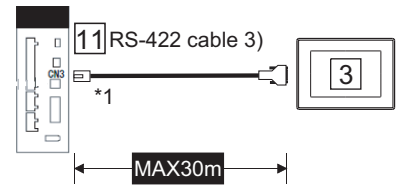
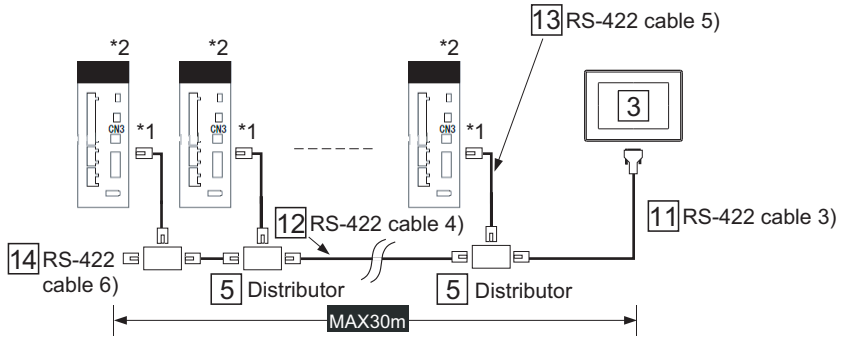
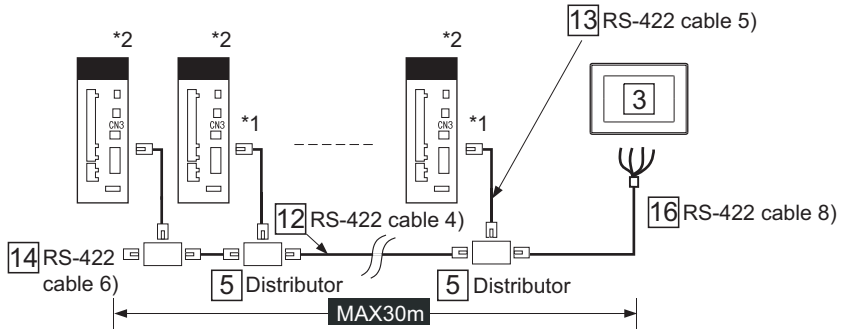
39.1.3 Connecting to the MELSERVO-J3 Series

Communication driver

MELSERVO-J3, J2S/M

1 System configuration and connection conditions

Connection conditions		System Configuration	Model
Number of GOTs	Distance		
1	—		GT16 GT15 GT11 Serial GT105□ GT104□
1	—		
1	30m or less		
1	15m or less		GT24V 10 20 30 (RS-232)
1	15m or less		GT24V 10 20 30 (RS-232)

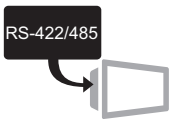
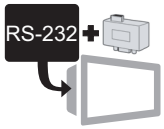
Connection conditions		System Configuration	Model
Number of GOTs	Distance		
1	30m or less		GT 24V 10 20 30 (RS-232)
1	30m or less		GT 16
1	30m or less		
1	30m or less		GT 16 GT 15 GT 11 Serial GT 10 5□ 4□
1	30m or less		GT 24V 10 20 30 (RS-422)

*1 Connect the connector of the servo amplifier to CN3.

*2 Multi-drop communication (Up to 32 axes can be connected.)

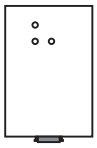
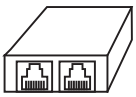
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 (RS-RS-232)
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

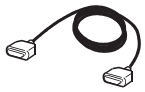
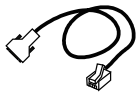
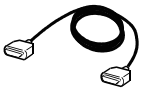
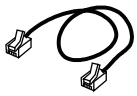
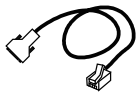
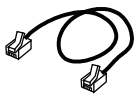
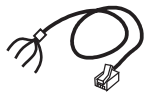
(2) Servo amplifier

Image	No.	Name	Model name
	4	RS-422/232 interface converter	FA-T-RS40VS (packed together with the 9 RS-232 cable2) and 10 RS-422 cabke 2))
	5	Distributor	BMJ-8 (Recommended)

4 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.
For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

5 is a product manufactured by HACHIKO ELECTRIC CO.,LTD.
For detail of this product, contact HACHIKO ELECTRIC CO.,LTD.

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion cable	GT16-C02R4-9S (0.2m)	GT16
	8	RS-422/232 conversion cable	DSV-CABV(1.5m)	
	9	RS-232 cable	RS-PCATCBL-0.5M(0.5m) (packed together with the RS-422/232 interface canverter 4)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30
	10	RS-422 cable	RS-422SCBL-2M(2m) (packed together with the RS-422/232 interface canverter 4)	
	11	RS-422 cable 3) • Between distributor and RS-422 connector conversion cable • Between servo amplifier and GOT • Between distributor and GOT	(To be prepared by the user. Section 39.2 Connection Cable)	GT16 GT15 GT11 Serial GT105□4□
	12	RS-422 cable 4) • Between distributors		GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30
	13	RS-422 cable 5) • Between servo amplifier and distributor		
	14	RS-422 cable 6) • Between pins of distributor		
	15	RS-232 cable 2)		GT24V1020 30 (RS-232)
	16	RS-422 cable 8)		GT24V1020 30 (RS-232)

8 is a product manufactured by Diatrend Corporation.
For detail of this product, contact Diatrend Corporation.

9, 10 are products manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.
For detail of these products, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

39.2 Connection Cable

The RS-232 cable or RS-422 cable used for connecting the GOT to the servo amplifier should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

1 RS-232 cable (☞ section 39.2.1)

Series and model names		connection cable	
		GT16, GT15, GT11, GT105□, GT104□	GT1030, GT1020
servo amplifier	MELSERVO-J2-Super Series	RS-232 cable 1)	RS-232 cable 2) RS-232 cable 3)
	MELSERVO-J2M Series	RS-232 cable 1)	RS-232 cable 2) RS-232 cable 3)
	MELSERVO-J3 Series	—	RS-232 cable 2)

2 RS-422 cable (☞ section 39.2.2)

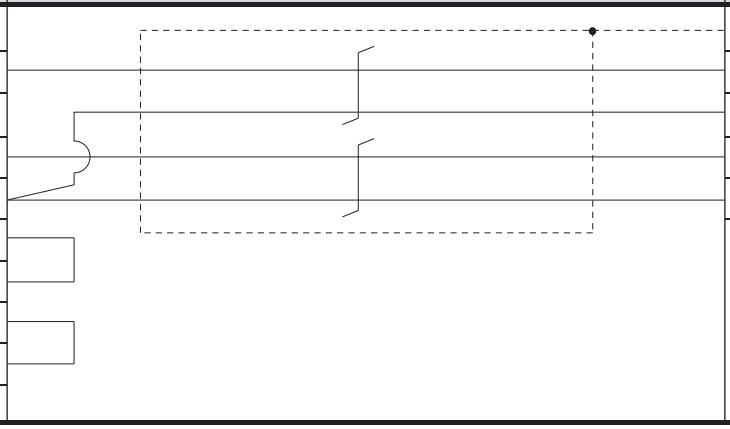
Series and model names		connection cable			
		GT16	GT15, GT11, GT105□, GT104□	GT1030, GT1020	Distributor
servo amplifier	MELSERVO-J2-Super Series	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 2)	RS-422 cable 7)	—
	MELSERVO-J2M Series	RS-422 cable 1) RS-422 cable 2)	RS-422 cable 2)	RS-422 cable 7)	—
	MELSERVO-J3 Series	RS-422 cable 3)	RS-422 cable 3)	RS-422 cable 8)	RS-422 cable 5)
Distributor	BMJ-8	RS-422 cable 3)	RS-422 cable 3)	RS-422 cable 8)	RS-422 cable 4) RS-422 cable 6)

39.2.1 RS-232 cable

The following shows the connection diagrams and connector specifications of the RS-232 cable used for connecting the GOT to a servo amplifier.

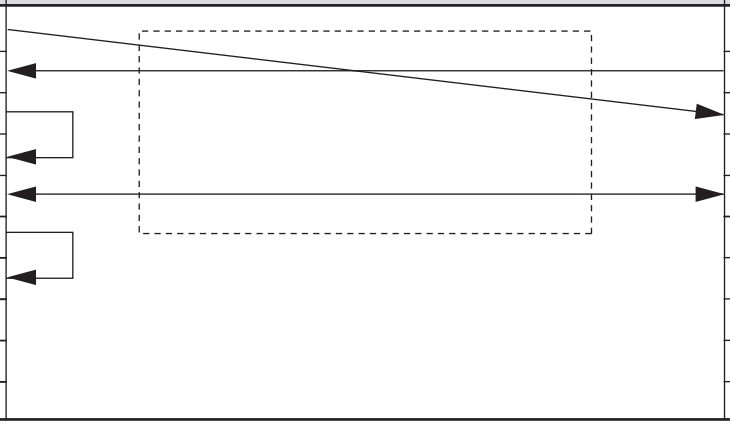
1 Connection diagram

(1) RS-232 cable 1)

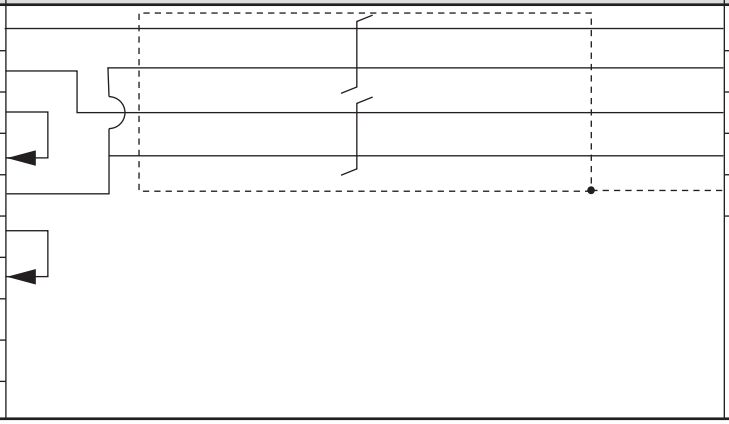
GOT side		Cable connection and signal direction	Connector for interface unit's or servo amplifier's CN3	
Signal name	Pin No.		Pin No.	Signal name
CD/NC*1	1		Plate	FG
SD(TXD)	3		2	RXD
—	9		11	LG
RD(RXD)	2		12	TXD
SG	5		11	LG
RS(RTS)	7			
CS(CTS)	8			
DR(DSR)	6			
ER(DTR)	4			

*1 GT16 : CD, GT15 : CD, GT11 : NC, GT105□ : NC, GT104□ : NC

(2) RS-232 cable 2)

GOT side		Cable connection and signal direction	Connection cable side	
Signal name	Pin No.		Pin No.	Signal name
SD(TXD)	1		1	-
RD(RXD)	2		2	RXD
ER(DTR)	3		3	TXD
DR(DSR)	4		4	DTR
SG	5		5	GND
RS(RTS)	6		6	DSR
CS(CTS)	7		7	RTS
NC	8		8	CTS
NC	9		9	-

(3) RS-232 cable 3)

GOT side		Cable connection and signal direction	Connector for interface unit's or servo amplifier's CN3	
Signal name	Pin No.		Pin No.	Signal name
SD(TXD)	1		2	RXD
RD(RXD)	2		1	LG
ER(DTR)	3		12	TXD
DR(DSR)	4		11	LG
SG	5		Plate	FG
RS(RTS)	6			
CS(CTS)	7			
NC	8			
NC	9			

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector type

9-pin D-sub (male) inch screw fixed type

(c) Connector model

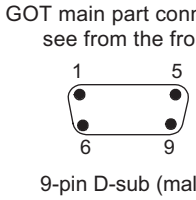
GOT	Hardware version*1	Model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-		
GT1055-Q, GT1050-Q	-		
GT1045-Q, GT1040-Q	-		
GT1030, GT1020	-	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.

*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

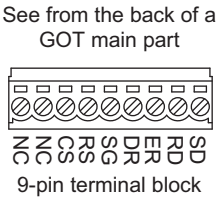
(d) Connector pin arrangement

GT16, GT15, GT11, GT105☐, GT104☐



9-pin D-sub (male)

GT1030, GT1020



9-pin terminal block

(2) Servo amplifier side connector
Use the connector compatible with the servo amplifier.
For details, refer to the following manual.

☞ See the technical data of the servo amplifier to be used.

3 Precautions when preparing a cable

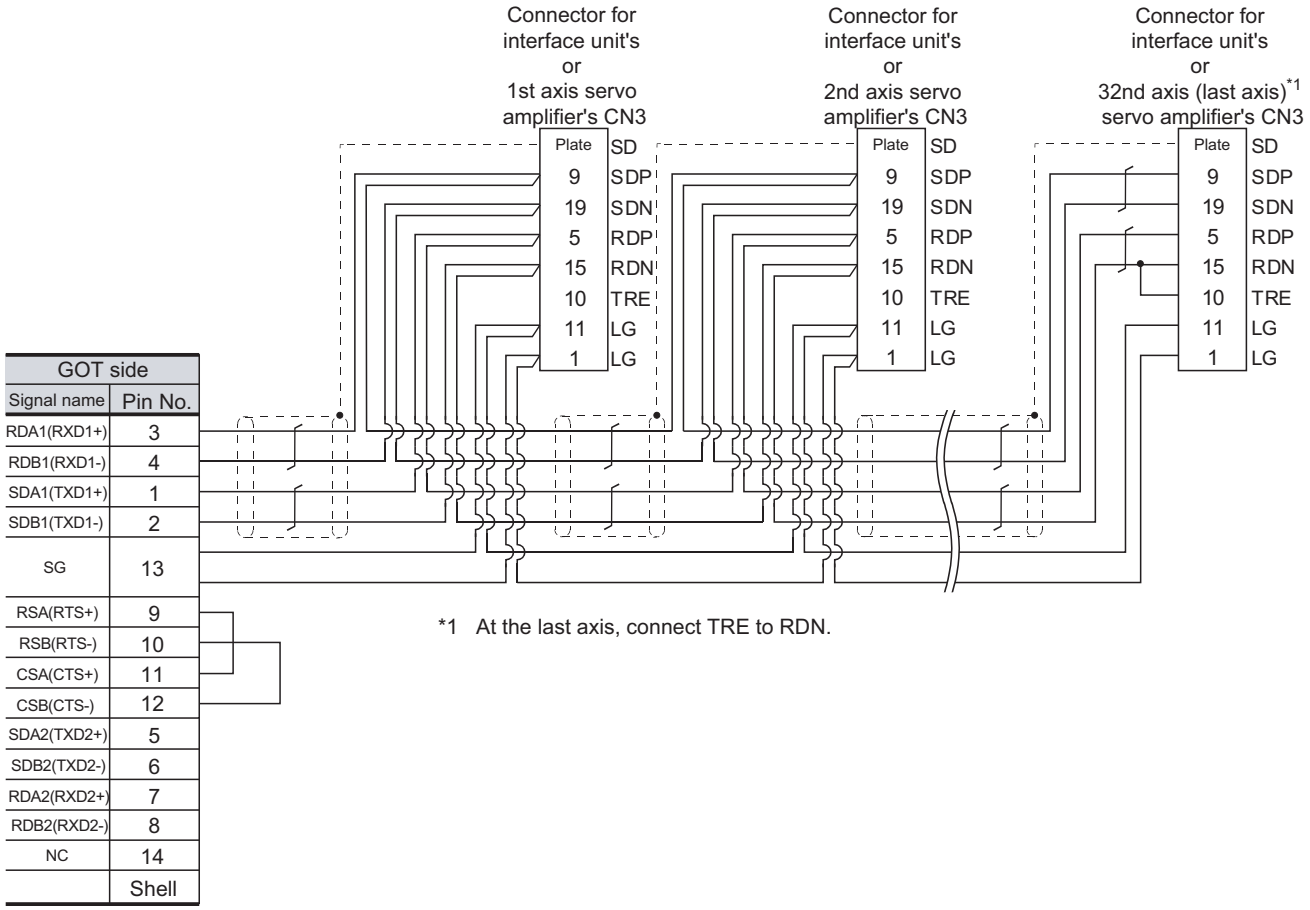
- Use a shielded multi-core cable and connect the shield to the FG terminal securely.
- The length of the RS-232 cable must be within 15m.
  However, for use at the transmission speed of 38400bps or higher, the length must be within 3m.

39.2.2 RS-422 cable

The following shows the connection diagrams and connector specifications of the RS-422 cable used for connecting the GOT to a servo amplifier.

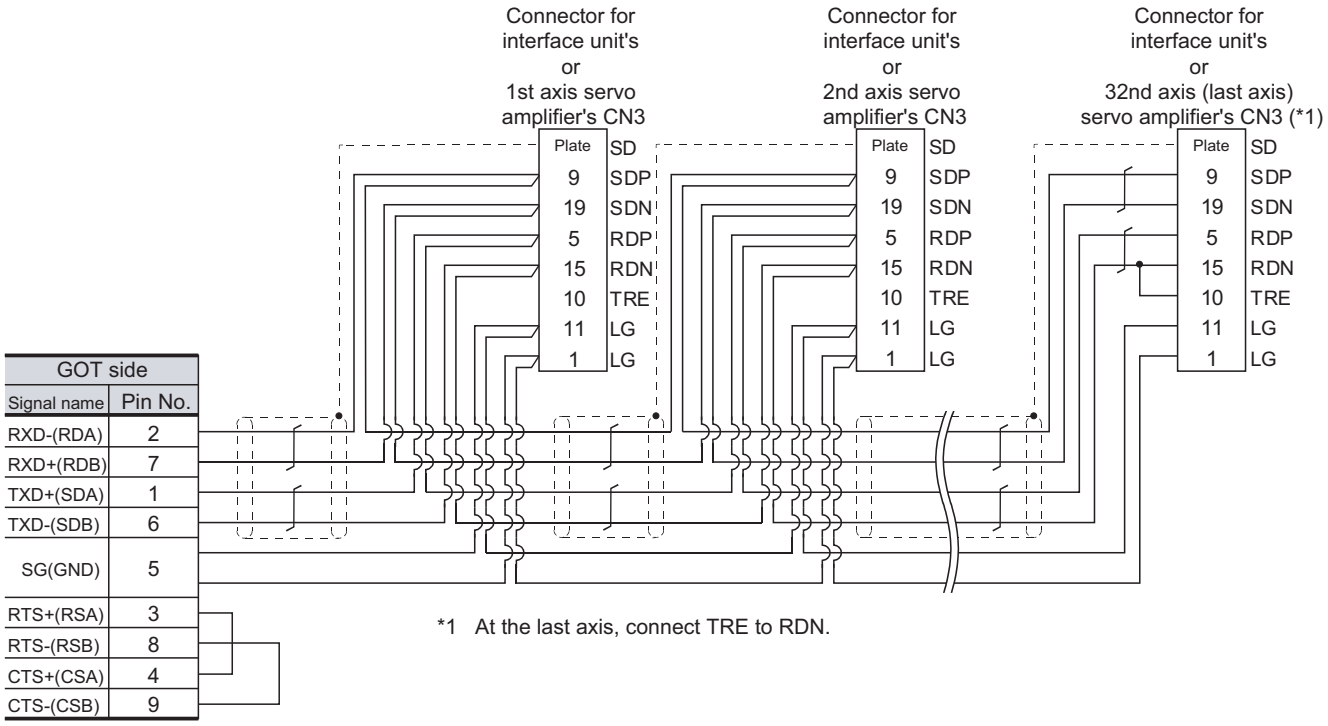
1 Connection diagram

(1) RS-422 cable 1)



*1 At the last axis, connect TRE to RDN.

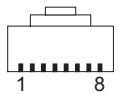
(2) RS-422 cable 2)



*1 At the last axis, connect TRE to RDN.

(3) RS-422 cable 3)

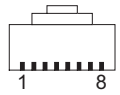
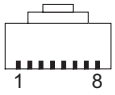
GOT side		cable connection	Distributor side (Modular connector)		
Signal name	Pin No.		Pin No.	Signal name	Pin layout*1
SDA	1		1	LG	
RDA	2		2	P5D	
RSA	3		3	RDP	
CSA	4		4	SDN	
SG	5		5	SDP	
SDB	6		6	RDN	
RDB	7		7	LG	
RSB	8		8	NC	
CSB	9				
FG	-				



RJ-45 plug(male)

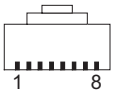
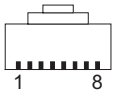
*1 The pin layout shows the engagement face.

(4) RS-422 cable 4)

Distributor side (Modular connector)			cable connection	Distributor side (Modular connector)		
Pin layout*1	Pin No.	Signal name		Pin No.	Signal name	Pin layout*1
 1 8 RJ-45 plug(male)	1	LG		1	LG	 1 8 RJ-45 plug(male)
	2	P5D		2	P5D	
	3	RDP		3	RDP	
	4	SDN		4	SDN	
	5	SDP		5	SDP	
	6	RDN		6	RDN	
	7	LG		7	LG	
	8	NC		8	NC	

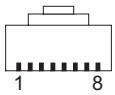
*1 The pin layout shows the engagement face.
*2 Make the wiring between the distributor and servo amplifier as short as possible.

(5) RS-422 cable 5)

Servo amplifier side (Modular connector)			cable connection	Distributor side (Modular connector)		
Pin layout*1	Pin No.	Signal name		Pin No.	Signal name	Pin layout*1
 1 8 RJ-45 plug(male)	1	LG		1	LG	 1 8 RJ-45 plug(male)
	2	P5D		2	P5D	
	3	RDP		3	RDP	
	4	SDN		4	SDN	
	5	SDP		5	SDP	
	6	RDN		6	RDN	
	7	LG		7	LG	
	8	NC		8	NC	

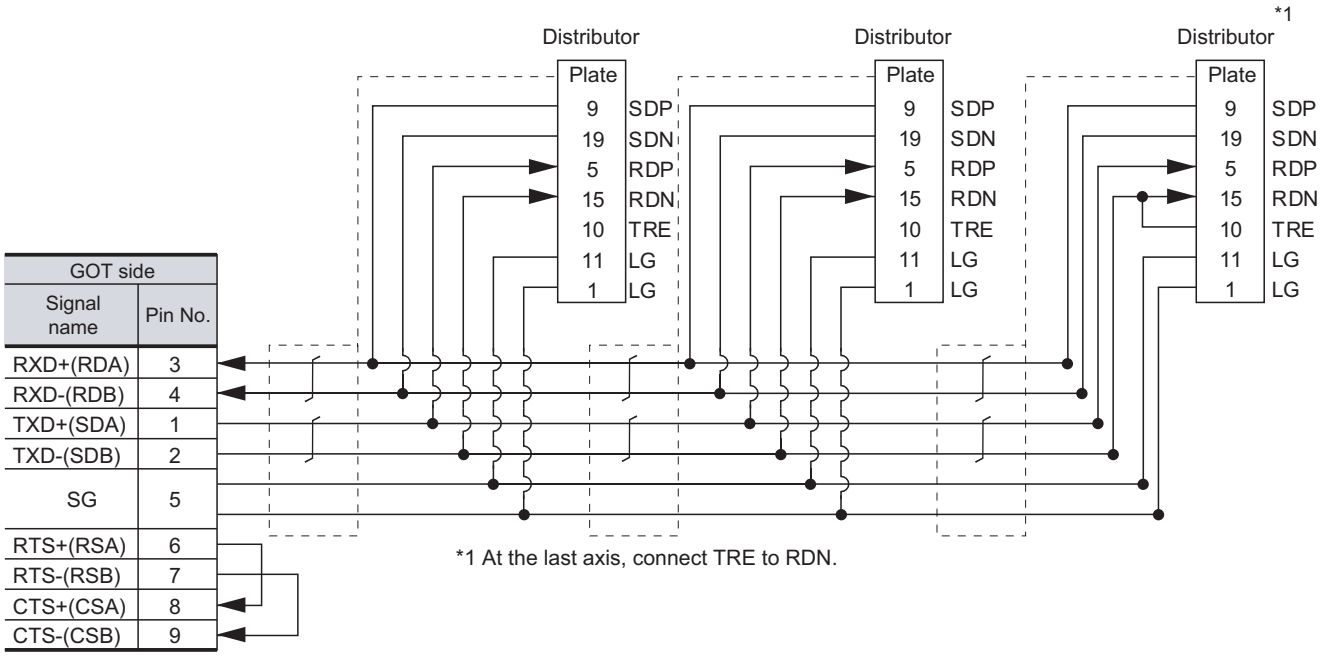
*1 The pin layout shows the engagement face.

(6) RS-422 cable 6)

Distributor side (Modular connector)			cable connection
Pin layout*1	Pin No.	Signal name	
 1 8 RJ-45 plug (male)	1	LG	
	2	P5D	
	3	RDP	
	4	SDN	*2
	5	SDP	
	6	RDN	
	7	LG	
	8	NC	

*1 The pin layout shows the engagement face.
*2 Perform terminal processing on the part between RDP (3-pin) and RDN (6-pin) with a 150Ω resistor.

(7) RS-422 cable 7)



(8) RS-422 cable 8)

GOT side		Cable connection and signal direction	Distributor side	
Signal name	Pin No.		Pin No.	Signal name
TXD+(SDA)	1	→	3	RDP
TXD-(SDB)	2	→	6	RDN
RXD+(RDA)	3	←	5	SDP
RXD-(RDB)	4	←	4	SDN
SG	5	—	1	LG
RTS+(RSA)	6		7	LG
RTS-(RSB)	7		2	P5D
CTS+(CSA)	8	←	8	NC
CTS-(CSB)	9	←		

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

GOT	Model	Connector type	Manufacturer
GT16*1	HDR-EC14LFDT1-SLE+	14-pin (female)	Honda Tsushin Kogyo Co., Ltd
GT1155-Q, GT1150-Q	17LE-13090-27(D3AC)	9-pin D-sub (female)	DDK Ltd.
GT1055-Q, GT1050-Q	17LE-13090-27(D3AC)		
GT1045-Q, GT1040-Q			
GT1030, GT1020	MC1.5/9-G-3.5BK	9-pin terminal block*2	PHOENIX CONTACT Inc.
RS-422 conversion unit	17LE-13090-27(D2AC)	9-pin D-sub (female)	DDK Ltd.
GT15-RS4-9S	17LE-13090-27(D3AC)		

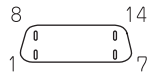
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5BK or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(b) Connector pin arrangement

GT16

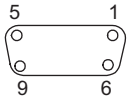
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105□, GT104□

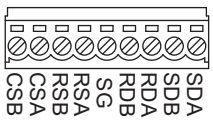
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part



9-pin terminal block

(2) Servo amplifier side connector

Use the connector compatible with the servo amplifier.

For details, refer to the following manual.

☞ See the technical data of the servo amplifier to be used.

3 Precautions when preparing a cable

The length of the RS-422 cable must be 30m or less.

39.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 39.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 39.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 39.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 39.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 39.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 39.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 39.3.7
Checking for normal monitoring

Point

Confirming the servo amplifier side setting

This section explains the GOT side setting.
When confirming the servo amplifier side setting, refer to the following.

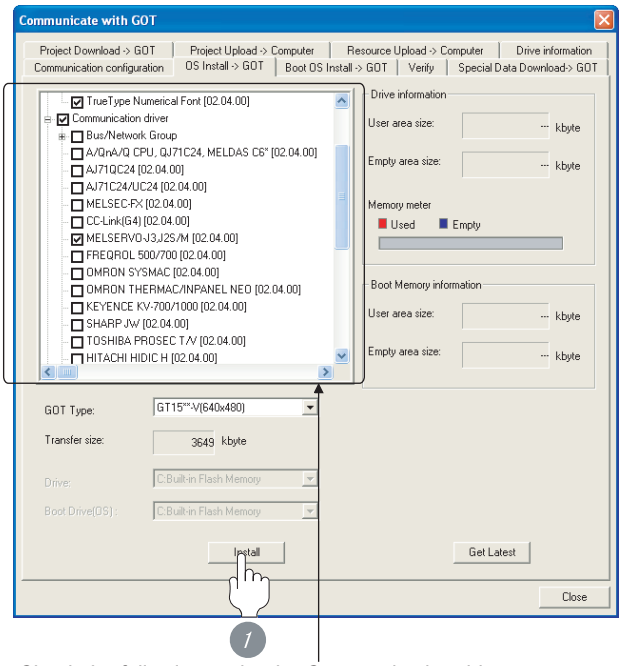
☞ Section 39.4 Setting on Servo Amplifier Side

39.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• MELSERVO-J3, J2S/M

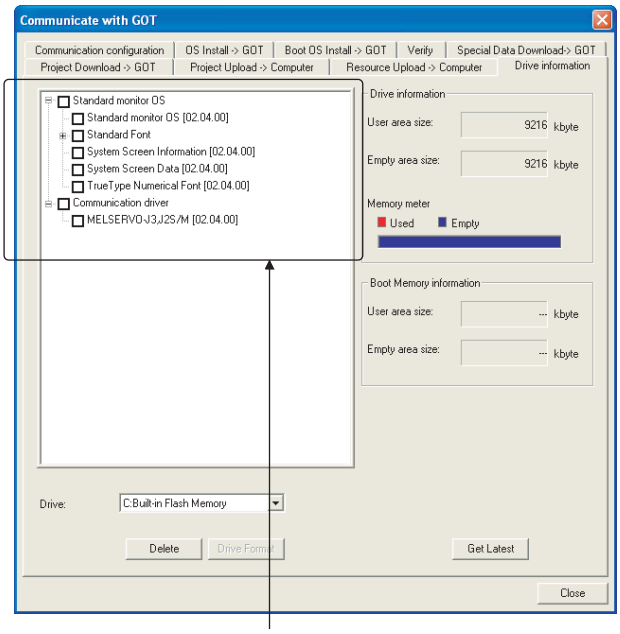
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

39.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:
1) Standard driver
2) Communication driver : MELSERVO-J3, J2S/M

39.3.3 Setting communication interface (Communication settings)

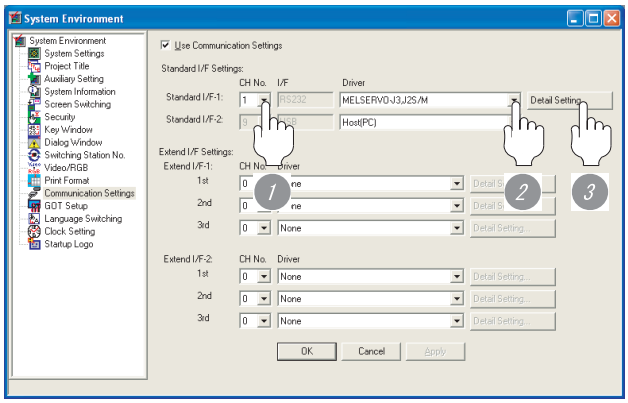
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

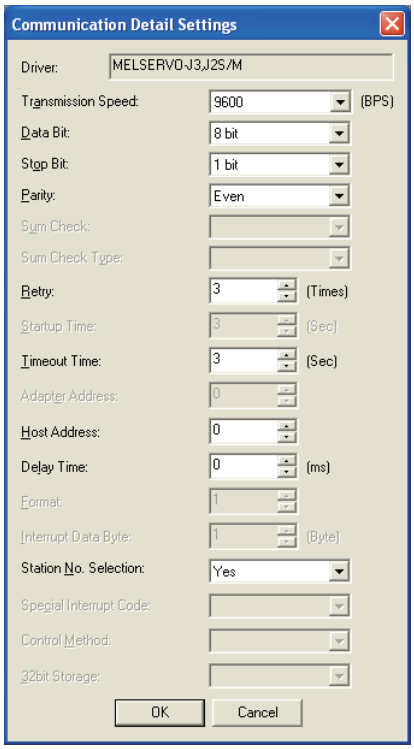
1 Communication settings



(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to "MELSERVO-J3, J2S/M".
3. Perform the detailed settings for the driver.
   (☞ 2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	9600bps, 19200bps, 38400bps, 57600bps 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Host Adress	Specify the station number of the servo amplifier in the system configuration. <Default: 0 >	0 to 31
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms
Station No. Selection	Specify whether to use the station No. during communication. If [Yes] is selected, the station No. is fixed to "0." <Default: Yes>	Yes or No

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.

For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

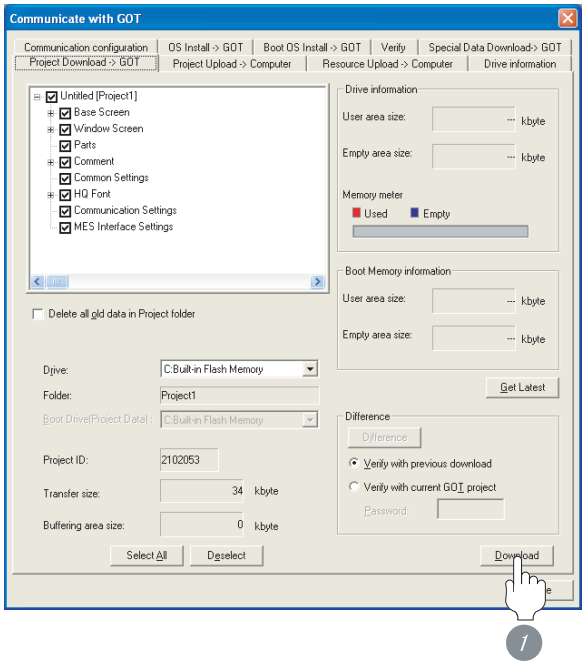
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

39.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

39.3.5 Attaching communication unit and connecting cable

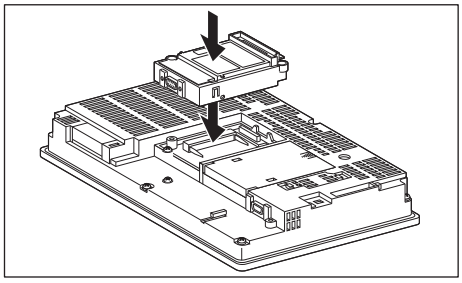
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

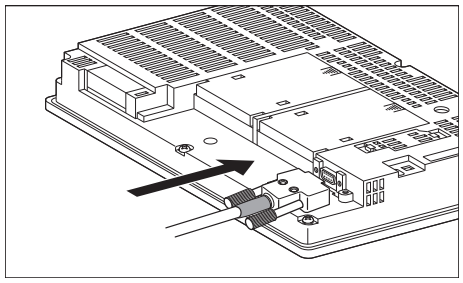
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

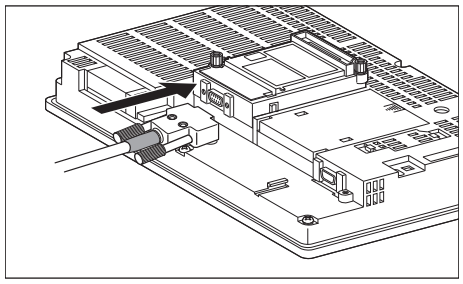
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



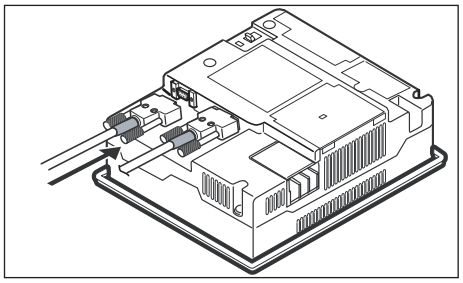
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



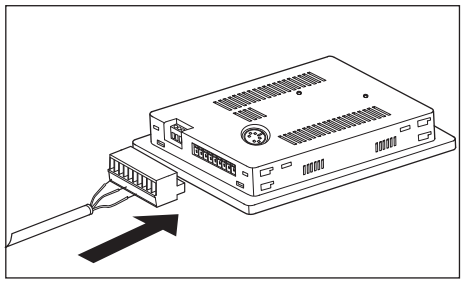
(b) For the GT11, GT105☐, GT104☐

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

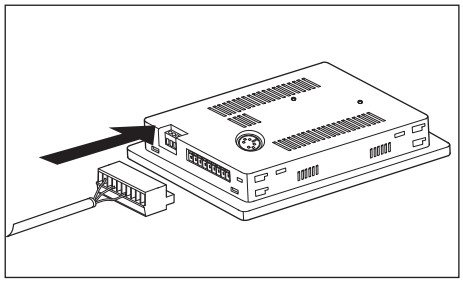


(c) For GT1030, GT1020 (built-in RS-232 interface)

1 Connect the RS-232 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.

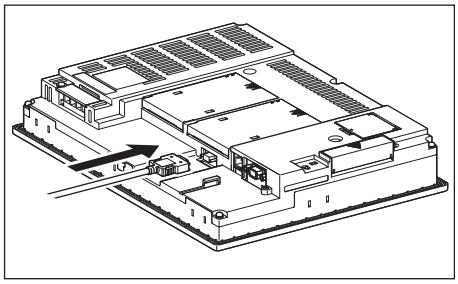


(2) How to connect the RS-422 cable

(a) For the GT16

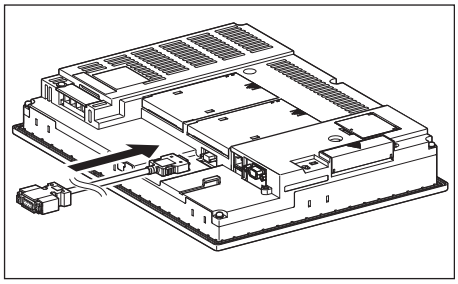
• Connection to the RS-422/485 interface

1 Connect the RS-422 cable to the RS-422/485 interface on the GOT.

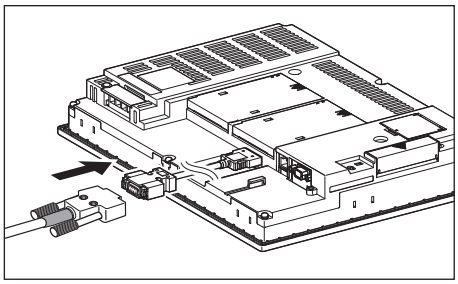


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

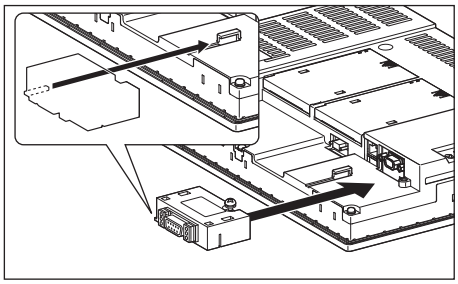


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

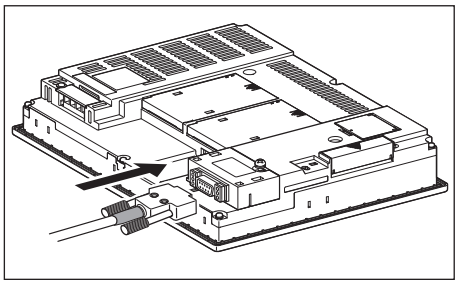


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

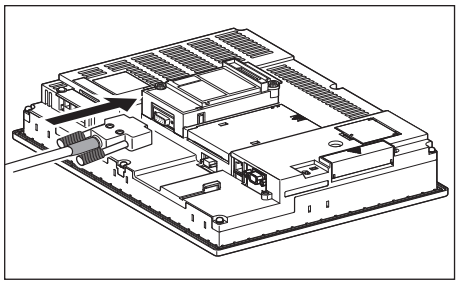


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

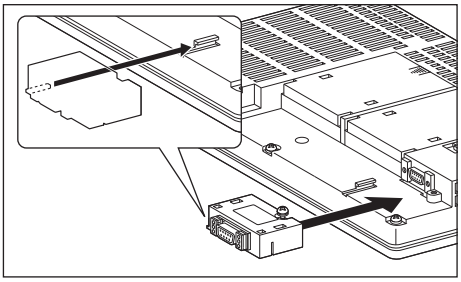
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



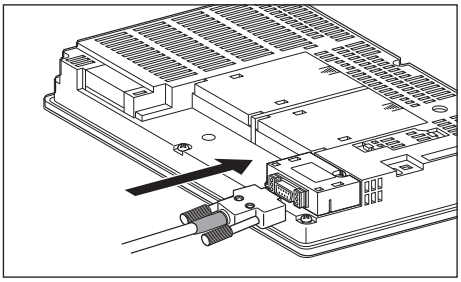
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

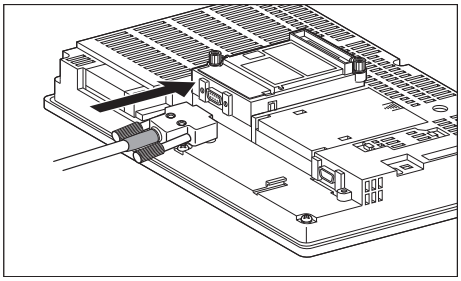


2 Connect the RS-422 cable to the RS-422 conversion unit.



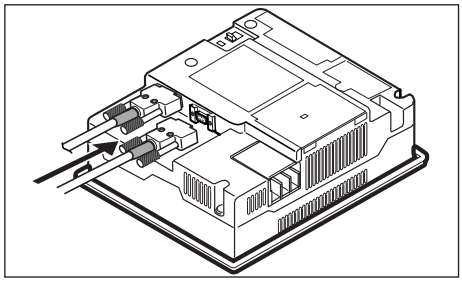
• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



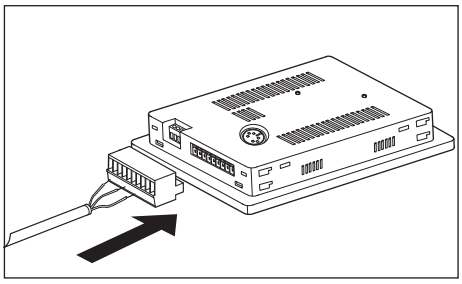
(c) For GT11, GT105☐, GT104☐

1 Connect the RS-422 cable to the RS-422 interface on the GOT.

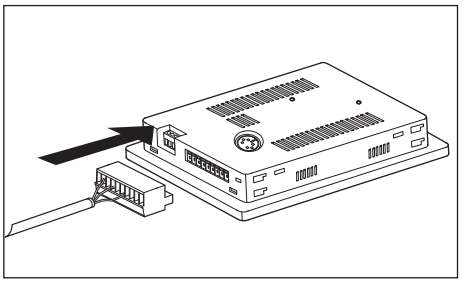


(d) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-422 cable to the terminal block packed together with the GOT.



2 Connect the terminal block to the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

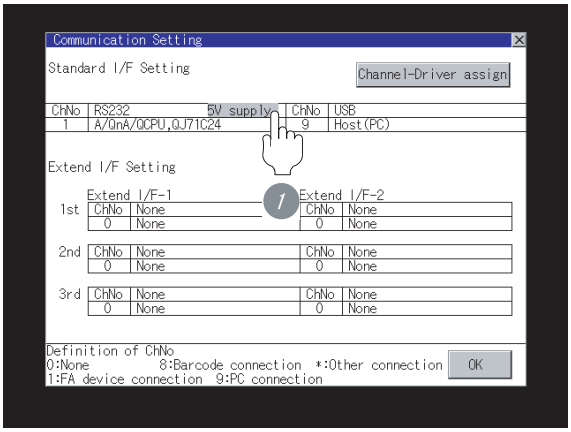
Point

When using the RS-422 conversion unit

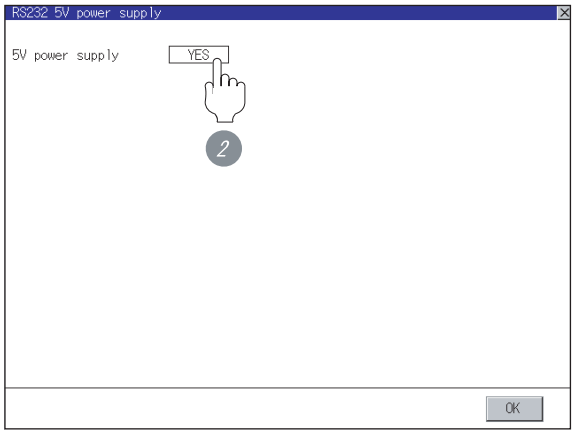
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

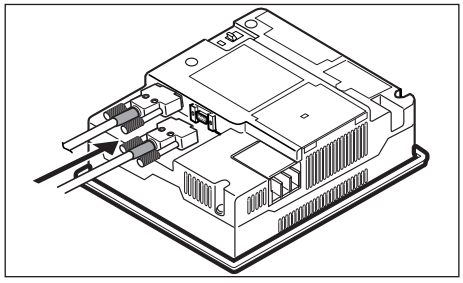


2 Set [5V power supply] to "YES".



(e) For the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



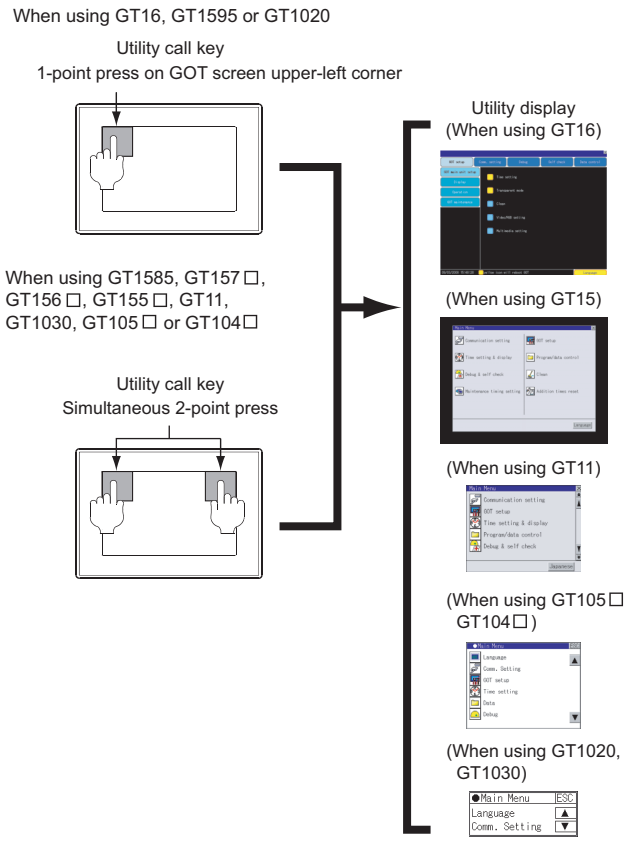
39.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

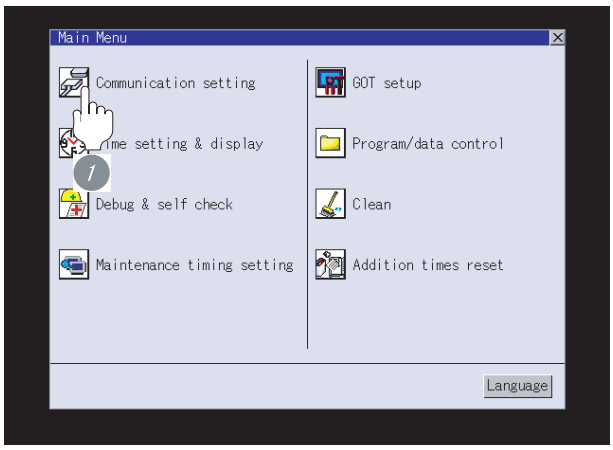


Point

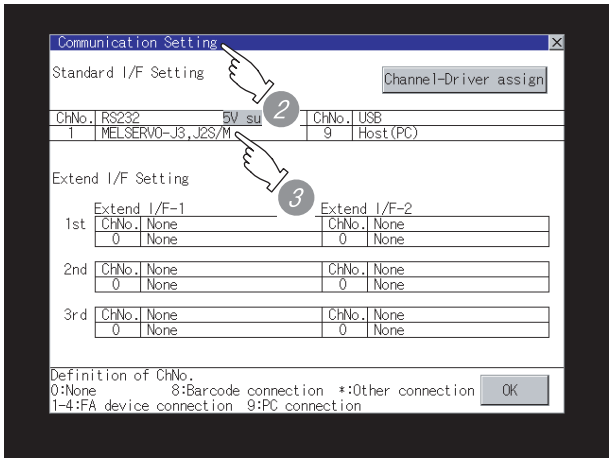
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver :MELSERVO-J3, J2S/M

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 39.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

39.3.7 Checking for normal monitoring

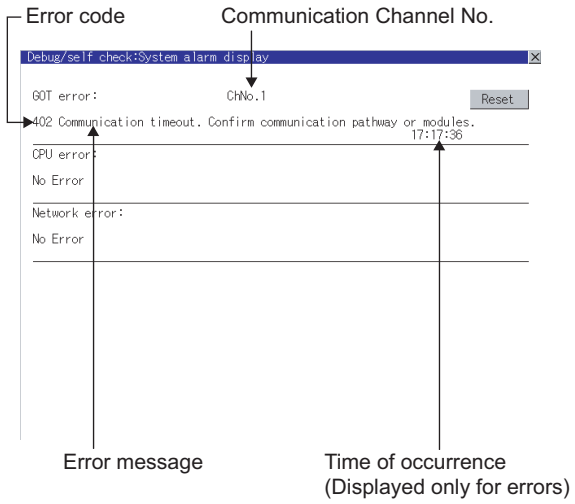
1 Check for errors occurring on the GOT(for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check(for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

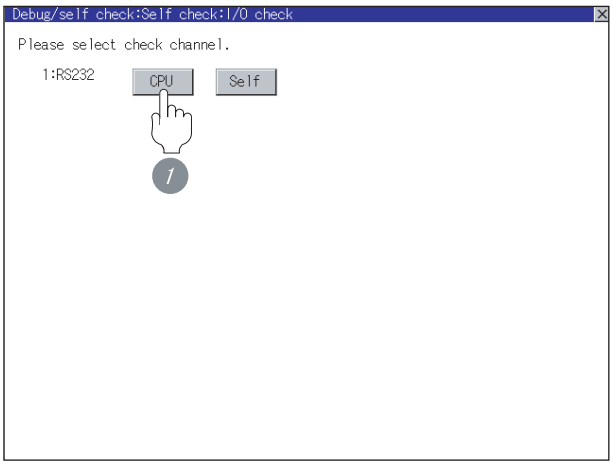
Display the I/O check screen by Main Menu.
- For GT16

  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11

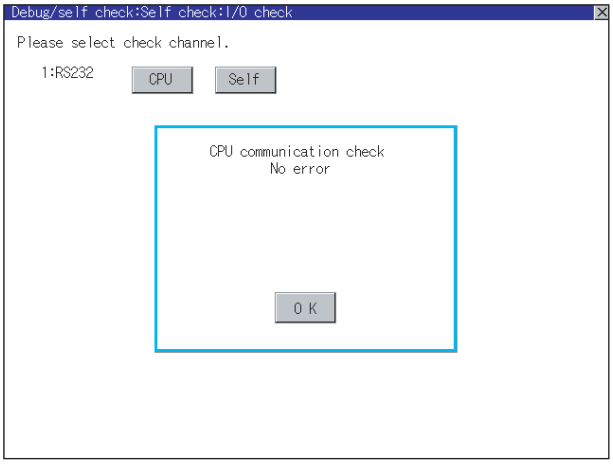
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected servo amplifier.



2 When the communication screen ends successfully, the screen on the left is displayed.

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

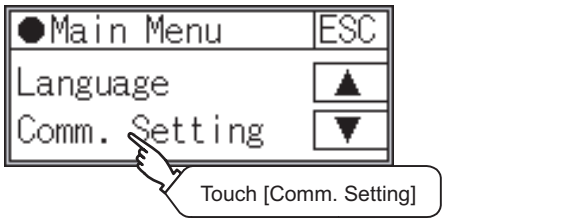
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

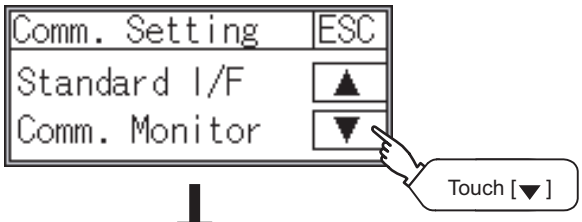
For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

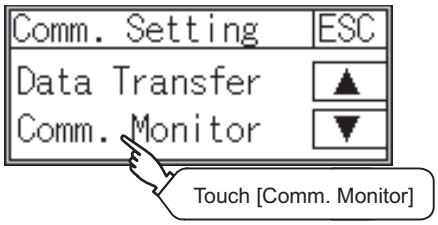
(Operation of communication monitoring function screen)

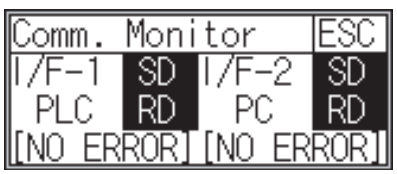
Main Menu





Communication settings





4 Confirming the servo amplifier side setting

When connecting the GOT, setting is required for the servo amplifier side.

Confirm if the servo amplifier side setting is correct.

☞ Section 39.4 Setting on Servo Amplifier Side

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

39.4 Setting on Servo Amplifier Side

Model name	Refer to
MELSERVO-J2-Super series	Section 39.4.1
MELSERVO-J2M series	Section 39.4.2
MELSERVO-J3 series	Section 39.4.3

39.4.1 Connecting to the MELSERVO-J2-Super series

Point

MELSERVO-J2-Super series

For details of the MELSERVO-J2-Super series, refer to the following manual.

☞ See the technical manual for the MELSERVO-J2-Super series servo amplifiers.

1 Parameters of MELSERVO-J2-Super series

Enter the parameters of the MELSERVO-J2-Super series.

Item	Setting
Basic parameter No. 15	Station No. setting: 0 to 31 <Default: 0> (*1)
Basic parameter No. 16	Serial communication function selection <Default: 0000> Basic parameter No. 16 ③ ② 0 ① (1)Serial communication baud rate selection (*2) 0: 9600bps 1: 19200bps 2: 38400bps 3: 57600bps (2)Serial communication I/F selection 0: RS-232 1: RS-422 (3)Communication response delay time selection 0: Invalid 1: Valid (Response after 800μs or longer delay)
In case of MR-J2S-_A Expansion parameter 2 No. 53 In case of MR-J2S-_CP Expansion parameter 2 No. 57 In case of MR-J2S-_CL Expansion parameter 2 No. 57	Function selection 8 <Default: 0000> (*3) Expansion parameter 2 No. 53 or No. 57 0 ① 0 0 (1)Station No. selection for protocol 0: With station No. 1: Without station No.

*1 Avoid duplication of the station No. with any of the other axes.

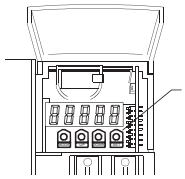
*2 Specify the same transmission speed as that of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

☞ See Section 39.3.3 Setting communication interface (Communication settings)

*3 To change the set value, enter "000E" to basic parameter No. 19.

Point

(1) Parameter setting
Set the parameter at the pushbutton switch provided on the operation section of the servo amplifier or setup software.



Pushbutton switch provided on the operation section of the servo amplifier

(2) When changing the parameter
Turn off then on the servo amplifier to be effective the new parameter.

39.4.2 Connecting to the MELSERVO-J2M series

Point

MELSERVO-J2M series

For details of the MELSERVO-J2M series, refer to the following manual.

See the technical manual for the MELSERVO-J2M series servo amplifiers.

1 Parameter of MELSERVO-J2M series

Enter the parameters of the MELSERVO-J2M series.

Item	Setting
Basic IFU parameter No. 0	Serial communication selection <Default: 0000> Basic IFU parameter No. 0 ③ ② 0 ① (1)Serial communication baud rate selection (*1) 0: 9600bps 1: 19200bps 2: 38400bps 3: 57600bps (2)Serial communication I/F selection 0: RS-232 1: RS-422 (3)Communication response delay time selection 0: Invalid 1: Valid (Response after 800μs or longer delay time)
Basic IFU parameter No. 10	Interface unit serial communication station No. selection: 0 to 31 <Default: 0> (*2)
Basic IFU parameter No. 11	Slot 1 serial communication station No. selection: 0 to 31 <Default: 1> (*2)
Basic IFU parameter No. 12	Slot 2 serial communication station No. selection: 0 to 31 <Default: 2> (*2)
Basic IFU parameter No. 13	Slot 3 serial communication station No. selection: 0 to 31 <Default: 3> (*2)
Basic IFU parameter No. 14	Slot 4 serial communication station No. selection: 0 to 31 <Default: 4> (*2)
Basic IFU parameter No. 15	Slot 5 serial communication station No. selection: 0 to 31 <Default: 5> (*2)
Basic IFU parameter No. 16	Slot 6 serial communication station No. selection: 0 to 31 <Default: 6> (*2)
Basic IFU parameter No. 17	Slot 7 serial communication station No. selection: 0 to 31 <Default: 7> (*2)
Basic IFU parameter No. 18	Slot 8 serial communication station No. selection: 0 to 31 <Default: 8> (*2)

*1 Specify the same transmission speed as that of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

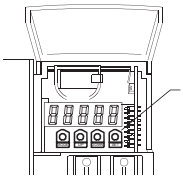
See Section 39.3.3 Setting communication interface (Communication settings)

*2 Avoid duplication of the station No. with any of the other units.

Point

(1) Parameter setting

Set the parameter at the pushbutton switch provided on the operation section of the servo amplifier or setup software.



Pushbutton switch provided on the operation section of the servo amplifier

(2) When changing the parameter

Turn off then on the servo amplifier to be effective the new parameter.

39.4.3 Connecting to the MELSERVO-J3 series

Point

MELSERVO-J3 series

For details of the MELSERVO-J3 series, refer to the following manual.

See the technical manual for the MELSERVO-J3 series servo amplifiers.

1 Parameters of MELSERVO-J3 series

Enter the parameters of the MELSERVO-J3 series.

Item	Setting
Basic parameter No. PC20	Station No. setting: 0 to 31 <Default: 0> (*1)
Basic parameter No. PC21	Serial communication function selection <Default: 0000> Basic parameter No. PC21 [ ][②][①][ ] (1)Serial communication baud rate selection (*2) 0: 9600bps 1: 19200bps 2: 38400bps 3: 57600bps 4: 115200bps (2)Communication response delay time selection 0: Invalid 1: Valid (Response after 800μs or longer delay)

*1 Avoid duplication of the station No. with any of the other axes.

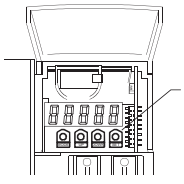
*2 Specify the same transmission speed as that of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

See Section 39.3.3 Setting communication interface (Communication settings)

Point

(1) Parameter setting

Set the parameter at the pushbutton switch provided on the operation section of the servo amplifier or setup software.



Pushbutton switch provided on the operation section of the servo amplifier

(2) When changing the parameter

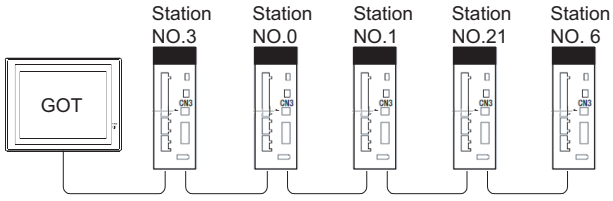
Turn off then on the servo amplifier to be effective the new parameter.

39.4.4 Station NO. settings

Set each station number while making sure that one station number is used only once.

The station number can be set without regard to the cable connection order.

No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the servo amplifer of which data is to be changed.

Specification range
0 to 31

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).

When specifying the station No. from 100 to 115 on GT Designer2,the value of GD10 to GD25 compatible to the station No.specification will be the station No.of the servo amplifer.

Specification statrion NO.	Compatible device	Setting range
100	GD10	0 to 31 For the setting other than the above, a communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only one station will be a target.

39.5 Precautions

1 Station number setting in the servo system

Make sure to establish servo system with the station number set with the host address.
For details of host address setting, refer to the following.

☞ Section 39.3.3 Setting communication interface (Communication settings)

2 GOT clock function

Since the servo amplifier does not have a clock function, the settings of "time adjusting" or "time broard cast" by GOT clock control will be disabled.

3 Servo amplifier/test operation using the GOT

During the servo amplifier/test operation, when the communication between the GOT and the servo amplifier is interrupted for 0.5[ms] or more, the servo amplifier decelerates, stops, and then gets into the servo lock status. During the servo amplifier/test operation, continue the communication constantly by monitoring the status display of the servo amplifier on the GOT screen, etc.

4 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller.
For example, faulty station that has communication timeout can be cut from the system.
For details of the setting contents of GOT internal device, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual
Section 2.9.1 GOT internal device

39.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial	Supporting the servo amplifier connection	2.09K	communication driver MELSERVO-J2S/M [01.02.**]
	Supporting connection to MELSERVO-J3 series MR-J3- ☐ A	2.18U	communication driver MELSERVO-J3, J2S/M [02.01.**]
	• Supporting the test operation mode • Supporting the write to the EEPROM for parameter • Supporting the read/write of the point tape for MR-J2S-CP	2.32J	communication driver MELSERVO-J3, J2S/M [03.00.**]
	Supporting connection to MELSERVO-J3 series MR-J3- ☐ T	2.63R	communication driver MELSERVO-J3, J2S/M [03.07.**]
	Supporting the retry, the timeout time and the delay time	2.73B	communication driver MELSERVO-J3, J2S/M [03.09.**]
GT16	Supporting the connections to GT16	2.90U	communication driver MELSERVO-J3, J2S/M [04.02.**]
GT105☐ GT24V1020 30	Supporting the connections to GT10	2.96A	Standard monitor OS [01.12.**] communication driver MELSERVO-J3,J2S/M [01.07.**]
GT16 GT15 GT11 Serial	Supporting connection to MELSERVO-J2S - ☐ CL		communication driver MELSERVO-J3,J2S/M [04.04.**]
GT105☐ GT24V1020 30			Standard monitor OS [01.12.**] communication driver MELSERVO-J3,J2S/M [01.07.**]

MEMO

40

ROBOT CONTROLLER CONNECTION



40.1 System Configuration . . . . . page 40-2

This section describes the equipment and cables needed for robot controller connection.
Select a system suitable for your application.

40.2 Preparatory Procedures for Monitoring . . . . . page 40-4

This section describes the procedures to be followed before monitoring in robot controller connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

40.3 PLC Side Setting . . . . . page 40-15

The PLC side settings for GOT connection are explained.
When checking the PLC side settings, refer to this section.

40.4 Precautions . . . . . page 40-17

This section describes the precautions on robot controller connection.
Refer to this section without fail before starting robot controller connection.

40.5 List of Functions Added by Version Upgrade . . . . . page 40-18

This section describes the functions added by version upgrade of GT Designer2 or OS.

40.1 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

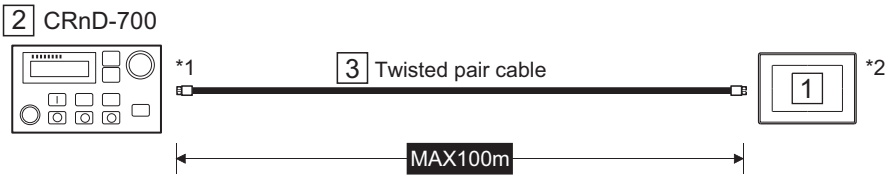
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

Communication driver

Ethernet (MELSEC), Q17nNC, CRnD-700

40.1.1 Connecting to robot controller (CRnD-700)

1 System configuration

Connection conditions		System configuration
Number of GOTs	Distance	
1	100m or less*3	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the robot controller, hub or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.
A cross cable is available for connecting the GOT to the robot controller.

*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
GT16 User's Manual (Hardware)

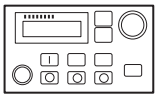
*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) Robot

Image	No.	Name	Model name
	2	Robot controller*1*2	CRnD-700

*1 For the system configuration of CRnD-700, refer to the following manual.

☞ CRnD-700 SET UP MANUAL

*2 Select [CRnD-700] for [Type] in [Ethernet] of GT Designer2.
For [Ethernet] of GT Designer2, refer to the following.

☞ 40.2.3Setting communication interface (Communication settings)

(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

40.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 40.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 40.2.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 40.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 40.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 40.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 40.2.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 40.2.7
Checking for normal monitoring

Point

Confirming the PLC side setting

This section explains the GOT side setting.
When confirming the PLC side settings, refer to the following.

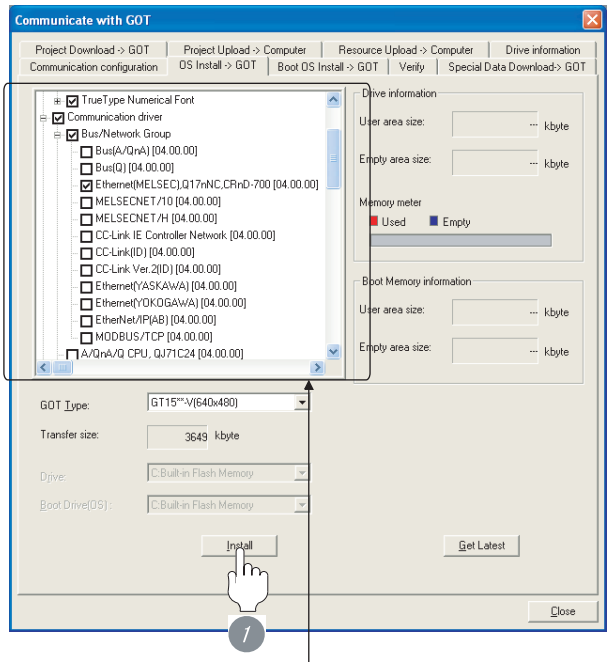
☞ Section 40.3 PLC Side Setting

40.2.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• Ethernet(MELSEC),Q17nNC,CRnD-700

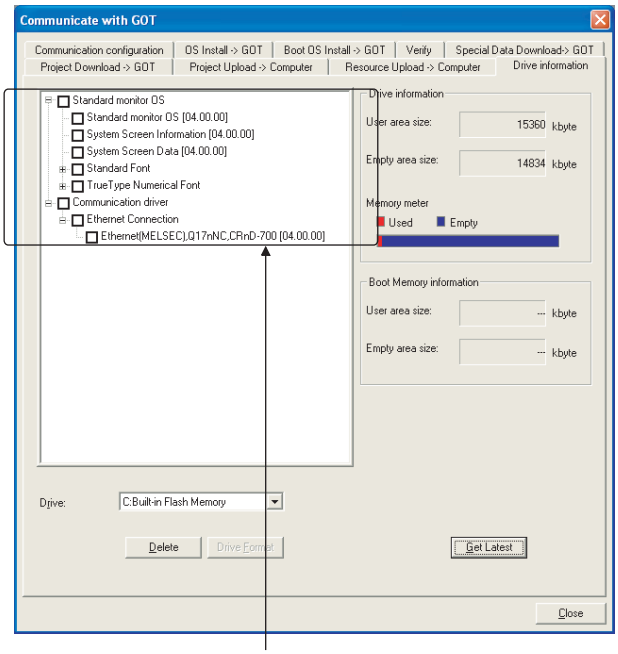
1 Check-mark a desired standard monitor OS, communication driver, soption OS, and extended function OS, and click the Install button.

40.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: Ethernet(MELSEC),Q17nNC, CRnD-700

40.2.3 Setting communication interface (Communication settings)

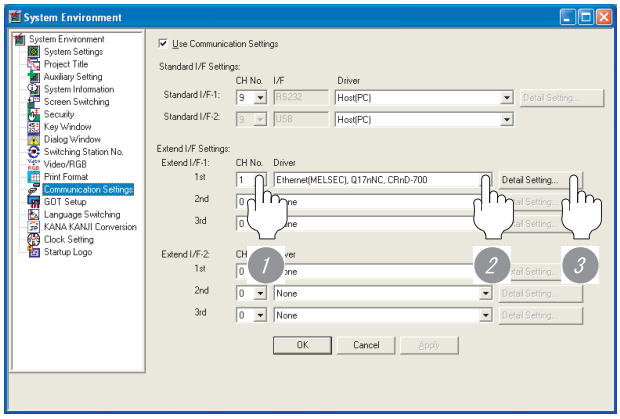
Make the GOT communication interface settings on [Communication setting] and [Ethernet] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication setting] and [Ethernet] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(For GT15)

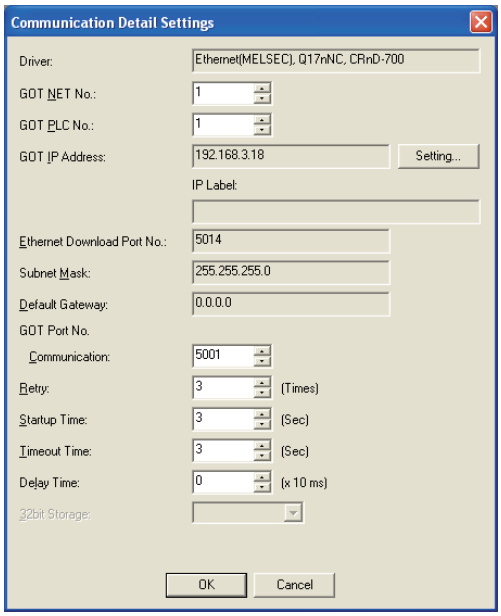
1 Set [1] to the channel No. used.

2 Set the driver to [Ethernet(MELSEC),Q17nNC, CRnD-700].

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

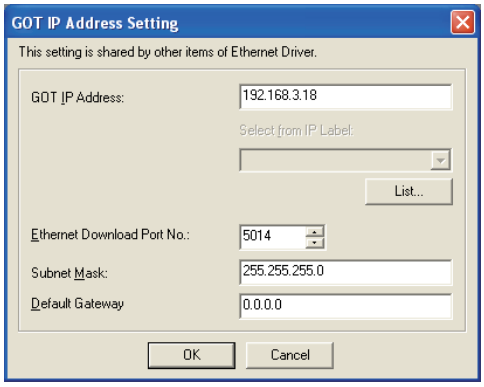
2 Communication detail settings

(1) GT16

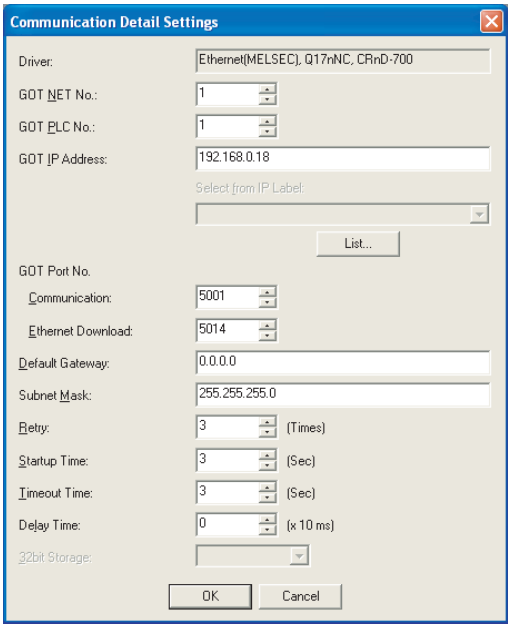


Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address*1	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.*1	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*1	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*1	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5001>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (×10ms)

*1 Click the Setting button and perform the setting in the [GOT IP Address Setting] screen.



(2) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5001>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No. (Ethernet Download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)

Point

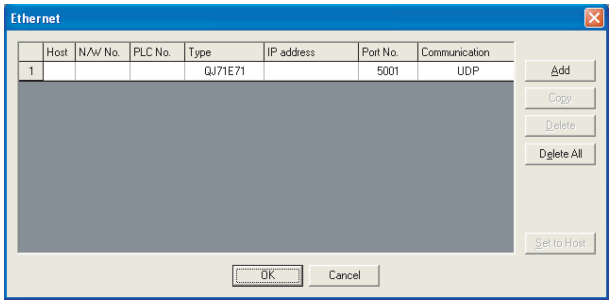
Example of communication detail settings

For examples of communication detail settings, refer to the following.

Section 40.3 PLC Side Setting

3 Ethernet setting

(1) Ethernet setting



Item	Description	Range
Host	The host is displayed. (The host is indicated with an asterisk (*).)	-
N/W No.	Set the network No. of the connected Ethernet module. <Default: blank>	1 to 239
PLC No.	Set the station No. of the connected Ethernet module. <Default: blank>	1 to 64
Type*1	CRnD-700 (fixed)	CRnD-700 (fixed)
IP address	Set the IP address of the connected Ethernet module. <Default: blank>	0.0.0.0 to 255.255.255.255
Port No.*2	Set the port No. of the connected Ethernet module. <Default: 5001>	1024 to 65534
Communication	UDP (fixed)	UDP (fixed)

*1 Select [CRnD-700] for [Type].

Point

Example of Ethernet setting

For examples of Ethernet setting, refer to the following.

Section 40.3 PLC Side Setting

Point

(1) Communication interface setting by Utility
The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
☞ GT ☐ User's Manual

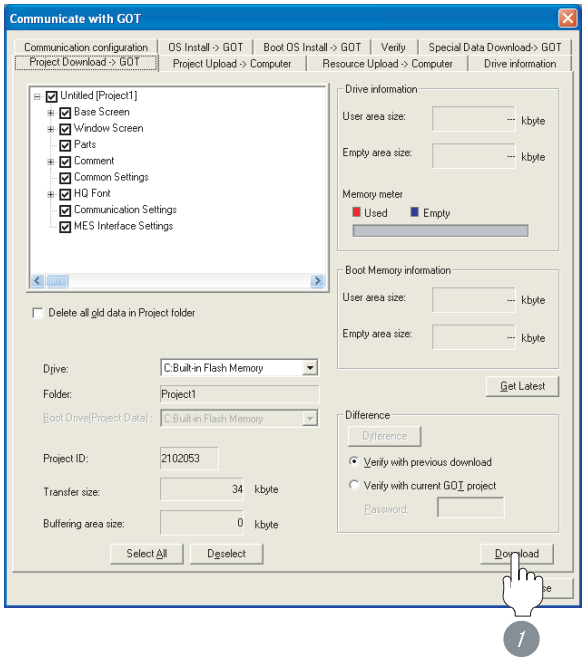
(2) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

40.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

40.2.5 Attaching communication unit and connecting cable

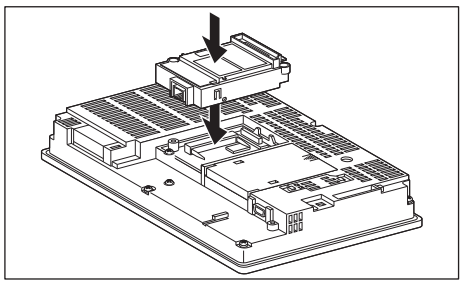
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

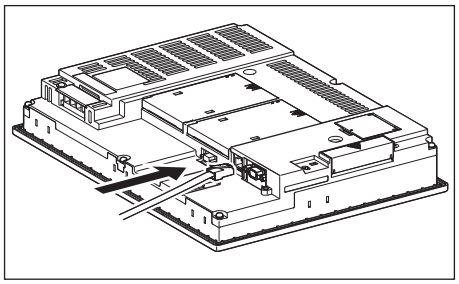
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet Communication Unit User's Manual

2 Connecting the cable

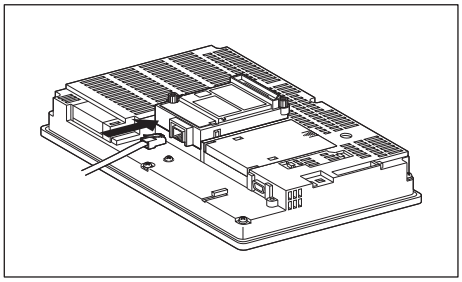
(1) For GT16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) For GT15

1 Connect the twisted pair cable to the Ethernet communication unit.



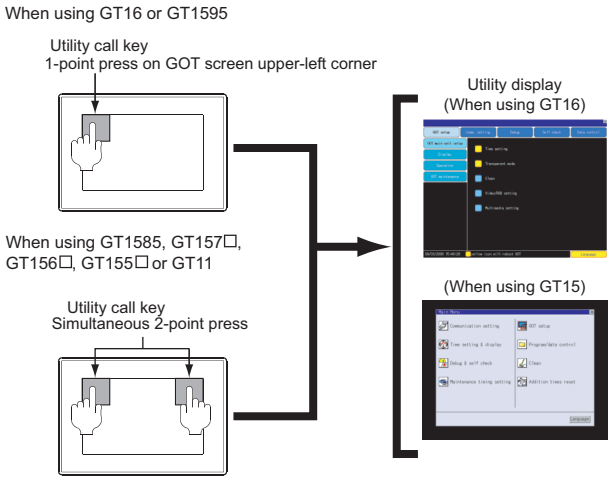
40.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)



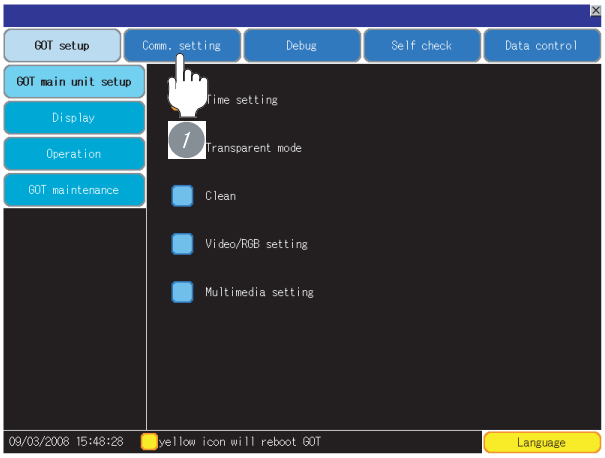
Point

When setting the utility call key to 1-point

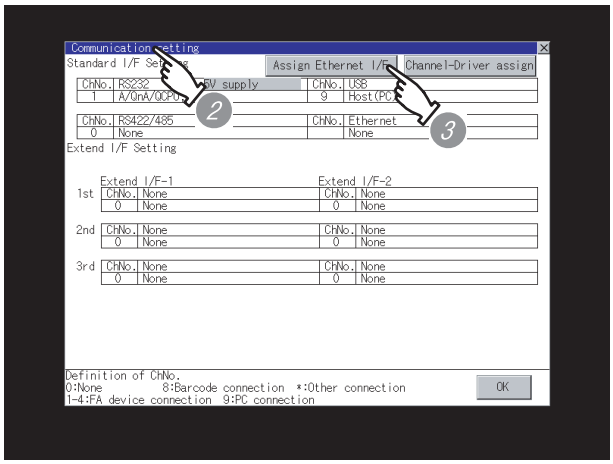
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual

(1) GT16

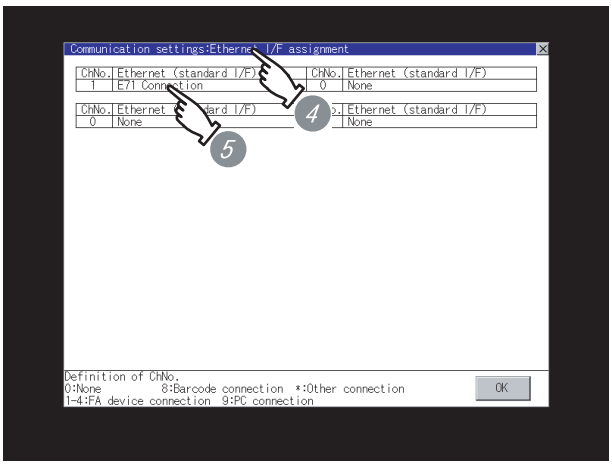


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet/IF].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver : E71 Connection

6 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 40.2 Preparatory Procedures for Monitoring

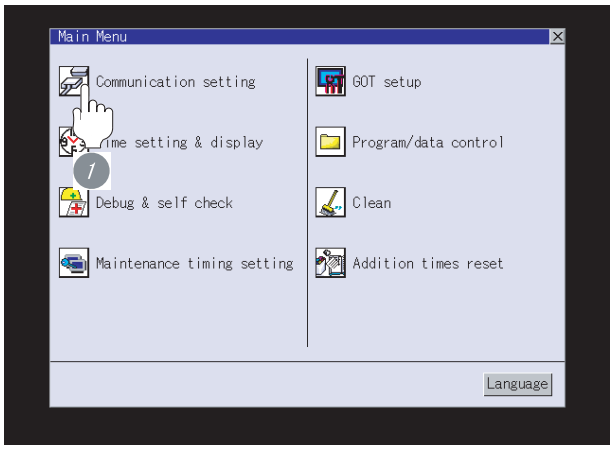
Point

When changing communication interface setting by Utility

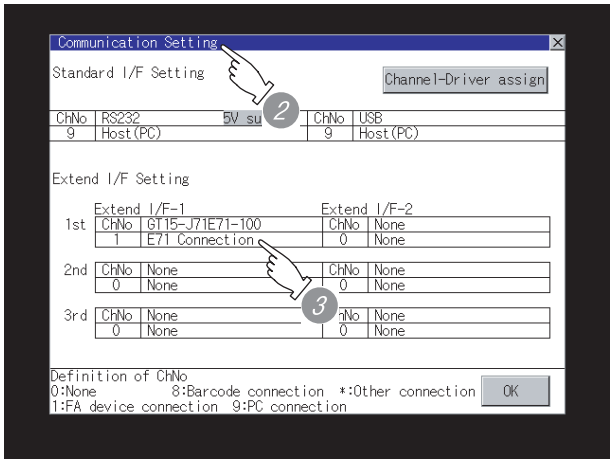
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility)

(2) GT15



1 After powering up the GOT, touch [Main Menu] → [Communication Settings] from the Utility.



2 The [Communication Settings] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver : E71 Connection

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 40.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT15 User's Manual

40.2.7 Checking for normal monitoring

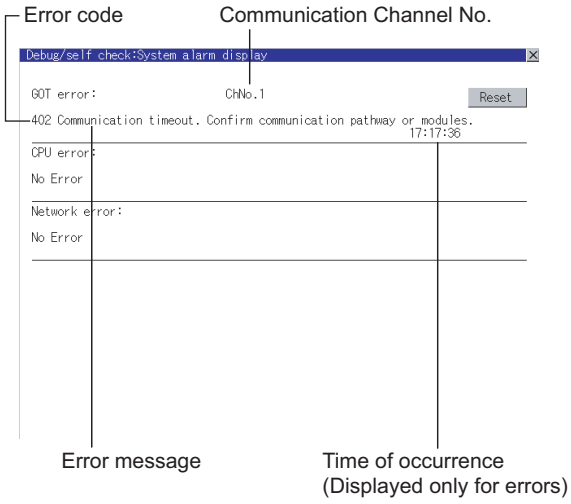
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

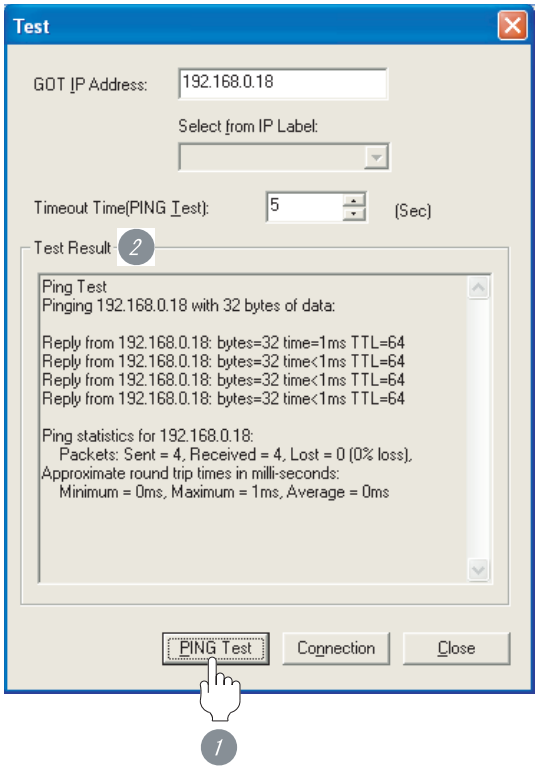
2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®
Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication
C:\>Ping 192.168.0.18
Request timed out.

(2) When using the "PING Test" of GT Designer2
Select [Communication] → [Communication configuration] → "Ethernet" and Test to display "PING Test".



1 Specify the "GOT IP address" of the "PING Test" and click on the PING Test button.

2 The "Test Result" is displayed after the "PING Test" is finished.

(3) When abnormal communication
At abnormal communication, check the followings and execute the Ping command again.
- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of "Communication settings"
- IP address of GOT specified by Ping command

Point

Ethernet diagnostics of GX Developer

Ethernet diagnostics of GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Developer, refer to the following manual.

☞ User's Manual of the Ethernet module

3 Confirming the PLC side setting

When connecting the GOT, setting is required for the PLC side.

Confirm if the PLC side setting is correct.

☞ Section 40.3 PLC Side Setting

4 Confirming the communication state to each station (station monitoring function)

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT.

When detecting the abnormal state, it is confirming the response by executing a Ping command to the faulty station.

The station monitoring state can be confirmed by using GOT internal device.

(1) Station monitoring state

(a) No. of faulty station (GS230)
Total No. of the faulty CPU are stored.
The station No. of faulty stations are stored to GS231 through GS238. (☞ (b)Faulty station information (GS231 to GS238))

Device	b15 to b8	b7 to b0
GS230	(00H fixed)	No. of faulty stations

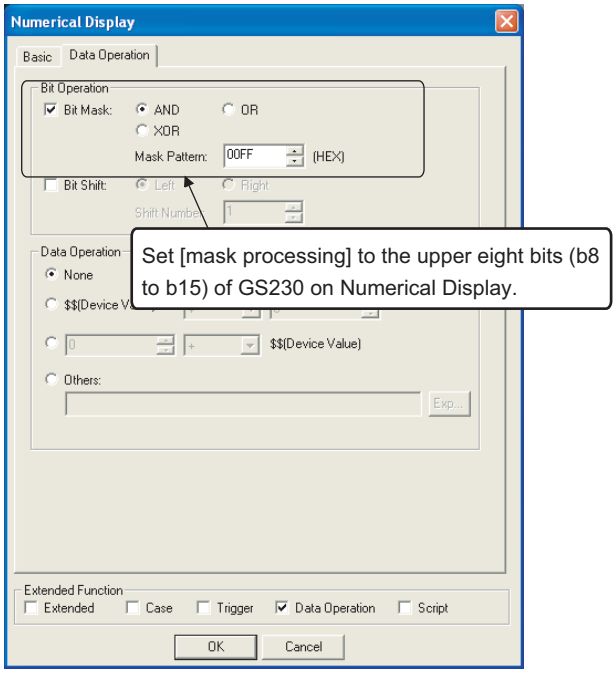
Point

When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.
For the data operation, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

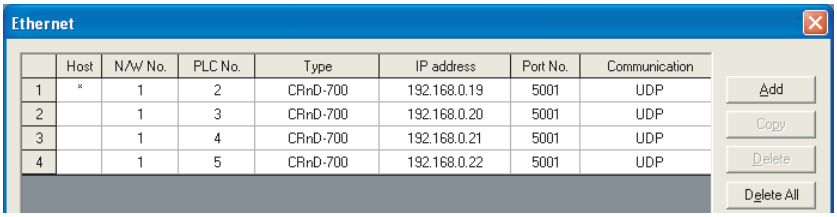
<Numerical Display (Data Operation tab) >



(b) Faulty station information (GS231 to GS238)

• The bit of the Ethernet setting No. corresponding to the faulty station is set.
  0: Normal
  1: Abnormal
• The bit is reset after the fault is recovered.

GS231 bit 0 · · ·
GS231 bit 1 · · ·
GS231 bit 2 · · ·
GS231 bit 3 · · ·



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

(2) Precautions of station monitoring function

This function is not applicable to the multiple CPU system in which the CPU No. is assigned at the device setting of GT Designer2.

For details of GT Designer2, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

40.3 PLC Side Setting

Model		Reference
Robot controller	CRnD-700	Section 40.3.1

40.3.1 Connecting to robot controller (CRnD-700)

This section describes the settings of a GOT and a robot controller in the case of system configuration shown as 1.

Point

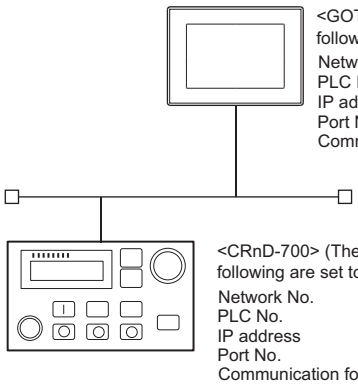
Robot controller (CRnD-700)

For details of the robot controller (CRnD-700), refer to the following manual.

Manual for CRnD-700

1 System configuration

3 [Communication settings] and [Ethernet setting] of GT Designer2



<GOT> (The settings other than the following are set to the default)

Network No. : 1
PLC No. : 1
IP address : 192.168.0.18
Port No. : 5001
Communication format : UDP (fixed)

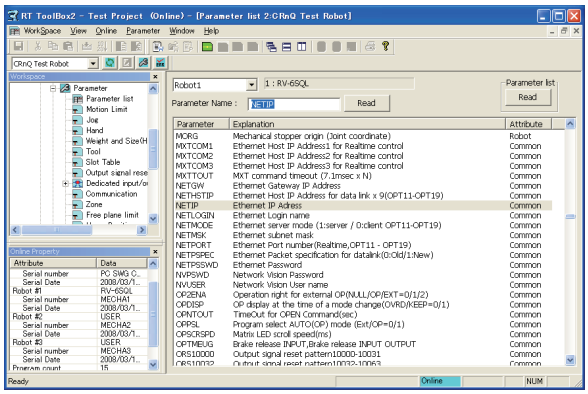
<CRnD-700> (The settings other than the following are set to the default)

Network No. : 1
PLC No. : 2
IP address : 192.168.0.19
Port No. : 5001
Communication format : UDP(fixed)

2 Parameter settings for CRnD-700

2 Parameter settings for CRnD-700

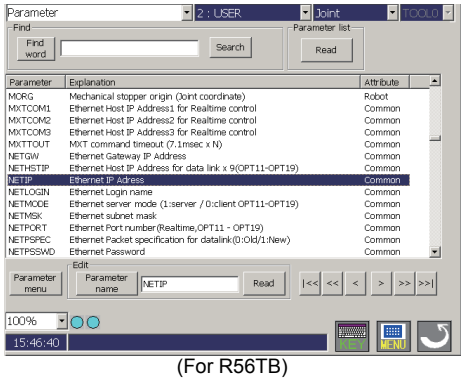
(1) For RT ToolBox2



Item	Setting	Setting necessity at GOT connection
NETIP	192.168.0.19	○
GOTPORT	5001	○

○ : Necessary △ : As necessary × : Not necessary

(2) For R32TB or R56TB



(For R56TB)

Item	Setting	Setting necessity at GOT connection
NETIP	192.168.0.19	○
GOTPORT	5001	○

○ : Necessary △ :As necessary × : Not necessary

3 [Communication settings] and [Ethernet setting] of GT Designer2

(1) Communication settings

Item	Setting
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
GOT Port No. (Communication)	5001
GOT Port No. (Ethernet Download)	5014
Default Gateway	0.0.0.0
Subnet Mask	255.255.255.0
Retry	3 Times
Startup Time	3 sec
Timeout Time	3 sec
Delay Time	0ms

(2) Ethernet setting

Item		Setting
Ethernet setting No.1	Host	*
	N/W No.	1
	PLC No.	2
	Type	CRnD-700
	IP address	192.168.0.19
	Port No.	5001 (fixed)
	Communication	UDP (fixed)

Point

[Communication Settings], [Ethernet] of GT Designer2

For [Communication Settings], [Ethernet] of GT Designer2, refer to the following.

☞ 40.2.3Setting communication interface (Communication settings)

4 Confirming communication state of CRnD-700

(1) When using the Command Prompt of Windows®.
Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.0.19
Reply from 192.168.0.19: bytes=32 time<1ms TTL=64

(b) When abnormal communication
C:\>Ping 192.168.0.19
Request timed out.

(2) When abnormal communication
Check the following, and then execute the Ping command again.
- Cable connection condition
- Parameter settings
- Operation state of the CRnD-700. (faulty or not)
- The IP address of the CRnD-700 specified for the Ping command.

40.4 Precautions

1 When setting IP address

Do not use "0" and "255" at the end of an IP address.
(Numbers of *.*.*.0 and *.*.*.255 are used by the system.)
The GOT may not monitor the controller correctly with the above numbers.
Consult with the administrator of the network before setting an IP address to the GOT and controller.

2 When connecting to the multiple network equipments (including GOT) in a segment

By increasing the network load, the transmission speed between the GOT and PLC may be reduced.
The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

40.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Connection to robot controller	Supporting the connection to CRnD-700	2.73B	Communication driver QJ71E71/AJ71(Q)E71, Q17nNC, CRnD-700 [03.09.**]
Connection to robot controller	Supporting the connection to GT16	2.90U	Communication driver Ethernet(MELSEC)/ Q17nNC/ CRnD-700 [04.02.**]

41

CNC CONNECTION

41.1 Direct Connection To CPU page41-2

This section describes the equipment and cables needed for direct connection to a CNC. Select a system suitable for your application



41.2 MELSECNET/10 Connection (PLC To PLC Network) page41-18

This section describes the equipment and cables needed when connecting to MELSECNET/10 (PLC to PLC network).
Select a system suitable for your application



41.3 CC-Link Connection (Intelligent Device Station) page41-33

This section describes the equipment and cables needed for CC-Link connection (intelligent device station).
Select a system suitable for your application



41.4 Ethernet Connection . . page41-48

This section describes the equipment and cables needed when connecting to Ethernet.
Select a system suitable for your application.



41.5 List of Functions Added by Version Upgrade page41-64

This section describes the functions added by version upgrade of GT Designer2 or OS.

Point Connection to CNC C70

This section describes the connection to the CNC C6/C64 only.
For details of the connection to the CNC C70, refer to the following.

☞ Chapter 2 BUS CONNECTION to Chapter 10 ETHERNET CONNECTION

41.1 Direct Connection To CPU

Connectable CNC is MELDAS C6/C64 series.
Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

41.1.1 System Configuration

Communication driver

AJ71C24, MELDAS C6*

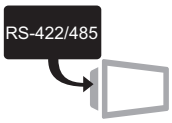
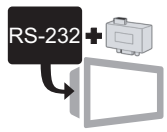
1 System configuration and connection conditions

Connection conditions			System configuration	Model
Number of GOTs	Communication	Distance		
1	RS-232	15m or less	*1 6 RS-232 cable → 1	GT16 GT15 GT11 Serial
	RS-422	30.7m or less	4 F311 cable (RS232, *2, GPP) → 5 RS-422 connector conversion cable → 2; 7 RS-422 cable	GT16
		30.5m or less	4 F311 cable (RS232, *2, GPP) → 7 RS-422 cable → 3	GT16 GT15 GT11 Serial

*1 Connect the connector of the CNC side to TERMINAL.
*2 Connect the connector of the CNC side to SIO.

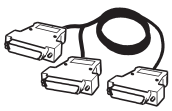
2 System equipment

(1) GOT

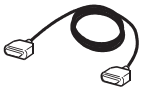
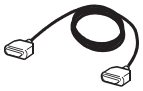
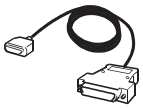
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
	2	RS-422/485 interface • For RS-422 communication	— (Built into GOT)	GT16
	3	RS-422 conversion unit *1 • For RS-422 communication	GT15-RS2T4-9P	GT16 GT15
		RS-422 interface • For RS-422 communication	— (Built into GOT)	GT11 Serial
		RS-422/485 Communication Unit • For RS-422 communication	GT15-RS4-9S	GT16 GT15

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT155□.

(2) CNC

Image	No.	Name	Model name
	4	F311 cable	To be prepared by the user, referring the following. ☞ MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL (BNP-B2255) F311 Cable Production Drawing

(3) Cable

Image	No.	Name	Model name	Model
	5	RS-422 connector conversion cable	GT16-C02R4-9S(0.2m)	GT16
	6	RS-232 cable • Between CNC and GOT	Section 41.1.2 Connection Cable	GT16 GT15 GT11 Serial
	7	RS-422 cable • Between F311 cable and GOT	GT01-C30R4-25P(3m), GT01-C100R4-25P(10m), GT01-C200R4-25P(20m), GT01-C300R4-25P(30m)	

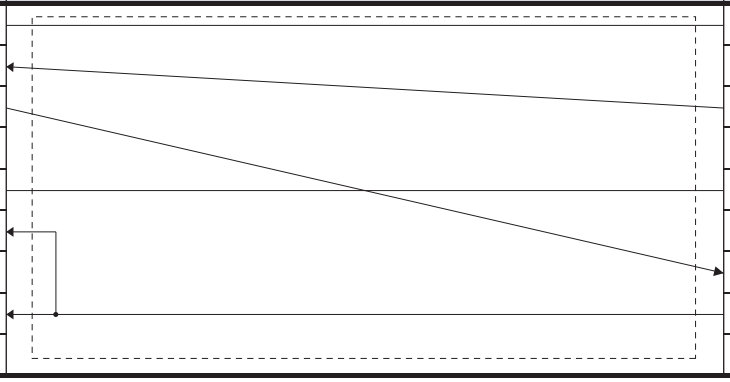
41.1.2 Connection Cable

The RS-232 cable used for connecting the GOT to the CNC should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

Model name		Connection cable
		RS-232 cable
CNC	MELDAS C6/C64	RS-232 cable

1 Connection diagram

(1) RS-232 cable 1)

GOT side		Cable connection and signal direction	CNC*1	
Signal name	Pin No.		Pin No.	Signal name
CD	1		1	GND
RD(RXD)	2		—	—
SD(TXD)	3		6	SD
ER(DTR)	4		—	—
SG	5		11	GND
DR(DSR)	6		—	—
RS(RTS)	7		16	RD
CS(CTS)	8		18	ER(DTR)
—	9		—	—

*1 For details of the CNC side connection, refer to the following manual.

MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL BNP-B2255
MELDAS C6/C64 NETWORK MANUAL BNP-B2372

2 Connector specifications

(1) GOT side connector

(a) Connector specifications

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector type

9-pin D-sub (male) inch screw fixed type

(c) Connector model

GOT	Hardware version*1	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd
GT1595-X	-	17LE-23090-27(D4CK)	
GT1585V-S	-		
GT1585-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1585-STBD	-		
GT1575V-S	-		
GT1575-STBA	B	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C	17LE-23090-27(D4CK)	DDK Ltd
GT1575-STBD	-		
GT1575-VTBA	D	GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E	17LE-23090-27(D4CK)	DDK Ltd
GT1575-VTBD	-		
GT1575-VN	-		
GT1572-VN	-		
GT1565-V	-		
GT1562-VN	-		
GT155☐	-		
GT1155-Q, GT1150-Q	-	17LE-23090-27(D3CC)	
GT15-RS2-9P	-		

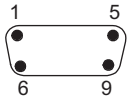
*1 For the confirmation method of GT15 hardware version, refer to the following manual.

☞ GT15 User's Manual

(d) Connector pin arrangement

GT16, GT15, GT11

GOT main part connector
see from the front



9-pin D-sub (male)

(2) CNC side connector
Use the connector compatible with the CNC side module.
For details, refer to the following manual.

☞ MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL BNP-B2255
MELDAS C6/C64 NETWORK MANUAL BNP-B2372

3 Precautions when preparing a cable

The length of the RS-232 cable must be 15m or less.

41.1.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 41.1.4
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 41.1.5
Checking OS installation on GOT

↓

Set the communication interface. (Communication settings)

☞ Section 41.1.6
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 41.1.7
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 41.1.8
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 41.1.9
Verifying GOT recognizes controllers

↓

Make sure that monitoring is performed normally.

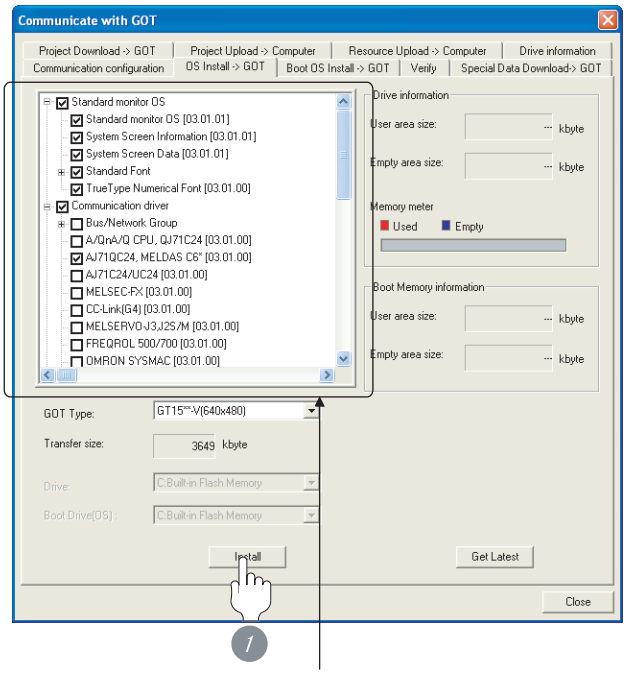
☞ Section 41.1.10
Checking for normal monitoring

41.1.4 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check either of the following under the Communication driver.
AJ71C24, MELDAS C6*

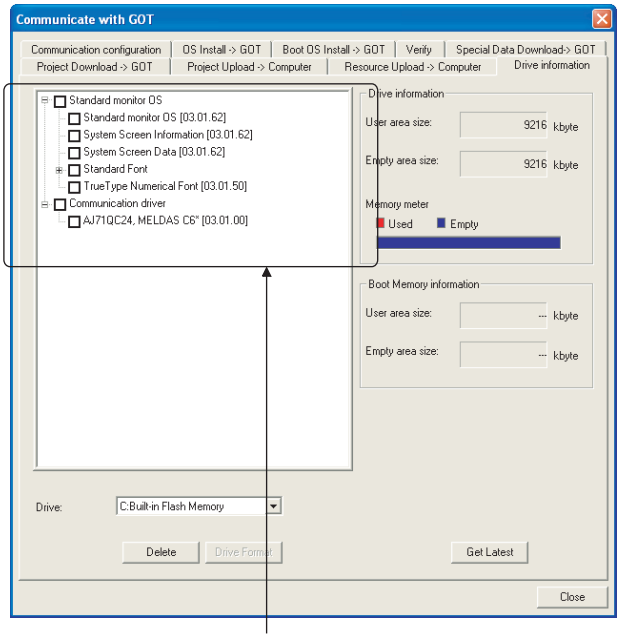
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

41.1.5 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver

- AJ71C24, MELDAS C6*

41.1.6 Setting communication interface (Communication settings)

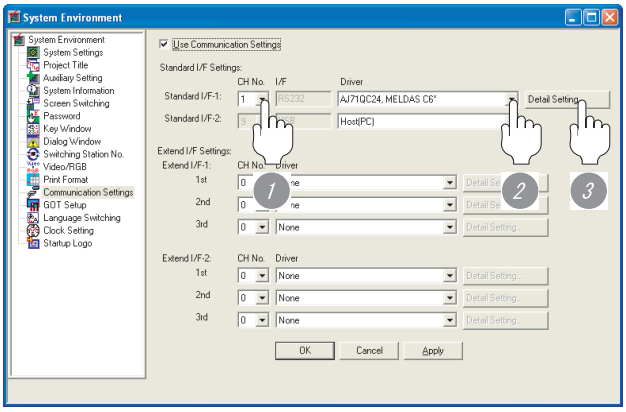
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



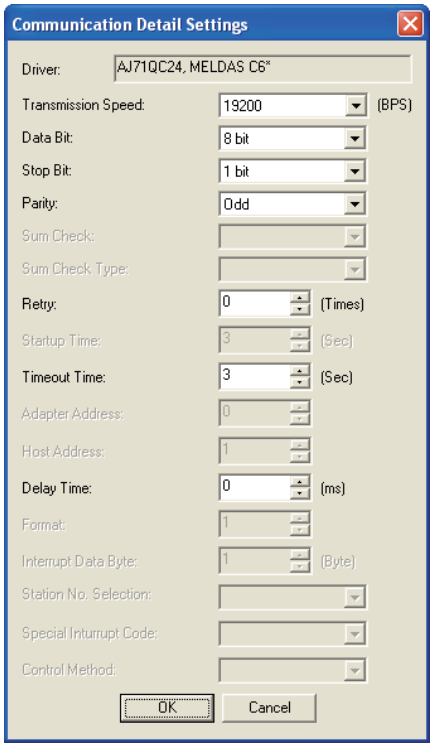
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver to “AJ71C24, MELDAS C6*”

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 19200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

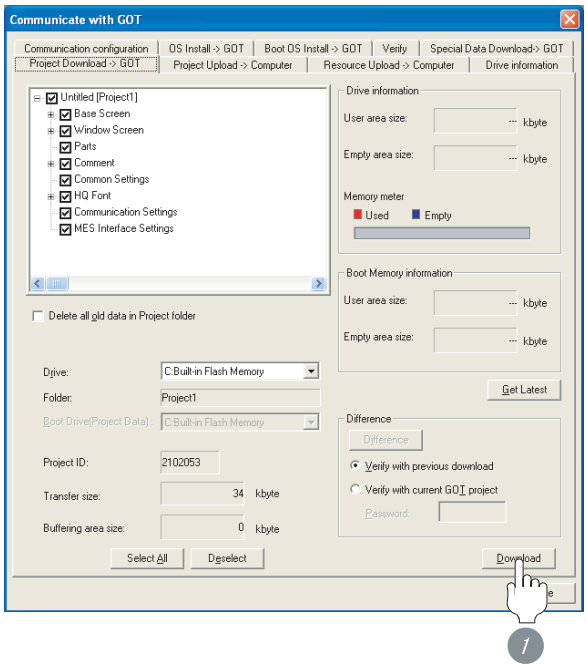
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

41.1.7 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

41.1.8 Attaching communication unit and connecting cable

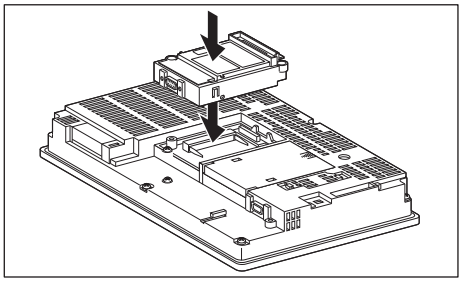
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the RS-232 serial communication unit and RS-422/485 serial communication unit, refer to the following manual.

☞ GT15 Serial Communication Unit User's Manual

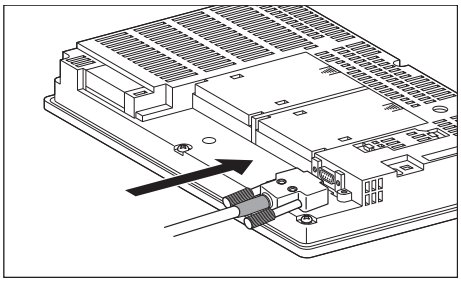
2 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

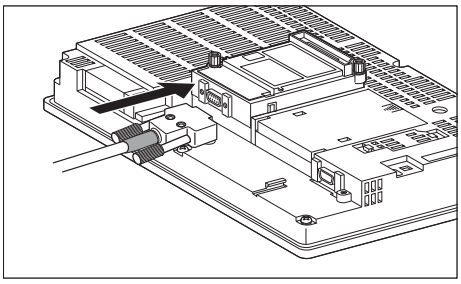
• Connection to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



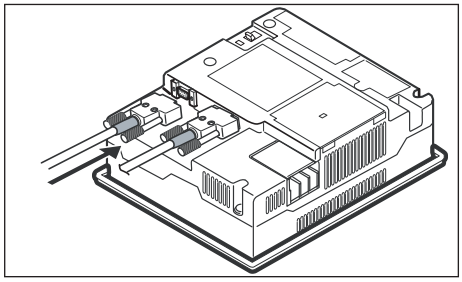
• Connection to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.

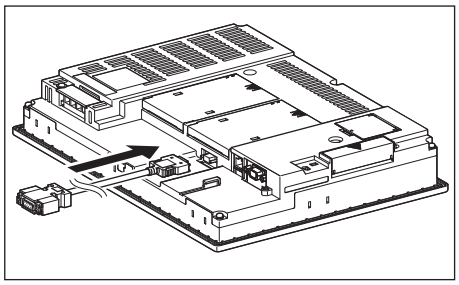


(2) How to connect the RS-422 cable

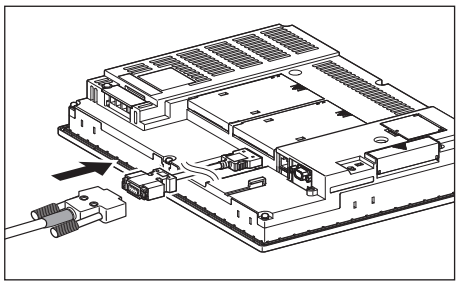
(a) For the GT16

• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

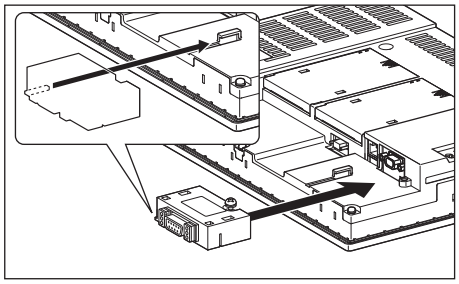


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

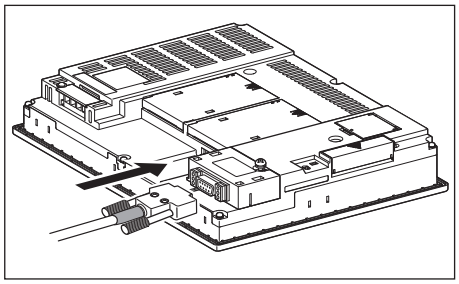


• Connection to the RS-232 interface

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

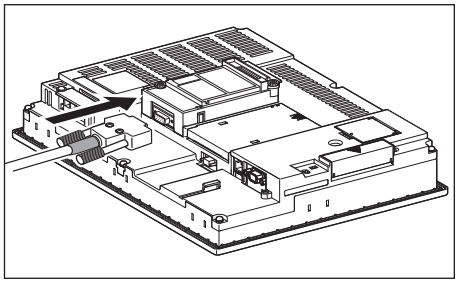


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

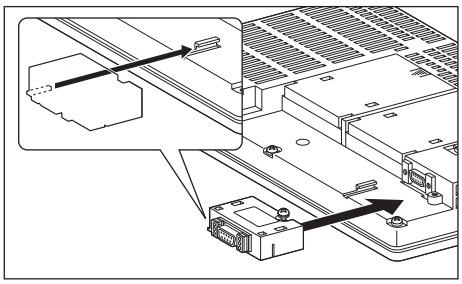
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



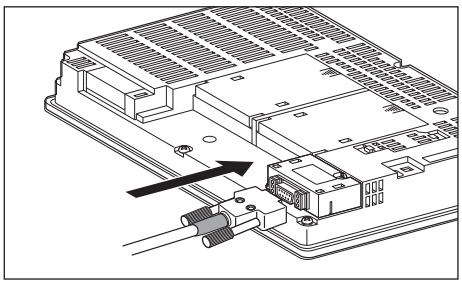
(b) For the GT15

• Connection to the RS-232 interface (The RS-422 conversion unit cannot be connected to GT155☐)

1 Connect the RS-422 conversion unit to the RS-232 interface on the GOT.

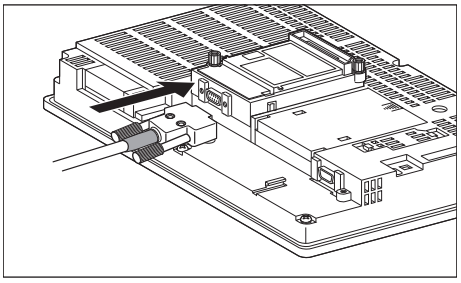


2 Connect the RS-422 cable to the RS-422 conversion unit.



• Connection to the RS-422/485 communication unit

1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



Point

RS-422 conversion unit

For details of the RS-422 conversion unit, refer to the following manual.

☞ GT15 RS-422 Conversion Unit User's Manual

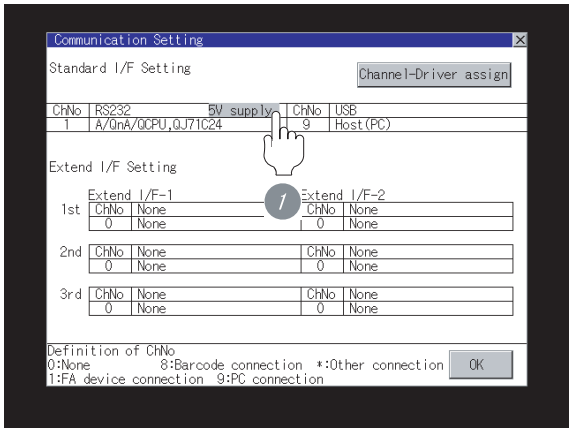
Point

When using the RS-422 conversion unit

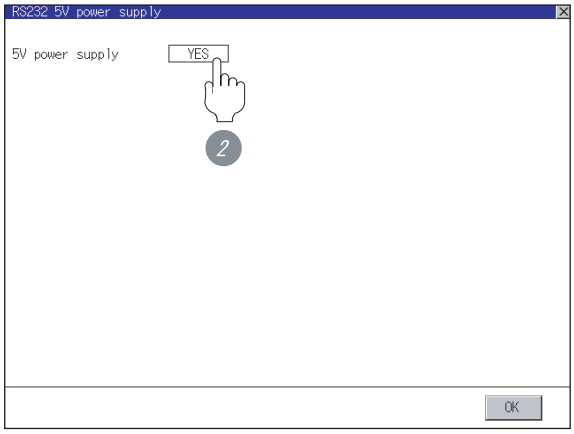
On "Communication settings" on the utility, make setting so that 5V DC power is supplied to the RS-422 conversion unit from the RS-232 interface on the GOT. For details on the utility, refer to the following manual:

☞ GT ☐ User's Manual

1 Touch [5V supply].

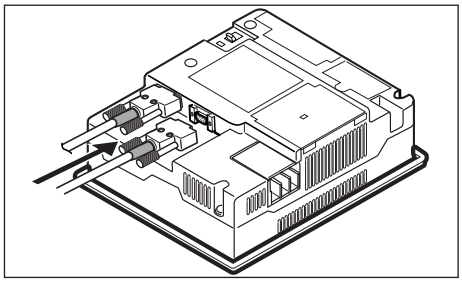


2 Set [5V power supply] to "YES".



(c) In the case of the GT11

1 Connect the RS-422 cable to the RS-422 interface on the GOT.



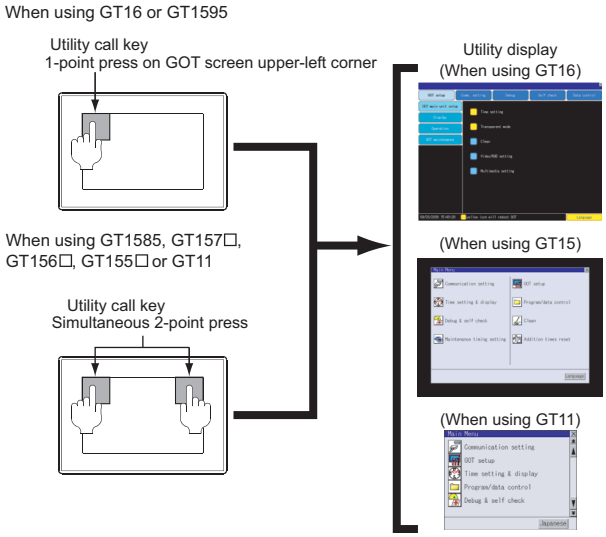
41.1.9 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

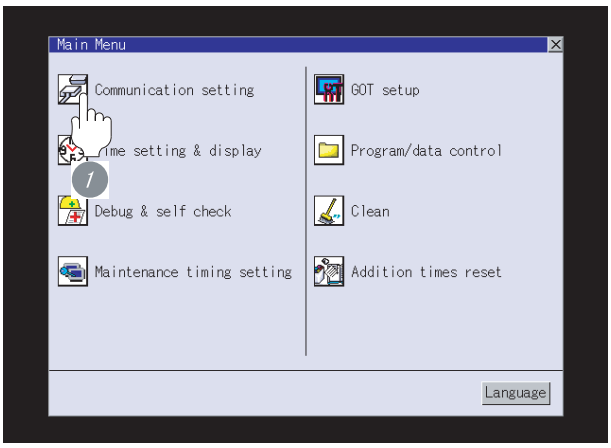


Point

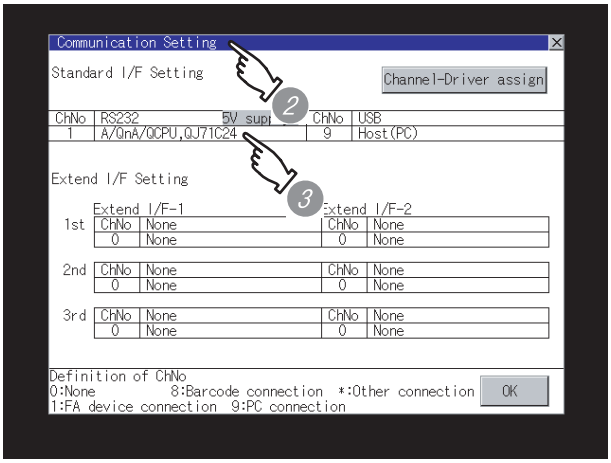
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver
  AJ71C24, MELDAS C64*

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 41.1.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

41.1.10 Checking for normal monitoring

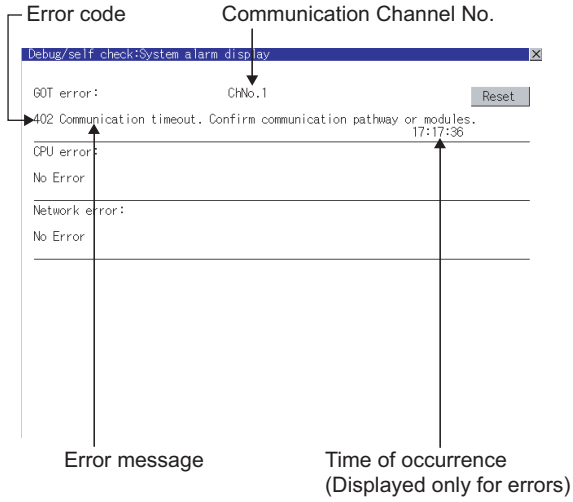
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check.

Whether the CNC can communicate with the GOT or not can be checked by the I/O check function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

- For GT16

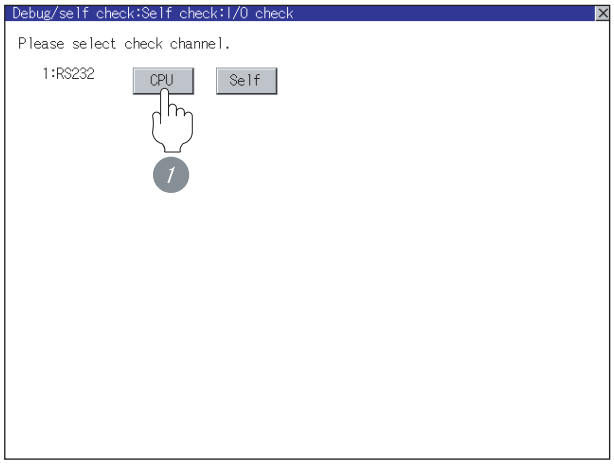
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].

- For GT15, GT11

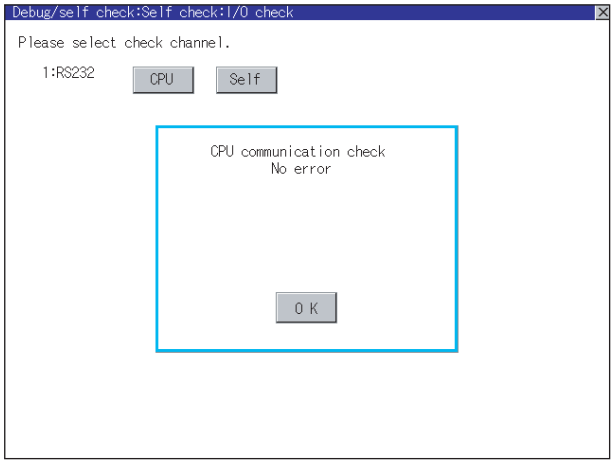
  Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected CNC.



2 When the communication screen ends successfully, the screen on the left is displayed.

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

41.1.11 Precautions

1 Communication settings

The communication driver names differs depending on the GT Designer2 versions.

GT Designer2 versions	
2.32J or before	2.43V or later
A/QnA/Q CPU, QJ71C24, MELDAS C6*	A/QnA/Q CPU, QJ71C24
AJ71QC24	AJ71QC24, MELDAS C6*

Point

Upgrading the version of the Standard monitor OS

When upgrading the Standard monitor OS on the GOT, an installation of the Communication driver [AJ71QC24, MELDAS C6*] onto the GOT may be necessary, according to the message on GT Designer2.

2 Version of CNC

For MELDAS C6/C64, use NC system software version D0 or later.

41.2 MELSECNET/10 Connection (PLC To PLC Network)

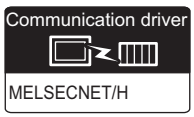
Connectable CNC is MELDAS C6/C64 series.
Select a system configuration suitable for your application.

Point

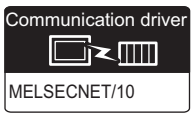
(1) Connectable network
Connect the GOT to the following network systems as an ordinary station.
• MELSECNET/10 network system (PLC to PLC network) optical loop system
• MELSECNET/10 network system (PLC to PLC network) coaxial bus system

(2) Conventions used in this section
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

41.2.1 System Configuration

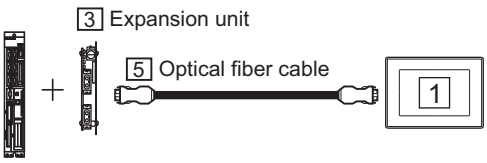
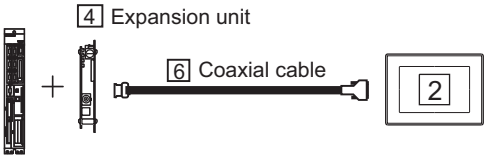


(When MELSECNET/H communication unit is used)



(When MELSECNET/10 communication unit is used)

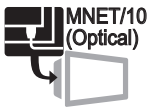
1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
63 (max.)	*1	
31 (max.)	*1	

*1 The overall extension cable length and the length between stations vary depending on the cable type to be used and the total number of stations.
For details, refer to the following manuals.
- MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL BNP-B2255
- MELDAS C6/C64 NETWORK MANUAL BNP-B2373

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MELSECNET/H communication unit *1 ▪ For optical loop system	GT15-J71LP23-25	GT16 GT15
		MELSECNET/10 communication unit ▪ For optical loop system	GT15-75J71LP23-Z	GT15
	2	MELSECNET/H communication unit *1 ▪ For coaxial bus system	GT15-J71BR13	GT16 GT15
		MELSECNET/10 communication unit ▪ For coaxial bus system	GT15-75J71BR13-Z	GT15

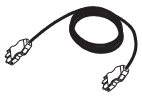
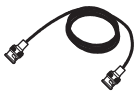
*1 Specify the MELSECNET/10 Mode as the Communication Settings.
For details of settings, refer to the following.

☞ Section 41.1.6 Setting communication interface (Communication settings)

(2) CNC

Image	No.	Name	Model name
	3	Expansion unit	FCU6-EX879 (Optical interface)
	4	Expansion unit	FCU6-EX878 (Coaxial interface)

(3) Cable

Image	No.	Name	Model name
	5	Optical fiber cable	For details of the optical fiber cable, refer to the following manual. ☞ ▪ MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL BNP-B2255 ▪ MELDAS C6/C64 NETWORK MANUAL BNP-B2373
	6	Coaxial cable	For details of the coaxial cable, refer to the following manual. ☞ ▪ MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL BNP- B2255 ▪ MELDAS C6/C64 NETWORK MANUAL BNP-B2373

41.2.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS on the GOT.

☞ Section 41.2.3
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 41.2.4
Checking OS installation on GOT

↓

Set the communication interface.
(Communication settings)

☞ Section 41.2.5
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 41.2.6
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 41.2.7
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 41.2.8
Verifying GOT recognizes controllers

↓

Make sure that monitoring is performed normally.

☞ Section 41.2.9
Checking for normal monitoring

Point

Confirming the CNC side setting

This section explains the GOT side setting.
When confirming the CNC side setting, refer to the following.

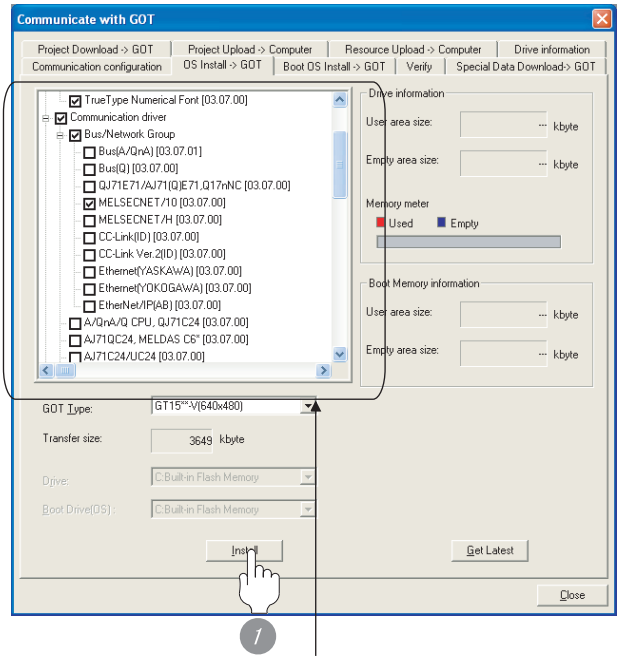
☞ Section 41.2.10 CNC Side Settings

41.2.3 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

- When using the MELSECNET/10 communication unit
  : MELSECNET/10
- When using the MELSECNET/H communication unit
  : MELSECNET/H

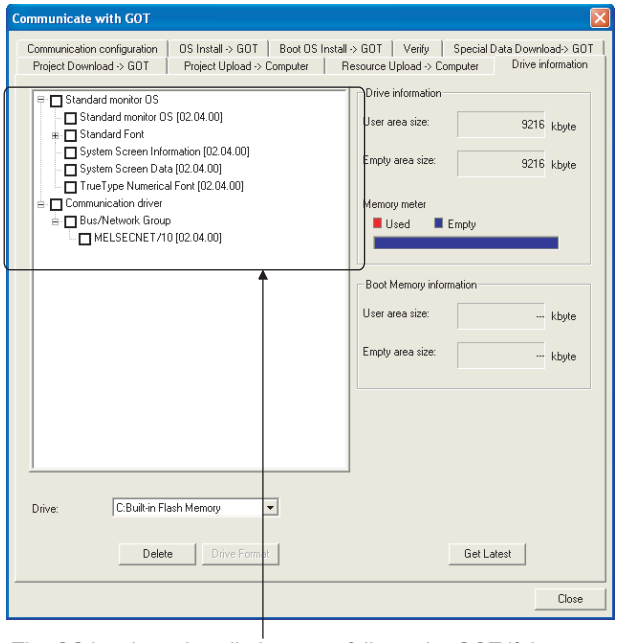
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

41.2.4 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver

- When using the MELSECNET/10 communication unit
  : MELSECNET/H
- When using the MELSECNET/H communication unit
  : MELSECNET/10

41.2.5 Setting communication interface (Communication settings)

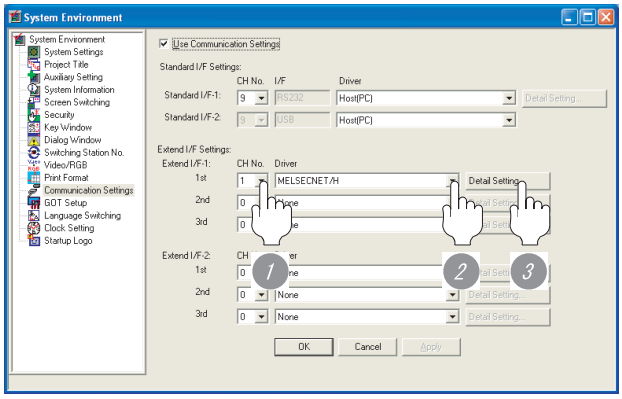
To configure the communication interface of the GOT, use the [Communication settings] of GT Designer2 and the switches of the communication unit.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver.

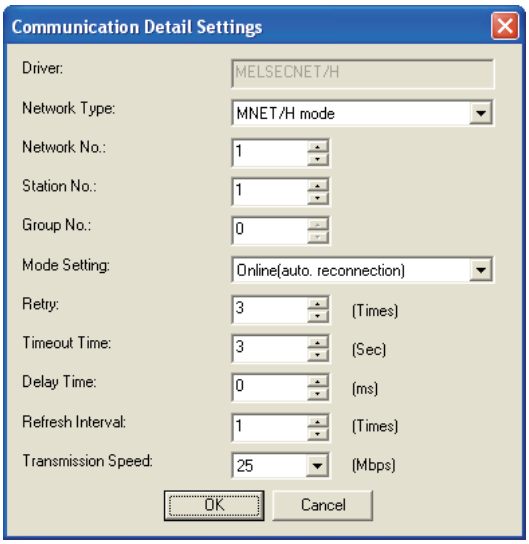
- When using the MELSECNET/H communication unit. : "MELSECNET/H"
- When using the MELSECNET/10 communication unit. : "MELSECNET/10"

3 Perform the detailed settings for the driver.

(2 Communication detail settings)

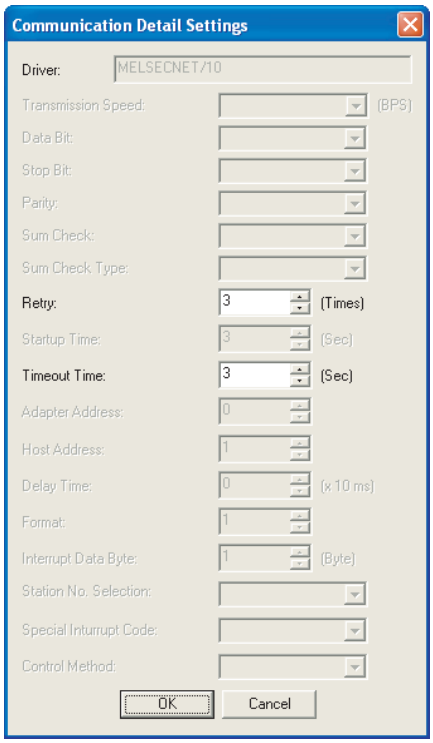
2 Communication detail settings

(1) MELSECNET/H



Item	Description	Range
Network Type	Set the network type. <Default: MNET/H mode>	• MNET/H mode • MNET/10 mode • MNET/H EXT mode
Network No.	Set the network No. <Default: 1>	• 1 to 239
Station No.	Set the station No. of the GOT. <Default: 1>	• 1 to 64
Mode Setting	Set the operation mode of the GOT. <Default: Online (auto. reconnection)>	• Online (auto. reconnection) • Offline • Test between slave station • Self-loopback test • Internal self-loopback test • H/W test
Retry	Set the number of retries to be performed when a communication timeout occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 300ms
Refresh Interval	Set the number of refreshes to secure the send/receive data in station units during communication. <Default: 1 Time> Valid when "Secured data send/ Secured data receive" is marked by the control station side network parameters of the MELSECNET/H network system.	1 to 1000 Times
Transmis-sion Speed	Set the communication transmission speed. <Default: 25Mbps>	10Mbps/25Mbps

(2) MELSECNET/10



Item	Description	Range
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec

Point

(1) When MELSECNET/H communication unit is used

When connecting to the MELSECNET/10 network, specify "MELSECNET/10 Mode" as "Network Type".

(2) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

- GT16 User's Manual (Basic Utility)
- GT15 User's Manual

(3) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

3 Switch setting (GT15-75J71P23-Z, GT15-75JBR13-Z)

Point

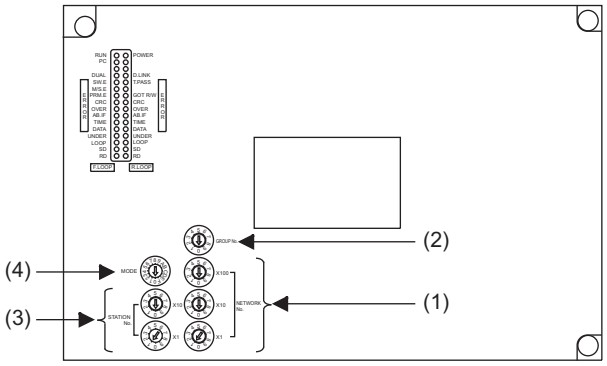
Switch setting of the communication unit

When using the MELSECNET/H communication unit, the switch setting is not needed.

For details of each setting switch and LED, refer to the following manual.

☞ GT15 MELSECNET/10 communication unit User's Manual

GT15-75J71LP23-Z, GT15-75J71BR13-Z



(1) Network number setting switch

Network number setting switch	Description	Setting
X100 X10 X1 NETWORK No.	Set the network No. of the MELSECNET/10 communication unit. <Default: 001>	1 to 239

(2) Group number setting switch

Group number setting switch	Description	Setting
GROUP No.	Set the group No. of the MELSECNET/10 communication unit. <Default: 0>	0: No group setting (fixed)*1

*1 The GOT does not use the group number. Specify "0".

(3) Station number setting switch

Station number setting switch	Description	Setting
X10 STATION No. X1	Set the station No. of the MELSECNET/10 communication unit. Set to not duplicate other stations in the network. <Default: 01>	1 to 64: GT15-75J71LP23-Z 1 to 32: GT15-75J71BR13-Z

(4) Mode setting switch

Mode setting switch	Description	Setting
MODE	On-line <Default: 0>	0

Point

(1) Switch setting example

For the switch setting example, refer to the following.

☞ Section 6.3 PLC Side Setting

(2) When the switch setting is changed

When changing the switch setting after mounting the MELSECNET/10 communication unit to the GOT, reset the GOT.

(3) Self check test

Select "3" to "9" as the mode setting switch to provide a self check test of the MELSECNET/10 communication unit.

For details, refer to the following manual.

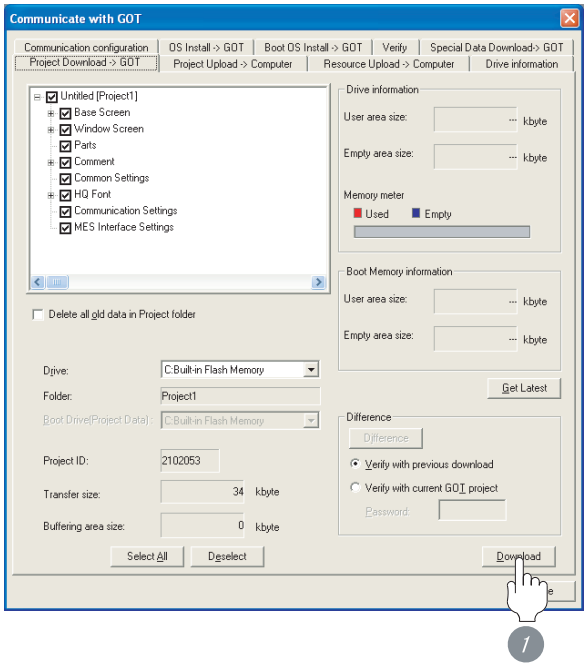
☞ GT15 MELSECNET/10 communication unit User's Manual

41.2.6 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

41.2.7 Attaching communication unit and connecting cable

Point

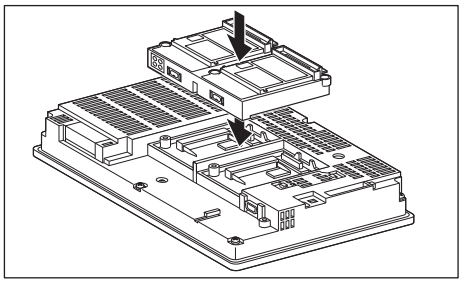
Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

(1) When MELSECNET/H communication unit is used

1 Mount the MELSECNET/H communication unit on the extension unit connector of the GOT.



Point

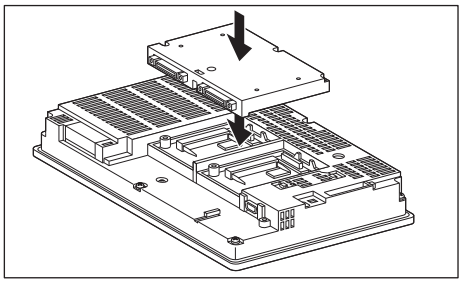
MELSECNET/H communication unit

For the details of mounting the MELSECNET/H communication unit, refer to the following manual.

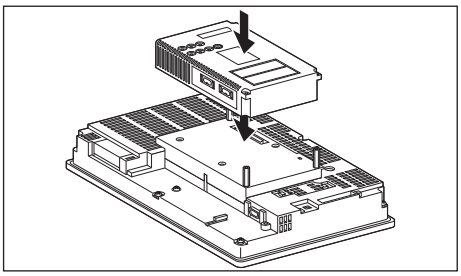
☞ GT15 MELSECNET/H communication unit User's Manual

(2) When MELSECNET/10 communication unit is used

1 Mount the interface converter unit to the extension unit connector of the GOT.



2 Mount the MELSECNET/10 communication unit to the interface converter unit.



Point

MELSECNET/10 communication unit

For details of the MELSECNET/10 communication unit, refer to the following manual.

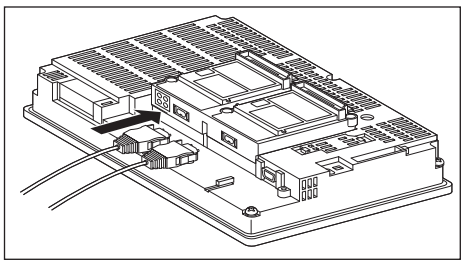
GT15 MELSECNET/10 communication unit User's Manual

2 Connecting the cable

(1) Optical fiber cable

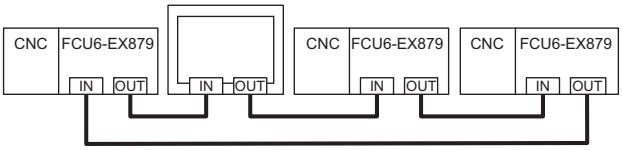
(a) Optical fiber cable connection method

1 Mount the optical fiber cable to the MELSECNET/H communication unit or the MELSECNET/10 communication unit.



(b) Wiring diagram

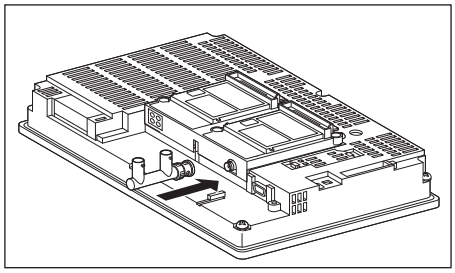
When connecting the adjacent stations, connect the IN with the adjacent OUT as follows.



(2) Coaxial cable

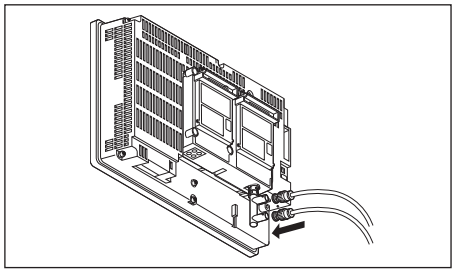
(a) Coaxial cable connection method

1 Mount the F-type connector to the MELSECNET/H communication unit or the MELSECNET/10 communication unit.



2 Mount the coaxial cable to the F-type connector.

If the MELSECNET/H communication unit or the MELSECNET/10 communication unit is terminal station of the network, be sure to connect a terminating resistor (sold separately: A6RCON-R75) to the F-type connector.



Point

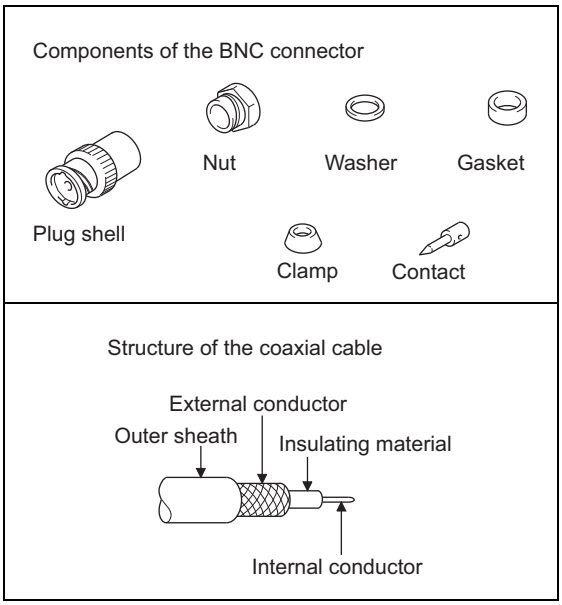
Precautions for connection of coaxial cable

Before connecting or disconnecting the coaxial connector, touch a grounded metal object to discharge the static electricity from the human body.
Failure to do so may result in a MELSECNET/H or MELSECNET/10 communication unit malfunction.

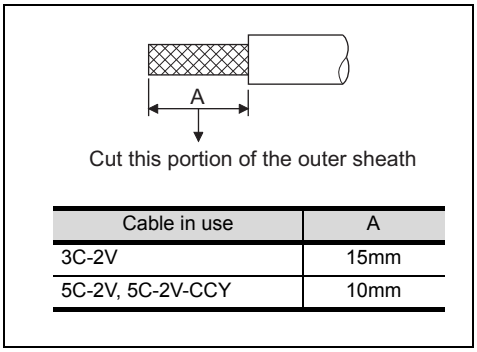
(b) Coaxial cable connector connection method
The following describes the method for connecting the BNC connector (connector plug for coaxial cable) and the cable.

⚠CAUTION

● Solder the coaxial cable connectors properly.
Insufficient soldering may result in malfunctions.

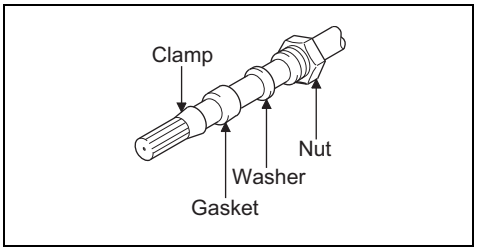


1 Remove the external sheath of the coaxial cable with dimensions as shown on the left.

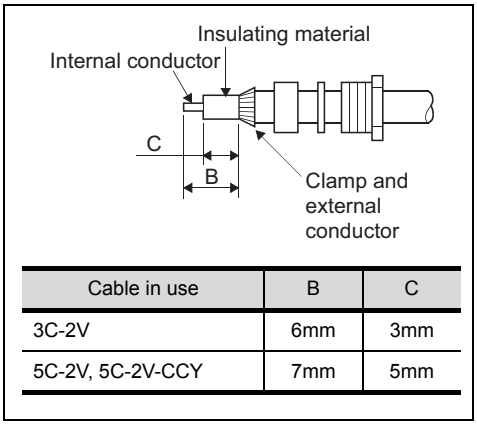


Cable in use	A
3C-2V	15mm
5C-2V, 5C-2V-CCY	10mm

2 Pass the nut, washer, gasket, and clamp through the coaxial cable as shown on the left and loosen the external conductor.

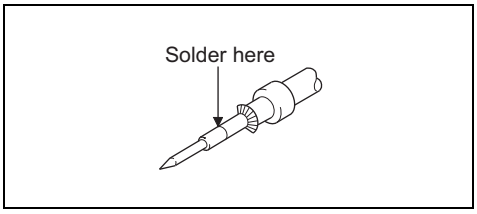


3 Cut the external conductor, insulting material, and internal conductor with the dimensions as shown on the left.
Note that the external conductor should be cut to the same dimension as the tapered section of the clamp and smoothed down to the clamp.

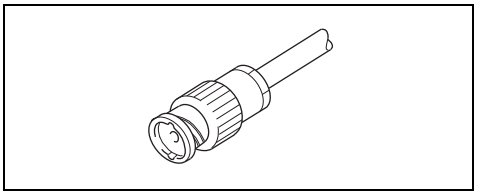


Cable in use	B	C
3C-2V	6mm	3mm
5C-2V, 5C-2V-CCY	7mm	5mm

4 Solder the contact to the internal conductor.



5 Insert the connector assembly shown in 4 into the plug shell and screw the nut into the plug shell.



Point

Precautions for soldering

Note the following precautions when soldering the internal conductor and contact.

- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

41.2.8 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

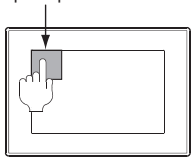
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

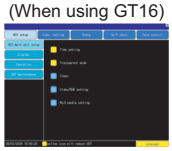
How to display Utility(at default)

When using GT16 or GT1595

Utility call key
1-point press on GOT screen upper-left corner

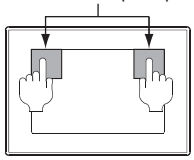


Utility display
(When using GT16)

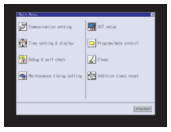


When using GT1585, GT157☐, GT156☐ or GT155☐

Utility call key
Simultaneous 2-point press



(When using GT15)

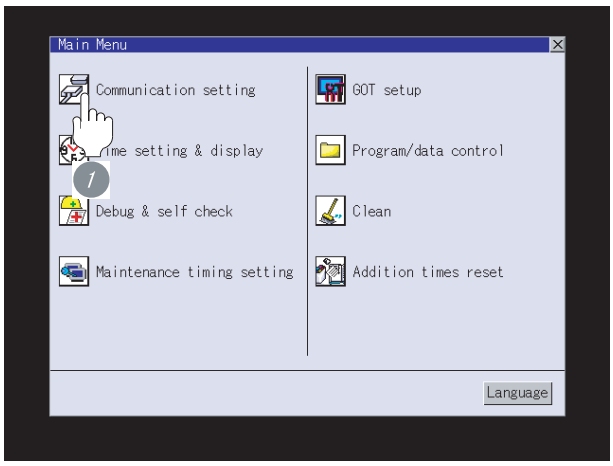


Point

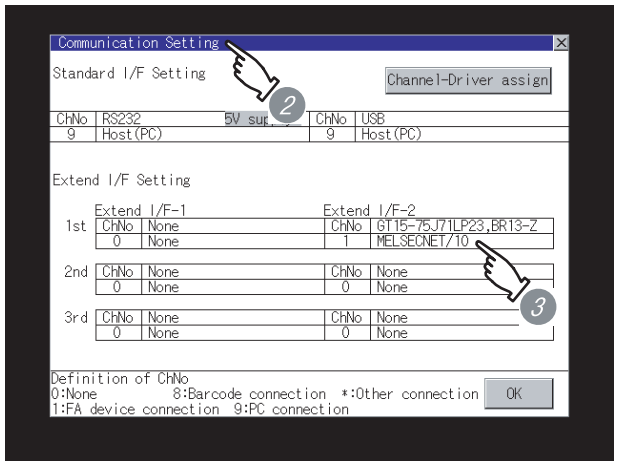
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver:
  (When using the MELSCNET/H communication unit) : MELSECNET/H
  (When using the MELSCNET/10 communication unit) : MELSECNET/10

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 41.2.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

41.2.9 Checking for normal monitoring

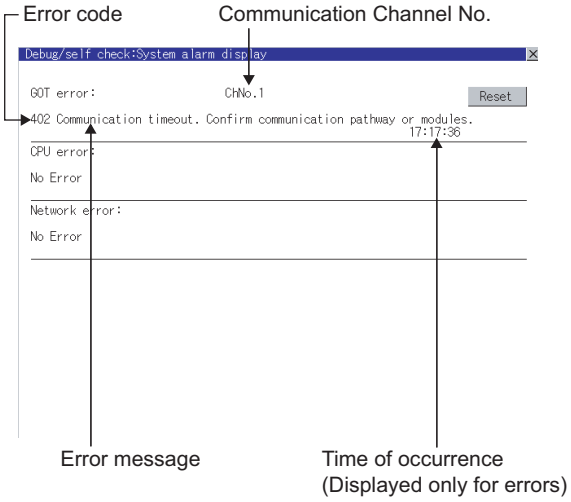
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT□ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

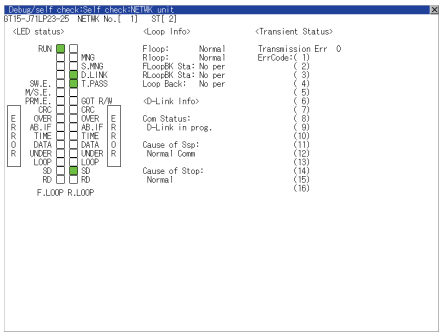
GT Designer2 Version □ Screen Design Manual

2 Confirming the communication state with network unit by GOT

The communication state between the GOT and the MELSECNET/10 network system can be confirmed by the Utility screen of the GOT.

For details on the operation method of the GOT Utility screen, refer to the following manual

- GT16 User's Manual (Basic Utility)
- GT15 User's Manual



Point

Communication unit for displaying network module status

Use the MELSECNET/H communication unit for displaying the network module status on the GOT. The GOT cannot display the network module status with the MELSECNET/10 communication unit.

3 Confirming the CNC side setting

When connecting the GOT, setting is required for the CNC side.

Confirm if the CNC side setting is correct.

Section 41.2.10 CNC Side Settings

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

41.2.10CNC Side Settings

1 Parameter Setting

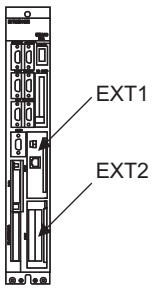
Set parameters related to MELSECNET/10 with MELSEC's peripheral devices in the same way as parameter setting of MELSEC CPU, and write them on CNC by PC. However, in the case of using the default parameters or not requiring separate settings due to normal stations, it is not necessary to set the network

(1) Control Station Parameter

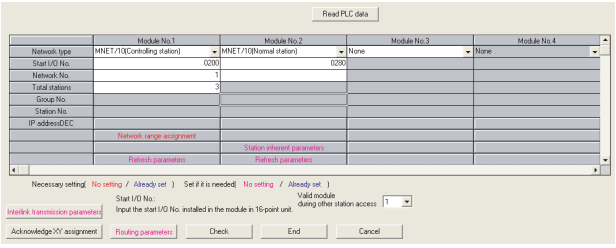
If you wish to place the control station in CNC and set the common parameters, set the network parameters by peripheral device and write them on CNC. An example of parameter setting by GPPW is as follows. Set the first I/O No. as follows according to the expansion slot to which the unit is inserted.

(a) Start I/O No.

Slot	Start I/O No.
EXT1	0200
EXT2	0280



(b) Example of GX Developer setting



For details of the parameter setting, refer to the following.

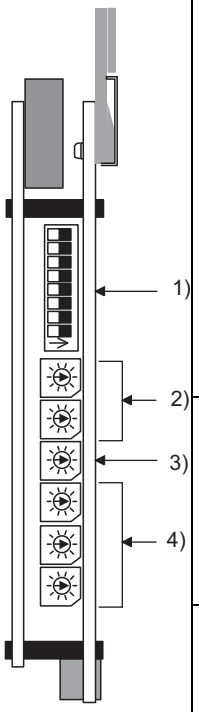
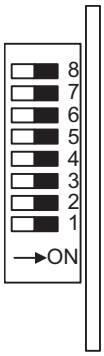
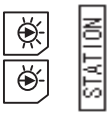
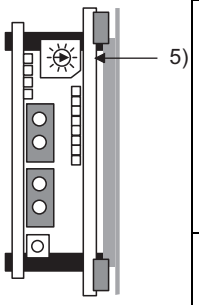
☞ MELDAS C6/C64 NETWORK MANUAL BNP-B2373

(2) Normal Station Parameter

As for normal stations, it is not necessary to set parameters unless separate settings are required. The refresh parameters are set and written as required. In this case, the parameter setting of the first I/O No. is the same as in the case of the control station.

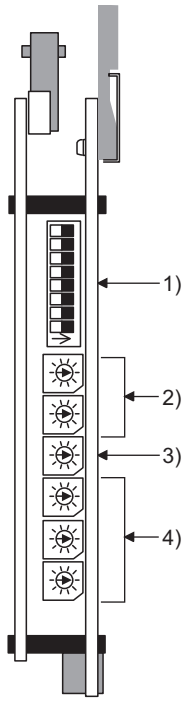
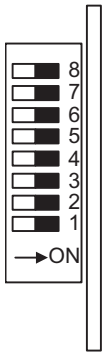
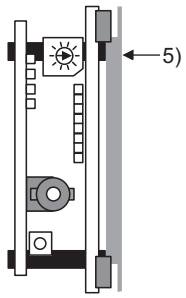
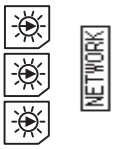
2 Expansion unit settings

(1) FCU6-EX879 (Optical fiber cable)

<table>
<tr><th>Switch layout</th><th>No.</th><th>Switch name</th><th>Settings</th></tr>
<tr><td rowspan="8"> 
</td><td rowspan="8">1)</td><td>Condition setting switch
 
</td><td>Set the operation condition.
<table>
<tr><th>SW</th><th>Description</th><th colspan="2">OFF</th><th colspan="2">ON</th></tr>
<tr><td>1</td><td>Network type*1</td><td colspan="2">Inter-PC net (PC)</td><td colspan="2">Remote I/O net</td></tr>
<tr><td>2</td><td>Station type*4</td><td colspan="2">Normal station (N.ST)</td><td colspan="2">Control station (MNG)</td></tr>
<tr><td>3</td><td>Used parameter*2</td><td colspan="2">Common parameters (PRM)</td><td colspan="2">Default parameter (D.PRM)</td></tr>
<tr><td>4</td><td rowspan="2">Number of stations*2 (Valid when SW3 is ON)</td><td>OFF</td><td rowspan="2">8 stations</td><td>ON</td><td rowspan="2">16 stations</td></tr>
<tr><td>5</td><td>OFF</td><td>ON</td></tr>
<tr><td>6</td><td rowspan="2">B/W total points*2 (Valid when SW3 is ON)</td><td>OFF</td><td rowspan="2">2K points</td><td>ON</td><td rowspan="2">4K points</td></tr>
<tr><td>7</td><td>OFF</td><td>ON</td></tr>
<tr><td>8</td><td>Not used</td><td colspan="2">Always OFF</td><td colspan="2"></td></tr>
</table>
</td></tr>
<tr><td>Station number switch
 
</td><td>2)</td><td>Station number setting*2*3
<Setting range>
01 to 64: Station number
Other than 01 to 64: Setting error</td></tr>
<tr><td>Settings switch of group NO.
 
</td><td>3)</td><td>Group number setting
Not used, fixed to 0</td></tr>
<tr><td rowspan="2"> 
</td><td>Settings switch of Network NO.
 
</td><td>4)</td><td>Network number setting*2
<Setting range>
001 to 255: Network number
Other than 001 to 255: Setting error</td></tr>
<tr><td>Mode setting switch
  </td><td>5)</td><td>Mode setting*2
0: Online
1: Cannot be used
2: Offline
3 to F: Test mode</td></tr>
</table>

*1 Set the network type to the PLC to PLC network.
*2 Set as necessary.
*3 Set the station No. not to overlap with that of other units.
*4 Set the station type to the control station.
*1 For details of the parameter setting, refer to the following.
☞ MELDAS C6/C64 NETWORK MANUAL BNP-B2373

(2) FCU6-EX878 (Coaxial cable)

<table>
<tr><th>Switch layout</th><th>No.</th><th>Switch name</th><th>Settings</th></tr>
<tr><td rowspan="5"> 
</td><td>1)</td><td>Condition setting switch
 
</td><td>Set the operation condition.
<table>
<tr><th>SW</th><th>Description</th><th colspan="4">OFF</th><th colspan="4">ON</th></tr>
<tr><td>1</td><td>Network type*1</td><td colspan="4">Inter-PC net (PC)</td><td colspan="4">Remote I/O net</td></tr>
<tr><td>2</td><td>Station type*4</td><td colspan="4">Normal station (N.ST)</td><td colspan="4">Control station (MNG)</td></tr>
<tr><td>3</td><td>Used parameter*2</td><td colspan="4">Common parameters (PRM)</td><td colspan="4">Default parameter (D.PRM)</td></tr>
<tr><td>4</td><td rowspan="2">Number of stations*2 (Valid when SW3 is ON)</td><td>OFF</td><td rowspan="2">8 stations</td><td>ON</td><td rowspan="2">16 stations</td><td>OFF</td><td rowspan="2">32 stations</td><td>ON</td><td rowspan="2">64 stations</td></tr>
<tr><td>5</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>6</td><td rowspan="2">B/W total points*2 (Valid when SW3 is ON)</td><td>OFF</td><td rowspan="2">2K points</td><td>ON</td><td rowspan="2">4K points</td><td>OFF</td><td rowspan="2">6K points</td><td>ON</td><td rowspan="2">8K points</td></tr>
<tr><td>7</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>8</td><td>Not used</td><td colspan="8">Always OFF</td></tr>
</table></td></tr>
<tr><td>2)</td><td>Station number switch
 
</td><td>Station number setting*2*3
<Setting range>
01 to 64: Station number
Other than 01 to 64: Setting error</td></tr>
<tr><td>3)</td><td>Setting switch of group number
 
</td><td>Group number setting
Not used, fixed to 0</td></tr>
<tr><td rowspan="2"> 
</td><td>4)</td><td>Setting switch of network number
 
</td><td>Network number setting*2
<Setting range>
001 to 255: Network number
Other than 001 to 255: Setting error</td></tr>
<tr><td>5)</td><td>Mode setting switch
  </td><td>Mode setting*2
0: Online
1: Cannot be used
2: Offline
3 to F: Test mode</td></tr>
</table>

*1 Set the network type to the PLC to PLC network.
*2 Set as necessary.
*3 Set the station No. not to overlap with that of other units.
*4 Set the station type to the control station.
*1 For details of the parameter setting, refer to the following.
☞ MELDAS C6/C64 NETWORK MANUAL BNP-B2373

41.2.11 Precautions

1 Network configuration

Use the MELSECNET/10 mode of MELSECNET/H (PLC to PLC network) or MELSECNET/10 (PLC to PLC network) to configure a network including the GOT.

(1) The following networks including the GOT cannot be configured.
- MELSECNET/10 (Remote I/O network)
- MELSECNET/H (Remote I/O network)(2)

(2) When configuring the network (MELSECNET/H (PLC to PLC network) including the GOT, refer to the following.

☞Chapter 5 MELSECNET/H CONNECTION (PLC TO PLC NETWORK)

2 Monitoring range

Only CNC of the same networks No. can be monitored in GOT.
For details, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

3 Starting GOT with CNC connection (MELSECNET/10 connection)

With the CNC connection (MESLSECNET/10 connection), the data link starts approximately 10 seconds after the GOT starts.

4 When system alarm regarding network error occurs

When a system alarm regarding a network error occurs with the CNC connection (MELSECNET/10 connection), the system alarm is kept displaying on the GOT even though the error factor is removed. For clearing the displayed system alarm, restart the GOT.

5 Version of CNC

For MELDAS C6/C64, use NC system software version E0 or later.

41.3 CC-Link Connection (Intelligent Device Station)



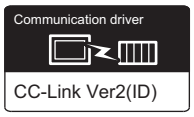
Connectable CNC is MELDAS C6/C64 series.
Select a system configuration suitable for your application.

Point

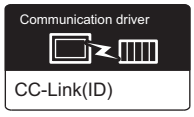
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

41.3.1 System Configuration

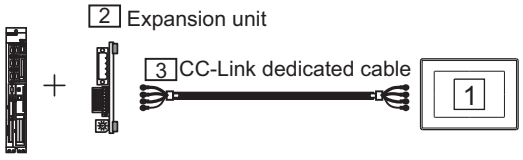


(When MODEL GT15-J61BT13
CC-Link communication unit is used)



(When MODEL GT15-75J61BT13-Z
CC-Link communication unit is used)

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
26 (max.)	*1	

*1 Max. overall cable length and the length between stations vary depending on the cable type to be used and transmission speed.
For details, refer to the following manuals.

- MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL BNP-B2255
- MELDAS C6/C64 NETWORK MANUAL BNP-B2373

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	MODEL GT15-J61BT13 CC-Link communication unit *2 • Intelligent device station	GT15-J61BT13	GT16 GT15
		MODEL GT15-75J61BT13-Z CC-Link communication unit • Intelligent device station	GT15-75J61BT13-Z	GT15

*2 Specify Ver.1 as the mode setting in the Communication Settings to use it.
For details of the settings, refer to the following the manual.

☞ Section 41.3.5 Setting communication interface (Communication settings)

(2) CNC

Image	No.	Name	Model name
	2	Expansion unit	FUC6-HR865

(3) Cable

Image	No.	Name	Model name
	3	CC-Link dedicated cable	For the specifications and inquiries of the CC-Link dedicated cable, refer to the following. ☞ CC-Link Partner Association's home page: http://www.cc-link.org/

41.3.2 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 41.3.3
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 41.3.4
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 41.3.5
Setting communication interface (Communication settings)

Download the project data.

Section 41.3.6
Downloading project data

Attach the communication unit and connect the cable.

Section 41.3.7
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 41.3.8
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 41.3.9
Checking for normal monitoring

Point

Confirming the CNC side setting

This section explains the GOT side setting.
When confirming the CNC side setting, refer to the following.

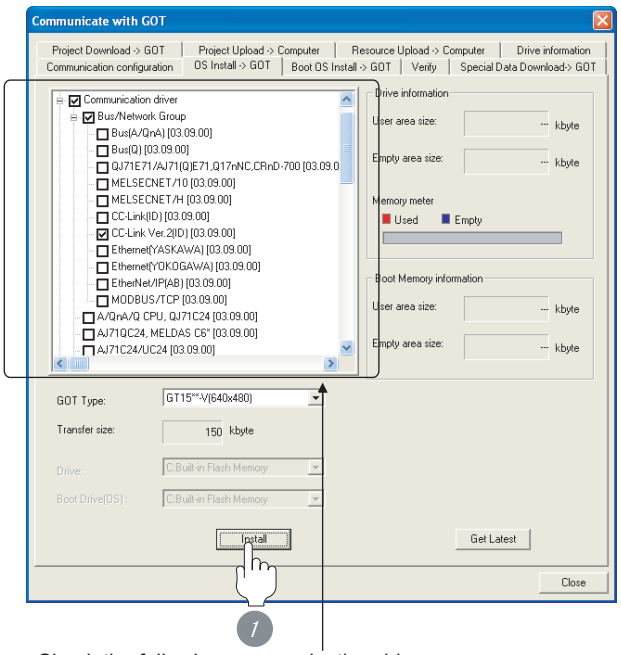
Section 41.3.10 CNC Side Settings

41.3.3 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following communication driver as necessary.

- When MODEL GT15-J61BT13 CC-Link communication unit is used: CC-Link Ver2(ID)
- When MODEL GT15-75J61BT13-Z CC-Link communication unit is used: CC-Link(ID)

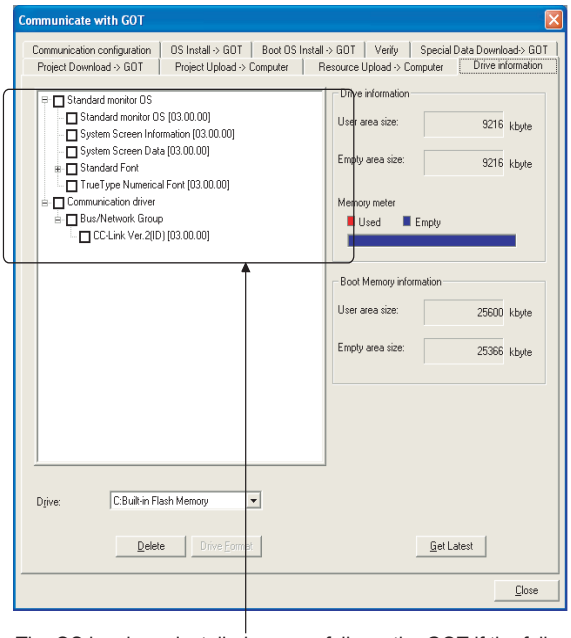
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

41.3.4 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (any of the following)

When MODEL GT15-J61BT13 CC-Link communication unit is used:

CC-Link Ver2(ID)

When MODEL GT15-75J61BT13-Z CC-Link communication unit is used:

CC-Link(ID)

41.3.5 Setting communication interface (Communication settings)

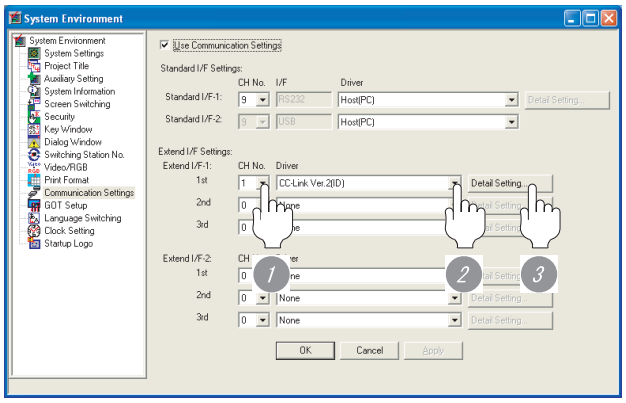
To set the communication interface of the GOT, use the [Communication settings] of GT Designer2 and the switches of the communication unit.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication Settings



(When using GT15)

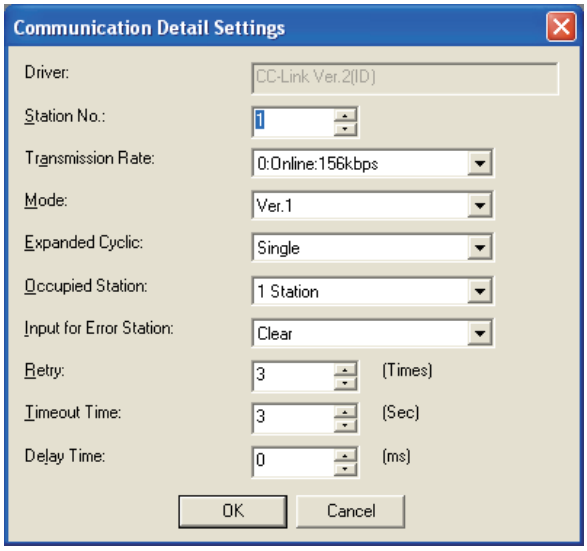
1 Set [1] to the channel No. used.

2 Set the driver as follows:
When MODEL GT15-J61BT13 CC-Link communication unit is used:
CC-Link Ver 2(ID)
When MODEL GT15-75J61BT13-Z CC-Link communication unit is used: CC-Link(ID)

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

2 Communication detail settings

(1) CC-Link Ver.2 (ID)



Item	Description	Range
Station No.	Set the station No. of the GOT. <Default: 1>	1 to 64
Transmission Rate*1	Set the transmission speed and the mode of the GOT. <Default: 0>	0 to E
Mode	Set the mode of CC-Link. <Default: Ver.1>	Ver.1/Ver.2/ Additional/ Offline
Expanded Cyclic	Set the cyclic point expansion. <Default: Single>	Single/Double/ Quadruple/ Octuple
Occupied Station	Set the number of stations occupied by the GOT. <Default: 1 Station>	1 Station/4 Stations
Input for Error Station	Set Clear/Hold at an error occurrence. <Default: Clear>	Clear/Hold
Retry	Set the number of retries to be performed when a communication times out. When no response is received after retries, a communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 300 (ms)

*1 For details of *1, refer to the next page.

Point

Mode setting

CNC is compatible only with CC-Link Ver.1.
Do not make the setting for Ver.2.

*1 Transmission speed settings

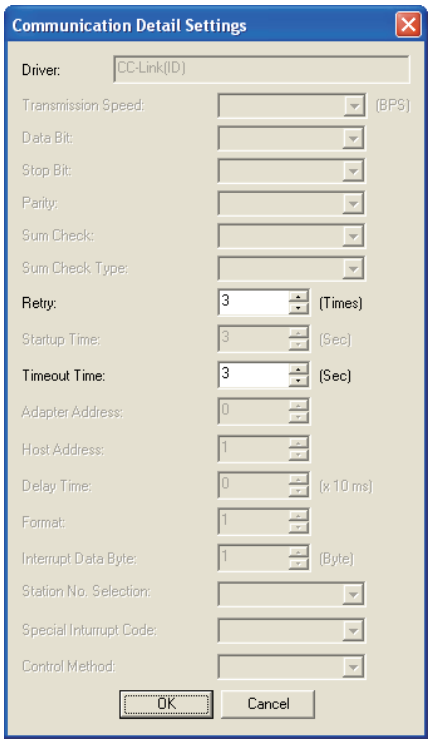
The following lists the transmission speed settings of the CC-Link communication.

Setting	Description
0	Online : 156kbps
1	Online : 625kbps
2	Online : 2.5Mbps
3	Online : 5Mbps
4	Online : 10Mbps
A	Hardware test : 156kbps
B	Hardware test : 625kbps
C	Hardware test : 2.5Mbps
D	Hardware test : 5Mbps
E	Hardware test : 10Mbps

For details of the hardware test, refer to the following manual.

CC-Link System Master/Local Module User's Manual for CC-Link module to be used

(2) CC-Link(ID)



Item	Description	Range
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

(2) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

3 Switch setting (Only when MODEL GT15-75J61BT13-Z CC-Link communication unit is used)

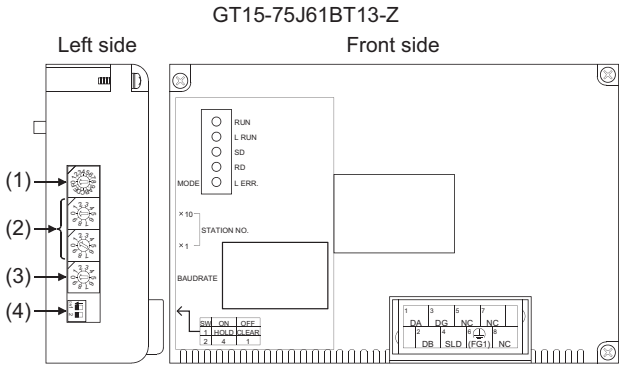
Point

Switch setting of the communication unit

When using the MODEL GT15-J61BT13 CC-Link communication unit, the switch setting is not needed.

For details of each setting switch and LED, refer to the following manual.

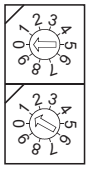
GT15 CC-Link communication unit User's Manual



(1) Mode setting switch

Mode setting switch	Description	Setting
	Select the online mode. <Default: 0>	0 (fixed)

(2) Station number setting switch

Station number setting switch	Description	Setting
	Specify the station No. of the CC-Link communication unit. <Default: 01>	1 to 64

(3) Transmission baudrate setting switch

Transmission baudrate setting switch	Description	Setting
	Specify the transmission speed. <Default: 0>	0: 156kbps 1: 625kbps 2: 2.5Mbps 3: 5Mbps 4: 10Mbps

(4) Condition setting switches

Condition setting switches	Setting switch	Description	Setting
	SW1	Specify input data status of the data link error station. <Default: OFF>	OFF: Cleared ON: Held
	SW2	Specify the number of stations occupied. <Default: OFF>	OFF: 1 station ON: 4 stations

Point

(1) Switch setting example

For the switch setting example, refer to the following.

Section 41.3.10 CNC Side Settings

(2) When the switch setting is changed

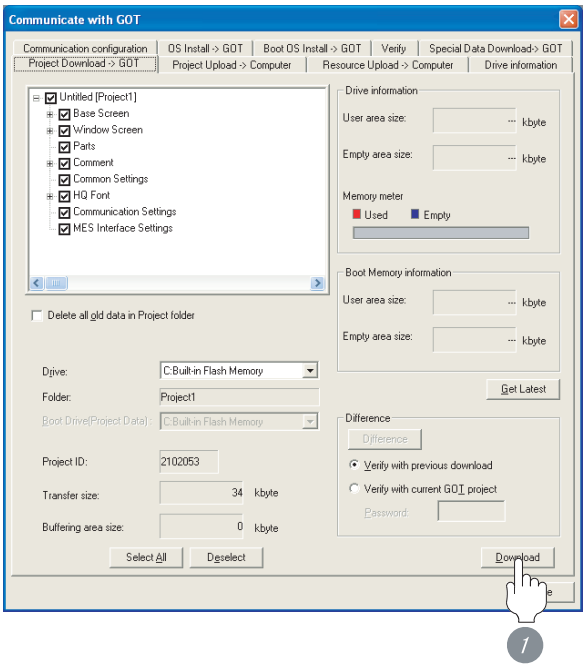
When changing the switch setting after mounting the GT15-75J61BT13 type CC-Link communication unit to the GOT, reset the GOT.

41.3.6 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

41.3.7 Attaching communication unit and connecting cable

Point

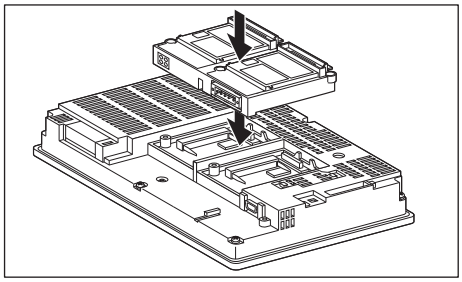
Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

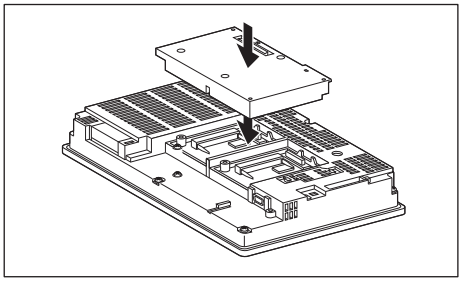
(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

1 Mount the CC-Link communication unit on the extension unit connector of the GOT.

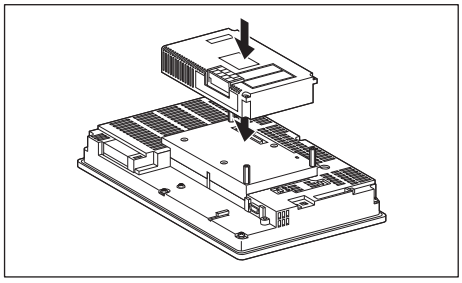


(2) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

1 Mount the interface converter unit to the extension unit connector of the GOT.



2 Mount the CC-Link communication unit to the interface converter unit.



Point

CC-Link communication unit

For the details of mounting the CC-Link communication unit, refer to the following manuals. For details of the CC-Link communication unit, refer to the following manual.

☞ • MODEL GT15-J61BT13 CC-Link communication unit User's Manual
• GT15 CC-Link communication unit User's Manual

2 Connecting the cable

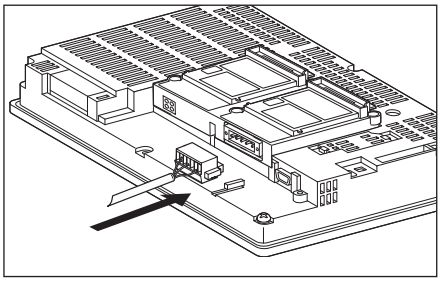
(1) When MODEL GT15-J61BT13 CC-Link communication unit is used

⚠CAUTION

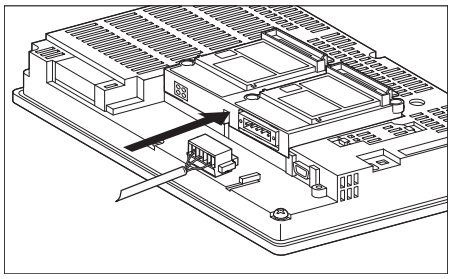
- Make sure to ground the FG terminal of the GOT power supply section and that of this unit by applying Class D Grounding (Class 3 Grounding Method) or higher which is used exclusively for the GOT.
  Not doing so may cause an electric shock or malfunction.

(a) CC-Link dedicated cable connection method

1 Connect the CC-Link cable to the terminal block socket (packed together) of the CC-Link communication unit.
When the communication unit is terminal station of the network, be sure to connect a terminating resistor (packed together with the CC-Link communication unit) to the terminal block socket.

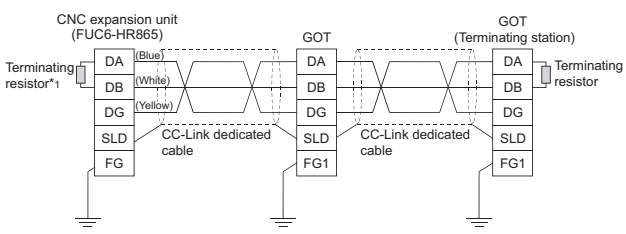


2 Mount the terminal block socket on the CC-Link communication unit connector of the GOT.



(b) Wiring diagram

<Wiring diagram>



*1 When CNC is a terminal station, connect a terminating resistor to the CNC.

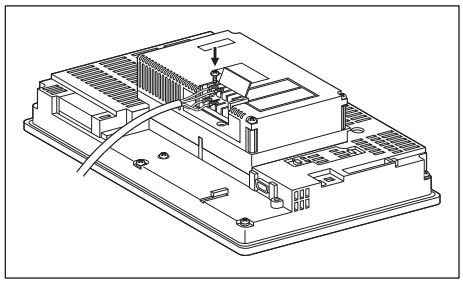
(2) When MODEL GT15-75J61BT13-Z CC-Link communication unit is used

⚠CAUTION

- Always ground the FG terminal of the GOT power supply and the FG1 terminal of this unit to the protective ground conductor.
  Be sure to ground the GOT and this unit separately.
  Failure to do so may cause an electric shock or malfunctions.
- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Be sure to tighten any unused terminal screws with a torque of 0.36 to 0.48N•m.
  Failure to do so may cause a short circuit due to contact with a solderless terminal.

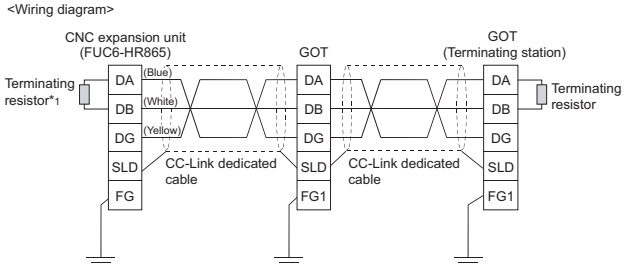
(a) CC-Link dedicated cable connection method

1 Connect the CC-Link cable to the terminal block of the CC-Link communication unit.
If the CC-Link communication unit is terminal station of the network, be sure to connect a terminating resistor (packed together with the CC-Link module) to the terminal block.



(b) Wiring diagram

<Wiring diagram>



*1 When CNC is a terminal station, connect a terminating resistor to the CNC.

41.3.8 Verifying GOT recognizes controllers

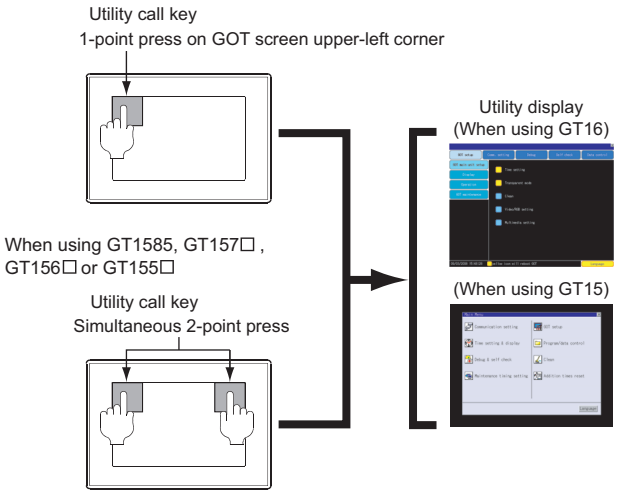
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

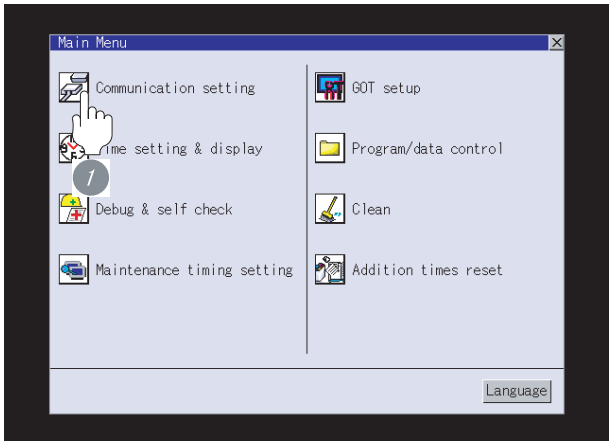


Point

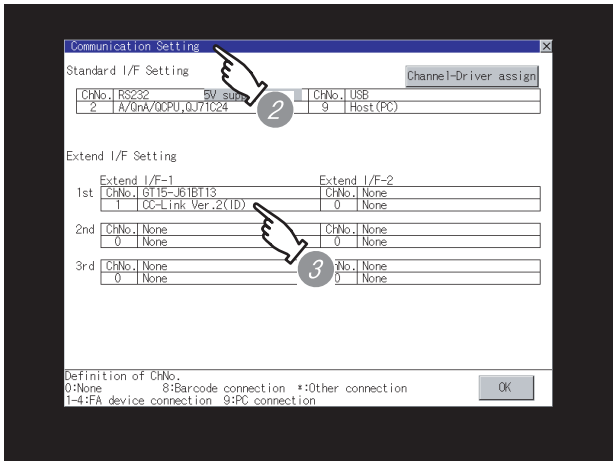
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: (any of the following)
  When MODEL GT15-J61BT13
  CC-Link communication unit is used:
  CC-Link Ver.2 (ID)
  When MODEL GT15-75J61BT13-Z CC-Link communication unit is used:
  CC-Link (ID)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 41.3.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

41.3.9 Checking for normal monitoring

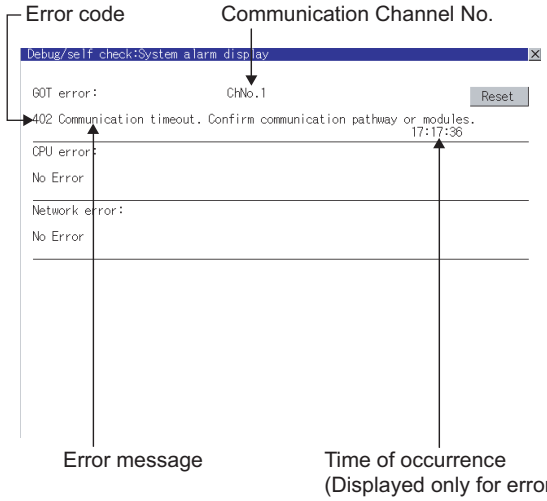
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

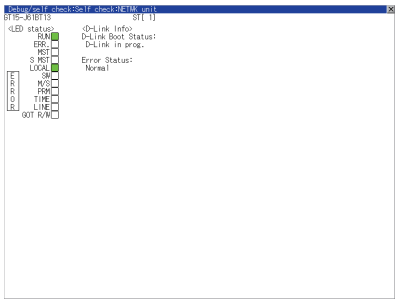
☞ GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication status with network unit by GOT

The communication status between the GOT and the CC-Link System can be confirmed by the Utility screen of the GOT.

For details on the operation method of the GOT Utility screen, refer to the following manual.

- GT16 User's Manual (Basic Utility)
- GT15 User's Manual



Point

CC-Link communication unit when network module status display is made

When the network module status display is made, use the CC-Link communication unit of MODEL GT15-J61BT13.
When the model is GT15-75J61BT13-Z, the network module status display cannot be made.

3 Checking the wiring state of the CC-Link dedicated cable

Check if the CC-Link dedicated cable is connected correctly to all the modules in the CC-Link system.

Perform the line test from the master station of the CC-Link System to check the wiring state of the CC-Link dedicated cable.

For the line testing method, refer to the following manuals.

For details of the parameter setting, refer to the following.

MELDAS C6/C64 NETWORK MANUAL BNP-B2373

4 Confirming the CNC side setting

When connecting the GOT, setting is required for the CNC side.

Confirm if the CNC side setting is correct.

Section 41.3.10 CNC Side Settings

5 Checking if the GOT is correctly performed the data link

Use [Monitoring other station] of the GX Developer to check if the GOT is correctly performed the data link.

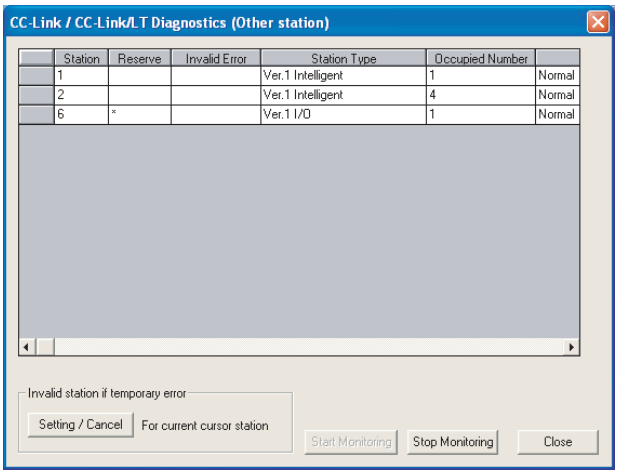
For the GX Developer operation method, refer to the following manual.

CC-Link System Master/Local Module User's Manual QJ61BT11N

(1) Checking the [Status] (The display example on the GX Developer Version 8)

Startup procedure

GX Developer → [Diagnostics] → [CC-Link / CC-Link/LT diagnostics] → Monitoring other station



All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

41.3.10CNC Side Settings

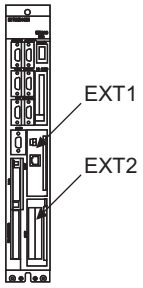
1 Parameter Setting

Set parameters related to CC-Link connection with GX Developer and write them to CNC by PLC. However, in the case of using the local stations, it is not necessary to set the network parameters.

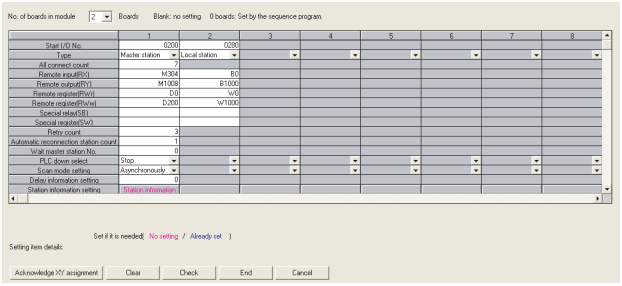
(1) Master station parameter

It is necessary to set and write the network parameters to CNC with GX Developer.
The following shows an example of parameter settings.
Set the first I/O No. as follows according to the expansion slot to which the unit is inserted.

(a) Start I/O No.

Slot	Start I/O No.	
EXT1	0200	
EXT2	0280	

(b) Example of GX Developer setting



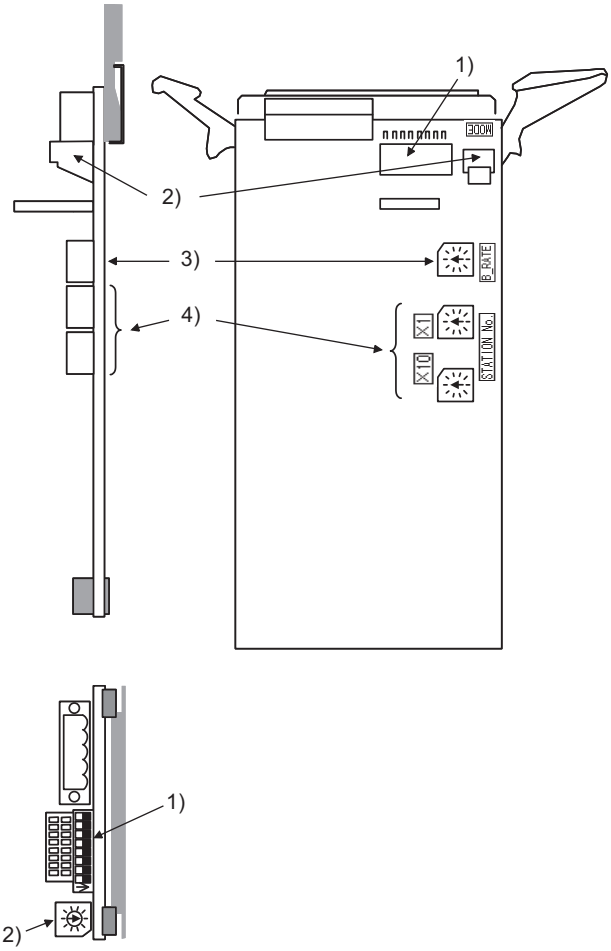
For details of the parameter setting, refer to the following.

☞ MELDAS C6/C64 NETWORK MANUAL
BNP-B2373

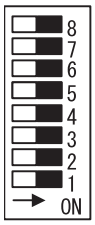
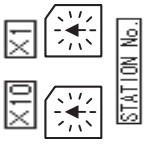
2 Expansion unit settings

Make the communication settings by the setting switch in the expansion unit (FCU6-HR865).

(1) Expansion unit



(2) Setting description

<table>
<tr><th>No.</th><th>Switch name</th><th>Settings</th></tr>
<tr><td>1)</td><td>Condition setting switch
 
</td><td>This switch sets the operation conditions.
<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Description</th><th colspan="8">Switch status</th><th colspan="2">Setting validity</th></tr>
<tr><th colspan="4">OFF</th><th colspan="4">ON</th><th>Master station (Standby master station)</th><th>Local station (Standby master station)</th></tr>
<tr><td>SW1</td><td>Station type*1</td><td colspan="4">Master station/local station</td><td colspan="4">Standby master station</td><td>(Valid)</td><td>(Valid)</td></tr>
<tr><td>SW2</td><td>(Not used)</td><td colspan="8">Always OFF</td><td>—</td><td>—</td></tr>
<tr><td>SW3</td><td>(Not used)</td><td colspan="8">Always OFF</td><td>—</td><td>—</td></tr>
<tr><td>SW4</td><td>Data link error station input data status*1</td><td colspan="4">Clear</td><td colspan="4">Hold</td><td>Valid</td><td>Valid</td></tr>
<tr><td>SW5</td><td rowspan="2">Number of occupied stations*1</td><td>OFF</td><td rowspan="2">1 station</td><td>OFF</td><td rowspan="2">2 stations</td><td>ON</td><td rowspan="2">3 stations</td><td>ON</td><td rowspan="2">4 stations</td><td rowspan="2">Invalid</td><td rowspan="2">Valid</td></tr>
<tr><td>SW6</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td></tr>
<tr><td>SW7</td><td>(Not used)</td><td colspan="8">Always OFF</td><td>—</td><td>—</td></tr>
<tr><td>SW8</td><td>(Not used)</td><td colspan="8">Always OFF</td><td>—</td><td>—</td></tr>
</table></td></tr>
<tr><td>2)</td><td>Mode setting switch`
 
</td><td>This switch sets the unit operation status.
<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Settability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>0</td><td rowspan="2">Online*1</td><td>Automatic online return provided when data link is enabled</td><td>Yes</td><td>Yes</td></tr>
<tr><td>1</td><td>Link with remote I/O net mode</td><td>Yes</td><td>No</td></tr>
<tr><td>2</td><td>Offline*1</td><td>Data link offline state</td><td>Yes</td><td>Yes</td></tr>
<tr><td>3</td><td>Line test 1*1</td><td>Line test 1 in offline state</td><td>Yes</td><td>No</td></tr>
<tr><td>4</td><td>Line test 2*1</td><td>Line test 2 in offline state</td><td>Yes</td><td>No</td></tr>
<tr><td>5</td><td>Parameter confirmation test*1</td><td>Checks the parameter details</td><td>Yes</td><td>No</td></tr>
<tr><td>6</td><td>Hardware test*1</td><td>Test Expansion unit (FCU6-HR865)</td><td>Yes</td><td>Yes</td></tr>
<tr><td>7 to F</td><td colspan="3">Not usable</td><td></td></tr>
</table></td></tr>
<tr><td>3)</td><td>Transmission speed setting switch
 
</td><td>This switch sets the unit transmission speed.
<table>
<tr><th>No.</th><th>Description</th></tr>
<tr><td>0</td><td>156Kbps*1</td></tr>
<tr><td>1</td><td>625Kbps*1</td></tr>
<tr><td>2</td><td>2.5Mbps*1</td></tr>
<tr><td>3</td><td>5Mbps*1</td></tr>
<tr><td>4</td><td>10Mbps*1</td></tr>
<tr><td>5 to F</td><td>Not usable</td></tr>
</table></td></tr>
<tr><td>4)</td><td>Setting switch of station No.
 
</td><td>This switch sets the unit station No. *1*2
<Setting range>
Master station : 00 Local station : 01 to 64
Standby master station : 01 to 64
If a value other than 00 to 64 is set, the "SW" and "L.ERR." LED will turn ON.</td></tr>
</table>

*1 Set as necessary.

*2 Set the station No. not to overlap with that of other units.
For details of the parameter setting, refer to the following.

☞ MELDAS C6/C64 NETWORK MANUAL BNP-B2373

41.3.11 Precautions

1 Using cyclic transmission

(1) I/O signal for master station
Do not turn on the reserved output signals in the output signals (remote output: RY) to the GOT from the master station.
When the reserved output signal is turned on, the CNC system may be malfunctioned.
For the assignment of I/O signals in the GOT, refer to the following manual.

☞ • MODEL GT15-J61BT13 CC-Link communication unit User's Manual
• GT15 CC-Link communication unit User's Manual

(2) CC-Link Mode
CNC is not compatible with CC-Link Ver.2.

(3) When GOT malfunctions, the cyclic output status remains the same as before becoming faulty.

2 For transient transmission

(1) Access range that can be monitored
The GOT can access to the CNC mounting the master and local station of the CC-Link System.
It cannot access another network via the CC-Link module.

3 GOT startup in CNC connection (CC-Link connection (Intelligent device station))

In the CNC connection (CC-Link connection (Intelligent device station)), the data link is started approximately 10 seconds after the GOT startup.

4 When a network error occurs in the system alarm

In the CNC connection (CC-Link connection (intelligent device station)), when a network error occurs in the system alarm, the system alarm message cannot be canceled even though the causes are removed.

5 Version of CNC

For MELDAS C6/C64, use NC system software version D0 or later.

41.4 Ethernet Connection

Connectable CNC is MELDAS C6/C64 series.
Select a system configuration suitable for your application.

Point

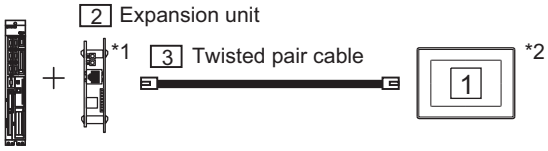
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

41.4.1 System Configuration

Communication driver
Ethernet (MELSEC), Q17nNC, CRnD-700

1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	distance	
128 (recommended to 16 units or less)	100m or less*2*3 (max.)	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standards.

*2 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
GT16 User's Manual (Hardware)

*3 A length between a hub and a node.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15

(2) CNC

Image	No.	Name	Model name
	2	Expansion unit	FUC6-EX875

*1 For the system configuration of the Ethernet module, refer to the following manuals.

☞ MELDAS C6/C64 CONNECTION AND MAINTENANCE MANUAL BNP-B2255
MELDAS C6/C64 NETWORK MANUAL BNP-B2373

*2 Select one of the following [Type] in [Ethernet setting] of GT Designer2.
For [Ethernet setting] of GT Designer2, refer to the following.

☞ Section 41.4.5 Setting communication interface (Communication settings)

(3) Cable

Image	No.	Name	Model name
	3	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

41.4.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 41.4.3
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 41.4.4
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 41.4.5
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 41.4.6
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 41.4.7
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 41.4.8
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 41.4.9
Checking for normal monitoring

Point

Confirming the CNC side setting

This section explains the GOT side setting.
When confirming the CNC side setting, refer to the following.

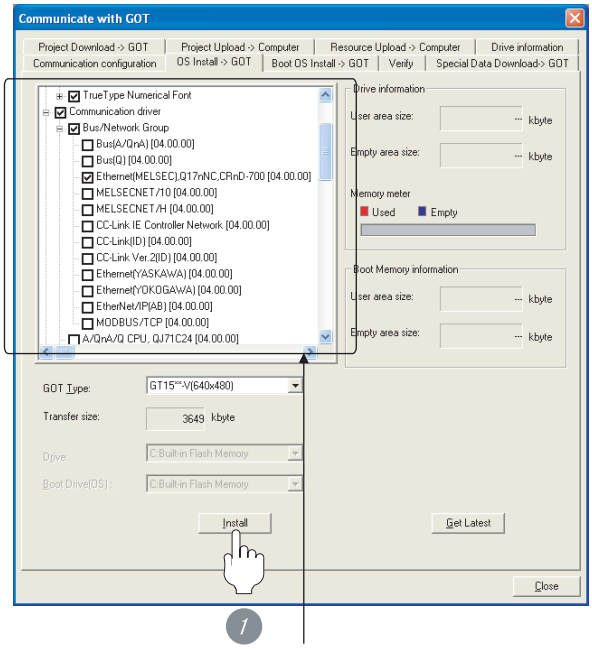
☞ Section 41.4.10 CNC Side Settings

41.4.3 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
• Ethernet (MELSEC), Q17nNC, CRnD-700

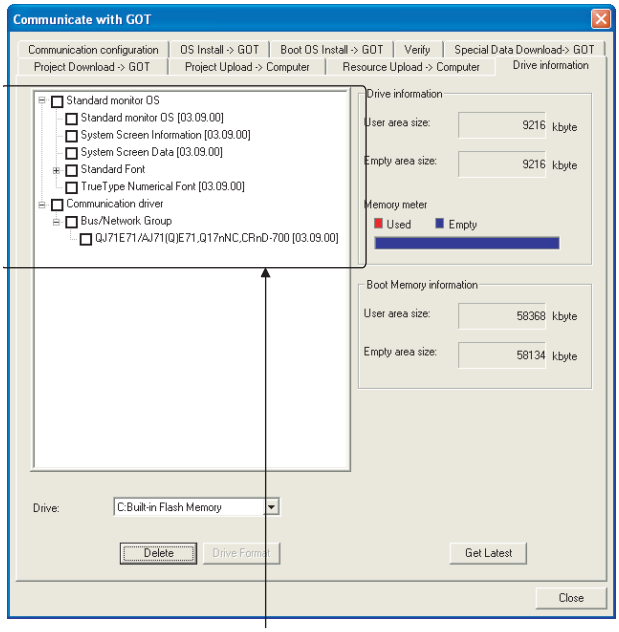
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

41.4.4 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: Ethernet(MELSEC), Q17nNC, CRnD-700

41.4.5 Setting communication interface (Communication settings)

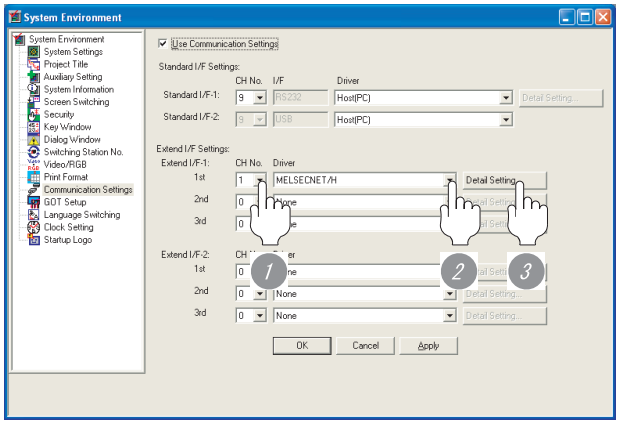
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

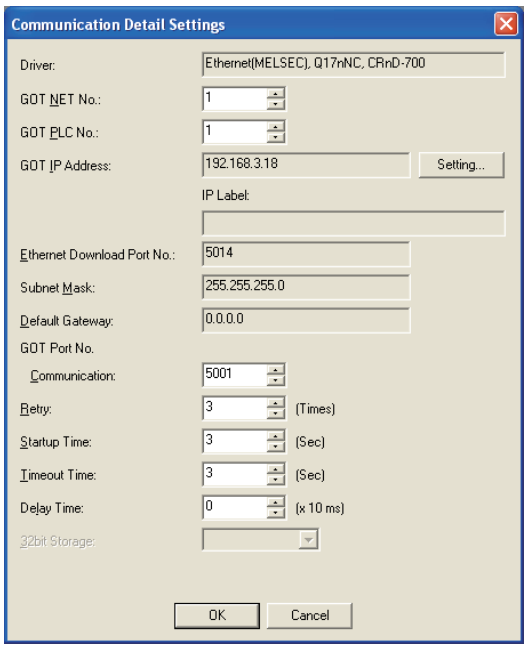


(When using GT15)

1. Set [1] to the channel No. used.
2. Set the driver to [Ethernet(MELSEC), Q17nNC, CRnD-700].
3. Perform the detailed settings for the driver.
   (☞ 2 Communication detail settings)

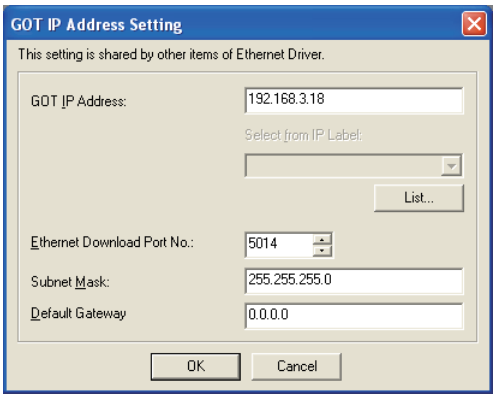
2 Communication detail settings

(1) GT16

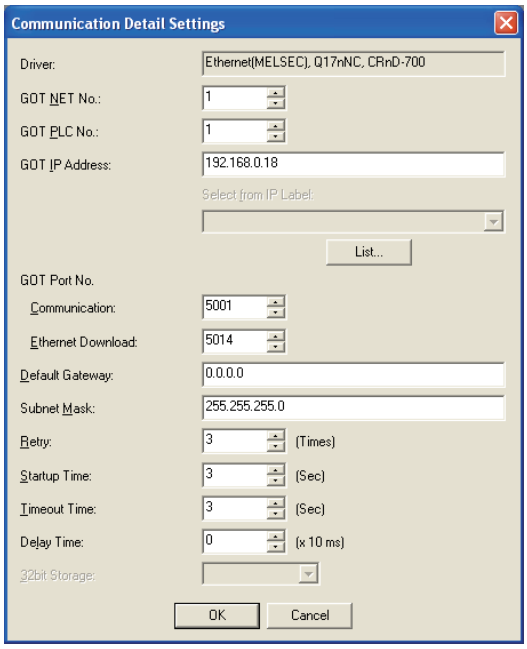


Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address*1	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.*1	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*1	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*1	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5001>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (×10ms)

*1 Click the Setting button and perform the setting in the [GOT IP Address Setting] screen.



(2) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No. (Communication)	Set the GOT port No. for the connection with the Ethernet module. <Default: 5001>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No. (Ethernet Download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time*1	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)

*1 To connect the GOT with the Ethernet module (Q Series) in the one-on-one relationship using a cross cable, set [Timeout Time] to 6 sec. or longer.

Point

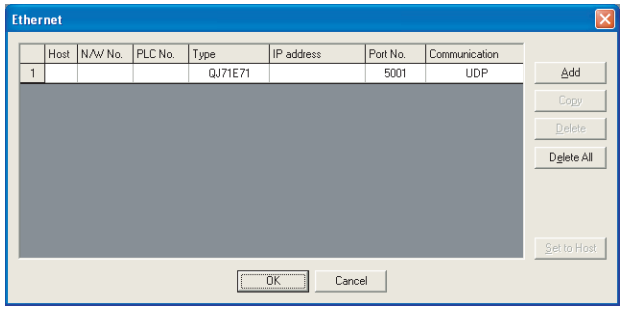
Example of communication detail settings

For examples of communication detail settings, refer to the following.

Section 41.4.10 CNC Side Settings

3 Ethernet setting

(1) Ethernet setting



Item	Description	Range
Host	The host is displayed. (The host is indicated with an asterisk (*).)	—
N/W No.	Set the network No. of the connected Ethernet module. <Default: blank>	Network No. of CNC*1
PLC No.	Set the station No. of the connected Ethernet module. <Default: blank>	Station No. of CNC
Type*1	Set the type of the connected Ethernet module. <Default: QJ71E71>	AJ71QE71
IP address	Set the IP address of the connected Ethernet module. <Default: blank>	IP address of CNC
Port No.*2	Set the port No. of the connected Ethernet module. <Default: 5001>	5001
Communication	UDP (fixed)	UDP (fixed)

*1 For operating CNC monitor function, set N/W No. to "239".

Point

Example of Ethernet setting

For examples of Ethernet setting, refer to the following.

Section 41.4.10 CNC Side Settings

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

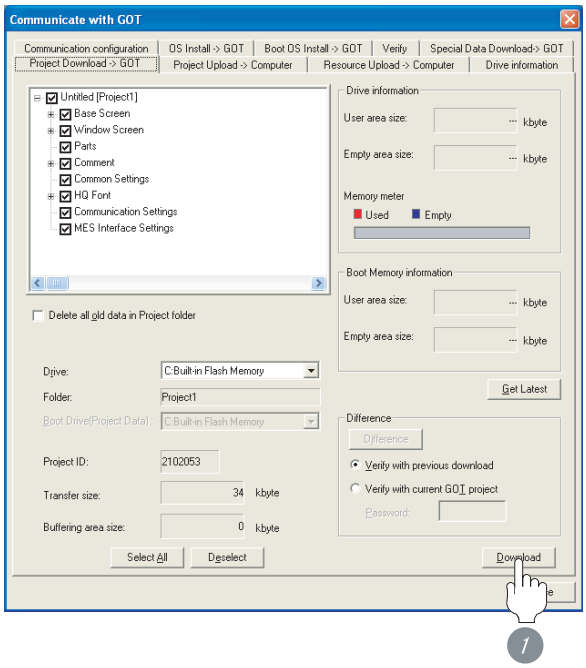
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

41.4.6 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

41.4.7 Attaching communication unit and connecting cable

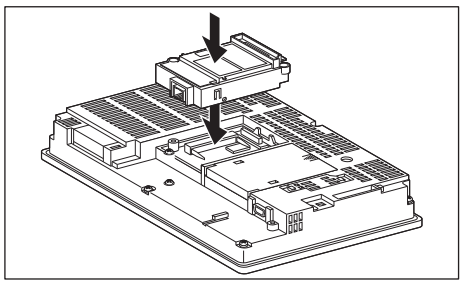
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

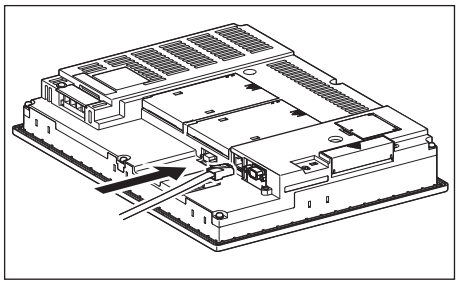
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet Communication Unit User's Manual

2 Connecting the cable

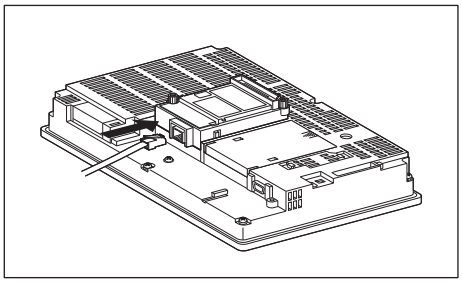
(1) For GT16

1 Connect the twisted pair cable to the Ethernet interface.



(2) For GT15

1 Connect the twisted pair cable to the Ethernet communication unit.



41.4.8 Verifying GOT recognizes controllers

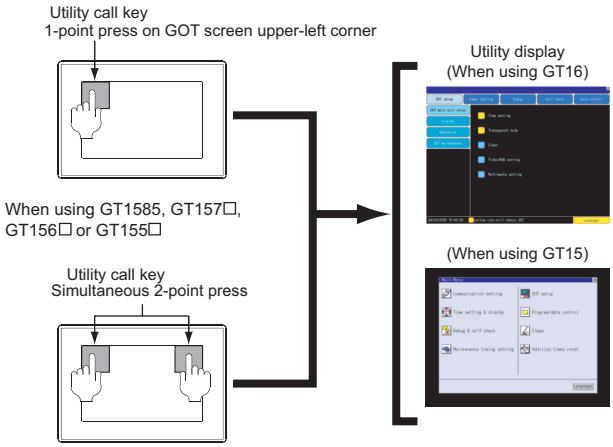
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595



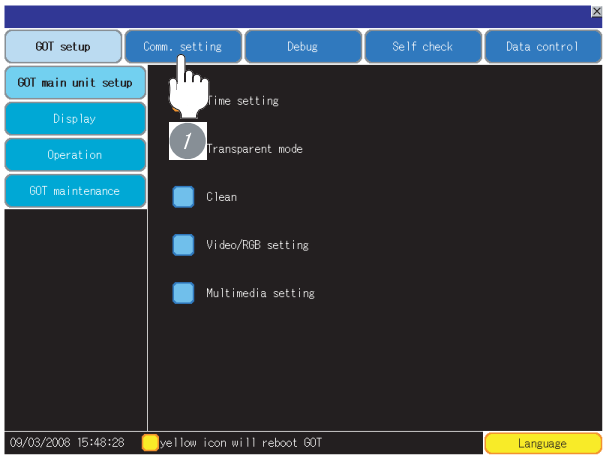
Point

When setting the utility call key to 1-point

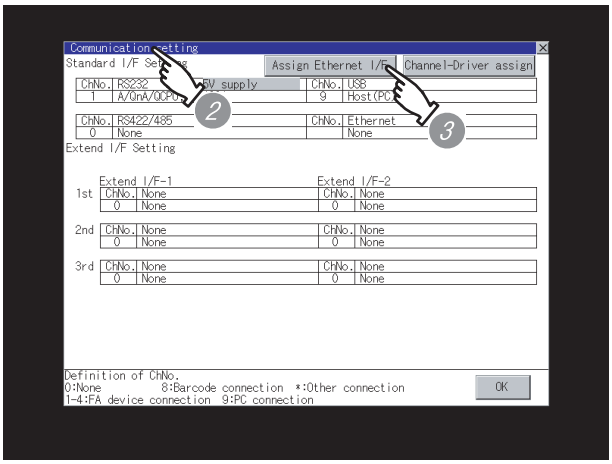
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual

(1) GT16

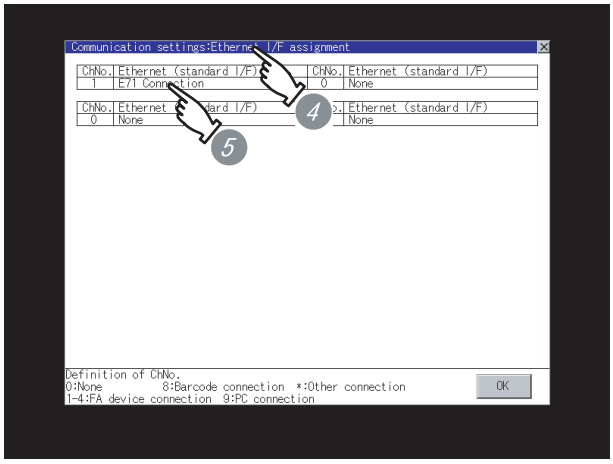


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet I/F].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver: E71 connection

6 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 41.4.2 Preparatory Procedures for Monitoring

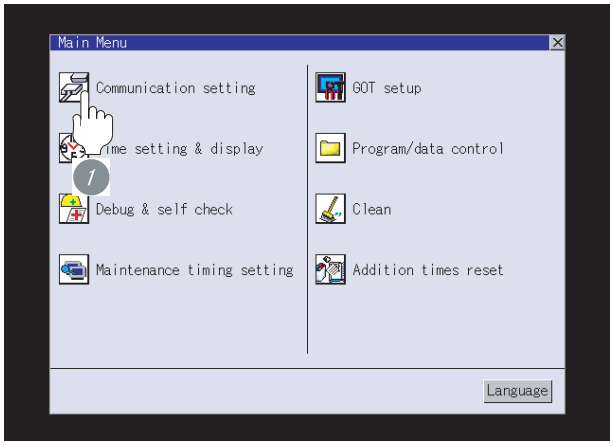
Point

When changing communication interface setting by Utility

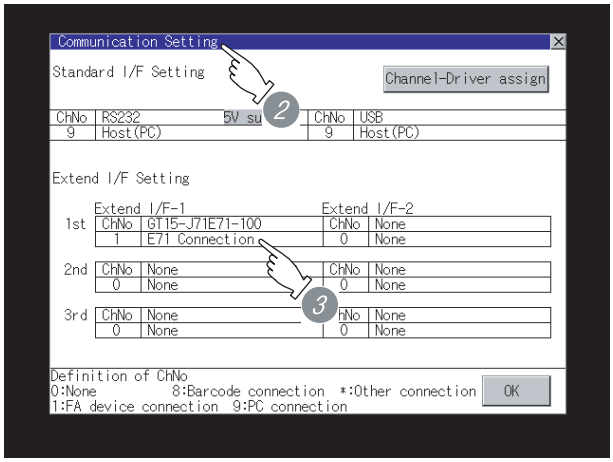
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility)

(2) GT15



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: E71 connection

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 41.4.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT15 User's Manual

41.4.9 Checking for normal monitoring

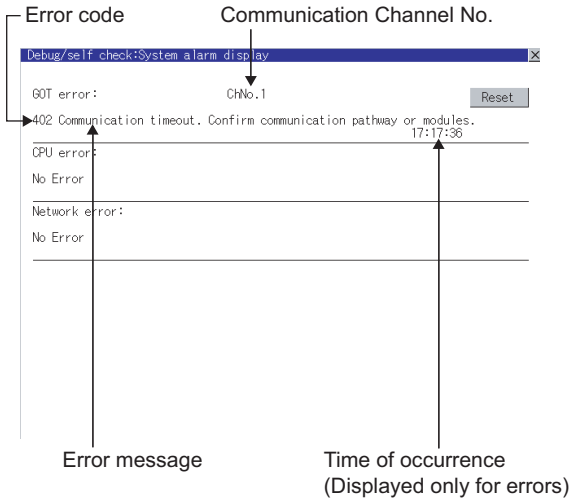
1 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication

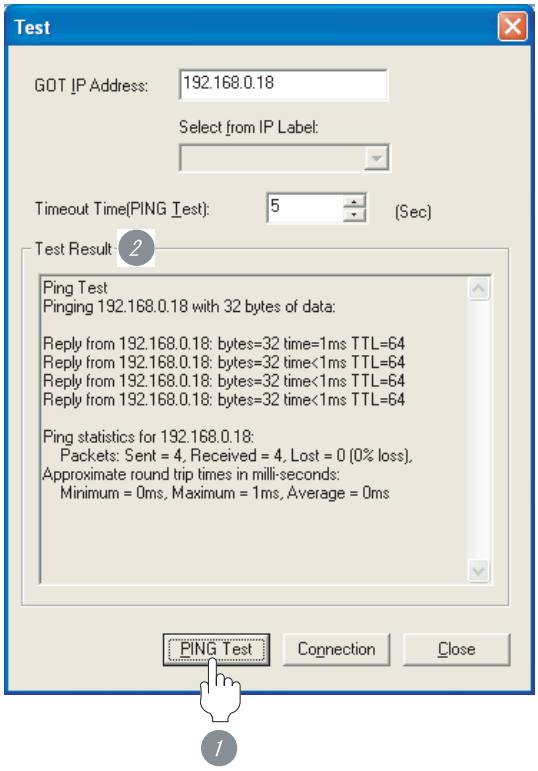
```
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms
TTL=64
```

(b) When abnormal communication

```
C:\>Ping 192.168.0.18
Request timed out.
```

(2) When using the "PING Test" of GT Designer2

Select [Communication] → [Communication configuration] → "Ethernet" and Test to display "PING Test".



1 Specify the "GOT IP address" of the "PING Test" and click on the PING Test button.

2 The "Test Result" is displayed after the "PING Test" is finished.

(3) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of "Communication settings"
- IP address of GOT specified by Ping command

3 Confirming the CNC side setting

When connecting the GOT, setting is required for the CNC side.

Confirm if the CNC side setting is correct.

☞ Section 41.4.10 CNC Side Settings

4 Confirming the communication state to each station (station monitoring function)

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT.

When detecting the abnormal state, it is confirming the response by executing a Ping command to the faulty station.

The station monitoring state can be confirmed by using GOT internal device.

(1) Station monitoring state

(a) No. of faulty station (GS230)

Total No. of the faulty CPU are stored.

The station No. of faulty stations are stored to GS231 through GS238. (☞ (b)Faulty station information (GS231 to GS238))

Device	b15 to b8	b7 to b0
GS230	(00H fixed)	No. of faulty stations

Point

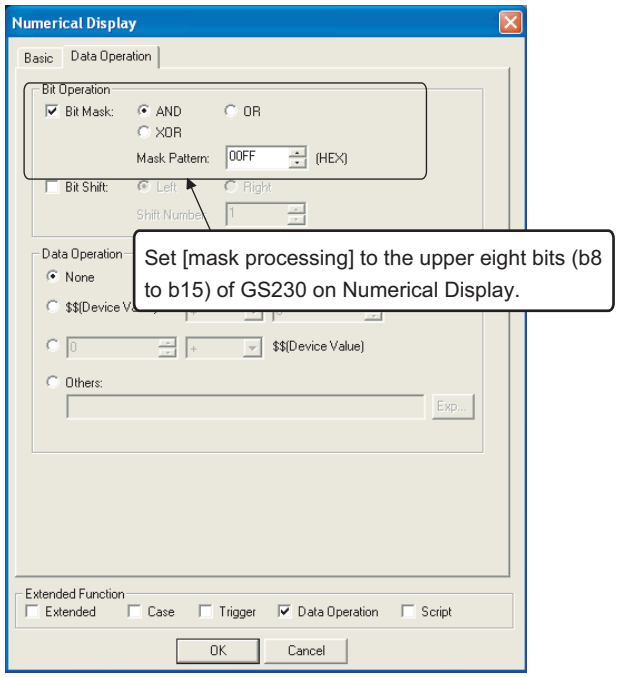
When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.

For the data operation, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

<Numerical Display (Data Operation tab) >

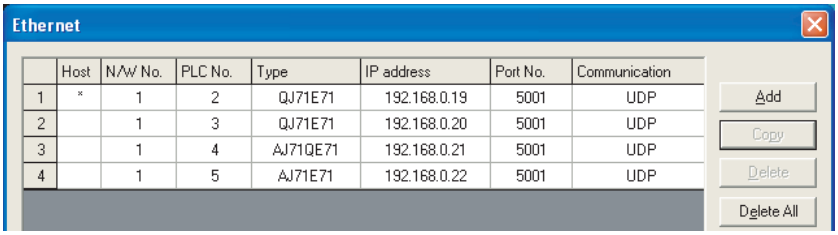


(b) Faulty station information (GS231 to GS238)

• The bit of the Ethernet setting No. corresponding to the faulty station is set.
0: Normal
1: Abnormal

• The bit is reset after the fault is recovered.

GS231 bit 0 · · ·
GS231 bit 1 · · ·
GS231 bit 2 · · ·
GS231 bit 3 · · ·



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

(2) Precautions of station monitoring function

This function is not applicable to the multiple CPU system in which the CPU No. is assigned at the device setting of GT Designer2.

For details of GT Designer2, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

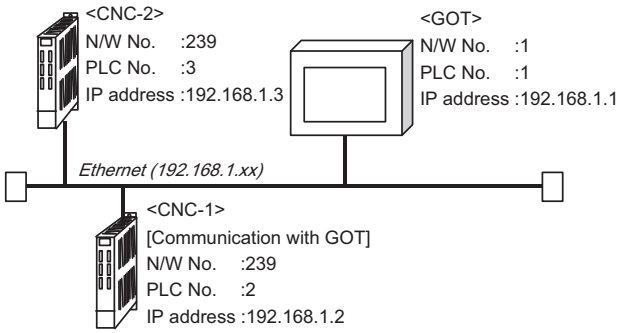
All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

41.4.10CNC Side Settings

1 System configuration

The following shows the example of the system configuration when using the CNC monitor function.



2 Parameter setting

Set parameters related to Ethernet with MELSEC's peripheral devices in the same way as parameter setting of MELSEC CPU, and write them on CNC by PC.

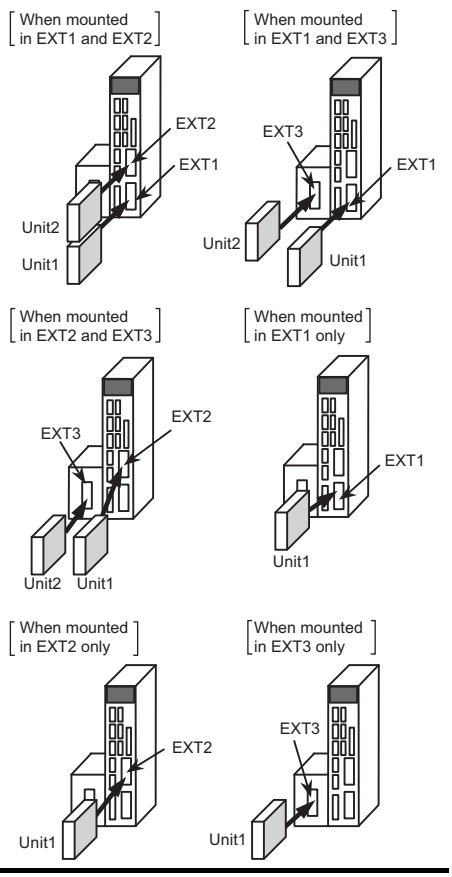
(1) Network parameter setting

Set the network parameters by peripheral device and write them on CNC. An example of parameter setting by GPPW is as follows.

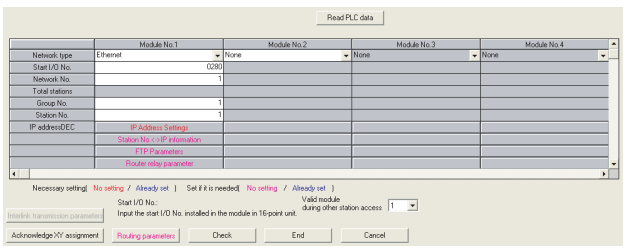
Set the first I/O No. as follows according to the expansion slot to which the unit is inserted.

(a) Unit No.

Slot position	Start I/O No.	Mounting position of extension unit
EXT1	0200	
EXT2	0280	
EXT3	0300	



(b) Example of GX Developer setting



For details of the parameter setting, refer to the following.

☞ MELDAS C6/C64 NETWORK MANUAL BNP-B2373

Point

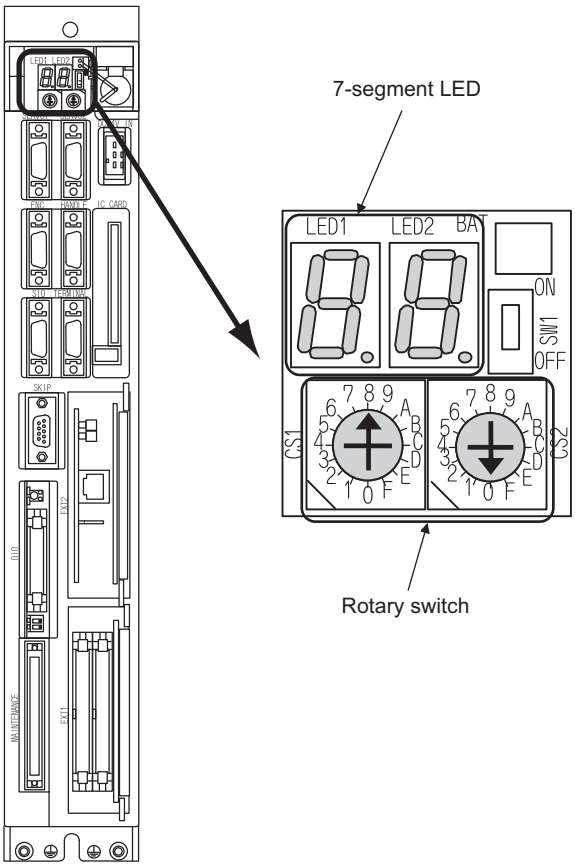
IP address setting

IP address setting on GX Developer is invalid.
Set the IP address by the 7-segment LED and rotary switch of the CNC side, referring to the next page.

(2) CNC side parameter setting

Confirm the CNC side parameter setting with the settings of IP address, gateway address, subnet mask and port No. by the 7-segment LED and rotary switch of the CNC side.
For details of the parameter setting operation, refer to the following.

☞ MELDAS C6/C64 NETWORK MANUAL BNP-B2373 IV Setting the Ethernet IP Address



41.4.11 Precautions

1 Via network system

GOT with Ethernet communication cannot access the CNCs in another network via the CNC (network module, Ethernet module, etc.).

2 When connecting to multiple GOTs

When connecting two or more GOTs in the Ethernet network, set each [PLC No.] to the GOT.

☞ Section 41.4.5 Setting communication interface (Communication settings)

3 When connecting to the multiple network equipments (including GOT) in a segment

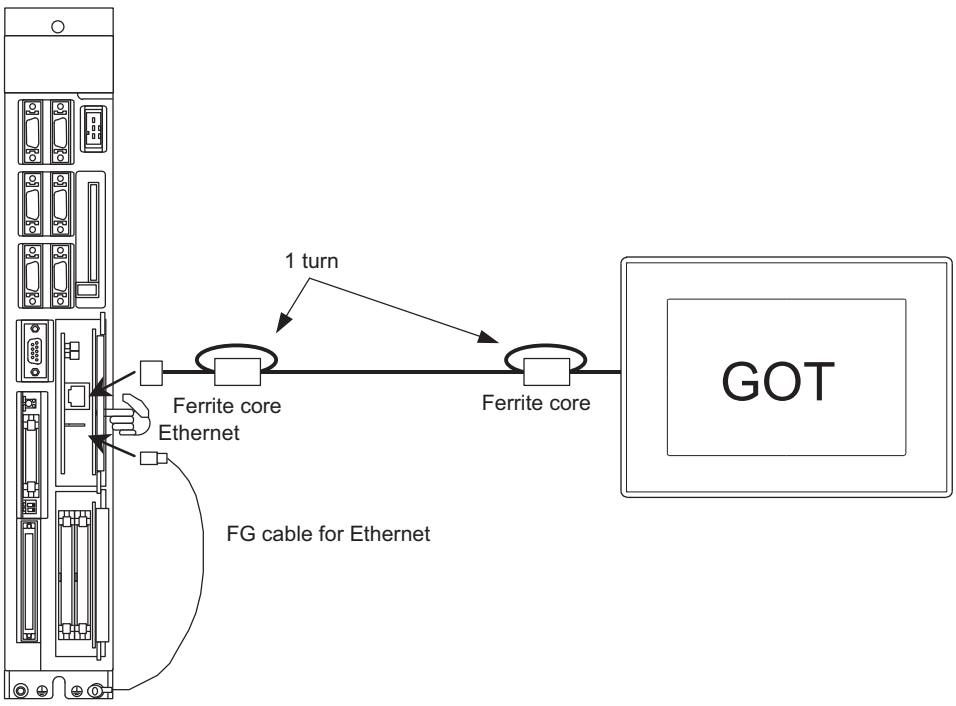
By increasing the network load, the transmission speed between the GOT and CNC may be reduced. The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

4 Ethernet cable connection

Ethernet cable is so susceptible to noise that you should wire power cables and electric supply cables separately. And you need to attach a ferrite core (attachment) on the control unit side.
For details of the Ethernet cable connection, refer to the following

☞ MELDAS C6/C64 NETWORK MANUAL BNP-B2373 IX Connection Function with GOT



5 Version of CNC

For MELDAS C6/C64, use NC system software version D0 or later.

41.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
CNC connection	Supporting the CNC connection	2.18U	Communication driver A/QnA/Q CPU, QJ71C24, MELDAS C6* [02.01.**] QJ71E71/AJ71(Q)E71 [02.01.**] MELSECNET/10 [02.01.**] CC-Link(ID) [02.01**]
CNC connection	• Supporting MELSECNET/10 mode of the communication unit for MELSECNET/H (Use GT15-J71LP23-25 or GT15-J71BR13 for a communication unit and MELSECNET/H for a communication driver.) • Supporting Ver.1 mode of the communication unit for CC-Link (Ver.2) (Use T15-J61BT13 for a communication unit and CC-Link Ver.2(ID) for a communication driver.)	2.32J	Communication driver MELSECNET/H [03.00.**] CC-Link(V2) [03.00.**]
CNC connection	Changing the Commnunication driver names	2.43V	Communication driver A/QnA/Q CPU, QJ71C24 [03.01.**] AJ71QC24, MELDAS C6* [03.01.**]
CNC connection	Supporting the retry, the timeout time and the delay time	2.73B	Communication driver AJ71QC24, MELDAS C6* [03.09.**]
CNC connection	Changing the Commnunication driver names	2.73B	Communication driver QJ71E71/AJ(Q)E71,Q17nNC, CRnD-700 [03.09.**]
CNC connection	Supporting the connections to GT16	2.90U	Communication driver AJ71QC24, MELDAS C6* [04.02.**] MELSECNET/H [04.02.**] CC-Link Ver2(ID) [04.02.**] Ethernet(MELSEC), Q17nNC,CRnD-700 [04.02.**]

42

GOT MULTI-DROP CONNECTION

GT16 and GT15 are supported by GT Works3 Version1.14Q or later.



42.1 System Configuration . . . . . page 42-2

This section describes devices and cables needed for GOT multi drop connection.
Refer to this section to select the desired system.

42.2 Connection Cable . . . . . page 42-8

This section describes the specifications of the cables needed for GOT multi drop connection.
Refer to this section to check the specifications of the connection cable to be used.

42.3 Preparatory Procedures for Monitoring . . . . . page 42-19

This section describes the preparatory procedures for monitoring in GOT multi drop connection.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

42.4 GOT Multi-Drop Connection Controller Setting . . . . . page 42-29

Setting for the GOT Multi-Drop Connection are explained.

42.5 Precautions . . . . . page 42-30

This section describes precautions for GOT multi drop connection.
Refer to this section without fail before starting GOT multi drop connection.

42.6 List of Functions Added by Version Upgrade . . . . . page 42-31

This section describes the functions added by version upgrade of GT Designer2 or OS.

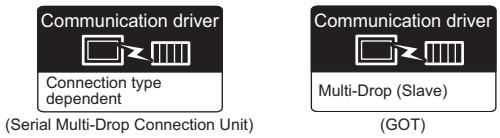
42.1 System Configuration

Select a system configuration suitable for your application.

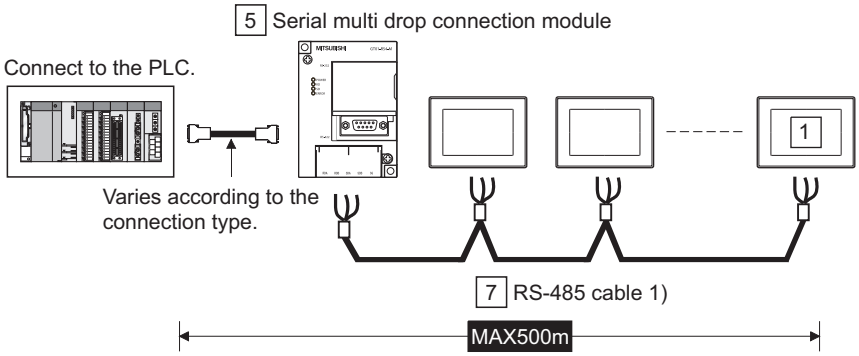
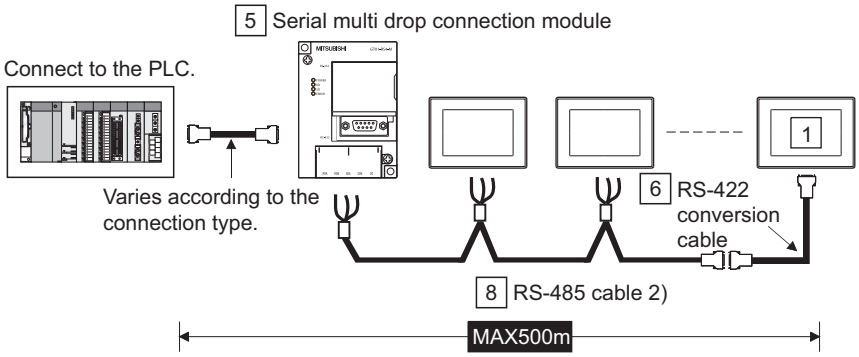
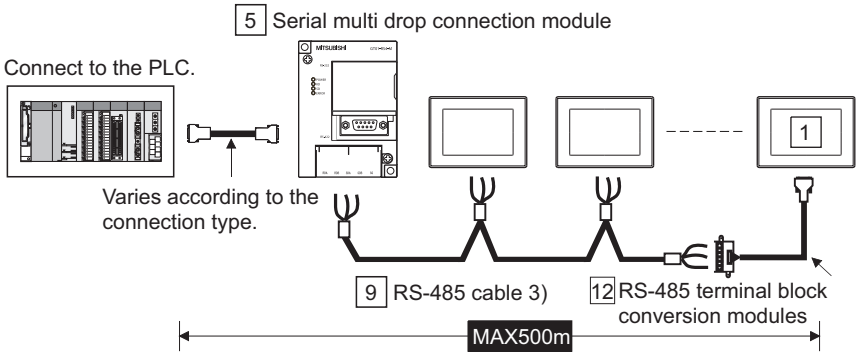
Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.



1 System configuration and connection conditions

Connection conditions		System configuration*1	Model
Number of GOTs	Distance		
16 (max.) (When the number of connected GOTs is increased, the response performance is degraded.)	500m (max)		GT16
			GT16
			GT16

Connection conditions		System configuration*1	Model
Number of GOTs	Distance		
16 (max.) (When the number of connected GOTs is increased, the response performance is degraded.)	500m (max)	5 Serial multi drop connection module Connect to the PLC. Varies according to the connection type. 2 10 RS-485 cable 4) MAX500m	GT16 GT15 (RS-422)
		5 Serial multi drop connection module Connect to the PLC. Varies according to the connection type. 3 8 RS-485 cable 2) MAX500m	GT16 GT15
		5 Serial multi drop connection module Connect to the PLC. Varies according to the connection type. 4 11 RS-485 cable 5) MAX500m	GT11 Serial GT105□ 4□ GT24V 10 20 30 (RS-422)

Point

Connection type with which GOT multi-drop connection is available

The following shows the connection type and controller type with which GOT multi-drop connection is available.

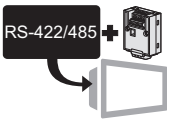
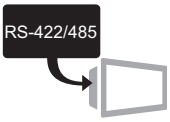
For connection between the Serial Multi-Drop Connection Unit and PLC, refer to the corresponding section.

GOT type	PLC ◄► Serial Multi-Drop Connection Unit		
	Connection type	Controller type	Serial Multi-Drop Connection driver
GT16 GT15	DIRECT CONNECTION TO CPU	MELSEC-QnU, Q17nD/M/NC/DR, CRnD-700	QnA/Q CPU
		MELSEC-QnA/Q/QS, MELDAS C6*	
		MELSEC-Q(MULTI)/Q MOTION	
		MELSEC-A	MELSEC-A
		MELSEC-FX	MELSEC-FX
GT11 Serial	DIRECT CONNECTION TO CPU	MELSEC-QnU, Q17nD/NC/DR	QnA/Q CPU
		MELSEC-QnA/Q, MELDAS C6*	
		MELSEC-Q(MULTI)/Q MOTION	
		MELSEC-A	MELSEC-A
		MELSEC-FX	MELSEC-FX
GT105□ 104□ GT24V 1020 1030 (RS-422)	DIRECT CONNECTION TO CPU	MELSEC-QnU	QnA/Q CPU
		MELSEC-QnA/Q	
		MELSEC-Q(MULTI)	
		MELSEC-A	MELSEC-A
		MELSEC-FX	MELSEC-FX

☞ Chapter 3 DIRECT CONNECTION TO CPU

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-422/485 interface • RS-485 communication	- (Built into GOT)	GT16
	2	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-TE	GT16 GT15
	3	RS-422/485 Communication Unit • For RS-485 communication	GT15-RS4-9S	GT16 GT15
	4	Connection Conversion Adapter*1 • RS-485 communication	GT10-9PT5S	GT11 Serial GT105□4□
		RS-422/485 interface • RS-485 communication	- (Built into GOT)	GT11 Serial GT105□4□ GT24V1020 30 (RS-422)

*1 Connect it to the RS-422/485 interface (built into GOT).

Point

GOT models support the GOT Multi-Drop Connection

The following GOT models support the GOT Multi-Drop Connection.
For the confirming method of hardware version, refer to the following.

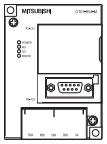
☞ GT11 User's Manual

☞ GT10 User's Manual

GOT	Hardware version	Standard monitor OS
GT16□, GT15□	*1	-
GT1155-QTBD	version C or later	
GT1155-QSBD	version F or later	
GT1150-QLBD	version F or later	
GT1055-QSBD, GT1050-QBBD	version C or later	Standard monitor OS[01.12.**]or later
GT1045-QSBD, GT1040-QBBD	version A or later	
GT1030-LBD, GT1030-LBDW	version B or later	
GT1020-LBD, GT1020-LBDW	version E or later	

*1 This item is supported by GT Works3 Version1.14Q or later.

(2) Serial Multi-Drop Connection Unit

Image	No.	Name	Model name
	5	Serial Multi-Drop Connection Unit	GT01-RS4-M

Point

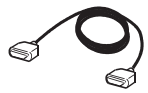
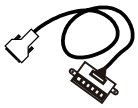
Communication setteings between the Serial Multi-Drop Connection Unit and PLC

Change the PLC communication selection switch according to the connection type between serial multi-drop connection unit and PLC.
For the setting of the Serial Multi-Drop Connection Unit, refer to the following.

☞ Serial Multi-Drop Connection Unit User's Manual

☞ 42.4.1Setting of Serial Multi-Drop Connection Unit

(3) Cable

Image	No.	Name	Model name	Model
	6	RS-422 connector conversion Cable	GT16-C02R4-9S(0.2m)	GT16
	7	RS-485 Cable 1) (2 wires, 4 wires)	(To be prepared by the user. ☞ Section 42.2 Connection Cable)	GT16
	8	RS-485 Cable 2) (4 wires)		GT16 GT15
	9	RS-485 Cable 3) (2 wires, 4 wires)		GT16
	10	RS-485 Cable 4)		GT16 GT15
	11	RS-485 Cable 5)		GT11 Serial GT105□4□ GT24V1020 30
	12	RS-485 terminal block conversion modules	FA-LTBGTR4CBL05 (0.5m) FA-LTBGTR4CBL10 (1m) FA-LTBGTR4CBL20 (2m)	GT16

12 is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For detail of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

Point

Connection cable between the Serial Multi-Drop Connection Unit an PLC

Select or create the connection cable between serial multi-drop connection unit and PLC according to the connection type.

For connection between the Serial Multi-Drop Connection Unit and PLC, refer to the following.

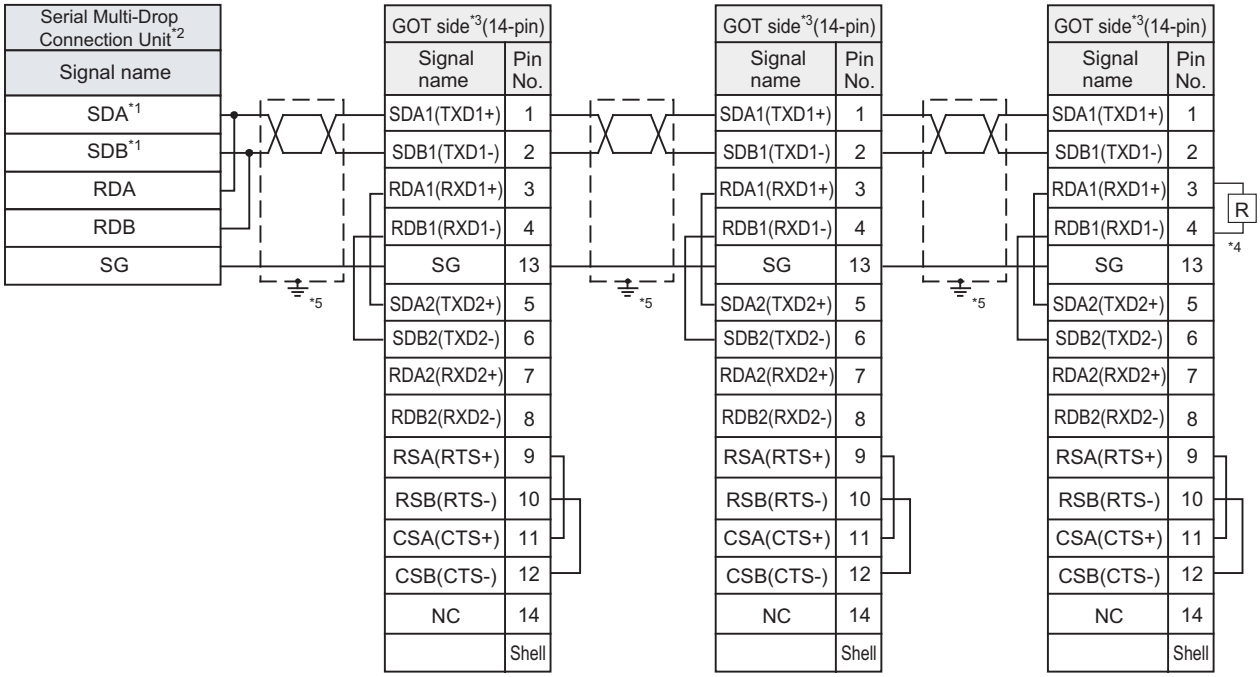
☞ Chapter 3 DIRECT CONNECTION TO CPU

42.2 Connection Cable

The following shows the cable connection diagram of the RS-485 cable used for connecting the serial multi-drop connection unit and GOT.

1 Connection diagram

(1) RS-485 Cable 1) (1 pair wiring)



*1 Use the twisted pair cable for SDA/SDB.

*2 Set the terminating resistor selector to "110Ω".

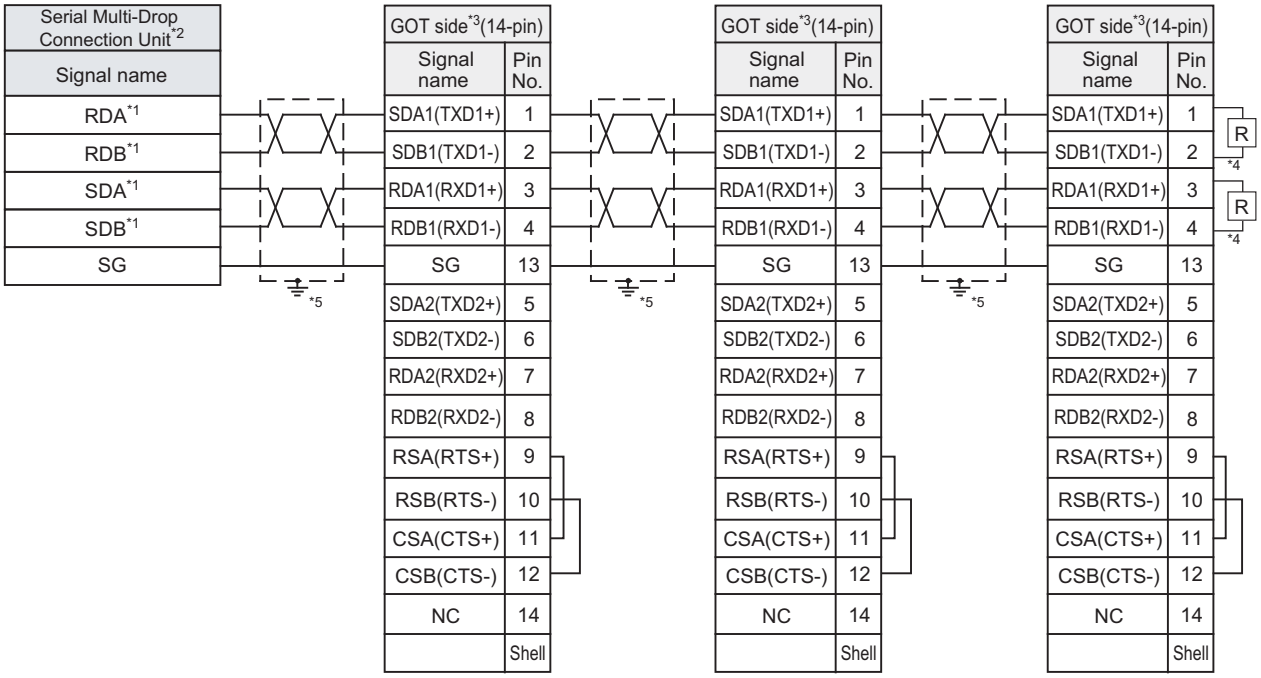
*3 Set the terminating resistor selector of the GOT main unit to "No".

4 Connecting terminating resistors

*4 Connect a 110Ω terminating resistor to the GOT to be a terminal.

*5 Make sure to ground a cable shield line by applying Class D Grounding.

(2) RS-485 Cable 1) (2 pair wiring)



*1 Use the twisted pair cable for SDA/ADB and RDA/RDB.

*2 Set the terminating resistor selector to "330Ω".

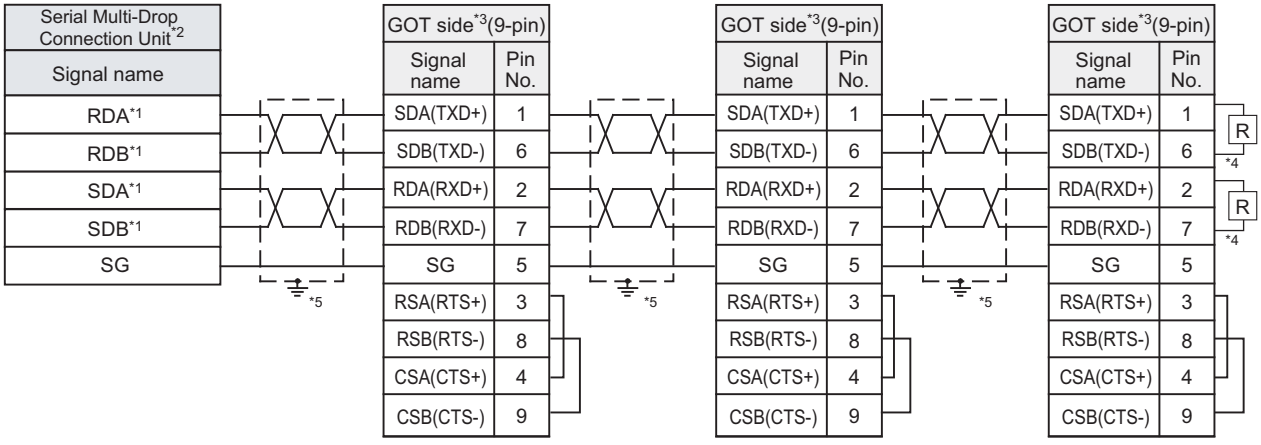
*3 Set the terminating resistor selector of the GOT main unit to "No".

4 Connecting terminating resistors

*4 Connect a 330Ω terminating resistor to the GOT to be a terminal.

*5 Make sure to ground a cable shield line by applying Class D Grounding.

(3) RS-485 cable 2)



*1 Use the twisted pair cable for SDA/ADB and RDA/RDB.

*2 Set the terminating resistor selector to "330Ω".

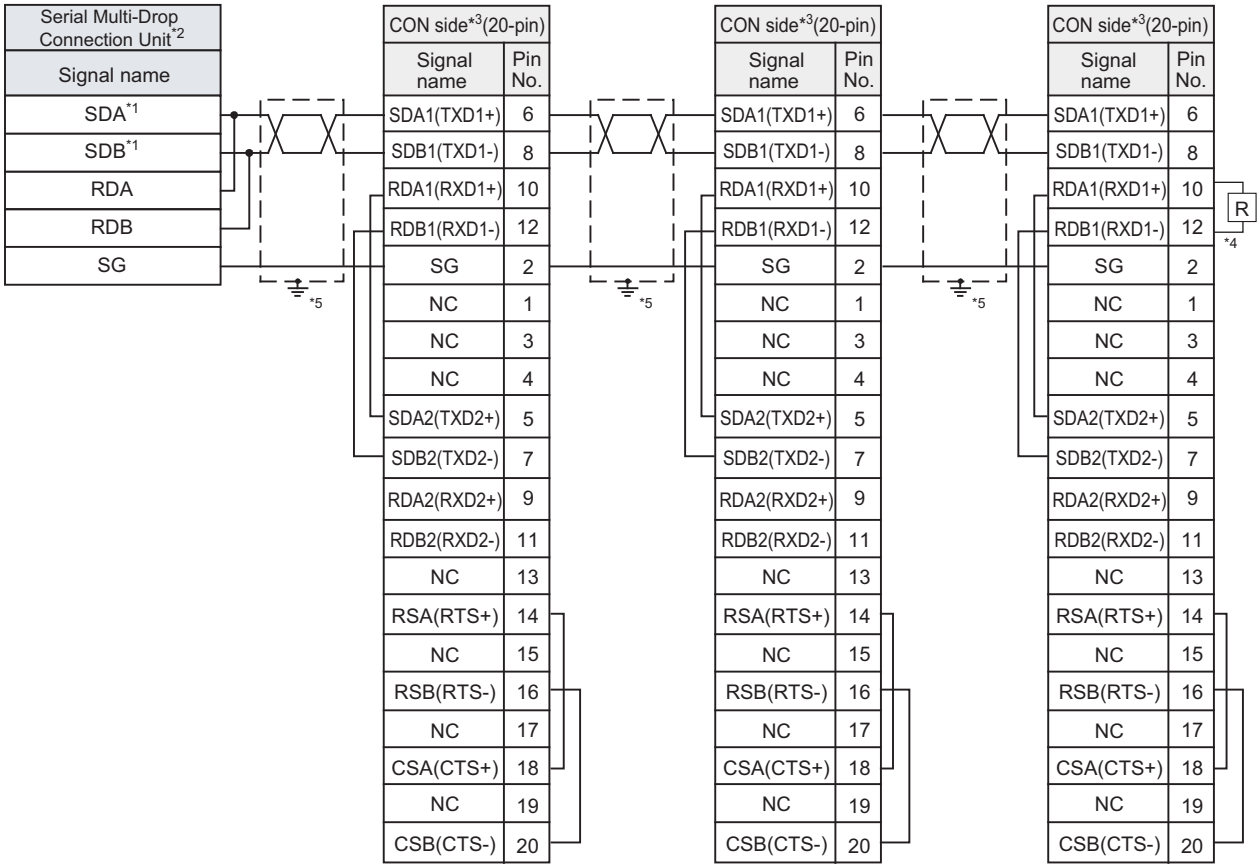
*3 Set the terminating resistor selector of the GOT main unit to "No".

4 Connecting terminating resistors

*4 Connect a 330Ω terminating resistor to the GOT to be a terminal.

*5 Make sure to ground a cable shield line by applying Class D Grounding.

(4) RS-485 Cable 3) (1 pair wiring)



*1 Use the twisted pair cable for SDA/SDB.

*2 Set the terminating resistor selector to "110Ω"

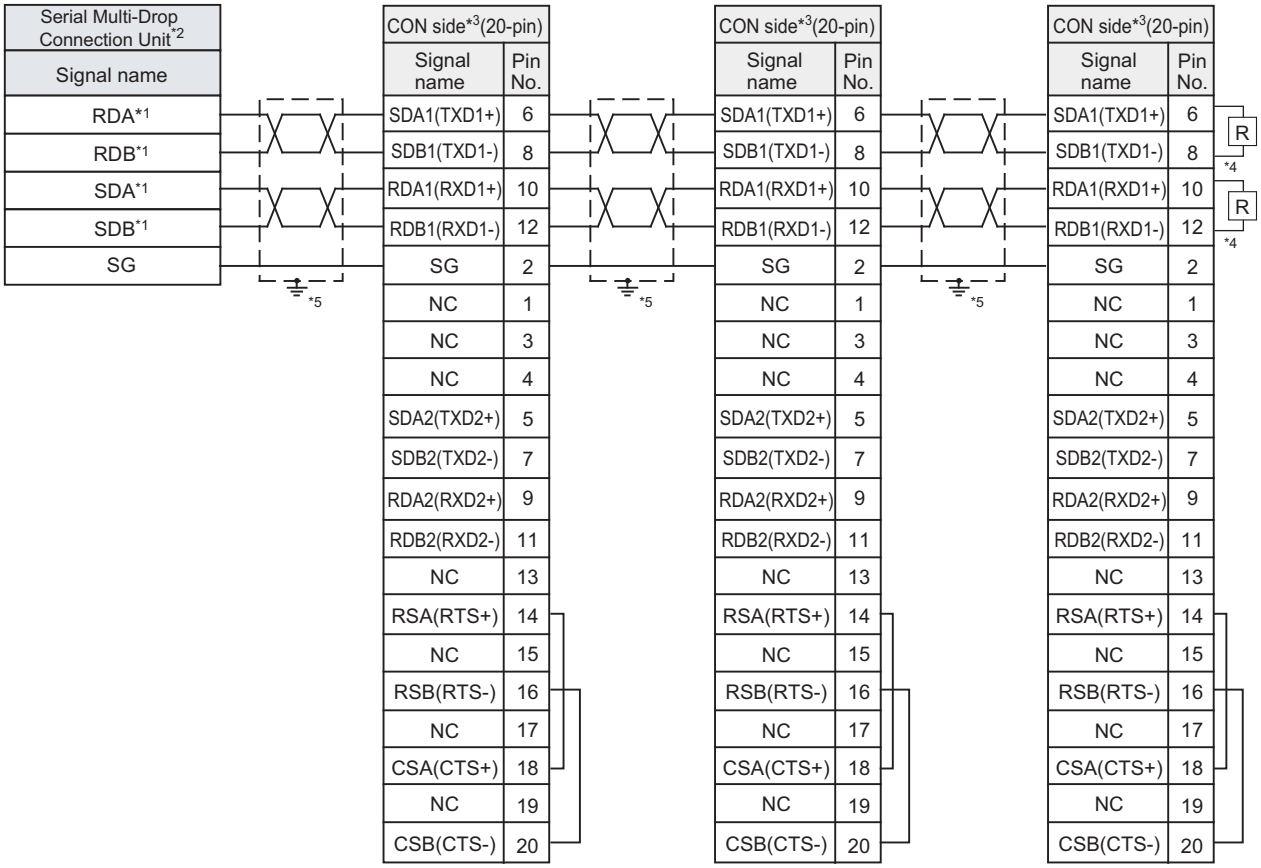
*3 Set the terminating resistor selector of the GOT main unit to "No".

4 Connecting terminating resistors

*4 Connect a 110Ω terminating resistor to the GOT to be a terminal.

*5 Make sure to ground a cable shield line by applying Class D Grounding.

(5) RS-485 Cable 3) (2 pair wiring)



*1 Use the twisted pair cable for SDA/ADB and RDA/RDB.

*2 Set the terminating resistor selector to "330Ω".

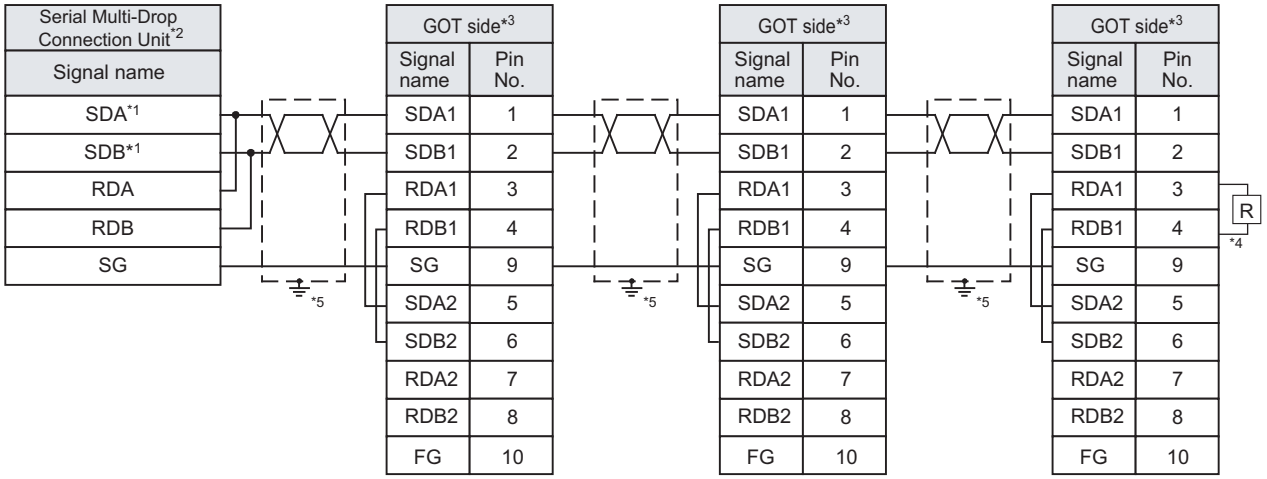
*3 Set the terminating resistor selector of the GOT main unit to "No".

4 Connecting terminating resistors

*4 Connect a 330Ω terminating resistor to the GOT to be a terminal.

*5 Make sure to ground a cable shield line by applying Class D Grounding.

(6) RS-485 Cable 4)



*1 Use the twisted pair cable for SDA/ADB and RDA/RDB.

*2 Set the terminating resistor selector to "110Ω".

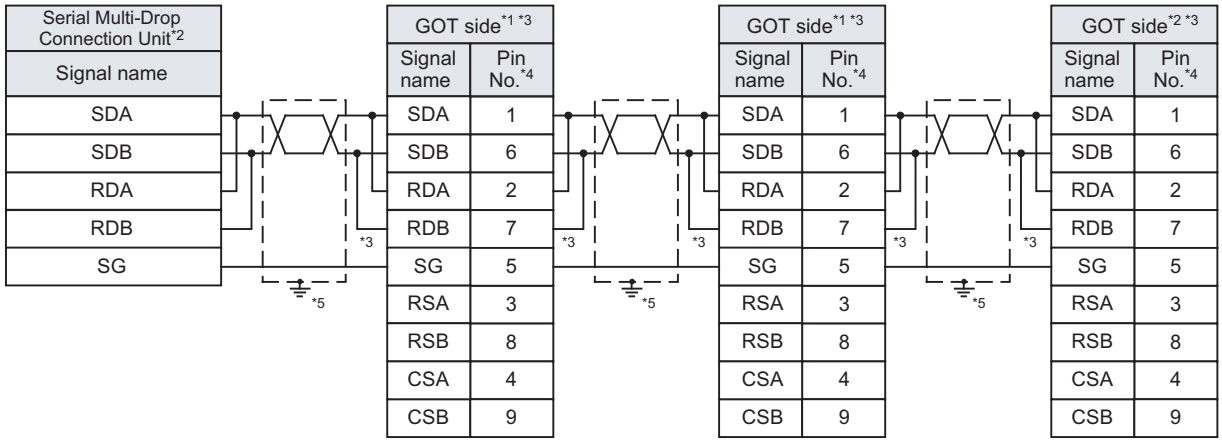
*3 Set the terminating resistor selector of the GOT main unit to "No".

4 Connecting terminating resistors

*4 Connect a 110Ω terminating resistor to the GOT to be a terminal.

*5 Make sure to ground a cable shield line by applying Class D Grounding.

(7) RS-485 Cable 5) (1 pair wiring)



*1 Set the terminating resistor selector to "OPEN".

*2 Set the terminating resistor selector to "110Ω".

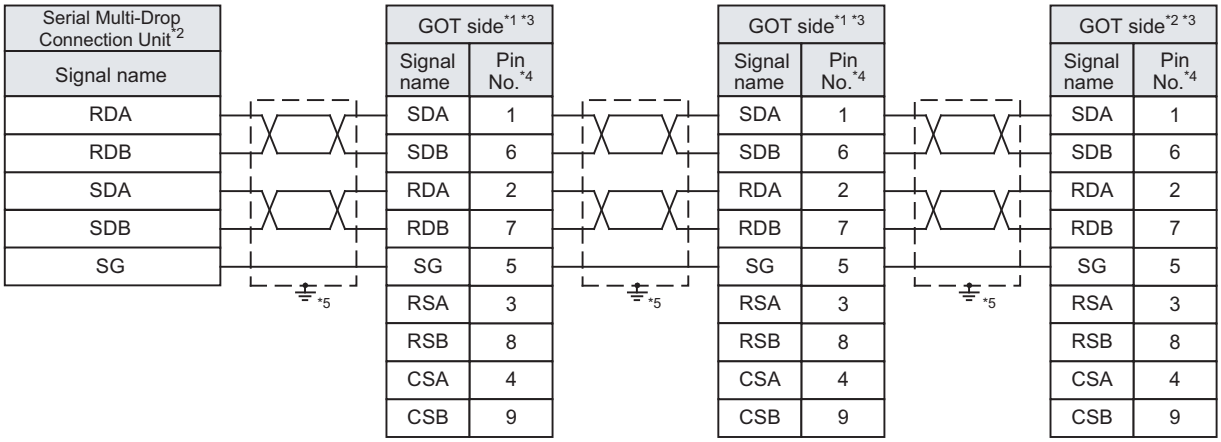
4 Connecting terminating resistors

*3 Set the 1pair / 2pair signal selection switch to "1pair" when using the connection conversion adapter. In that case, transition wiring is not necessary between SDA and RDA or SDB and RDB.

*4 This is the connector pin No. of GT11, GT105□, or GT104□ main unit.

*5 Make sure to ground a cable shield line by applying Class D Grounding (100Ω or less).

(8) RS-485 Cable 5) (2 pair wiring)



Serial Multi-Drop Connection Unit*2	GOT side*1 *3		GOT side*1 *3		GOT side*2 *3	
Signal name	Signal name	Pin No.*4	Signal name	Pin No.*4	Signal name	Pin No.*4
RDA	SDA	1	SDA	1	SDA	1
RDB	SDB	6	SDB	6	SDB	6
SDA	RDA	2	RDA	2	RDA	2
SDB	RDB	7	RDB	7	RDB	7
SG	SG	5	SG	5	SG	5
	RSA	3	RSA	3	RSA	3
	RSB	8	RSB	8	RSB	8
	CSA	4	CSA	4	CSA	4
	CSB	9	CSB	9	CSB	9

*1 Set the terminating resistor selector to "OPEN".

*2 Set the terminating resistor selector to "330Ω".

4 Connecting terminating resistors

*3 Set the 1pair / 2pair signal selection switch to "2pair" when using the connection conversion adapter.

*4 This is the connector pin No. of GT11, GT105□, or GT104□ main unit.

*5 Make sure to ground a cable shield line by applying Class D Grounding (100Ω or less).

2 Connector specifications

(1) GOT side connector (RS-422/485)

Use the following as the RS-422/485 interface connectors on the GOT.

For the GOT side of the RS-422/485 cable, use a connector or connector cover applicable to the GOT connector.

(a) Connector type

GOT	Connector type	Connector model	Manufacturer
GT16*1	14-pin (female)	HDR-EC14LFDT1-SLE+	Honda Tsushin Kogyo Co., Ltd
GT11, GT105 □, GT104 □	9-pin D-sub (female)	17LE-13090-27(D3AC)	DDK Ltd.
GT1030, GT1020	9-pin tarminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS4-TE	-	SL-SMT3.5/10/90F BOX	Weidmuller interconnections inc.
GT15-RS4-9S	9-pin D-sub (female)	17LE-13090-27(D3AC)	DDK Ltd.

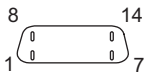
*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5BK or corresponding product) of the cable side is packed together with the GT10.

(b) Connector pin arrangement

GT16

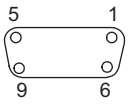
GOT main part connector see from the front



14-pin (female)

GT15, GT11, GT105 □, GT104 □

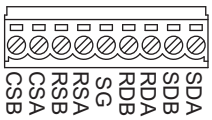
GOT main part connector see from the front



9-pin D-sub (female)

GT1030, GT1020

See from the back of a GOT main part

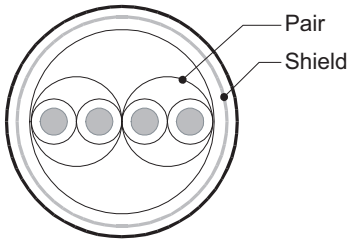


9-pin terminal block

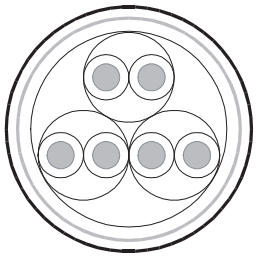
3 Precautions when preparing a cable

Use a shielded twisted pair cable of 0.3mm^2 or more as a cable for GOT multi-drop connection. The following shows recommended model names and manufacturers of the cable to be used.

Manufacturer	Model	Remarks
Mitsubishi Cable Industries,Ltd	SPEV(SB)-0.5-2P	Two-pair cable of 0.5mm^2
Showa Electric Wire & Cable Co.,Ltd	KMPEV-SB CWS-178 0.5SQ × 2P	Two-pair cable of 0.5mm^2
Sumitomo Electric Industries.,Ltd	DPEV SB 0.3 × 3P	Three-pair cable of 0.3mm^2
	DPEV SB 0.5 × 3P	Three-pair cable of 0.5mm^2
The Furukawa Electric Co.,Ltd	D-KPEV-SB 0.5 × 3P	Three-pair cable of 0.5mm^2
Fujikura Ltd.	IPEV-SB 2P × 0.3 mm^2	Two-pair cable of 0.3mm^2
	IPEV-SB 2P × 0.5 mm^2	Two-pair cable of 0.5mm^2



Two-pair cable structual drawing example

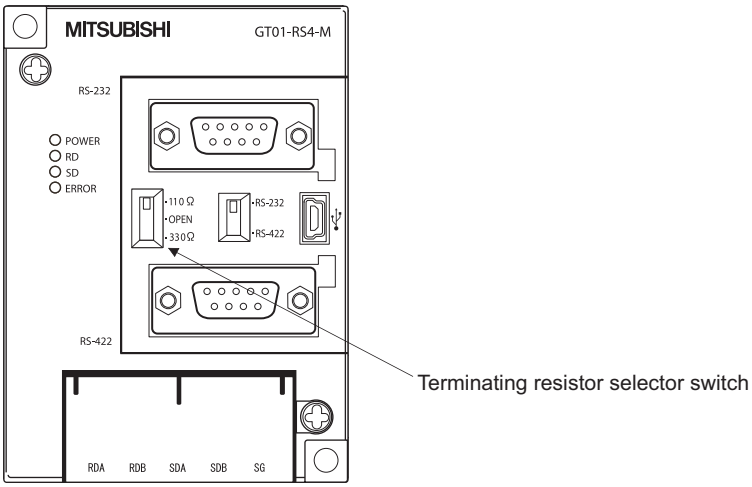


Two-pair cable structual drawing example

4 Connecting terminating resistors

(1) Serial Multi-Drop Connection Unit

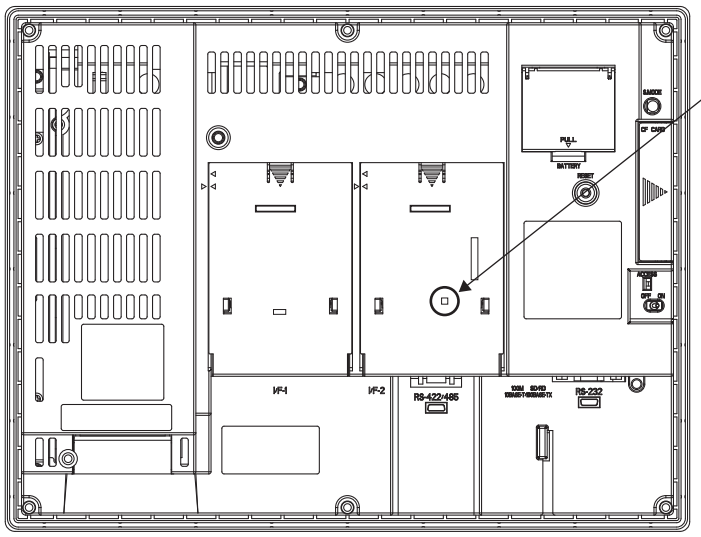
Set the terminating resistor of Serial Multi-Drop Connection Unit using the terminating reisistor selector switch.



(2) GOT

Set the terminating resistor of GT16 or RS-422/485 communication unit, GT11, GT10 using the terminating resistor setting switch.

(a) GT16

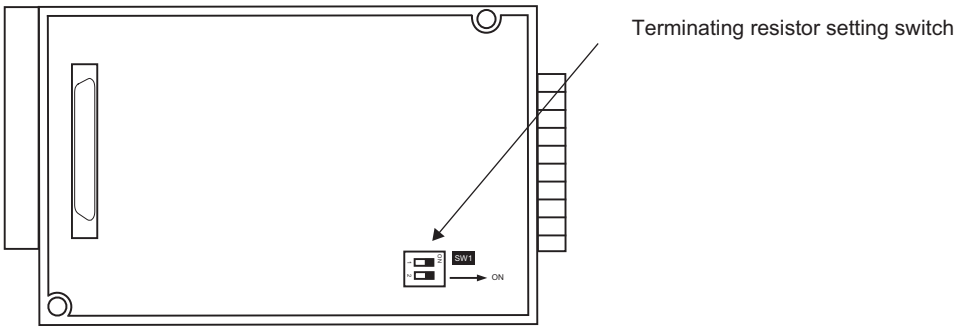


(b) For RS422/485 communication unit

Terminating resistor*1	Switch No.	
	1	2
Enable	ON	ON
Disable	OFF	OFF

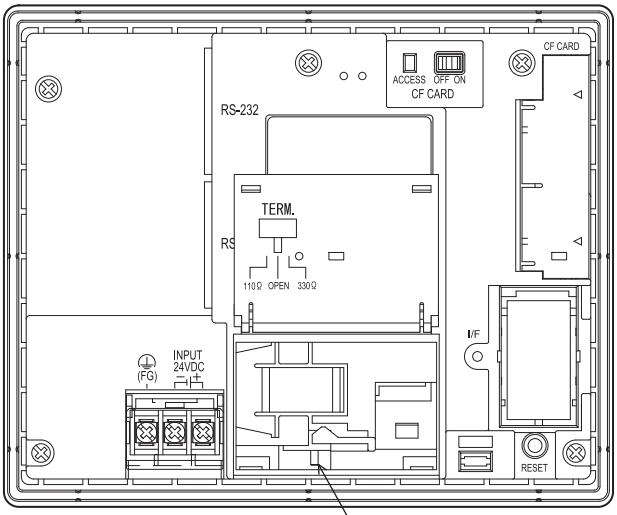


*1 The default setting is "Disable".

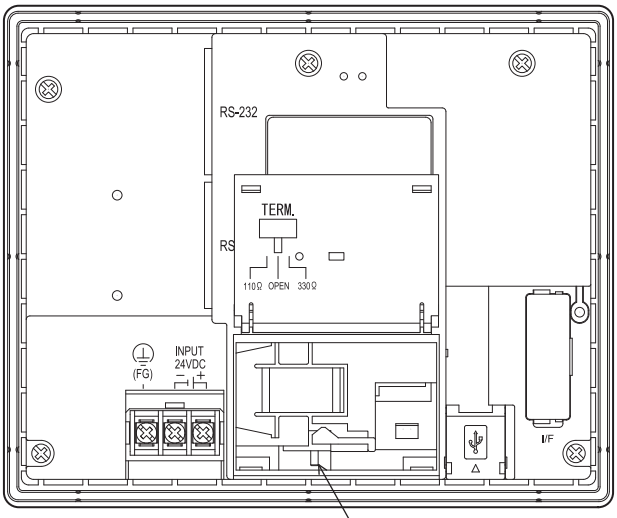


Rear View of RS-422/485 communication unit

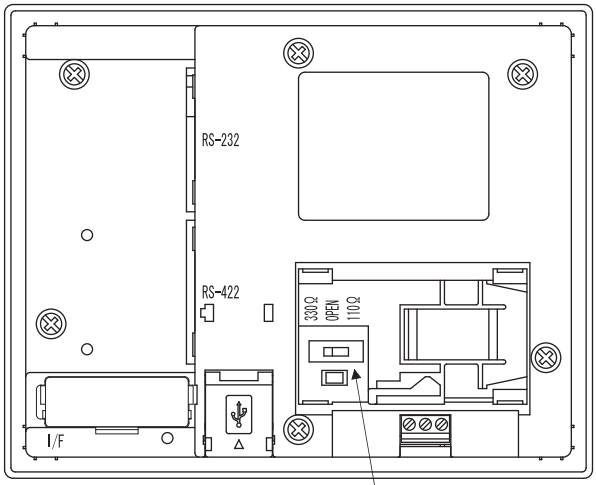
(c) GT11



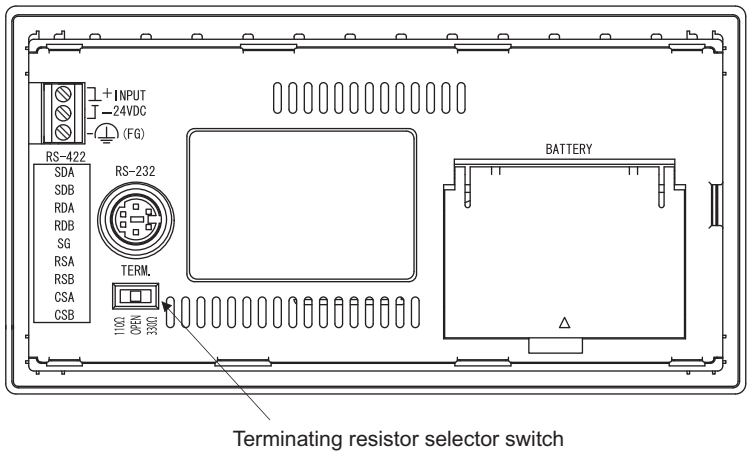
(d) GT105□



(e) GT104□

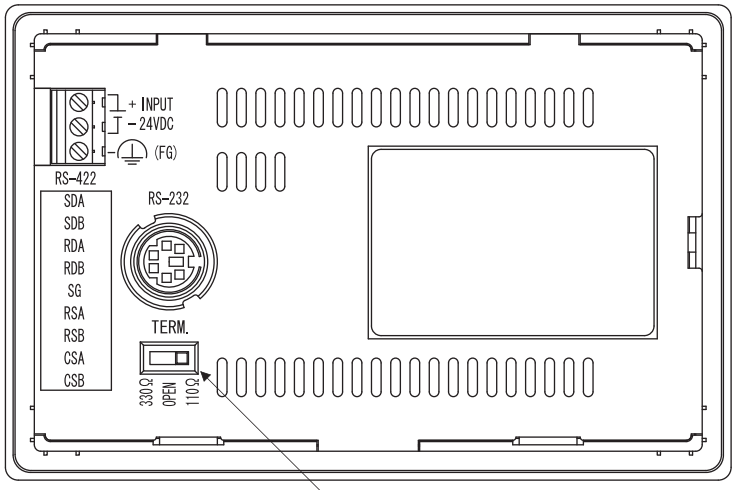


(f) GT1030



Terminating resistor selector switch

(g) GT1020



Terminating resistor selector switch

42.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS.

Section 42.3.1 Install the OS

Checking OS installation on GOT

Section 42.3.2 Checking OS installation on GOT

Set the communication interface. (Communication settings)

Section 42.3.3 Setting communication interface (Communication settings)

Download the project data.

Section 42.3.4 Downloading project data

Connect the cable.

Section 42.3.5 Cable connection

Make sure that the GOT recognizes the controller

Section 42.3.6 Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

Section 42.3.7 Checking for normal monitoring

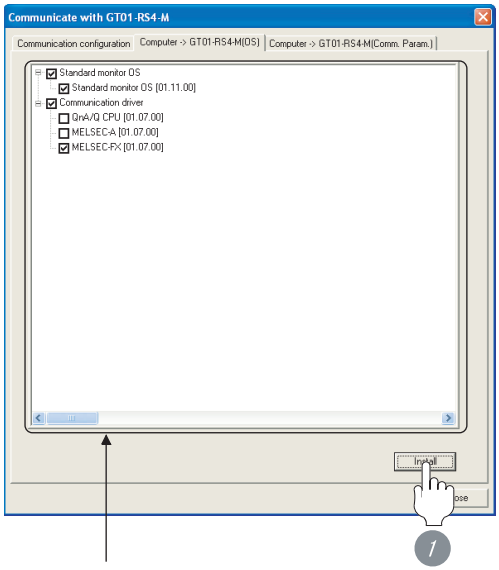
42.3.1 Install the OS

1 Install OS onto Serial Multi-Drop Connection Unit

Install the standard monitor OS and communication driver according to the desired connection type onto the serial multi-drop connection unit.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the communication driver.

- Connection type dependent

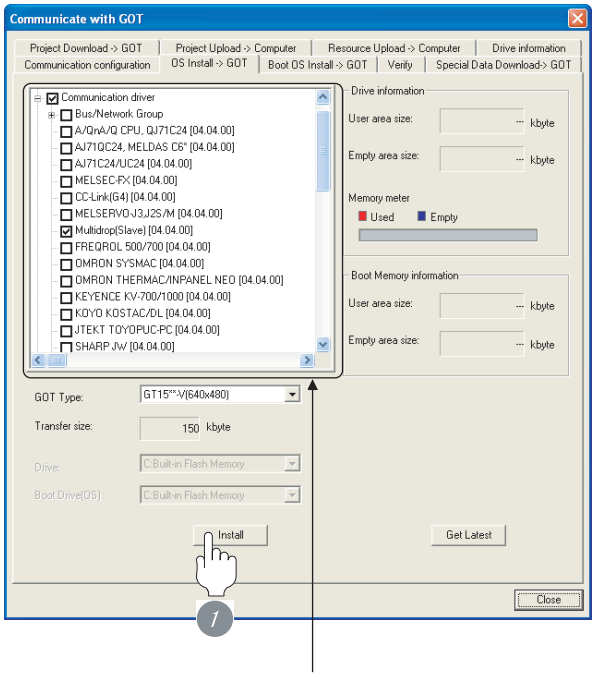
1 Check-mark a communication driver according to the desired connection type and click the Install button.

2 Install OS onto GOT

Install the standard monitor OS, communication driver andoption OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

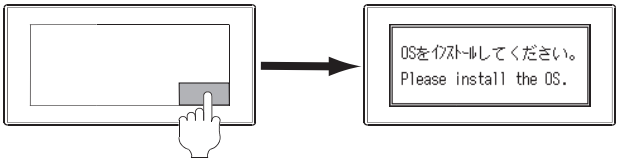
- Multidrop (slave)

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

Point

Installing communication driver onto GT10 When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode.

GT10 User's Manual (Operating of transmission mode)



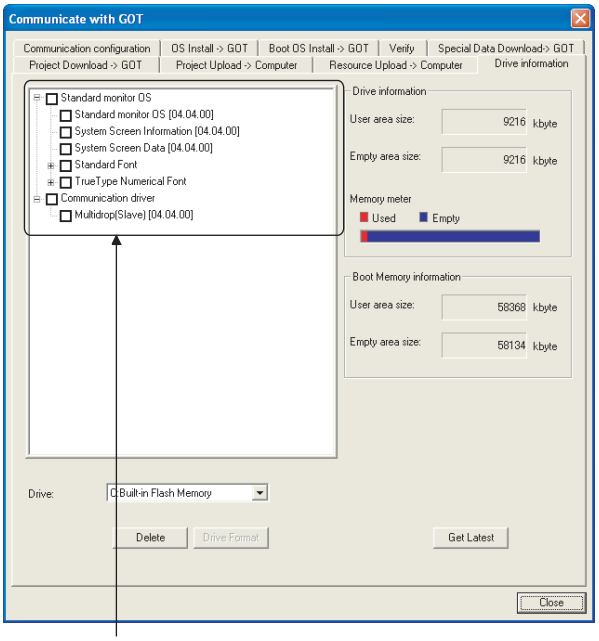
Turn on the GOT while the bottom right corner is touched.

42.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed :

1) Standard monitor OS

2) Communication driver: Multidrop (slave)

42.3.3 Setting communication interface (Communication settings)

1 Setting of Serial Multi-Drop Connection Unit

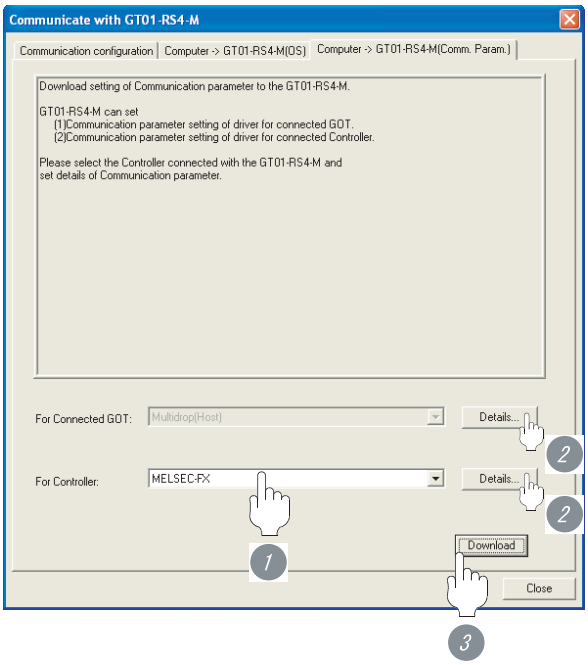
Make the Serial Multi-Drop Connection Unit interface setting on [Communication with GT01-RS4-M] of GT Designer 2.

Select the same communication driver as the one installed on the serial multi-drop connection unit for the communication interface for controllers.

For details on [Communication with GT01-RS4-M] of GT Designer 2, refer to the mannuals.

☞ GT Designer2 Version □ Basic Operation/Data Transfer Manual

(1) Communication settings



1 Set the following to the driver for the connected equipment.

- Connection type dependent

The driver for connection with the GOT is fixed to the following one.

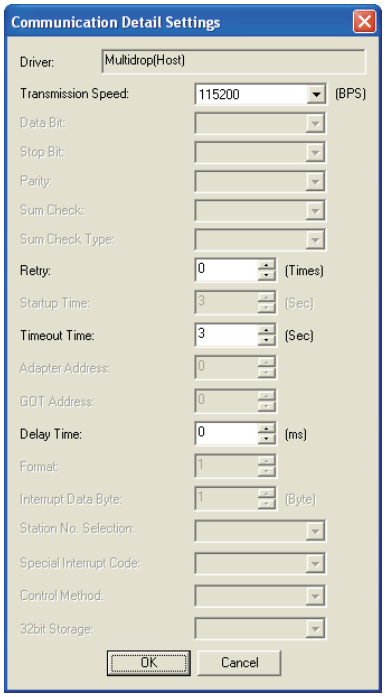
- Multidrop(Host)

2 Perform the detailed settings for the driver. (☞ (2)Communication detail settings)

3 Click the Download button.

(2) Communication detail settings

(a) For the connection with GOT



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(b) For the connected equipment

Set the communication detail settings of the driver for controllers according to the connection type.

☞ Refer to each chapter.

2 GOT communication interface setting

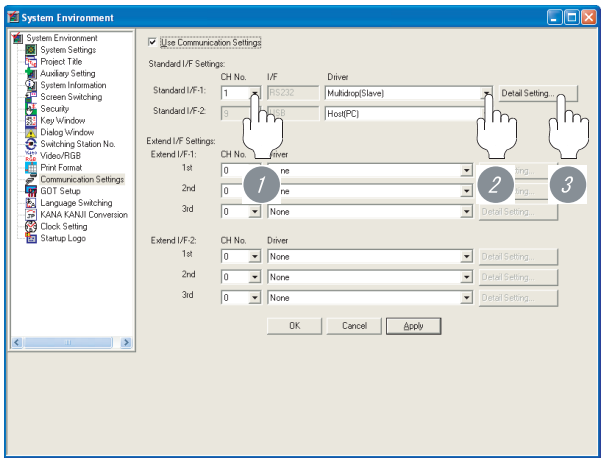
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

(1) Communication settings

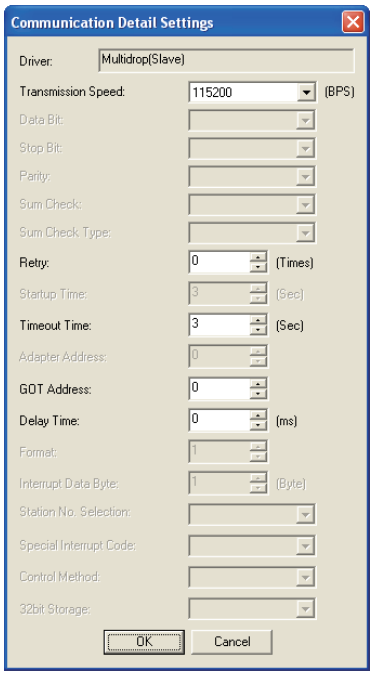


1 Set [1] to the channel No. used.

2 Set the driver to [multidrop(slave)].

3 Perform the detailed settings for the driver. ((2)Communication detail settings)

(2) Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
GOT Adress	Specify the station number of the host station in the system configuration. <Default: 0>	0 to 15
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.

For details on the Utility, refer to the following manual.

GT ☐ User's Manual

(2) Precedence in communication settings

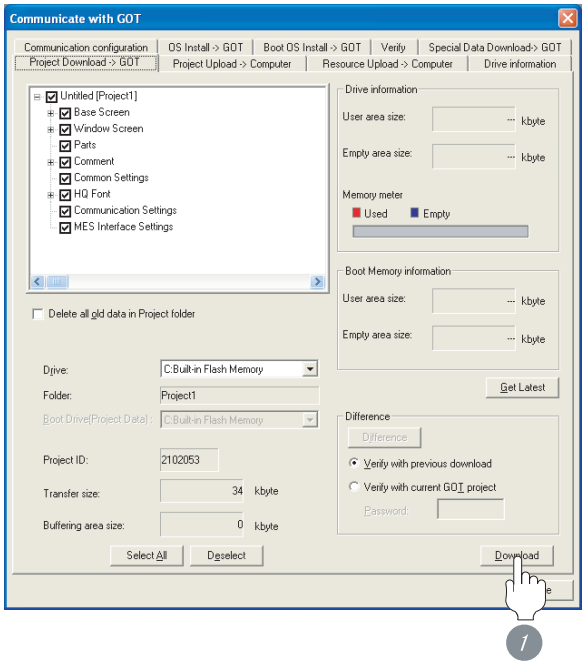
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

42.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

42.3.5 Cable connection

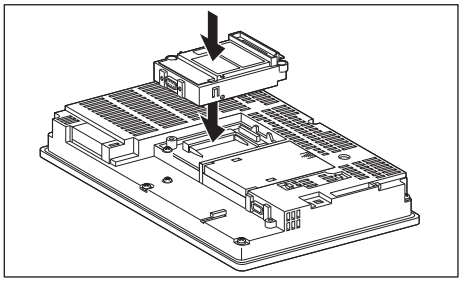
Point

Cautions when connecting the cable.

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Attach the serial communication unit to the extension unit connector on the GOT.



Point

Communication unit

For details on the serial communication unit, refer to the following manual.

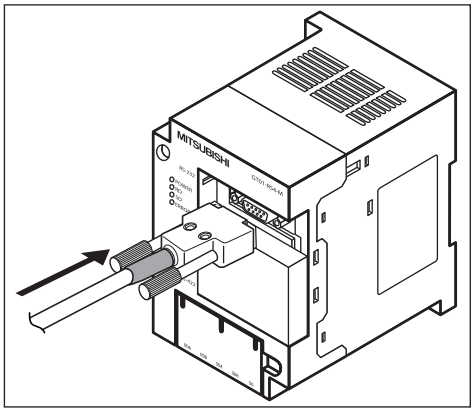
☞ GT15 Serial Communication Unit User's Manual

2 How to connect the cable

(1) How to connect the RS-232 cable

(a) When using Serial Multi-Drop Connection Unit

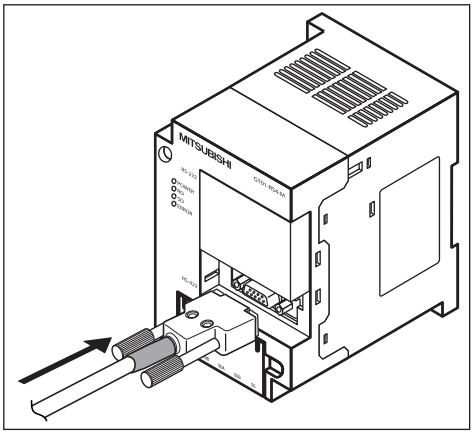
1 Connect the RS-232 cable to the connector for PLC communication (for RS-232 connection) of the serial multi-drop connection unit.



(2) How to connect the RS-232 cable

(a) When using Serial Multi-Drop Connection Unit

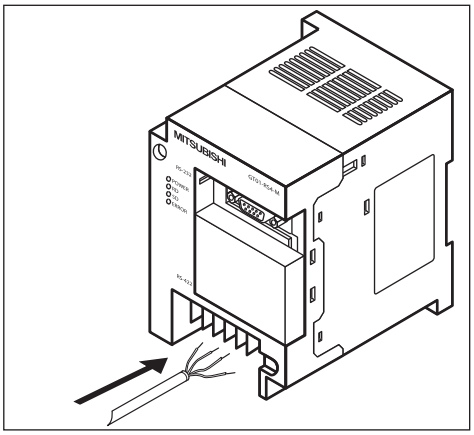
1 Connect the RS-422 cable to the connector for PLC communication (for RS-422 connection) of the serial multi-drop connection unit.



(3) How to connect the RS-485 cable

(a) When using Serial Multi-Drop Connection Unit

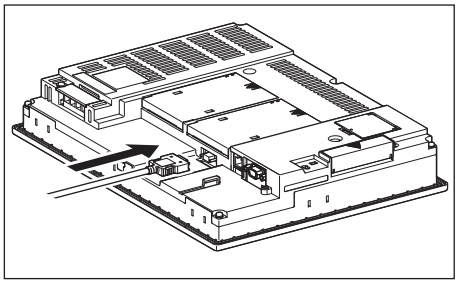
1 Connect the RS-485 cable to the terminal block for serial multi-drop communication of the serial multi-drop connection unit.



(b) For the GT16

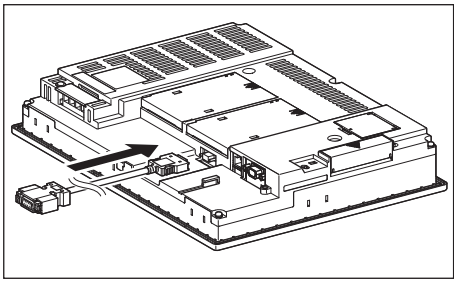
• Connection to the RS-422/485 interface

1 Connect the RS-485 cable to the RS-422/485 interface on the GOT.

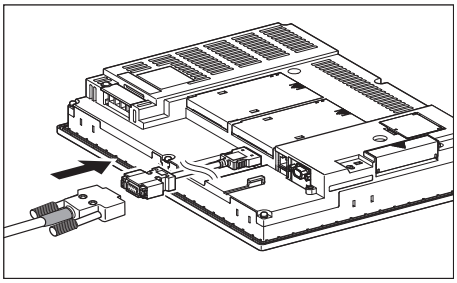


• Connection to the RS-422/485 interface with the RS-422 connector conversion cable

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

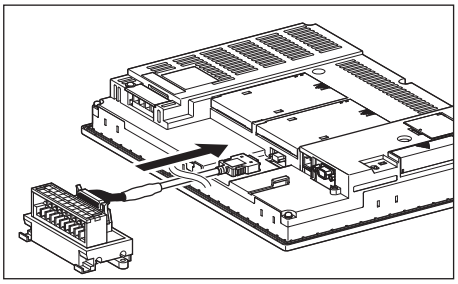


2 Connect the RS-422 cable to the RS-422 connector conversion cable.

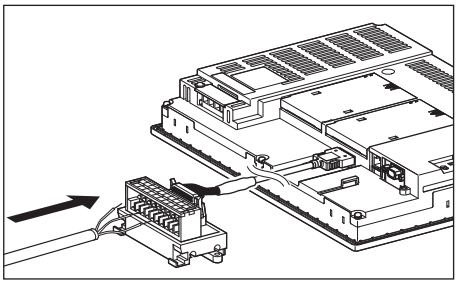


• Connection to the RS-422/485 interface with the RS-485 terminal block conversion modules

1 Connect the RS-485 terminal block conversion modules to the RS-422/485 interface on the GOT.

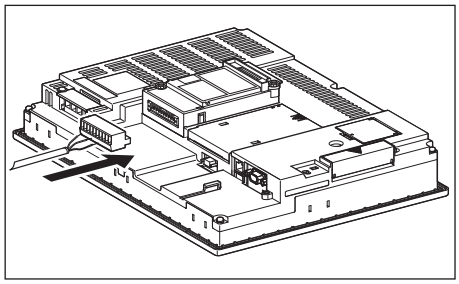


2 Connect the RS-485 cable to the RS-485 terminal block conversion modules.

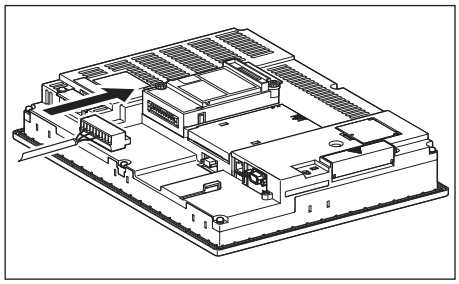


• Connection to the RS-422/485 communication unit

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.

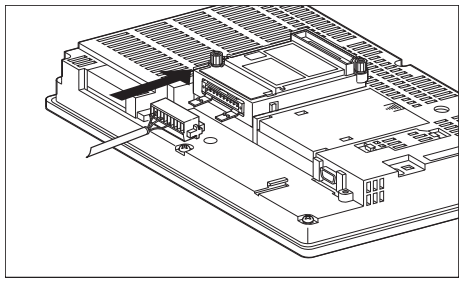


2 Connect the terminal block to the RS-422/485 communication unit on the GOT.

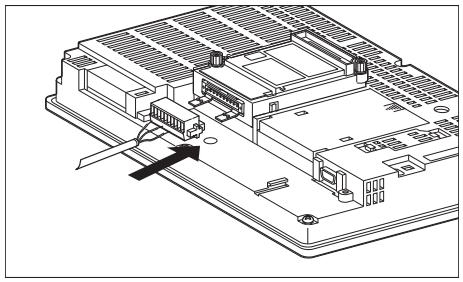


(c) For GT15

1 Connect the RS-485 cable to the terminal block packed together with the RS-422/485 communication unit.

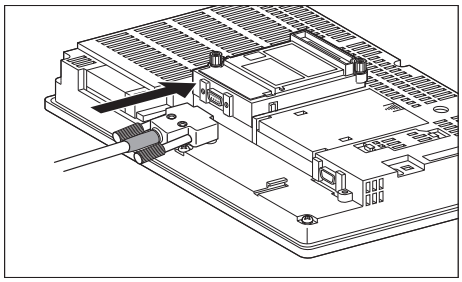


2 Connect the terminal block to theRS-422/485 communication unit on the GOT.



• Connection to the RS-422/485 communication unit

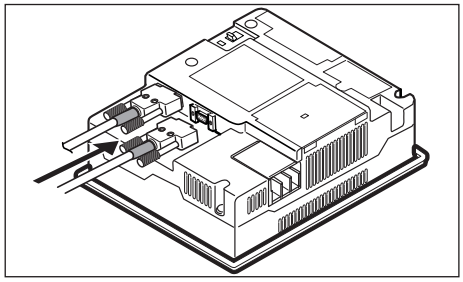
1 Connect the RS-422 cable to the RS-422/485 communication unit on the GOT.



(d) For GT11, GT105 □, GT104 □

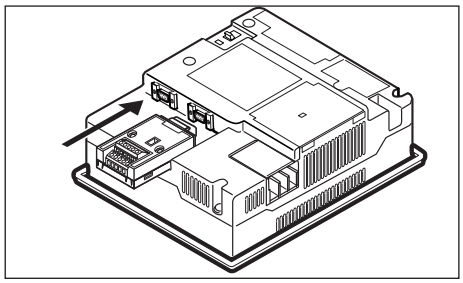
• Connection to the RS-422/485 interface

1 Connect the RS-422 connector conversion cable to the RS-422/485 interface on the GOT.

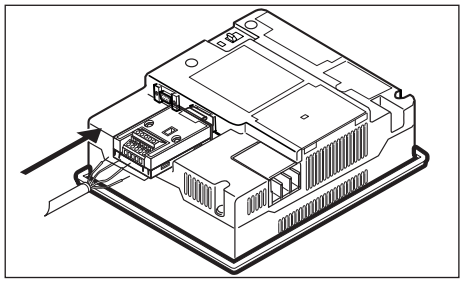


• Connection to the RS-422/485 interface with the connection conversion adapter.

1 Connect the connection conversion adapter to the RS-422/485 interface on the GOT.

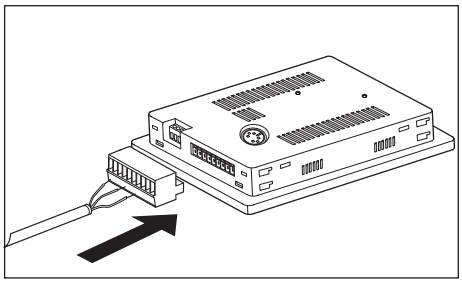


2 Connect the RS-485 cable to connection conversion adapter.

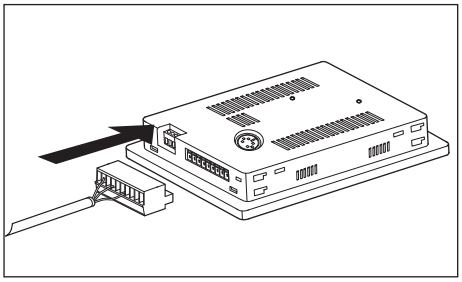


(e) For GT1030, GT1020 (built-in RS-422 interface)

1 Connect the RS-485 cable to the terminal 2 block packed together with the GOT.



2 Connect the terminal block to the GOT.



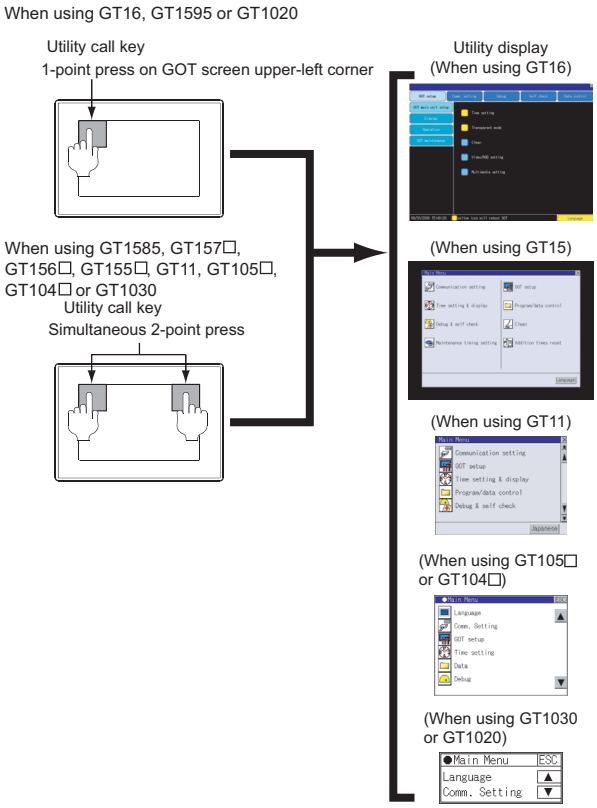
42.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status

Remark

How to display Utility(at default)

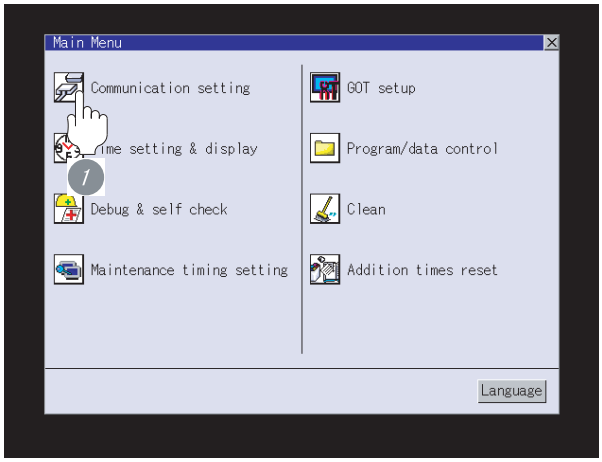


Point

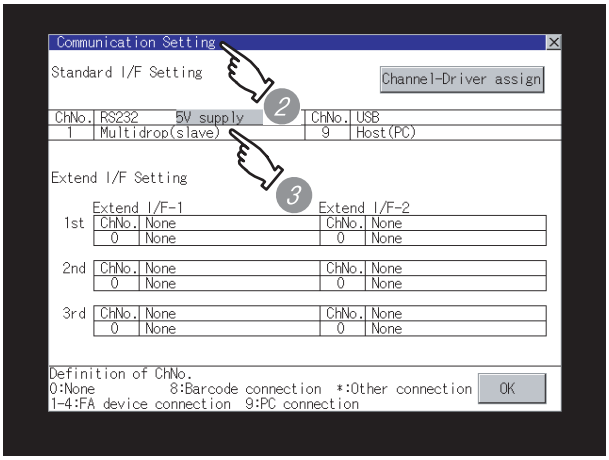
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Settings] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
- Communication driver : multidrop(Slave)

4 When the communication driver name is not displayed normally, carry out the following procedure again.
Section 42.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

(1) Communication interface setting by Utility
changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data. For details on the Utility, refer to the following manual.
GT ☐ User's Manual

(2) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

42.3.7 Checking for normal monitoring

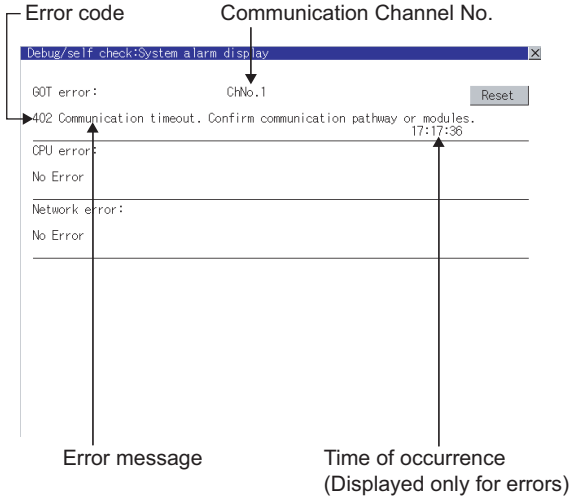
1 Check for errors occurring on the GOT(for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.
GT Designer2 Version ☐ Screen Design Manual

2 Perform an I/O check(for GT16, GT15, GT11)

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function.

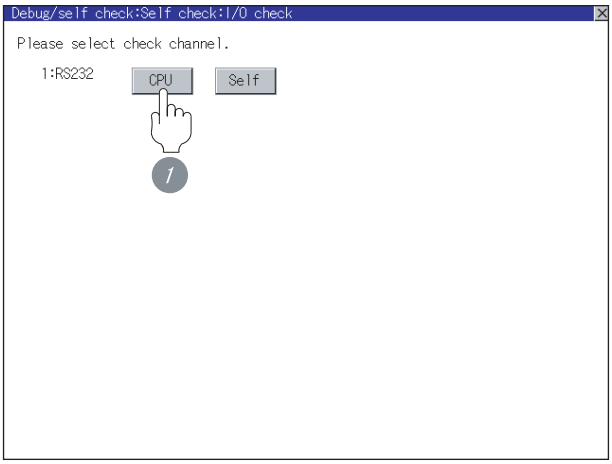
If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by Main Menu.

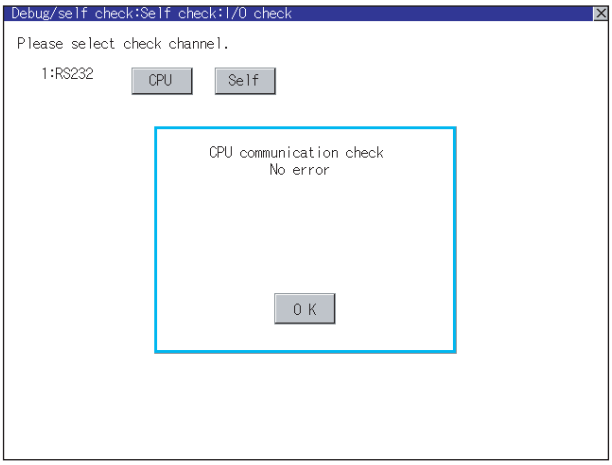
- For GT16
  Display the I/O check screen by [Main Menu] → [Self check] → [I/O check].
- For GT15, GT11
  Display the I/O check screen by [Main Menu] [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT □ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

4 Communication monitoring function(for GT10)

The communication monitoring is a function that checks whether the Serial Multi-Drop Connection Unit can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

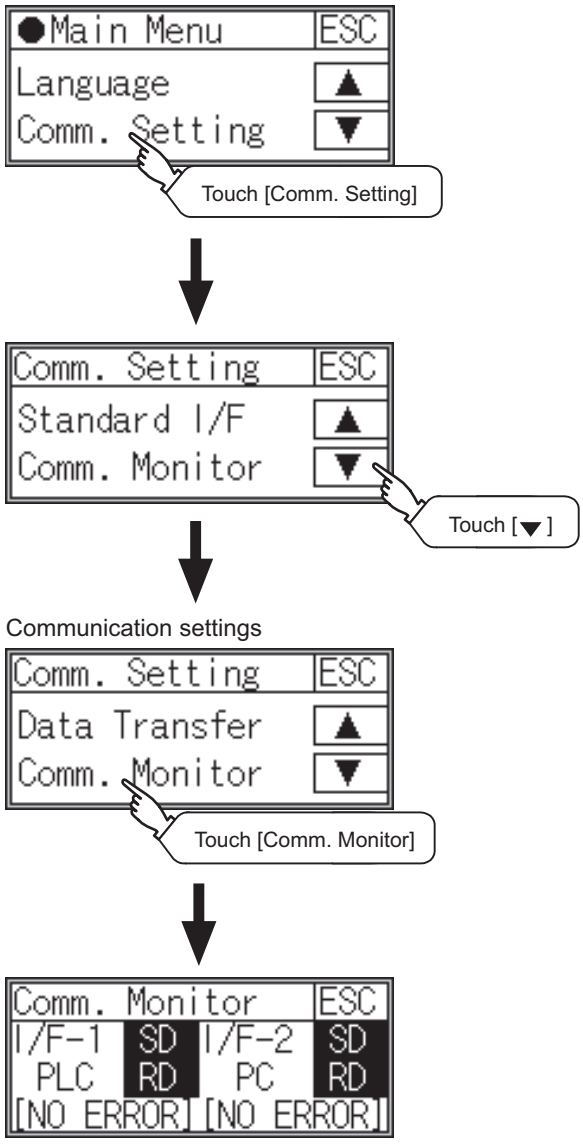
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

42.4 GOT Multi-Drop Connection Controller Setting

42.4.1 Setting of Serial Multi-Drop Connection Unit

Point

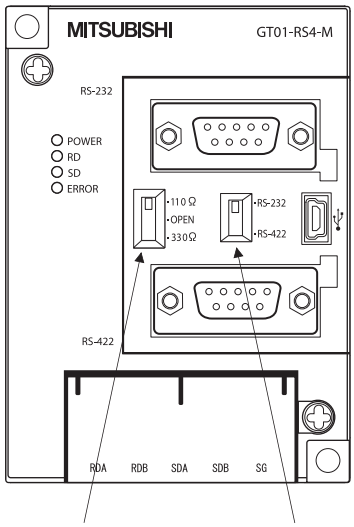
Serial Multi-Drop Connection Unit

For details on the Serial Multi-Drop Connection Unit, refer to the following mannual.

☞ Serial Maulti-Drop Connection Unit User's manual

1 Setting switches

Set the switches according to the connection type.



Terminating resistor selector switch

PLC communication selection switch

42.4.2 Setting of connection conversion adapter

Point

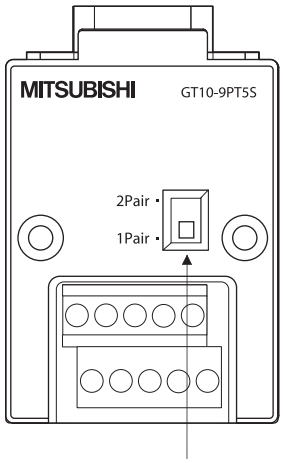
Connection Conversion Adapter

For details on the connection conversion adapter, refer to the following mannual.

☞ Connection Conversion Adapter User's manual

1 Setting switches

Set the switches according to the connection type.

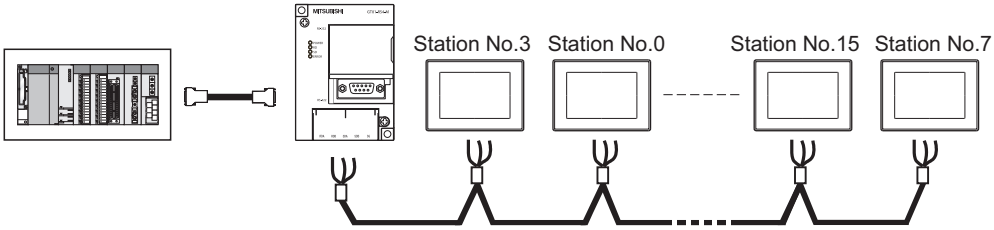


1pair / 2pair signal selection switch

42.5 Precautions

1 Station number setting on GOT

Set each station number so that no station number overlaps.
When the station No. is duplicated, the GOT whose station No. is duplicated cannot be monitored normally.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



The example of a Station No. setting

2 Debug

The debug of the GOT is not available for the GOT multi-drop connection.
For the debug of the GOT, refer to the followings.

☞ GOT Series Extended/Option Functions Manual
☞ GT16 User's Manual (Basic Utility)
☞ GT15 User's Manual

3 System alarm (GT16, GT15, GT11)

The alarms of the serial multi-drop connection unit are displayed on the system alarm. The alarms of the connected PLC are not displayed.

4 Activating the serial multidrop connection module

The master module detects a slave GOT, which is connected, at the startup. It may take time to detect again the slave station which is not detected at this point. Activate the master module in the condition that a communication can be made after the startup of the slave GOT.

5 Device update cycle

- When the number of connected slave GOTs and the total device points of each GOT increase, the device update cycle on the screen may get slower. In such a case, it is recommended to reduce the total device points of each GOT. (Please consider 500 points as a guide of the total points.) In addition, when a timeout error occurs, make the timeout time longer in the communication settings of the slave GOT.
- When the device number is set randomly, the device update cycle becomes slower compared to the case that the device number is set consecutively. Therefore, it is recommended to set the device number consecutively.
- Depending on the device points or combination, it may take time to switch the screen. At this time, the device update cycle of other slave station is also affected.

6 FA transparent function

FA transparent function is not available for the GOT multi-drop connection.

42.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT16 GT15	GOT Multi- Drop Connection	Supporting the GOT Multi-Drop Connection	This item is supported by GT Works3 Version1.14Q or later.	-
GT11 Serial			2.96A	Communication driver Multi-Drop (slave) [04.04.**]
GT105□ 4□ GT24V 10 20 30				Standard monitor OS [01.12.**] Communication driver Multi-Drop (slave) [01.07.**]

MEMO

43

CONNECTION TO SOUND OUTPUT UNIT



43.1 System Configuration . . . . . page 43-2

This section describes the equipment needed when connecting to the sound output function.
Select a system suitable for your application.

43.2 Preparatory Procedures for Monitoring . . . . . page 43-4

This section describes the procedures to be followed before monitoring in the sound output function.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

43.3 Precautions . . . . . page 43-9

This section describes the precautions on the sound output function.
Be sure to read this when outputting the sound.

43.4 List of Functions Added by Version Upgrade . . . . . page 43-10

This section describes the functions added by version upgrade of GT Designer2 or OS.

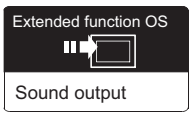
43.1 System Configuration

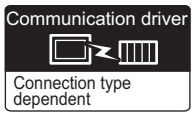
Select a system configuration suitable for your application.

Point

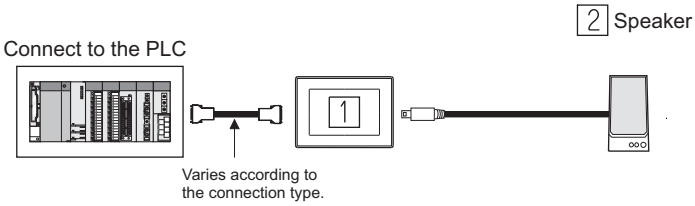
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.





1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs	Distance	
1	Varies according to the speaker's specifications.	

*1 For the PLC connection type and communication interface for the sound output function, refer to each chapter.

Remark

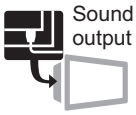
System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

- MITSUBISHI PLC CONNECTIONS(☞ Chapter 2 to Chapter 8)
- THIRD PARTY PLC CONNECTIONS(☞ Chapter 10 to Chapter 15)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Sound output unit	GT15-SOUT	GT16 GT15

(2) Speaker

Image	No.	Name	Model
	2	Speaker	For applicable speakers, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000series (GOT-A-0010)

Remark Technical News

Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANSweb) to refer to the Technical News.
http://wwwf2.mitsubishielectric.co.jp/english/index.html

43.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

☞ Refer to each chapter.

⇩

Install the OS onto the GOT.

☞ Section 43.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 43.2.2
Checking OS installation on GOT

⇩

Set the communication interface. (Communication settings)

☞ Section 43.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 43.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 43.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the controller.

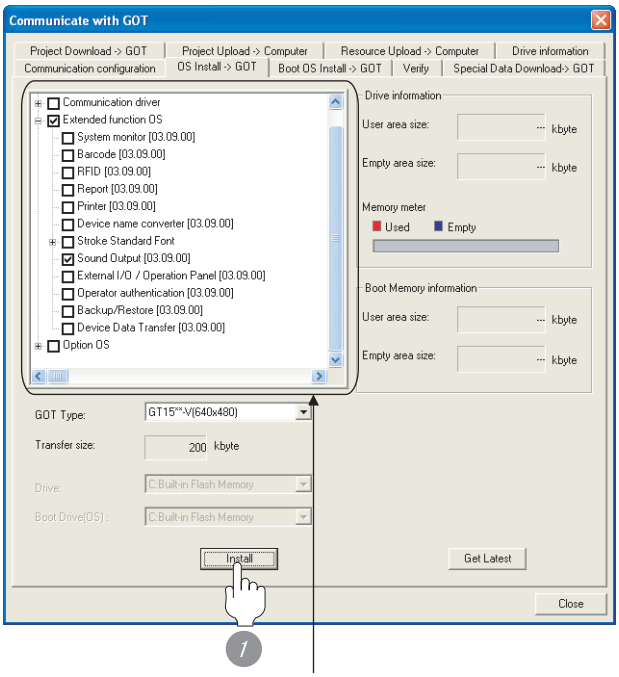
☞ Section 43.2.6
Verifying GOT recognizes controllers

43.2.1 Installing OS onto GOT

Install the extended function OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
・Depends on the connection type
・Sound output
Check the following on the extended function OS.

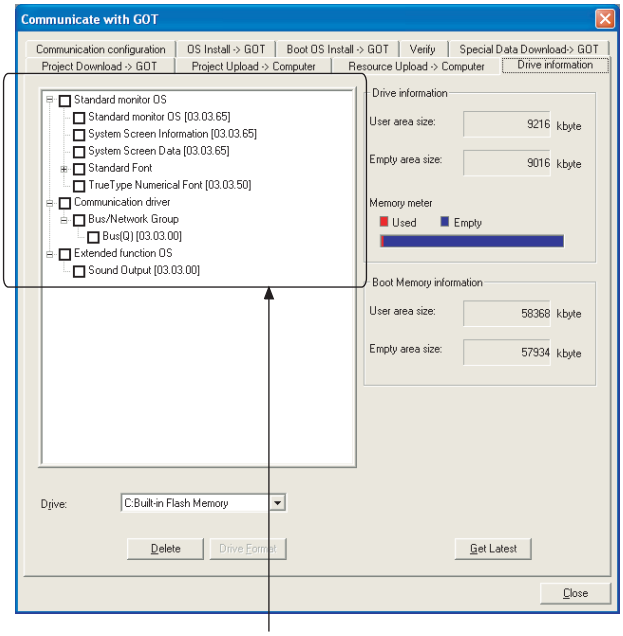
1 Check-mark an extended function OS (Sound output), and click the Install button.

43.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Depends on the connection type

3) Extended function OS: Sound output

43.2.3 Setting communication interface (Communication settings)

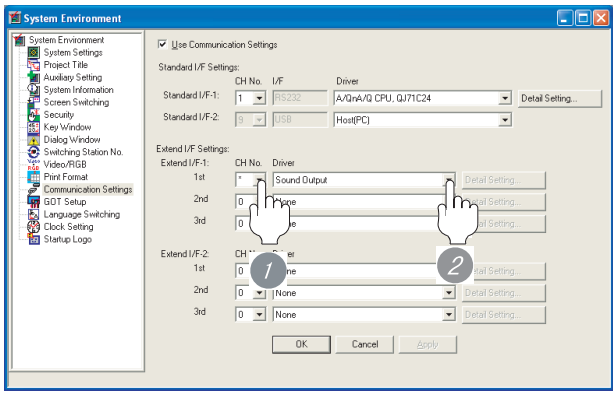
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set [*] to the channel No. used.

2 Set the driver to [Sound Output].

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

GT ☐ User's Manual

(2) Precedence in communication settings

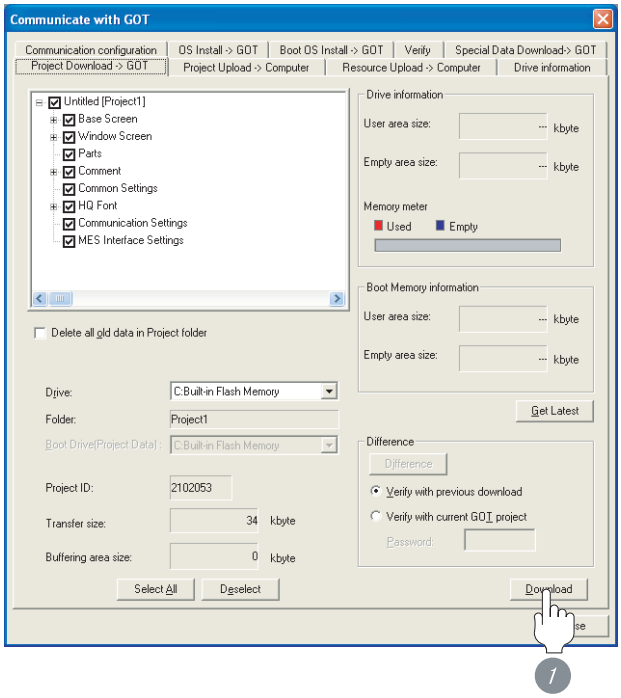
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

43.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

43.2.5 Attaching communication unit and connecting cable

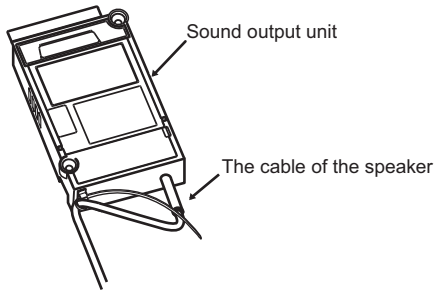
Point

Cautions when attaching the option unit and connecting the cable

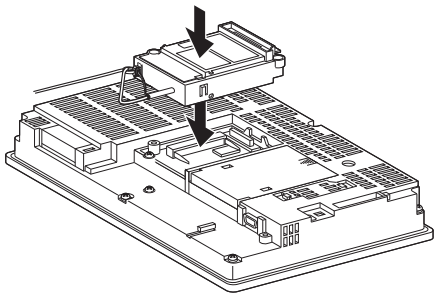
Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the option unit

1 Connect the cable of the speaker to the sound output unit.



2 Attach the sound output unit to the extension unit connector on the GOT.



Point

Sound output unit

For details on the sound output unit, refer to the following manual.

☞ GT15 Sound output unit User's Manual

43.2.6 Verifying GOT recognizes controllers

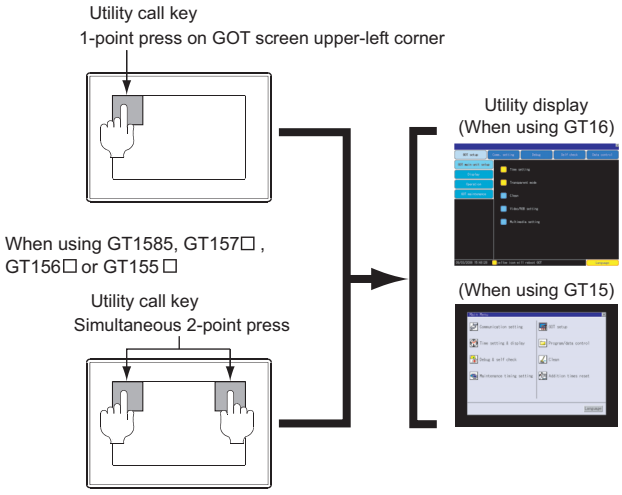
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

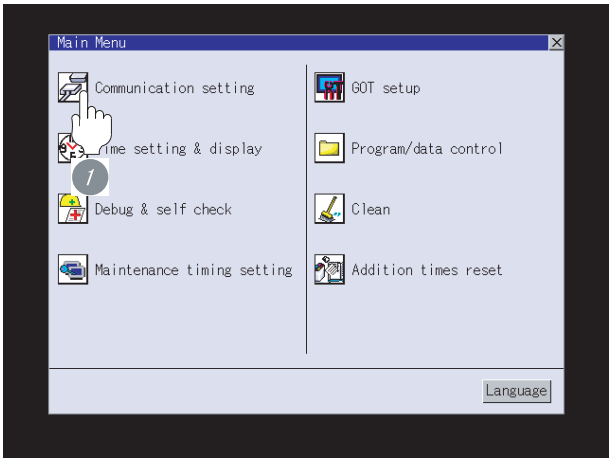


Point

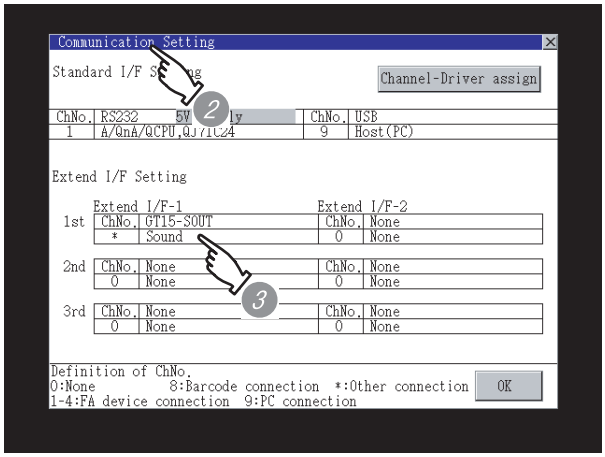
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication Setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: Sound output

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 43.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT☐User's Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

43.3 Precautions

1 Sound output function setting on GT Designer2

Before connecting the sound output unit, make the sound output file setting.
For details, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

43.4 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Sound output connection	Supporting the sound output function	2.58L	Extended function OS Sound output [03.03.**]
Sound output connection	Supporting the connections to GT16	2.90U	Extended function OS Sound output [04.02.**]

44

CONNECTION TO EXTERNAL I/O DEVICE



44.1 System Configuration . . . . . page 44-2

This section describes the equipment and cables needed when connecting to the external I/O function.
Select a system suitable for your application.

44.2 Connection Cable . . . . . page 44-5

This section describes the cable specifications when connecting to an external I/O function.
Confirm the connection cable specifications for your application.

44.3 Connection Diagram . . . . . page 44-13

This section describes the wiring diagram of the external I/O function.
Be sure to read this when connecting a user-created connection cable, etc.

44.4 Preparatory Procedures for Monitoring . . . . . page 44-20

This section describes the procedures to be followed before monitoring in the external I/O function.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

44.5 Precautions . . . . . page 44-25

This section describes the precautions on the external I/O function.
Be sure to read this when connecting the operation panel, etc.

44.6 List of Functions Added by Version Upgrade . . . . . page 44-26

This section describes the functions added by version upgrade of GT Designer2 or OS.

44.1 System Configuration

Select a system configuration suitable for your application.

Point

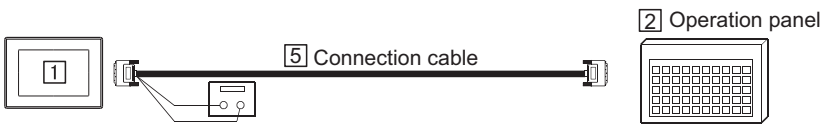
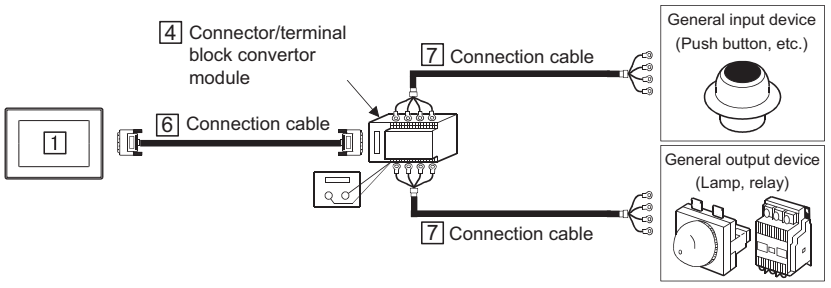
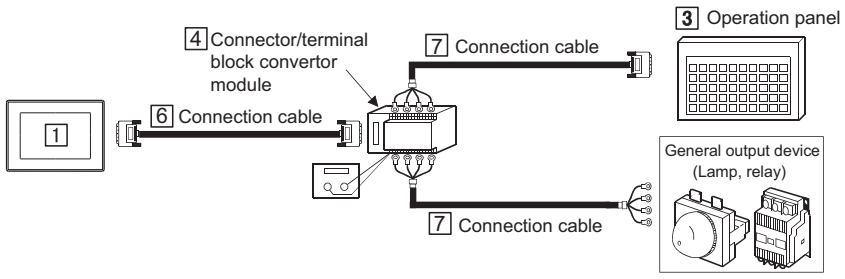
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

Extended function OS

External I/O /Operation panel

1 System configuration and connection conditions

Connection conditions	System configuration
When only inputting	
When inputting and outputting	
	

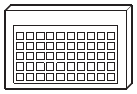
2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	External I/O unit*1	GT15-DIO, GT15-DIOR	GT16 GT15

*1 When starting, turn on the external power supply to the external I/O unit, and then turn on the GOT.
When turning off the external power supply, a system alarm occurs.
When a system alarm is occurs, the input/output cannot be performed.
In this case, turn on the main power of the GOT, or reset the GOT.
(When bus connection is used, the reset switch on the GOT does not function.)

(2) Operation panel

Image	No.	Name	Model name
	2	Operation panel	(To be prepared by the user referring to Section 44.3.1.)
	3		(To be prepared by the user referring to Section 44.3.2.)

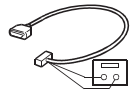
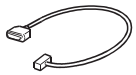
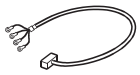
(3) Connector/terminal block convertor module

Image	No.	Name	Model name
	4	Connector/terminal block convertor module *1*2	A6TBY36-E, A6TBY54-E

*1 The power supply of 24VDC must be applied for the external I/O unit.
When the power supply of the external I/O unit is stopped in the operation, the operation panel becomes nonfunctional.
For using the operation panel again, reset the GOT after supplying the power to the external I/O unit.

*2 When the connector/terminal block convertor module is used, the maximum input points are 64 points.

(4) Cable

Image	No.	Name	Model
	5	Connection cable between the GOT and the operation panel*1	(To be prepared by the user referring to Section 44.2.1.)
	6	Connection cable between the GOT and the connector/ terminal block convertor module*1	(To be prepared by the user referring to Section 44.2.2.)
	7	Connection cable between the connector/terminal block convertor module and the general I/O device	(To be prepared by the user referring to Section 44.3.1.)
	8	Connection cable between the connector/terminal block convertor module and the operation panel	(To be prepared by the user referring to Section 44.3.2.)

*1 The power supply of 24VDC must be applied for the external I/O unit.
When the power supply of the external I/O unit is stopped in the operation, the operation panel becomes nonfunctional.
For using the operation panel again, reset the GOT after supplying the power to the external I/O unit.

44.2 Connection Cable

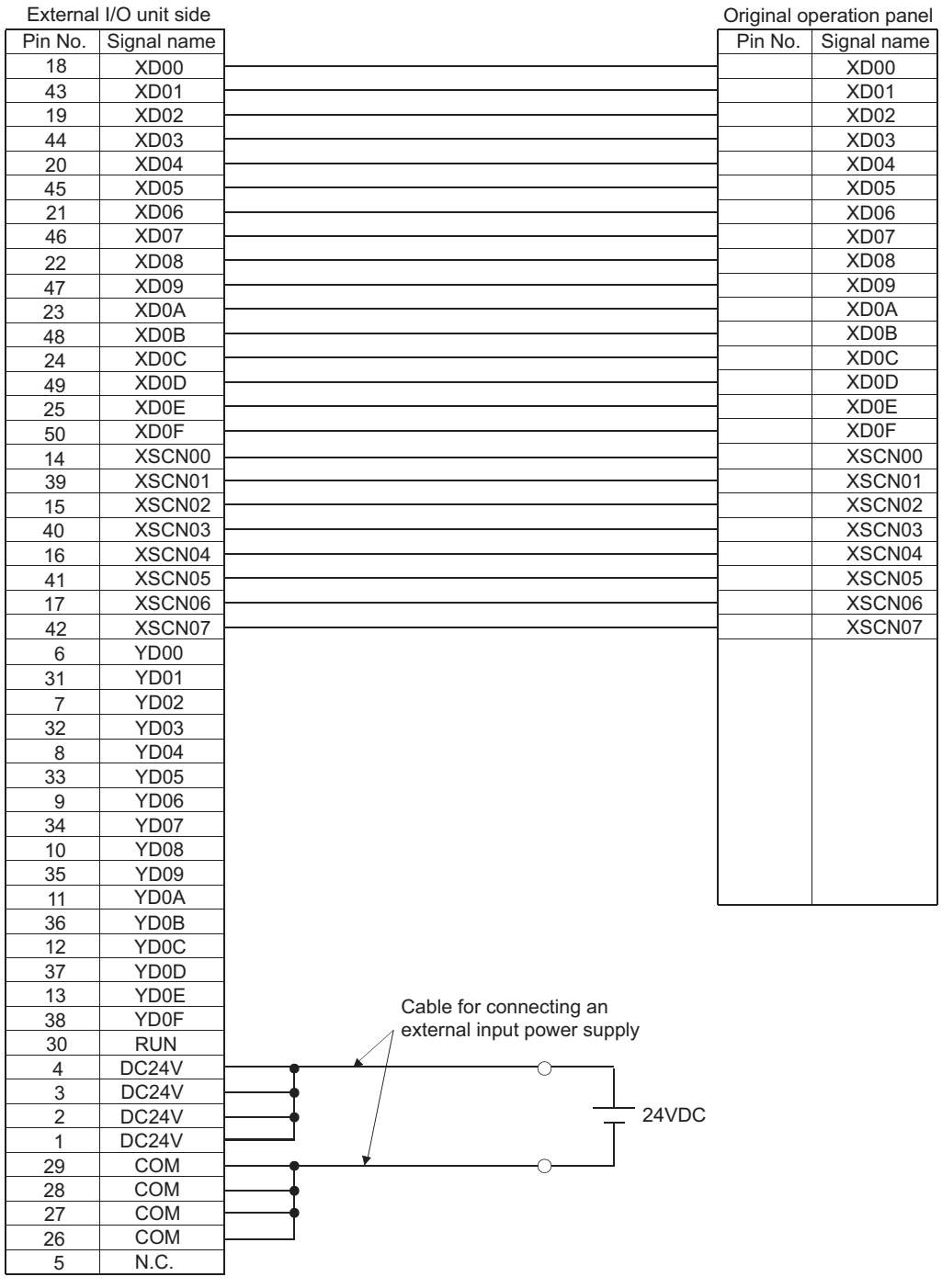
The cable for connecting between the external I/O unit and the operation panel or connector/terminal block convertor module or between the connector/terminal block convertor module and the general I/O device can be prepared by the user.

44.2.1 Connection cable between external I/O unit and operation panel

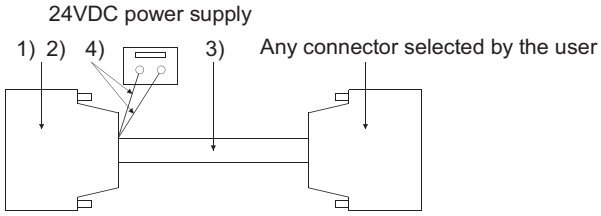
The connection cable between the external I/O unit and the operation panel must be prepared by the user referring to the followings.

1 For GT15-DIO

(1) Connection diagram



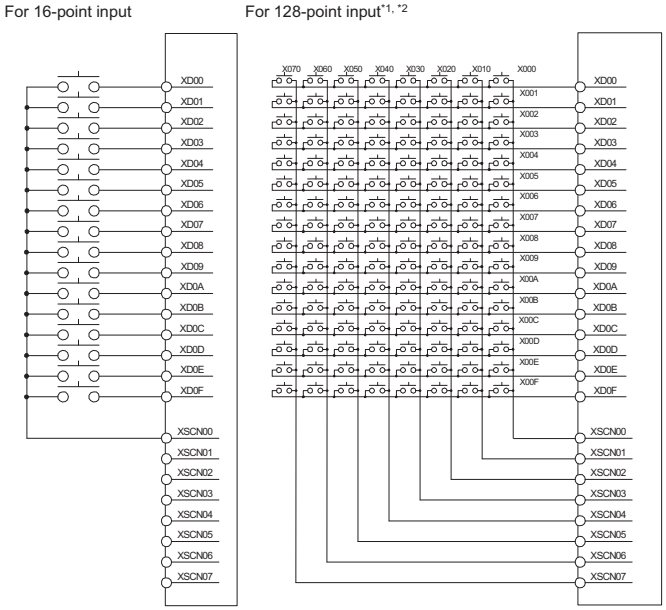
(2) Connector specifications



No.	Name	Model	Manufacturer
1)	Connector	PCR-E50FS+	Honda Tsushin Kogyo Co., Ltd.
2)	Connector cover	PCS-E50LA	
3)	Cable	UL 2464 AWG28 or equivalent	—
4)	Cable for connecting an external input power supply	UL 1007 AWG24 or equivalent	—

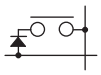
(3) Precautions when preparing the cable
Maximum cable length differs depending on the cable used.Make the cable length within the range that can satisfy the I/O specifications of the external I/O unit.

(4) User-created wiring diagram for the operation panel



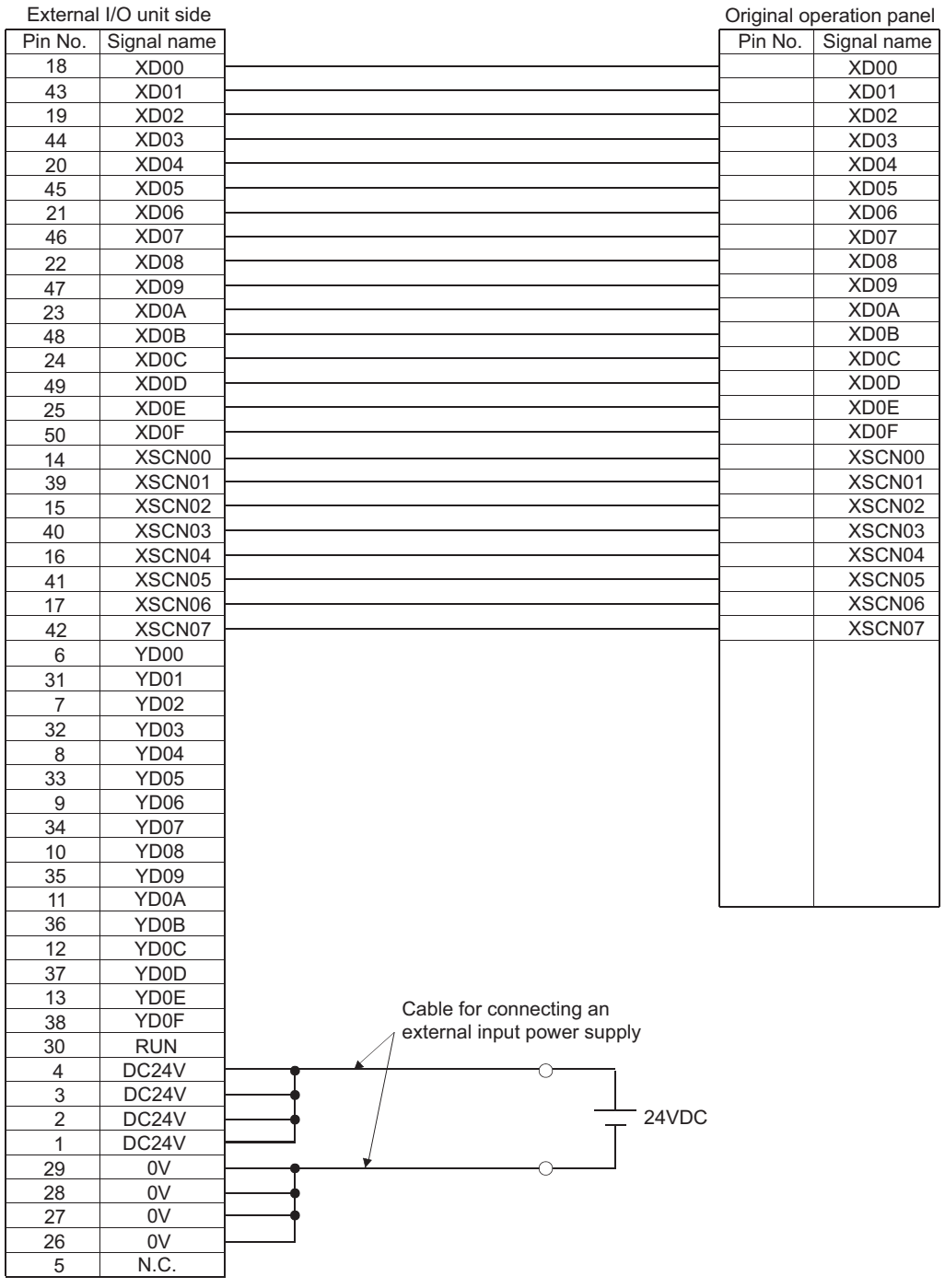
*1 The 128-point input can be executed with using a 16-point input signal (XD00 to XD0F) with an 8-point scan signal (XSCN00 to XSCN07).

*2 When two or more switches are pressed simultaneously, be sure to put the diode to each switch. (Only for 128-point input)



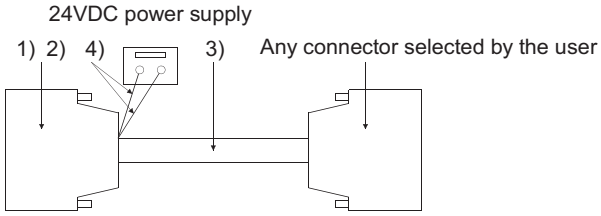
2 For GT15-DIOR

(1) Connection diagram



External I/O unit side		Original operation panel	
Pin No.	Signal name	Pin No.	Signal name
18	XD00		XD00
43	XD01		XD01
19	XD02		XD02
44	XD03		XD03
20	XD04		XD04
45	XD05		XD05
21	XD06		XD06
46	XD07		XD07
22	XD08		XD08
47	XD09		XD09
23	XD0A		XD0A
48	XD0B		XD0B
24	XD0C		XD0C
49	XD0D		XD0D
25	XD0E		XD0E
50	XD0F		XD0F
14	XSCN00		XSCN00
39	XSCN01		XSCN01
15	XSCN02		XSCN02
40	XSCN03		XSCN03
16	XSCN04		XSCN04
41	XSCN05		XSCN05
17	XSCN06		XSCN06
42	XSCN07		XSCN07
6	YD00		
31	YD01		
7	YD02		
32	YD03		
8	YD04		
33	YD05		
9	YD06		
34	YD07		
10	YD08		
35	YD09		
11	YD0A		
36	YD0B		
12	YD0C		
37	YD0D		
13	YD0E		
38	YD0F		
30	RUN		
4	DC24V		
3	DC24V		
2	DC24V		
1	DC24V		
29	0V		
28	0V		
27	0V		
26	0V		
5	N.C.		

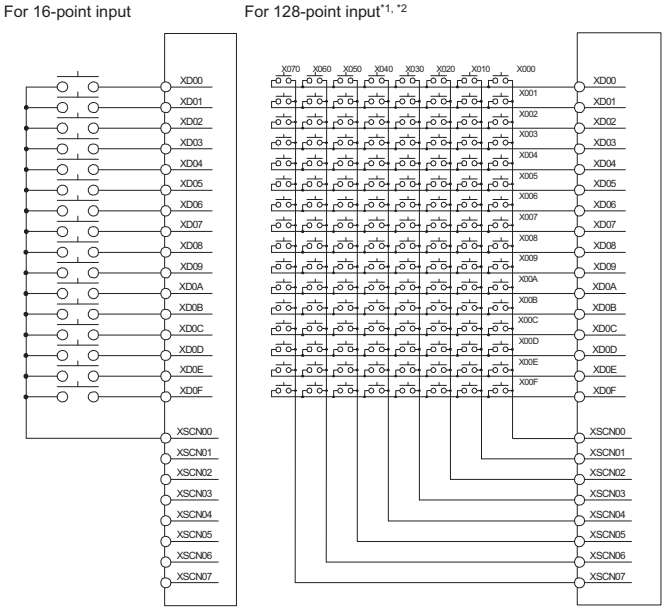
(2) Connector specifications



No.	Name	Model	Manufacturer
1)	Connector	PCR-E50FS+	Honda Tsushin Kogyo Co., Ltd.
2)	Connector cover	PCS-E50LA	
3)	Cable	UL 2464 AWG28 or equivalent	—
4)	Cable for connecting an external input power supply	UL 1007 AWG24 or equivalent	—

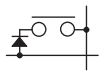
(3) Precautions when preparing the cable
Maximum cable length differs depending on the cable used.Make the cable length within the range that can satisfy the I/O specifications of the external I/O unit.

(4) User-created wiring diagram for the operation panel



*1 The 128-point input can be executed with using a 16-point input signal (XD00 to XD0F) with an 8-point scan signal (XSCN00 to XSCN07).

*2 When two or more switches are pressed simultaneously, be sure to put the diode to each switch. (Only for 128-point input)

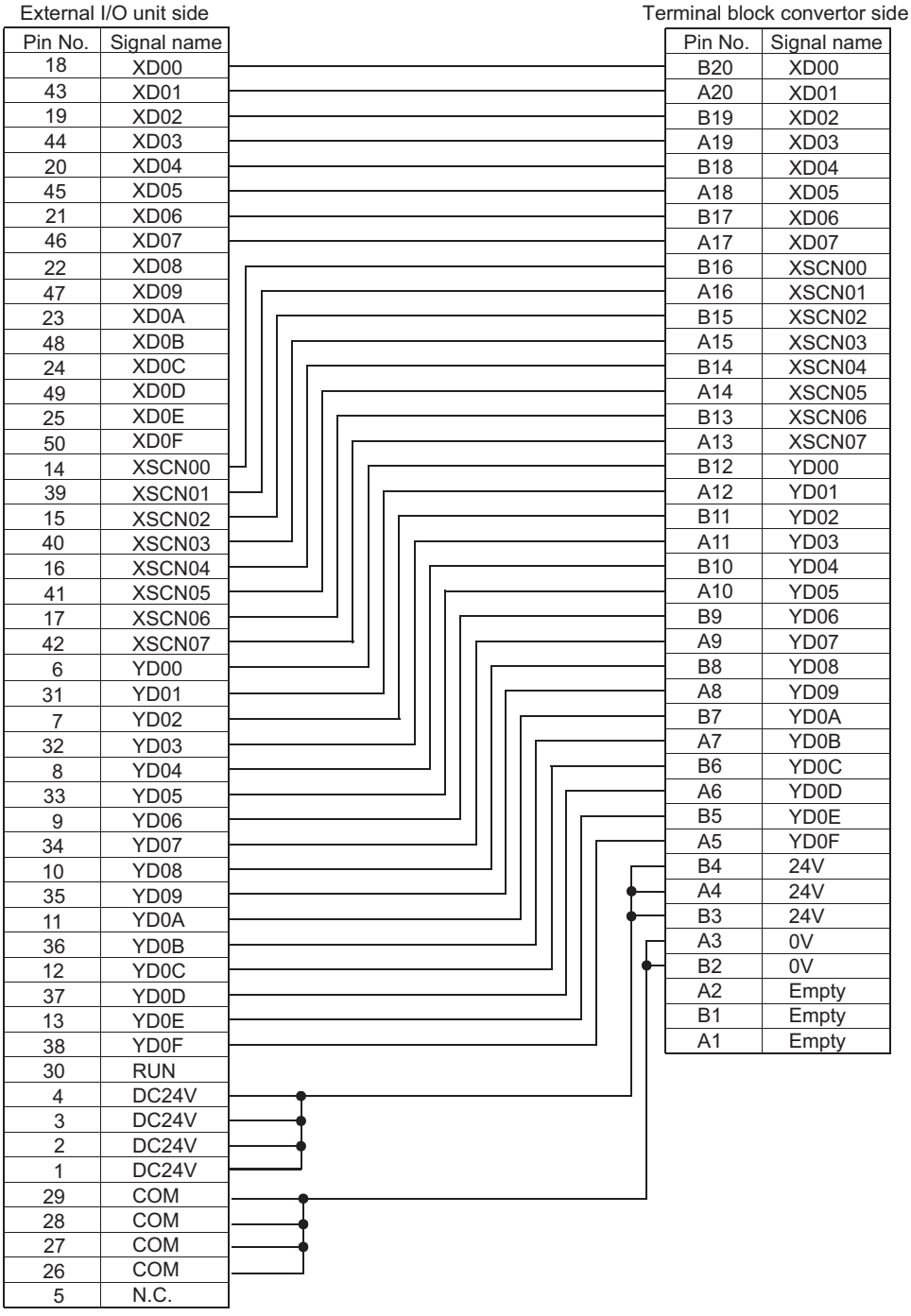


44.2.2 Connection cable between external I/O unit and connector/terminal block converter module

The connection cable between the external I/O unit and the connector/terminal block converter module must be prepared by the user referring to the followings.

1 For GT15-DIO

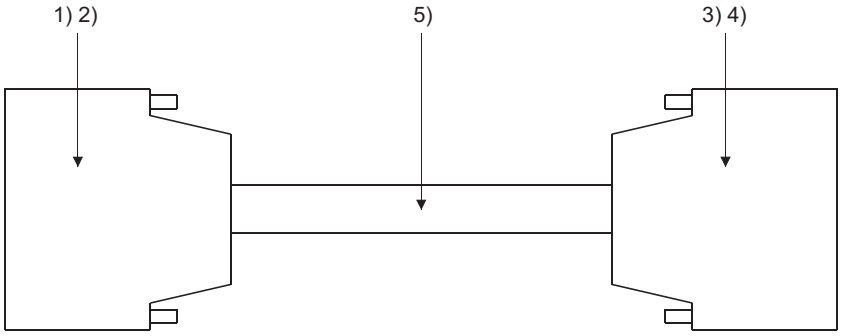
(1) Connection diagram



Pin No.	Signal name
18	XD00
43	XD01
19	XD02
44	XD03
20	XD04
45	XD05
21	XD06
46	XD07
22	XD08
47	XD09
23	XD0A
48	XD0B
24	XD0C
49	XD0D
25	XD0E
50	XD0F
14	XSCN00
39	XSCN01
15	XSCN02
40	XSCN03
16	XSCN04
41	XSCN05
17	XSCN06
42	XSCN07
6	YD00
31	YD01
7	YD02
32	YD03
8	YD04
33	YD05
9	YD06
34	YD07
10	YD08
35	YD09
11	YD0A
36	YD0B
12	YD0C
37	YD0D
13	YD0E
38	YD0F
30	RUN
4	DC24V
3	DC24V
2	DC24V
1	DC24V
29	COM
28	COM
27	COM
26	COM
5	N.C.

Pin No.	Signal name
B20	XD00
A20	XD01
B19	XD02
A19	XD03
B18	XD04
A18	XD05
B17	XD06
A17	XD07
B16	XSCN00
A16	XSCN01
B15	XSCN02
A15	XSCN03
B14	XSCN04
A14	XSCN05
B13	XSCN06
A13	XSCN07
B12	YD00
A12	YD01
B11	YD02
A11	YD03
B10	YD04
A10	YD05
B9	YD06
A9	YD07
B8	YD08
A8	YD09
B7	YD0A
A7	YD0B
B6	YD0C
A6	YD0D
B5	YD0E
A5	YD0F
B4	24V
A4	24V
B3	24V
A3	0V
B2	0V
A2	Empty
B1	Empty
A1	Empty

(2) Connector specifications



No.	Name	Model	Manufacturer
1)	Connector	PCR-E50FS+	Honda Tsushin Kogyo Co., Ltd.
2)	Connector cover	PCS-E50LA	
3), 4)	Connector (with a cover)	A6CON1	Mitsubishi Electric Corporation
3)	Connector	FCN-361J040-AU	FUJITSU COMPONENT LIMITED
4)	Connector cover	FCN-360C040-B	
5)	Cable	UL 2464 AWG28 or equivalent	—

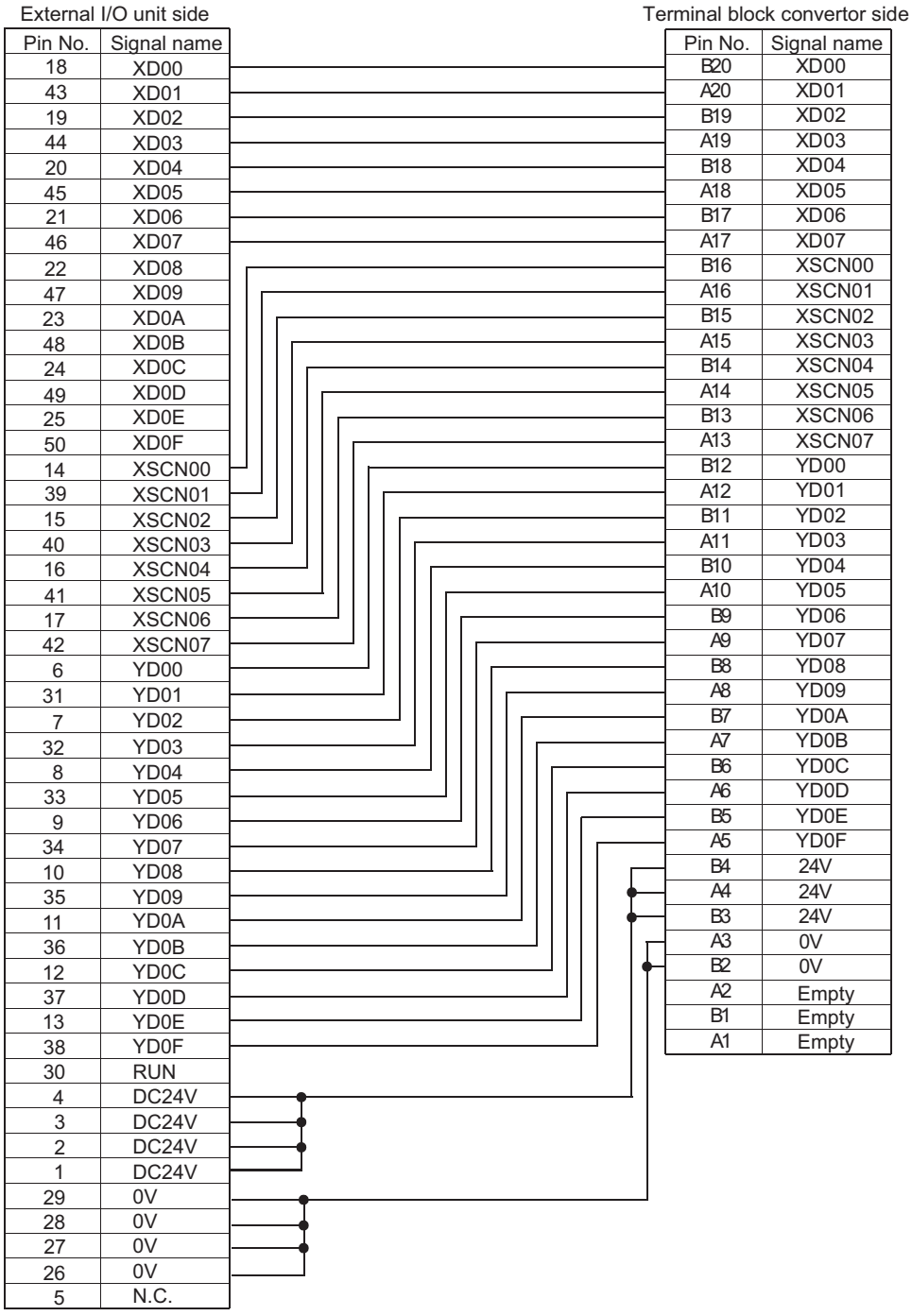
(3) Precautions when preparing the cable

Maximum cable length differs depending on the cable used.

Make the cable length within the range that can satisfy the I/O specifications of the external I/O unit.

2 For GT15-DIOR

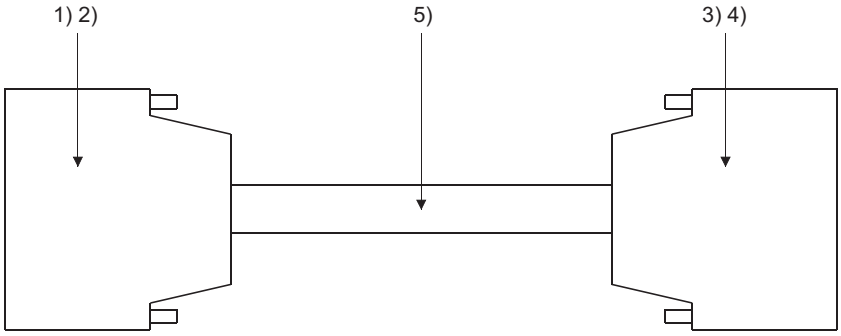
(1) Connection diagram



Pin No.	Signal name
18	XD00
43	XD01
19	XD02
44	XD03
20	XD04
45	XD05
21	XD06
46	XD07
22	XD08
47	XD09
23	XD0A
48	XD0B
24	XD0C
49	XD0D
25	XD0E
50	XD0F
14	XSCN00
39	XSCN01
15	XSCN02
40	XSCN03
16	XSCN04
41	XSCN05
17	XSCN06
42	XSCN07
6	YD00
31	YD01
7	YD02
32	YD03
8	YD04
33	YD05
9	YD06
34	YD07
10	YD08
35	YD09
11	YD0A
36	YD0B
12	YD0C
37	YD0D
13	YD0E
38	YD0F
30	RUN
4	DC24V
3	DC24V
2	DC24V
1	DC24V
29	0V
28	0V
27	0V
26	0V
5	N.C.

Pin No.	Signal name
B20	XD00
A20	XD01
B19	XD02
A19	XD03
B18	XD04
A18	XD05
B17	XD06
A17	XD07
B16	XSCN00
A16	XSCN01
B15	XSCN02
A15	XSCN03
B14	XSCN04
A14	XSCN05
B13	XSCN06
A13	XSCN07
B12	YD00
A12	YD01
B11	YD02
A11	YD03
B10	YD04
A10	YD05
B9	YD06
A9	YD07
B8	YD08
A8	YD09
B7	YD0A
A7	YD0B
B6	YD0C
A6	YD0D
B5	YD0E
A5	YD0F
B4	24V
A4	24V
B3	24V
A3	0V
B2	0V
A2	Empty
B1	Empty
A1	Empty

(2) Connector specifications



No.	Name	Model	Manufacturer
1)	Connector	PCR-E50FS+	Honda Tsushin Kogyo Co., Ltd.
2)	Connector cover	PCS-E50LA	
3), 4)	Connector (with a cover)	A6CON1	Mitsubishi Electric Corporation
3)	Connector	FCN-361J040-AU	FUJITSU COMPONENT LIMITED
4)	Connector cover	FCN-360C040-B	
5)	Cable	UL 2464 AWG28 or equivalent	—

(3) Precautions when preparing the cable

Maximum cable length differs depending on the cable used.

Make the cable length within the range that can satisfy the I/O specifications of the external I/O unit.

44.3 Connection Diagram

The cable for connecting between the external I/O unit and the user-created original operation panel or connector/terminal block converter module or between the connector/terminal block converter module and the general I/O device can be prepared by the user.

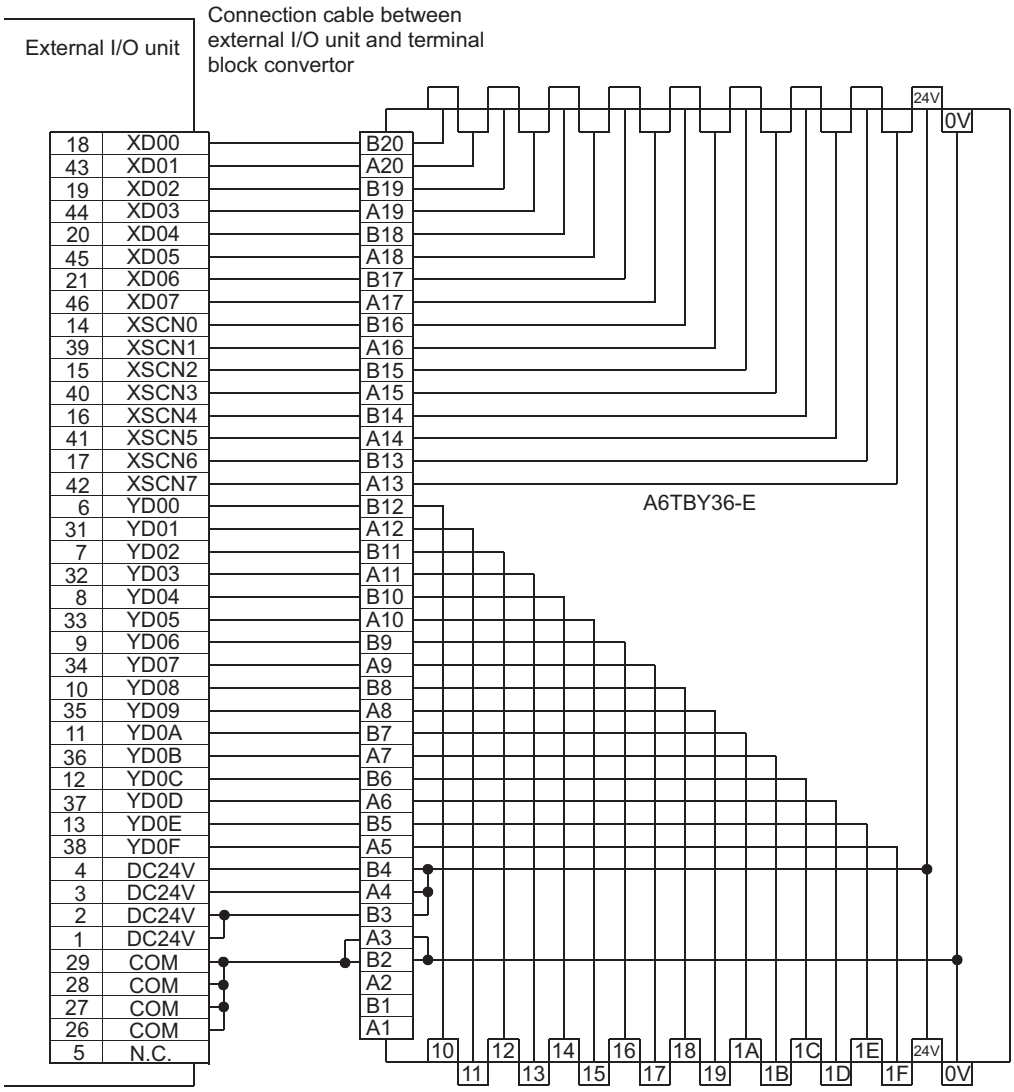
44.3.1 Connection diagram between external I/O unit and connector/terminal block converter module

The connection cable between the connector/terminal block converter module and the general I/O device depends on the general I/O device used by the user.
The cable must be prepared by the user referring the followings.

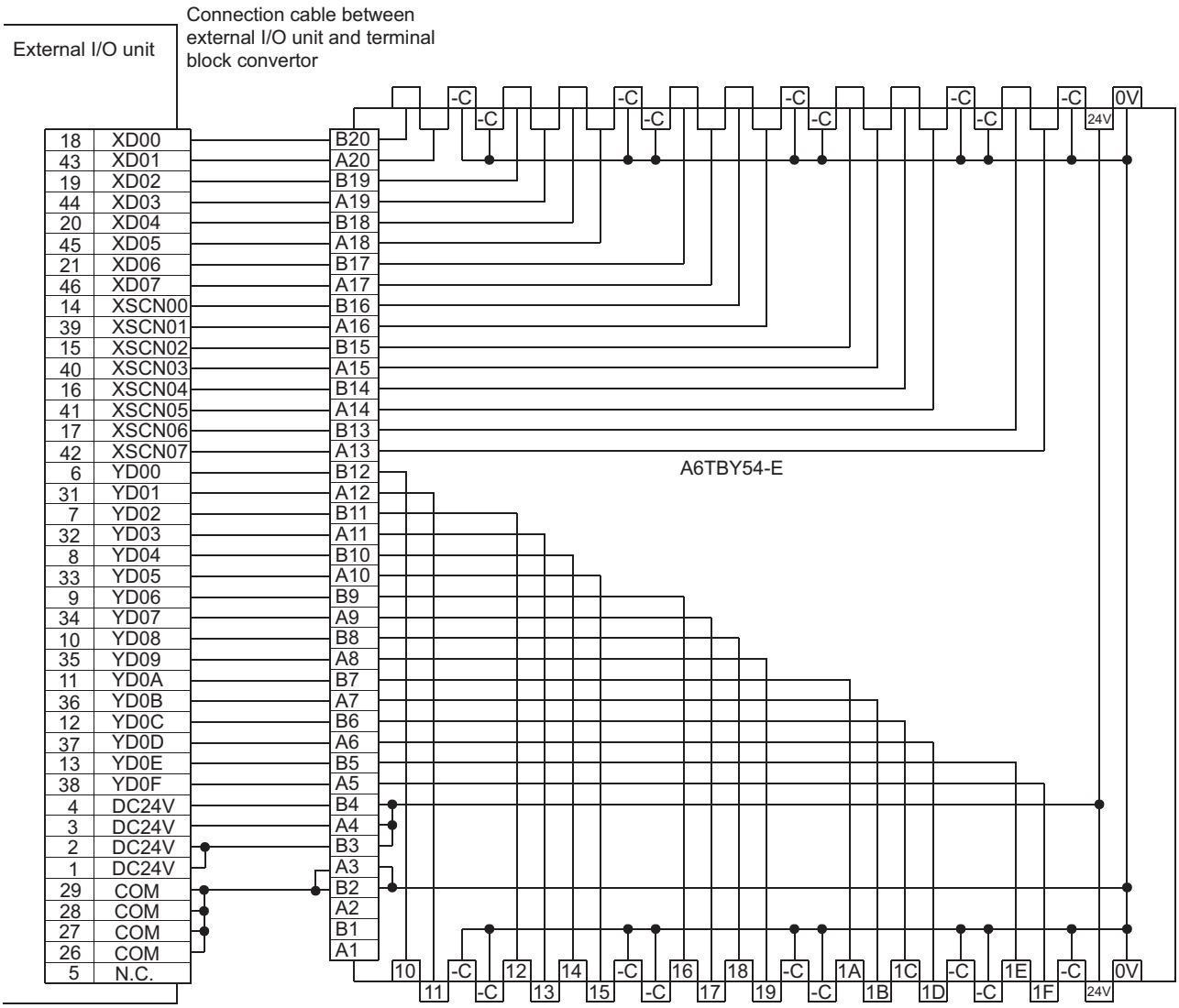
1 For GT15-DIO

(1) Connection diagram

(a) When using A6TBY36-E connector/terminal block module



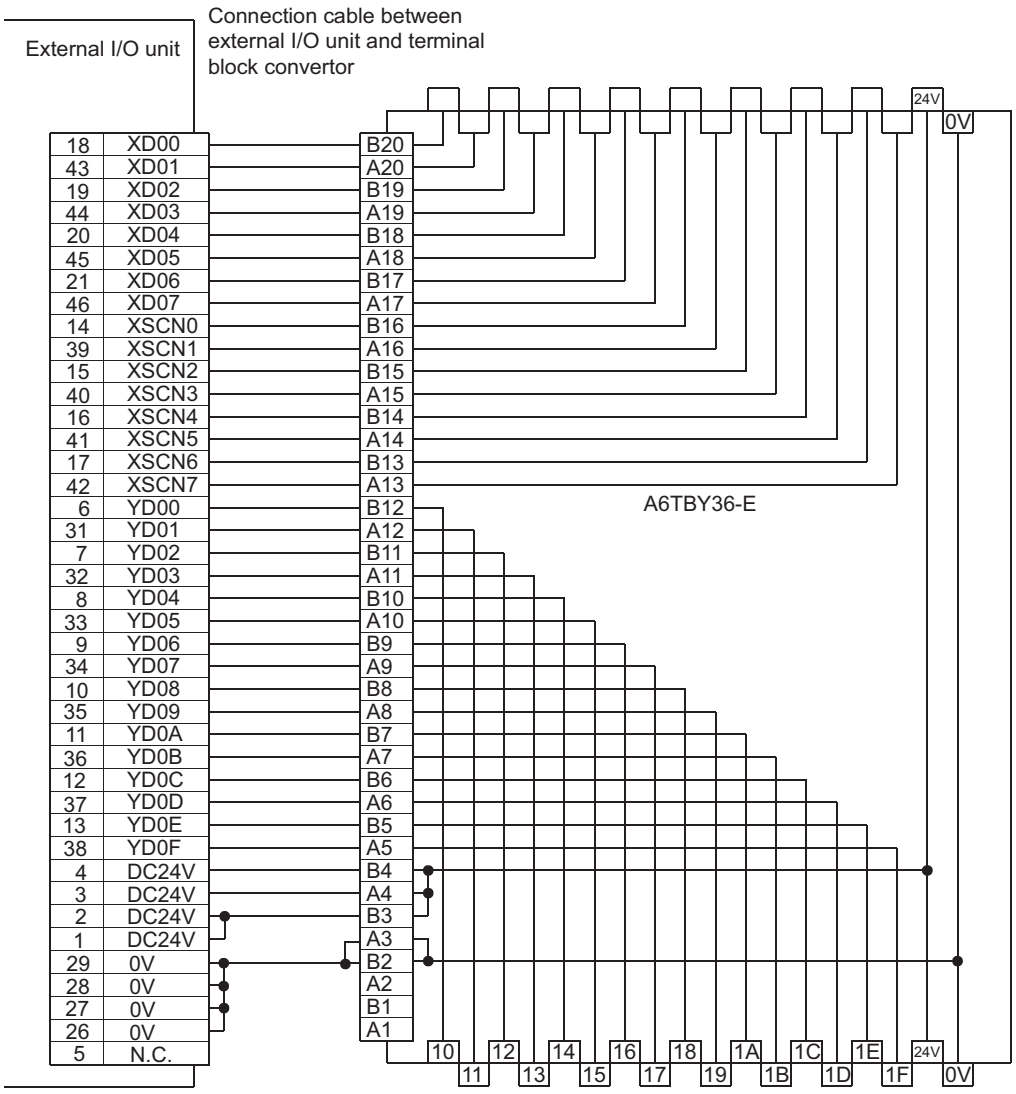
(b) When using A6TBY54-E connector/terminal block module



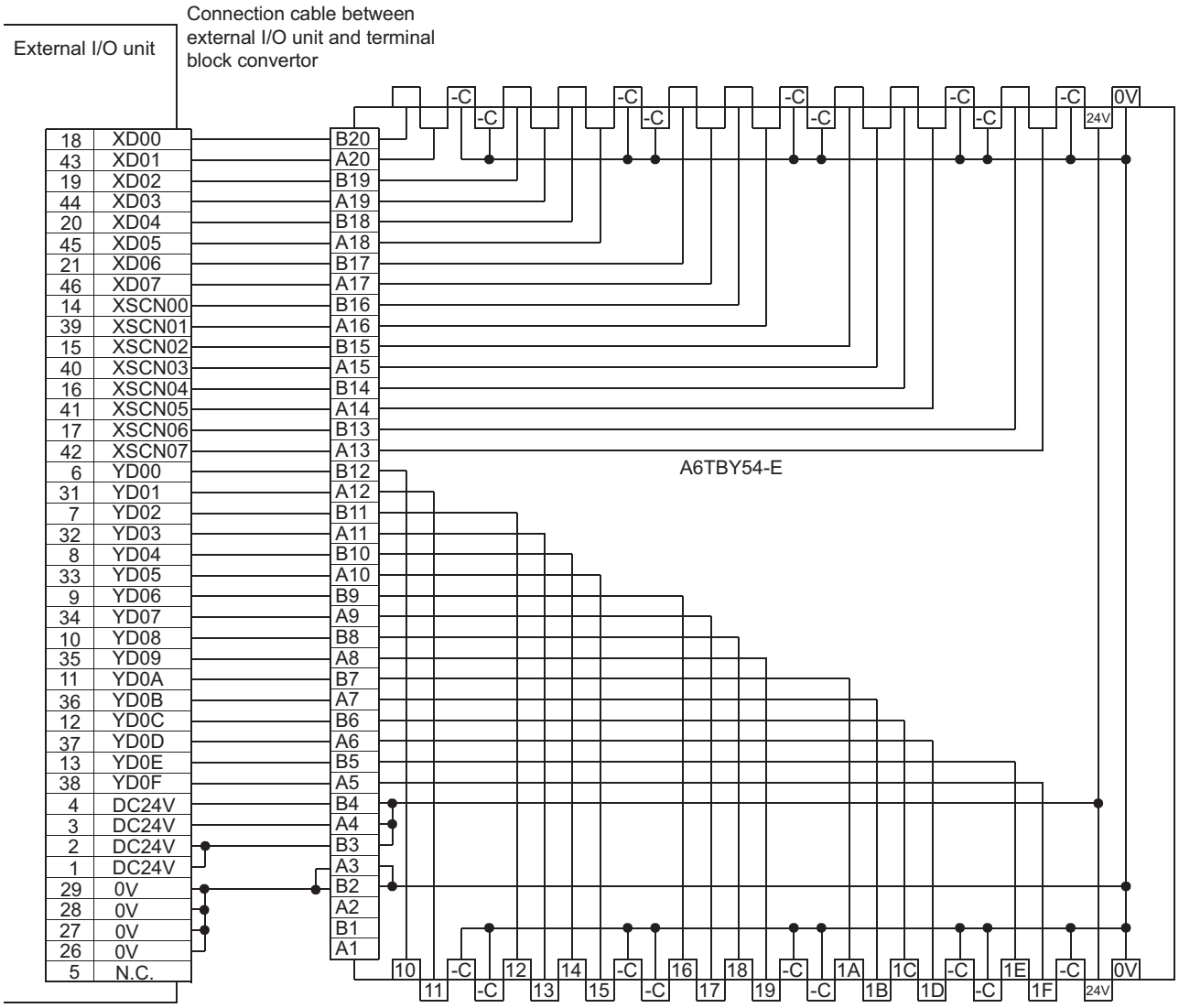
2 For GT15-DIOR

(1) Connection diagram

(a) When using A6TBY36-E connector/terminal block module



(b) When using A6TBY54-E connector/terminal block module



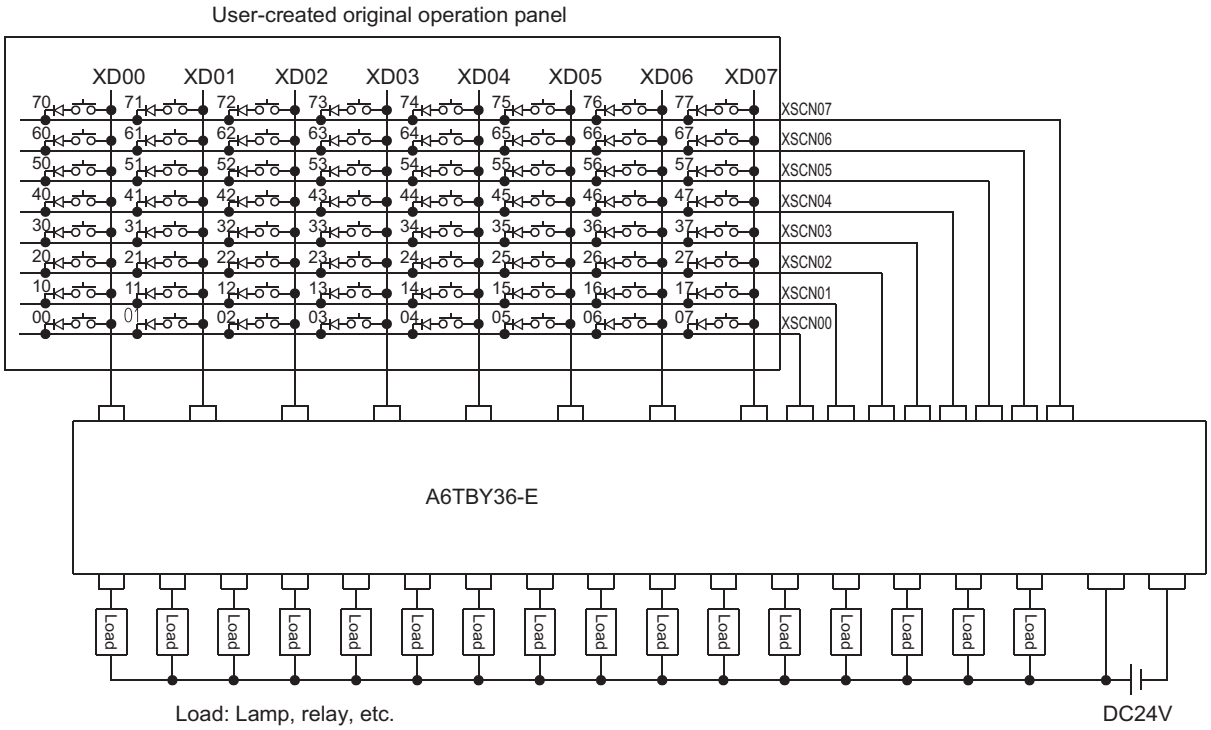
44.3.2 Connection cable between connector/terminal block converter module and user-created original operation panel

The connection cable between the connector convertor module and the user-created original operation panel must be prepared by the user referring to the followings.

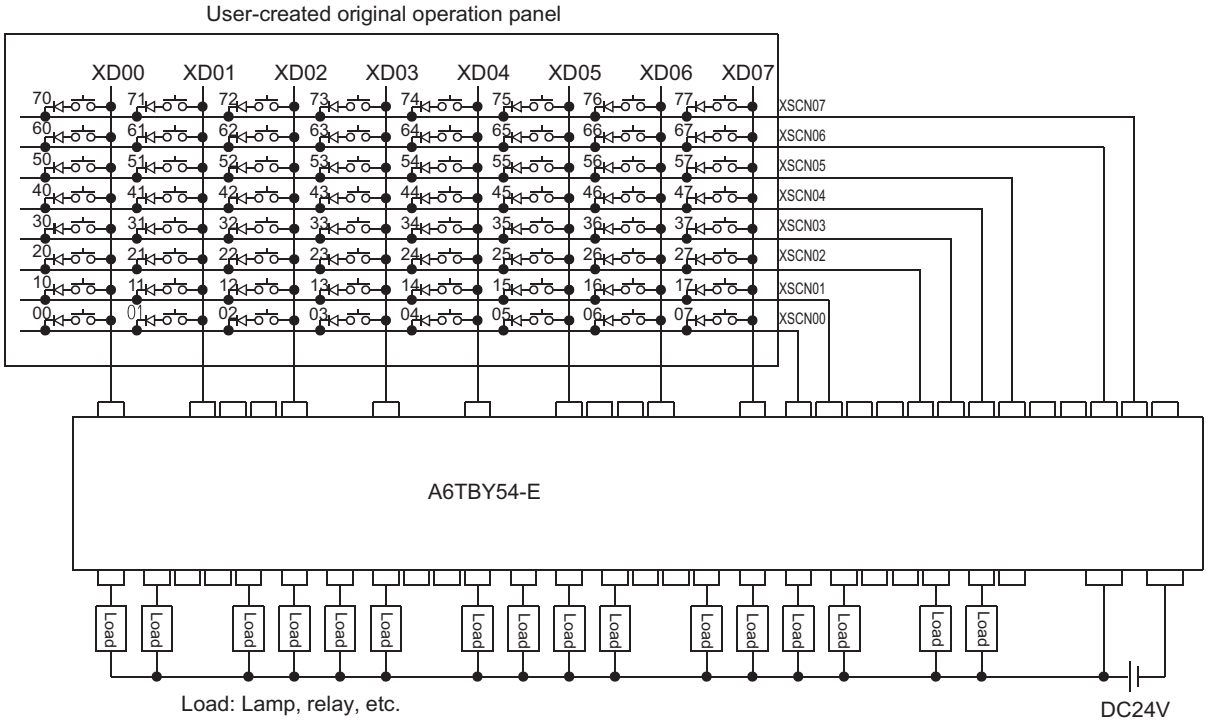
1 For GT15-DIO

(1) Connection diagram

(a) When using A6TBY36-E connector/terminal block module



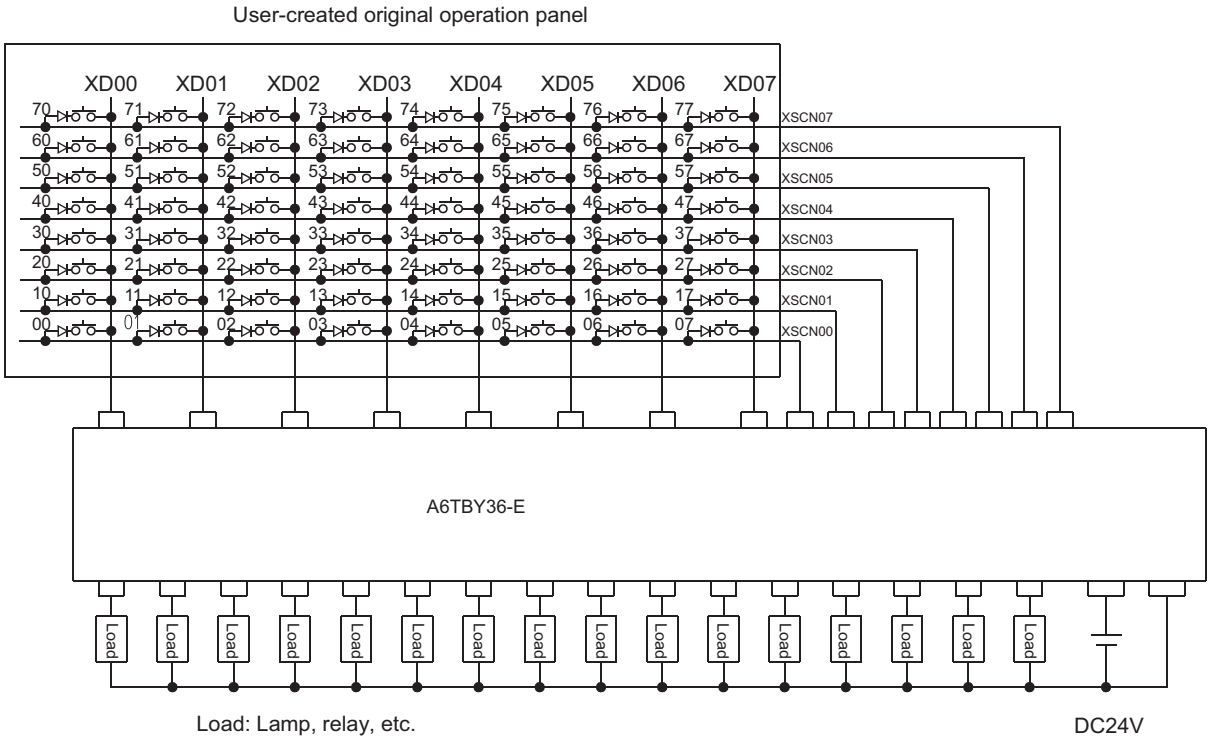
(b) When using A6TBY54-E connector/terminal block module



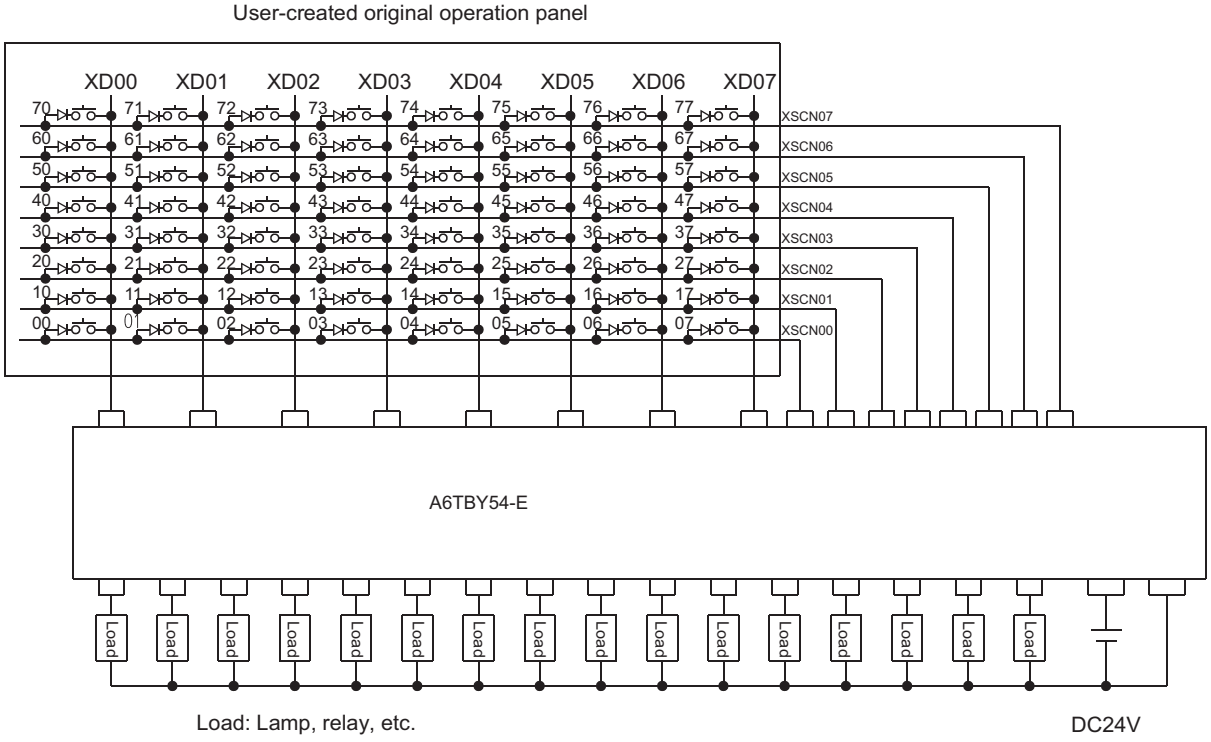
2 For GT15-DIOR

(1) Connection diagram

(a) When using A6TBY36-E connector/terminal block module



(b) When using A6TBY54-E connector/terminal block module



44.4 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 44.4.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 44.4.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 44.4.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 44.4.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 44.4.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the controller.

☞ Section 44.4.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

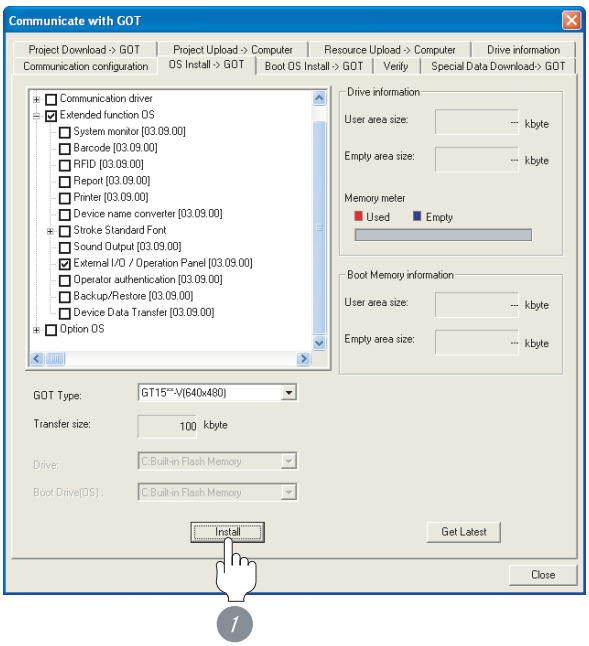
☞ Section 44.4.7
Checking for normal monitoring

44.4.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



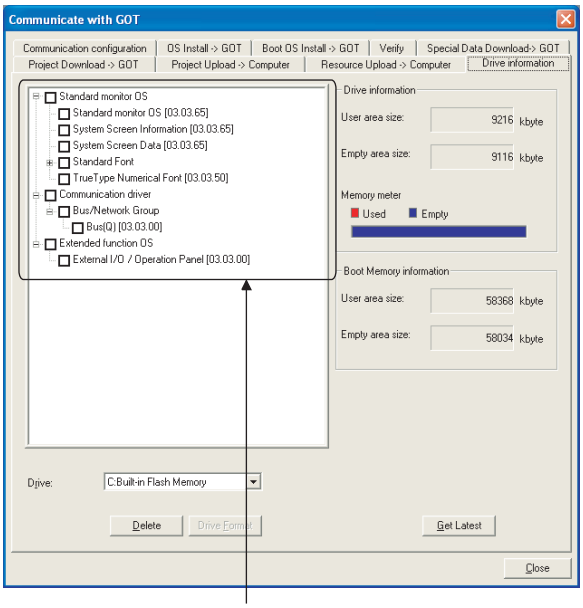
1 Check-mark an extended function OS (External I/O / Operation panel), and click the Install button.

44.4.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: Depends on the connection type
3) Extended function OS: External I/O / Operation Panel

44.4.3 Setting communication interface (Communication settings)

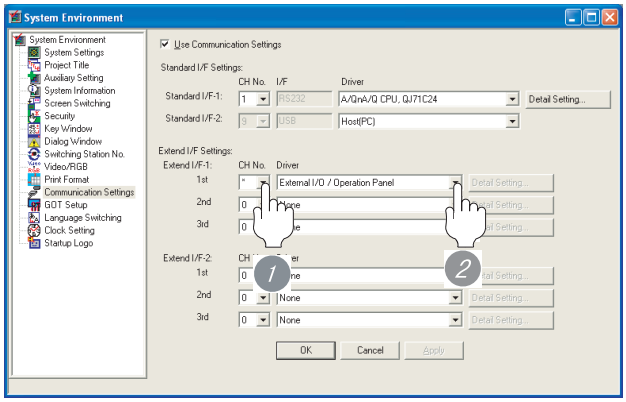
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



1 Set [*] to the channel No. used.

2 Set the driver to [External I/O / Operation Panel].

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

(2) Precedence in communication settings

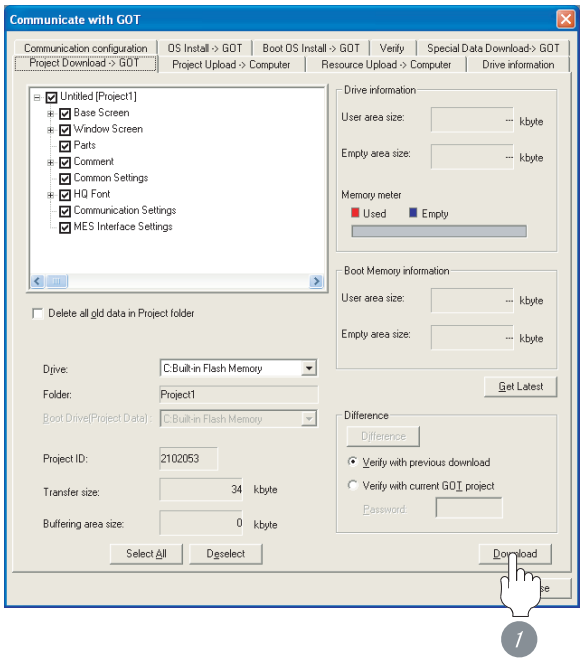
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

44.4.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

44.4.5 Attaching communication unit and connecting cable

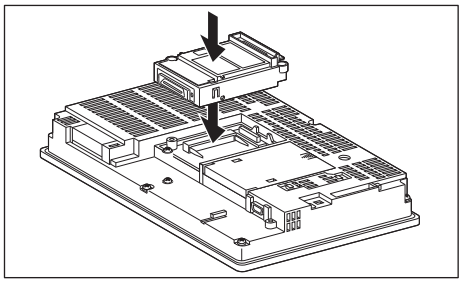
Point

Cautions when attaching the option unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the option unit and connecting the cable.

1 Attaching the option unit

1 Attach the external I/O unit to the extension unit connector on the GOT.



Point

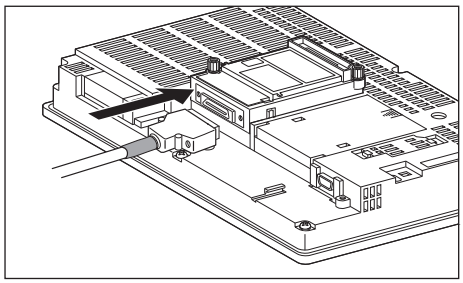
External I/O unit

For details on the external I/O unit, refer to the following manual.

☞ GT15 External I/O unit User's Manual

2 How to connect the cable

1 Connect the cable to the external I/O unit.



44.4.6 Verifying GOT recognizes controllers

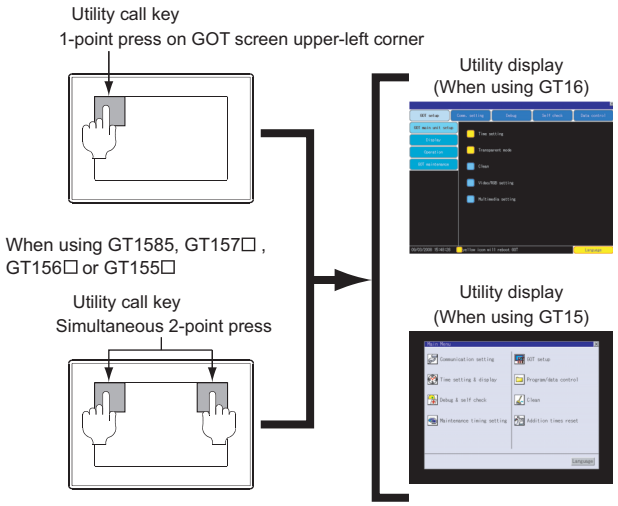
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

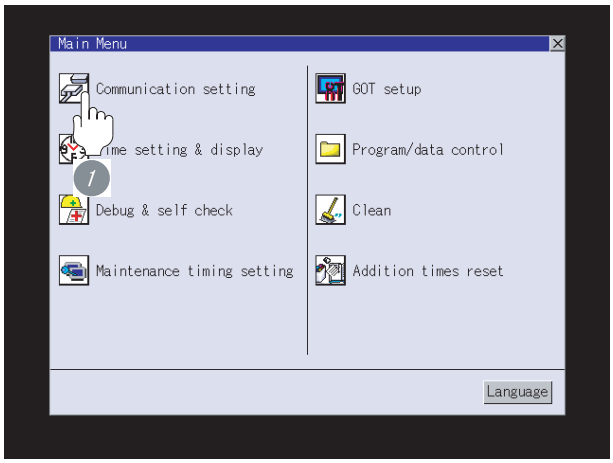


Point

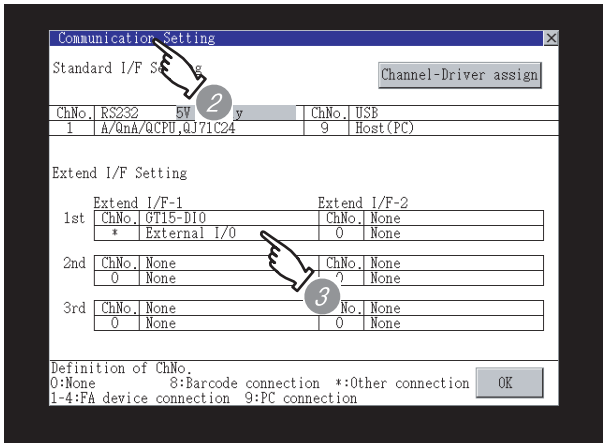
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication Setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver
  : External I/O / Operation Panel

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 44.4 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

44.4.7 Checking for normal monitoring

1 Check for the I/O status

Pressing the numeric keypad or the button of the operation panel allows you to confirm that the input data is written to the GOT.

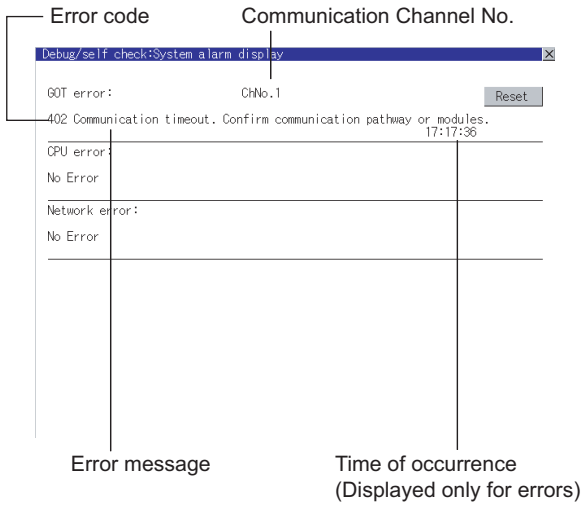
☞ Section 44.1 System Configuration

2 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT and communications.

For details on the system alarm, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

44.5 Precautions

1 External I/O function setting on GT Designer2

Before using the operation panel, make the operation panel setting.
For details, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

44.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
External I/O function	Supporting the external I/O device	2.58L	Communication driver External I/O/Operation panel [03.03.**]
External I/O function	Supporting the connections to GT16	2.90U	Communication driver External I/O/Operation panel [04.02.**]
	Supporting the connection to GT15-DIOR		

45

FINGERPRINT AUTHENTICATION DEVICE CONNECTION



45.1 System Configuration . . . . . page 45-2

This section describes the equipment and cables required needed when connecting to the Fingerprint authentication device.
Select a system suitable for your application.

45.2 Preparatory Procedures for Monitoring . . . . . page 45-3

This section describes the procedures to be followed before monitoring in the fingerprint authentication device connection.
The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

45.3 Precautions . . . . . page 45-7

This section describes the precautions on the fingerprint authentication device connection.
Be sure to read this when establishing a fingerprint authentication device connection.

45.4 List of Functions Added by Version Upgrade . . . . . page 45-8

This section describes the functions added by version upgrade of GT Designer2 or OS.

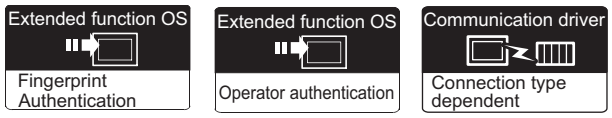
45.1 System Configuration

Select a system configuration suitable for your application.

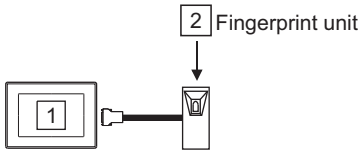
Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.



1 System configuration and connection conditions

Connection conditions		System Configuration
Number of GOTs	Distance	
1	Varies according to the fingerprint unit's specifications.	

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15

(2) Fingerprint authentication device

Image	No.	Name	Model name
	2	Fingerprint unit	GT15-80FPA

45.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

Refer to each chapter.

Installing OS onto GOT

Section 45.2.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 45.2.2
Checking OS installation on GOT.

Set the communication interface. (Communication settings)

Section 45.2.3
Setting communication interface (Communication settings)

Download the project data.

Section 45.2.4
Downloading project data

Attach the communication unit and connect the cable.

Section 45.2.5
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

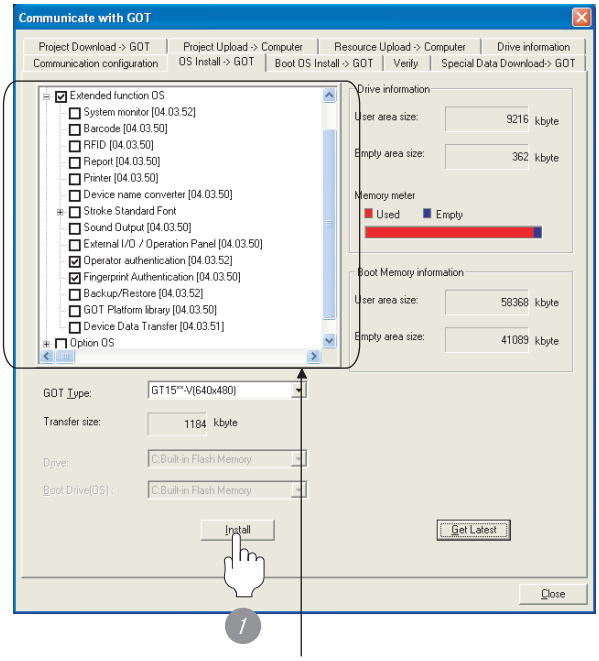
Section 45.2.6
Verifying GOT recognizes controllers

45.2.1 Installing OS onto GOT

Install the extended function OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

· Depends on the connection type

Place a check mark in the box of the following items in the extended function OS.

· Operator authentication

· Fingerprint Authentication

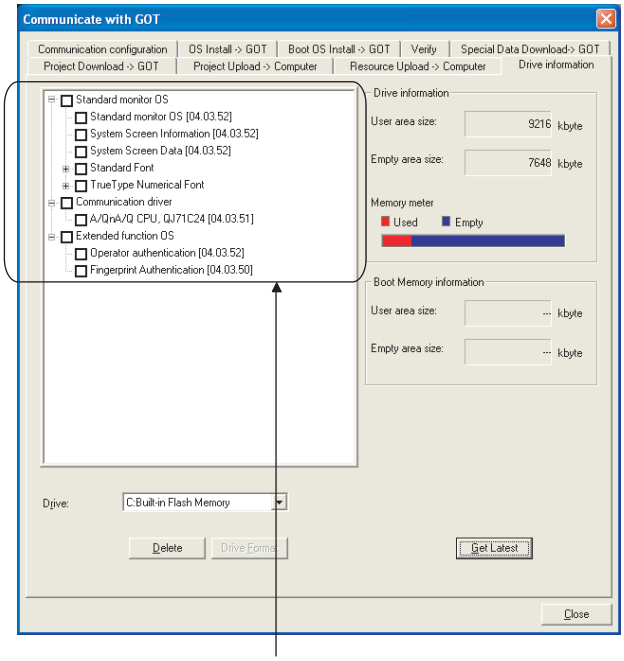
1 Check-mark an extended function OS (Operator authentication, Fingerprint Authentication), and click the Install button.

45.2.2 Checking OS installation on GOT.

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver: Depends on the connection type
3) Extended function OS: Operator authentication, Fingerprint Authentication

45.2.3 Setting communication interface (Communication settings)

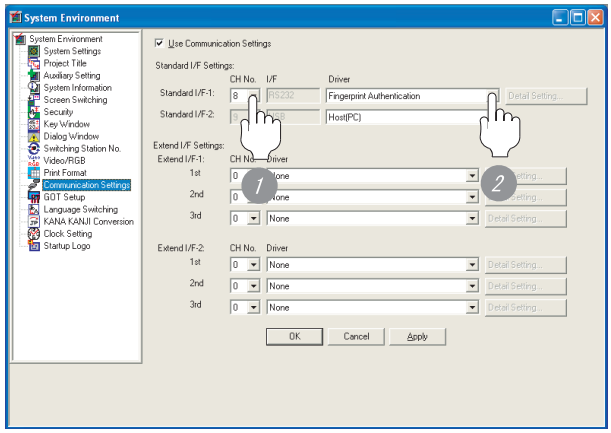
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set "8" to the channel No. used.

2 Set the driver to "Fingerprint Authentication".

Point

(1) For communication interface setting

For the fingerprint authentication device connection, use the channel No.8 of standard interface.

The following external devices, which use Channel No.8, cannot be connected at the same time.

- RFID controller that uses the external authentication
- Barcode reader and RFID controller that require the power supply

(2) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's [Communication setting] after downloading [Communication setting] of project data.

For details on the Utility, refer to the following manuals.

☞ ・GT16 User's Manual (Basic Utility)
・GT15 User's Manual

(3) Precedence in communication settings

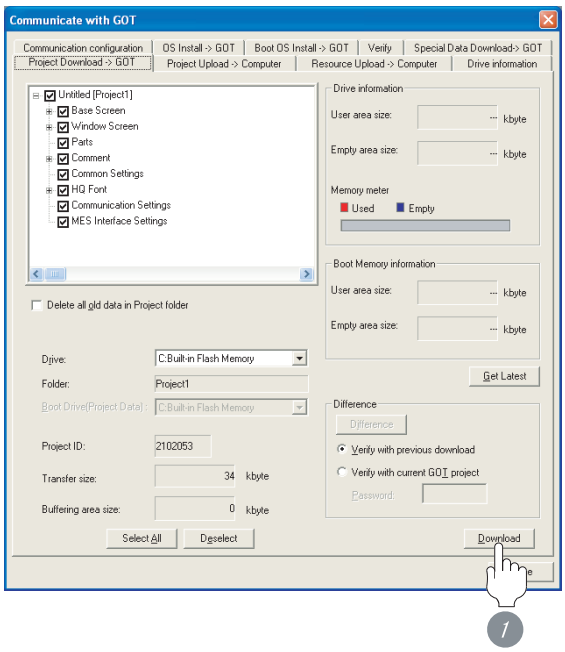
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

45.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

45.2.5 Attaching communication unit and connecting cable

Point

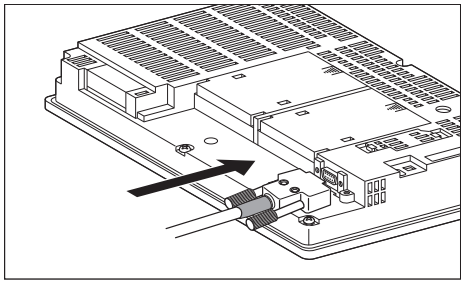
Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 How to connect the cable

(1) How to connect the USB cable

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



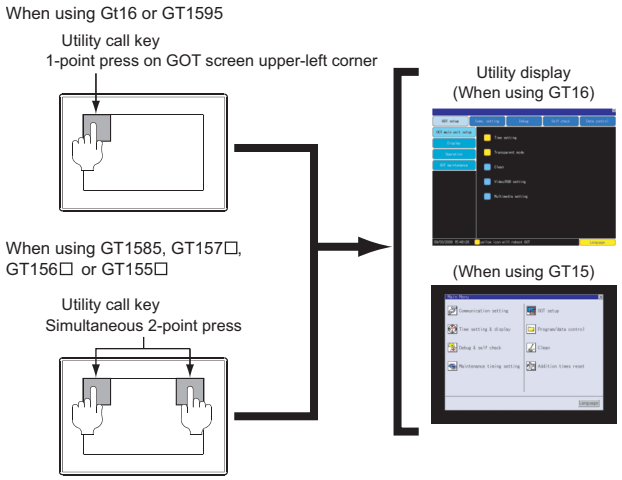
45.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility (at default)

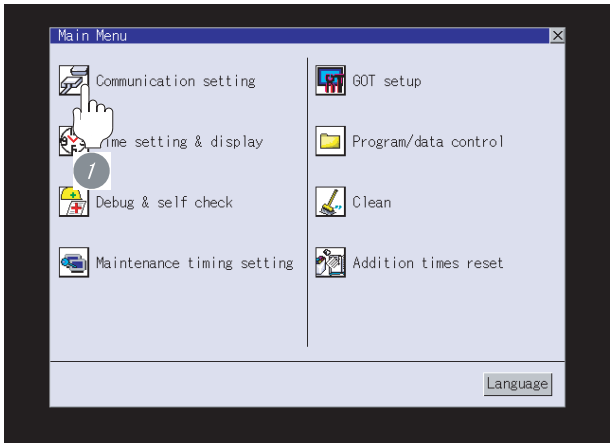


Point

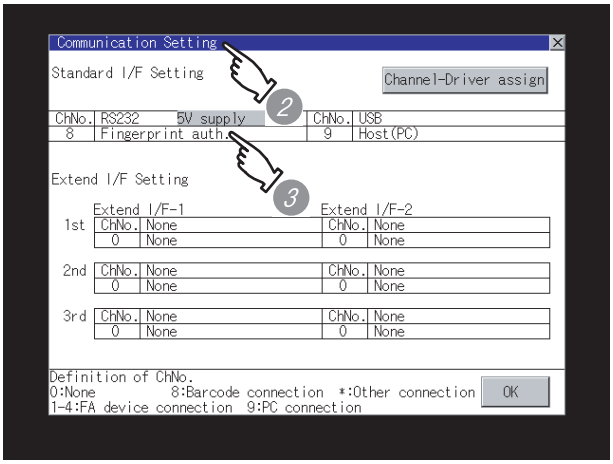
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: Fingerprint auth.

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ 45.2Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT☐ User's Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

45.3 Precautions

1 Fingerprint authentication setting

Set the fingerprint authentication and operator authentication on the GT Designer2 and GOT.
For details, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

☞ GT□ User's Manual

2 Controller setting

The fingerprint authentication device requires the power supply from the GOT. Therefore, set Channel No. 8 using the standard interface.
If the channel No. other than Channel No. 8 is set, the GOT does not recognize the device as a controller.

45.4 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT16 GT15	Fingerprint authentication device connection	Supporting the fingerprint authentication device connection.	2.91V	Standard monitor OS [04.03.**]

46

BAR CODE READER CONNECTION



46.1 System Configuration . . . . . page 46-2

This section describes devices and cables needed for bar code reader connection.
Refer to this section to select the desired system.

46.2 Preparatory Procedures for Monitoring . . . . . page 46-4

This section describes the preparatory procedures for the monitoring in the bar code reader connection.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

46.3 Precautions . . . . . page 46-11

This section describes the precautions for bar code reader connection.
Refer to this section without fail before starting bar code reader connection.

46.4 System Configuration Examples . . . . . page 46-12

This section describes system configuration examples of the bar code reader connection.

46.5 List of Functions Added by Version Upgrade . . . . . page 46-14

This section describes the functions added by version upgrade of GT Designer2 or OS.

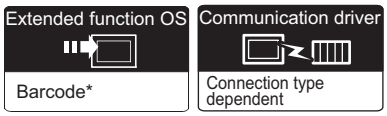
46.1 System Configuration

Select a system configuration suitable for your application.

Point

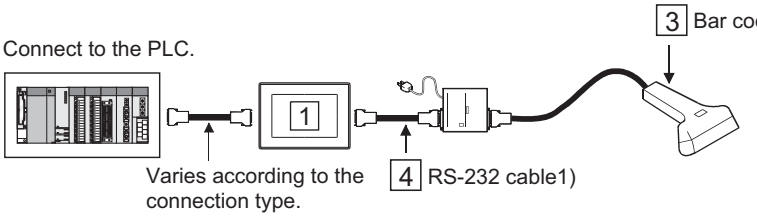
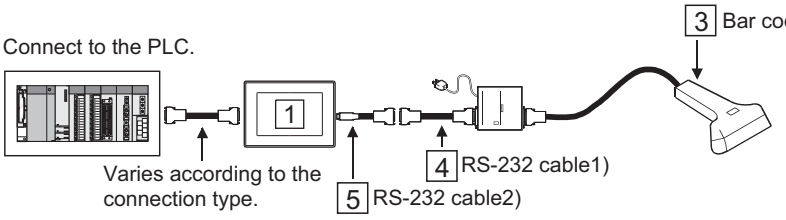
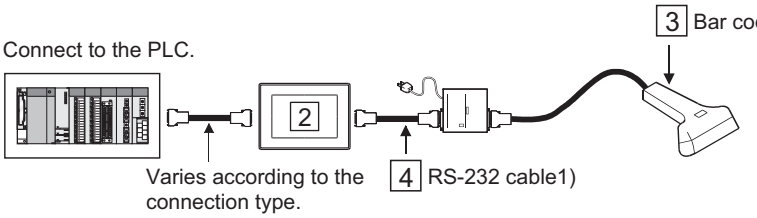
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.



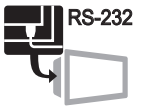
* For GT10, the installation of the extended function OS is not required.

1 System configuration and connection conditions

Connection conditions		System Configuration	Model
Number of GOT	Distance		
1	Varies according to the bar code reader's specifications.		GT16 GT15 GT11 Bus GT11 Serial GT10 5□ 4□
			GT 24V 10 20 30 GT 5V 10 20
			GT16 GT15

2 System equipment

(1) GOT

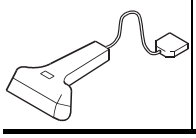
Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial GT105□ 4□ GT24V1020 30 GT5V1020
	2	RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

Point When using the RS-232 communication unit

Use the RS-232 communication unit of the GOT for connecting to a barcode reader. However, when the RS-232 communication unit is used, the following operation cannot be supported.

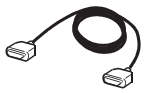
(a) Supplying the power to a barcode reader from the GOT

(2) Bar code reader

Image	No.	Name	Model name
	3	Bar code reader*1	For connectable bar code readers and system equipment, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

*1 For available bar code types, refer to the following Technical News.
☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

(3) Cable

Image	No.	Name	Model name	Model
	4	RS-232 cable 1) • Between Bar code reader and GOT	Refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)	GT16 GT15 GT11 Bus GT11 Serial GT105□ 4□ GT24V1020 30 GT5V1020
	5	RS-232 cable 2) • Between Bar code reader and GOT	GT10-C02H-6PT9P (0.2m)	GT24V1020 30 GT5V1020

Remark (1) System configuration between GOT and PLC

For the system configuration between the GOT and PLC, refer to the corresponding section.

- MITSUBISHI PLC CONNECTIONS (☞ Sections 2 to 10)
- THIRD PARTY PLC CONNECTIONS (☞ Sections 11 to 27)

(2) Technical News

Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANS web) to refer to the Technical News.

http://wwwf2.mitsubishielectric.co.jp/english/index.html

46.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

☞ Refer to each chapter.

⇩

Install the OS onto the GOT.

☞ Section 46.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 46.2.2
Checking OS installation on GOT

⇩

Set the communication interface. (Communication settings)

☞ Section 46.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 46.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 46.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 46.2.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 46.2.7
Checking for normal monitoring

Point

On system configuration example

This section describes GOT side settings.
For system configuration examples of bar code reader connection, refer to the following.

☞ Section 46.4 System Configuration Examples

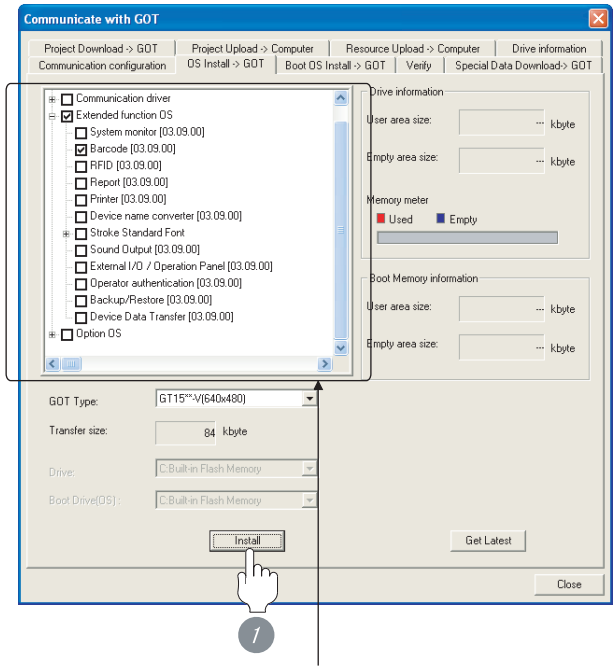
46.2.1 Installing OS onto GOT

Install the extended function OS onto the GOT.

For GT10, the installation of the extended function OS is not required.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• Depends on the connection type

Place a check mark in the box of the following item in the extended function OS.

• Barcode

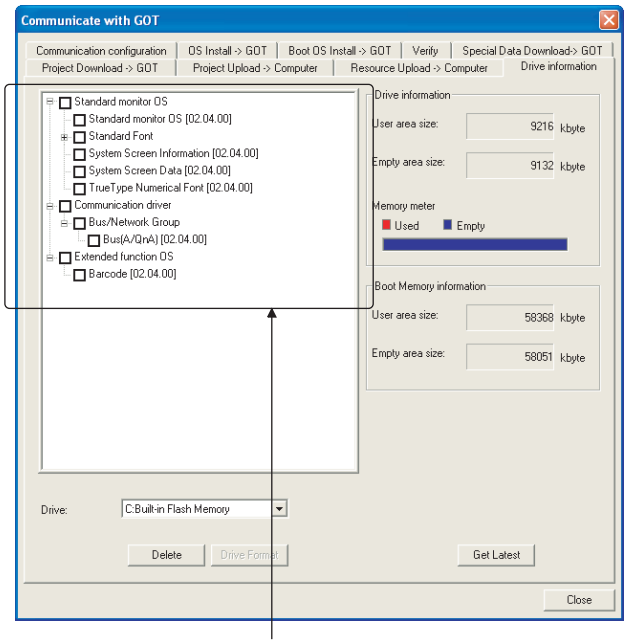
1 Check-mark a extended function OS (Barcode), and click the Install button.

46.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Depends on the connection type

3) Extended function OS: Barcode

46.2.3 Setting communication interface (Communication settings)

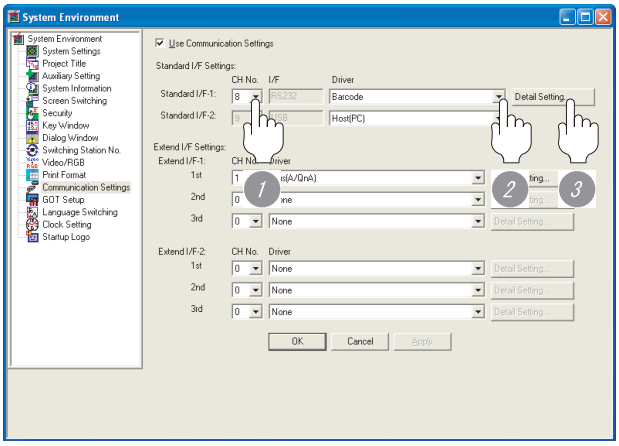
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set the channel No. to be used.
- When using the standard interface
  Set "8" to the channel No.
- When using the extension interface
  Select one of Channels No. "5" to "7".

2 Set the driver to "Barcode".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

Point

(1) Setting the communication interface

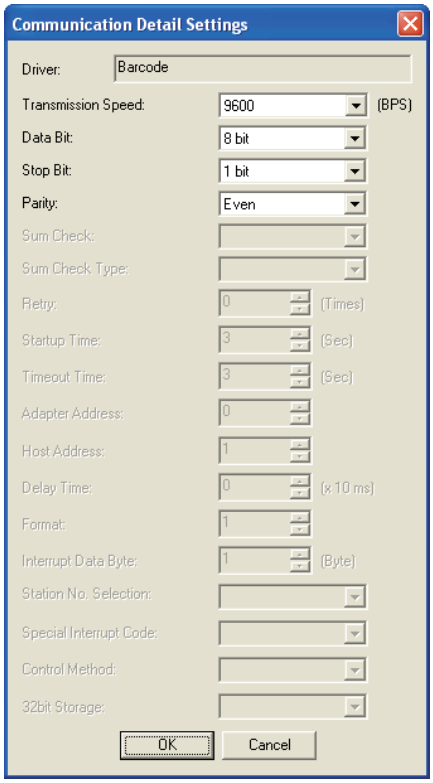
When Channel No.8 is used, the following external devices, which use Channel No.8, cannot be connected at the same time.
- Fingerprint recognition device
- RFID controller that uses the external authentication
- RFID controller that requires the power supply

When connecting the above-mentioned devices at the same time, set [Barcode] to Channels No. 5 to 7.

(2) Setting the driver

To Channels No. 5 to 8, multiple [Barcode] cannot be set.

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

☞ GT10 User's Manual

(b) Communication settings

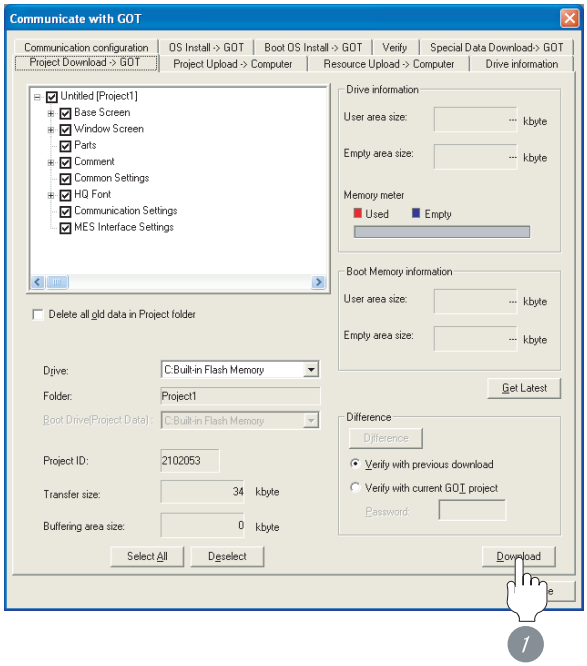
Communication settings can be changed on only GT Designer2.

46.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

46.2.5 Attaching communication unit and connecting cable

Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

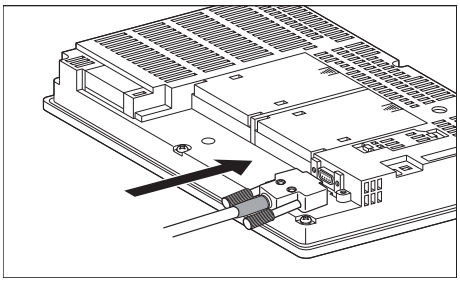
1 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

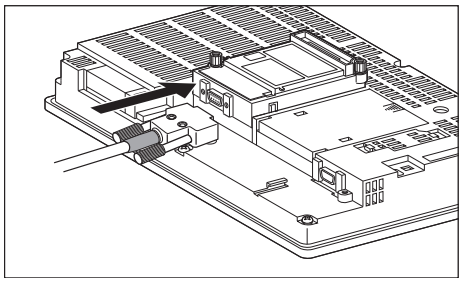
• When connecting to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



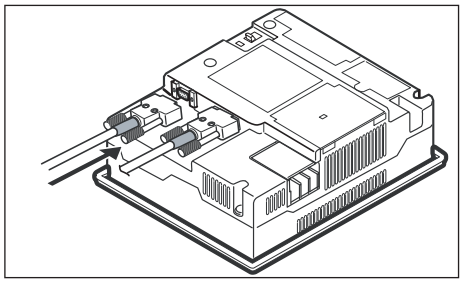
• When connecting to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



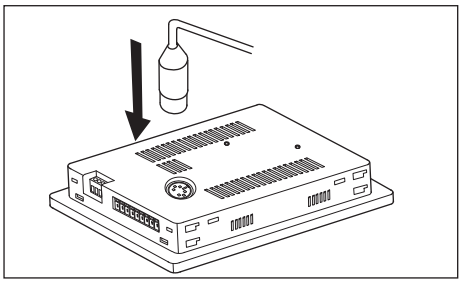
(b) For GT11, GT105☐, GT104☐

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



(c) For GT1030, GT1020

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



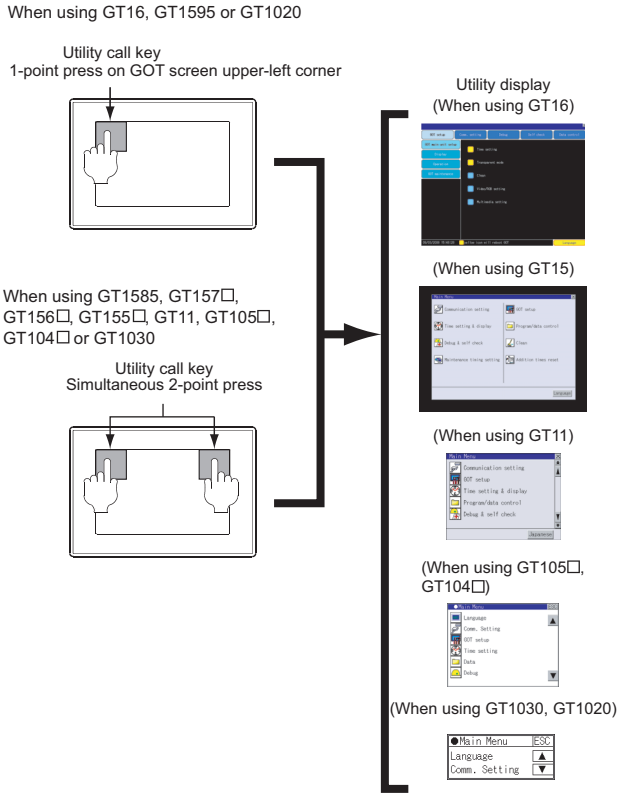
46.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

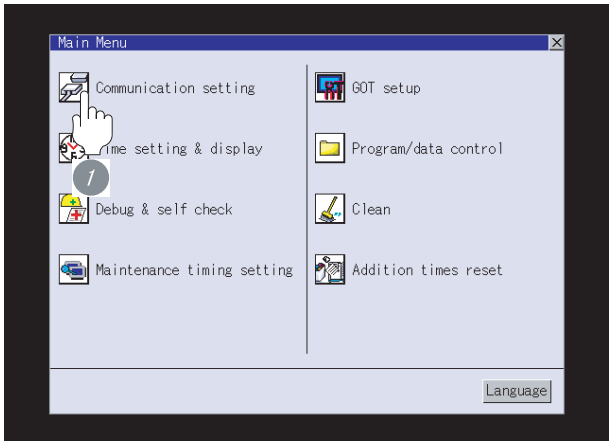


Point

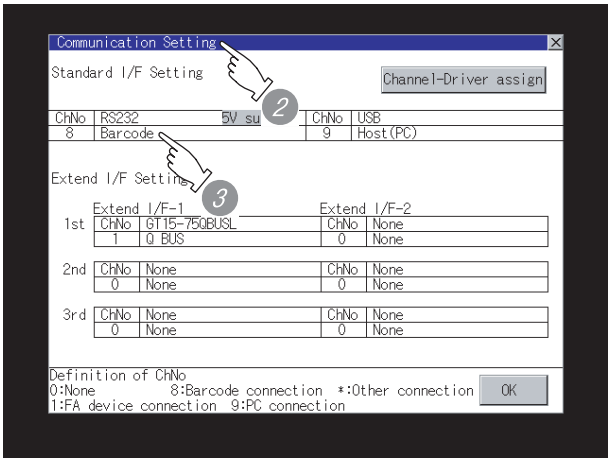
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
- Communication driver: Barcode

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 46.2 Preparatory Procedures for Monitoring

Point

(1) For GT16, GT15, GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Settings" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

46.2.7 Checking for normal monitoring

1 Read the bar code

Read the bar code with a bar code reader and check that the read data are written into the PLC CPU.

Section 46.4 System Configuration Examples

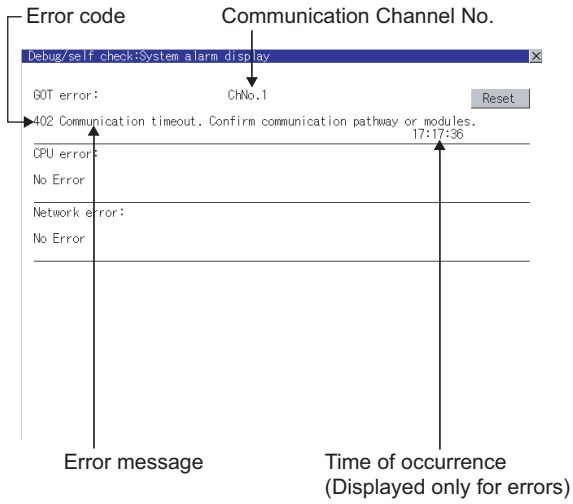
2 Check for errors occurring on the GOT. (for GT16, GT15, GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

3 Communication monitoring function (for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

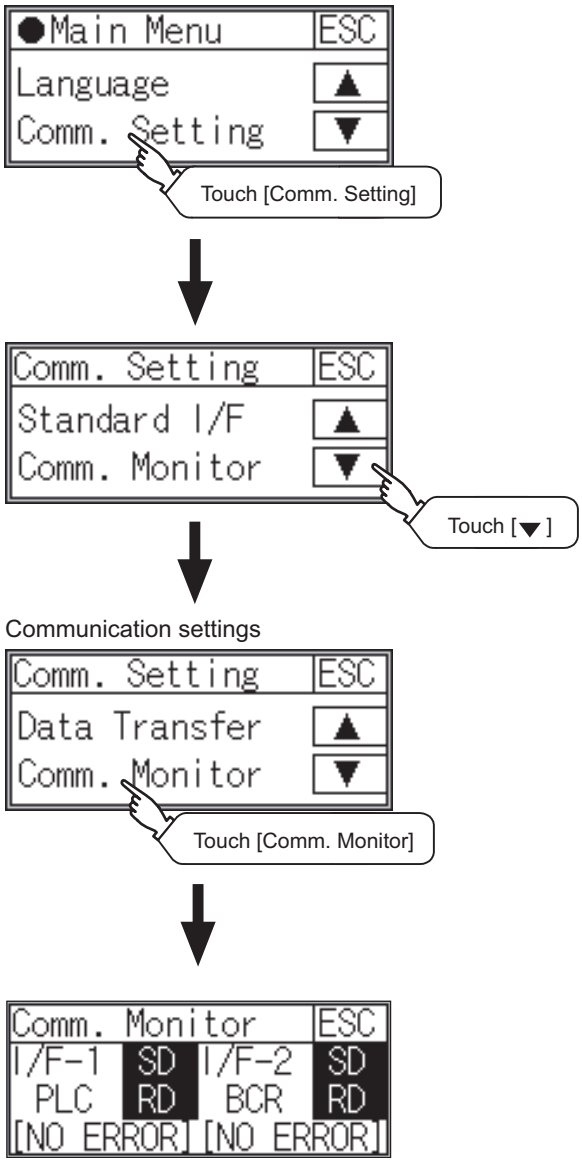
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

GT10 User's Manual

(Operation of communication monitoring function screen)

Main Menu



All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

46.3 Precautions

1 Bar code function setting on GT Designer2

Before connecting the bar code reader, make the bar code function and system data settings.
For details, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

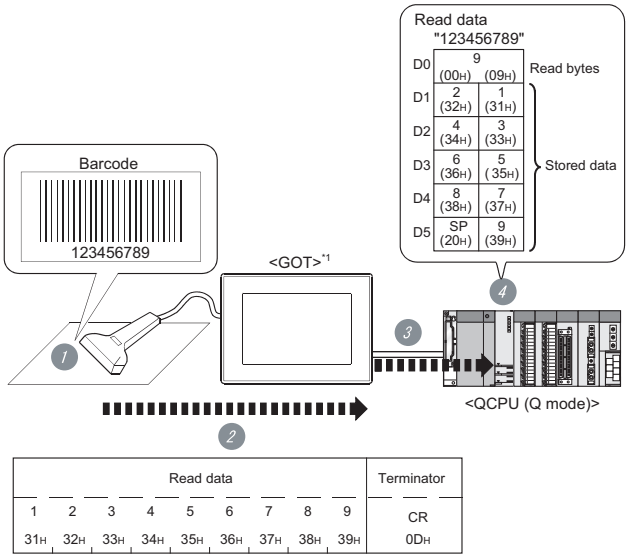
2 Controller setting

When using the barcode reader, which requires the power supply from the GOT, set Channel No. 8 using the standard interface.
With Channels No. 5 to 7 of the extension interface, the power cannot be supplied.

46.4 System Configuration Examples

A system configuration example for bar code reader connection is shown below.

1 System Configuration



*1 The GOT and QCPU (Q mode) are connected through a bus.
For bus connection, refer to the following.
☞ Chapter 2 BUS CONNECTION

1 The bar code is read with the bar code reader.
☞ 2 Bar code reader setting

2 The GOT receives the data sent from the bar code reader.
☞ 3 "Communication Settings" in GT Designer2

3 The received data are written to the PLC CPU.
☞ 4 "Bar Code" in GT Designer2

4 The data read with the bar code reader are written into the PLC CPU devices.
☞ 5 Confirmation on PLC side

2 Bar code reader setting

The bar code reader shall be configured as shown below.

Item	Setting
Baud rate	9600bps
Data length	8bit
Stop bit	1bit
Parity	Even
Header	None
Terminator	CR

Point

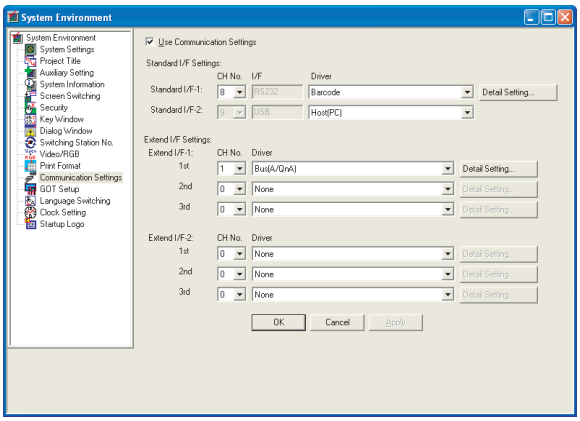
Bar code reader setting

For the bar code reader setting, refer to the following manual.

☞ The User's Manual of the bar code reader you are using

3 "Communication Settings" in GT Designer2

(1) Communication settings



(2) Barcode

Keep consistency with the bar code reader setting.

Item	Setting (Use default value.)
Transmission Speed	9600bps
Data Bit	8bit
Stop Bit	1bit
Parity	Even

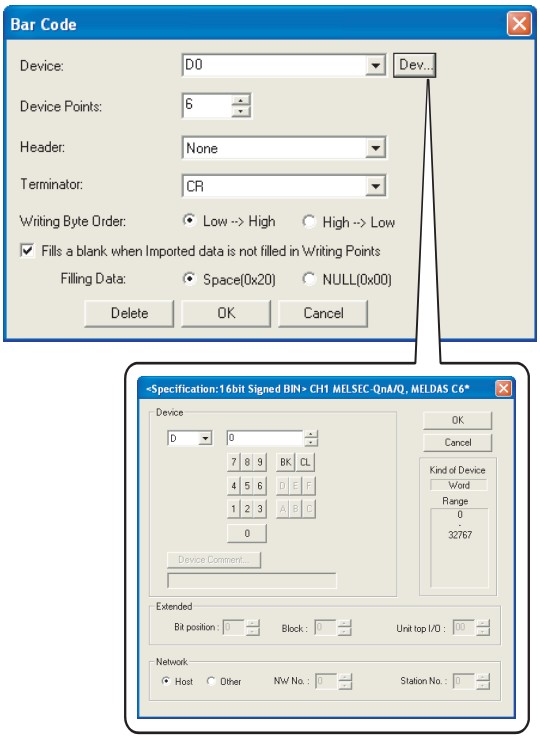
Point

"Communication Settings" in GT Designer2

For the "Communication settings" in GT Designer2, refer to the following.

☞ Section 46.2.3 Setting communication interface (Communication settings)

4 "Bar Code" in GT Designer2



Item	Setting
Device	D0
Device Points	6
Header*1	None
Terminator*1	CR
Writing Byte Order	Low → High
Fills a blank when Imported data is not filled in Writing Points	Check (Filling Data is available)
Filling Data	Space (0×20)

*1 Keep consistency with the bar code reader setting.

Point

"Bar Code" in GT Designer2

For the "Bar Code" setting in GT Designer2, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

5 Confirmation on PLC side

Connect GX Developer to the QCPU (Q-mode) and check if the data, which has been read with the bar code reader, are written in D0 to D5.

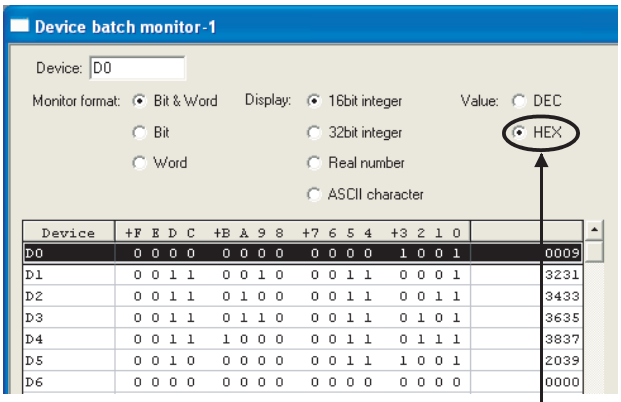
For GX Developer operations, refer to the following manual.

☞ GX Developer Version□ Operating Manual

(1) Confirming the device values of D0 to D5 (when using GX Developer Version 8)

Starting procedure

GX Developer → [Online] → [Monitor] → [Device batch]



ASCII codes are hexadecimals. Specify [HEX] for [Value] of the GX Developer and confirm the read data.

46.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15 GT11 Serial GT11 Bus	Bar code reader connection	Supporting the bar code reader connection	2.09K	Extended function OS Barcode [01,02,**]
GT15 GT11 Serial GT11 Bus	Bar code reader connection	Supporting the 2D bar code reader connection	2.27D	Extended function OS Barcode [02,04,**] Standard monitor OS [01.08.**]
GT24V1020 30 GT5V1020	Bar code reader connection	Supporting the connections to GT10	2.77F	Standard monitor OS [01.08.**]
GT16	Bar code reader connection	Supporting the connections to GT16	2.90U	Standard monitor OS [04.02.**]
GT1050 4□	Bar code reader connection	Supporting the connections to GT1050 Supporting the connections to GT104□		Standard monitor OS [01.10.**]

47

VIDEO/RGB CONNECTION



47.1 System Configuration . . . . . page 47-2
This section describes the equipment and cables needed when connecting to Video/RGB. Select a system suitable for your application.

47.2 Connection Cable . . . . . page 47-9
This section describes the specifications of the cables needed when connecting to a Video/RGB.
Check the specifications of the connection cables.

47.3 Preparatory Procedures for Monitoring . . . . . page 47-14
This section provides the procedures to be followed before performing monitoring in connection to Video/RGB. The procedures are written on the step-by-step basis so that even a novice GOT user can follow them to start communications.

47.4 Precautions . . . . . page 47-20
This section describes the precautions about Video/RGB connection. Refer to this section without fail before starting Video/RGB connection.

47.5 List of Functions Added by Version Upgrade . . . . . page 47-21
This section describes the functions added by version upgrade of GT Designer2 or OS.

47.1 System Configuration

The following GOT models support the Video/RGB connection.

GOT model
GT16
GT1585V-S
GT1575V-S

Select a system configuration suitable for your application.

Point

Conventions used in this section

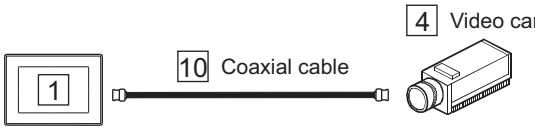
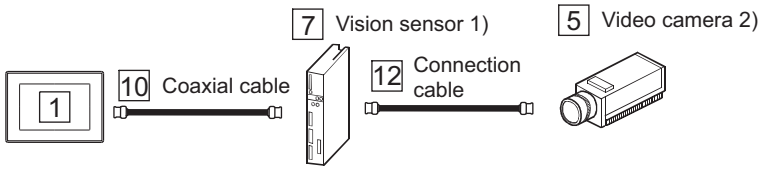
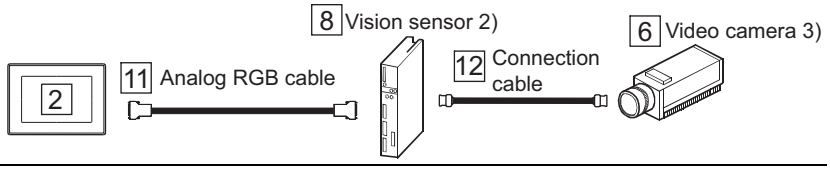
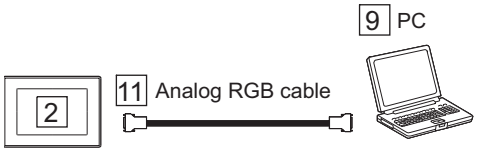
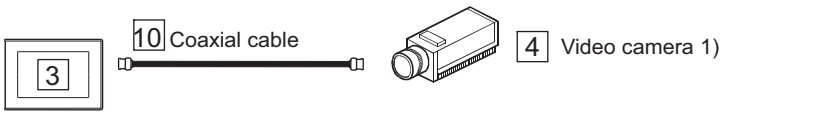
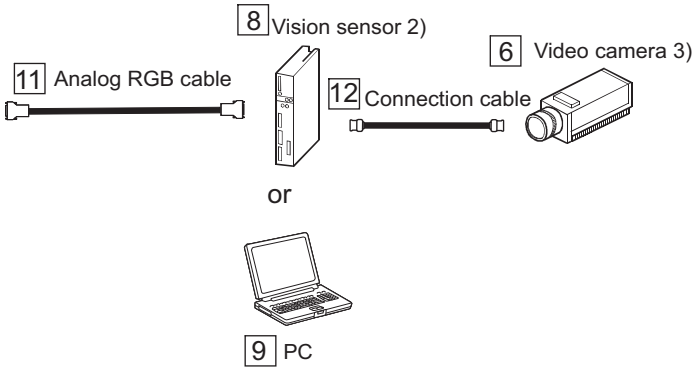
Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

47.1.1 Displaying video image on GOT

Extended function OS: Video/RGB input

Communication driver: Connection type dependent

1 System configuration and connection conditions

Connection conditions				System configuration
Number of GOTs	Number of Video/RGB equipment	Signal type	Distance	
1	4 (max)	NTSC/PAL	*1	
1	4 (max)	NTSC/PAL	*1	
1	2 (max) GT16	Analog RGB	*1	
1	1 GT15	Analog RGB	*1	
1	4 (max)	NTSC/PAL	*1	
1	1	Analog RGB	*1	

*1 The cable length differs depending on the specification of the video camera, vision sensor, or PC used by the user.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Video input unit • For connection between GOT and video camera*1	GT16M-V4	GT16
		Video input unit • For connection between GOT and vision sensor		
		Video input unit • For connection between GOT and video camera*1	GT15V-75V4	GT15
		Video input unit • For connection between GOT and vision sensor		
	2	RGB input unit • For connection between GOT and PC/vision sensor	GT16N-R2*2	GT16
			GT15V-75R1	GT15
	3	Video/RGB input unit • For connection between GOT and video camera*1 • For connection between GOT and PC/vision sensor	GT16M-V4R1	GT16
			GT15V-75V4R1	GT15

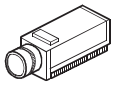
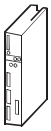
*1 For connectable video camera types, refer to the following Technical News.

☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

*2 RGB can be input with two channels. For the switching between two channels, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

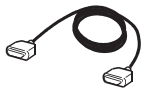
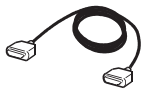
(2) Video/RGB connection equipment

Image	No.	Name	Model name
	4	Video camera 1)	For connectable video camera types, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)
	5	Video camera 2)	Select a model in accordance with the 7 vision sensor 1) specifications used by the user.
	6	Video camera 3)	Select a model in accordance with the 8 vision sensor 2) specifications used by the user.
	7	Vision sensor 1)	To be selected by the user.
	8	Vision sensor 2)	To be selected by the user.
	9	PC	To be selected by the user.

Remark

Technical News
Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANS web) to refer to the Technical News.
http://wwwf2.mitsubishielectric.co.jp/english/index.html

(3) Cable

Image	No.	Name	Model name
	10	Coaxial cable	(To be prepared by the user. ☞ Section 47.2 Connection Cable)
	11	Analog RGB cable*1	GT15-C50VG (5m)
	12	Connection cable	To be prepared by the user, referring the following manual. ☞ Manuals of a video camera and a vision sensor to be used

*1 The analog RGB cable can be prepared by the user.(☞ Section 43.2 Connection Cable)

Point

(1) Power supply of video camera

Depending on the video camera type, noises from the power supply cable of the camera may cause a malfunction on the PLC or the GOT In this case, apply the following line filter to the power line of the camera.
Recommended line filter: TDK ZHC2203-11 (or equivalent)

(2) Power supply of vision sensor
If a video camera is used via a vision sensor, a power supply module may be required depending on the vision sensor to be used.

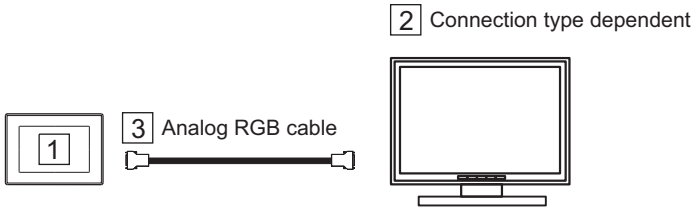
(3) Selection of Video signal output source
Depending on the video camera or the system to be used, both the power supply module and the video camera can output video signals. If video signals are output from both the video camera and the power supply module, the voltage level of the signals become lower and the video image cannot be correctly displayed. In this case, use the output from the video camera.

(4) Power-On of video camera
Turn on the video camera simultaneously with the GOT.

47.1.2 Displaying GOT screen on external monitor

Communication driver
Connection type dependent

1 System configuration and connection conditions

Connection conditions				System configuration
Number of GOTs	Number of Video/RGB equipment	Signal type	Distance	
1	1	Analog RGB	*1	

*1 The cable length differs depending on the specification of the external monitor used by the user.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RGB output unit • For connection between GOT and external monitor*1	GT16M-ROUT	GT16
			GT15V-75ROUT	GT15

*1For connectable external monitor types, refer to the following Technical News.

☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

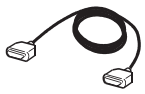
(2) Video/RGB connection equipment

Image	No.	Name	Model name
	2	External monitor	For connectable external monitor types, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

Remark

Technical News
Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANS web) to refer to the Technical News.
http://wwwf2.mitsubishielectric.co.jp/english/index.html

(3) Cable

Image	No.	Name	Model name
	3	Analog RGB cable*1	GT15-C50VG(5m)

*1 The analog RGB cable can be prepared by the user.(☞ Section 43.2 Connection Cable)

47.2 Connection Cable

The coaxial cable/analog RGB cable to connect the GOT to the Video/RGB equipment must be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

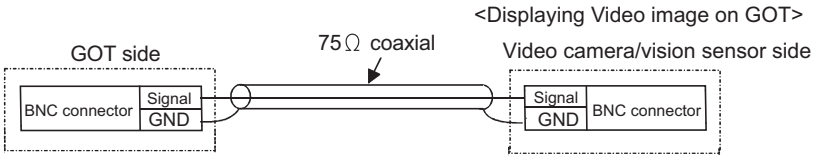
47.2.1 Coaxial cable

The following provides the specifications, the connecotors and creation method of the coaxial cable to connect the GOT to the video output equipment.

⚠CAUTION

- Solder the coaxial cable connectors properly.
  Insufficient soldering may result in malfunctions.

1 Connection diagram

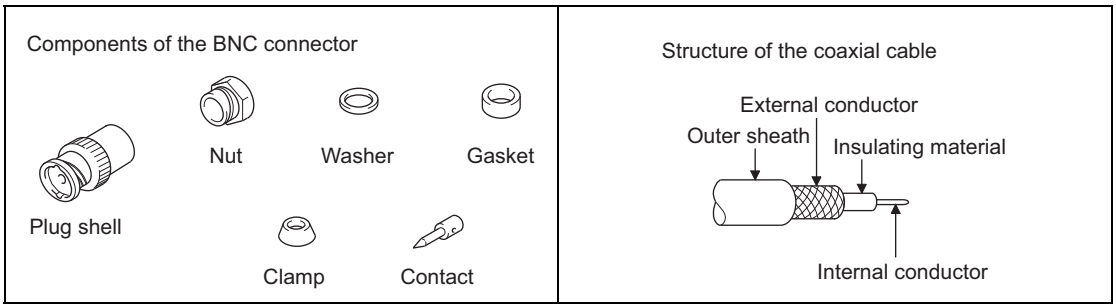


Cable specification

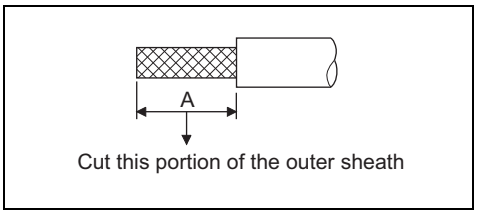
Item	Specifications
Applicable cable	3C-2V,5C-2V (JIS C 3501 compliant)

(1) Connecting the BNC connector to the coaxial cable

(a) Components of the BNC connector and the coaxial cable

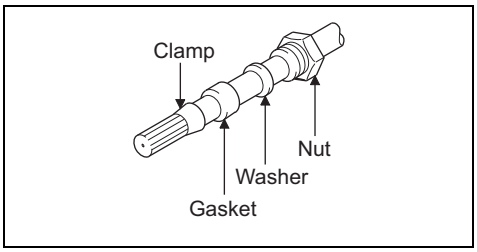


(b) Connection method

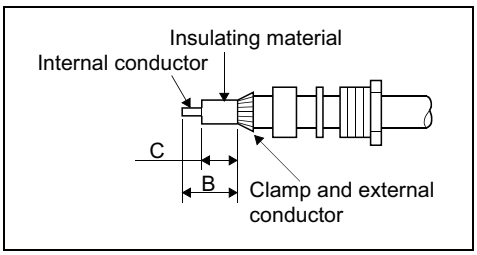


Cable in use	A
3C-2V	15mm
5C-2V, 5C-2V-CCY	10mm

1 Remove the external sheath of the coaxial cable with dimensions as shown on the left.

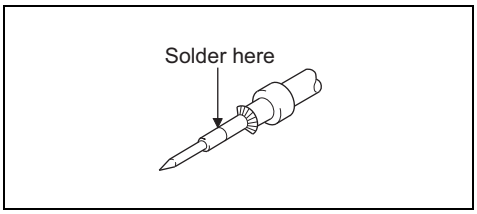


2 Pass the nut, washer, gasket, and clamp through the coaxial cable as shown on the left and loosen the external conductor.

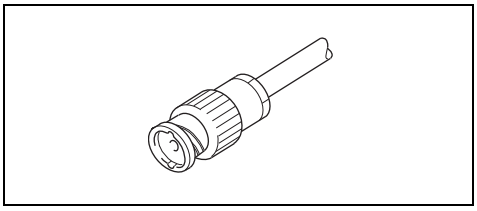


3 Cut the external conductor, insulting material, and internal conductor with the dimensions as shown on the left.
Note that the external conductor should be cut to the same dimension as the tapered section of the clamp and smoothed down to the clamp.

Cable in use	B	C
3C-2V	6mm	3mm
5C-2V, 5C-2V-CCY	7mm	5mm



4 Solder the contact to the internal conductor.



5 Insert the connector assembly shown in 4 into the plug shell and screw the nut into the plug shell.

Point Precautions for soldering

Note the following precautions when soldering the internal conductor and contact.
- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

2 Connector specifications

(1) GOT side connector

The following connector is used for the video input unit.

For the GOT side connector of the coaxial cable, use a connector applicable to the GOT connector.

GOT	Connector model	Connector type	Manufacturer
GT16M-V4	227161-4	BNC	Tyco International, Ltd.
GT16M-V4R1			
GT15V-75V4			
GT15V-75V4R1			

(2) Video camera/vision sensor side connector

Use a connector compatible with the video camera/vision sensor to be used.

3 Precautions when preparing a cable

The cable length differs depending on the specification of the video camera or vision sensor to be used.

Create a cable under the specifications of the video camera/vision sensor.

Remark

When the coaxial cable is long

When the coaxial cable is long, video signals are attenuated by the cable.

The use of a video signal amplifier is recommended to correct the attenuated signals.

Connect a video signal amplifier in reference to the following:

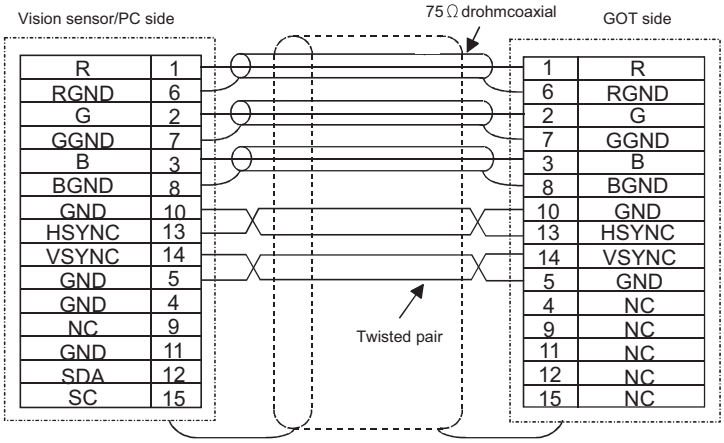
- Coaxial cable: The cable length is 100m or more when 3C-2V is used.
- Coaxial cable: The cable length is 200m or more when 5C-2V is used.

47.2.2 Analog RGB cable

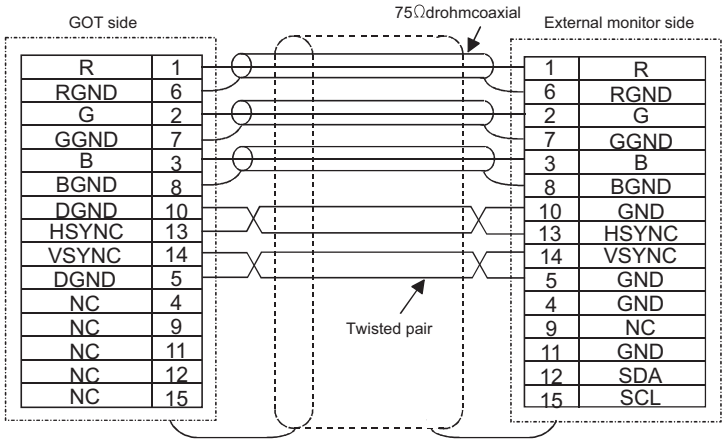
The following provides the specifications, the connection diagrams and the connectors of the cable connecting the GOT to the RGB output type vision sensor/PC.

1 Connection diagram

<Displaying video image on GOT>



<Displaying GOT screen on external monitor>



Cable specification

Item	Specifications
Applicable connector	15-pin D-sub for both ends

2 Connector specifications

(1) GOT side connector

The following connector is used for the Video/RGB input unit, RGB input unit and RGB output unit. For the GOT side connector and connector cover of the analog RGB cable, use the ones applicable to the GOT connector.

GOT	Connector model	Connector type	Manufacturer
GT16M-R2	17HE-R13150-73MC2	15-pin D-sub (female)	DDK Ltd.
GT16M-V4R1			
GT16M-ROUT			
GT15V-75R1			
GT15V-75V4R1			
GT15V-75ROUT			

(2) Vision sensor/PC side connector

Use a connector compatible with the vision sensor/PC to be used.

3 Precautions when preparing a cable

The cable length differs depending on the specification of the vision sensor/PC to be used. Create a cable under the specifications of the vision sensor/PC.

47.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 47.3.1
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 47.3.2
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 47.3.3
Setting communication interface (Communication settings)

Download the project data.

Section 47.3.4
Downloading project data

Attach the communication unit and connect the cable.

Section 47.3.5
Attaching option unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

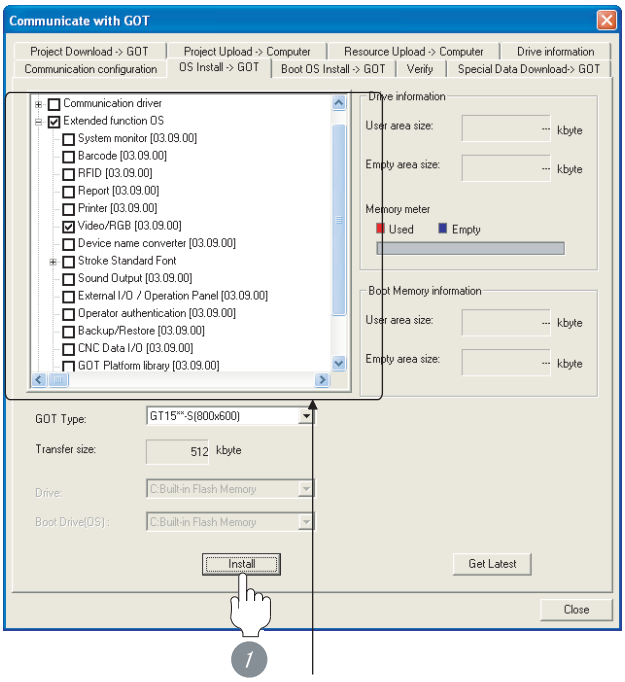
Section 47.3.6
Verifying GOT recognizes controllers

47.3.1 Installing OS onto GOT

Install the extended function OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• Depends on the connection type

Place a check mark in the box of the following item in the extended function OS.

• Video/RGB

1 Check-mark a extended function OS (Video/RGB), and click the Install button.

Point

Displaying GOT screen on external monitor

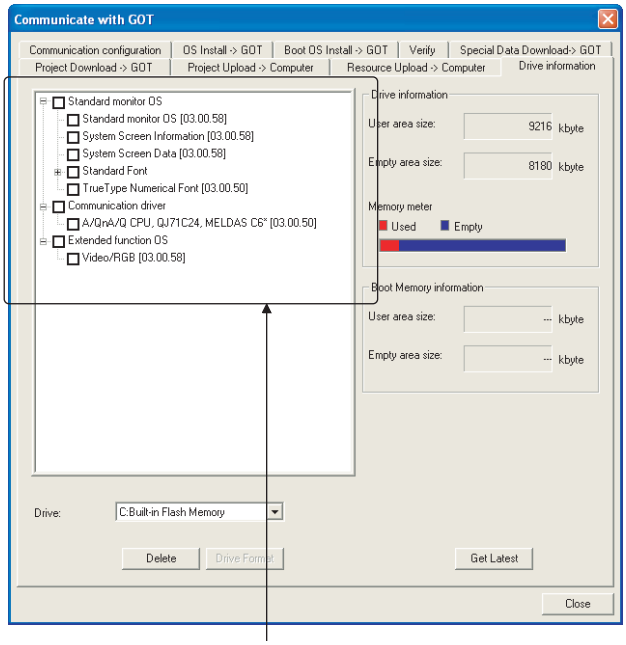
Installing the extended function OS is not needed.

47.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Depends on the connection type

3) Extended function OS: Video/RGB

47.3.3 Setting communication interface (Communication settings)

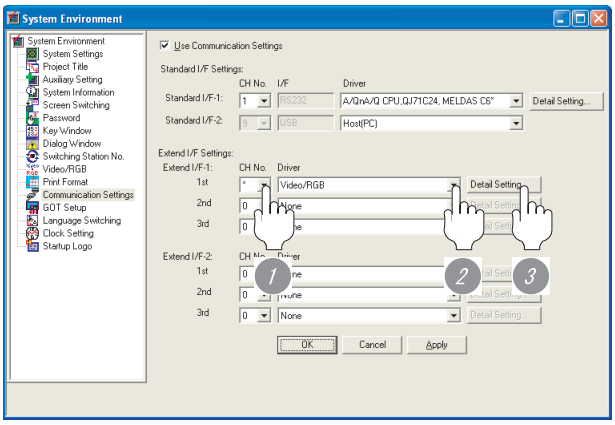
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



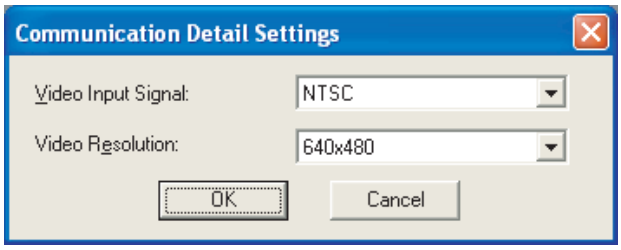
(When using GT15)

1 Set "*" to the channel No. used.

2 Set the driver as follows:
To display a video image on the GOT: "Video/RGB"
To display a GOT screen on the external monitor: "RGB output"

3 Perform the detailed settings for the driver.
(2 Communication detail settings (only when "Video/RGB" has been set))

2 Communication detail settings (only when "Video/RGB" has been set)



Item	Description	Range
Video Input Signal*1	Set the video input signal. <Default: NTSC>	NTSC, PAL
Video Resolution*2	Set the video resolution. <Default: 640×480>	640×480, 720×480, 768×576*3

*1 When NTSC format is selected, the resolution is fixed to 640×480.

*2 For GT1675M-V and GT1665M-V, the resolution is fixed to 640×480.

*3 768×576 can be set only for the GT16.

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

3 Setting the video/RGB function

Set the video/RGB function.

For the video/RGB function setting, refer to the following manual.

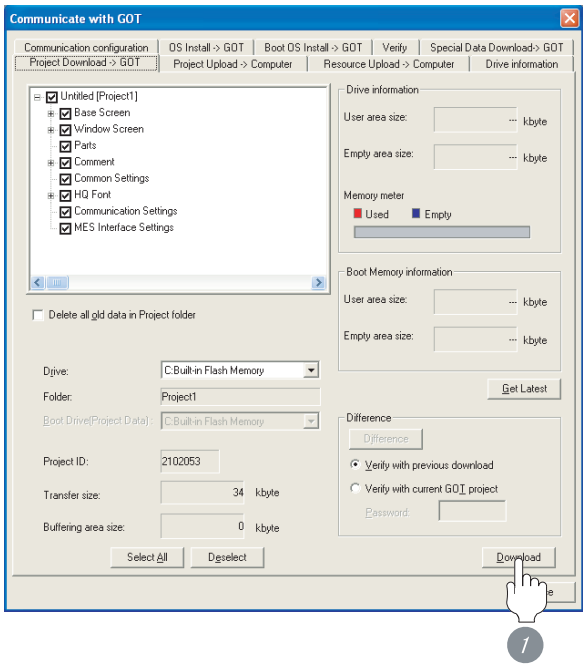
☞ GT Designer2 Version ☐ Screen Design Manual

47.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

47.3.5 Attaching option unit and connecting cable

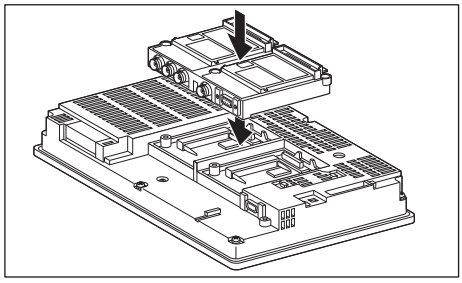
Point

Precautions when attaching the video/RGB unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the video/RGB unit and connecting the cable.

1 Attaching the option unit

1 Attach the video/RGB unit to the extension unit connector on the GOT as necessary.



Point

Video/RGB unit

(1) Details of attaching method

For the details of attaching the video/RGB unit, refer to the following manual.

- GT16 Video/RGB Input Unit User's Manual
- GT16 RGB Output Unit User's Manual
- User's Manual for MODEL GT15V-75V4R1 Video/RGB Input Unit MODEL GT15V-75V4 Video Input Unit MODEL GT15V-75R1 RGB Input Unit
- User's Manual for MODEL GT15V-75ROUT RGB Output Unit

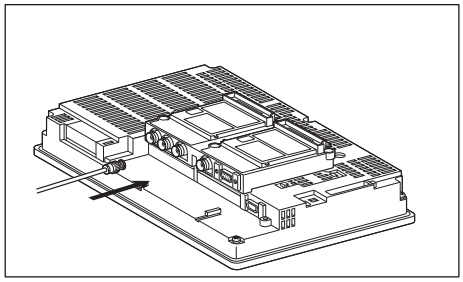
(2) Attaching multiple units

Multiple video/RGB units cannot be attached to the GOT.

2 Connecting the cable

(1) Coaxial cable connection method

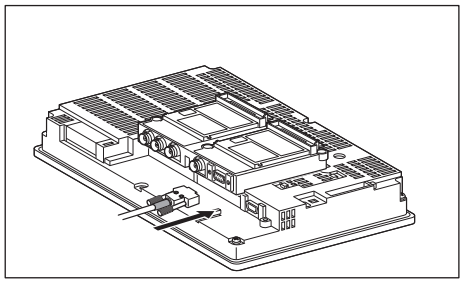
1 Connect the coaxial cable to the video/RGB input unit on the GOT.



(2) Analog RGB cable connection method

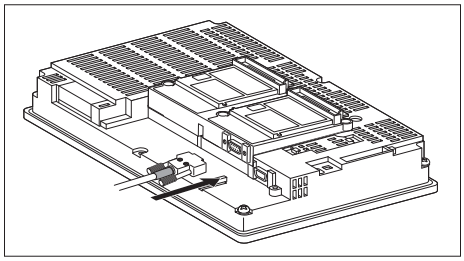
(a) Displaying video image on GOT

1 Connect the analog RGB cable to the video/RGB input unit or the RGB input unit on the GOT.



(b) Displaying GOT screen on external monitor

1 Connect the analog RGB cable to the RGB output unit on the GOT.



47.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

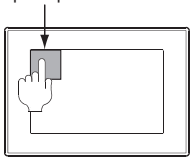
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16

Utility call key
1-point press on GOT screen upper-left corner

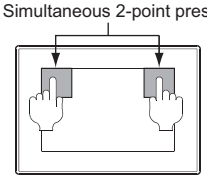


Utility display
(When using GT16)

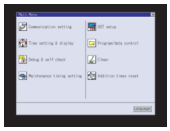


When using GT1585 or GT1575

Utility call key
Simultaneous 2-point press



(When using GT15)

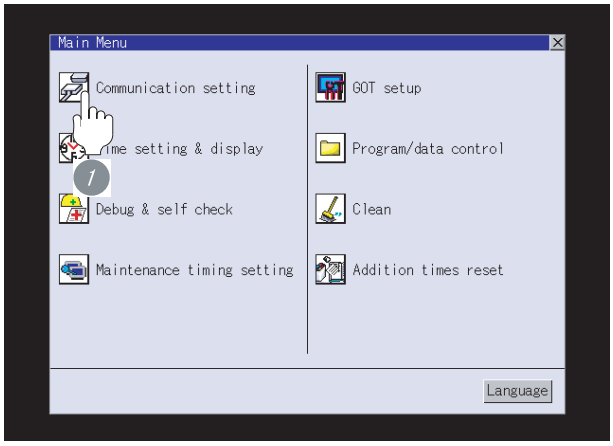


Point

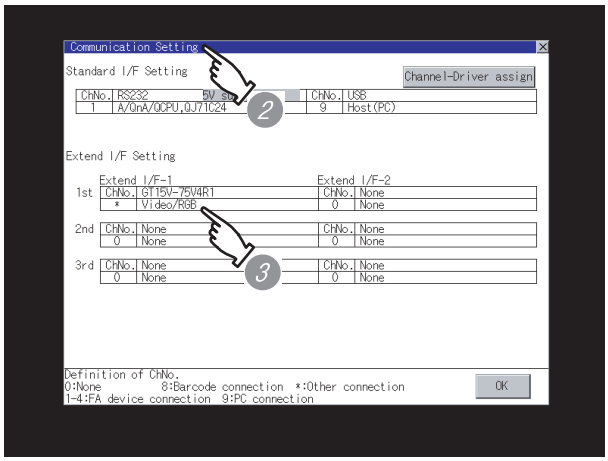
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Extended function OS
  <To display a video image on the GOT>
  Video/RGB
  <To display a GOT screen on the external monitor>
  RGB output

When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 47.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

47.4 Precautions

47.4.1 Connecting to PC

When connecting to a PC, ground the earth wire of the PC.

47.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Video/RGB connection	Supporting the Video/RGB connection	2.32J	Extended function OS Video/RGB input [03.00.**]
Video/RGB connection	Supporting the connections to GT16	2.90U	Extended function OS Video/RGB input [04.02.**]

MEMO

48

MULTIMEDIA CONNECTION



48.1 System Configuration . . . . . page 48 - 2

This section describes the equipment and cables needed for the multimedia connection.
Select a system suitable for your application.

48.2 Connection Cable . . . . . page 48 - 8

This section describes the specifications of the cables needed for the multimedia connection.
Check the specifications of the connection cables.

48.3 Preparatory Procedures for Monitoring . . . . . page 48 - 11

This section describes the procedures to be followed before monitoring in the multimedia connection.

48.4 Precautions . . . . . page 48 - 17

This section describes the precautions about the multimedia connection.
Refer to this section without fail before starting multimedia connection.

48.5 List of Functions Added by Version Upgrade . . . . . page 48 - 18

This section describes the functions added by version upgrade of GT Designer2 or OS.

48.1 System Configuration

Select a system configuration suitable for your application.

Point

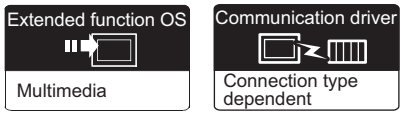
(1) Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

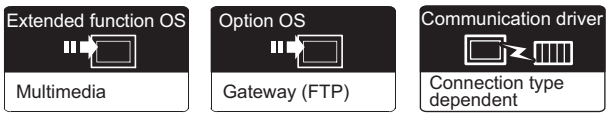
(2) Before making the multimedia connection

Update the software version of the multimedia unit to the latest version.
For the version upgrade of the multimedia unit, refer to the following manual.
☞ GT16 User's Manual (Basic Utility)

To save a video image and display it on the GOT

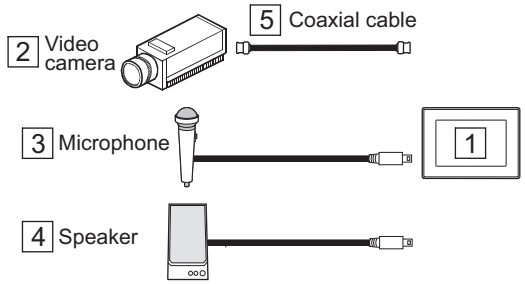


To send a video image to a personal computer



48.1.1 Saving video image and displaying it on GOT

1 System configuration and connection conditions

Connection conditions			System configuration
Number of GOTs	Signal type	Distance	
1	NTSC/PAL	*1	

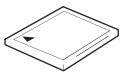
*1 The cable length differs depending on the specification of the video camera used by the user.

2 System equipment

Remark Technical News

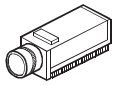
Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANS web) to refer to the Technical News.
http://wwwf2.mitsubishielectric.co.jp/english/index.html

(1) GOT

Image	No.	Name	Model name	Model
	1	Multimedia unit • For connection between GOT and video camera	GT16M-MMR	GT16
		CF card*1 • For multimedia unit	For the type of CF card that can be inserted, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000series (GOT-A-0010)	

*1 For the CF card to be inserted into the multimedia unit, refer to the following.
☞ Section 48.4 Precautions

(2) Multimedia controller

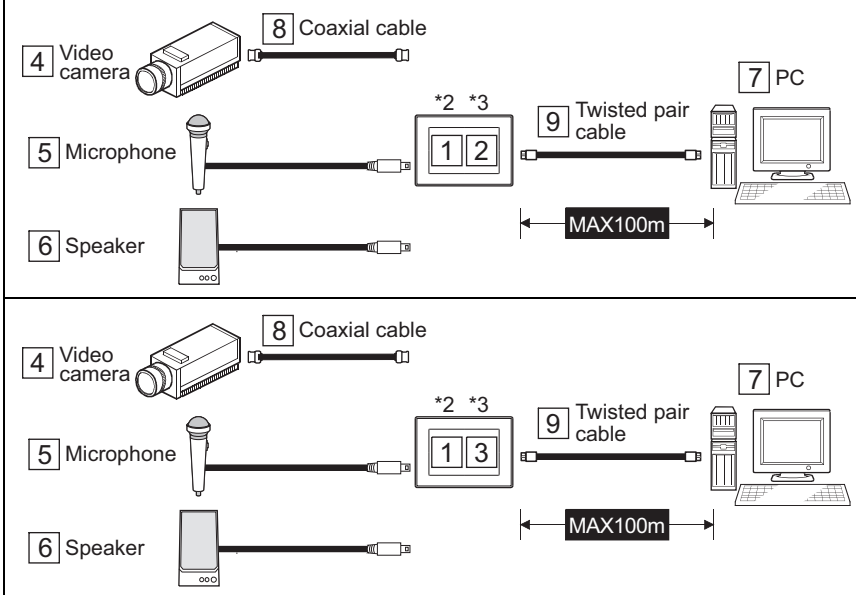
Image	No.	Name	Model name
	2	Video camera	For the type of applicable video camera, microphone or speaker, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000series (GOT-A-0010)
	3	Microphone	
	4	Speaker	

(3) Cable

Image	No.	Name	Model name
	5	Coaxial cable	(To be prepared by the user. ☞ Section 48.2 Connection Cable)

48.1.2 Sending video image to personal computer

1 System configuration and connection conditions

Connection conditions				System configuration
Number of GOTs	Signal type	Distance: Coaxial cable	Distance: Twisted pair cable	
1	NTSC/PAL	*1	100m or less	

*1 The cable length differs depending on the specification of the video camera used by the user.

*2 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

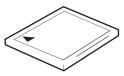
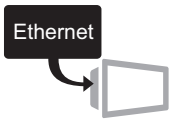
*3 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
☞ GT16 User's Manual (Hardware)

2 System equipment

Remark Technical News

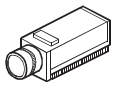
Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANS web) to refer to the Technical News.
http://wwwf2.mitsubishielectric.co.jp/english/index.html

(1) GOT

Image	No.	Name	Model name	Model
	1	Multimedia unit • For connection between GOT and video camera	GT16M-MMR	GT16
	1	CF card*1 • For multimedia unit • For GOT	For the type of CF card that can be inserted, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000series (GOT-A-0010)	GT16
	2	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
	3	Ethernet interface • For Ethernet communication	GT16M-MMR	GT16

*1 For the CF card to be inserted into the multimedia unit, refer to the following.
☞ Section 48.4 Precautions

(2) Multimedia controller

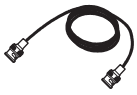
Image	No.	Name	Model name
	4	Video camera	For the type of applicable video camera, microphone or speaker, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000series (GOT-A-0010)
	5	Microphone	
	6	Speaker	

(3) PC

Image	No.	Name	Model name
	7	PC*1	To be selected by the user.

*1 Install the multimedia interaction tool before use.
For details of the multimedia interaction tool, refer to the following manual.
☞ GT Designer2 Version □ Screen Design Manual

(4) Cable

Image	No.	Name	Model name
	8	Coaxial cable	(To be prepared by the user. ☞ Section 48.2 Connection Cable)
	9	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

48.2 Connection Cable

The coaxial cable used for connecting the GOT to a video camera should be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

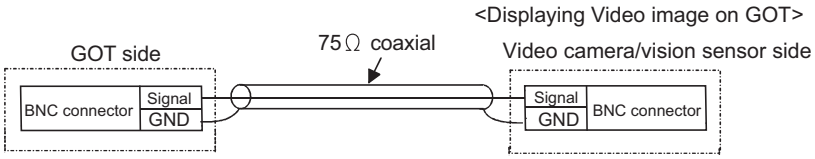
48.2.1 Coaxial cable

The following shows the connection diagrams and connector specifications of the coaxial cable used for connecting the GOT to a video camera.

⚠ CAUTION

- Solder the coaxial cable connectors properly.
  Insufficient soldering may result in malfunctions.

1 Connection diagram

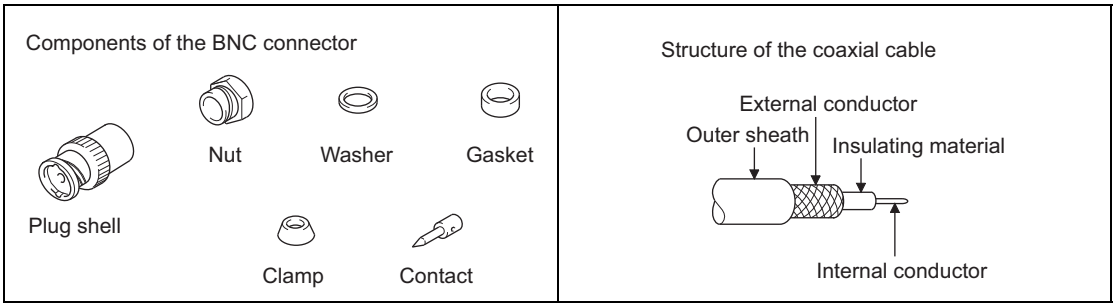


Cable specification

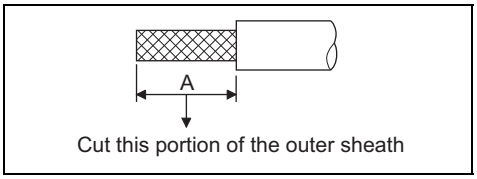
Item	Specifications
Applicable cable	3C-2V,5C-2V (JIS C 3501 compliant)

(1) Connecting the BNC connector to the coaxial cable

(a) Components of the BNC connector and the coaxial cable

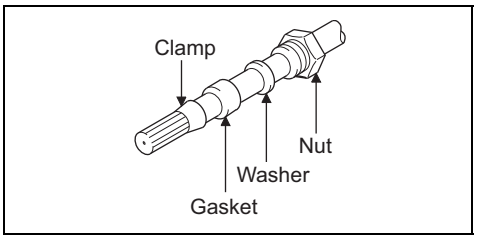


(b) Connection method

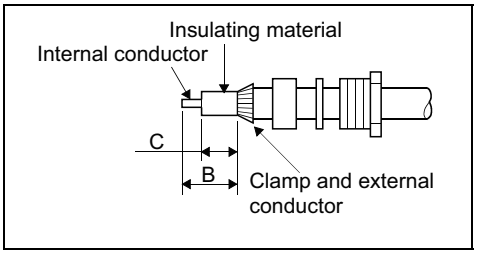


Cable in use	A
3C-2V	15mm
5C-2V, 5C-2V-CCY	10mm

1 Remove the external sheath of the coaxial cable with dimensions as shown on the left.

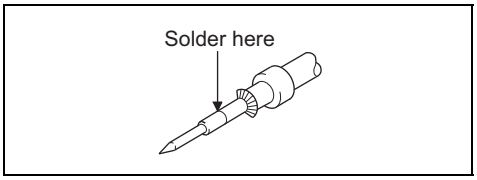


2 Pass the nut, washer, gasket, and clamp through the coaxial cable as shown on the left and loosen the external conductor.

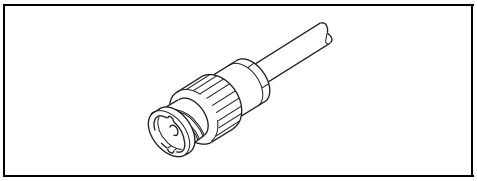


Cable in use	B	C
3C-2V	6mm	3mm
5C-2V, 5C-2V-CCY	7mm	5mm

3 Cut the external conductor, insulting material, and internal conductor with the dimensions as shown on the left.
Note that the external conductor should be cut to the same dimension as the tapered section of the clamp and smoothed down to the clamp.



4 Solder the contact to the internal conductor.



5 Insert the connector assembly shown in 4 into the plug shell and screw the nut into the plug shell.

Point

Precautions for soldering

Note the following precautions when soldering the internal conductor and contact.
- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

2 Connector specifications

(1) GOT side connector

Use the following as the multimedia unit connector.

For the GOT side connector of the coaxial cable, use a connector applicable to the GOT connector.

GOT	Connector model	Connector type	Manufacturer
GT16M-MMR	227161-4	BNC	Tyco International, Ltd.

(2) Video camera side connector

Use a connector compatible with the video camera to be used.

3 Precautions when preparing a cable

The cable length differs depending on the specification of the video camera to be used.

Create a cable under the specification of the video camera.

Remark

When the coaxial cable is long

When the coaxial cable is long, video signals are attenuated by the cable.

The use of a video signal amplifier is recommended to correct the attenuated signals.

Connect a video signal amplifier in reference to the following:

- Coaxial cable: The cable length is 100m or more when 3C-2V is used.
- Coaxial cable: The cable length is 200m or more when 5C-2V is used.

48.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

☞ Refer to each chapter.

↓

Install the OS onto the GOT.

☞ Section 48.3.1
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 48.3.2
Checking OS installation on GOT

↓

Set the communication interface. (Communication settings)

☞ Section 48.3.3
Setting communication interface (Communication settings)

↓

Set the gateway function.*1

☞ Section 48.3.4
Set the gateway function

↓

Download the project data.

☞ Section 48.3.5
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 48.3.6
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 48.3.7
Verifying GOT recognizes controllers

↓

Install the multimedia interaction tool onto the personal computer*1

☞ Section 48.3.8
Installing and setting multimedia interaction tool onto personal computer

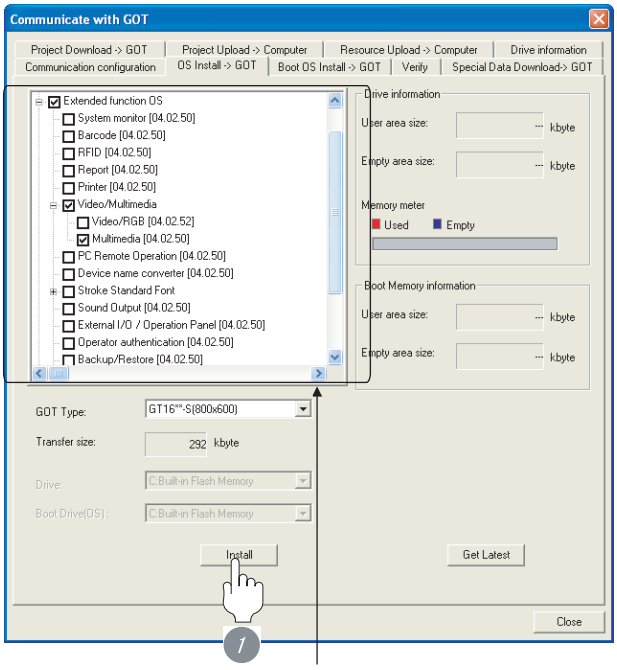
*1 Set when sending a video image to the personal computer.

48.3.1 Installing OS onto GOT

Install the option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

Depends on the connection type

Place a check mark in the box of the following item in the extended function OS.

Multimedia

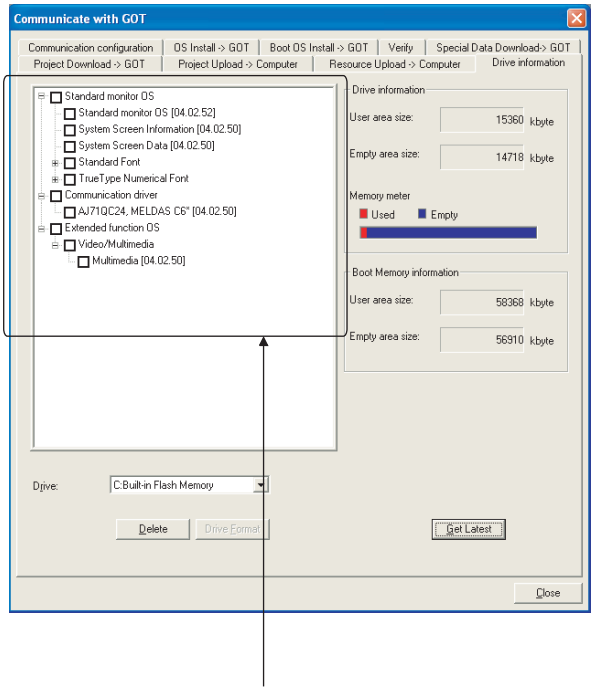
1 Check-mark an extended function OS (Multimedia), and click the Install button.

48.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver : Depends on the connection type
3) Extended function OS

Multimedia

48.3.3 Setting communication interface (Communication settings)

Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

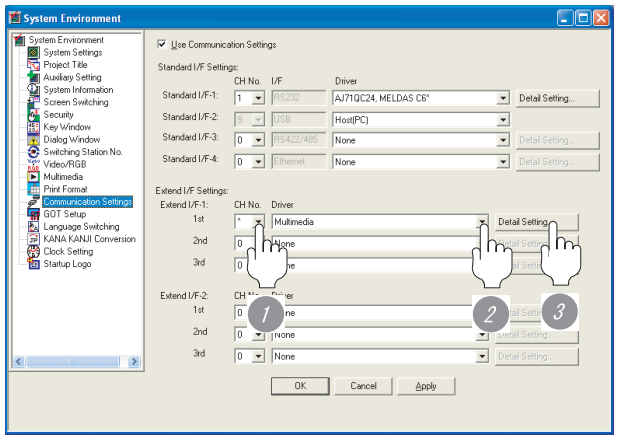
Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

(1) When the connection type is other than "Ethernet connection"or "MODBUS® /TCP"

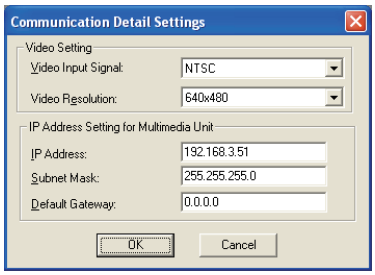


1 Set "*" to the channel No. used for the first stage of the Extend I/F-1.

2 Set the driver to [Multimedia].

3 Perform the detailed settings for the driver. (2 Communication detail settings)

2 Communication detail settings



(1) Video Setting

Item	Description	Range
Video Input Signal*1	Set the video input signal. <Default: NTSC>	NTSC, PAL
Video Resolution	Set the video resolution.	640×480, 768×576

*1 When NTSC format is selected, the resolution is fixed to 640 × 480.
When PAL format is selected, the resolution is fixed to 768 × 576.

(2) IP Address Setting for Multimedia Unit

Set the network settings for connecting from the multimedia unit via Ethernet.

Item	Description	Range
IP Address	Set the IP address of the multimedia unit. <Default: 192.168.3.51>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask when using the subnetwork. When the subnetwork is not used (only via router), the operation is executed with the default value. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway	Set the router address of the default gateway on the side to which the multimedia unit is connected. (only via router) <Default: 0.0.0.0 >	0.0.0.0 to 255.255.255.255

Point

Network settings with the utility

The network settings can also be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility)

3 Setting the multimedia function

Set the multimedia function.

For the multimedia function setting, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

48.3.4 Set the gateway function

Set the gateway function for using FTP.

For the gateway function setting, refer to the following.

☞ · Chapter 55 GATEWAY FUNCTION
· GOT1000 Series Gateway Functions Manual

Point

To save a video image and display it on the GOT

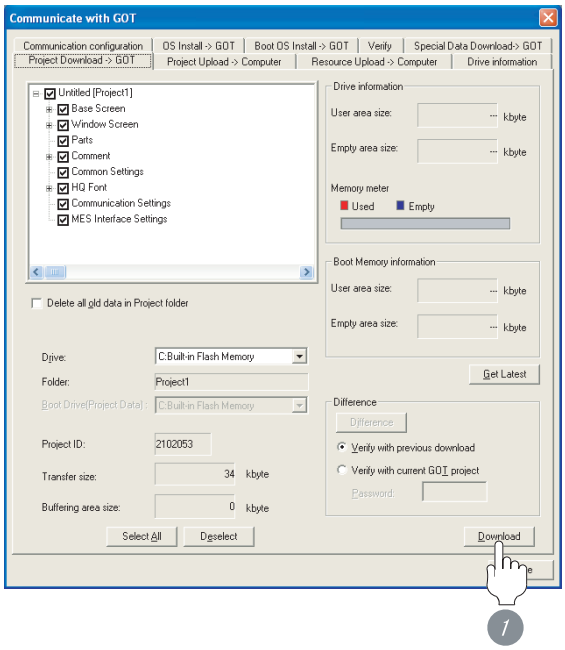
When saving a video image and displaying it on the GOT, the gateway function setting is unnecessary.

48.3.5 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

48.3.6 Attaching communication unit and connecting cable

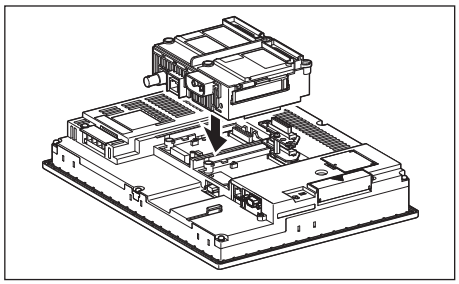
Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Mount the multimedia unit on the extension unit connector of the GOT.



Point

Multimedia unit

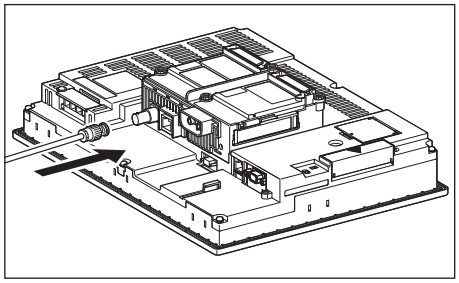
For details of the multimedia unit, refer to the following manual.

GT16 Multimedia Unit User's Manual

2 Ethernet communication unit

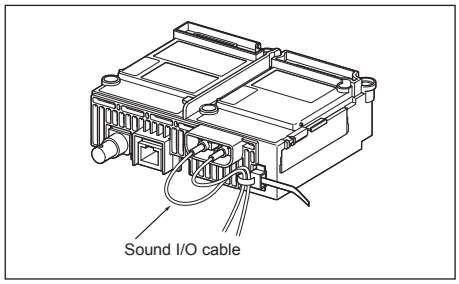
(1) Coaxial cable connection method

1 Connect the coaxial cable to the multimedia unit on the GOT.



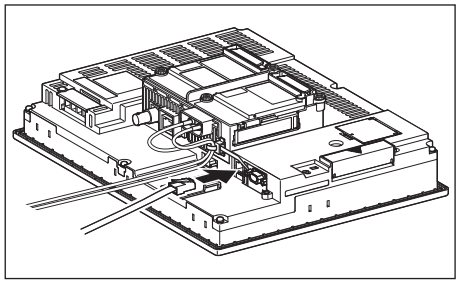
(2) Twisted pair cable connection method

1 Connect the sound I/O cable to the multimedia unit.



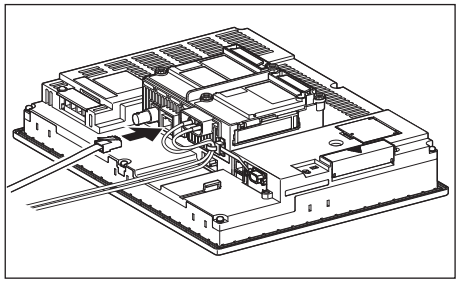
(a) When connecting to the GOT Ethernet interface

1 Connect the twisted pair cable to the GOT Ethernet interface.



(b) When connecting to the multimedia unit

1 Connect the twisted pair cable to the GOT multimedia unit.



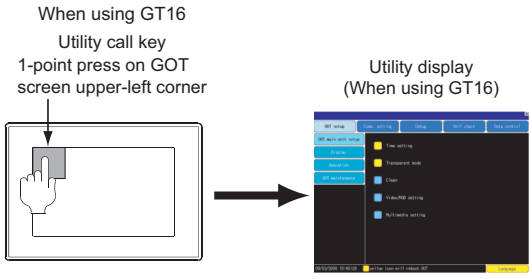
48.3.7 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

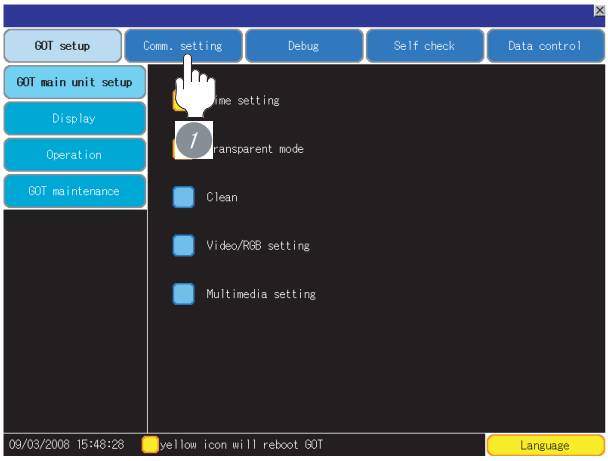


Point

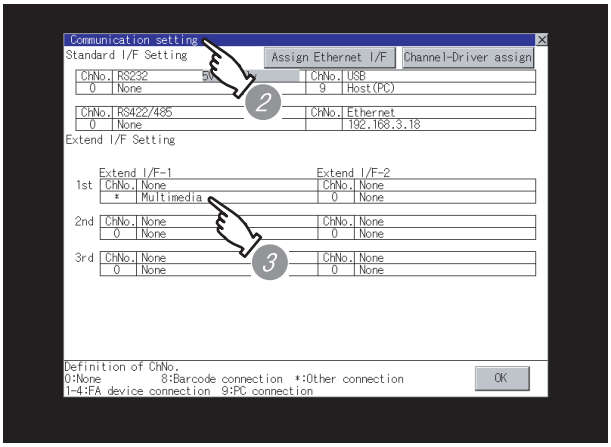
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Extended function OS
  Multimedia

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 48.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT16 User's Manual

48.3.8 Installing and setting multimedia interaction tool onto personal computer

Install the multimedia interaction tool onto the personal computer and set it.

For how to install and set multimedia interaction tool, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

Point

To save a video image and display it on the GOT

When saving a video image and displaying it on the GOT, the installation and setting of the multimedia interaction tool onto the personal computer are unnecessary.

48.4 Precautions

1 When the multimedia function is used

The multimedia function and the video/RGB function are installed exclusively.
Select either of them to use.

2 CF card on the multimedia unit

For the CF card that can be inserted into the multimedia unit, formatting in FAT32 is recommended.
If the CF card formatted in FAT16 is inserted, the following phenomena may occur.

- Reading, writing or saving of movie files takes time.
- When a movie file is played, the movie momentarily looks like as if it stopped.

48.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Multimedia connection	Supporting the multimedia connection	2.90U	Extended function OS Multimedia [04.02.**]
Multimedia connection	Supporting the Ethernet connection between the multimedia unit and a personal computer	2.96A	Extended function OS Multimedia [04.04.**]
Multimedia connection	Supporting the recording and playing of movie files with sound	2.98C	Extended function OS Multimedia [04.05.**]

49

PRINTER CONNECTION



49.1 System Configuration . . . . . page 49-2

This section describes devices and cables needed for printer connection.
Refer to this section to select the desired system.

49.2 Preparatory Procedures for Monitoring . . . . . page 49-4

This section describes the preparatory procedures for the monitoring in the printer connection.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

49.3 Precautions . . . . . page 49-8

This section describes the precautions for printer connection.
Refer to this section without fail before starting printer connection.

49.4 List of Functions Added by Version Upgrade . . . . . page 49-9

This section describes the functions added by version upgrade of GT Designer2 or OS.

49.1 System Configuration

Select a system configuration suitable for your application.

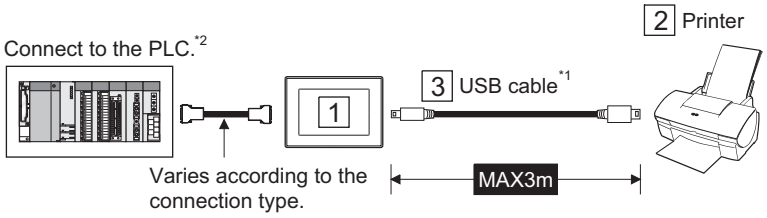
Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

Extended function OS: Printer
Communication driver: Connection type dependent

1 System configuration and connection conditions

Connection conditions		System Configuration
Number of GOT	Distance	
1	Varies according to the printer's specifications.	

*1 When connecting the printer to the GOT, use the supplied dedicated printer connection cable.

*2 The PLC connection type and communication interface for printer connection are shown below.

GOT type	PLC ↔ GOT		GOT ↔ Printer
	Connection type	Communication interface of GOT	Communication interface of GOT
GT16 GT15	Bus connection	Bus connection unit	Printer interface
	MELSECNET/H connection (PLC to PLC network)	MELSECNET/H communication unit	
	MELSECNET/10 connection (PLC to PLC network)		
	CC-Link IE controller network connection	CC-Link IE controller network communication unit	
	CC-Link connection (intelligent device station)	CC-Link communication unit	
	Direct CPU connection	RS-232 communication unit RS-422/485 communication unit	
	Computer link connection		
	CC-Link connection (via G4)		
	Third party PLC connection		
GT16	Ethernet connection	Ethernet interface	
GT15	Ethernet connection	Ethernet communication unit	

Remark System configuration between GOT and PLC

For the system configuration between the GOT and PLC, refer to the corresponding section.

- MITSUBISHI PLC CONNECTIONS (☞ Sections 2 to 10)
- THIRD PARTY PLC CONNECTIONS (☞ Sections 11 to 27)

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Printer unit • For communication between GOT and PictBrigde Compatible Printer*1	GT15-PRN	GT16 GT15

*1 GOT does not support some PictBridge Compatible Printers. For connectable printers and system equipment, refer to the following Technical News.

☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

(2) Printer

Image	No.	Name	Model name
	2	PictBridge Compartible Printer*1	For connectable printers and system equipment, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

Remark Technical News

Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANS web) to refer to the Technical News.
http://wwwf2.mitsubishielectric.co.jp/english/index.html

(3) Cable

Image	No	Name	Model name
	3	cable for printer connection only	GT09-C30USB-5P(3m)(packed together with the printer unit)

49.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

☞ Refer to each chapter.

↓

Install the OS onto the GOT.

☞ Section 49.2.1
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 49.2.2
Checking OS installation on GOT

↓

Set the communication interface. (Communication settings)

☞ Section 49.2.3
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 49.2.4
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 49.2.5
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

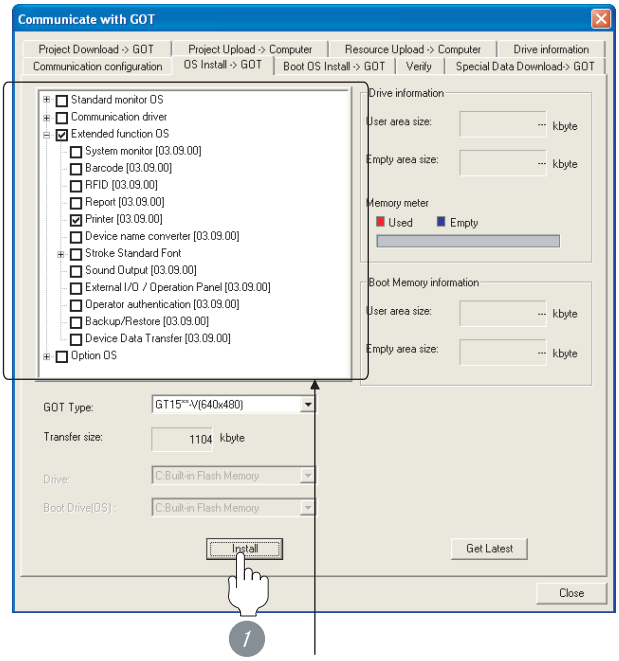
☞ Section 49.2.6
Verifying GOT recognizes controllers

49.2.1 Installing OS onto GOT

Install the extended function OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• Depends on the connection type

Place a check mark in the box of the following item in the extended function OS.

• Printer

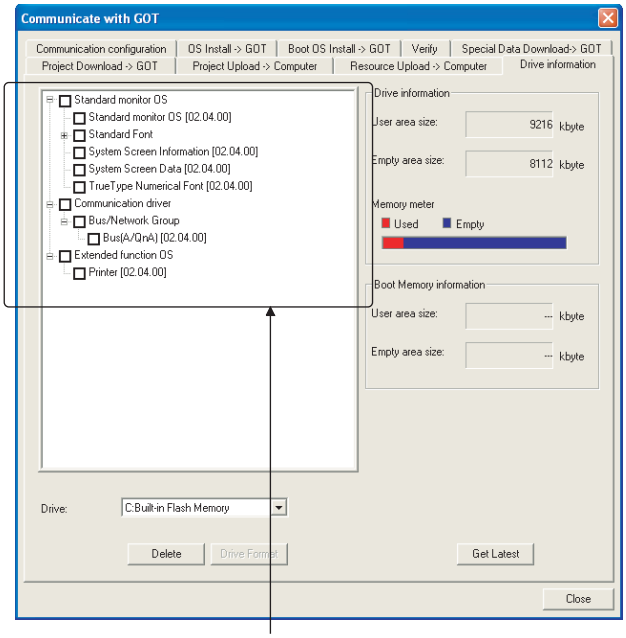
1 Check-mark a extended function OS (Printer), and click the Install button.

49.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Depends on the connection type

3) Extended function OS: Printer

49.2.3 Setting communication interface (Communication settings)

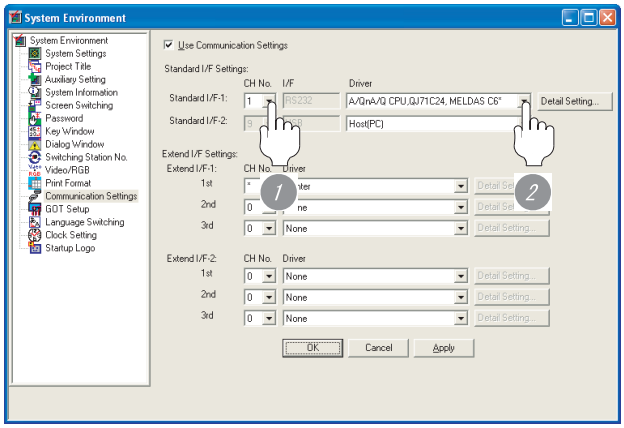
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

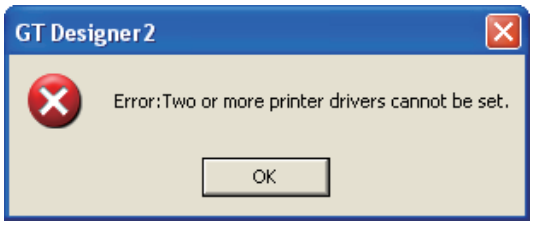
1 Set "*" to the channel No. used.

2 Set the driver to "Printer".

Point

Number of available printer drivers

Two or more drivers cannot be set.
If two or more printer drivers are set, the following error message will appear.

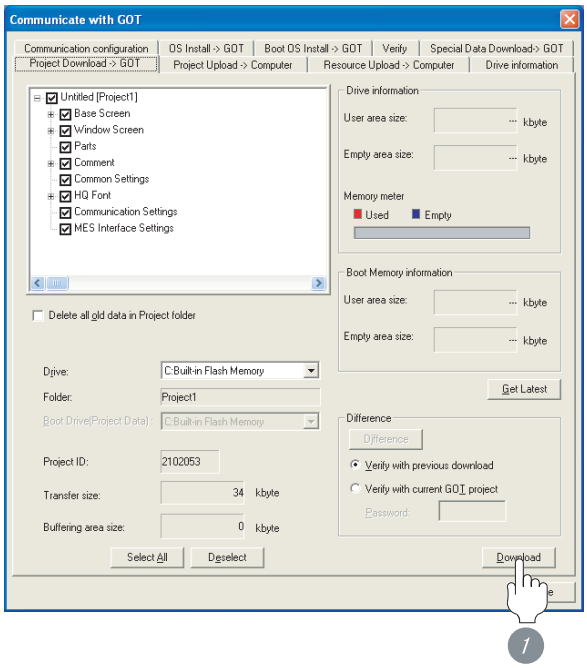


49.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

49.2.5 Attaching communication unit and connecting cable

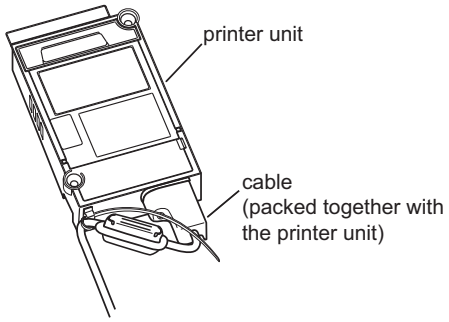
Point

Cautions when attaching the communication unit and connecting the cable

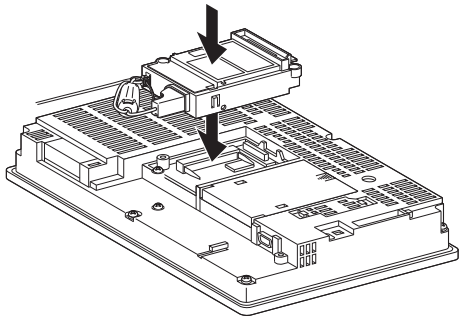
Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 Attaching the communication unit

1 Connect the cable (packed together with the printer unit) to the printer unit.



2 Attach the printer unit to the extension unit connector on the GOT.



Point

Printer unit

For details on the printer unit, refer to the following manual:

☞ GT15 Printer unit User's Manual

49.2.6 Verifying GOT recognizes controllers

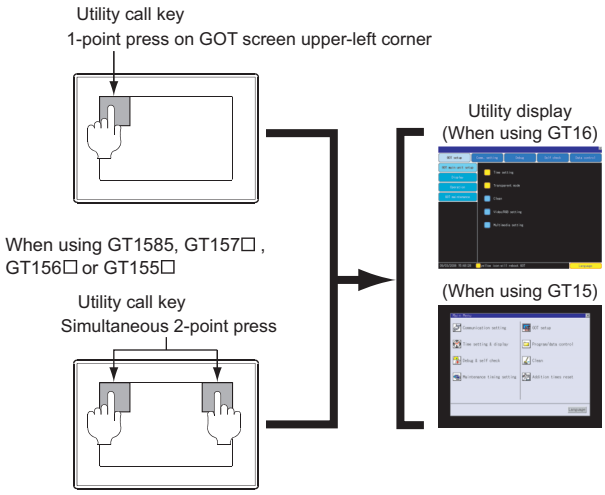
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595

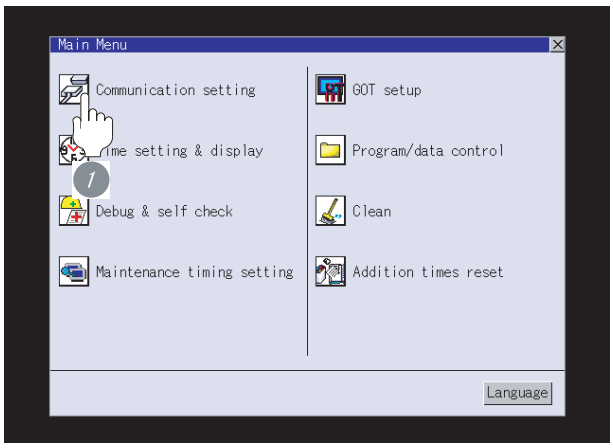


Point

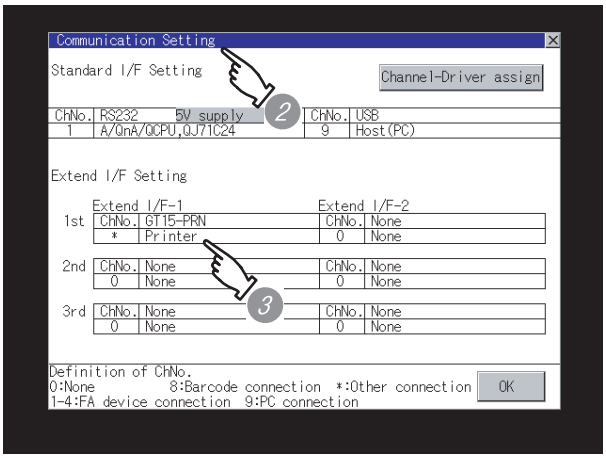
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver: Printer

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 49.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

49.3 Precautions

1 Connection/disconnection of USB cable during print operation

When the USB cable is disconnected during print operation, the printer hangs up depending on the model of PictBrige compatible printer. In this case, turn on the main power of the printer and then restart it.

2 When a printer cannot perform print operation

While the initialization of the printer is being carried out at boot time, some models of PictBrige compatible printers send "Print Ready" signal to GOT. If printing operation is started from GOT, an error will occur and the printing operation will be disabled.
If this occurs, restart a printer with the following procedure.

1. Disconnect the USB cable from the printer.
2. Turn the power of the printer OFF.
3. Disconnect the power supply cable of the printer and stop the printer completely.
4. Connect the power supply cable to the printer.
5. Turn the power of the printer ON and wait unitil the intialization processing of the printer is completed.
6. Connect the USB cable to the printer.

For the handling errors occurred on the printer, refer to the following.

☞Manual for the printer being used

49.4 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
printer connection	Supporting the printer connection	2.27D	Extended function OS Printer[02.04.**]
printer connection	Supporting the connections to GT16	2.90U	Extended function OS Printer[04.02.**]

MEMO

50

REMOTE PERSONAL COMPUTER OPERATION CONNECTION



50.1 System Configuration . . . . . page 50-2

This section describes devices and cables needed for remote personal computer operation connection.
Select a system suitable foryour application.

50.2 Connection Cable . . . . . page 50-4

This section describes the cable specifications needed for remote personal computer operation connection.
Check the specifications of the connection cables.

50.3 Preparatory Procedures for Monitoring . . . . . page 50-7

This section describes the preparatory procedures for the monitoring in the remote personal computer operation connection.

50.4 Precautions . . . . . page 50-13

This section describes the precautions for remote personal computer operation connection.
Refer to this section without fail before starting remote personal computer operation connection.

50.5 List of Functions Added by Version Upgrade . . . . . page 50-14

This section describes the functions added by version upgrade of GT Designer2 or OS.

50.1 System Configuration

The RGB display is used for the remote personal computer operation connection.
The following GOT models support the remote personal computer operation connection.

GOT model
GT16
GT1585V-S
GT1575V-S

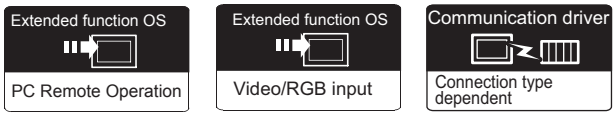
Select a system configuration suitable for your application.

Point

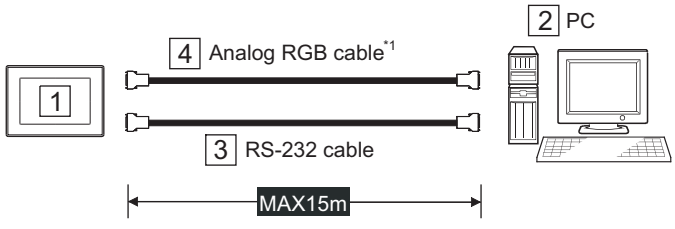
Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

50.1.1 When using remote personal computer operation function on GOT



1 System configuration and connection conditions

Connection conditions				System configuration
Number of GOTs	Number of Personal computers	Distance: Analog RGB cable	Distance: RS-232 cable	
1	1	*1	15m or less	

*1 The cable length differs depending on the specification of the personal computer to be used. Use the cable that is compatible with the personal computer to be used.

2 System equipment

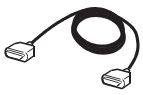
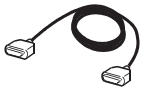
(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15
		RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15
		RGB input unit • For connection between GOT and personal computer	GT16M-R2	GT16
		Video/RGB input unit	GT16M-V4R1	GT16
		RGB input unit • For connection between GOT and personal computer	GT15V-75R1	GT16 GT15
		Video/RGB input unit	GT15V-75V4R1	GT16 GT15

(2) PC

Image	No.	Name	Model name
	2	PC	To be selected by the user.

(3) Cable

Image	No.	Name	Model name
	3	RS-232 cable*1 • Between personal computer and GOT	GT01-C30R2-9S(3m)
	4	Analog RGB cable*1 • Between personal computer and GOT	GT15-C50VG(5m)

*1 The RS-232 cable and the analog RGB cable can be prepared by the user. (☞ Section 50.2 Connection Cable)

50.2 Connection Cable

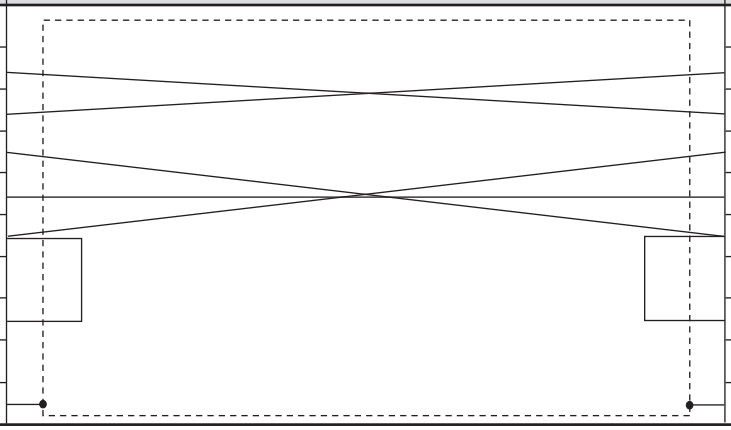
When using a three meter or longer RS-232 cable for connecting a GOT to a personal computer, the cable must be prepared by the user.
The following provides connection diagrams for each cable, connector specifications and other information.

50.2.1 RS-232 cable

The following shows the connection diagram and connectors of RS-232 cable for connecting the GOT to the personal computer.

1 Connection diagram

RS-232cable

GOT side		Cable connection and signal direction	PC side	
Signal name	Pin No.		Pin No.	Signal name
DCD	1		1	CD
RD	2		2	RD
SD	3		3	SD
DTR	4		4	DTR
SG(GND)	5		5	SG(GND)
DSR	6		6	DSR
RTS	7		7	RTS
CTS	8		8	CTS
	9		9	CI
FG	shell		shell	FG

2 Connector specifications

(1) GOT side connector

(a) GOT side connector

Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT.

For the GOT side of the RS-232 cable, use a connector or connector cover applicable to the GOT connector.

(b) Connector type

9-pin D-sub (male) inch screw fixed type

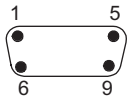
(c) Connector model

GOT	Hardware version	Connector model	Manufacturer
GT16	-	17LE-23090-27(D4C☐)	DDK Ltd.
GT1585V-S		17LE-23090-27(D4CK)	
GT1575V-S			
GT15-RS2-9P		17LE-23090-27(D3CC)	

(d) Connector pin arrangement

GT16, GT15

GOT main part connector
see from the front



9-pin D-sub (male)

(2) PC side connector

Use a connector compatible with the personal computer to be used.

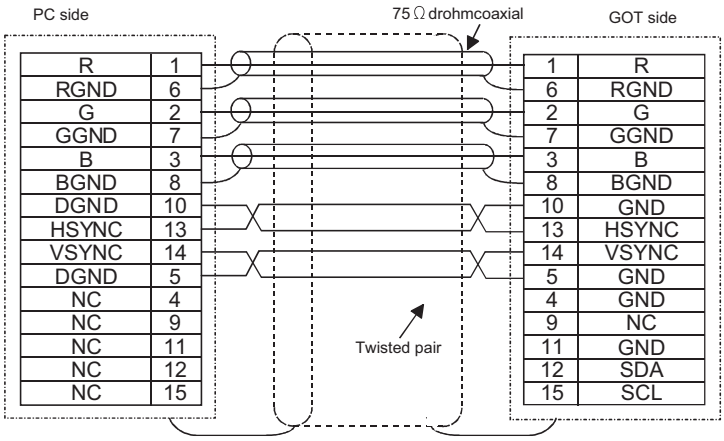
3 Precautions when preparing a cable

• The length of the RS-232 cable must be 15m or less.

50.2.2 Analog RGB cable

The following shows the specifications, connection diagrams, and connectors of the cable for connecting a GOT to a RGB output type personal computer.

1 Connection diagram



Cable specification

Item	Specifications
Applicable connector	15-pin D-sub for both ends

2 Connector specifications

(1) GOT side connector

Use the following as the video/RGB input unit and the RGB input unit connectors.

For the GOT side connector and connector cover of the analog RGB cable, use the ones applicable to the GOT connector.

GOT	Connector model	Connector type	Manufacturer
GT16M-R2	17HE-R13150-73MC2	15-pin D-sub (female)	DDK Ltd.
GT16M-V4R1			
GT15V-75R1			
GT15V-75V4R1			

(2) Personal computer side connector

Use a connector compatible with the personal computer to be used.

3 Precautions when preparing a cable

The cable length differs depending on the specification of the personal computer to be used. Create a cable under the specifications of the personal computer.

50.3 Preparatory Procedures for Monitoring

The following the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PC.

☞ Refer to each chapter.

⇩

Install the OS onto the GOT.

☞ Section 50.3.1
Install the OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 50.3.2
Checking OS installation on GOT

⇩

Set the communication interface. (Communication settings)

☞ Section 50.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 50.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 50.3.5
Attaching option unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 50.3.6
Verifying GOT recognizes controllers

⇩

Installing and setting up computer remote operation driver.

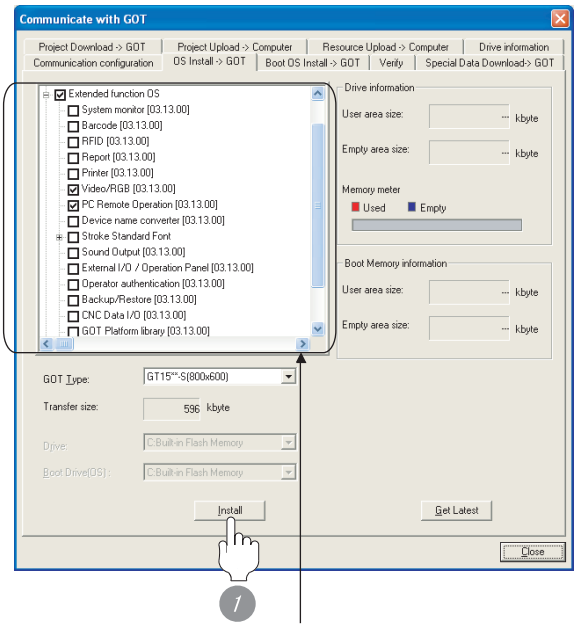
☞ Section 50.3.7
Installing and setting up remote personal computer operation driver

50.3.1 Install the OS onto GOT

Install the standard monitor OS, communication driver and extended function OSonto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

・ Depends on the connection type

Place a check mark in the box of the following item in the extended function OS.

・ Video/RGB

・ PC Remote Operation

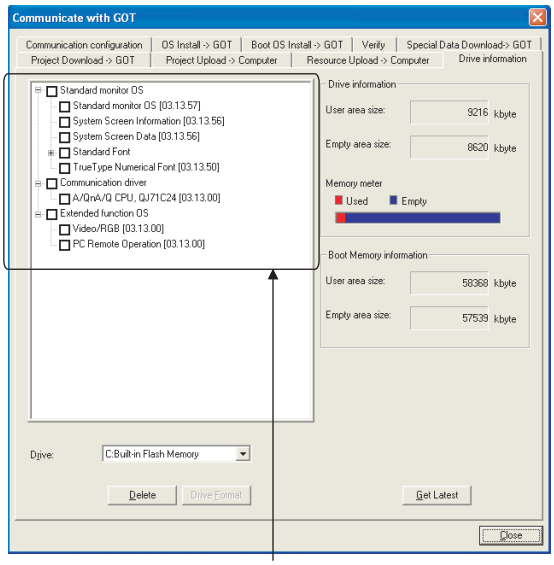
1 Check the extended function OS (Video/RGB, PC Remote Operation), and then click the Install button.

50.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Depends on the connection type

3) Extended function OS: Video/RGB, PC Remote Operation

50.3.3 Setting communication interface (Communication settings)

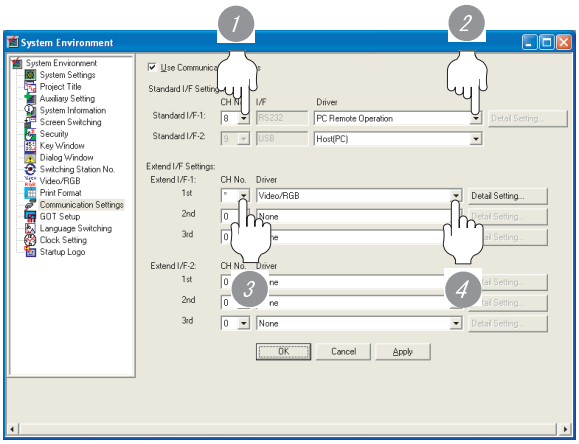
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

Settings for the remote personal computer operation connection

1 Set the channel No. to be used.
- When using the standard interface
  Set "8" to the channel No.
- When using the extension interface
  Select one of Channels No. "5" to "7".

2 Set the driver to [PC Remote Operation].

Setting the video/RGB connection

3 Set "*" to the channel No. for the first stage of the Extend I/F-1.

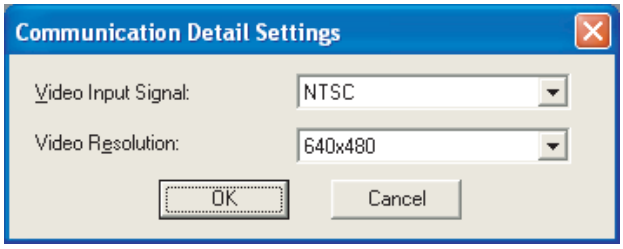
4 Set the driver to [Video/RGB].

Point

Setting for the driver

To Channels No. 5 to 8, multiple [PC Remote Operation] cannot be set.

2 Communication detail settings



Item	Description	Range
Video Input Signal*1	Set the video input signal. <Default: NTSC>	NTSC, PAL
Video Resolution*2	Set the video resolution. <Default: 640×480>	640×480, 720×480, 768×576*3

*1 When NTSC format is selected, the resolution is fixed to 640×480.

*2 For GT1675M-V and GT1665M-V, the resolution is fixed to 640×480.

*3 768×576 can be set only for the GT16.

Point

(1) Setting the communication interface

When Channel No.8 is used, the following external devices, which use Channel No.8, cannot be connected at the same time.

- Fingerprint recognition device
- RFID controller that uses the external authentication
- Barcode reader and RFID controller that require the power supply

When connecting the above-mentioned devices at the same time, set [PC Remote Operation] to Channels No. 5 to 7.

(2) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(3) Precedence in communication settings

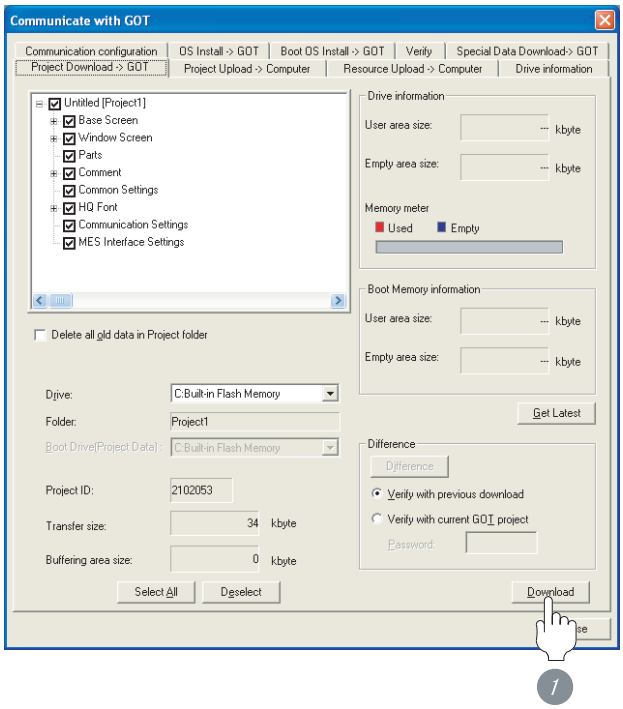
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

50.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

50.3.5 Attaching option unit and connecting cable

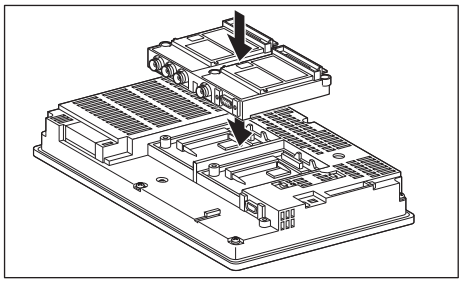
Point

Cautions when attaching the option unit and connecting the cable

Shut off all phases of the GOT power supply beforeattaching the option unit and connecting the cable.

1 Attaching the option unit

1 Attach the Video/RGB unit to the extension unit connector on the GOT as necessary.



Point

Video/RGB unit

(1) Details of attaching method

For the details of attaching the Video/RGB unit, refer to the following manual.

- GT16 Video/RGB Input Unit User's Manual
- User's Manual for MODEL GT15V-75V4R1 Video/RGB Input Unit MODEL GT15V-75V4 Video Input Unit MODEL GT15V-75R1 RGB Input Unit

(2) Attaching multiple units

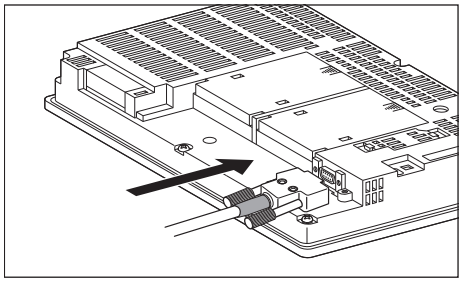
Multiple Video/RGB units cannot be attached to the GOT.

2 Connecting the cable

(1) How to connect the RS-232 cable

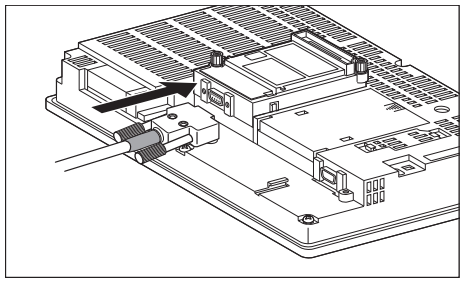
• When connecting to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



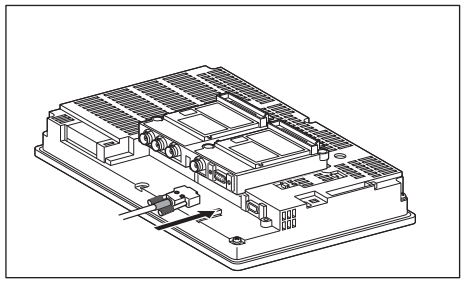
• When connecting to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(2) Analog RGB cable connection method

1 Connect the analog RGB cable to the Video/ RGB input unit or the RGB input unit on the GOT.



50.3.6 Verifying GOT recognizes controllers

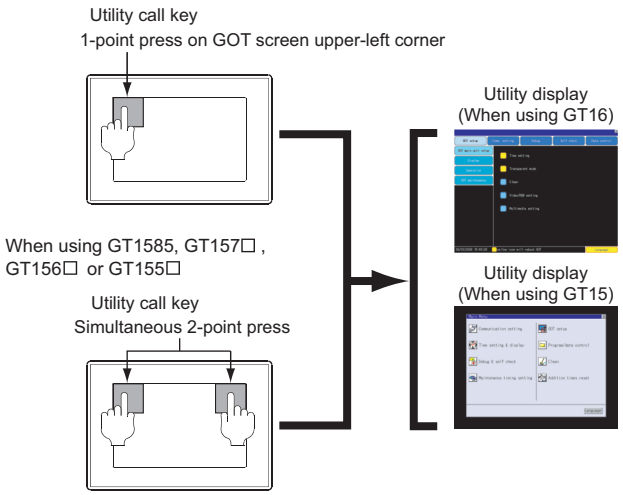
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

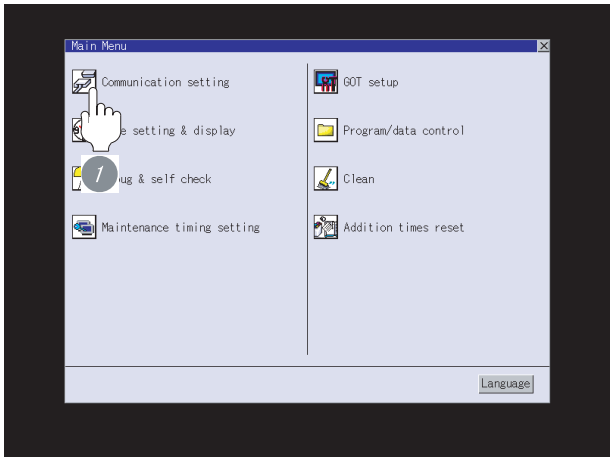
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Point

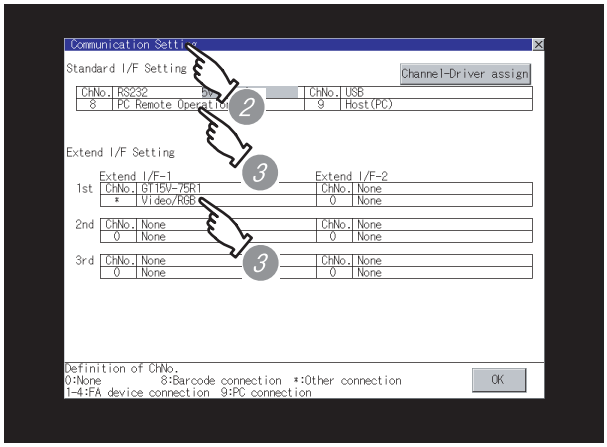
How to display Utility (at default)

When using GT16 or GT1595





1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Check that the following communication driver and extended function OS are displayed in the driver display box for the communication interface to be used.

- Extended function OS: Video/RGB, PC Remote Operation

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 50.3 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.

For details on the Utility, refer to the following manual.

☞ GT □ User's Manual

50.3.7 Installing and setting up remote personal computer operation driver

Install and set up the remote personal computer operation driver to the personal computer.

For installing and setting up the remote personal computer operation driver, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

50.4 Precautions

1 Personal computer side setting

Before using the remote personal computer operation function, install the remote personal computer operation driver on the personal computer.

After the driver installation, check that the driver is correctly installed.

For details of the remote personal computer operation driver, refer to the following manual.

☞ GT Designer2 Version □ Screen Design Manual

50.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Remote personal computer operation connection	Supporting the remote personal computer operation function	2.82L	Extended function OS PC Remote Operation [03.13.**]
Remote personal computer operation connection	Supporting the connection to GT16	2.90U	Extended function OS PC Remote Operation [04.02.**]

51

RFID CONNECTION



51.1 System Configuration . . . . . page 51-2

This section describes devices and cables needed for RFID connection.
Refer to this section to select the desired system.

51.2 Preparatory Procedures for Monitoring . . . . . page 51-4

This section describes the preparatory procedures for the monitoring in RFID connection.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

51.3 Precautions . . . . . page 51-10

This section describes the precautions for RFID connection.
Refer to this section without fail before starting RFID connection.

51.4 List of Functions Added by Version Upgrade . . . . . page 51-11

This section describes the functions added by version upgrade of GT Designer2 or OS.

51.1 System Configuration

Select a system configuration suitable for your application.

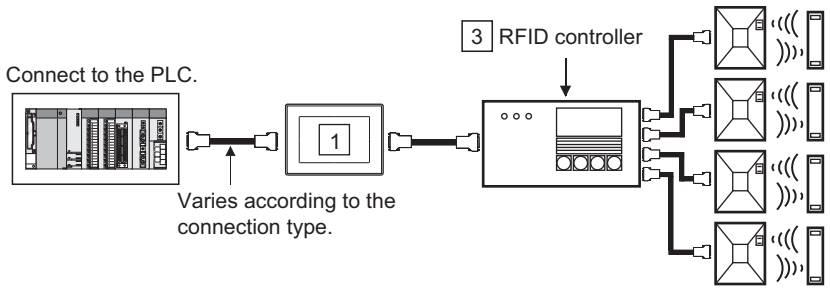
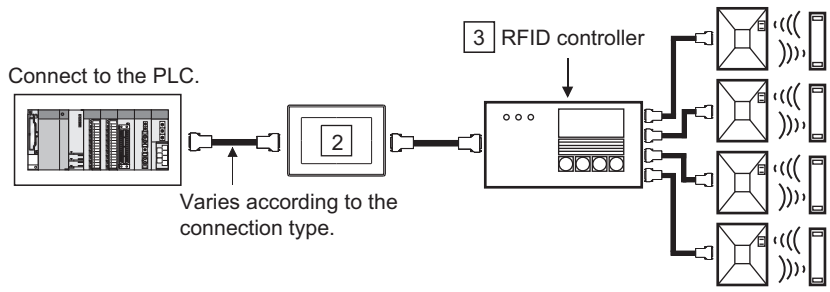
Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.

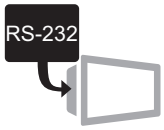
Extended function OS: RFID
Communication driver: Connection type dependent

1 System configuration and connection conditions

Connection conditions		System Configuration	Model
Number of GOT	Distance		
1	Varies according to specification of RFID controllers.		GT16 GT15 GT11 Bus GT11 Serial
			GT16 GT15

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial
	2	RS-232 Communication Unit • For RS-232 communication	GT15-RS2-9P	GT16 GT15

Point

When using the RS-232 communication unit

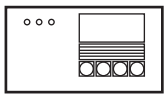
Use the RS-232 communication unit of the GOT for connecting to an RFID controller.

However, when the RS-232 communication unit is used, the following operations cannot be supported.

(a) Using the external authentication

(b) Supplying the power to an RFID controller from the GOT

(2) RFID controller

Image	No.	Name	Model name
	3	RFID controller	For connectable RFID controllers and system equipment, refer to the following Technical bulletin. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

Remark

(1) System configuration between GOT and PLC

For the system configuration between the GOT and PLC, refer to the corresponding section.

- MITSUBISHI PLC CONNECTIONS (☞ Chapter 2 to 10)
- THIRD PARTY PLC CONNECTIONS (☞ Chapter 11 to 27)
- MODBUS(R) CONNECTION (☞ Chapter 29 to 30)

(2) Technical News

Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANS web) to refer to the Technical News.

http://wwwf2.mitsubishielectric.co.jp/english/index.html

51.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

☞ Refer to each chapter.

⇩

Install the OS onto the GOT.

☞ Section 51.2.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 51.2.2
Checking OS installation on GOT

⇩

Set the communication interface. (Communication settings)

☞ Section 51.2.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 51.2.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 51.2.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 51.2.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

☞ Section 51.2.7
Checking for normal monitoring

Point

On system configuration example

This section describes GOT side settings.
For system configuration examples of RFID connection, refer to the following.

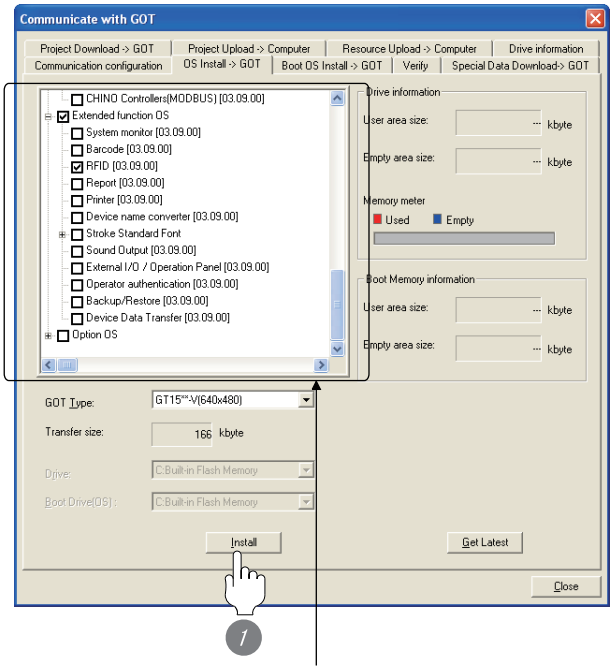
☞ GT Designer2 Version ☐ Screen Design Manual

51.2.1 Installing OS onto GOT

Install the extended function OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

• Depends on the connection type

Place a check mark in the box of the following item in the extended function OS.

• RFID

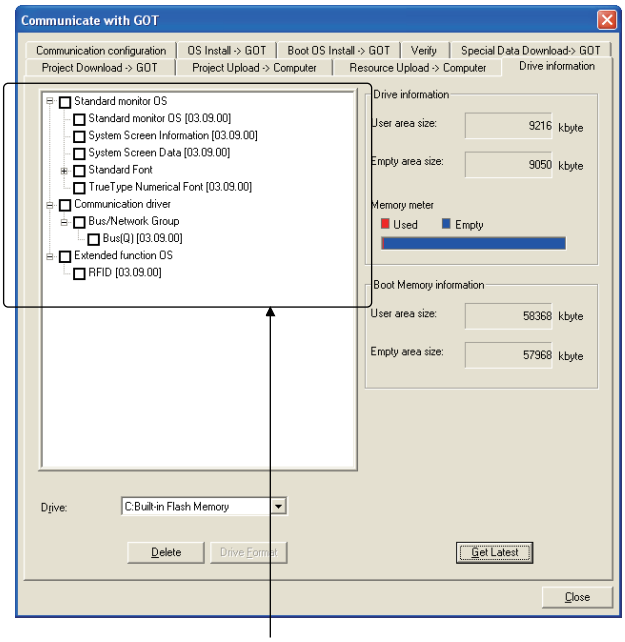
1 Check-mark a extended function OS (RFID), and click the Install button.

51.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver: Depends on the connection type

3) Extended function OS: RFID

51.2.3 Setting communication interface (Communication settings)

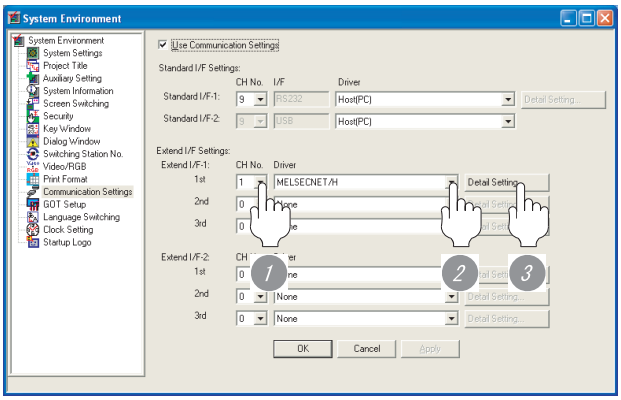
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set the channel No. to be used.
- When using the standard interface
  Set "8" to the channel No.
- When using the extension interface
  Select one of Channels No. "5" to "7".

2 Set the driver to "RFID".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

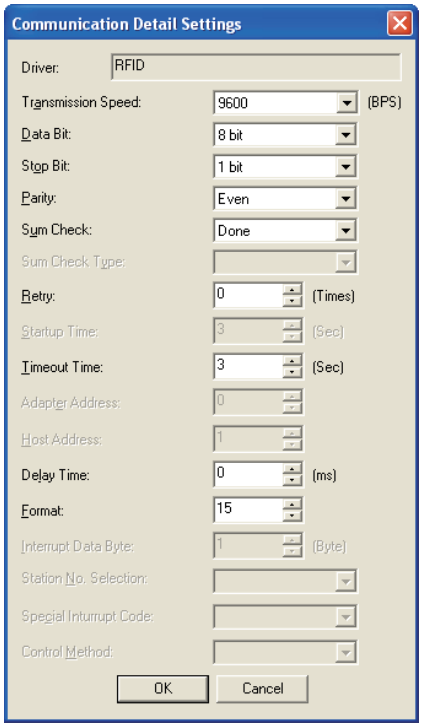
Point

(1) Setting the communication interface
When Channel No.8 is used, the following external devices, which use Channel No.8, cannot be connected at the same time.
- Fingerprint recognition device
- Barcode reader that requires the power supply

When connecting the above-mentioned devices at the same time, set [RFID] to Channels No. 5 to 7.

(2) Setting the driver
To Channels No. 5 to 8, multiple [RFID] cannot be set.

2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps>	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. <Default: 8bit>	7bit/8bit
Stop Bit	Specify the stop bit length for communications. <Default: 1bit>	1bit/2bit
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. <Default: Even>	None Even Odd
Sum check	Set whether or not to perform a sum check during communication. <Default: Done>	Done, None
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 times>	0 to 5 times
Timeout Time	Set the time period for a communication to time out. <Default: 3 seconds>	3 to 30 seconds
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0ms>	0 to 3000 ms

(Continued to next page)

Item	Description	Range
Format	Select the communication format. <Default:15> Dedicated protocol • Format 10 (LS Industrial Systems Co., Ltd. LSR) • Format 11 (MARS TECHNO SCIENCE Corp. ICU-60S) • Format 12 (MARS TECHNO SCIENCE Corp. ICU-215 (Mifare)) Nonprocedural protocol • Format 15	10/11/12/15

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT ☐ User's Manual

(2) Precedence in communication settings

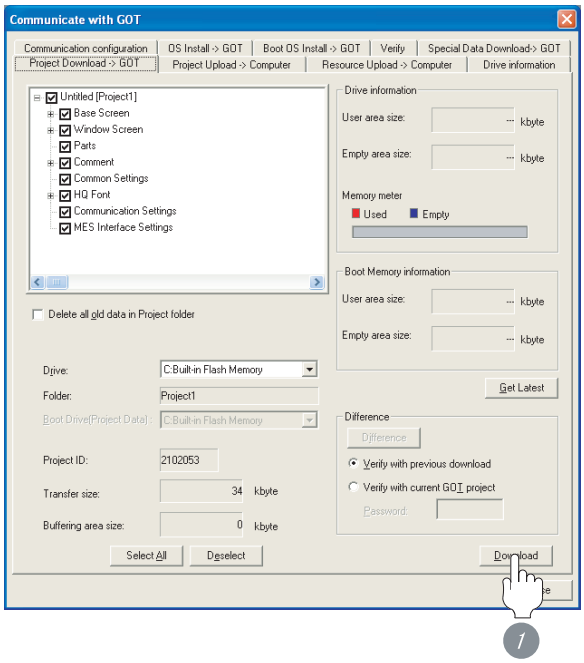
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

51.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

51.2.5 Attaching communication unit and connecting cable

Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

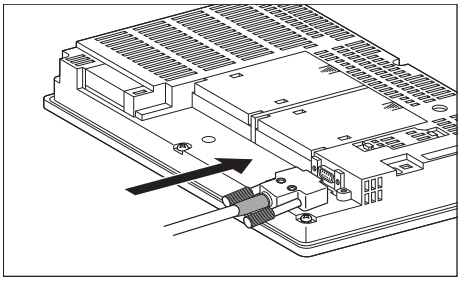
1 How to connect the cable

(1) How to connect the RS-232 cable

(a) For GT16, GT15

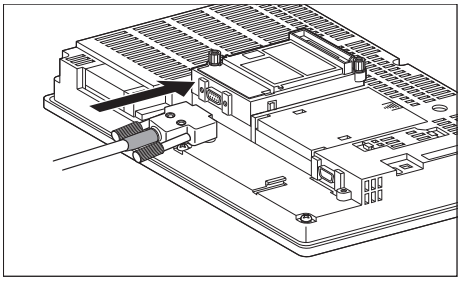
• When connecting to the RS-232 interface

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



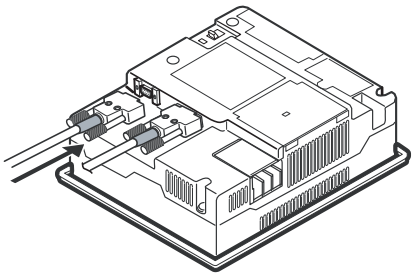
• When connecting to the RS-232 communication unit

1 Connect the RS-232 cable to the RS-232 communication unit on the GOT.



(b) For the GT11

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



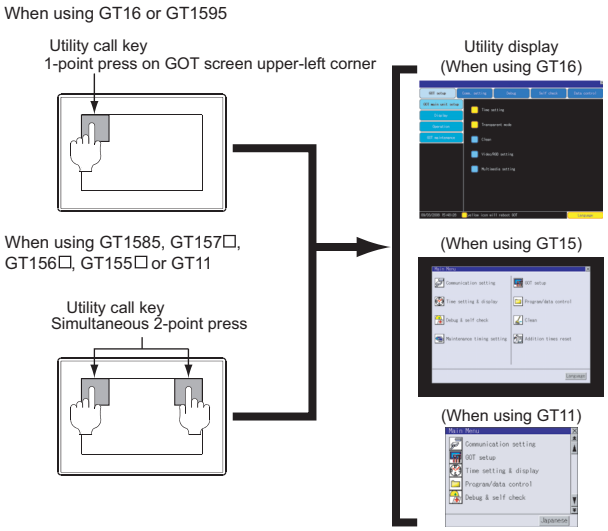
51.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

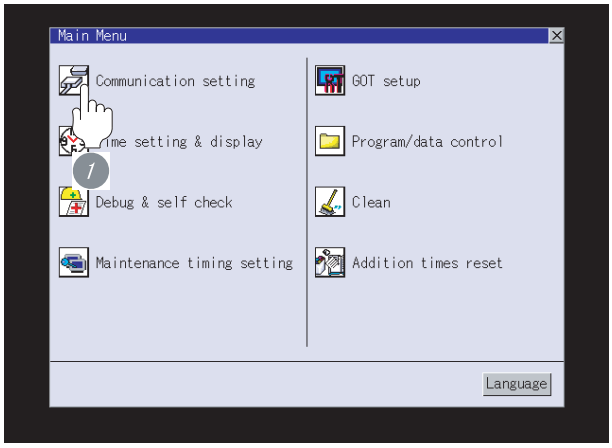


Point

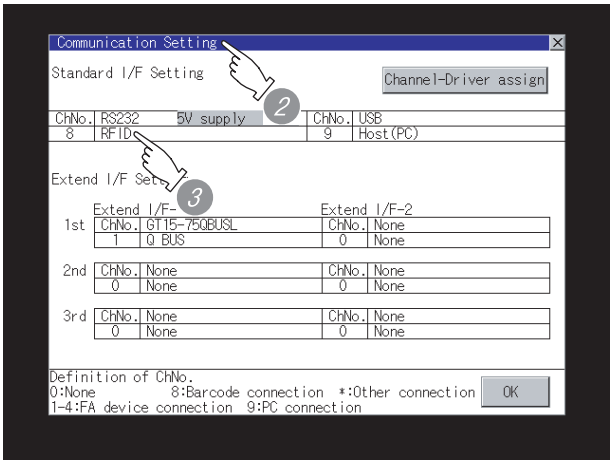
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.
- Communication driver: RFID

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 51.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

51.2.7 Checking for normal monitoring

1 Read IC tag

Read IC tag with a RFID reader/writer and check that the read data are written into the PLC CPU.

Detailed settings including sequence programs, device settings and other settings required for monitoring, refer to the following manual.

☞ GT Designer2 Version ☐ Screen design manual

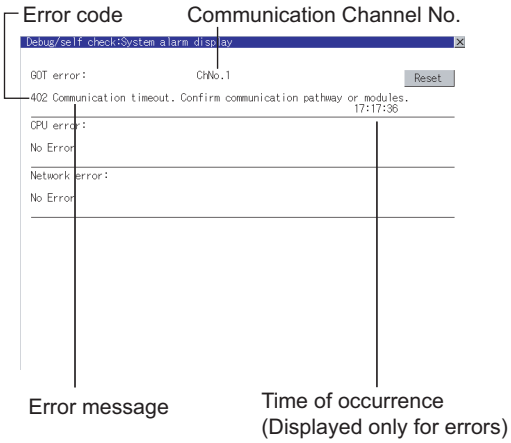
2 Check for errors occurring on the GOT.

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

51.3 Precautions

1 RFID function setting on GT Designer2

Before connecting the RFID controller, set the RFID function and system data.
For details, refer to the following manual.

☞ GT Designer2 Version ☐ Screen design manual

2 Controller setting

(1) When using the external authentication
When using the external authentication on the RFID controller, set Channel No. 8 using the standard interface.
When connecting the RFID using Channels No. 5 to 7 of the extension interface, extension interface cannot be used.
For details on the external authentication, refer to the following manual.

☞ GT Designer2 Version ☐ Screen design manual

(2) When requiring the power supply
When using the RFID controller, which requires the power supply from the GOT, set Channel No. 8 using the standard interface.
With Channels No. 5 to 7 of the extension interface, the power cannot be supplied.

3 Cmmunication in multiple RFID readers/writers connection

When connecting multiple RFID readers/writers, some controllers may communicate with each RFID reader/writer.
For communicating the RFID controller with the each RFID reader/writer, set an interlock so that the RFID controller does not communicate with RFID readers/writers until the executing communication is completed.

51.4 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
RFID connection	Supporting the RFID connection	2.73B	Extended function OS RFID [03.09.**]
RFID connection	Supporting the connections to GT16	2.90U	Extended function OS Printer[04.02.**]

MEMO

OTHER FUNCTIONS

Chapter52 MULTI-CHANNEL FUNCTION

Chapter53 FA TRANSPARENT FUNCTION

Chapter54 MULTIPLE-GT11, GT10 CONNECTION FUNCTION

Chapter55 GATEWAY FUNCTION

Chapter56 MES INTERFACE FUNCTION

MEMO

52

MULTI-CHANNEL FUNCTION



52.1 What is Multi-channel Function? . . . . . page 52-2

This section provides the outline of multi-channel function.

52.2 Bus Connection and Serial Connection. . . . . page 52-3

This section describes the system configuration examples for using the multi-channel function in a bus or serial connection.

52.3 Ethernet Multiple Connection . . . . . page 52-11

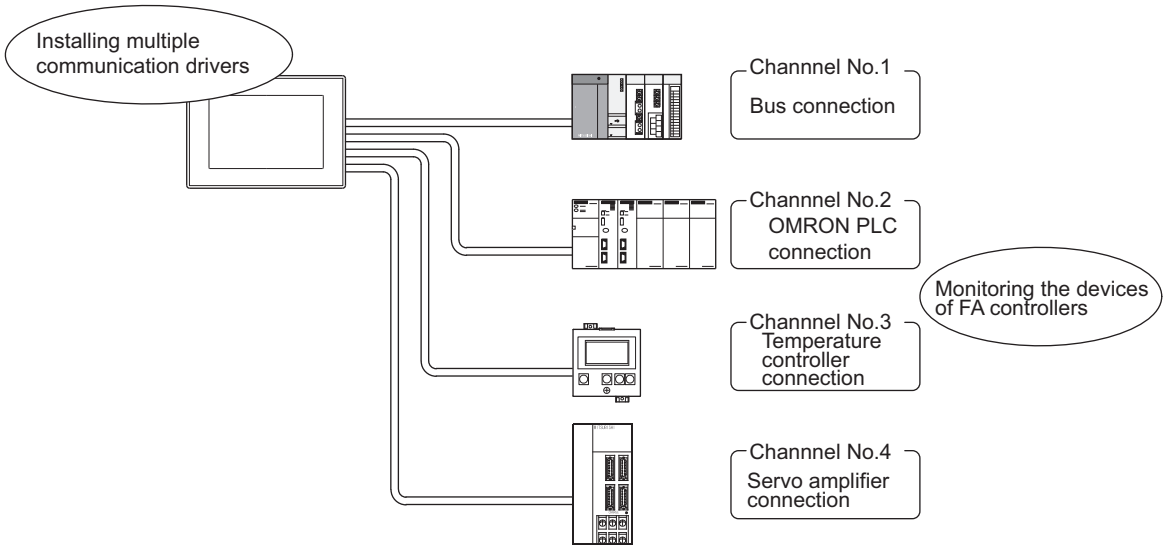
This section describes the system configuration examples for using the multi-channel function in an Ethernet multiple connection.

52.4 List of Functions Added by Version Upgrade . . . . . page 52-20

This section describes the functions added by version upgrade of GT Designer2 or OS.

52.1 What is Multi-channel Function?

Multi-channel Function is a function to monitor up to four FA controllers (PLC CPU, temperature controller, inverter, etc.) on one GOT by installing multiple communication drivers in the GOT .
(For GT155□, up to two controllers (two channels))



Point

(1) Before using the multi-channel function
This manual only describes the procedure for using the multi-channel function based on the following system configuration example.

☞ Section 52.2 Bus Connection and Serial Connection

☞ Section 52.3 Ethernet Multiple Connection

When using the multi-channel function, refer to the following manual first to select a system or a communication unit which is mounted to GOT.

☞ GT Designer2 Version□ Screen Design Manual (Section 2.8 Multi-channel Function)

(2) System configuration when the multi-channel function is used
The system configuration between GOT and the controllers is the same as that of when not using the multi-channel function.
For the system configuration between GOT and the controllers, refer to the following.

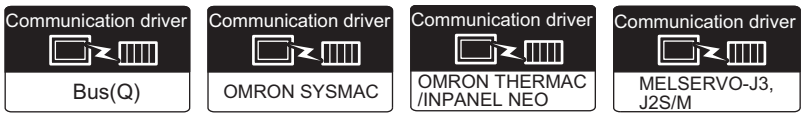
☞ Each chapter indicating the system configuration

52.2 Bus Connection and Serial Connection

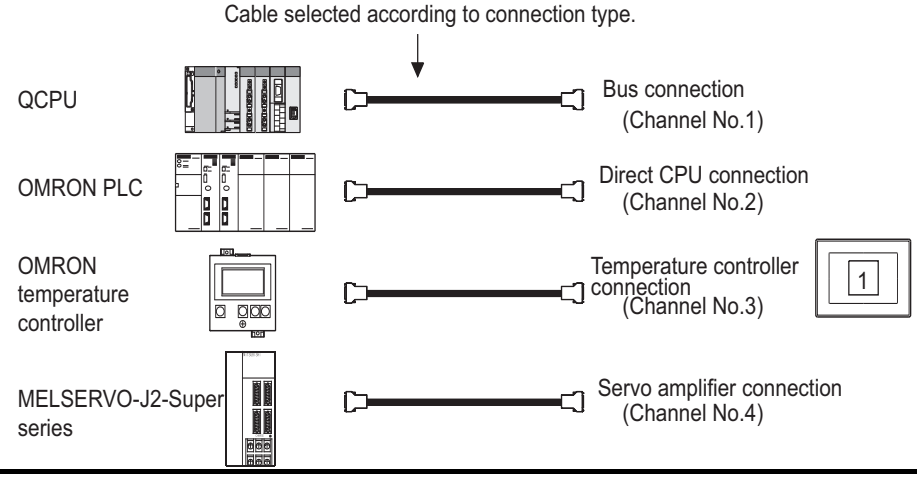
One GOT can monitor a PLC CPU, temperature controller and servo amplifier, etc. Therefore, the system configuration, in which several controllers are mixed, can be easily established.
In addition, each system can be monitored on the GOT screen, and the unified management of the information is possible.

52.2.1 System Configuration Examples

This section uses the following system configuration as an example.



1 System configuration

Connection conditions		System configuration
Number of GOTs	Distance	
Differ according to connection type.		

Point

Controllers that use Channels No.5 to 8

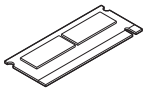
The following shows the drivers that can be set to Channels No. 5 to 8.
For the system configuration and connection condition with the controller, refer to the chapter of each controller.

Channel No.	Driver*1	Reference
5 to 7	Barcode, RFID, PC Remote Operation	Chapter 45 FINGERPRINT AUTHENTICATION DEVICE CONNECTION
8	Barcode, RFID, PC Remote Operation, Fingerprint Authentication	Chapter 46 BAR CODE READER CONNECTION Chapter 50 REMOTE PERSONAL COMPUTER OPERATION CONNECTION Chapter 51 RFID CONNECTION

*1 Only one channel can be assigned to one driver.

2 System equipment

(1) GOT

Image	No.	Name	Model name
	1	Bus connection unit • For terminal GOT	GT15-QBUS
		RS-232 interface • For direct CPU connection	— (Built into GOT)
		RS-232 Communication unit • For temperature controller connection	GT15-RS2-9P
		RS-422/485 Communication unit • For inverter connection	GT15-RS4-9S
		Option function board*1 • For optional function	GT15-QFNB, GT15-QFNB16M, GT15-QFNB32M, GT15-QFNB48M, GT15-MESB48M

*1 For GT16, the option function board is not required.

(2) Cable

For selecting the cable, refer to each chapter indicating the system configuration.

52.2.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

☞ Section 52.2.3
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 52.2.4
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 52.2.5
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 52.2.6
Downloading project data

⇩

Attach the option function board/communication unit and connect the cable.

☞ Section 52.2.7
Attaching option function board/communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 52.2.8
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

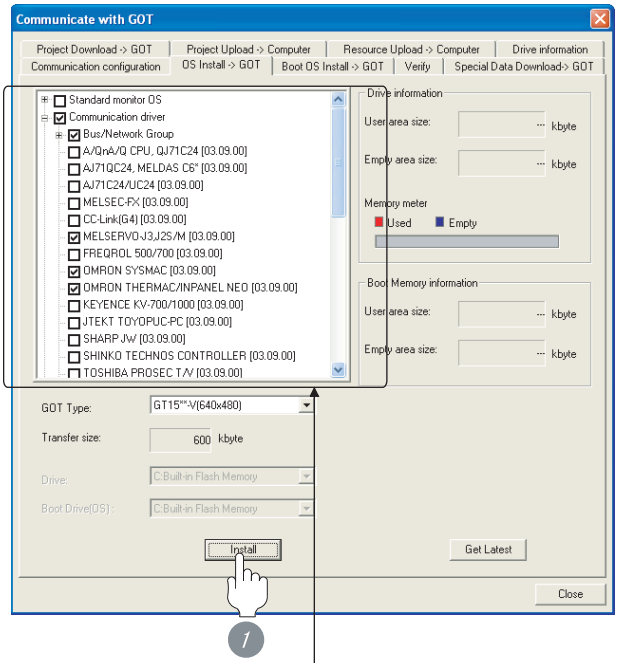
☞ Section 52.2.9
Checking for normal monitoring

52.2.3 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
- Bus (Q)
- OMRON SYSMAC
- OMRON THERMAC/INPANEL NEO
- MELSERVO-J3,J2S/M

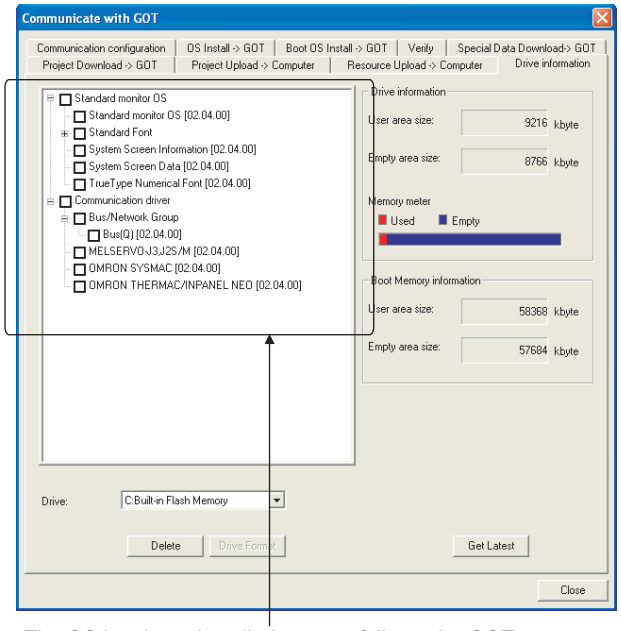
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

52.2.4 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver
   - MELSEC-FX
   - MELSECNET/H
   - Ethernet(AB)
   - Ethernet(MELSEC), Q17nNC, CRnD-700

52.2.5 Setting communication interface (Communication settings)

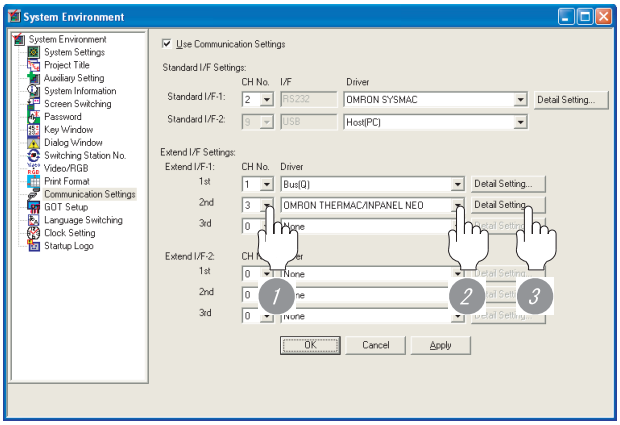
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings



(When using GT15)

1 Set the CH No. according to the position of communication unit to be mounted to the GOT.

2 Set the communication driver to each CH No..
- Channel No.1: Bus(Q)
- Channel No.2: OMRON SYSMAC
- Channel No.3: OMRON THERMAC/INPANELNEO
- Channel No.4: MELSERVO-J3,J2S/M

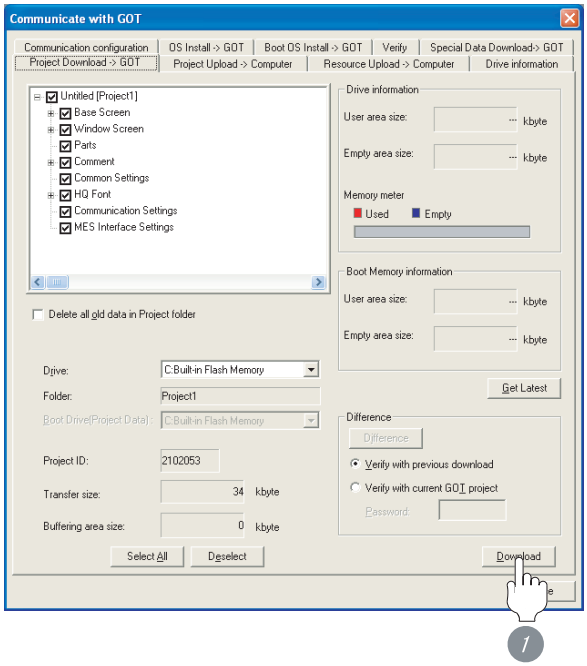
3 Perform the detailed settings for the driver. (☞ Communication detail settings of each chapter.)

52.2.6 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

52.2.7 Attaching option function board/communication unit and connecting cable

The communication unit attachment method and the cable connection method differ according to connection type.

For attaching option function board/communication unit and connecting cable, refer to the following manual.

☞ Each chapter indicating the Attaching communication unit and connecting cable

For installing procedure of the option function board, refer to the following manual.

☞ GT15 User's Manual (Section 8.3 Option Function Board)

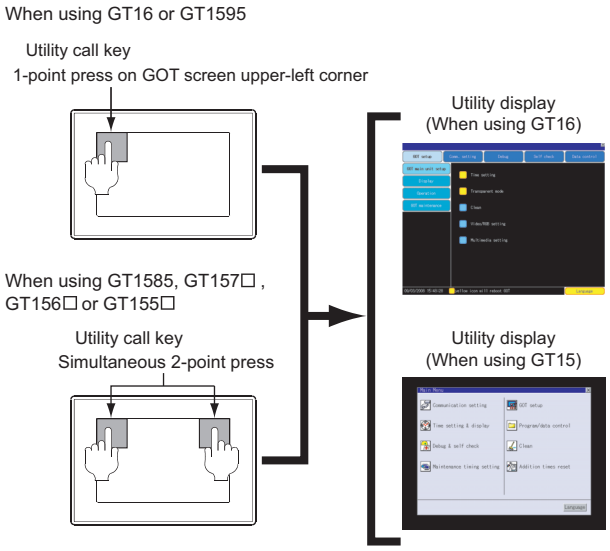
52.2.8 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

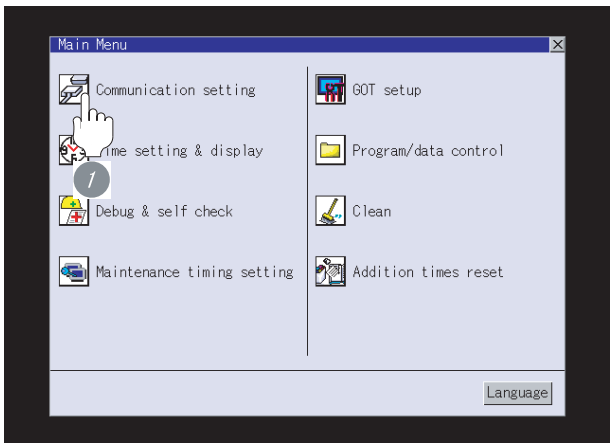


Point

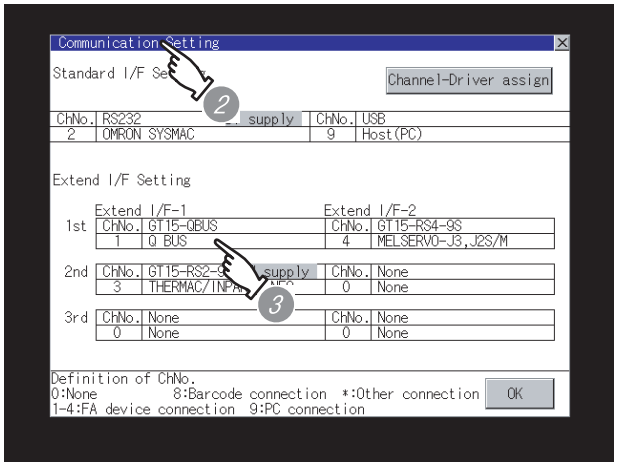
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication Settings] from the Utility.



2 The [Communication Settings] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver
  Bus (Q)
  OMRON SYSMAC
  OMRON THERMAC/INPANEL NEO
  MELSERVO-J3,J2S/M

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 52.2.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

52.2.9 Checking for normal monitoring

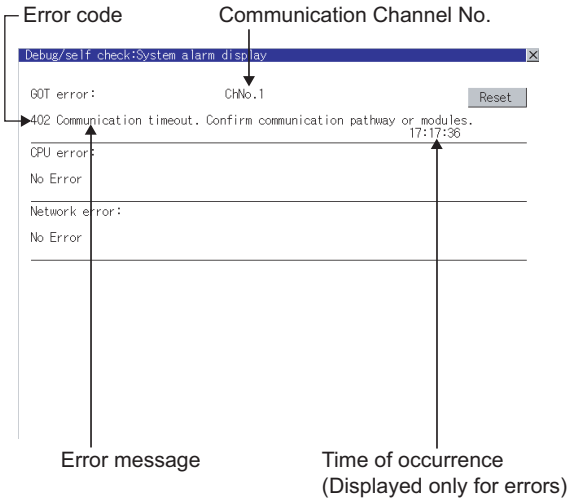
1 Check for errors occurring on the GOT

(1) System alarm

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.
For details on the system alarm, refer to the following manual.

GT □ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

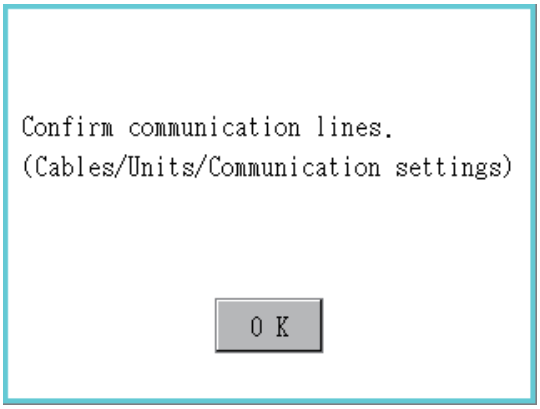
GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version □ Screen Design Manual

(2) Dialog box display

When CH No.1 has a communication error, GOT display the following dialog box. When a communication error occurs on one of CH No.2 to No.4, nothing appears on GOT display.



2 Checking procedure except for system alarm

Checking procedure except for system alarm differs according to the connection type.

For the checking procedure of each connection type, refer to the following manual.

Each chapter indicating the Checking for normal monitoring

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

52.2.10 Connected Equipment Side Settings

Communication settings of the controller differ according to the connection type.

For communication settings of the controller, refer to the followings.

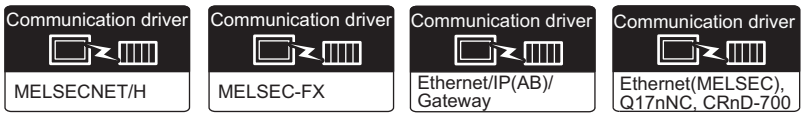
☞ Each chapter indicating the checking for normal monitoring

52.3 Ethernet Multiple Connection

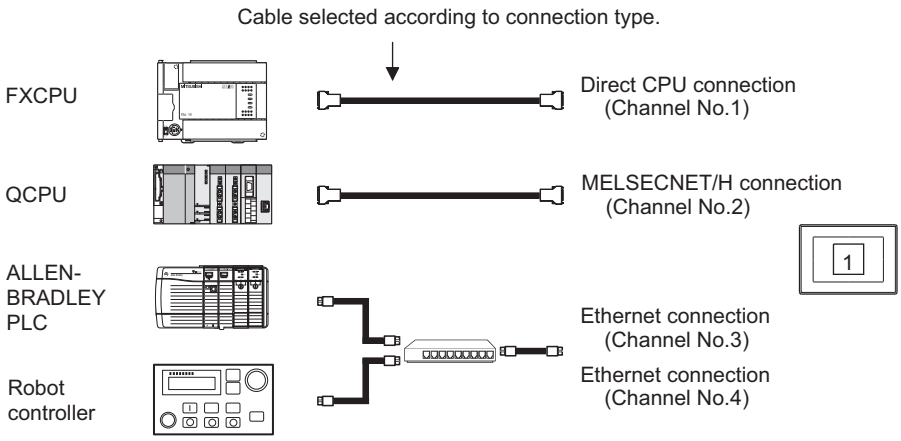
One GOT can make several Ethernet connections and the bus or network connections. Therefore, the system configuration, in which several networks are linked, can be established.

52.3.1 System Configuration Examples

This manual uses the following system configuration as an example.

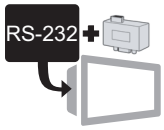
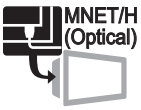
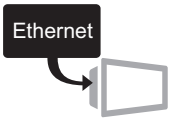


1 System configuration

Connection conditions		System configuration
Number of GOTs	Distance	
Differ according to connection type.		

2 System equipment

(1) GOT

Image	No.	Name	Model name
	1	RS-422 conversion unit • For RS-422 communication	GT15-RS2T4-9P
		MELSECNET/H Communication Unit • For MELSECNET/H connection	GT15-J71LP23-25
		Ethernet interface • For Ethernet connection	— (Built into GOT)

(2) Cable

For selecting the cable, refer to each chapter indicating the system configuration.

52.3.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Install the OS onto the GOT.

Section 52.3.3
Installing OS onto GOT

Make sure that the OS is installed on the GOT.

Section 52.3.4
Checking OS installation on GOT

Set the communication interface.
(Communication settings)

Section 52.3.5
Setting communication interface (Communication settings)

Download the project data.

Section 52.3.6
Downloading project data

Attach the communication unit and connect the cable.

Section 52.3.7
Attaching communication unit and connecting cable

Make sure that the GOT recognizes the connected equipment.

Section 52.3.8
Verifying GOT recognizes controllers

Make sure that monitoring is performed normally.

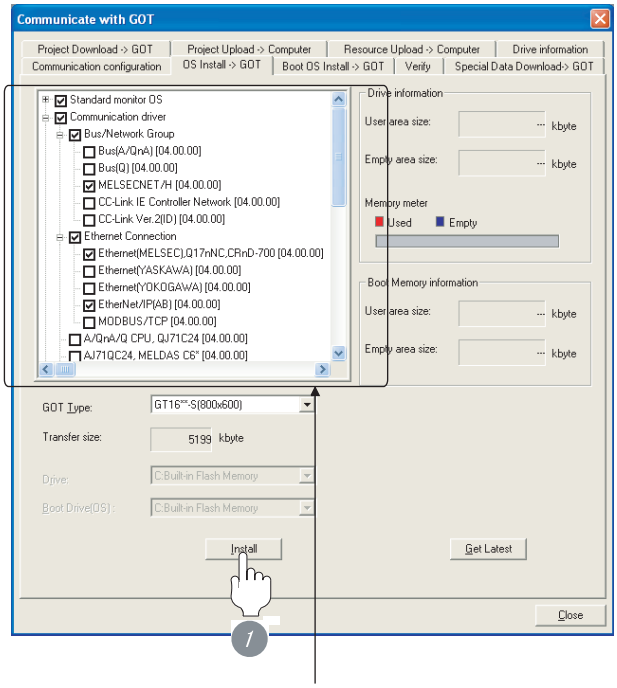
Section 52.3.9
Checking for normal monitoring

52.3.3 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.
- MELSEC-FX
- MELSECNET/H
- Ethernet/IP(AB)
- Ethernet(MELSEC), Q17nNC, CRnD-700

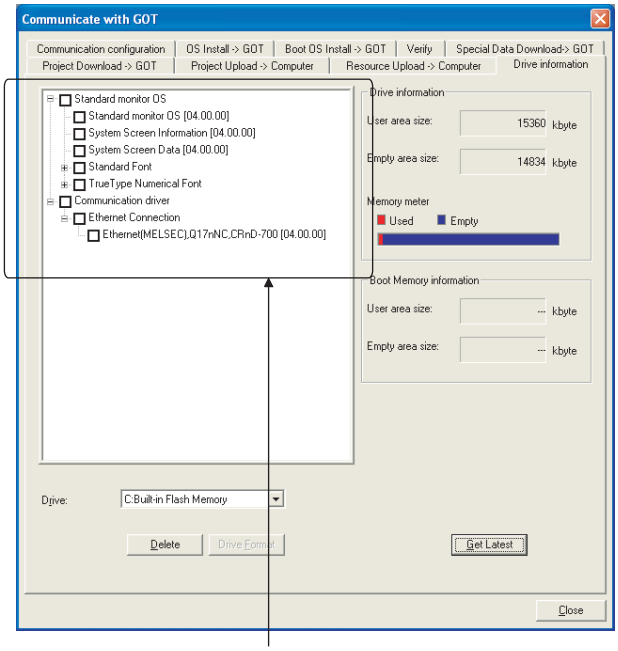
1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

52.3.4 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver
   - MELSEC-FX
   - MELSECNET/H
   - Ethernet/IP(AB)
   - Ethernet(MELSEC), Q17nNC, CRnD-700

52.3.5 Setting communication interface (Communication settings)

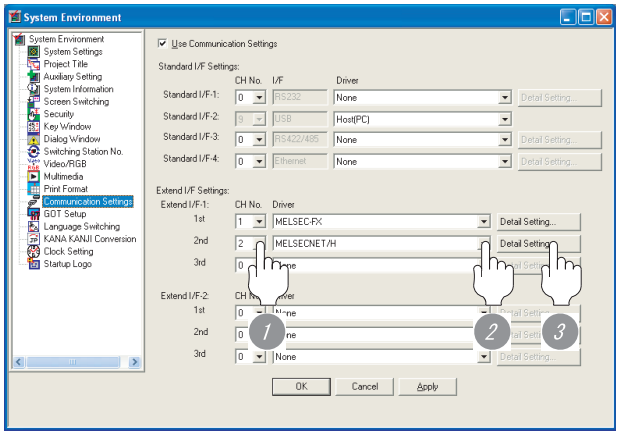
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

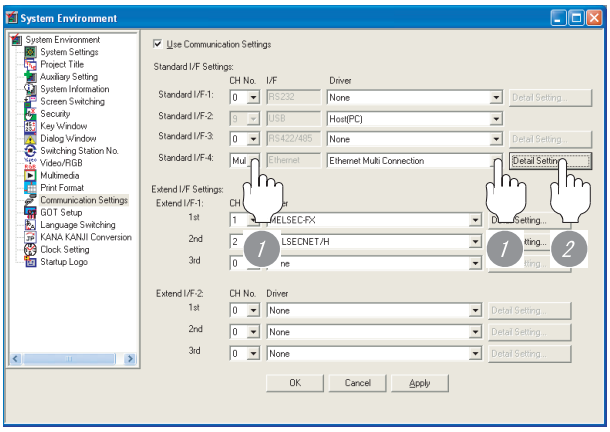


1 Set the CH No. according to the position of communication unit to be mounted to the GOT.

2 Set the communication driver to each CH No..
- Channel No.1: MELSEC-FX
- Channel No.2: MELSECNET/H

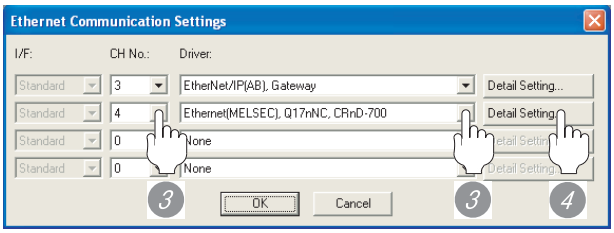
3 Perform the detailed settings for the driver. (☞ Communication detail settings of each chapter.)

2 Ethernet multiple connection



1 Set the CH No. of the standard I-F-4 and the driver.
- Channel No.Multi: Ethernet multiple connection

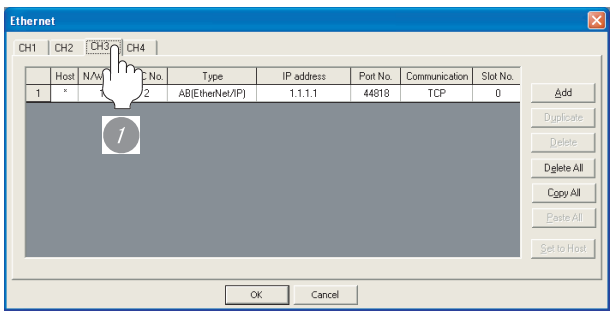
2 Perform the detailed settings for the Ethernet multiple connection.



3 Set the CH No. and driver to be used for each Ethernet connection.
- Channel No.3:
  Ethernet/IP(AB), Gateway
- Channel No.4:
  Ethernet(MELSEC), Q17nNC, CRnD-700

4 Perform the detailed settings for the driver. (☞ Communication detail settings of each chapter.)

3 Ethernet setting



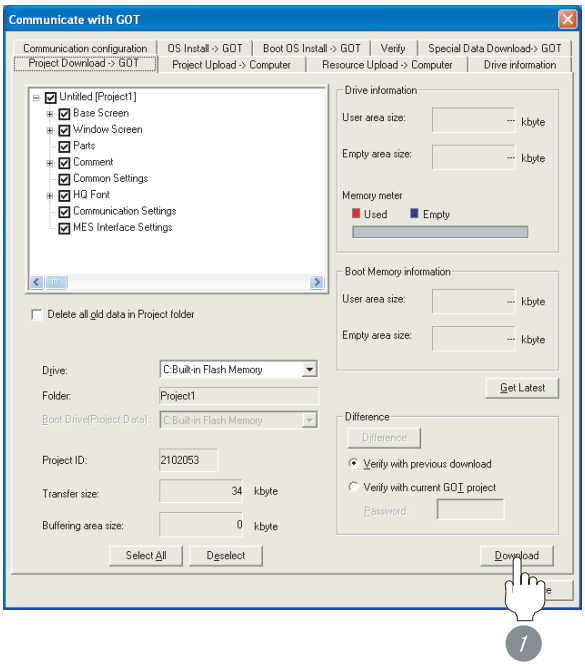
1 Select the tab of the CH No. to be used for each Ethernet connection and perform the Ethernet setting. (☞ Ethernet setting of each chapter)

52.3.6 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

52.3.7 Attaching communication unit and connecting cable

The communication unit attachment method and the cable connection method differ according to connection type.

For attaching communication unit and connecting cable, refer to the following manual.

☞ Each chapter indicating the Attaching communication unit and connecting cable

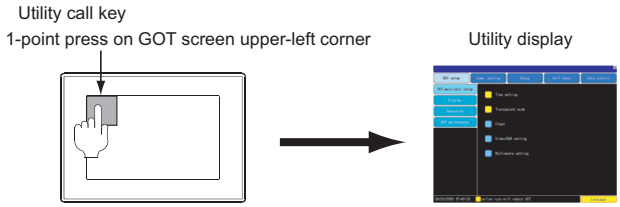
52.3.8 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

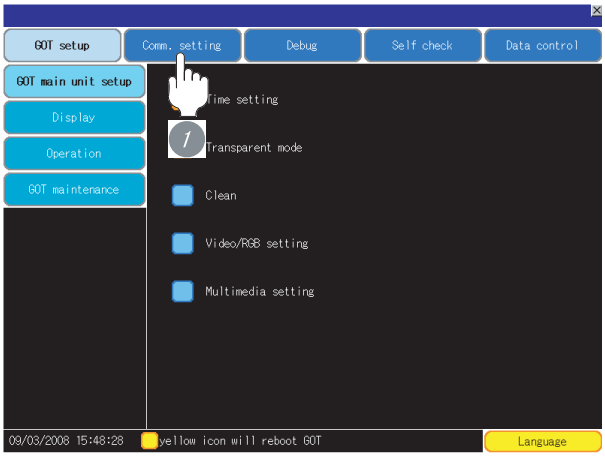


Point

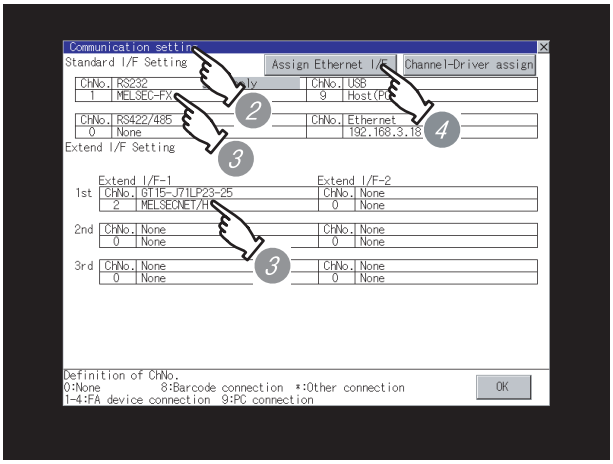
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT16 User's Manual (Basic Utility)



1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.

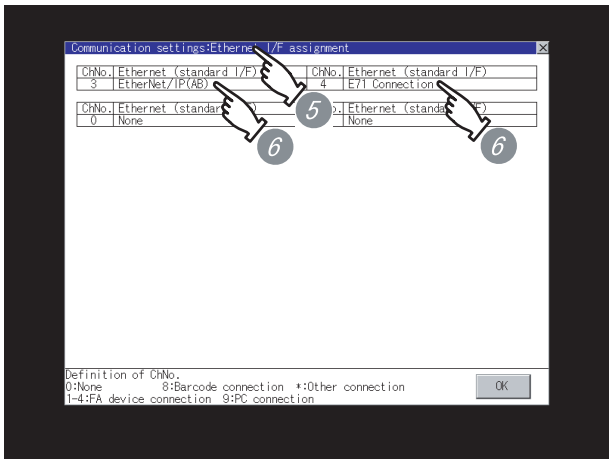


2 The [Comm. Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver
  MELSEC-FX
  MELSECNET/H

4 Touch [Assign Ethernet/IF].



5 The [Assign Ethernet I/F] appears.

6 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver
  EtherNet/IP(AB)
  E71 Connection

7 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 52.3.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility)

52.3.9 Checking for normal monitoring

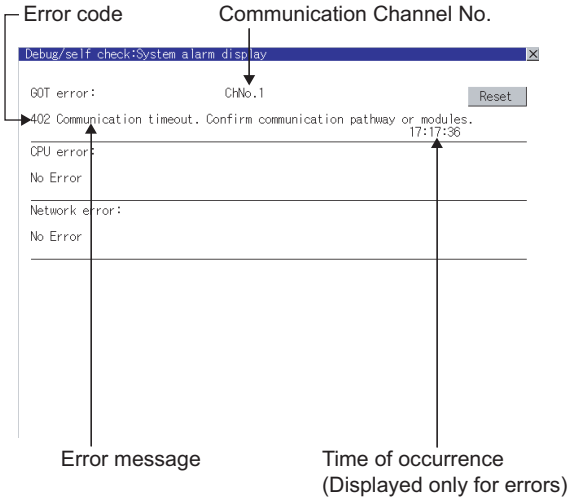
1 Check for errors occurring on the GOT

(1) System alarm

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT16 User's Manual (Basic Utility)



Hint! Advanced alarm popup display

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).

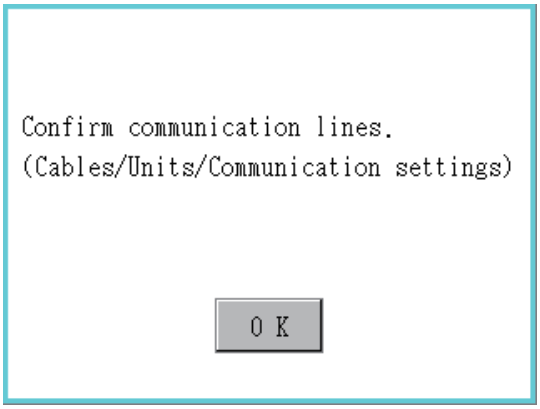
Since comments can be flown from right to left, even a long comment can be displayed all.

For details of the advanced popup display, refer to the following manual.

GT Designer2 Version □ Screen Design Manual

(2) Dialog box display

When CH No.1 has a communication error, GOT display the following dialog box. When a communication error occurs on one of CH No.2 to No.4, nothing appears on GOT display.



2 Checking procedure except for system alarm

Checking procedure except for system alarm differs according to the connection type.

For the checking procedure of each connection type, refer to the following manual.

Each chapter indicating the Checking for normal monitoring

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

52.3.10 Connected Equipment Side Settings

Communication settings of the controller differ according to the connection type.

For communication settings of the controller, refer to the followings.

☞ Each chapter indicating the checking for normal monitoring

52.4 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT15	Multi-cannnel function	Supporting the Multi-cannnel function	2.18U	Standard monitor OS [0.2.01.**] Communication driver The communication drivers are applicable only to the software version [02.01.**] and above.
GT16	Multi-cannnel function	Supporting the connections to GT16	2.90U	Standard monitor OS [0.4.02.**] Communication driver The communication drivers are applicable only to the software version [04.02.**] and above.
GT16	Multi-cannnel function	Supporting the Ethernet multiple connection	2.90U	Standard monitor OS [0.4.02.**] Communication driver The communication drivers are applicable only to the software version [04.02.**] and above.
GT16 GT15	Multi-channel function	Supporting Channels No. 5 to 7 for the extension interface	2.96A	Standard monitor OS [0.4.04.**] Communication driver The communication drivers are applicable only to the software version [04.04.**] and above.

53

FA TRANSPARENT FUNCTION



53.1 FA Transparent Function . . . . . page 53-2

This section provides the outline of the FA transparent function.

53.2 System Configuration . . . . . page 53-2

This section describes the devices and cables needed to using the FA transparent function.
In this section, select a system suitable for your application.

53.3 Compatible Software . . . . . page 53-24

This section describes the software compatible with the FA transparent function.
In this section, select a software suitable for your application.

53.4 Preparatory Procedure for Accessing . . . . . page 53-28

This section describes the procedures to be followed before accessing the PLC using the FA transparent function.

53.5 Precautions . . . . . page 53-54

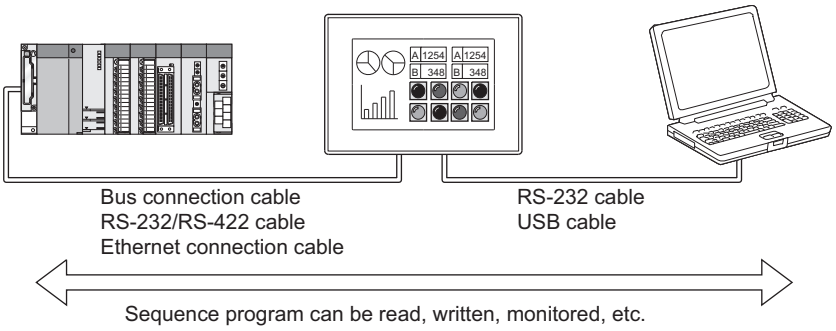
This section provides the cautions on the FA transparent function.
Be sure to read this when using the FA transparent function.

53.6 List of Functions Added by Version Upgrade . . . . . page 53-62

This section describes the functions added by version upgrade of GT Designer2 or OS.

53.1 FA Transparent Function

The FA transparent function allows the sequence programs of the Mitsubishi PLC to be read, written and monitored from a PC connected via a GOT.



Point

The software settings when using FA transparent function

For the software settings, refer to the following when using FA transparent function.

☞ Section 53.4.4
Accessing the PLC by the GX Developer, PX Developer, GX Configurator

☞ Section 53.4.5 Accessing by the MT Developer

☞ Section 53.4.6 Accessing the servo amplifier by the MR Configurator

☞ Section 53.4.7 Accessing the inverter by the FR Configurator

☞ Section 53.4.8 Accessing PLC by FX Configurator-FP

☞ Section 53.4.9 Accessing by RT ToolBox2

53.2 System Configuration

Select a system configuration suitable for your application.

Point

Conventions used in this section

Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.

53.2.1 GX Developer

GT16 GT15 GT11 GT10

The following PLC series support FA transparent function.

PLC series
QCPU, QnCPU, ACPU, FXCPU, Motion controller CPU (A Series)*1

*1 GT10 is not supporting the connection to Motion controller CPU (A Series).

Communication driver
Connection type dependant

1 System configuration and connection conditions

Connection conditions between GOT and PC	System configuration*4	Model
RS-232	3 PC 4 RS-232 cable 1) 1 Differs according to the connection method MAX3m · Bus connection*2 · Direct CPU connection · Computer link connection*1 · Ethernet connection cable*3	GT16 GT15 GT11 Bus GT11 Serial GT10 5□ 4□
	3 PC 6 RS-232 cable 2) 1 Differs according to the connection method MAX3m · Direct CPU connection · Computer link connection*1	GT 24V 10 20 30 GT 5V 10 20
	Differs according to the connection method 4 RS-232/USB conversion adaptor 3 PC 7 USB cable 1 · Direct CPU connection · Computer link connection*1	GT 24V 10 20 30 GT 5V 10 20
USB	3 PC 7 USB cable 2 Differs according to the connection method · Bus connection*2 · Direct CPU connection · Computer link connection*1 · Ethernet connection cable*3	GT16 GT15 GT11 Bus GT11 Serial GT10 5□ 4□

*1 Applicable to the QCPU only

*2 GT10 is not applicable to the bus connection.

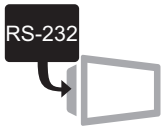
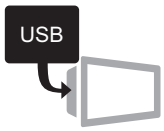
*3 GT11 and GT10 are not applicable to the Ethernet connection.

*4 The following shows the types of connections to the PLC and the corresponding communication interfaces.

GOT type	PLC ◄►GOT		GOT ◄►PC
	Connection type	Communication interface of GOT	Communication interface of GOT
GT16	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 interface	
		RS-422/485 communication unit (Model:GT15-RS4-9S only)	
	Computer link connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 interface	
		RS-422/485 communication unit (Model:GT15-RS4-9S only)	
	Ethernet connection	Ethernet interface	RS-232 interface
			USB interface
GT15	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 communication unit (Model:GT15-RS4-9S only)	
	Computer link connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 communication unit (Model:GT15-RS4-9S only)	
	Ethernet connection	Ethernet communication unit	RS-232 interface
			USB interface
GT11 Bus	Bus connection	Bus interface	RS-232 interface
			USB interface
GT11 Serial, GT105□ 4□	Direct CPU connection	RS-232 interface	USB interface
		RS-422 interface	RS-232 interface
			USB interface
	Computer link connection	RS-232 interface	USB interface
		RS-422 interface	RS-232 interface
			USB interface
GT24V1020 30, GT5V1020	Direct CPU connection	RS-232 interface	RS-232 interface
		RS-422 interface	
	Computer link connection	RS-232 interface	RS-232 interface
		RS-422 interface	

2 System equipment

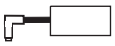
(1) GOT (Communication interface to the personal computer)

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial GT105□ 4□ GT24V 10 20 30 GT5V 10 20
	2	USB interface • For USB communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial GT105□ 4□

(2) PC

Image	No.	Name	Model name
	3	PC	For compatible software refer to the following. (☞ Section 53.3 Compatible Software)

(3) conversion adaptor

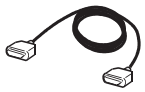
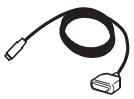
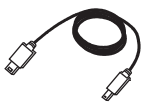
Image	No.	Name	Model name	Model
	4	RS-232/USB Conversion adaptor*1	GT10-RS2TUSB-5S*2	GT24V 10 20 30 GT5V 10 20

*1 The use of RS-232/USB conversion adaptor requires an installation of the dedicated communication driver onto PC. For the details, refer to the following manual.

☞ RS-232/USB Conversion adaptor User's Manual

*2 Not compatible with the peripheral S/W FX-PCS/WIN.

(4) Cable

Image	No	Name	Model name	Model
	5	RS-232 cable 1)	GT01-C30R2-9S(3m)	GT16 GT15 GT11 Bus GT11 Serial GT105□ 4□
	6	RS-232 cable 2)	GT01-C30R2-6P(3m)	GT24V 10 20 30 GT5V 10 20
	7	USB cable *	GT09-C30USB-5P(3m) GT09-C20USB-5P(2m)	GT16 GT15 GT11 Bus GT11 Serial GT105□ 4□ GT24V 10 20 30 GT5V 10 20

*: Use the dedicated cable.

Point

System configuration between GOT and Mitsubishi PLC

For details on the system configuration between a GOT and a Mitsubishi PLC, refer to the following.

☞ Chapter 2 BUS CONNECTION

☞ Chapter 3 DIRECT CONNECTION TO CPU

☞ Chapter 4 COMPUTER LINK CONNECTION

☞ Chapter 10 ETHERNET CONNECTION

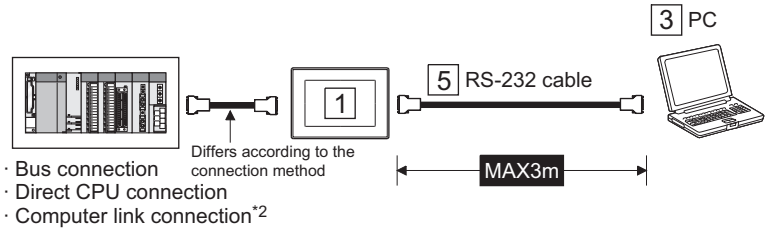
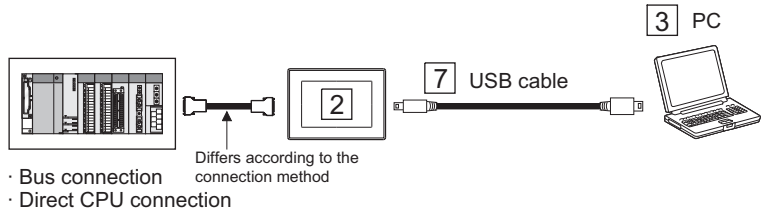
53.2.2 PX Developer, GX Configurator

The following PLC series support FA transparent function.

PLC series
QCPU

Communication driver
Connection type dependant

1 System configuration and connection conditions

Connection conditions between GOT and PC	System configuration*1
RS-232	
USB	

*1 The following shows the types of connections to the PLC and the corresponding communication interfaces.

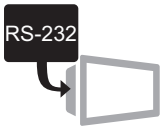
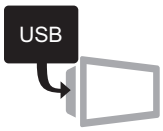
GOT type	PLC ↔ GOT		GOT ↔ PC
	Connection type	Communication interface of GOT	Communication interface of GOT
GT16	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 interface	
		RS-422/485 communication unit (Model:GT15-RS4-9S only)	
	Computer link connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 interface	
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	

GOT type	PLC ◄►GOT		GOT ◄►PC
	Connection type	Communication interface of GOT	Communication interface of GOT
GT15	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 communication unit (Model:GT15-RS4-9S only)	
	Computer link connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT11 Bus	Bus connection	Bus interface	RS-232 interface
			USB interface
GT11 Serial	Direct CPU connection	RS-232 interface	USB interface
		RS-422 interface	RS-232 interface
			USB interface
	Computer link connection	RS-232 interface	USB interface
		RS-422 interface	RS-232 interface
			USB interface

*2 Not compatible with GX Configurator.

2 System equipment

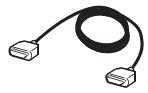
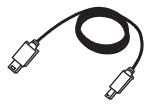
(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial
	2	USB interface • For USB communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial

(2) PC

Image	No.	Name	Model name
	3	PC	For compatible software refer to the following. (☞ Section 53.3 Compatible Software)

(3) Cable

Image	No	Name	Model name
	5	RS-232 cable	GT01-C30R2-9S(3m)
	7	USB cable *	GT09-C30USB-5P(3m) GT09-C20USB-5P(2m)

*: Use the dedicated cable.

Point

System configuration between GOT and Mitsubishi PLC

For details on the system configuration between a GOT and a Mitsubishi PLC, refer to the following.

☞ Chapter 2 BUS CONNECTION

☞ Chapter 3 DIRECT CONNECTION TO CPU

☞ Chapter 4 COMPUTER LINK CONNECTION

53.2.3 MT Developer

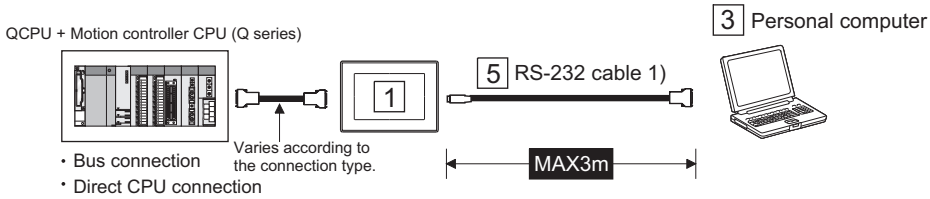
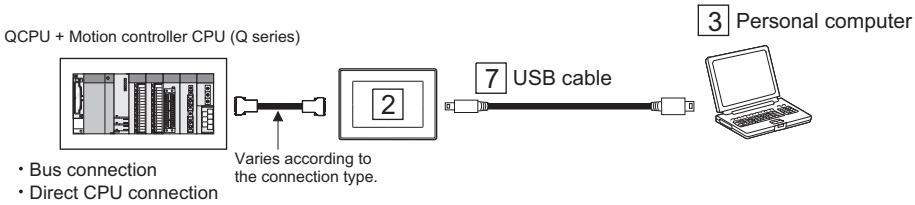
The following is the series name of the PLC CPU for which the FA transparent is available.

Series name
Motion controller CPU (Q series)*1

*1 MR-MQ100 is not supported.

Communication driver
Connection type dependant

1 System configuration and connection conditions

Connection condition between GOT and personal computer	System configuration*1
RS-232	
USB	

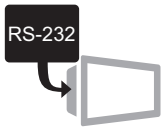
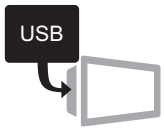
*1 The following shows the PLC connection type and communication interface when the FA transparent function is used.

GOT type	PLC ◄► GOT side		GOT ◄► Personal computer side
	Connection type	Communication interface of GOT	Communication interface of GOT
GT16	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 interface	
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	

GOT type	PLC ◄► GOT side		GOT ◄► Personal computer side
	Connection type	Communication interface of GOT	Communication interface of GOT
GT15	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT11 Bus	Bus connection	Bus interface	RS-232 interface
			USB interface
GT11 Serial	Direct CPU connection	RS-232 interface	USB interface
		RS-422 interface	RS-232 interface
			USB interface

2 System equipment

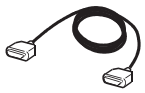
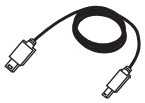
(1) GOT (Communication interface to the personal computer)

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	(Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial
	2	USB interface • For USB communication	(Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial

(2) Personal computer

Image	No.	Name	Model
	3	Personal computer	For the applicable software, refer to the following. (☞ Section 53.3 Compatible Software)

(3) Cable

Image	No.	Name	Model
	5	RS-232 cable 1)	GT01-C30R2-9S (3m)
	7	USB cable*	GT09-C30USB-5P (3m) GT09-C20USB-5P (2m)

* Use the dedicated cable.

Point

System configuration between GOT and MITSUBISHI PLC

For the system configuration between GOT and MITSUBISHI PLC, refer to the following.

☞ Chapter 2 BUS CONNECTION

☞ Chapter 3 DIRECT CONNECTION TO CPU

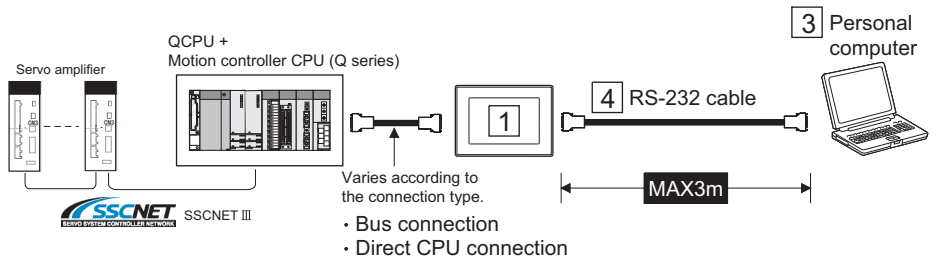
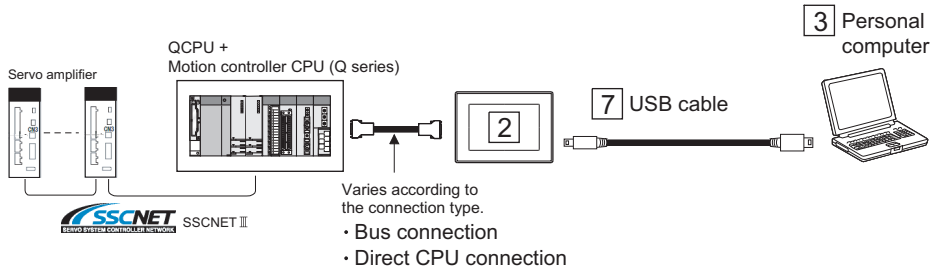
53.2.4 MR Configurator

The following is the series names of the PLC CPU and servo amplifier for which the FA transparent is available.

Series name	Model name
Motion controller CPU (Q series)	Q173HCPU, Q172HCPU
MELSERVO-J3 series	MR-J3-□B

Communication driver
Connection type dependant

1 System configuration and connection conditions

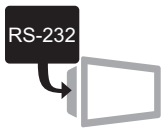
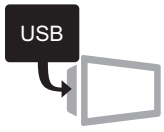
Connection condition between GOT and personal computer	System configuration*1
RS-232	
USB	

*1 The following shows the PLC connection type and communication interface when the FA transparent function is used.

GOT type	PLC ↔ GOT side		GOT ↔ Personal computer side
	Connection type	Communication interface of GOT	Communication interface of GOT
GT16	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 interface	
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT15	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT11 Bus	Bus connection	Bus interface	RS-232 interface
			USB interface
GT11 Serial	Direct CPU connection	RS-232 interface	USB interface
		RS-422 interface	RS-232 interface
			USB interface

2 System equipment

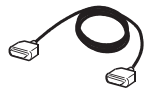
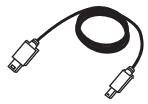
(1) GOT (Communication interface to the personal computer)

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	(Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial
	2	USB interface • For USB communication	(Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial

(2) Personal computer

Image	No.	Name	Model
	3	Personal computer	For the applicable software, refer to the following. (☞ Section 53.3 Compatible Software)

(3) Cable

Image	No.	Name	Model
	5	RS-232 cable 1)	GT01-C30R2-9S (3m)
	7	USB cable*	GT09-C30USB-5P (3m) GT09-C20USB-5P (2m)

* Use the dedicated cable.

Point

System configuration between GOT and MITSUBISHI PLC

For the system configuration between GOT and MITSUBISHI PLC, refer to the following.

☞ Chapter 2 BUS CONNECTION

☞ Chapter 3 DIRECT CONNECTION TO CPU

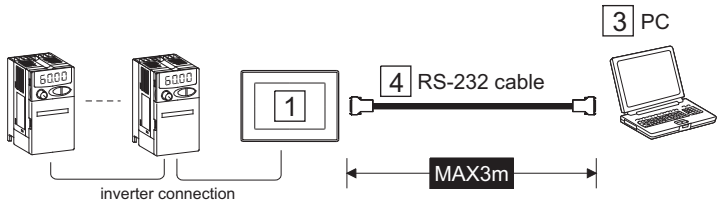
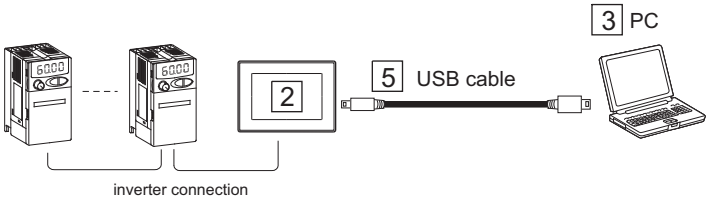
53.2.5 FR Configurator

The following inverter series support FA transparent function.

Series
FREQROL A700/F700/E700 Series

Communication driver
Connection type dependant

1 System configuration and connection conditions

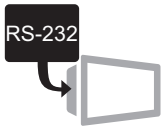
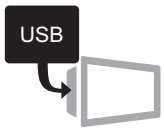
Connection conditions between GOT and PC	System configuration*1
RS-232	
USB	

*1 The following shows the types of connections to the inverter and the corresponding communication interfaces.

GOT type	Inverter ↔ GOT	GOT ↔ PC
	Communication interface of GOT	Communication interface of GOT
GT16	RS-422 conversion unit	USB interface
	RS-422/485 interface	RS-232 interface USB interface
	RS-422/485 communication unit (Model:GT15-RS4-9S only)	
GT15	RS-422 conversion unit	USB interface
	RS-422/485 communication unit (Model:GT15-RS4-9S only)	RS-232 interface USB interface
GT11 Serial	RS-422 interface	RS-232 interface
		USB interface

2 System equipment

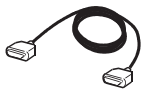
(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial
	2	USB interface • For USB communication	— (Built into GOT)	GT16 GT15 GT11 Serial

(2) PC

Image	No.	Name	Model name
	3	PC	For compatible software refer to the following. (☞ Section 53.3 Compatible Software)

(3) Cable

Image	No	Name	Model name
	4	RS-232 cable	GT01-C30R2-9S(3m)
	5	USB cable *	GT09-C30USB-5P(3m) GT09-C20USB-5P(2m)

*: Use the dedicated cable.

Point

System configuration between GOT and Mitsubishi inverter

For details on the system configuration between GOT and Mitsubishi inverter, refer to the following.

☞ Chapter 38 INVERTER CONNECTION

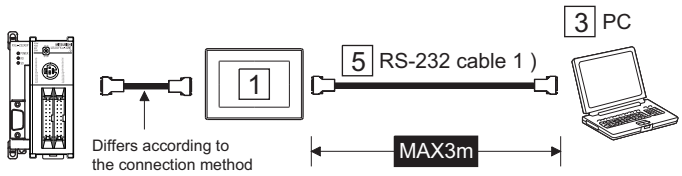
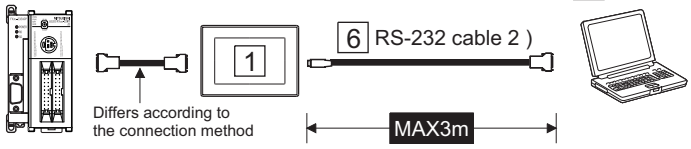
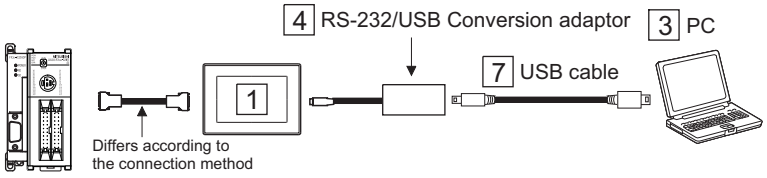
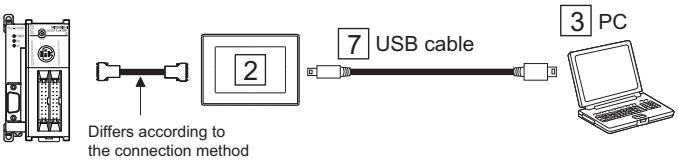
53.2.6 FX Configurator-FP

The following PLC series support FA transparent function.

PLC series
FXCPU

Communication driver
Connection type dependant

1 System configuration and connection conditions

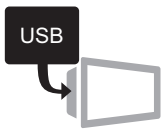
Connection conditions between GOT and PC	System configuration*1	Model
RS-232		GT16 GT15 GT11 Serial GT10 5□ 4□
		GT 24V 10 20 30 GT 5V 10 20
		GT 24V 10 20 30 GT 5V 10 20
USB		GT16 GT15 GT11 Serial GT10 5□ 4□

*1 The following shows the types of connections to the PLC and the corresponding communication interfaces.

GOT type	PLC ↔ GOT	GOT ↔ PC
	Communication interface of GOT	Communication interface of GOT
GT16	RS-232 interface	USB interface
	RS-422 conversion unit	
	RS-232 communication unit	RS-232 interface USB interface
	RS-422/485 interface	
	RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT15	RS-232 interface	USB interface
	RS-422 conversion unit	
	RS-232 communication unit	RS-232 interface USB interface
	RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT11 Serial GT105□4□	RS-232 interface	USB interface
	RS-422 interface	RS-232 interface USB interface
GT24V1020 30 GT5V1020	RS-232 interface	RS-232 interface USB interface
	RS-422 interface	

2 System equipment

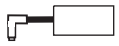
(1) GOT (Communication interface to the personal computer)

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□ GT24V1020 30 GT5V1020
	2	USB interface • For USB communication	— (Built into GOT)	GT16 GT15 GT11 Serial GT105□4□

(2) PC

Image	No.	Name	Model name
	3	PC	For compatible software refer to the following. (☞ Section 53.3 Compatible Software)

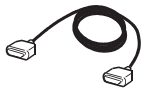
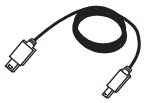
(3) conversion adaptor

Image	No.	Name	Model name	Model
	4	RS-232/USB Conversion adaptor*1	GT10-RS2TUSB-5S	GT 24V 10 20 30 GT 5V 10 20

*1 The use of RS-232/USB conversion adaptor requires an installation of the dedicated communication driver onto PC. For the details, refer to the following manual.

☞ RS-232/USB Conversion adaptor User's Manual

(4) Cable

Image	No.	Name	Model name	Model
	5	RS-232 cable 1)	GT01-C30R2-9S(3m)	GT 16 GT 15 GT 11 Serial GT 10 5□ 4□
	6	RS-232 cable 2)	GT01-C30R2-6P(3m)	GT 24V 10 20 30 GT 5V 10 20
	7	USB cable *	GT09-C30USB-5P(3m) GT09-C20USB-5P(2m)	GT 16 GT 15 GT 11 Serial GT 10 5□ 4□ GT 24V 10 20 30 GT 5V 10 20

*: Use the dedicated cable.

Point

System configuration between GOT and Mitsubishi PLC

For details on the system configuration between a GOT and a Mitsubishi PLC, refer to the following.

☞ Chapter 3 DIRECT CONNECTION TO CPU

53.2.7 RT ToolBox2

The following PLC series support FA transparent function.

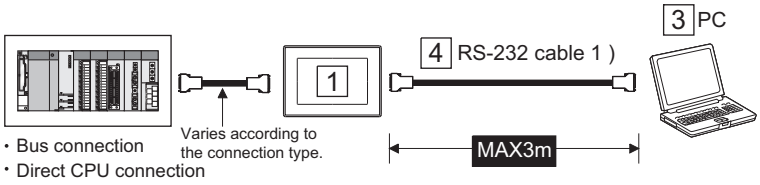
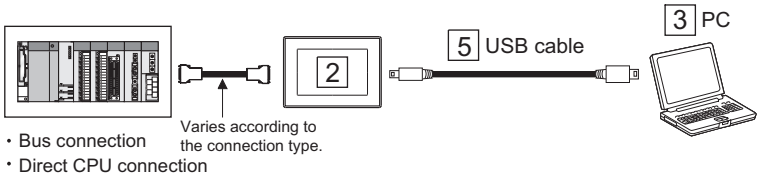
Series
CRnQ-700

Communication driver

A/QnA/Q CPU,QJ71C24

(For GT16, GT15, GT11)

1 System configuration and connection conditions

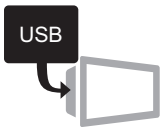
Connection condition between GOT and PC	System configuration*1
RS-232	
USB	

*1 The following shows the types of connections to the PLC and the corresponding communication interfaces.

GOT type	PLC ↔ GOT side		GOT ↔ Personal computer side
	Connection type	Communication interface of GOT	Communication interface of GOT
GT16	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 interface	
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT15	Bus connection	Bus connection unit	RS-232 interface
			USB interface
	Direct CPU connection	RS-232 interface	USB interface
		RS-422 conversion unit	
		RS-232 communication unit	RS-232 interface USB interface
		RS-422/485 communication unit (Model: GT15-RS4-9S only)	
GT11 Bus	Bus connection	Bus interface	RS-232 interface
			USB interface
GT11 Serial	Direct CPU connection	RS-232 interface	USB interface
		RS-422 interface	RS-232 interface
			USB interface

2 System equipment

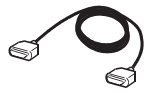
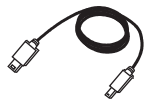
(1) GOT (Communication interface to the personal computer)

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial
	2	USB interface • For USB communication	— (Built into GOT)	GT16 GT15 GT11 Bus GT11 Serial

(2) PC

Image	No.	Name	Model name
	3	PC	For compatible software refer to the following. (☞ Section 53.3 Compatible Software)

(3) Cable

Image	No.	Name	Model
	4	RS-232 cable 1)	GT01-C30R2-9S (3m)
	5	USB cable*	GT09-C30USB-5P (3m) GT09-C20USB-5P (2m)

* Use the dedicated cable.

Point

System configuration between GOT and MITSUBISHI PLC

For the system configuration between GOT and MITSUBISHI PLC, refer to the following.

☞ Chapter 2 BUS CONNECTION

☞ Chapter 3 DIRECT CONNECTION TO CPU

53.3 Compatible Software

The following shows the software compatible with the FA transparent function.

Point

(1) The range accessible by software when FA transparent function is used
Use of the FA transparent function does not affect the range accessible by the software.
For details on accessible range, refer to the manual for the respective software.

(2) The software settings when using FA transparent function
For the software settings, refer to the following when using FA transparent function.

☞ Section 53.4.4
Accessing the PLC by the GX Developer, PX Developer, GX Configurator

☞ Section 53.4.5 Accessing by the MT Developer

☞ Section 53.4.6 Accessing the servo amplifier by the MR Configurator

☞ Section 53.4.7 Accessing the inverter by the FR Configurator

☞ Section 53.4.8 Accessing PLC by FX Configurator-FP

☞ Section 53.4.9 Accessing by RT ToolBox2

1 Connecting the GOT and PC with RS-232

(1) Bus connection
The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU(Q mode)	GX Developer*1 PX Developer*4 GX Configurator*5 -AD/DA/SC/CT/TI/TC/AS/FL/PT
Q/QnA/ACPU, motion controller CPU (A Series)	GX Developer*1
Motion controller CPU (Q Series)	MT Developer*2 SW6RN-GSV13P, SW6RN-GSV22P, SW6RN-GSV43P, SW6RN-GSV54P, SW6RN-GSVDOSCP, SW6RN-GSVSNETP (for user API) MR Configurator*3
Robot controller (CRnQ-700)	RT ToolBox2*6

*1 GX Developer Version 8 or later is required to use the FA transparent function.
GX Developer Version 8.68W or later is required to use the FA transparent function when connecting theQnUDE(H)CPU to the GOT.

*2 MT Developer (SW6RNC-GSVE) Version 00N or later is required to use the FA transparent function.

*3 MR Configurator (MRZJW3-SETUP221E) Version B1 or later is required to use the FA transparent function.

*4 PX Developer Version 1.09K or later is required to use the FA transparent function.
PX Developer Version 1.18U or later is required to use the FA transparent function when connecting the Q02PHCPU or Q06PHCPU to the GOT.

*5 GX Configurator-AD: Version 2.03D or later , GX Configurator-DA: Version 2.04E or later
GX Configurator-SC: Version 2.10L or later , GX Configurator-CT: Version 1.23Z or later
GX Configurator-TI: Version 1.22Y or later , GX Configurator-TC: Version 1.21X or later
GX Configurator-AS: Version 1.20W or later , GX Configurator-FL: Version 1.21X or later
GX Configurator-PT: Version 1.20W or later

*6 RT ToolBox2 Version 1.1 or later is required to use the FA transparent function.

(2) Direct CPU connection

The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU(Q mode)	GX Developer PX Developer*3 GX Configurator*4 -AD/DA/SC/CT/TI/TC/AS/FL/PT
QCPU(A mode),QnA/ACPU	GX Developer
FXCPU	GX Developer, FX-PCS/WIN*5 FX Configurator-FP*6
Motion controller CPU (Q Series)	MT Developer SW6RN-GSV13P, SW6RN-GSV22P, SW6RN-GSV43P, SW6RN-GSV54P SW6RN-GSVDOSCP, SW6RN-GSVSNETP (for user API) MR Configurator*1
Motion controller CPU (A Series)	GX Developer SW3RN-GSV13P, SW3RN-GSV22P, SW3RN-GSV43P, SW3RN-GSV51P
FREQROL A700/F700/E700 Series	FR Configurator*2
Robot controller (CRnQ-700)	RT ToolBox2*7

*1 MR Configurator (MRZJW3-SETUP221E) Version B1 or later is required to use the FA transparent function.

*2 FR Configurator(FR-SW2-SETUP-WJ) Ver.1.02 or later is required to use the FA transparent function when connecting the A700/F700 series to the GOT.
FR Configurator(FR-SW3-SETUP-WJ) Ver.2.00 or later is required to use the FA transparent function when connecting the E700 series to the GOT.
FR Configurator(FR-SW3-SETUP-WJ) Ver.3.10 or later is required to use the FA transparent function when connecting the F700 series to the GOT.

*3 PX Developer Version 1.09K or later is required to use the FA transparent function.
PX Developer Version 1.18U or later is required to use the FA transparent function when connecting the Q02PHCPU or Q06PHCPU to the GOT.

*4 GX Configurator-AD: Version 2.03D or later , GX Configurator-DA: Version 2.04E or later
GX Configurator-SC: Version 2.10L or later , GX Configurator-CT: Version 1.23Z or later
GX Configurator-TI: Version 1.22Y or later , GX Configurator-TC: Version 1.21X or later
GX Configurator-AS: Version 1.20W or later , GX Configurator-FL: Version 1.21X or later
GX Configurator-PT: Version 1.20W or later

*5 The RS-232/USB conversion adaptor (GT10-RS2TUSB-5S) is not applicable to FX-PCS/WIN.

*6 FX Configurator-FP Version 1.30 or later is required to use the FA transparent function.

*7 RT ToolBox2 Version 1.1 or later is required to use the FA transparent function.

(3) Computer link connection

The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU(Q mode)	GX Developer*1 PX Developer*2

*1 GX Developer Version 8.62Q or later is required to use the FA transparent function.
GX Developer Version 8.68W or later is required to use the FA transparent function when connecting the QnUDE(H)CPU to the GOT.

*2 PX Developer Version 1.18U or later is required to use the FA transparent function.

(4) Ethernet connection

The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU (Q mode)*1	GX Developer*2
QCPU (A mode), QnA/ACPU*1	

*1 Only QCPU can be connected. To connect to QnA/ACPU, connect via QCPU.

*2 GX Developer Version 8.78G or later is required to use the FA transparent function.

2 Connecting the GOT and PC with USB

(1) Bus connection

The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU(Q mode)	GX Developer*1 PX Developer*4 GX Configurator*5 -AD/DA/SC/CT/TI/TC/AS/FL/PT
QCPU(A mode),QnA/ACPU, motion controller CPU (A Series)	GX Developer*1
Motion controller CPU (Q Series)	MT Developer*2 SW6RN-GSV13P, SW6RN-GSV22P, SW6RN-GSV43P, SW6RN-GSV54P, SW6RN-GSVDOSCP, SW6RN-GSVSNETP (for user API) MR Configurator*3
Robot controller (CRnQ-700)	RT ToolBox2*6

*1 GX Developer Version 8.22Y or later is required to use the FA transparent function.
GX Developer Version 8.68W or later is required to use the FA transparent function when connecting the QnUDE(H)CPU to the GOT.

*2 MT Developer (SW6RNC-GSVE) Version 00N or later is required to use the FA transparent function.

*3 MR Configurator (MRZJW3-SETUP221E) Version B1 or later is required to use the FA transparent function.

*4 PX Developer Version 1.09K or later is required to use the FA transparent function.
PX Developer Version 1.18U or later is required to use the FA transparent function when connecting the Q02PHCPU or Q06PHCPU to the GOT

*5 GX Configurator-AD: Version 2.03D or later , GX Configurator-DA: Version 2.04E or later
GX Configurator-SC: Version 2.10L or later , GX Configurator-CT: Version 1.23Z or later
GX Configurator-TI: Version 1.22Y or later , GX Configurator-TC: Version 1.21X or later
GX Configurator-AS: Version 1.20W or later , GX Configurator-FL: Version 1.21X or later
GX Configurator-PT: Version 1.20W or later

*6 RT ToolBox2 Version 1.1 or later is required to use the FA transparent function.

(2) Direct CPU connection

The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU(Q mode)	GX Developer*1 PX Developer*5 GX Configurator*6 -AD/DA/SC/CT/TI/TC/AS/FL/PT
QCPU(A mode),QnA/ACPU, motion controller CPU (A Series)	GX Developer*1
FXCPU	GX Developer*1, FX Configurator-FP*1
Motion controller CPU (Q Series)	MT Developer*2 SW6RN-GSV13P, SW6RN-GSV22P, SW6RN-GSV43P, SW6RN-GSV54P, SW6RN-GSVDOSCP, SW6RN-GSVSNETP (for user API) MR Configurator*3
FREQROL A700/F700/E700/D700 Series	FR Configurator*4
Robot controller (CRnQ-700)	RT ToolBox2*8

*1 GX Developer Version 8.22Y or later is required to use the FA transparent function.
GX Developer Version 8.68W or later is required to use the FA transparent function when connecting the QnUDE(H)CPU to the GOT.

*2 MT Developer (SW6RNC-GSVE) Version 00N or later is required to use the FA transparent function.

*3 MR Configurator (MRZJW3-SETUP221E) Version B1 or later is required to use the FA transparent function.

*4 FR Configurator(FR-SW2-SETUP-WJ) Ver.1.02 or later is required to use the FA transparent function when connecting the A700/F700 series to the GOT.
FR Configurator(FR-SW3-SETUP-WJ) Ver.2.00 or later is required to use the FA transparent function when connecting the E700 series to the GOT.
FR Configurator(FR-SW3-SETUP-WJ) Ver.3.10 or later is required to use the FA transparent function when connecting the F700 series to the GOT.

*5 PX Developer Version 1.09K or later is required to use the FA transparent function.
PX Developer Version 1.18U or later is required to use the FA transparent function when connecting the Q02PHCPU or Q06PHCPU to the GOT

*6 GX Configurator-AD: Version 2.03D or later , GX Configurator-DA: Version 2.04E or later
GX Configurator-SC: Version 2.10L or later , GX Configurator-CT: Version 1.23Z or later
GX Configurator-TI: Version 1.22Y or later , GX Configurator-TC: Version 1.21X or later
GX Configurator-AS: Version 1.20W or later , GX Configurator-FL: Version 1.21X or later
GX Configurator-PT: Version 1.20W or later

*7 FX Configurator-FP Version 1.30 or later is required to use the FA transparent function.

*8 RT ToolBox2 Version 1.1 or later is required to use the FA transparent function.

(3) Computer link connection

The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU(Q mode)	GX Developer*1 PX Developer*2

*1 GX Developer Version 8.62Q or later is required to use the FA transparent function.
GX Developer Version 8.68W or later is required to use the FA transparent function when connecting the QnUDE(H)CPU to the GOT.

*2 PX Developer Version 1.18U or later is required to use the FA transparent function.

(4) Ethernet connection

The following shows the software and the accessible PLC CPUs.

PLC CPU	Software
QCPU (Q mode)*1	GX Developer*2
QCPU (A mode), QnA/ACPU*1	

*1 Only QCPU can be connected. To connect to QnA/ACPU, connect via QCPU.

*2 GX Developer Version 8.78G or later is required to use the FA transparent function.

53.4 Preparatory Procedure for Accessing

The following shows the procedures to be followed before accessing and corresponding reference sections.

Connect the GOT to a Mitsubishi PLC.

☞ Chapter 2 BUS CONNECTION
☞ Chapter 3 DIRECT CONNECTION TO CPU
☞ Chapter 4 COMPUTER LINK CONNECTION
☞ Chapter 10 ETHERNET CONNECTION
☞ Chapter 38 INVERTER CONNECTION

↓

Set the communication interface.
(Communication settings)

☞ Section 53.4.1
Setting communication interface (Communication settings)

↓

Attach the communication unit and connect the cable.

☞ Section 53.4.2
Attaching the communication unit and connecting the cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 53.4.3
Verifying GOT recognizes controllers

↓

As necessary, access the PLC and inverter by the following softwares.

- GX Developer
- PX Developer
- GX Configurator
- MT Developer
- MR Configurator
- FR Configurator
- FX Configurator

☞ Section 53.4.4
Accessing the PLC by the GX Developer, PX Developer, GX Configurator

☞ Section 53.4.5
Accessing by the MT Developer

☞ Section 53.4.6
Accessing the servo amplifier by the MR Configurator

☞ Section 53.4.7
Accessing the inverter by the FR Configurator

☞ Section 53.4.8
Accessing PLC by FX Configurator-FP

☞ Section 53.4.9
Accessing by RT ToolBox2

53.4.1 Setting communication interface (Communication settings)

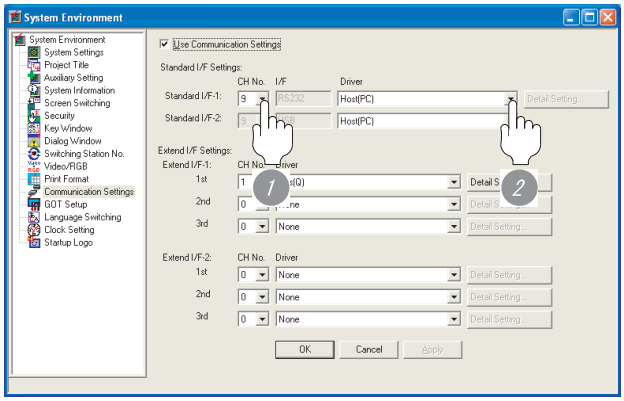
Set the communication interface of the GOT at [Communication settings] in GT Designer2.

For details on [Communication settings] of GT Designer2, refer to the following manual:

☞ GT Designer2 Version Screen Design Manual

1 Communication settings

Connecting the GOT and PC with the RS-232 interface



(When using GT15)

1 Set "9" to the No. of the to be used.

2 Set the driver to "Host(PC)".

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

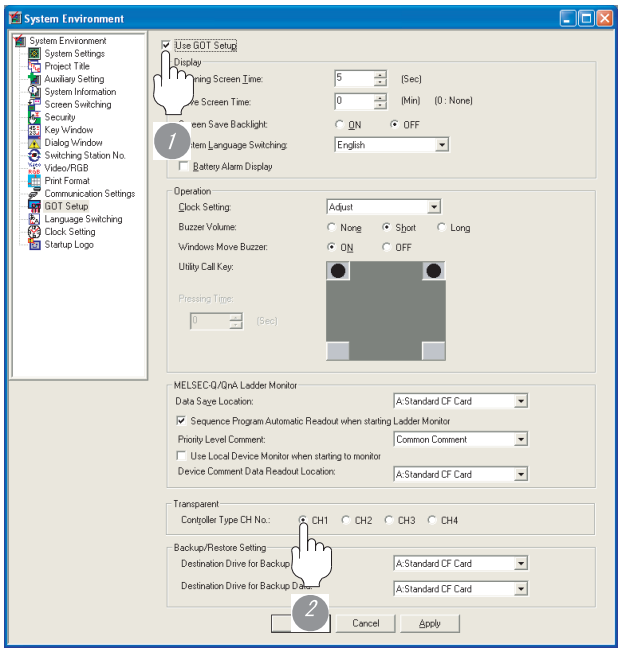
☞ GT ☐ User's Manual

(2) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

2 GOT Setup

When using the multi-channel function (only GT16, GT15), specify the channel No. on which FA transparent function is executed.



(When using GT15)

1 Check [Use GOT Setup].

2 As necessary, check one of [CH1] to [CH4]. (Default: CH1)

Point

Transparent setting on the utility screen

Transparent setting can be performed by the GOT. For details of the operating, refer to the following.

☞ GT15 User's Manual

53.4.2 Attaching the communication unit and connecting the cable

Point

Cautions when attaching the communication unit and connecting the cable

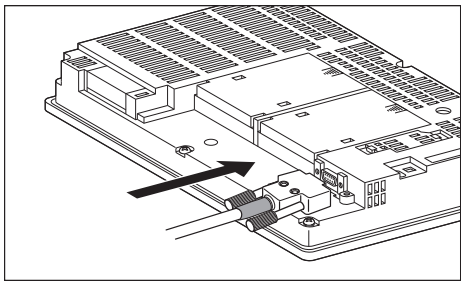
Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 How to connect the cable

(1) How to connect the RS-232 cable

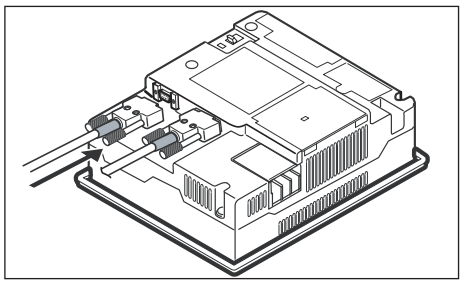
(a) For GT16, GT15

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



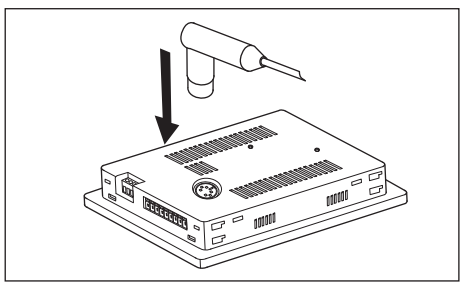
(b) For GT11, GT105☐, GT104☐

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



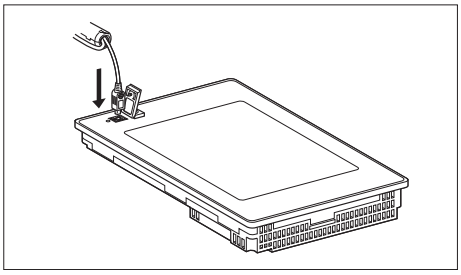
(c) For GT1030, GT1020

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



(2) How to connect the USB cable

1 Connect the USB cable to the USB interface on the GOT.



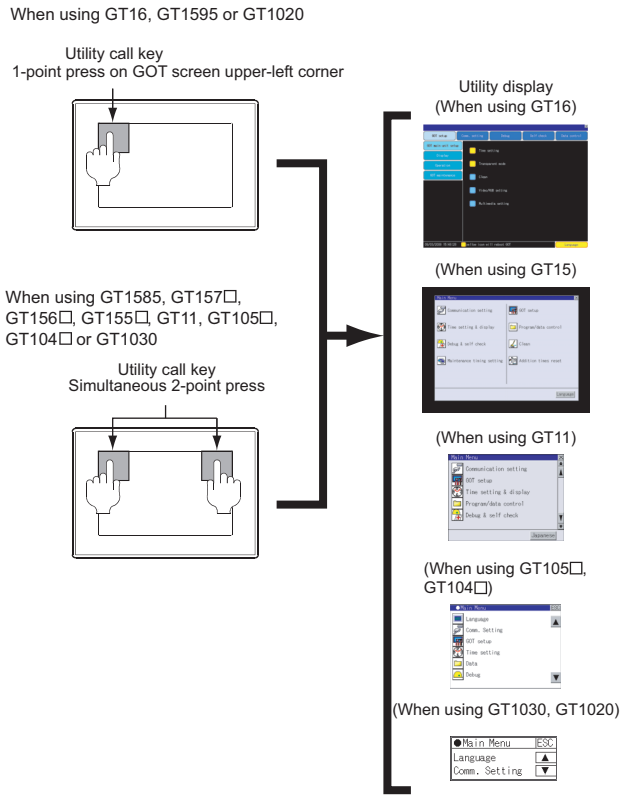
53.4.3 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

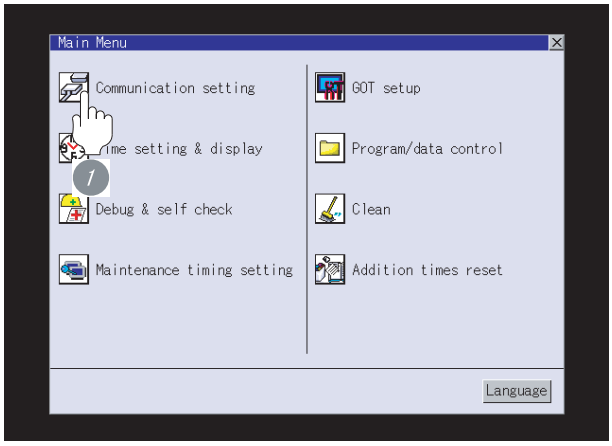


Point

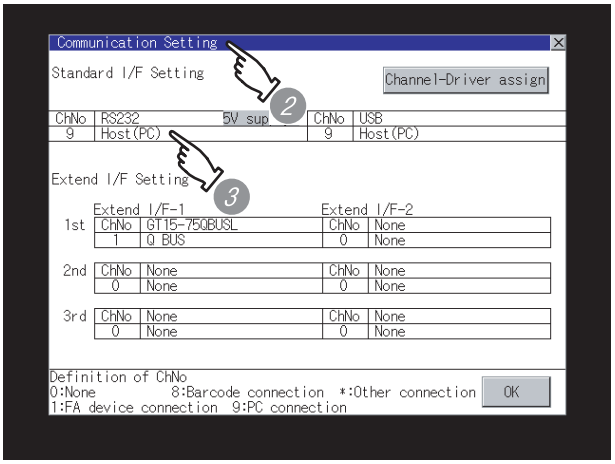
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Host(PC)

When the communication driver name is not displayed normally, carry out the following procedure again.

Section 53.4 Preparatory Procedure for Accessing

Point

(1) For GT15, GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

GT16 User's Manual (Basic Utility), GT15 User's Manual, GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

Communication settings can be changed on only GT Designer2.

53.4.4 Accessing the PLC by the GX Developer, PX Developer, GX Configurator

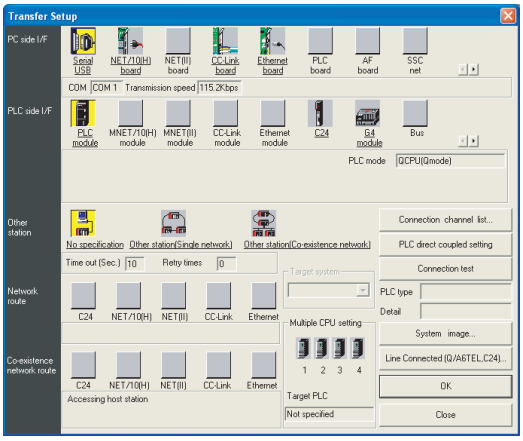
The setting method for the FA transparent function of GX Developer is used as an example.

GX Configurator is an add-on software of GX Developer.

1 When connecting the GOT and PC with RS-232

(1) Connecting the GOT and PLC in bus connection or direct CPU connection

The following shows an access example by GX Developer (when connected to the QCPU (Q mode)) when the GOT and PC are connected by RS-232.

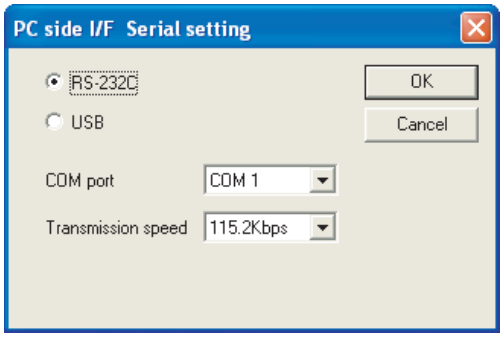


1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [QCPU (Q mode)].

3 The [Transfer Setup] is displayed.

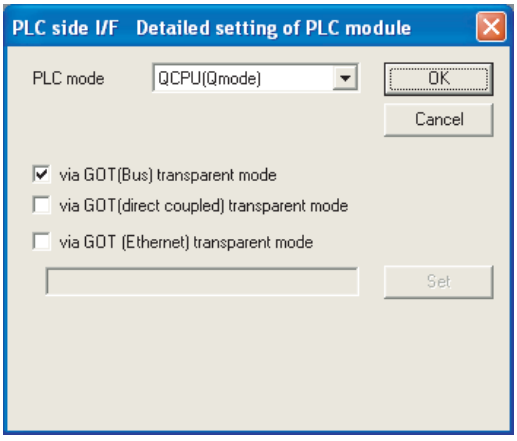
4 Set the [Transfer Setup]:
PC side I/F : Serial USB (COM)
PLC side I/F : PLC module
Other station : No specification



5 Double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

6 Check [RS-232C] for [PC side I/F Serial setting].

(For bus connection only)



7 When bus connection has been made, double-click the [PLC module] on the PLC side I/F to display the [PLC side I/F Detailed setting of PLC module].

8 On the [PLC side I/F Detailed setting of PLC module], mark the [via GOT(Bus) transparent mode] checkbox.

Direct CPU connection *1

For direct CPU connection, mark the [via GOT (direct coupled) transparent mode] checkbox.

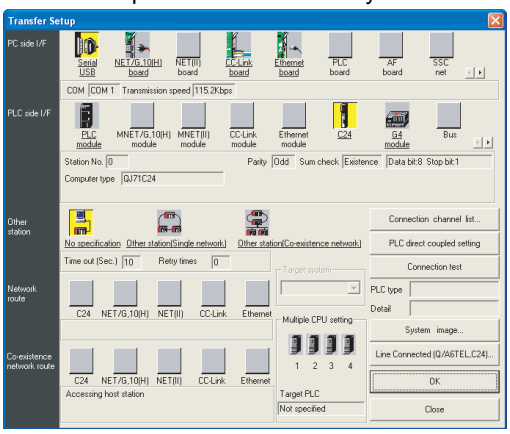
*1 This is operation required in the case of using GX Developer of which version is 8.22Y and above.



9 The screen returns to the [Transfer Setup]. Click the Connection Test to check if GX Developer has been connected to the QCPU (Q mode).

(2) Connecting the GOT and PLC in computer link connection (GX Configurator is not supported.)

The following shows an access example by GX Developer (when connected to the QJ71C24(N)) when the GOT and personal computer are connected by the RS-232 interface.

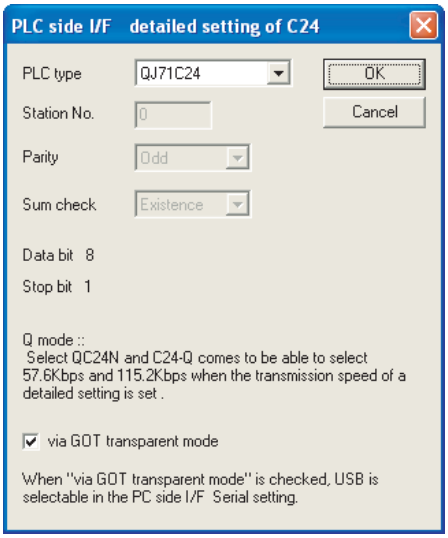


1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [QCPU (Q mode)].

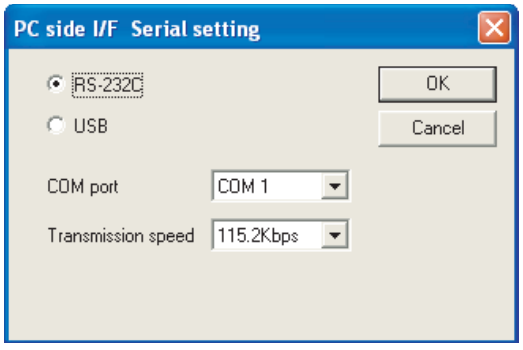
3 The [Transfer Setup] is displayed.

4 Set the [Transfer Setup]:
PC side I/F : Serial
PLC side I/F : C24
Other station : No specification



5 Return to [Transfer Setup] and double-click [C24] of the PLC side I/F to display [PLC side I/F detailed setting of C24].

6 Check [via GOT transparent mode] for [PLC side I/F detailed setting of C24].



7 Double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

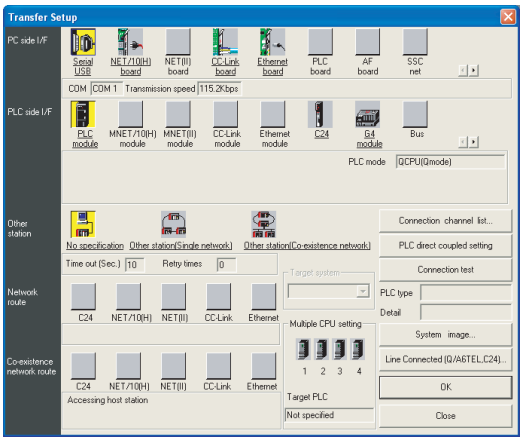
8 Check [RS-232C] for [PC side I/F Serial setting].



9 The screen returns to the [Transfer Setup]. Click the Connection Test to check if GX Developer has been connected to the QCPU (Q mode).

(3) When connecting the GOT and PLC in Ethernet communication

The following shows an access example by GX Developer (when connecting to QCPU (Q mode)) when the GOT and the personal computer are connected by the RS-232.

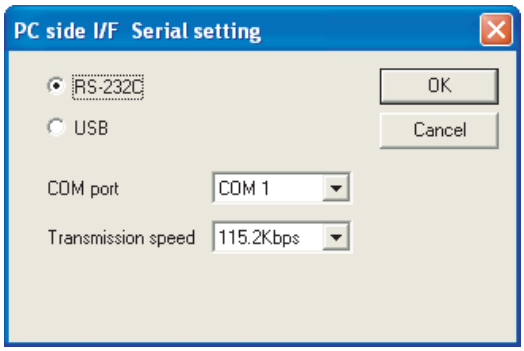


1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [QCPU (Q mode)].

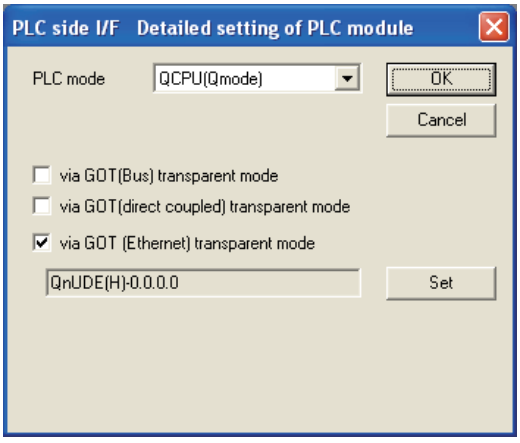
3 The [Transfer Setup] is displayed.

4 Set the [Transfer Setup].
PC side I/F : Serial USB (COM)
PLC side I/F : PLC module
Other station : No specification



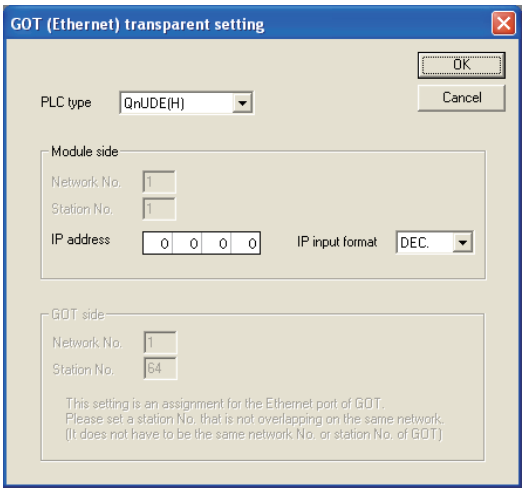
5 Double-click [Serial USB] of the PC side I/F to display [PC side I/F Serial setting].

6 Check [RS-232C] for [PC side I/F Serial setting].



7 Double-click [PLC module] of the PLC side I/F to display [PLC side I/F Detailed setting of PLC module].

8 On the [PLC side I/F Detailed setting of PLC module], mark the [via GOT (Ethernet) transparent mode] checkbox and click [Set].





9 By clicking [Set], the [GOT (Ethernet) transparent setting] is displayed.
Here, set the built-in Ethernet port QCPU or Ethernet module, which is firstly connected via a GOT.

10 Set [QnUDE(H)] or [QJ71E71] for [PLC type].
When connecting the Q173NCCPU, set[QJ71E71].

11 Specify the number for [Network No.] and [Station No.] same as the number assigned to the Ethernet module.
When [QnUDE(H)] is set for [Type name], the setting is not required.

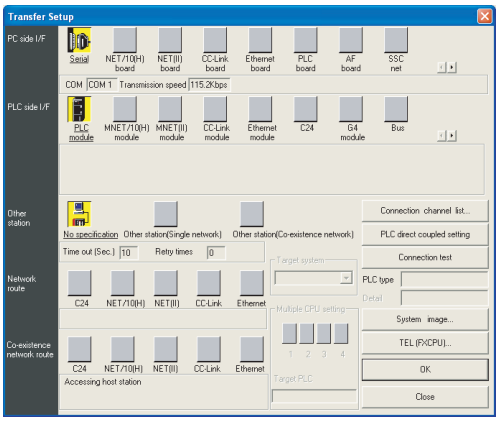
12 Specify the IP address for [IP address] same as the IP address assigned to the built-in Ethernet port QCPU or Ethernet module.

13 The screen returns to [Transfer Setup]. Click Connection Test to check if GX Developer has been connected to the QCPU (Q mode).

2 When connecting the GOT and PC with USB

(1) When the Q/QnA/ACPU, motion controller CPU (A Series) is connected

The following is an access example by GX Developer (When connected to the A Series) when the GOT and PC are connected by USB.



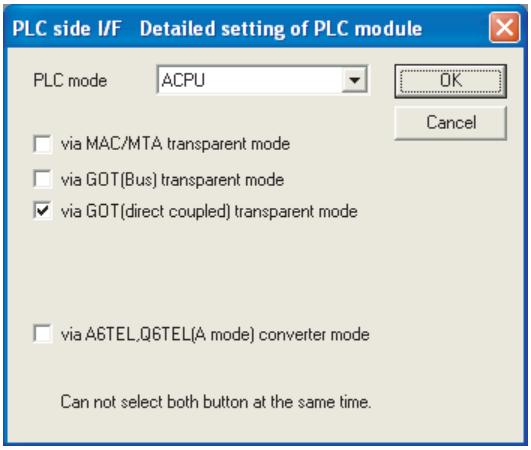
1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [ACPU].

3 The [Transfer Setup] is displayed.

4 Set the [Transfer Setup]:
PC side I/F : Serial
PLC side I/F : PLC module
Other station : No specification

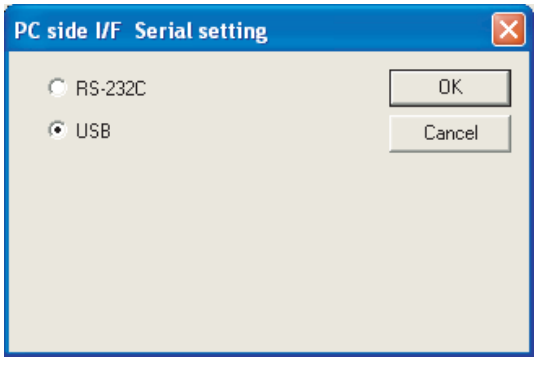
5 Double-click [PLC module] of the PLC side I/F to display [PLC side I/F Detailed setting of PLC module].



6 Check-mark either of the following in [PLC side I/F Detailed setting of PLC module].

Bus connection
[via GOT (Bus) transparent mode]

Direct CPU connection
[via GOT (direct coupled) transparent mode]



7 Return to [Transfer Setup] and double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

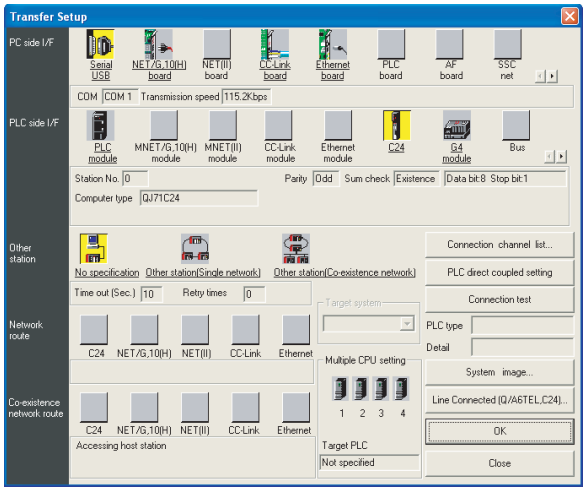
8 Select [USB] in [PC side I/F Serial setting].



9 The screen returns to the [Transfer Setup]. Click the Connection Test to check if GX Developer has been connected to the ACPU.

(2) Connecting the GOT and PLC in computer link connection (GX Configurator is not supported.)

The following shows an access example by GX Developer (when connected to the QJ71C24(N)) when the GOT and personal computer are connected by the USB interface.

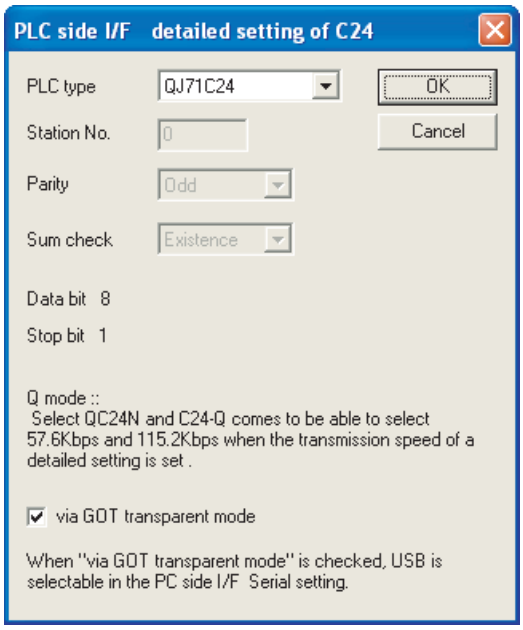


1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [QCPU (Q mode)].

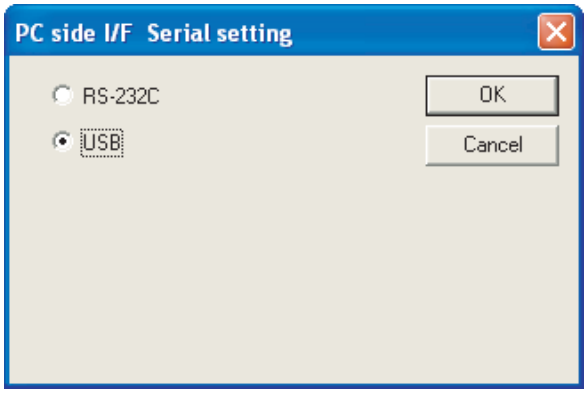
3 The [Transfer Setup] is displayed.

4 Set the [Transfer Setup]:
PC side I/F : Serial
PLC side I/F : C24
Other station : No specification



5 Double-click [C24] of the PLC side I/F to display [PLC side I/F detailed setting of C24].

6 Check [via GOT transparent mode] for [PLC side I/F detailed setting of C24].



7 Return to [Transfer Setup] and double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

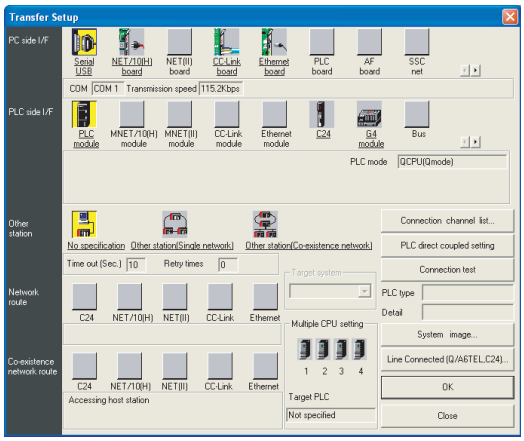
8 Select [USB] in [PC side I/F Serial setting].



9 The screen returns to the [Transfer Setup]. Click the Connection Test to check if GX Developer has been connected to the QCPU (Q mode).

(3) When connecting the GOT and PLC in Ethernet communication

The following shows an access example by GX Developer (when connecting to QCPU (Q mode)) when the GOT and the personal computer are connected by the USB.

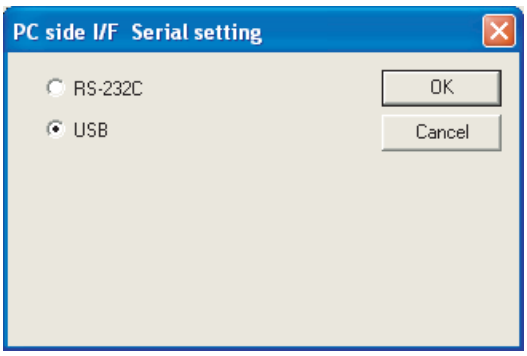


1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [QCPU (Q mode)].

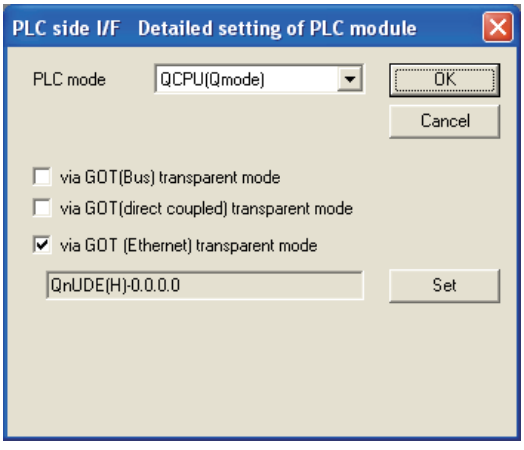
3 The [Transfer Setup] is displayed.

4 Set the [Transfer Setup].
PC side I/F : Serial USB (COM)
PLC side I/F : PLC module
Other station : No specification



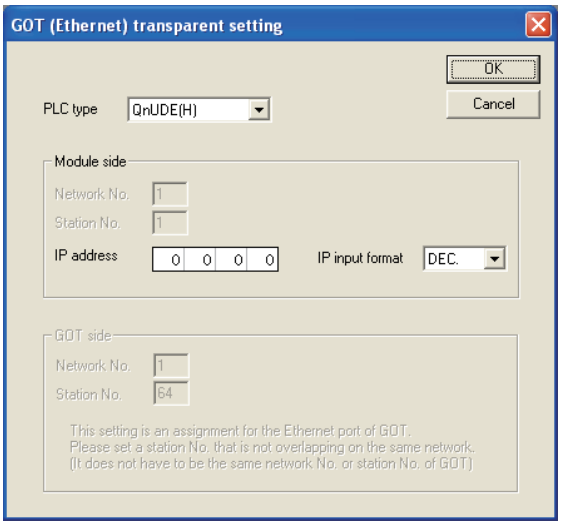
5 Double-click [Serial USB] of the PC side I/F to display [PC side I/F Serial setting].

6 Check [USB] for [PC side I/F Serial setting].



7 Double-click [PLC module] of the PLC side I/F to display [PLC side I/F Detailed setting of PLC module].

8 On the [PLC side I/F Detailed setting of PLC module], mark the [via GOT (Ethernet) transparent mode] checkbox and click [Set].





9 By clicking [Set], the [GOT (Ethernet) transparent setting] is displayed.
Here, set the built-in Ethernet port QCPU or Ethernet module, which is firstly connected via a GOT.

10 Set [QnUDE(H)] or [QJ71E71] for [PLC type].
When connecting the Q173NCCPU, set[QJ71E71].

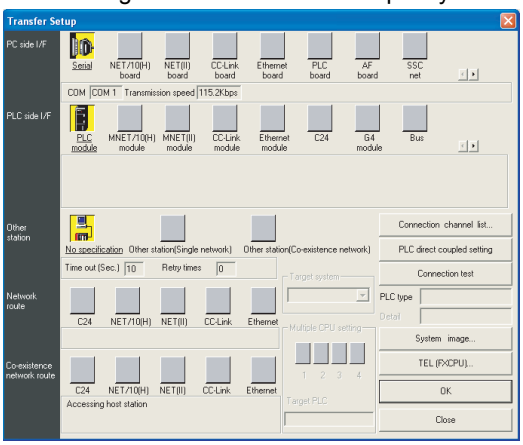
11 Specify the number for [Network No.] and [Station No.] same as the number assigned to the Ethernet module.
When [QnUDE(H)] is set for [Type name], the setting is not required.

12 Specify the IP address for [IP address] same as the IP address assigned to the built-in Ethernet port QCPU or Ethernet module.

13 The screen returns to [Transfer Setup]. Click Connection Test to check if GX Developer has been connected to the QCPU (Q mode).

(4) When the FXCPU is connected

The following shows an access example by GX Developer when the GOT and PC are connected by USB.

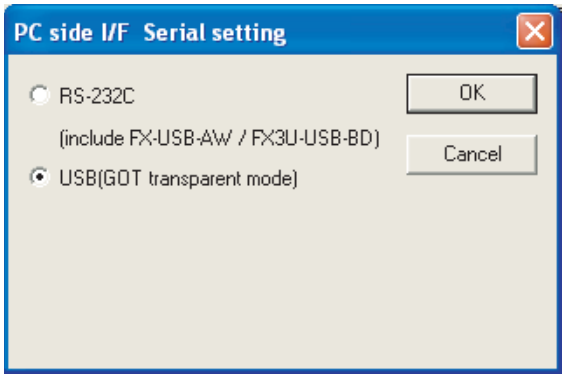


1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [FXCPU].

3 The [Transfer Setup] is displayed.

4 Set the [Transfer Setup]:
PC side I/F : Serial
PLC side I/F : PLC module
Other station : No specification



5 Double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

6 Select [USB (GOT transparent mode) in [PC side I/F Serial setting].



7 The screen returns to the [Transfer Setup]. Click the Connection Test to check if GX Developer has been connected to the FXCPU.

Point

How to operate GX Developer

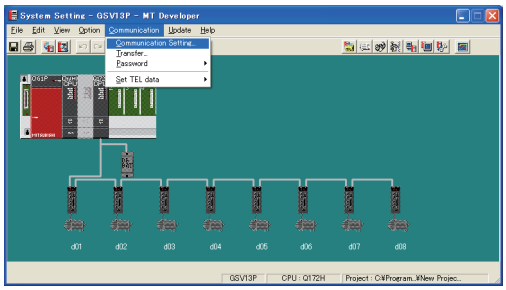
For details on GX Developer operations, refer to the following manual:

☞ GX Developer Version Operating Manual

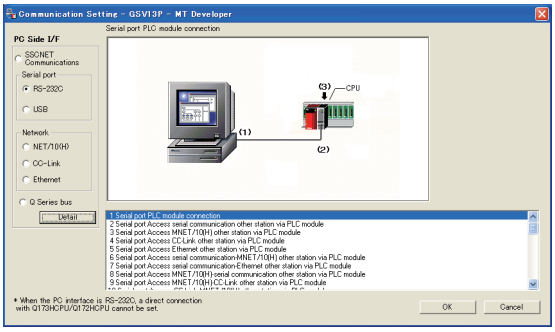
53.4.5 Accessing by the MT Developer

1 When connecting the GOT and PC with RS-232

The following shows an access example by MT Developer (when connected to the motion controller CPU (Q series)) when the GOT and PC are connected by RS-232.

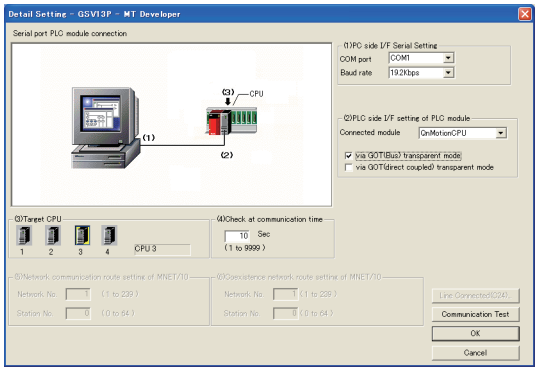


1 Click [Communication] → [Communication Setting] in MT Developer.



2 Check-mark [RS-232C] in [Serial port].

3 Click [Detail].



4 Check-mark either of the following in [PLC side I/F setting of PLC module].

Bus connection

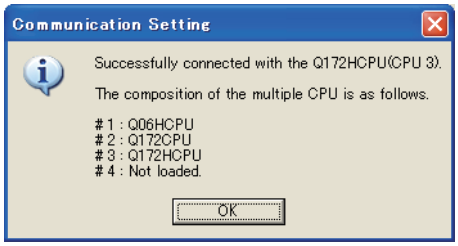
[via GOT(Bus) transparent mode]

Direct CPU connection

[via GOT(direct coupled) transparent mode]

5 As necessary, select a CPU that is targeted by using the transparent function in [CPU].

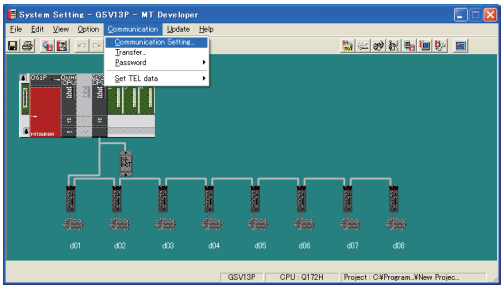
6 Click Communication Test .



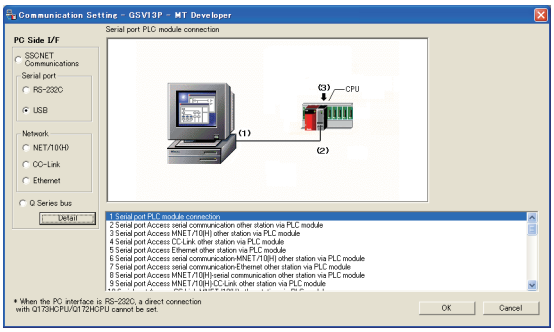
7 Confirm that the PC is connected to the motion controller CPU (Q series).

2 When connecting the GOT and PC with USB

The following shows an access example by MT Developer (when connected to the motion controller CPU (Q series)) when the GOT and PC are connected by USB.

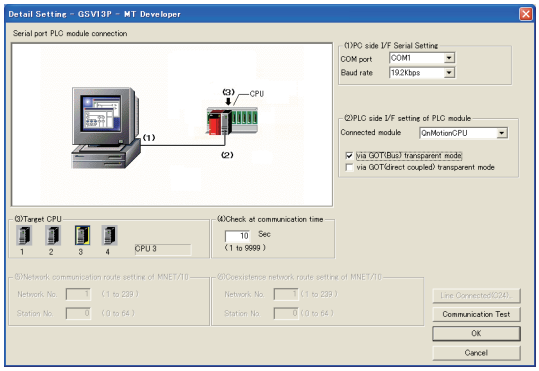


1 Click [Communication] → [Communication Setting] in MT Developer.



2 Check-mark [USB] in [Serial port].

3 Click [Detail].



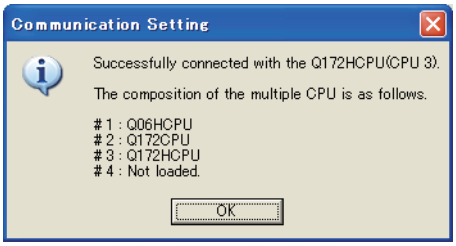
4 Check-mark either of the following in [PLC side I/F setting of PLC module].

Bus connection
[via GOT(Bus) transparent mode]

Direct CPU connection
[via GOT(direct coupled) transparent mode]

5 As necessary, select a CPU that is targeted by using the transparent function in [CPU].

6 Click Communication Test.



7 Confirm that the PC is connected to the motion controller CPU (Q series).

53.4.6 Accessing the servo amplifier by the MR Configurator

Make the FA transparent settings with the of MT Developer.

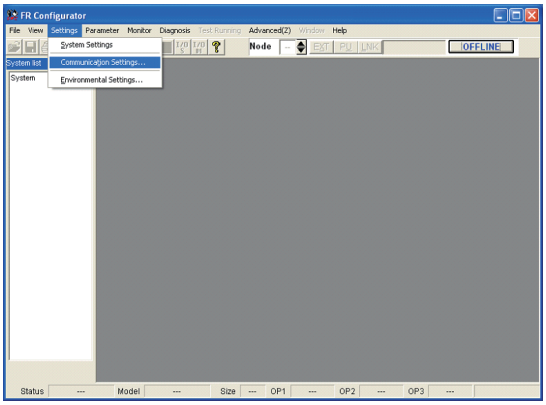
For details, refer to the following:

☞ Section 53.4.5 Accessing by the MT Developer

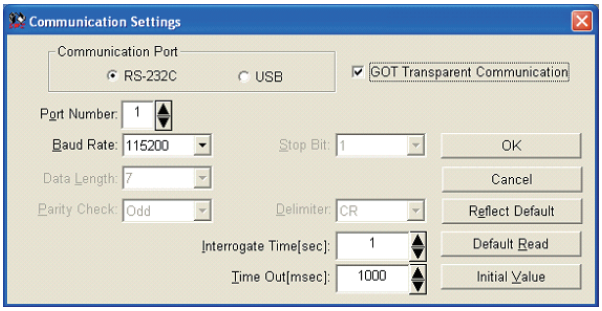
53.4.7 Accessing the inverter by the FR Configurator

1 When connecting the GOT and PC with RS-232

The following shows an access example by MT Developer (when connected to the FREQROL A700/F700 Series) when the GOT and PC are connected by RS-232.



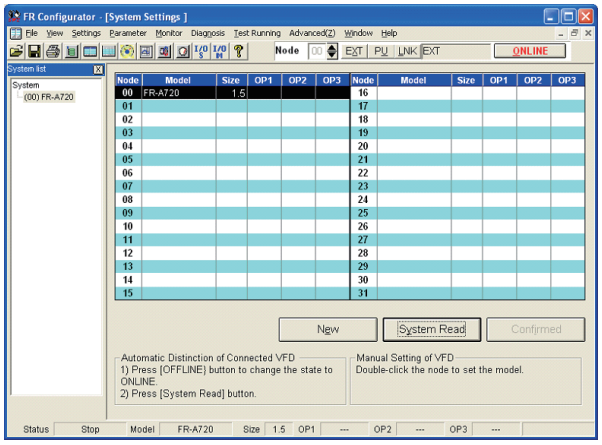
1 Click [Settings] → [Communication Settings...] in FR Configurator.



2 On the [Communication Port], mark the [RS-232C] checkbox.

3 Click the [GOT Transparent Communication].

4 Click the [OK].

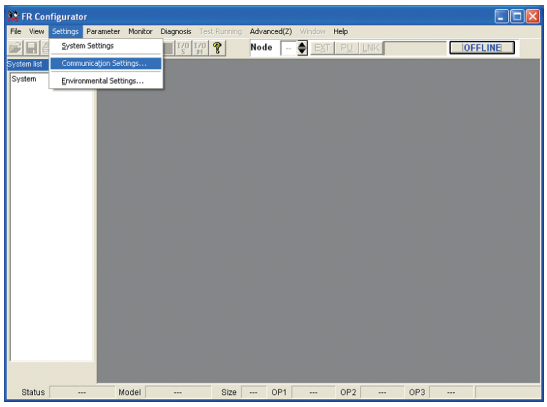


5 Click [OFFLINE] to make it [ONLINE].

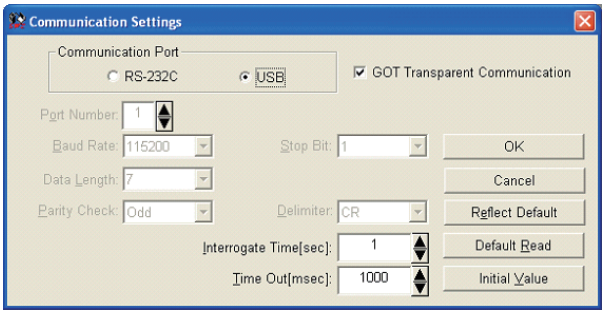
6 Click the [System Read], then check if GOT has been connected to FREQROL A700/F700 series normally.

2 When connecting the GOT and PC with USB

The following shows an access example by MT Developer (when connected to the FREQROL A700/F700 Series) when the GOT and PC are connected by USB



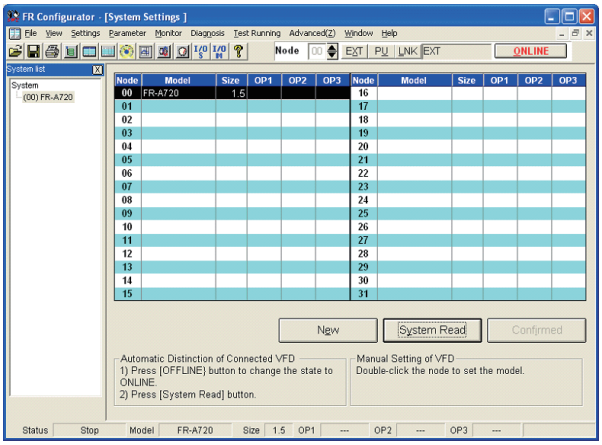
1 Click [Settings] → [Communication Settings...] in FR Configurator.



2 On the [Communication Port], mark the [USB] checkbox.

3 Click the [GOT Transparent Communication].

4 Click the [OK].



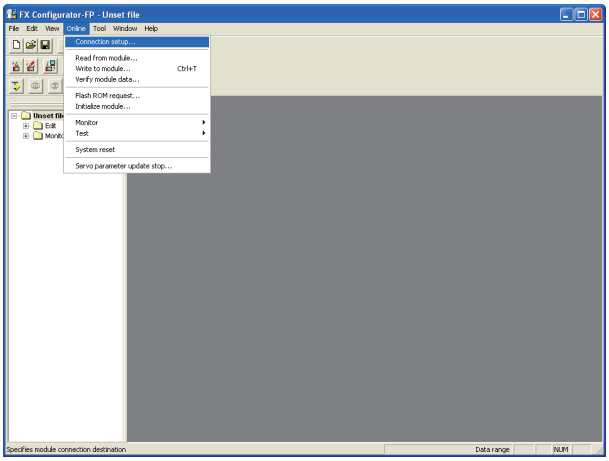
5 Click [OFFLINE] to make it [ONLINE].

6 Click the [System Read], then check if GOT has been connected to FREQROL A700/F700 series normally.

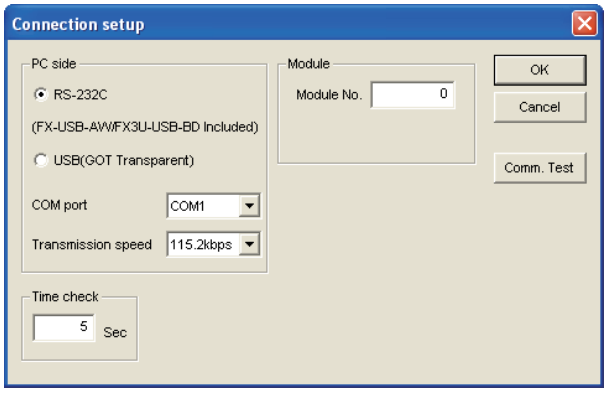
53.4.8 Accessing PLC by FX Configurator-FP

1 When connecting the GOT and PC with RS-232

The following shows an access example by FX Configurator-FP (when connecting to the FXCPU) when the GOT and the personal computer are connected by the RS-232.

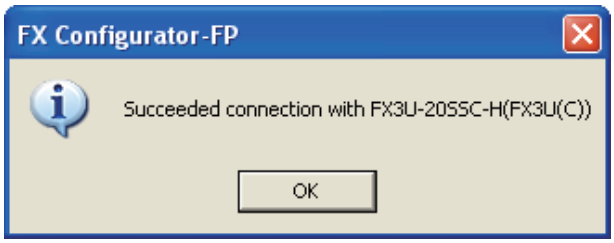


1 Click [Connection setup] for [Online] on FX Configurator-FP.



2 Check [RS-232 (FX-USB-AW/FX3U-USB-BD Included)] for [PC side].

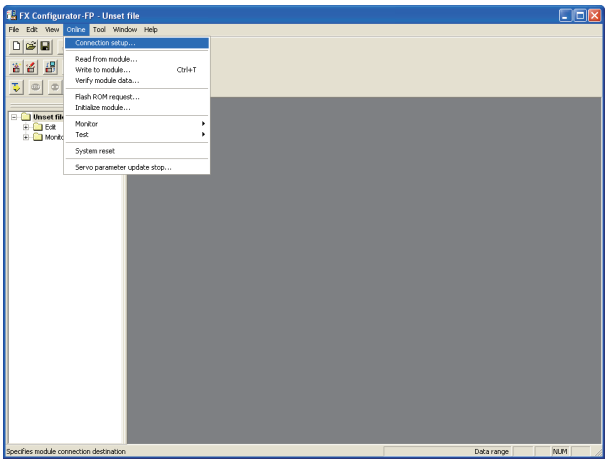
3 Click [Comm. Test]



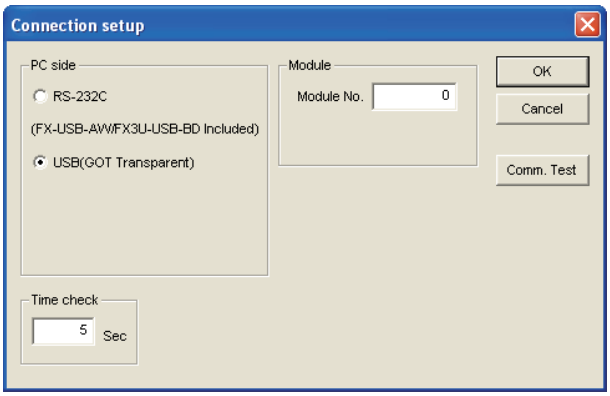
4 After the communication test is completed, check that the GOT is correctly connected to the FXCPU.

2 When connecting the GOT and PC with USB

The following shows an access example by FX Configurator-FP (when connecting to the FXCPU) when the GOT and the personal computer are connected by the USB.

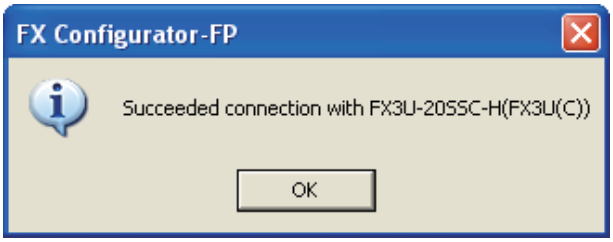


1 Click [Connection setup] for [Online] on FX Configurator-FP.



2 Check [USB(GOT Transparent)] for [PC side].

3 Click [Comm. Test].

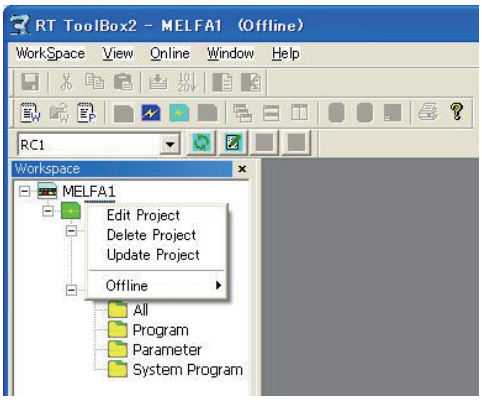


4 After the communication test is completed, check that the GOT is correctly connected to the FXCPU.

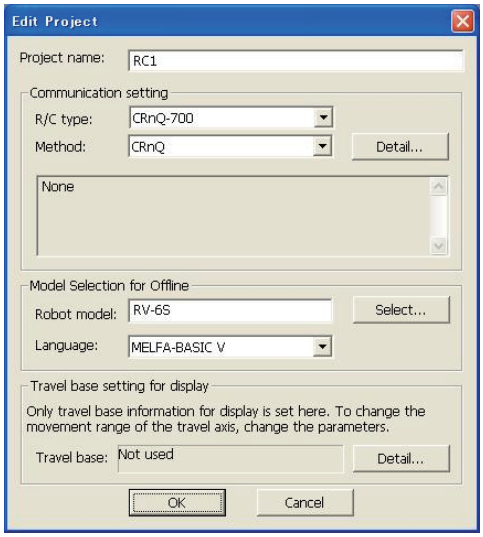
53.4.9 Accessing by RT ToolBox2

1 When connecting the GOT and PC with RS-232

The following shows an access example by RT ToolBox2 (when connecting to CRnQ-700) when the GOT and the personal computer are connected by the RS-232.

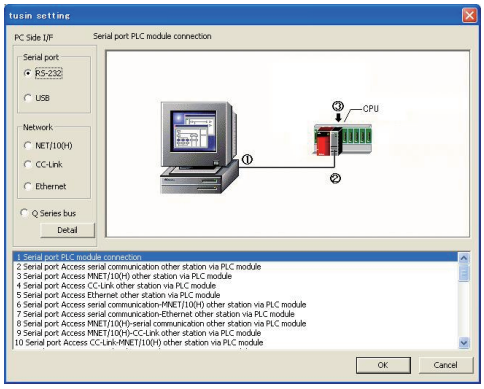


1 Right-click a project name to be a target on the project tree of RT ToolBox2.
Click [Edit Project].



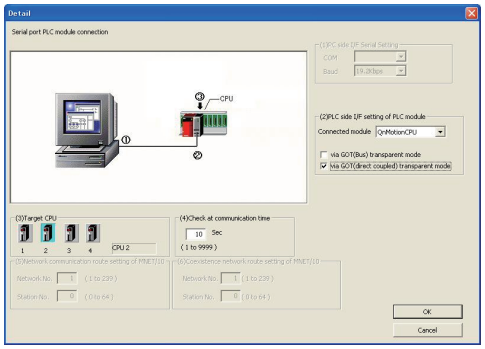
2 Set [Method] to [CRnQ].

3 Click [Detail].



4 Check-mark [RS-232] in [Serial port].

5 Click [Detail].



6 Check-mark either of the following in [PLC side I/F setting of PLC module].

Bus connection

[via GOT(Bus) transparent mode]

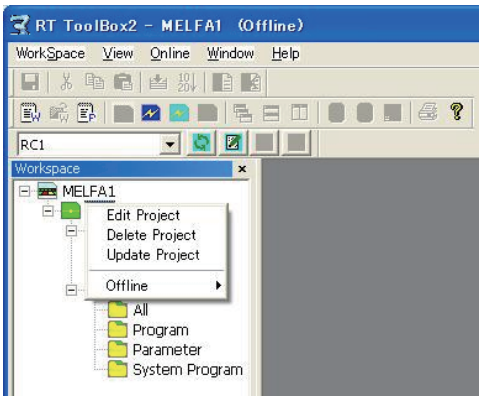
Direct CPU connection

[via GOT(direct coupled) transparent mode]

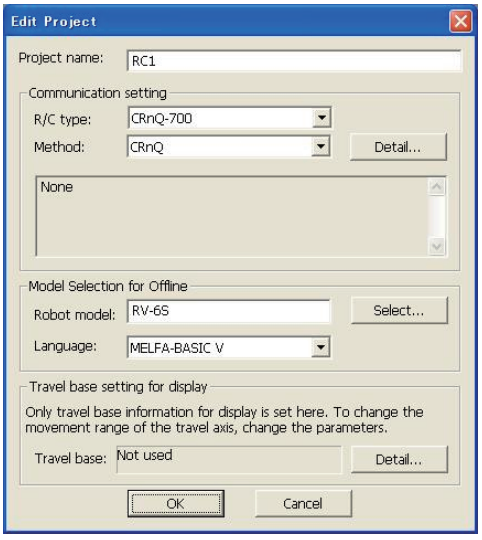
7 As necessary, select a CPU that is targeted in [CPU].

2 When connecting the GOT and PC with USB

The following shows an access example by RT ToolBox2 (when connecting to CRnQ-700) when the GOT and the personal computer are connected by the USB.

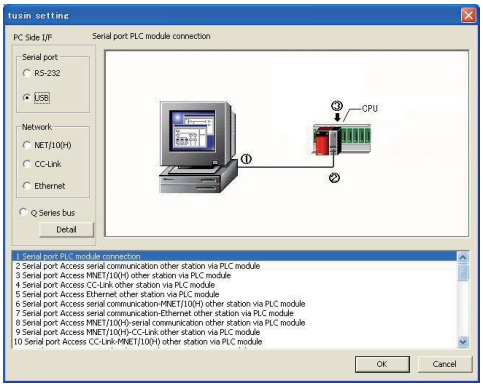


1 Right-click a project name to be a target on the project tree of RT ToolBox2.
Click [Edit Project].



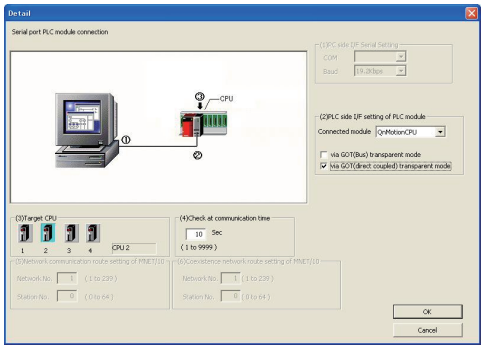
2 Set [Method] to [CRnQ].

3 Click [Detail].



4 Check-mark [USB] in [Serial port].

5 Click [Detail].



6 Check-mark either of the following in [PLC side I/F setting of PLC module].

Bus connection

[via GOT(Bus) transparent mode]

Direct CPU connection

[via GOT(direct coupled) transparent mode]

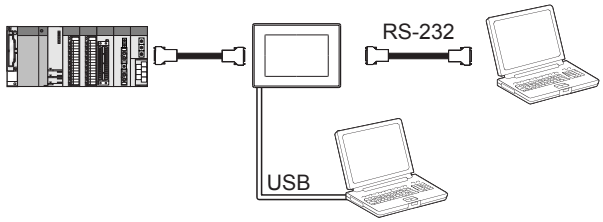
7 As necessary, select a CPU that is targeted in [CPU].

53.5 Precautions

53.5.1 Precautions common to each software

1 GOT interface required to use the FA transparent function

Connect the PC, to which GX Developer or any other relevant software has been installed, to the RS-232 interface or USB interface of the GOT.
When performing the FA transparent function, use either RS-232 interface or USB interface of the GOT. Using both of them to perform the FA transparent function concurrently is not allowed.



2 Conditions for suspending the FA transparent function

The FA transparent function is also suspended when any of the following operations, which stop the GOT monitor, is performed.
Note that the FA transparent function will not be stopped while using the optional function such as the Utility display or ladder monitor function.

(1) When project data is downloaded/uploaded by GT Designer2, or when the OS is installed*1

(2) When the GOT is set up.*1

(3) When no communication request (online monitor, etc.) has been issued from GX Developer for 45 minutes

*1 A timeout error occurs in GX Developer.

3 When GOT monitoring is faulty

The FA transparent function cannot be used in case that the GOT monitoring is faulty due to PLC CPU errors or faulty communication between the PLC CPU and GOT.
When GOT monitoring is faulty, check the following.

(1) Whether the PLC CPU operates normally

☞ Refer to the User's Manual of the PLC CPU you use.

(2) Whether the PLC CPU and GOT are connected normally

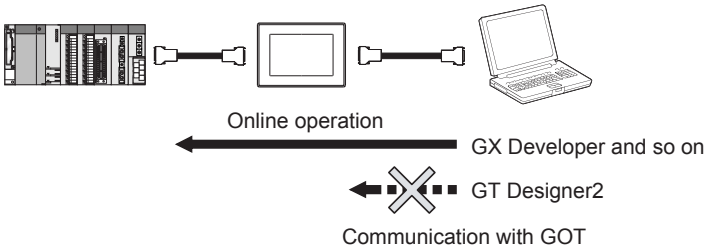
☞ • Chapter 2 BUS CONNECTION
• Chapter 3 DIRECT CONNECTION TO CPU
• Chapter 4 COMPUTER LINK CONNECTION

4 When monitoring the PLC CPU from a PC

When monitoring the PLC CPU from a PC, the GOT and PC refresh the display slower.

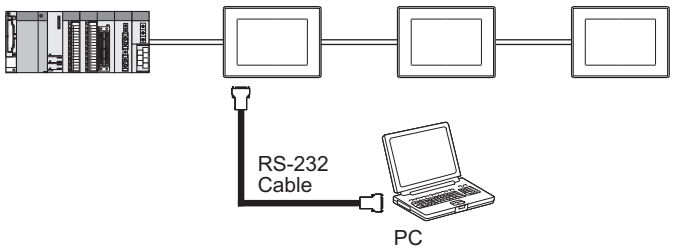
5 Software available for the FA tranparent function

When multiple kinds of software are activated on one PC, only one of them is available for communications using the FA transparent function.
Do not concurrently perform any communications using the FA transparent function.
(Offline operation with each software is available.)
Also, do not perform communications with the GOT (e.g. downloading project data) from GT Designer2 during execution of communications using the FA transparent function.



6 When the FA transparent function is used in a bus connection

(1) When mutiple GOTs are bus-connected
When multiple GOTs are bus-connected, the FA transparent function can be used on each GOT. However, note that the monitoring performance of each GOT slows down as the number of monitoring GOTs and PCs increases.

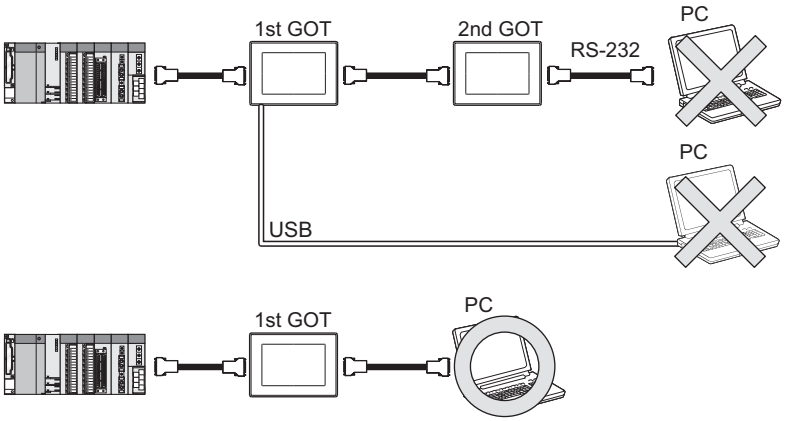


(2) When the FA transparent function is used in a bus connection
When the FA transparent function is used in a bus connection, the following GX Developer functions cannot be executed.
The message "The executed function is not supported. Please check the manual and other documentation." is displayed on GX Developer

Unsupported GX Developer functions	Remarks
• Remote Reset • Remote system reset	—
• Remote RUN • Remote STOP • Remote PAUSE • Remote STEP-RUN • Remote latch clear • Write clock data • Clear malfunction log	Inexecutable only when specify all stations/groups has been performed.

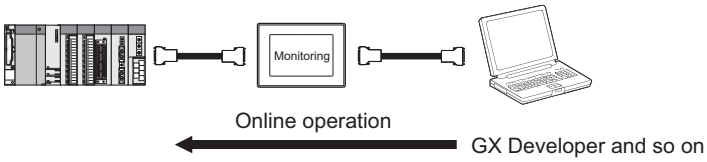
7 When using together with the Multiple-GT11, GT10 connection function

When multiple GOTs are connected, the FA transparent function is not available even if the RS-232 interface or USB interface is used for the connection.



8 When PLC power disconnection occurs with the FA transparent function being used

While the FA transparent function is being used, if the communication between the PLC and the GOT is stopped due to PLC power disconnection or a disconnection of the communication cable between the PLC and the GOT, the GOT waits for timeout against the communication request from the peripheral devices (GX Developer, etc.), and recovery of monitoring between the PLC and the GOT is delayed.



9 When the FA transparent function is used in an Ethernet connection

(1) GX Developer function

When the FA transparent function is used in an Ethernet connection, the following GX Developer functions cannot be executed.

The message "The executed function is not supported. Please check the manual and other documentation." is displayed on GX Developer.

Unsupported GX Developer functions	Remarks
• Remote Reset • Remote system reset	—
• Remote RUN • Remote STOP • Remote PAUSE • Remote STEP-RUN • Remote latch clear • Write clock data • Clear malfunction log • Remote password function • CC-Link IE controller network diagnostics • Ethernet diagnostics (PING test/loopback test with the Ethernet module (Q series))	Inexecutable only when specify all stations/groups has been performed.

(2) GOT station monitoring function

When the FA transparent function is used in an Ethernet connection, GOT station monitoring function cannot be operated.

Therefore, in the cases of "no connection target", "PLC power OFF", etc., the monitoring of the GOT delays for the timeout time.

10 When connecting the GOT multi-drop connection

FA transparent function is not available for the GOT multi-drop connection.

53.5.2 When using GX Developer

1 When connecting to QCPU (A mode)

When connecting to QCPU (A mode), set the PLC type to "A4UCPU" or "QCPU (A mode)" on GX Developer.

2 Connecting the GOT and GX Developer with RS-232

The [Transmission speed] setting in [PC side I/F Serial setting] of [Transfer Setup] must be within the range supported by the connected CPU.

CPU connected	Transmission speed
QCPU, FXCPU	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
QnACPU	9600bps, 19200bps, 38400bps
ACPU	9600bps, 19200bps
Motion controller CPU (A series)	9600bps

3 When [monitor conditions] have been set on GX Developer

(1) Monitoring performance of the GOT is temporarily suspended.

(2) The GOT cannot respond to the touch switch operation and numerical/ascii inputs.

(3) Writing to PLC results in a system alarm occurrence and displays the message, "315 Device writing error. Correct device.".

(4) While setting the monitor conditions, do not perform any operation which makes the GOT restart (e.g. downloading project data, changing utility data).
Doing so may display a system alarm, "402 Communication timeout. Confirm communication pathway or modules." when the GOT restarts.
When the monitor conditions setting for the PLC CPU has not been cancelled, reconnect GX Developer to cancel the setting. (An error may be output when the monitor conditions setting is cancelled.)

(5) When the time check of GX Developer is set to 30 seconds or more in the monitor condition settings, the message "402 Communication timeout. Confirm communication pathway or modules." may appear.
Set the time check time of GX Developer to 30 seconds or less.

4 When exiting GX Developer

For 45 seconds after GX Developer has been exited, the GOT continues monitoring at the same speed as when the FA transparent function is working.

5 When performing [Read to PLC], [Write to PLC] and other file operations on GX Developer

If any of the following GOT functions is executed during the file operation such as [Read to PLC], [Write to PLC], this may cause the GOT or GX Developer to develop an error.
In this case, take the following corrective action :

GOT functions	Error messages on GOT	Corrective action on GOT side	Error messages on GX Developer error message	Corrective action on GX Developer
File reading in the ladder monitor function for MELSEC-Q	The file is not found.	With no file operation being executed on GX Developer, re-execute the file reading.	File access failure. Please retry.	With no file reading being executed in the ladder monitor function for MELSEC-Q, re-execute the file operation.
Read/write of values of the file register specified for the recipe function	358 PLC file access failure. Confirm PLC drive.*1	Stop the file operation on GX Developer and turn ON the trigger device for the recipe function again.	File access failure. Please retry.	Execute the file access operation again with the recipe in-process signal in GOT system information ON.
			PLC file system error. Unable to communicate with PLC.	
Reading TC monitor set value in the system monitor function	No message is displayed. (The TC set value space is blank.)	With no file operation being executed on GX Developer, re-execute the TC monitor.	File access failure. Please retry.	With no TC set value being read, re-execute the file operation.

*1 The numerical indicates the system alarm No.

6 When PLC write is failed while using the FA transparent function

The execution of PLC write using the FA transparent function may be failed due to some reason such as cable disconnection.
When this occurs, re-execute the PLC write from the same PC, or reset the PLC CPU.

7 Restrictions on GX Developer during backup/restore execution

(1) When reading/writing data from/to a PLC, monitoring a PLC, and others are executed with GX Developer with the FA transparent function during the backup/restore execution with the GOT, the backup/restore is stopped.
Check that reading/writing data from/to the PLC, monitoring the PLC, and others are not executed with GX Developer with the FA transparent function. Execute the backup/restore with the GOT again.

(2) When the backup/restore is executed with the GOT while reading/writing data from/to a PLC, monitoring a PLC, and others are executed with GX Developer with the FA transparent function, errors occur on GX Developer.
The backup/restore with the GOT is correctly executed.

53.5.3 When using MT Developer

1 When exiting MT Developer

For 45 seconds after GX Developer has been exited, the GOT continues monitoring at the same speed as when the FA transparent function is working.

2 When PLC write is failed while using the FA transparent function

The execution of PLC write using the FA transparent function may be failed due to some reasons such as cable disconnection.
When this occurs, re-execute the PLC write from the same PC, or reset the motion controller CPU.

3 When a cable disconnection has occurred

When the cable between the GOT and the motion CPU is disconnected, it takes time until a timeout error occurs in MT Developer.

53.5.4 When using MR Configurator

1 Unavailable functions and restrictions

For the use via the motion controller, there are unavailable functions and restrictions.
For details on the restrictions, refer to the help screen of MR Configurator.

2 Monitor speed of GOT

Since the FA transparent function is used via the motion CPU, the monitor speed of GOT is slow.

53.5.5 When using FR Configurator

1 GOT monitoring when using FA transparent function

When FA transparent function is used, GOT suspends monitoring on channels supporting FA transparent function.

Point

Cancelling the suspended GOT monitoring immediately

To cancel the suspended (45 seconds) GOT monitoring immediately after FA transparent is executed, input "1" to device GS457. Then GOT resumes monitoring.
If FA transparent is resumed even if "1" is already input to device GS457, an error will occur on FR Configurator.
For the details of the device, refer to the following manual.
☞GT Designer2 Version□ Screen Design Manual

2 When using the oscilloscope function specified sampling

Since the monitoring of the inverter data may be not performed at the specified sampling intervals depending on the settings of oscilloscope function, adjust the communication setting, a sampling interval, etc.

3 About PU mode operation command source selection

On the setting of PU mode operation command source selection (Pr:551) of the inverter, specify the terminal (1:RS-485 terminals, 2:PU connected) connected to GOT.

53.6 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT16 GT15 GT11 Bus GT11 Serial	USB connection	Supporting USB connection between the PC and GOT.	2.09K	GT15: • Standard monitor OS [01.02.**] GT11: • Standard monitor OS [01.02.**] • BootOS [01.02.**.C]
GT16 GT15 GT11 Bus GT11 Serial	software	Supporting FR Configurator	2.27D	GT15: • Standard monitor OS [02.04.**] GT11: • Standard monitor OS [02.04.**]
GT16 GT15 GT11 Bus GT11 Serial	software	Supporting PX Developer, GX Configurator	2.32J	• Standard monitor OS [03.00.**]
GT16 GT15 GT11 Bus GT11 Serial	software	MT Developer • Supporting USB connection between the PC and GOT • Supporting Bus connection between the GOT and programmable controller Supporting MR Configurator	2.58L	• Standard monitor OS [03.03.**]
GT24V10 20 30 GT5V10 20	GOT model addition	Supporting FA transparent when connecting to the GT1020	2.43V	• Standard monitor OS [01.02.**]
GT24V10 20 30 GT5V10 20	GOT model addition	Supporting FA transparent when connecting to the GT1030	2.58L	• Standard monitor OS [01.03.**]
GT16 GT15 GT11 Serial	software	GX Developer • Supporting computer link connection between the GOT and programmable controller	2.77F	• Standard monitor OS [03.12.**]
GT24V10 20 30				• Standard monitor OS [01.08.**]
GT16 GT15 GT11 Serial	software	PX Developer • Supporting computer link connection between the GOT and programmable controller	2.82L	• Standard monitor OS [03.13.**]
GT16 GT15 GT11 Serial	software	Supporting FX Configurator-FP	2.82L	• Standard monitor OS [03.13.**]
GT24V10 20 30				• Standard monitor OS [01.09.**]

(Continued to next page)

Model	Item	Description	Version of GT Designer2	Version of OS
GT105□ GT104□	GOT model addition	Supporting FA transparent when connecting to the GT105□ Supporting FA transparent when connecting to the GT104□	2.90U	• Standard monitor OS [01.10.**]
GT16	GOT model addition	Supporting FA transparent when connecting to the GT16		• Standard monitor OS [04.02.**]
GT16 GT15 GT11 Serial	software	Supporting RT ToolBox2		
GT16 GT15 GT11 Serial	Connection destination addition	Supporting FA transparent when connecting to the FREQROL-D700	2.91V	• Standard monitor OS [04.03.**]
GT105□ GT104□ GT24V1030 GT5V1020				• Standard monitor OS [01.11.*]
GT16 GT15	software	GX Developer • Supporting the Ethernet connection between the GOT and programmable controller	2.96A	• Standard monitor OS [04.04.**]

MEMO

54

MULTIPLE-GT11, GT10 CONNECTION FUNCTION



54.1 System Configuration . . . . . page 54-2

This section describes devices and cables needed for connection of multiple GOTs.
Refer to this section to select the desired system.

54.2 Connection Cable . . . . . page 54-7

This section describes the specifications of the cables needed for connection of multiple GOTs.
Refer to this section to check the specifications of the connection cable to be used.

54.3 Preparatory Procedures for Monitoring . . . . . page 54-10

This section describes the preparatory procedures for monitoring in multiple-GT11 connection.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

54.4 Precautions . . . . . page 54-20

This section describes precautions for multiple-GT11 connection.
Refer to this section without fail before starting multiple-GT11 connection.

54.5 List of Functions Added by Version Upgrade . . . . . page 54-22

This section describes the functions added by version upgrade of GT Designer2 or OS.

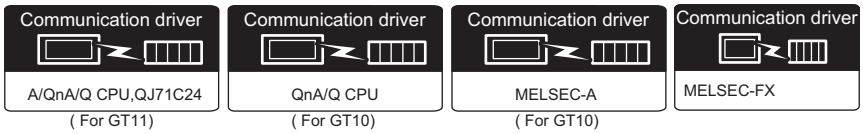
54.1 System Configuration

Select a system configuration suitable for your application.

Point

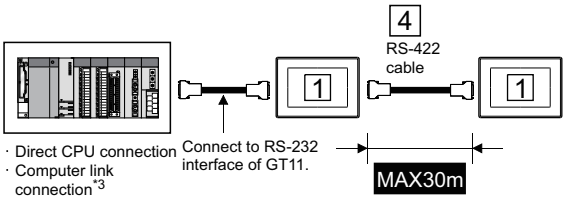
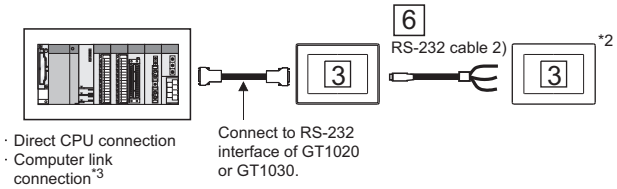
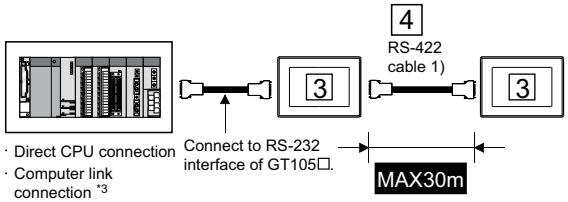
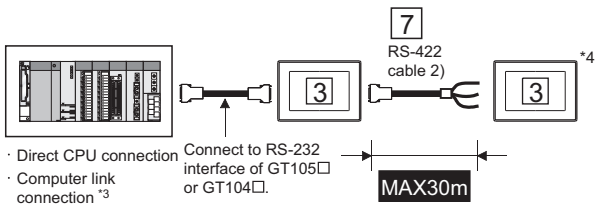
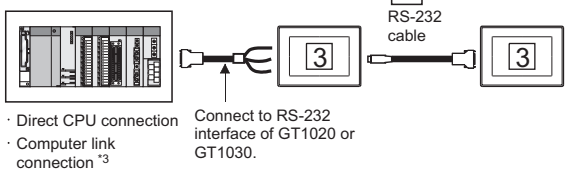
Conventions used in this section

Numbers (e.g. [1]) of *1* System configuration and connection conditions correspond to the numbers (e.g. [1]) of *2* System equipment.
Use these numbers as references when confirming models and applications.



1 System configuration and connection conditions

(1) Connecting 1st GOT to MITSUBISHI PLC via RS-232 interface

Connection conditions		System configuration*1	Model
Number of GOTs	Distance		
2 (max.)	(See the right column.)		GT11 Serial
2 (max.)	(See the right column.)		GT24V 10 20 30 (RS-232)
2 (max.)	(See the right column.)		GT10 5□ 4□
2 (max.)	(See the right column.)		GT10 5□ 4□ GT24V 10 20 30 (RS-422)
2 (max.)	(See the right column.)		GT10 5□ 4□ GT24V 10 20 30 (RS-232)

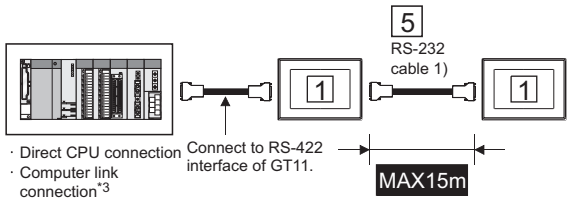
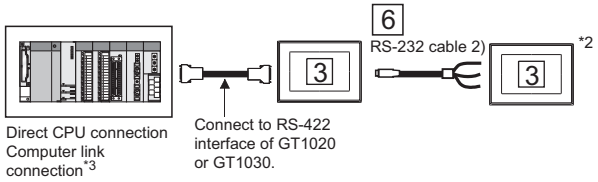
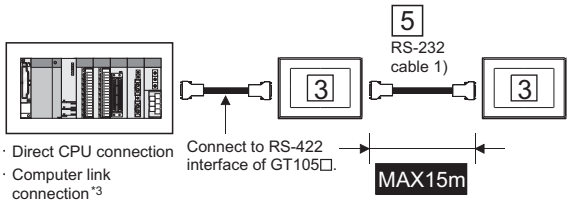
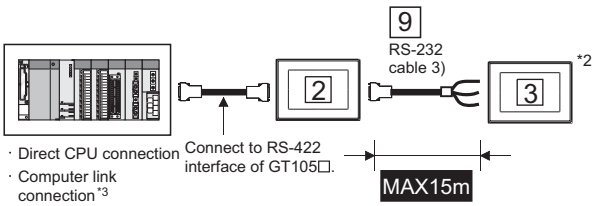
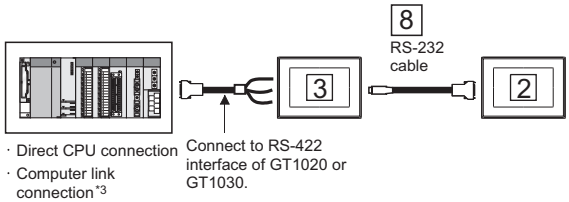
*1 When GT11 and GT10 exist in the same system, the multiple connection function is not supported.

*2 For the GT1020 or GT1030, 2nd GOT must be a RS-232 built-in product.

*3 When connected to the Computer link, the multiple connection function supports only QCPU (Q mode).

*4 For the GT1020 or GT1030, 2nd GOT (input power supply: 24V) must be a RS-422 built-in product.

(2) Connecting 1st GOT to MITSUBISHI PLC via RS-422 interface

Connection conditions		System configuration*1	Model
Number of GOTs	Distance		
2 (max.)	(See the right column.)		GT11 Serial
2 (max.)	(See the right column.)		GT24V1020 1030 GT5V1020 (RS-422)
2 (max.)	(See the right column.)		GT1054□ 4□
2 (max.)	(See the right column.)		GT1054□ 4□ GT24V1020 1030 (RS-232)
2 (max.)	(See the right column.)		GT1054□ 4□ GT24V1020 1030 GT5V1020 (RS-422)

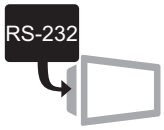
*1 When GT11 and GT10 are intermingled, the Multiple connection function is not supported.

*2 For the GT1020 or GT1030, 2nd GOT(input power supply : 24V) must be a RS-232 built-in product.

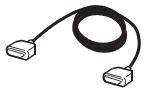
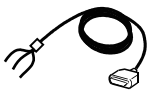
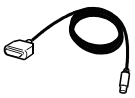
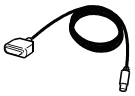
*3 When connected to the Computer link, the multiple connection function supports only QCPU (Q mode).

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	RS-232 interface • For RS-232 communication	- (Built into GOT)	GT11 Serial
		RS-422 interface • For RS-422 communication	- (Built into GOT)	GT11 Serial
	2	RS-232 interface • For RS-232 communication	- (Built into GOT)	GT10 5□ 4□
		RS-422 interface • For RS-422 communication	- (Built into GOT)	GT10 5□ 4□
	3	RS-232 interface • For RS-232 communication	- (Built into GOT)	GT 24V 10 20 30 (RS-232)
		RS-422 interface • For RS-422 communication	- (Built into GOT)	GT 24V 10 20 30 GT 5V 10 20 (RS-422)

(2) Cable

Image	No.	Name	Model name	Model
	4	RS-422 cable 1)	(To be prepared by the user. ☞ Section 54.2 Connection Cable)	GT11 Serial GT10 5□ 4□
	5	RS-232 cable 1)	GT01-C30R2-9S(3m)	GT11 Serial GT10 5□ 4□
	6	RS-232 cable 2)*1	GT10-C30R2-6P(3m)	GT 24V10 20 30 GT 5V10 20 (RS-422)
	7	RS-422 cable 2) *1	(To be prepared by the user. ☞ Section 54.2 Connection Cable)	GT10 5□ 4□ GT 24V10 20 30 (RS-422)
	8	RS-232 cable	GT01-C30R2-6P(3m)	GT10 5□ 4□ GT 24V10 20 30 (RS-232) GT 24V10 20 30 GT 5V10 20 (RS-422)
	9	RS-232 cable 3)	(To be prepared by the user. ☞ Section 54.2 Connection Cable)	GT10 5□ 4□ GT 24V10 20 30 (RS-232)

*1 For the connection to 2nd GOT, refer to the cable connection diagram. (☞ Section 54.2 Connection Cable)

Point

Connection type applicable to the multiple-GT11, GT10 connection function

The multiple-GT11, GT10 connection function is available for the following types of connection of the GOT and a MITSUBISHI PLC. For the system configuration between the GOT and MITSUBISHI PLC, refer to the corresponding section.

- Direct CPU connection (☞ Chapter 3 DIRECT CONNECTION TO CPU)
- Computer Link connection

  (☞ Chapter 4 COMPUTER LINK CONNECTION)*1

*1 Only when connecting to QCPU (Q mode)

54.2 Connection Cable

The following provides connection diagrams for each cable, which must be prepared by the user, connector specifications and other information.
For wiring to the connector terminal block of the 2nd GT1020 or GT1030, refer to the connection diagrams for cables.

1 Connection diagram

(1) RS-422 cable 1) (for only GT11, GT105 □, GT104□)

GOT side		Cable connection and signal direction	GOT side	
Signal name	Pin No.		Signal name	Pin No.
SDA	1		1	SDA
RDA	2		2	RDA
RSA	3		3	RSA
CSA	4		4	CSA
SG	5		5	SG
SDB	6		6	SDB
RDB	7		7	RDB
RSB	8		8	RSB
CSB	9		9	CSB

(2) RS-232 cable 1) (for only GT11, GT105 □, GT104□)

GOT side		Cable connection and signal direction	GOT side	
Signal name	Pin No.		Signal name	Pin No.
N.C.	1		1	N.C.
RD(RXD)	2		2	RD(RXD)
SD(TXD)	3		3	SD(TXD)
ER(DTR)	4		4	ER(DTR)
SG	5		5	SG
DR(DSR)	6		6	DR(DSR)
RS(RTS)	7		7	RS(RTS)
CS(CTS)	8		8	CS(CTS)
–	9		9	–

(3) RS-232 cable 2) (for only GT1020, GT1030)

Second GOT Side	Cable connection	Untied wire color of GT10-C30R2-6P	First GOT side
Signal name			Pin layout
SD		Brown	
RD		Red	
ER		Blue	
DR		Yellow	
SG		Green	
RS		Purple	
CS			MINI-DIN 6Pin:male
NC			
NC			

(4) RS-422 cable 2) (for only GT105 □, GT104□, GT1020, GT1030)

First GOT side		Cable connection and signal direction	Second GOT side	
Signal name	Pin No.		Pin No.	Signal name
RD	2	←	1	SDA
A	7	←	2	SDB
RD	1	→	3	RDA
B	6	→	4	RDB
SD	5		5	SG
A	4	←	6	RSA
SD	9	←	7	RSB
B	3	→	8	CSA
SG	8	→	9	CSB

(5) RS-232 cable 3) (for only GT105 □, GT104□, GT1020, GT1030)

First GOT side		Cable connection and signal direction	Second GOT side	
Signal name	Pin No.		Pin No.	Signal name
N.C	1		1	SD(TXD)
RD(RXD)	2	←	2	RD(RXD)
SD(TXD)	3	→	3	ER(DTR)
ER(DTR)	4		4	DR(DSR)
SG	5		5	SG
DR(DSR)	6	←	6	RS
RS(RTS)	7		7	CS(CTS)
CS(CTS)	8	←	8	N.C.
-	9		9	N.C.

2 Connector specifications

(1) GOT side connector (RS-232)

Use the following as the RS-232 interface connector on the GOT.

For the GOT side of the RS-232 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

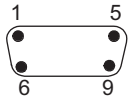
GOT	Connector type	Model	Manufacturer
GT11, GT105 □, GT104 □	9-pin D-sub (male)	17LE-23090-27(D3CC)	DDK Ltd.
GT1020, GT1030	9-pin tarminal block*1	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.

*1 The terminal block (MC1.5/9-ST-3.5BK or corresponding product) of the cable side is packed together with the GT10.

(b) Connector model

GT11, GT105 □, GT104 □

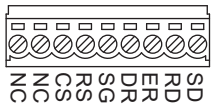
GOT main part connector see from the front



9-pin D-sub (male)

GT1020, GT1030

See from the back of a GOT main part



9-pin terminal block

(2) GOT side connector (RS-422)

Use the following as the RS-422 interface connector on the GOT.

For the GOT side of the RS-422 cable, use a connector and connector cover applicable to the GOT connector.

(a) Connector type

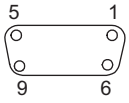
GOT	Connector type	Model	Manufacturer
GT11, GT105 □	9-pin D-sub (female)	17LE-13090-27(D3AC)	DDK Ltd.
GT1020, GT1030	9-pin tarminal block*1	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.

*1 The terminal block (MC1.5/9-ST-3.5BK or corresponding product) of the cable side is packed together with the GT10.

(b) Connector model

GT11, GT105 □, GT104 □

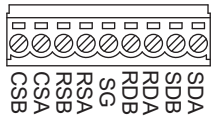
GOT main part connector see from the front



9-pin D-sub (female)

GT1020, GT1030

See from the back of a GOT main part



9-pin terminal block

3 Precautions when preparing a cable

The length of the RS-422 cable must be 30m or less.

The length of the RS-232 cable must be 15m or less.

54.3 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the MITSUBISHI PLC to the 1st GOT.

☞ Chapter 3 DIRECT CONNECTION TO CPU
☞ Chapter 4 COMPUTER LINK CONNECTION

⇩

(2nd GOT)

Install the OS onto the GOT.

☞ Section 54.3.1
Installing OS onto GOT

⇩

Make sure that the OS is installed on the GOT.

☞ Section 54.3.2
Checking OS installation on GOT

⇩

Set the communication interface.
(Communication settings)

☞ Section 54.3.3
Setting communication interface (Communication settings)

⇩

Download the project data.

☞ Section 54.3.4
Downloading project data

⇩

Attach the communication unit and connect the cable.

☞ Section 54.3.5
Attaching communication unit and connecting cable

⇩

Make sure that the GOT recognizes the connected equipment.

☞ Section 54.3.6
Verifying GOT recognizes controllers

⇩

Make sure that monitoring is performed normally.

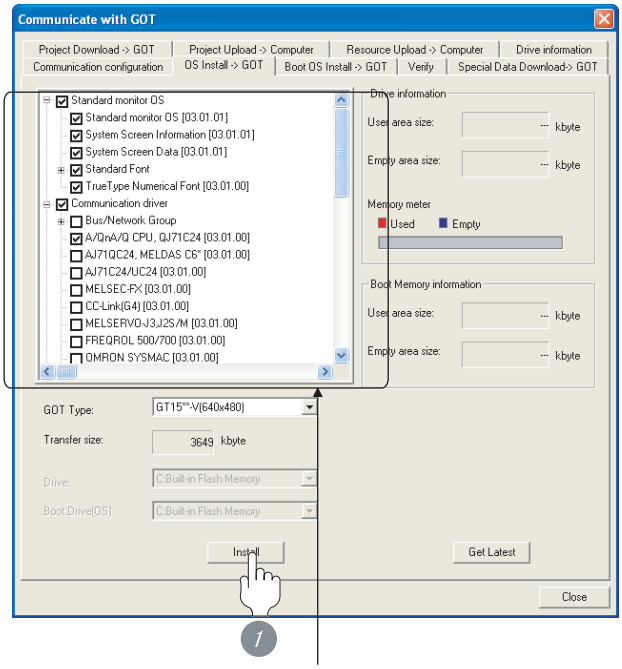
☞ Section 54.3.7
Checking for normal monitoring

54.3.1 Installing OS onto GOT

Install the standard monitor OS, communication driver and option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Place a check mark in either box of the following items under the Communication driver, according to the connection type of the 1st GOT.

<For GT11>

- When connecting to A/QnA/QCPU or a motion controller CPU: A/QnA/Q CPU, QJ71C24
- When connecting to FXCPU: MELSEC-FX

<For GT10>

- When connecting to QnA/QCPU: QnA/Q CPU
- When connecting to ACPU: MELSEC-A
- When connecting to FXCPU: MELSEC-FX

1 Check-mark a desired standard monitor OS, communication driver, option OS, and extended function OS, and click the Install button.

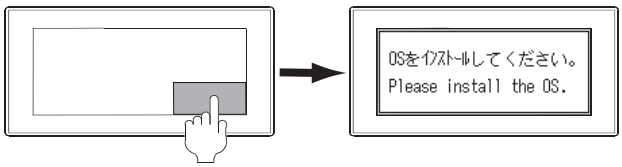
Point

Installing communication driver onto GT10

When installing communication driver onto the GOT, turn on the GOT in the OS transfer mode. For details, refer to the following manual.

☞ GT10 User's Manual

(Operating of transmission mode)



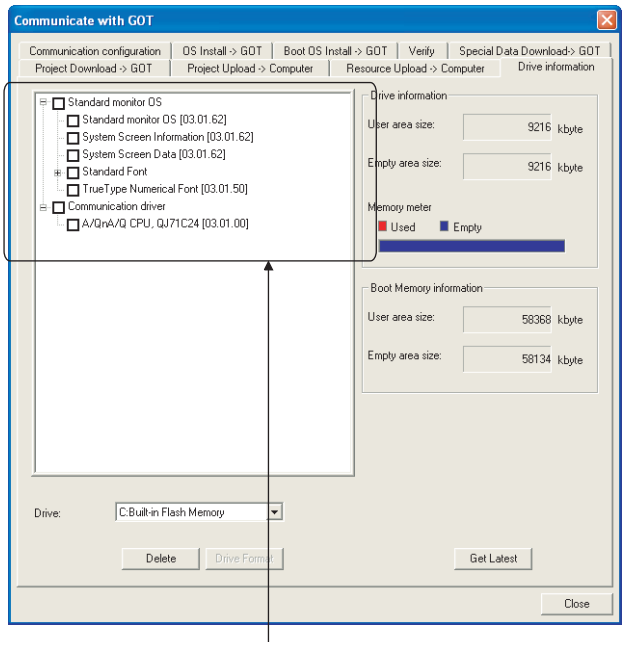
Turn on the GOT while the bottom right corner is touched.

54.3.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS

2) Communication driver (either of the following)

<For GT11>

- A/QnA/Q CPU, QJ71C24
- MELSEC-FX

<For GT10>

- QnA/Q CPU
- MELSEC-A
- MELSEC-FX

54.3.3 Setting communication interface (Communication settings)

Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

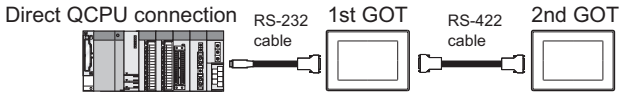
1 Communication settings

The following is an example of communication settings on GT11.

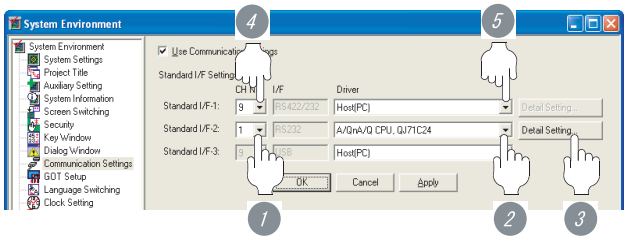
Select "1: A/QnA/QCPU, QJ71C24 or MELSEC-FX" as a communication interface used for connecting the MITSUBISHI PLC or the GOT on the preceding stage.

Select "9: Host (PC)" as a communication interface used for connecting the GOT on the next stage.

Example: To connect the 1st GOT to the QCPU via RS-232 interface



(1) The 1st GOT



- Setting the communication interface connected to the QCPU (RS-232 interface)

  1 Set "1" to the channel No. used.

  2 Set the driver to "A/QnA/QCPU, QJ71C24".

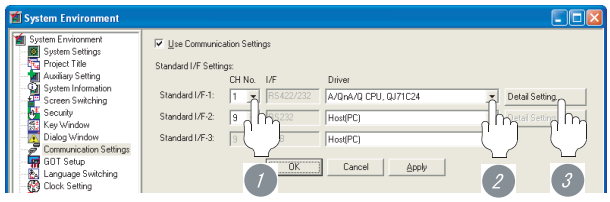
  3 Perform the detailed settings for the driver.
  (☞ 2 Communication detail settings)

- Setting the communication interface connected to the 2nd GOT (RS-422 interface)

  4 Set "9" to the channel No. used.

  5 Set the driver to "Host (PC)".

(2) The 2nd GOT



(3) Setting the communication interface connected to the 1st GOT (RS-422 interface)

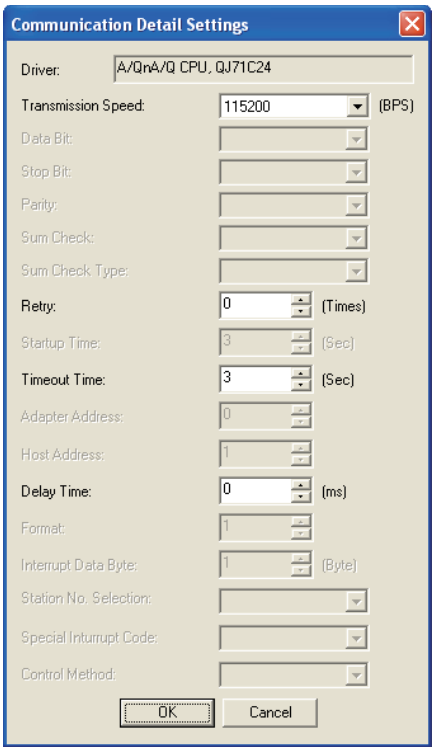
1 Set "1" to the channel No. used.

2 Set the driver to "A/QnA/QCPU, QJ71C24".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings

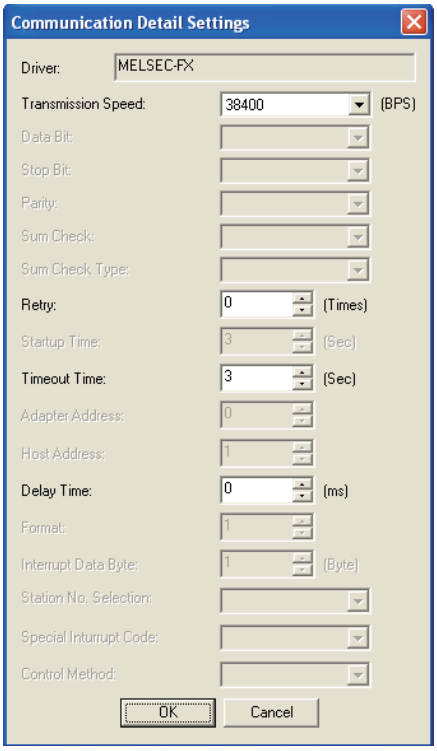
(1) A/QnA/QCPU, QJ71C24



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

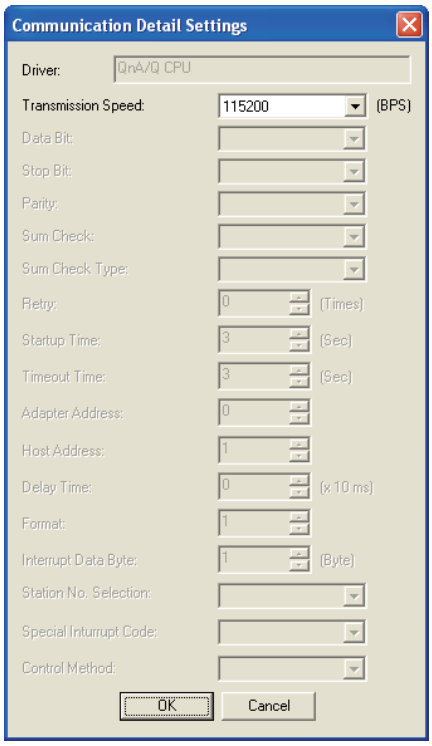
(2) MELSEC-FX

For GT11



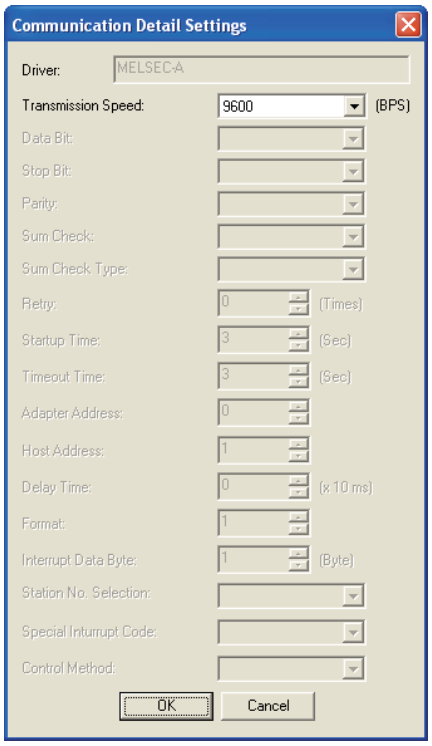
Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 38400bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(3) QnA/Q CPU



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment.	9600bps, 19200bps, 38400bps, 57600bps, 115200bps

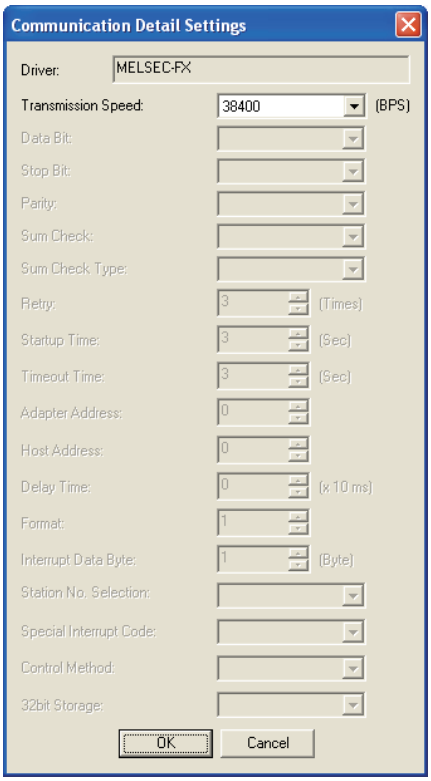
(4) MELSEC-A



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 9600bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment.	9600bps,

(5) MELSEC-FX

For GT10



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 38400bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps

Point

(1) For GT11

(a) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

GT11 User's Manual

(b) Precedence in communication settings

When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility

Although the communication interface setting can be checked, it cannot be changed.

For details on the Utility, refer to the following manual.

GT10 User's Manual

(b) Communication settings

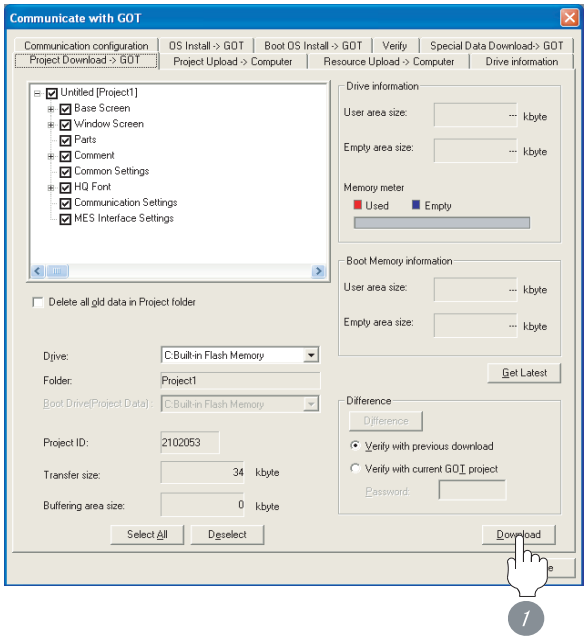
Communication settings can be changed on only GT Designer2.

54.3.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

54.3.5 Attaching communication unit and connecting cable

Point

Cautions when attaching the communication unit and connecting the cable

Shut off all phases of the GOT power supply before attaching the communication unit and connecting the cable.

1 How to connect the cable

Using the RS-232 and RS-422 interfaces alternately, connect the GOTs (connection in series).

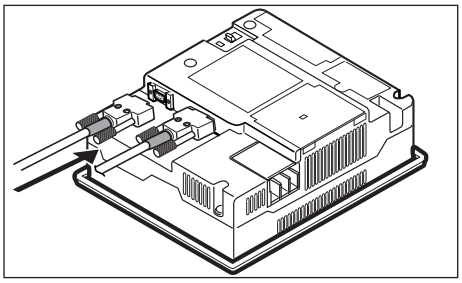
(The USB interface is not usable for the multiple-GT11 connection.)

Up to two GOTs can be connected.

(1) How to connect the RS-232 cable

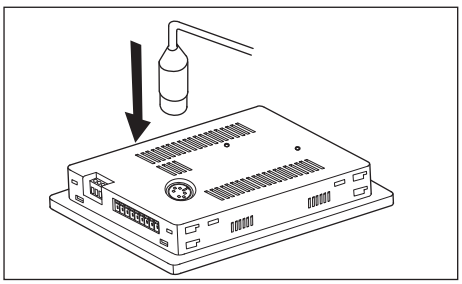
(a) For GT11, GT105□, GT104□

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



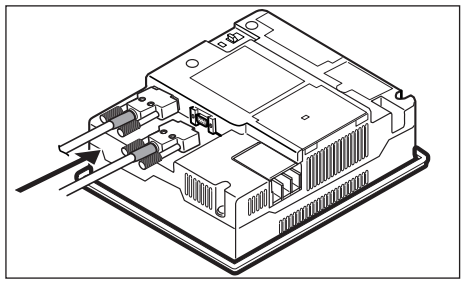
(b) For GT1020, GT1030

1 Connect the RS-232 cable to the RS-232 interface on the GOT.



(2) How to connect the RS-422 cable

1 Connect the RS-422 cable to the RS-422 conversion unit.



54.3.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

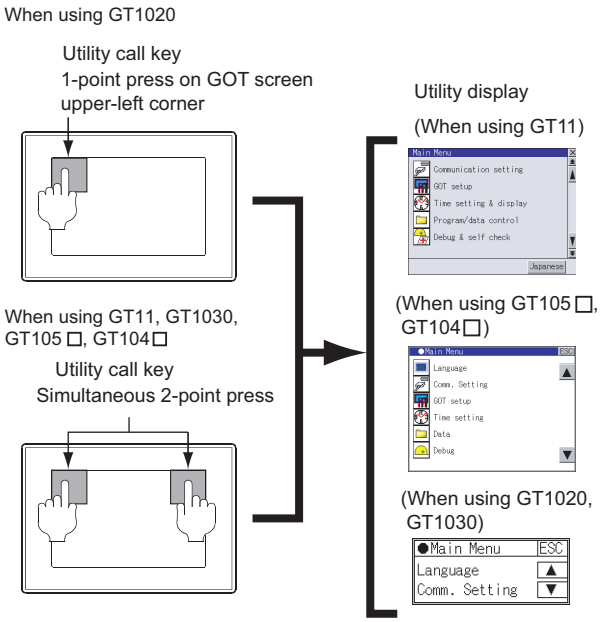
- Channel number of communication interface, communication drivers allocation status

Remark

How to display Utility (at default)

To display the Utility (at default), touch the upper right and upper left positions on the screen at the same time (pressing 2 points).
For how to start and operate the Utility, refer to the following manual.

GT ☐ User's Manual



Point

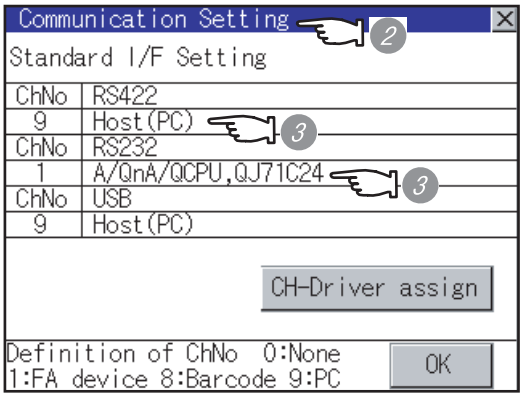
When setting the utility call key to 1-point

When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

GT ☐ User's Manual



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver of the communication interface connected to MITSUBISHI PLC or the GOT on the preceding stage (either of the following)
  <For GT11>
  A/QnA/QCPU, QJ71C24
  MELSEC-FX
  <For GT10>
  QnA/QCPU
  MELSEC-A
  MELSEC-FX
- Communication driver of the communication interface connected to the GOT on the next stage
  Host (PC)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Section 54.3 Preparatory Procedures for Monitoring

Point

(1) For GT11

(a) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.
☞ GT11 User's Manual

(b) Precedence in communication settings
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

(2) For GT10

(a) Communication interface setting by the Utility
Although the communication interface setting can be checked, it cannot be changed.
For details on the Utility, refer to the following manual.
☞ GT10 User's Manual

(b) Communication settings
Communication settings can be changed on only GT Designer2.

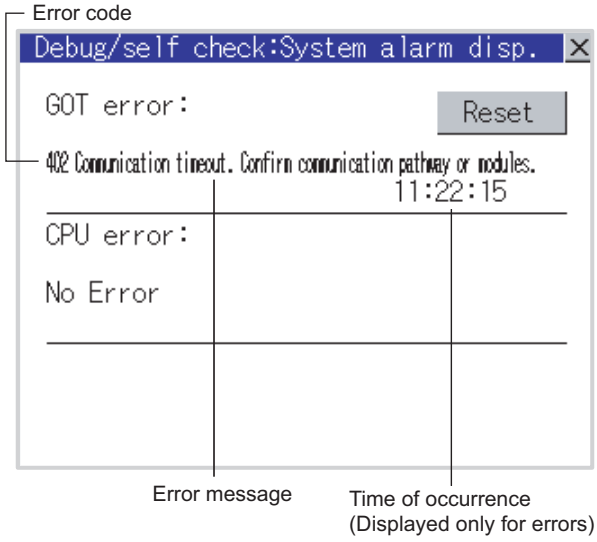
54.3.7 Checking for normal monitoring

1 Check for errors occurring on the GOT (for GT11)

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT11 User's Manual



2 Perform an I/O check(for GT11)

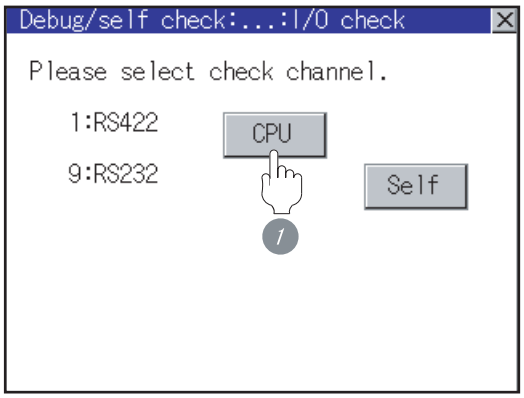
Whether the PLC can communicate with the GOT or not can be checked by the I/O check* function.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check].

For details on the I/O check, refer to the following manual:

☞ GT ☐ User's Manual



1 Touch [CPU] on the I/O check screen.
Touching [CPU] executes the communication check with the connected PLC.



2 When the communication screen ends successfully, the screen on the left is displayed.

* The I/O check cannot be executed depending on controllers.

3 Communication monitoring function(for GT10)

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.

If this check ends successfully, it means correct communication interface settings and proper cable connection.

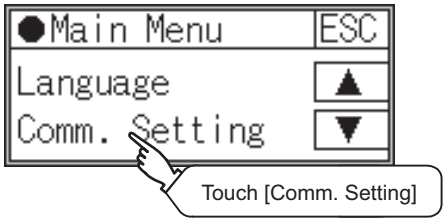
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor] .

For details on the communication monitoring function, refer to the following manual:

☞ GT10 User's Manual

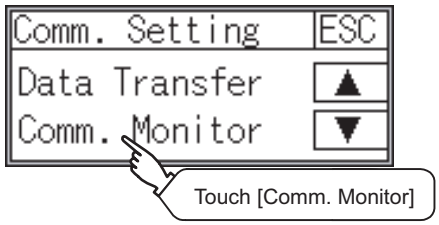
(Operation of communication monitoring function screen)

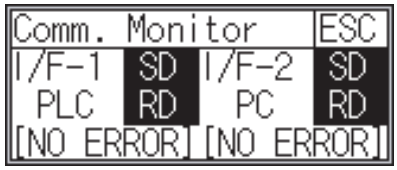
Main Menu





Communication settings





All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

54.4 Precautions

1 Communication settings

The communication driver names differs depending on the GT Designer2 versions.

GT Designer2 versions	
2.32J or before	2.43V or later
A/QnA/Q CPU, QJ71C24, MELDAS C6*	A/QnA/Q CPU, QJ71C24
AJ71QC24	AJ71QC24, MELDAS C6*

2 GOT's communication timing

(1) GOT's communication timing

Adjust the communication timing so that, after applying the power to the system, the communication with the connected device (MITSUBISHI PLC) is performed in order starting from the first GOT (from the 1st GOT to the 2nd, and so on).

When the communication is failed, retries are performed. And if the predetermined time has elapsed, a communication error occurs.

(2) Adjusting communication timing

(a) When powering up the system simultaneously

Using the utility or selecting [GOT Setup] - [Opening Screen Time] from GT Designer2, set the opening screen time adding a delay to each setting for the GOTs. During the opening process, communication with the connected device does not start.

Example: Set value of "Opening Screen Time" (Inside (): set value)

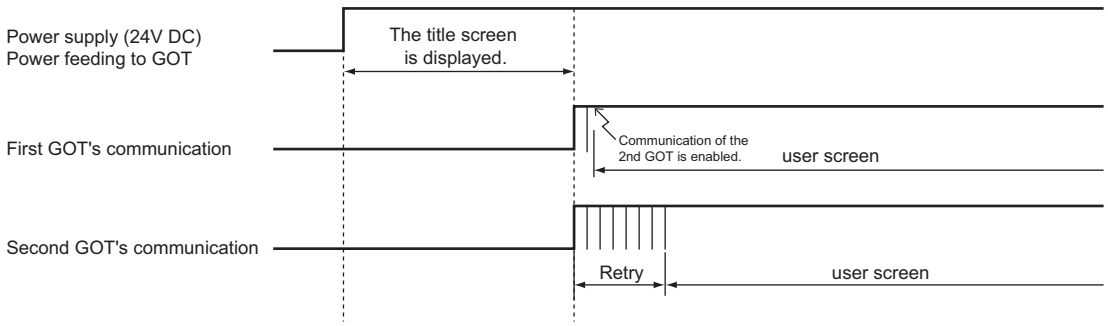
First module (5s) → Second module (10s)

(b) When powering on devices individually

Turn on the connected device first, and then the first GOT, the second GOT, and so on.

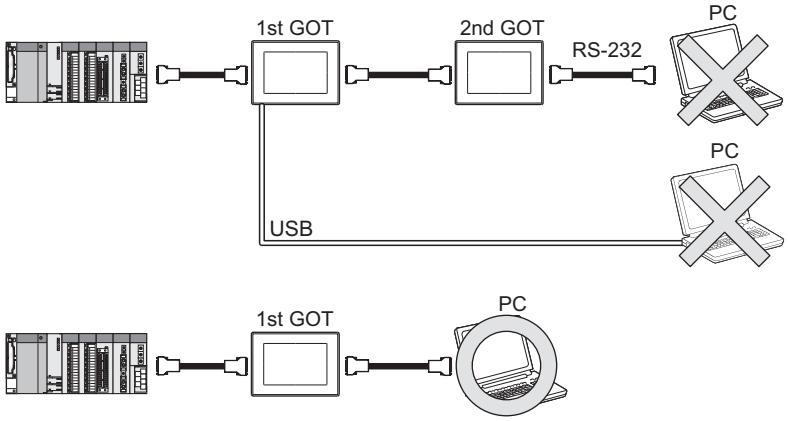
*1 If the first GOT is turned on after a while the second GOT is turned on, because the communication start of the second GOT is delayed, a communication error may be detected at the second GOT.

*2 If the system power is turned on simultaneously and it takes time to start the communication of the second GOT, a communication error may be developed.



3 Using the FA transparent function

When multiple GOTs are connected, using the FA transparent function through connection via the RS-232 interface or USB interface of the GOT is not allowed.



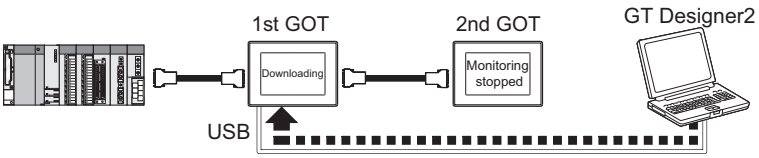
4 Monitoring stop condition for the GOT in the multiple-GT11 connection

In the system where multiple GOTs are connected, performing either of the following monitoring stop operations on the preceding stage (the first GOT) also stops monitoring of the GOT on the next stage (the second GOT).
When the GOT on the preceding stage resumes monitoring, the GOT on the next stage also resumes it.

(1) When project data is downloaded/uploaded by GT Designer2, or when the OS is installed*1

(2) When the GOT is set up*1

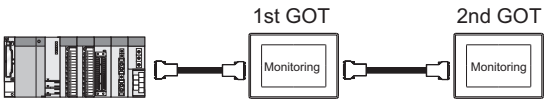
*1 A timeout error occurs in GX Developer.



The project data is being download.

5 When PLC power disconnection occurs in the multiple-GOT connection

In the system where multiple GOTs are connected, when the communication between the PLC and the first GOT is stopped due to PLC power disconnection and a disconnection of the communication cable between the PLC and the first GOT, the GOT waits for timeout against the communication request from the peripheral devices (GX Developer, etc.), and recovery of monitoring between the PLC and the GOT is delayed.



54.5 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Model	Item	Description	Version of GT Designer2	Version of OS
GT11 Serial	Multiple-GT11 connection function	Supporting the multiple-GT11 connection function	2.09K	Standard monitor OS [01.02.**] BootOS[01.02.**.C]
GT 24V 10 20 30 GT 5V 10 20	Multiple-GT11, GT10 connection function	Supporting the multiple-GT10 connection function	2.43V	Standard monitor OS [01.02.**]
GT 24V 10 20 30	Multiple-GT11, GT10 connection function	Supporting the multiple-GT1030 connection function	2.58L	Standard monitor OS [01.03.**]
GT11 Serial	Multiple-GT11, GT10 connection function	Supporting the multiple connection function in the Computer link connection	2.77F	Standard monitor OS [03.12.**]
GT 24V 10 20 30 GT 5V 10 20				Standard monitor OS [01.08.**] Communication driver QnA/Q CPU[01.03.**]
GT 10 5□ 4□	Multiple-GT105 □ connection function	Supporting the multiple-GT105 □ connection function Supporting the multiple-GT104 □ connection function	2.90U	Standard monitor OS [01.10.**]

55

GATEWAY FUNCTION



55.1 System Configuration . . . . . page 55 - 2

This section describes devices and cables needed for the gateway function.
Refer to this section to select the desired system.

55.2 Preparatory Procedures for Monitoring . . . . . page 55 - 6

This section describes the preparatory procedures for connecting to the Ethernet and monitoring the connected device.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

55.3 List of Functions Added by Version Upgrade . . . . . page 55 - 18

This section describes the functions added by version upgrade of GT Designer2 or OS.

Point

Descriptions given in this chapter

This section describes only the connection for using the gateway function.
For details of the gateway function, refer to the following manual.

☞ GOT1000 Series Gateway Functions Manual.

55.1 System Configuration

Select a system configuration suitable for your application.

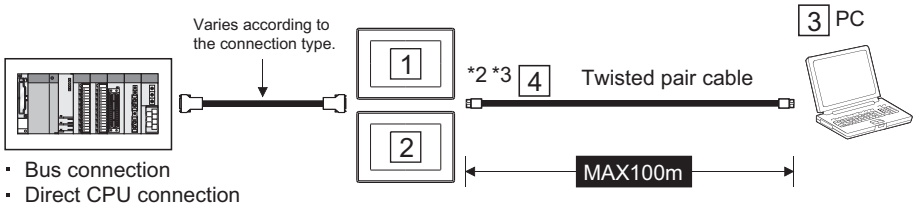
Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.



1 System configuration and connection conditions

Connection conditions		System configuration
Number of GOTs*1	Distance	
64 (max.)	Within 100m (max.)	 ▪ Bus connection ▪ Direct CPU connection ▪ Computer link connection ▪ Ethernet connection ▪ Third party PLC connection ▪ Microcomputer connection ▪ Temperature controller connection ▪ MELSECNET/H connection (PLC to PLC network) ▪ MELSECNET/10 connection (PLC to PLC network)*4 ▪ CC-Link IE controller network connection ▪ CC-Link connection (Intelligent device station)*5 ▪ Inverter connection ▪ Servo amplifier connection ▪ Robot controller connection*6 ▪ CC-Link connection (Via G4) ▪ CNC connection*7

*1 Includes the GOT (server function), the GOT (client function) and the PC used for communication with the GOT.

*2 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.

*3 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
GT16 User's Manual (Hardware)

*4 When establishing a MELSECNET/10 connection, use the MELSECNET/H communication unit.

*5 When establishing a CC-Link connection, use the CC-Link communication unit (GT15-J61BT13).

*6 Compatible with only CRnD-700.

*7 Compatible with only MELDAS C6/C64.

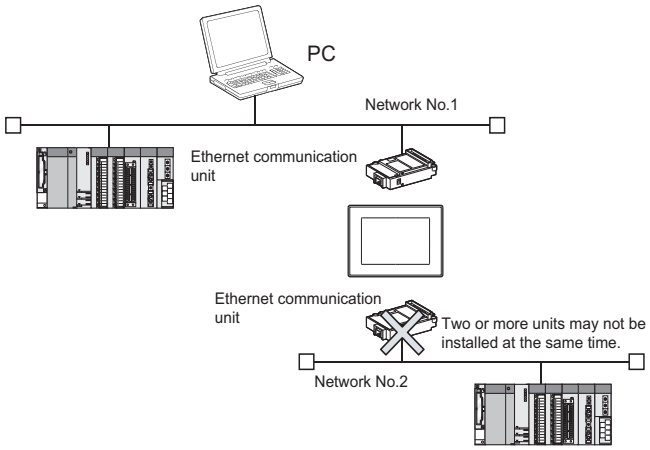
Point

PLC connection type and communication interface

The PLC connection types and the communication interfaces for systems using the gateway function are shown below.

PLC ↔ GOT		GOT ↔ PC
Connection type	Communication interface of GOT	Communication interface of GOT
Direct CPU connection Computer link connection CC-Link connection (Via G4) Third party PLC connection Microcomputer connection Temperature controller connection Inverter connection Servo amplifier connection	RS-232 interface	Ethernet interface*2 Ethernet communication units*3
	RS-422/485 interface*2	
	RS-422 conversion unit	
	RS-232 communication unit	
	RS-422/485 communication unit	
BUS connection	BUS connection unit	
Ethernet connection Robot controller connection	Ethernet interface*2	
	Ethernet communication unit*1*3	
MELSECNET/H connection (PLC to PLC network) MELSECNET/10 connection (PLC to PLC network)	MELSECNET/H communication unit	
CC-Link IE controller network connection	CC-Link IE controller network communication unit	
CC-Link connection (Intelligent device station)	CC-Link communication unit (GT15-J61BT13)	
CNC connection	RS-232 interface	
	RS-422/485 interface*2	
	RS-422 conversion unit	
	RS-232 communication unit	
	RS-422/485 communication unit	
	Ethernet interface*2	
	Ethernet communication unit*1*3	
	MELSECNET/H communication unit	
	CC-Link communication unit (GT15-J61BT13)	

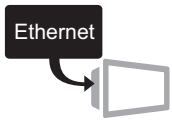
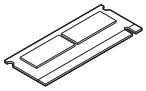
*1 Connect the PLC to the same Ethernet communication unit as that used for connection between the GOT and PC.
Ethernet connection is available between the GOT or PC that uses the gateway function and the PLC within the same network. (Two or more Ethernet communication units may not be installed at the same time.)



*2 Interface that is built into GT16.
*3 Cannot be used for GT16.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
	2	Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15
	2	Option function board • For optional function	GT15-FNB, GT15-QFNB, GT15-QFNB16M, GT15-QFNB32M, GT15-QFNB48M, GT15-MESB48M	GT15

(2) PC

Image	No.	Name	Model name
	3	PC	Software to be used: MX Component, Version 3 or later*1

*1 For the accessing range for use of the gateway function, refer to the following manual.

☞ GOT1000 Series Gateway Functions Manual.

(3) Cable

Image	No.	Name	Model name
	4	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

Point

(1) System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

- MITSUBISHI PLC CONNECTIONS (☞ Chapter 2 to Chapter 10)
- THIRD PARTY PLC CONNECTIONS (☞ Chapter 11 to Chapter 27)
- MICROCOMPUTER CONNECTION (☞ Chapter 28)
- MODBUS(R) CONNECTION (☞ Chapter 29 to Chapter 30)
- CNC CONNECTION (☞ Chapter 41)

(2) System configuration for use of the mail send function

The SMTP mail server must be established in the intranet to use the mail send function.

55.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

☞ Refer to each chapter.

↓

Install the OS onto the GOT.

☞ Section 55.2.1
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 55.2.2
Checking OS installation on GOT

↓

Set the communication interface.
(Communication settings)

☞ Section 55.2.3
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 55.2.4
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 55.2.5
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 55.2.6
Verifying GOT recognizes controllers

↓

Make sure that monitoring is performed normally.

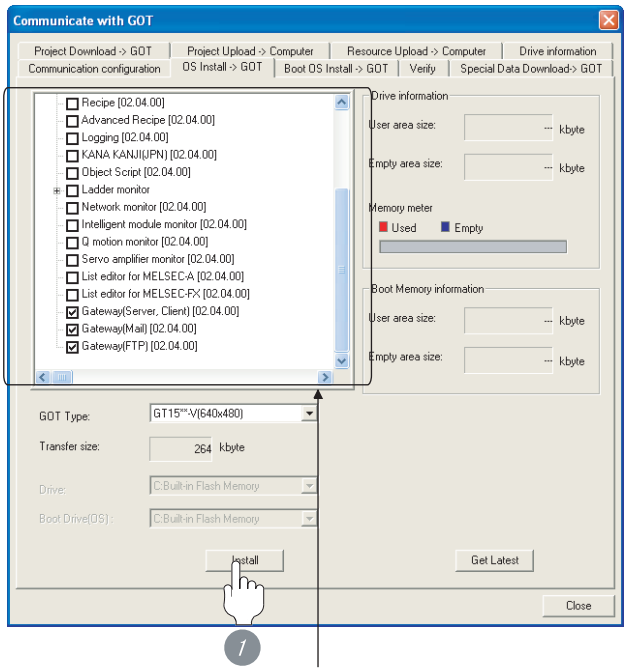
☞ Section 55.2.7
Checking for normal monitoring

55.2.1 Installing OS onto GOT

Install the option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version □ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

Depends on the connection type

Place a check mark in the box of the function used in Option OS.

Gateway (Server, Client)

Gateway (Mail)

Gateway (FTP)

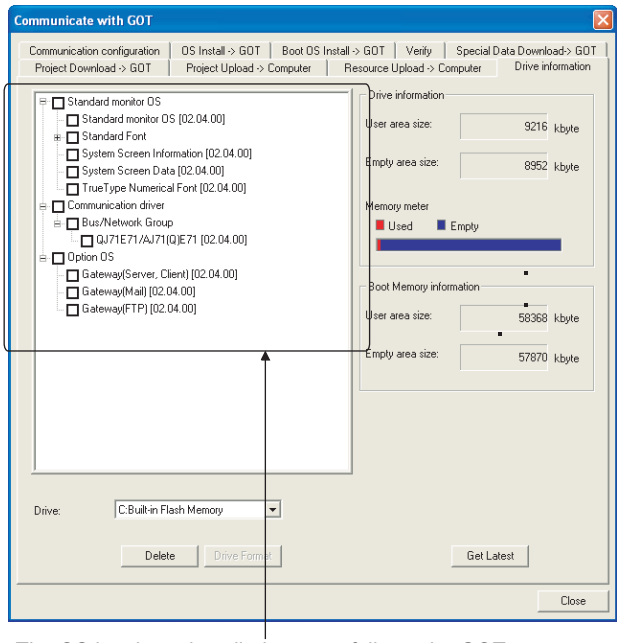
1 Check-mark a desired option OS (gateway function), and click the Install button.

55.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed:

1) Standard monitor OS
2) Communication driver : Depends on the connection type
3) Option OS (Functions to be used)

Gateway (Server, Client)
Gateway (Mail)
Gateway (FTP)

55.2.3 Setting communication interface (Communication settings)

Make the GOT communication interface settings on [Communication Settings] of GT Designer2.

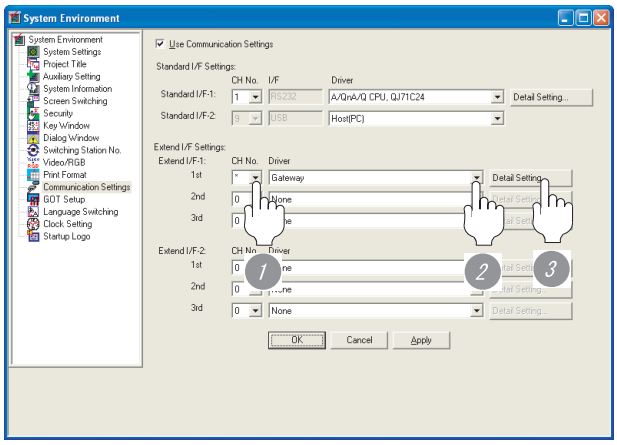
Select the same communication driver as the one installed on the GOT for each communication interface.

For details on [Communication Settings] of GT Designer2, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

1 Communication settings

(1) When the connection type is other than "Ethernet connection"or "MODBUS® /TCP"



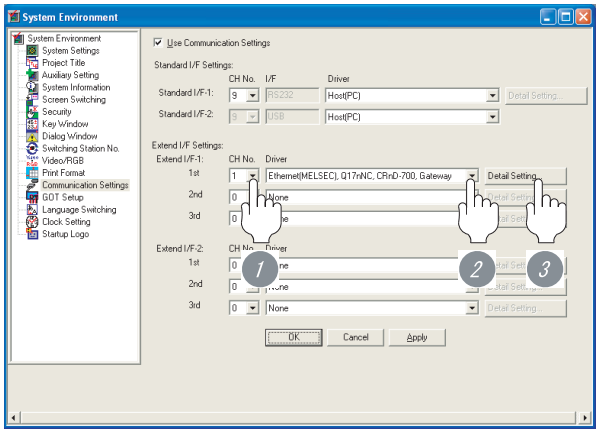
(When using GT15)

1 Set "*" to the channnel No. used.

2 Set the driver to "Gateway".

3 Perform the detailed settings for the driver.
(2 Communication detail settings)

(2) When the connection type is [Ethernet connection]



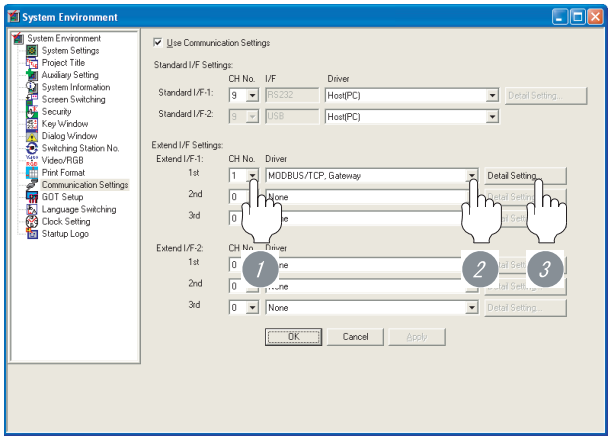
(When using GT15)

1 Set [1] to the channel No. used.

2 Set the driver.
- When MITSUBISHI PLC is used: [Ethernet(MELSEC),Q17nNC,CRnD-700,Gateway]
- When YASKAWA PLC is used: [Ethernet(YASKAWA), Gateway]
- When YOKOGAWA PLC is used: [Ethernet(YOKOGAWA), Gateway]
- When ALLEN-BRADLEY PLC is used: [EtherNet/IP(AB), Gateway]

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

(3) When the connection type is [MODBUS/TCP connection]



(When using GT15)

1 Set [1] to the channel No. used.

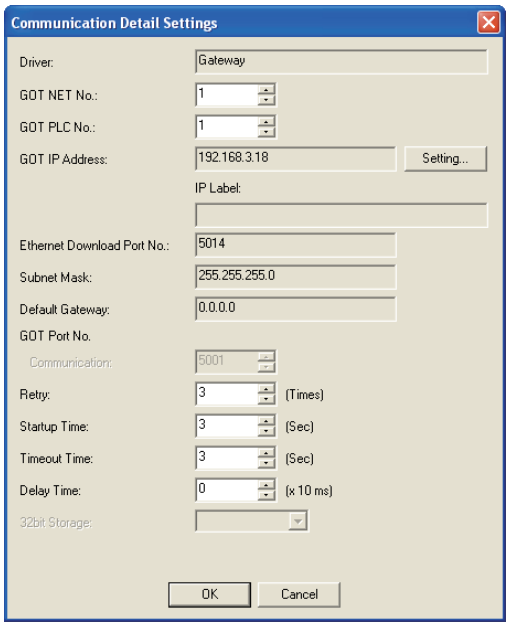
2 Set the driver to "MODBUS/TCP, Gateway".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings

(1) Gateway

(a) GT16



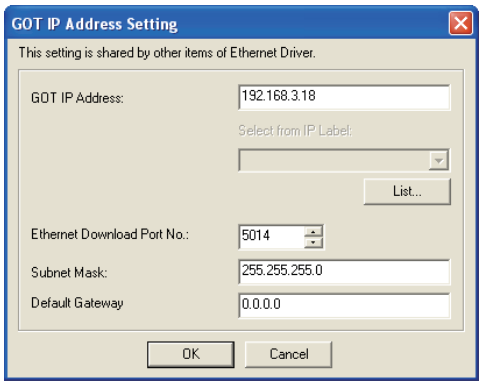
Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64 *1
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No. *2 *3	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*3	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*3	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No.*2*4 (Communication)	Set the GOT port No. for the connection with the connected equipment. • MITSUBISHI PLC <Default: 5001> • YASKAWA PLC <Default: 5016> • YOKOGAWA PLC <Default: 5017> • ALLEN-BRADLEY PLC <Default: 5015> • MODBUS/TCP, Gateway <Default: 5020>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry*5	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times

Item	Description	Range
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time*6*7	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time*8	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)
32bit Storage*9	Select the steps to store two words (32-bit data). <Default: LH Order>	LH Order / HL Order

*1 The range 1 to 247 is settable for [MODBUS/TCP, Gateway] of Communication detail settings.

*2 When using the Gateway function only, the setting of [GOT port No.] is invalid.

*3 Click the Setting button and perform the setting in the [GOT IP address settings] screen.



*4 No setting is required for [Gateway] of Communication detail settings.

*5 No setting is required for [MODBUS/TCP, Gateway] of Communication detail settings.

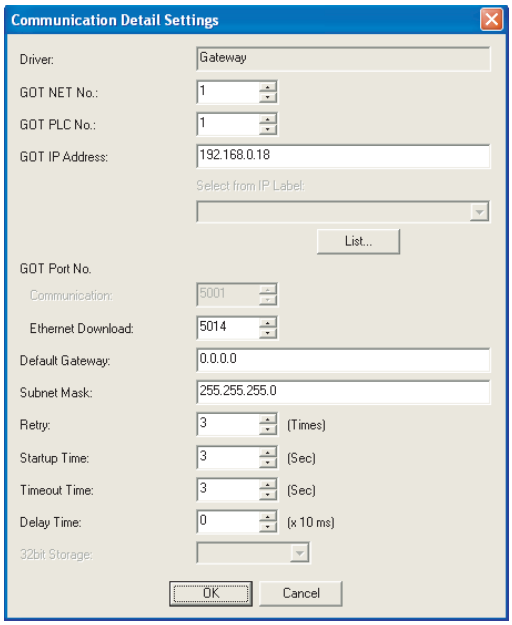
*6 When using the mail send function:
Specify the [Timeout Time] after connection to the SMTP server. (However, the communication timeout time of about one minute is fixed for the case where connection with the SMTP server is failed after starting mail transmission.)

*7 To connect the GOT with the Ethernet module (Q Series) in the one-on-one relationship using a cross cable, set [Timeout Time] to 6 sec. or longer.

*8 When using the mail send function:
Specify the time of transmission interval between one mail and the next mail when sending multiple mails.

*9 The setting can be made for [MODBUS/ TCP,Gateway] of Communication detail settings.

(b) GT15



Item	Description	Range
GOT NET No.	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.	Set the station No. of the GOT. <Default: 1>	1 to 64 *1
GOT IP Address	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No.*2 (Communication)*3	Set the GOT port No. for the connection with the connected equipment. • MITSUBISHI PLC <Default: 5001> • YASKAWA PLC <Default: 5016> • YOKOGAWA PLC <Default: 5017> • ALLEN-BRADLEY PLC <Default: 5015>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No.*2 (Ethernet Download)	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry*4	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time*5*6	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec

Item	Description	Range
Delay Time*7	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)
32bit Storage*8	Select the steps to store two words (32-bit data). <Default: LH Order>	LH Order / HL Order

*1 The range 1 to 247 is settable for [MODBUS/TCP, Gateway] of Communication detail settings.

*2 When using the Gateway function only, the setting of [GOT port No.] is invalid.

*3 No setting is required for [Gateway] of Communication detail settings.

*4 No setting is required for [MODBUS/TCP, Gateway] of Communication detail settings.

*5 When using the mail send function:
Specify the [Timeout Time] after connection to the SMTP server. (However, the communication timeout time of about one minute is fixed for the case where connection with the SMTP server is failed after starting mail transmission.)

*6 To connect the GOT with the Ethernet module (Q Series) in the one-on-one relationship using a cross cable, set [Timeout Time] to 6 sec. or longer.

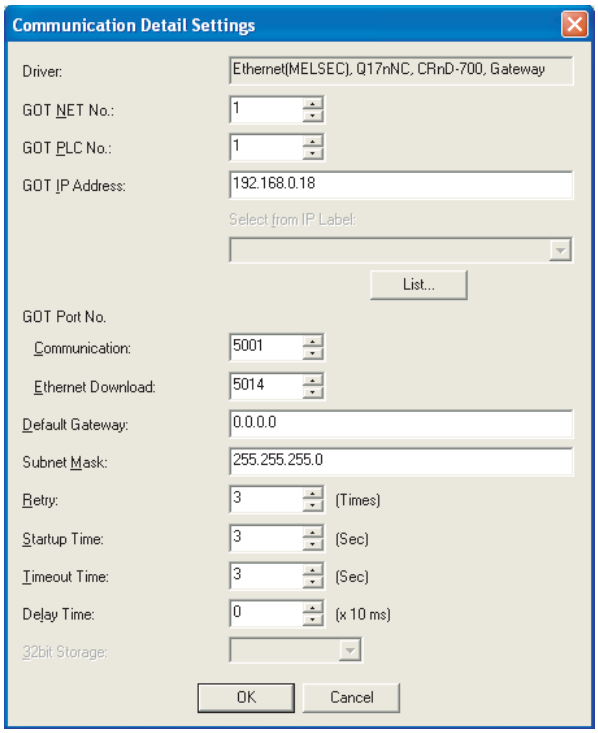
*7 When using the mail send function:
Specify the time of transmission interval between one mail and the next mail when sending multiple mails.

*8 The setting can be made for [MODBUS/TCP, Gateway] of Communication detail settings.

(2) [Ethernet(MELSEC),Q17nNC,CRnD-700,Gateway]

For the setting items, refer to the following.

☞ 2 (1) Gateway

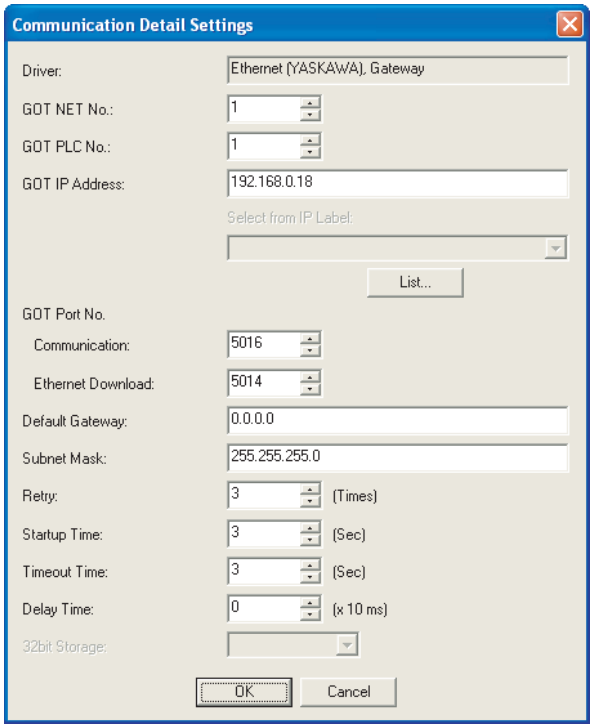


(When using GT15)

(3) Ethernet (YASKAWA) , Gateway

For the setting items, refer to the following.

☞ 2 (1) Gateway

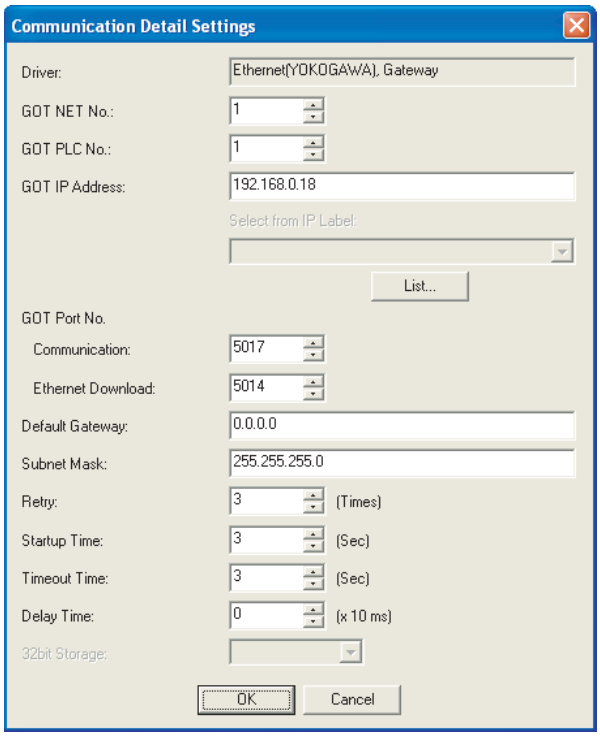


(When using GT15)

(4) Ethernet (YOKOGAWA), Gateway

For the setting items, refer to the following.

2 (1) Gateway

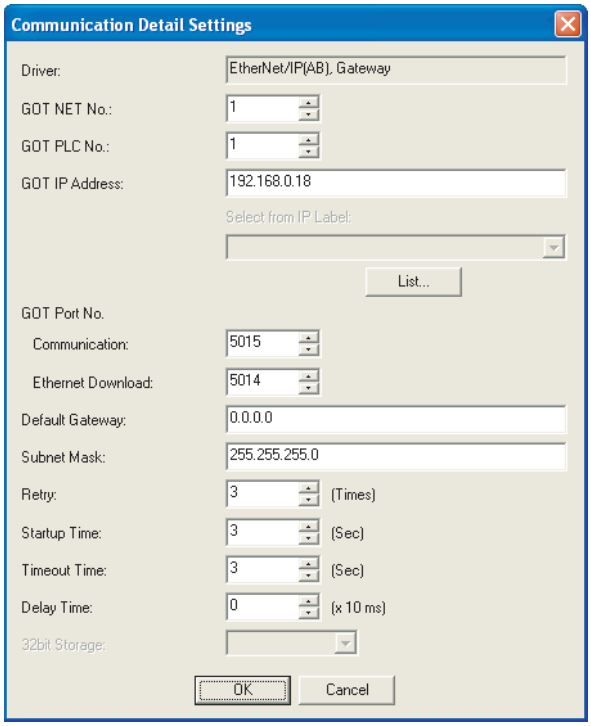


(When using GT15)

(5) EtherNet/IP(AB), Gateway

For the setting items, refer to the following.

2 (1) Gateway

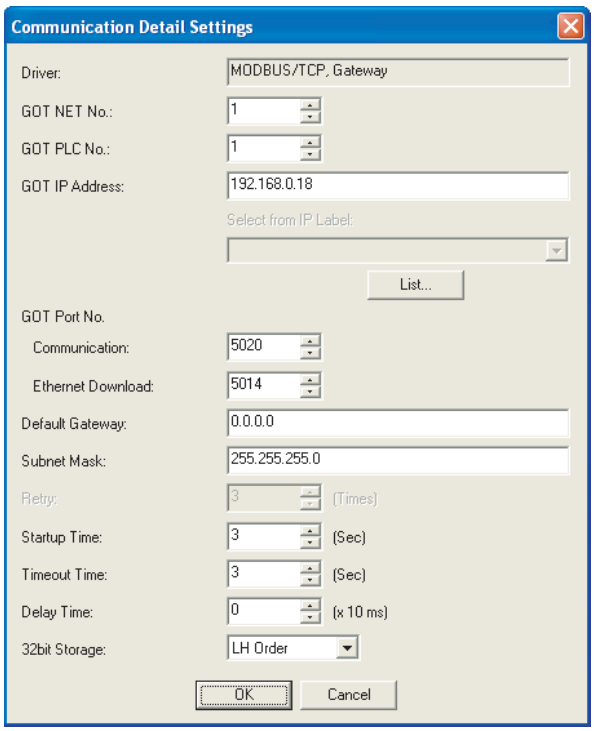


(When using GT15)

(6) MODBUS/TCP, Gateway

For the setting items, refer to the following.

2 (1) Gateway



(When using GT15)

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication Settings] after downloading [Communication Settings] of project data.

For details on the Utility, refer to the following manual.

GT ☐ User's Manual

(2) Precedence in communication settings

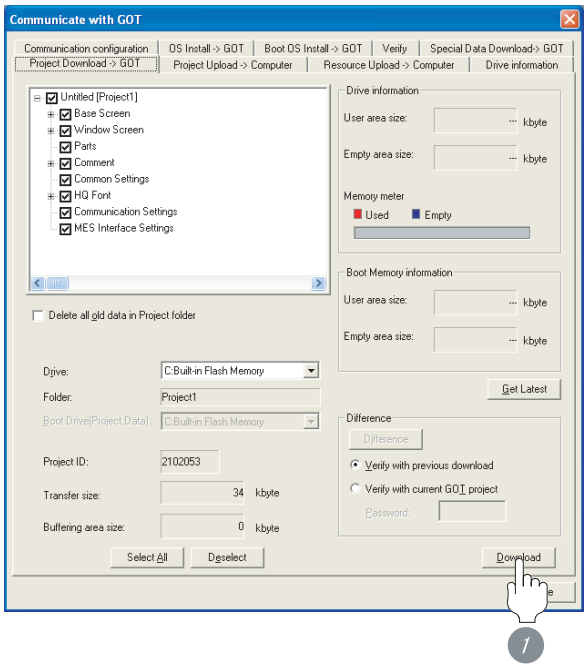
When settings are made by GT Designer 2 or the Utility, the latest setting is effective.

55.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

55.2.5 Attaching communication unit and connecting cable

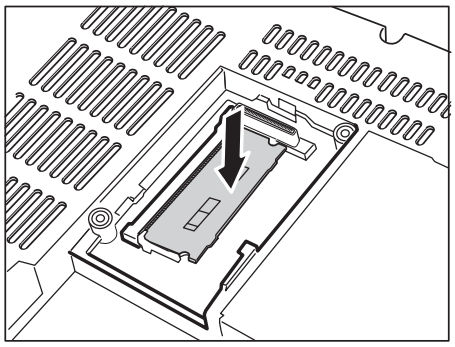
Point

Precautions for cable connection or installation of the option function board or communication unit

Before installing the option function board or communication unit or connecting cables, shut off all phases of the power supply to the GOT.

1 Attaching the option function board (GT15)

1 Attach the option function board to the option function board interface on the GOT.



Point

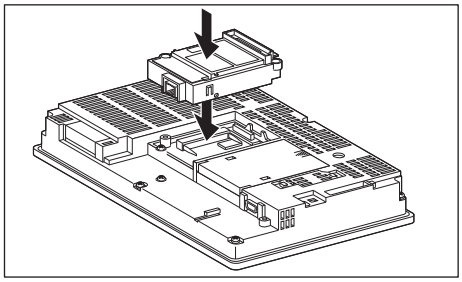
Option function board

For details on the option function board, refer to the following manual:

☞ GT15 OPTION FUNCTION BOARD/OPTION FUNCTION BOARD WITH ADD-ON MEMORY User's Manual

2 Attaching the communication unit (GT15)

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

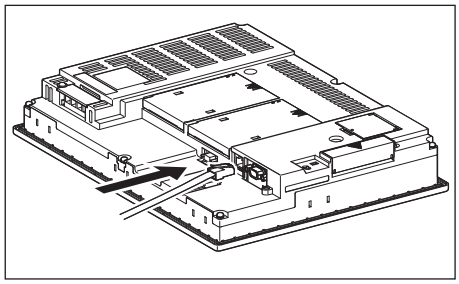
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet Communication Unit User's Manual

3 Connecting the cable

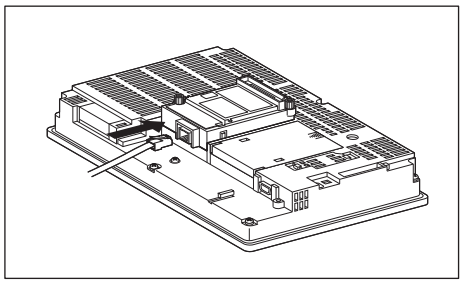
(1) For GT16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) For GT15

1 Connect the twisted pair cable to the Ethernet communication unit.



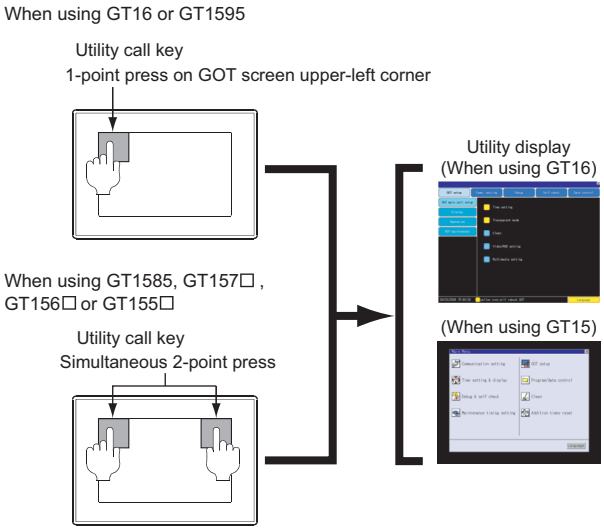
55.2.6 Verifying GOT recognizes controllers

Verify the GOT recognizes controllers on [Communication setting] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)



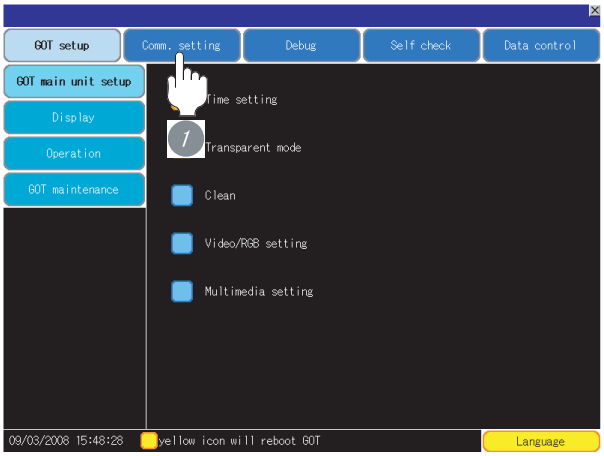
Point

When setting the utility call key to 1-point

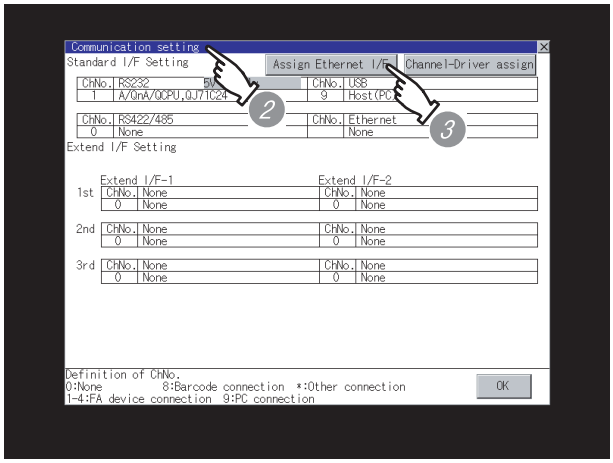
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT ☐ User's Manual

(1) GT16

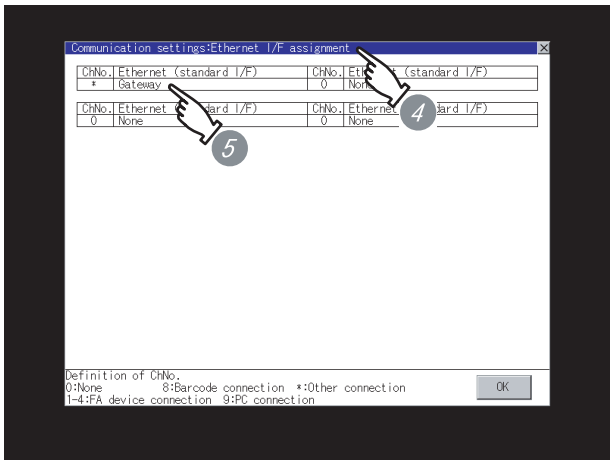


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet/IF].



4 The [Assign Ethernet I/F] appears.

5 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver (either of the following)
  Gateway
  E71/gateway
  Ethernet(YASKAWA)
  Ethernet(YOKOGAWA)
  Ethernet/IP(AB)
  MODBUS/TCP

6 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 55.2 Preparatory Procedures for Monitoring

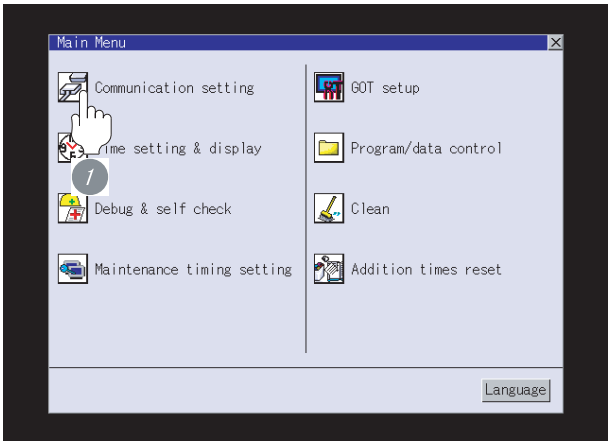
Point

When changing communication interface setting by Utility

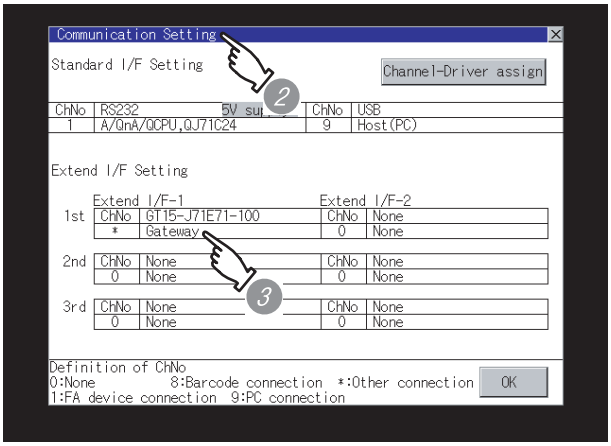
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility)

(2) GT15



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver (either of the following)
  Gateway
  E71/gateway
  Ethernet(YASKAWA)
  Ethernet(YOKOGAWA)
  Ethernet/IP(AB)
  MODBUS/TCP

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 55.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT15 User's Manual

55.2.7 Checking for normal monitoring

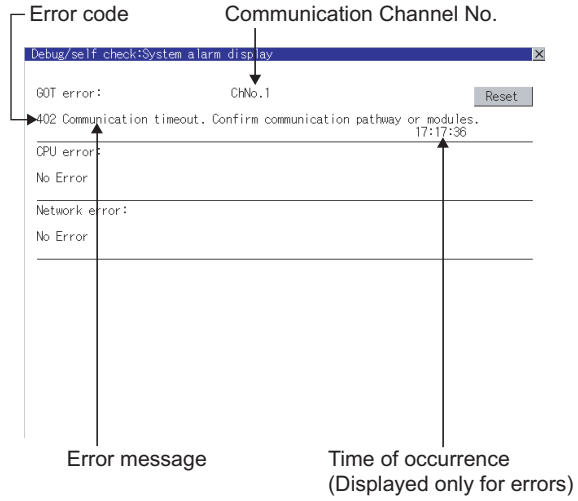
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

GT ☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

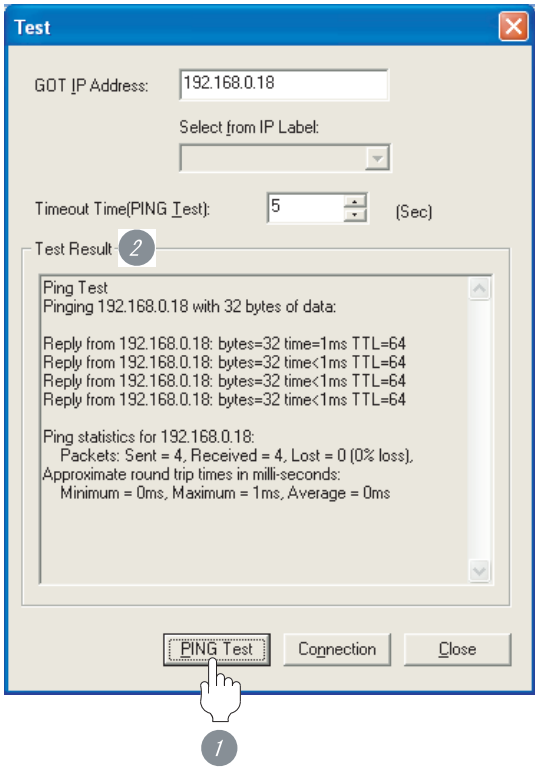
Execute a Ping command at the Command Prompt of Windows®

(a) When normal communication
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication
C:\>Ping 192.168.0.18
Request timed out.

(2) When using the [PING Test] of GT Designer2

Select [Communication] → [Communication configuration] → [Ethernet] and Test to display [PING Test].



1 Specify the [GOT IP address] of the [PING Test] and click on the PING Test button.

2 The [Test Result] is displayed after the [PING Test] is finished.

(3) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of [Communication Settings]
- IP address of GOT specified by Ping command

Point

Ethernet diagnostics of GX Developer (available only with Mitsubishi PLCs)

Ethernet diagnostics of GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Developer, refer to the following manual.

☞ User's Manual of the Ethernet module

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

Point

If all the communication settings are completed

Set up the gateway function to be used.

☞ GOT1000 Series Gateway Functions Manual

55.3 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
Gateway function	Supporting the gateway function	2.09K	Standard monitor OS [01.02.**] Option OS • Gateway (Sever, Client) [01.02.**] • Gateway (Mail) [01.02.**]
Gateway function	Function to transfer the files stored in the GOT, including recipe and alarm data, with the personal computer.	2.18U	Option OS • Gateway (FTP) [02.02.**]
Gateway function	Enables transferring binary data with the FTP server function.	2.43V	Option OS • Gateway (FTP) [03.01.**]
Gateway function	Changing the Commnunication driver names	2.63R	Communication driver QJ71E71/AJ71(Q)E71, Q17nNC,Gateway [03.07.**]
Gateway function	Changing the Commnunication driver names	2.73B	Communication driver QJ71E71/AJ71(Q)E71, Q17nNC,CRnD-700,Gateway [03.09.**]
Gateway function	Supporting the MODBUS® /TCP connection	2.73B	Communication driver MODBUS/TCP, Gateway [03.09.**]
Gateway function	Supporting the connections to GT16	2.90U	Standard monitor OS [04.02.**] Option OS • Gateway (Sever, Client) [04.02.**] • Gateway (Mail) [04.02.**] • Gateway (FTP) [04.02.**]

56

MES INTERFACE FUNCTION



56.1 System Configuration . . . . . page 56 - 2

This section describes devices and cables needed for the MES interface function.
Refer to this section to select the desired system.

56.2 Preparatory Procedures for Monitoring . . . . . page 56 - 6

This section describes the preparatory procedures for connecting to the Ethernet and monitoring the connected device.
The sequential checkup procedure will be helpful for those who communicate through the GOT for the first time.

56.3 List of Functions Added by Version Upgrade . . . . . page 56 - 16

This section describes the functions added by version upgrade of GT Designer2 or OS.

Point

Descriptions given in this chapter

This section describes only the connection for using the MES function.
For details of the MES function, refer to the following manual.

☞ GOT1000 Series MES Interface Function Manual

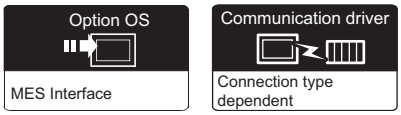
56.1 System Configuration

Select a system configuration suitable for your application.

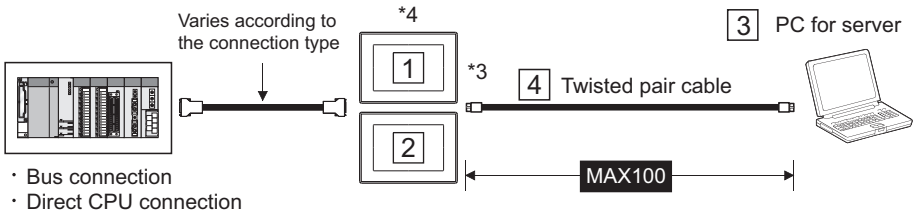
Point

Conventions used in this section

Numbers (e.g. 1) of *1* System configuration and connection conditions correspond to the numbers (e.g. 1) of *2* System equipment.
Use these numbers as references when confirming models and applications.



1 System configuration and connection conditions

Connection conditions		System configuration
Number of servers*1	Distance	
8*2 (max.)	Within 100m (max.)	 ・Bus connection ・Direct CPU connection ・Computer link connection ・Ethernet connection ・Third party PLC connection ・Microcomputer connection ・Temperature controller connection ・MELSECNET/H connection (PLC to PLC network) ・MELSECNET/10 connection (PLC to PLC network) *5 ・CC-Link IE controller network connection ・CC-Link connection (Intelligent device station) *6 ・Inverter connection ・Servo amplifier connection ・CC-Link connection (Via G4) ・CNC connection*7

*1 Number of server that one GOT can communicate.

*2 Total number of data base server and application server.

*3 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

*4 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.

GT16 User's Manual (Hardware)

*5 When establishing a MELSECNET/10 connection, use the MELSECNET/H communication unit.

*6 When establishing a CC-Link connection, use the CC-Link communication unit (GT15-J61BT13).

*7 Compatible with only MELDAS C6/C64.

Point

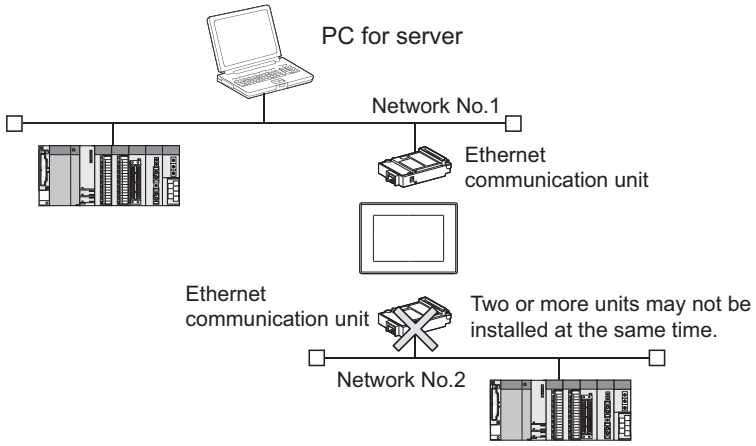
PLC connection type and communication interface

The PLC connection types and the communication interfaces for systems using the MES interface function are shown below.

PLC ↔ GOT		GOT ↔ PC
Connection type	Communication interface of GOT	Communication interface of GOT
Direct CPU connection Computer link connection CC-Link connection (Via G4) Third party PLC connection Microcomputer connection Temperature controller Connection Inverter connection Servo amplifier connection	RS-232 interface	Ethernet interface*2 Ethernet communication units*3
	RS-422/485 interface*2	
	RS-422 conversion unit	
	RS-232 communication unit	
	RS-422/485 communication unit	
BUS connection	BUS connection unit	
Ethernet connection	Ethernet interface*2 Ethernet communication unit*1*3	
MELSECNET/H connection (PLC to PLC network) MELSECNET/10 connection (PLC to PLC network)	MELSECNET/H communication unit	
CC-Link IE controller network connection	CC-Link IE controller network communication unit	
CC-Link connection (Intelligent device station)	CC-Link communication unit (GT15-J61BT13)	
CNC connection	RS-232 interface	
	RS-422/485 interface*2	
	RS-422 conversion unit	
	RS-232 communication unit	
	RS-422/485 communication unit	
	Ethernet interface*2 Ethernet communication unit*1*3	
	MELSECNET/H communication unit	
	CC-Link communication unit (GT15-J61BT13)	

* For details of *1 to *3, refer to the following.

*1 Connect the PLC to the same Ethernet communication unit as that used for connection between the GOT and PC.
Ethernet connection is available between the GOT or PC that uses the MES interface function and the PLC within the same network. (Two or more Ethernet communication units may not be installed at the same time.)

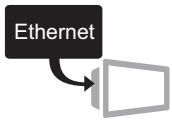
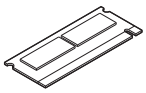


*2 Interface that is built into GT16.

*3 Cannot be used for GT16.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Model
	1	Ethernet interface • For Ethernet communication	— (Built into GOT)	GT16
		Option function board • For optional function	GT16-MESB	
	2	Ethernet communication unit • For Ethernet communication	GT15-J71E71-100	GT15
		Option function board • For optional function	GT15-MESB48M	

(2) PC for server

Image	No.	Name	Model name
	3	PC	Software to be used in MES interface function: DB connection service, DB connection service setting tool*1

*1 For the setting of the DB connection service, refer to the following manual.

☞ GOT1000 Series MES Interface Function Manual

(3) Cable

Image	No.	Name	Model name
	4	Twisted pair cable	10BASE-T Shielded twisted pair cable (UTP) or unshielded twisted pair cable in category (STP): 3, 4, and 5 100BASE-TX Shielded twisted pair cable (STP) category 5 and 5e

Point

(1) System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

- MITSUBISHI PLC CONNECTIONS (☞ Chapter 2 to Chapter 10)
- THIRD PARTY PLC CONNECTIONS (☞ Chapter 11 to Chapter 27)
- MICROCOMPUTER CONNECTION (☞ Chapter 28)
- MODBUS(R) CONNECTION (☞ Chapter 29 to Chapter 30)
- TEMPERATURE CONTROLLER CONNECTIONS (☞ Chapter 31 to Chapter 37)
- INVERTER CONNECTION (☞ Chapter 38)
- SERVO AMPLIFIER CONNECTION (☞ Chapter 39)
- CNC CONNECTION (☞ Chapter 41)

56.2 Preparatory Procedures for Monitoring

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Connect the GOT to the PLC.

☞ Refer to each chapter.

↓

Install the OS onto the GOT.

☞ Section 56.2.1
Installing OS onto GOT

↓

Make sure that the OS is installed on the GOT.

☞ Section 56.2.2
Checking OS installation on GOT

↓

Set the communication interface. (Communication settings)

☞ Section 56.2.3
Setting communication interface (Communication settings)

↓

Download the project data.

☞ Section 56.2.4
Downloading project data

↓

Attach the communication unit and connect the cable.

☞ Section 56.2.5
Attaching communication unit and connecting cable

↓

Make sure that the GOT recognizes the connected equipment.

☞ Section 56.2.6
Verifying GOT recognizes connected equipment

↓

Make sure that monitoring is performed normally.

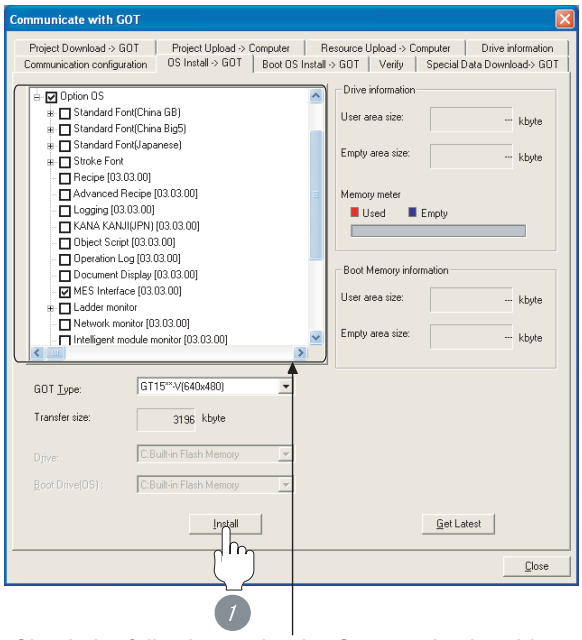
☞ Section 56.2.7
Checking for normal monitoring

56.2.1 Installing OS onto GOT

Install the option OS onto the GOT.

For the OS installation methods, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



Check the following under the Communication driver.

- Depends on the connection type

Place a check-mark in the box of the function used in Option OS.

- MES Interface

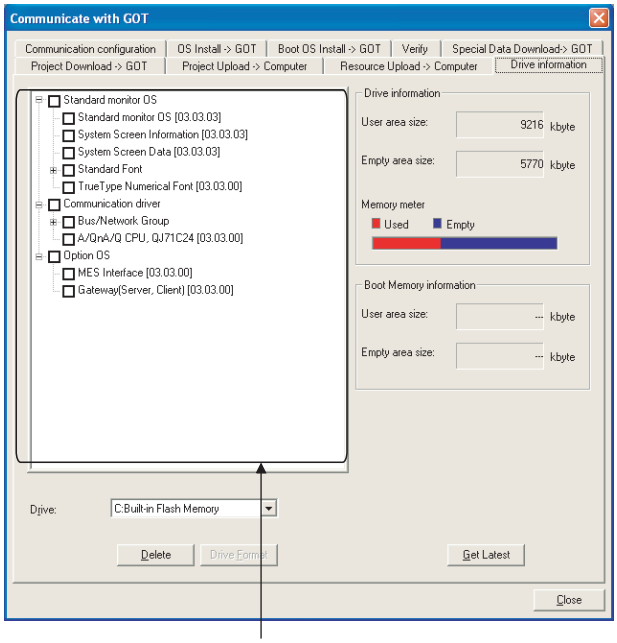
1 Check-mark a desired option OS (MES interface function), and click the Install button.

56.2.2 Checking OS installation on GOT

Check if the OS is properly installed or not on the Drive information tab of GT Designer2.

For the operation on the Drive information tab, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



The OS has been installed successfully on the GOT if the following can be confirmed.

1) Standard monitor OS
2) Communication driver: Depends on the connection type
3) Option OS (Functions to be used)
 • MES Interface

56.2.3 Setting communication interface (Communication settings)

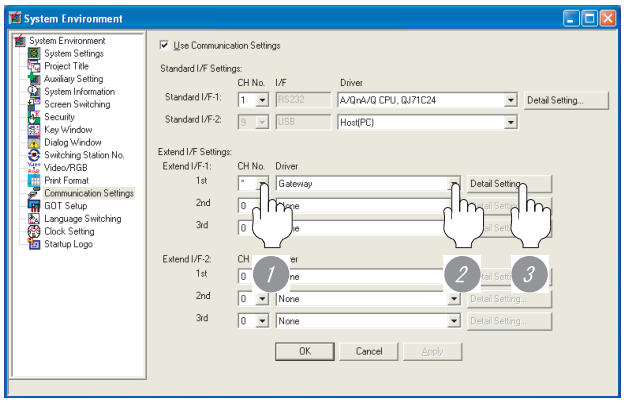
Make the GOT communication interface settings on [Communication Settings] of GT Designer2.
Select the same communication driver as the one installed on the GOT for each communication interface.
For details on [Communication Settings] of GT Designer2, refer to the following manual.

☞ GT Designer2 Version☐ Screen Design Manual

1 Communication settings

When using the MES interface function, set either of the following setting in the communication settings.
In addition, set the IP address at the communication detail settings.

(1) When the connection type is other than "Ethernet connection" or "MODBUS®/TCP"

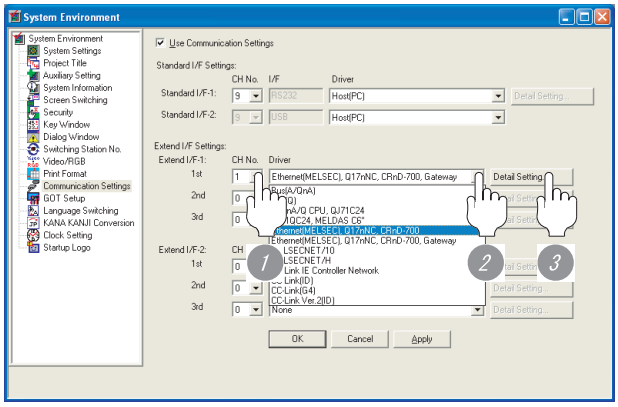


1 Set [*] to the channel No. used.

2 Set the driver.
When using the MES interface function only, set to [Ethernet Download].
When using the gateway function in combination with the MES interface function, set to [Gateway].

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

(2) When the connection type is Ethernet connection

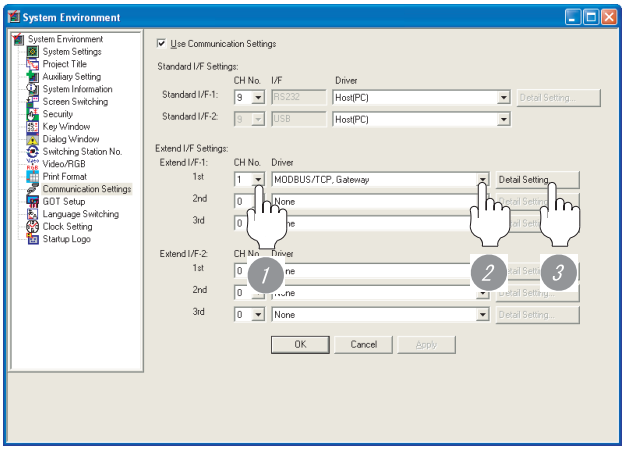


1 Set [1] to the channel No. used.

2 Set the driver.
- When MITSUBISHI PLC is used (only for the MES interface function): [Ethernet(MELSEC),Q17nNC,CRnD-700]
- When MITSUBISHI PLC is used (for use with the gateway function): [Ethernet(MELSEC),Q17nNC,CRnD-700, Gateway]
- When YASKAWA PLC is used: [Ethernet(YASKAWA), Gateway]
- When YOKOGAWA PLC is used: [Ethernet(YOKOGAWA), Gateway]
- When ALLEN-BRADLEY PLC is used: [Ethernet(AB)/Gateway]

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

(3) When the connection type is [MODBUS/TCPconnection]



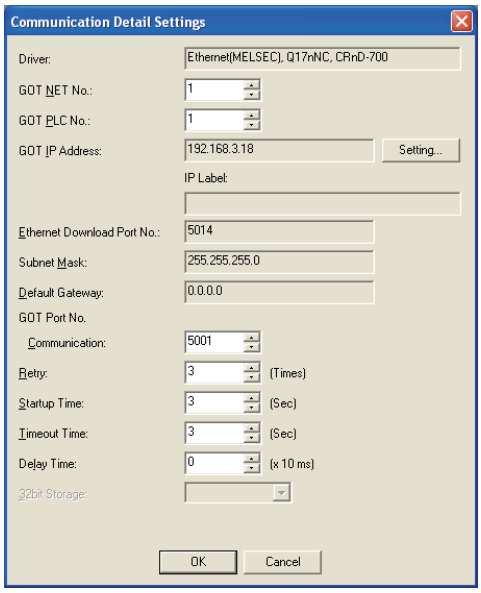
1 Set [1] to the channel No. used.

2 Set the driver to "MODBUS/TCP, Gateway".

3 Perform the detailed settings for the driver.
(☞ 2 Communication detail settings)

2 Communication detail settings

(1) GT16



For Ethernet(MELSEC), Q17nNC, CRnD-700

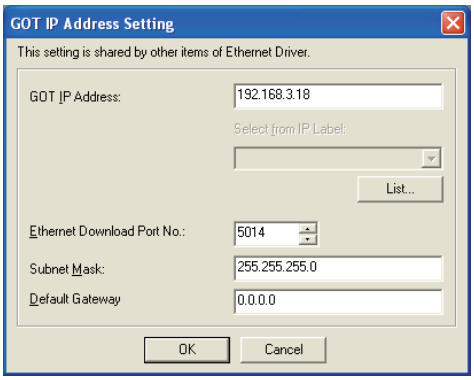
Item	Description	Range
GOT NET No.*1	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.*1	Set the station No. of the GOT. <Default: 1>	1 to 64 *2
GOT IP Address*3	Set the IP address of the GOT. <Default: 192.168.3.18>	0.0.0.0 to 255.255.255.255
Ethernet Download Port No. *3 *4	Set the GOT port No. for Ethernet download. <Default: 5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Subnet Mask*3	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Default Gateway*3	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default: 0.0.0.0>	0.0.0.0 to 255.255.255.255
GOT Port No.*4*5 (Communication)	Set the GOT port No. for the connection with the connected equipment. • MITSUBISHI PLC <Default: 5001> • YASKAWA PLC <Default: 5016> • YOKOGAWA PLC <Default: 5017> • ALLEN-BRADLEY PLC <Default: 5015> • MODBUS/TCP, Gateway <Default: 5020>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Retry*1*6	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time*1	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec

Item	Description	Range
Timeout Time*1*7	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time*1	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10 ms)
32bit Storage*8	Select the steps to store two words (32-bit data). <Default: LH Order>	LH Order / HL Order

*1 No setting is required for [Ethernet download] of Communication detail settings.

*2 The range 1 to 247 is settable for [MODBUS/TCP, Gateway] of Communication detail settings.

*3 Click the Setting button and perform the setting in the [GOT IP address settings] screen.



*4 When using the gateway function only, the setting at [GOT port No.] is invalid.

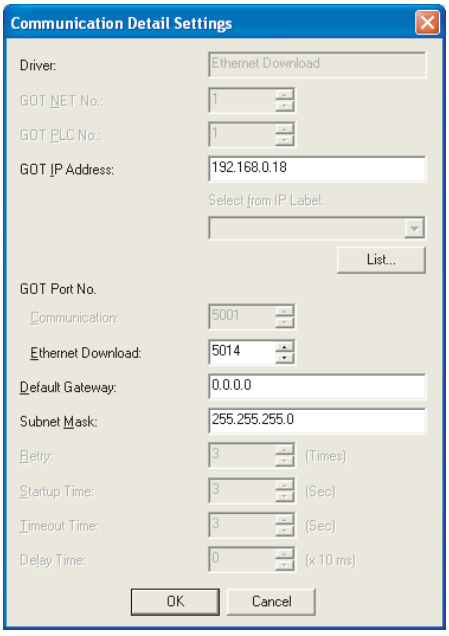
*5 No setting is required for [Gateway] and [Ethernet Download] of the Communication detail settings.

*6 No setting is required for [MODBUS/TCP, Gateway] of Communication detail settings.

*7 To connect the GOT with the Ethernet module (Q Series) in the one-on-one relationship using a cross cable, set [Timeout Time] to 6 sec. or longer.

*8 The setting can be made for [MODBUS/TCP, Gateway] of Communication detail settings.

(2) GT15



When Ethernet download

Item	Description	Range
GOT NET No.*1	Set the network No. of the GOT. <Default: 1>	1 to 239
GOT PLC No.*1	Set the station No. of the GOT. <Default: 1>	1 to 64*2
GOT IP Address*3	Set the IP address of the GOT. <Default: 192.168.0.18>	0.0.0.0 to 255.255.255.255
GOT Port No.*3 (Communication)*4	Set the GOT port No. for the connection with the connected equipment. • MITSUBISHI PLC <Default: 5001> • YASKAWA PLC <Default: 5016> • YOKOGAWA PLC <Default: 5017> • ALLEN-BRADLEY PLC <Default: 5015>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
GOT Port No.*3 (Ethernet Download)	Set the GOT port No. for Ethernet download. <Default:5014>	1024 to 5010, 5014 to 65534 (Except for 5011, 5012 and 5013)
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for communication via router) <Default:0.0.0.0>	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. <Default: 255.255.255.0>	0.0.0.0 to 255.255.255.255
Retry*1*5	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 3 Times>	0 to 5 Times
Startup Time*1	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. <Default: 3 Sec>	3 to 255 Sec
Timeout Time*1*6	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 90 Sec
Delay Time*1	Set the delay time for reducing the load of the network/ destination PLC. <Default: 0ms>	0 to 10000 (× 10ms)
32bit Storage*7	Select the steps to store two words (32-bit data). <Default: LH Order>	LH Order / HL Order

*1 No setting is required for [Ethernet download] of Communication detail settings.

*2 The range 1 to 247 is settable for [MODBUS/TCP, Gateway] of Communication detail settings.

*3 When using the gateway function only, the setting at [GOT port No.] is invalid.

*4 No setting is required for [Gateway] and [Ethernet Download] of the Communication detail settings.

*5 No setting is required for [MODBUS/TCP, Gateway] of Communication detail settings.

*6 To connect the GOT with the Ethernet module (Q Series) in the one-on-one relationship using a cross cable, set [Timeout Time] to 6 sec. or longer.

*7 The setting can be made for [MODBUS/TCP, Gateway] of Communication detail settings.

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's [Communication setting] after downloading [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

(2) Procedence in communication settings

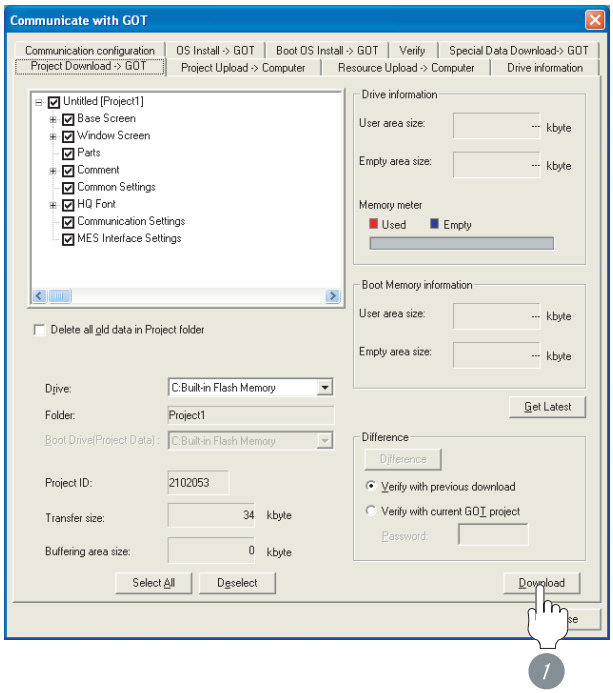
When settings are made by GT Designer2 or the Utility, the latest setting is effective.

56.2.4 Downloading project data

Download project data to the GOT.

For how to download project data, refer to the following manual.

☞ GT Designer2 Version ☐ Basic Operation/Data Transfer Manual



1 Check the necessary items and click the Download button.

56.2.5 Attaching communication unit and connecting cable

Point

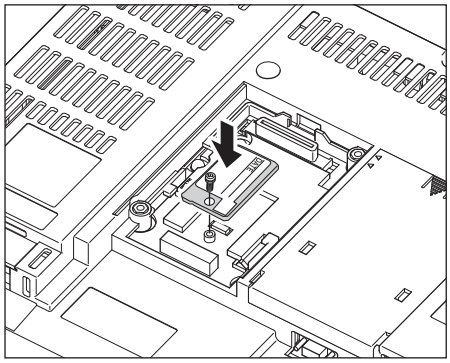
Precautions for cable connection or installation of the option function board or communication unit

Before installing the option function board or communication unit or connecting cables, shut off all phases of the power supply to the GOT.

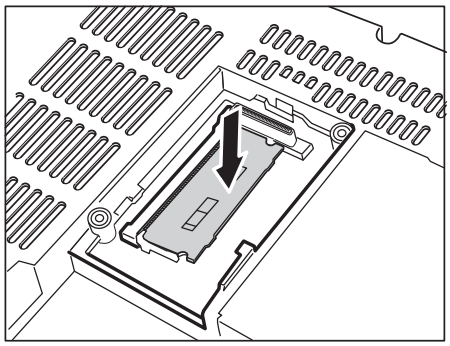
1 Attaching the option function board

1 Attach the option function board to the option function board interface on the GOT

(When using GT16)



(When using GT15)



Point

Option function board

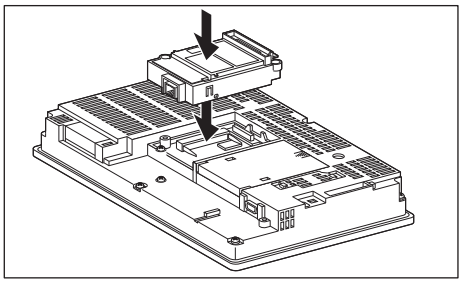
For details on the option function board, refer to the following manual:

☞ · GT15 OPTION FUNCTION BOARD/OPTION FUNCTION BOARD WITH ADD-ON MEMORY User's Manual

· GT16 MES Interface Function Board User's Manual

2 Attaching the communication unit (GT15)

1 Attach the Ethernet communication unit to the extension unit connector on the GOT.



Point

Ethernet communication unit

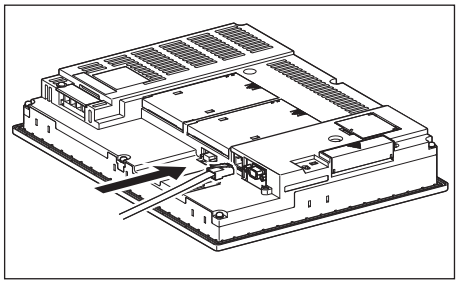
For details on the Ethernet communication unit, refer to the following manual:

☞ GT15 Ethernet Communication Unit User's Manual

3 Connecting the cable

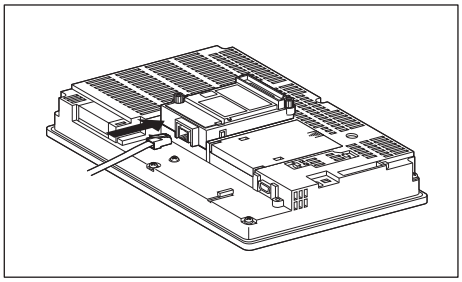
(1) For GT 16

1 Connect the twisted pair cable to the GOT Ethernet interface.



(2) For GT 15

1 Connect the twisted pair cable to the Ethernet communication unit.



56.2.6 Verifying GOT recognizes controllers

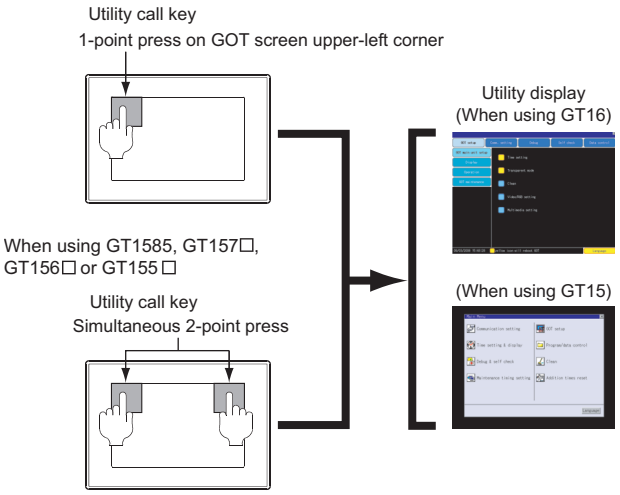
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark

How to display Utility(at default)

When using GT16 or GT1595



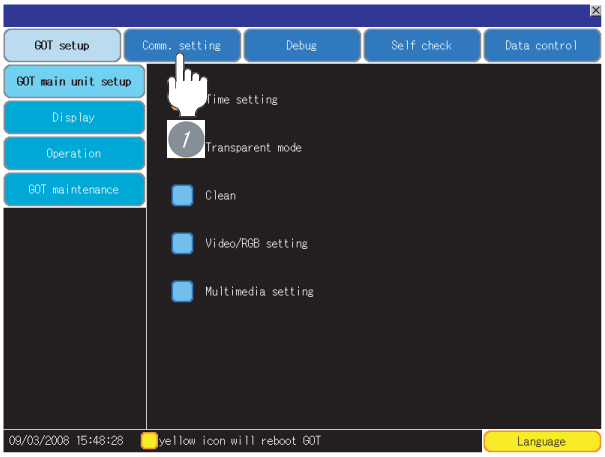
Point

When setting the utility call key to 1-point

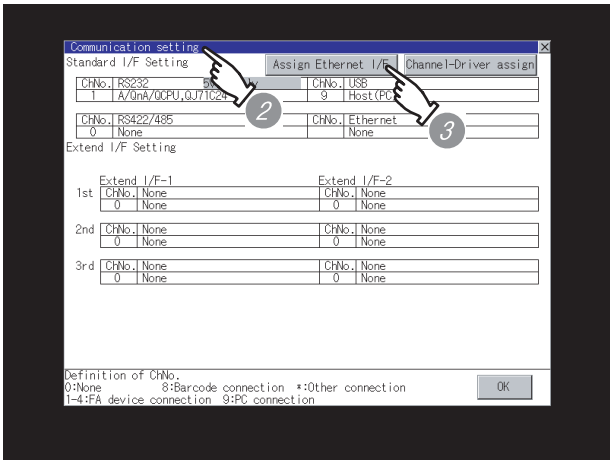
When setting [Pressing Time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.
For the setting of the utility call key, refer to the following.

☞ GT☐ User's Manual

(1) GT16

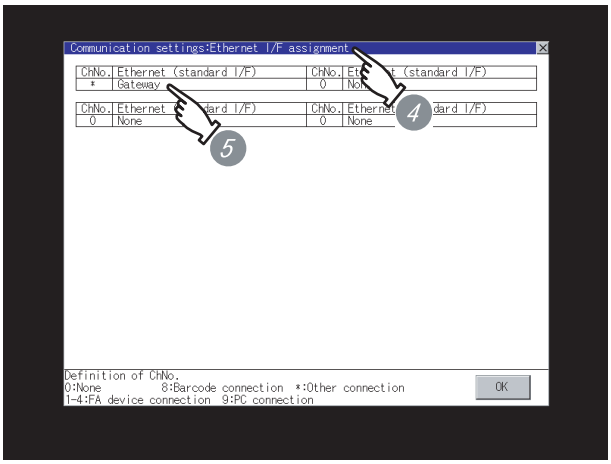


1 After powering up the GOT, touch [Main Menu] → [Comm. Setting] from the Utility.



2 The [Comm. Setting] appears.

3 Touch [Assign Ethernet/IF].



1 The [Assign Ethernet I/F] appears.

2 Verify that the following communication driver name is displayed in the box for the Ethernet interface to be used.

- Communication driver (either of the following)
  Gateway
  E71/gateway
  Ethernet(YASKAWA)
  Ethernet(YOKOGAWA)
  Ethernet/IP(AB)
  MODBUS/TCP

3 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 56.2 Preparatory Procedures for Monitoring

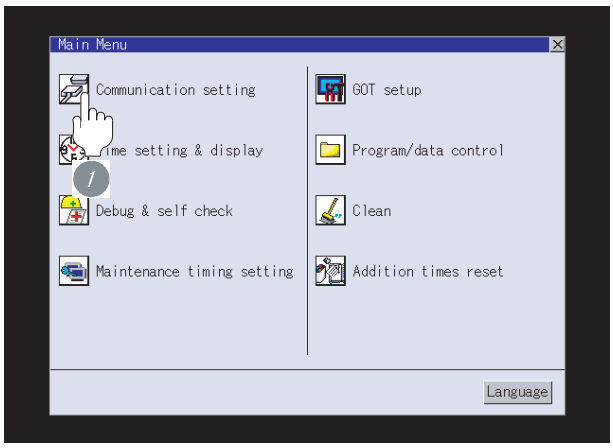
Point

When changing communication interface setting by Utility

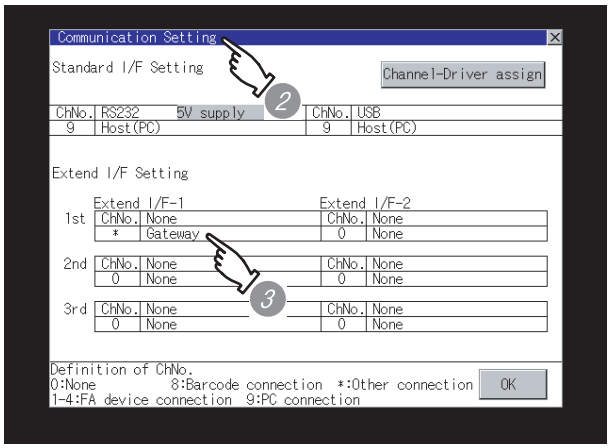
The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility)

(2) GT15



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication Setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver (either of the following)
  Gateway
  E71 connection
  E71/gateway
  Ethernet(YASKAWA)
  Ethernet(YOKOGAWA)
  Ethernet/IP(AB)
  MODBUS/TCP

4 When the communication driver name is not displayed normally, carry out the following procedure again.

☞ Section 56.2 Preparatory Procedures for Monitoring

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ GT ☐ User's Manual

56.2.7 Checking for normal monitoring

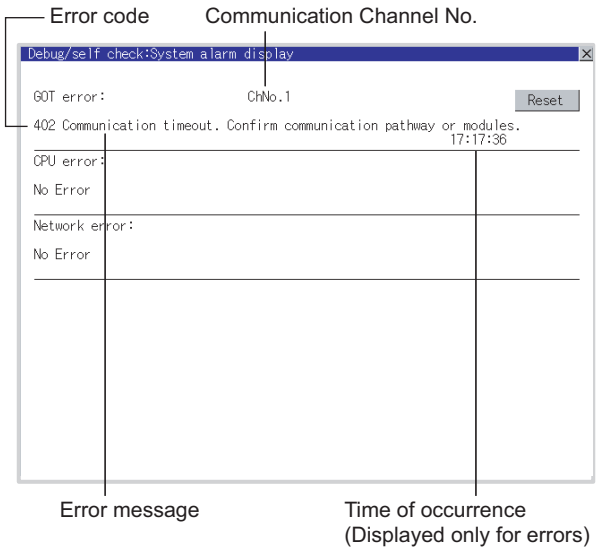
1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.

For details on the system alarm, refer to the following manual.

☞ GT☐ User's Manual

(When using GT15)



Hint! Advanced alarm popup display

GT16 GT15

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

☞ GT Designer2 Version ☐ Screen Design Manual

2 Confirming the communication state of GOT

(1) When using the Command Prompt of Windows®

Execute a Ping command at the Command Prompt of Windows®

(a) When normal communication

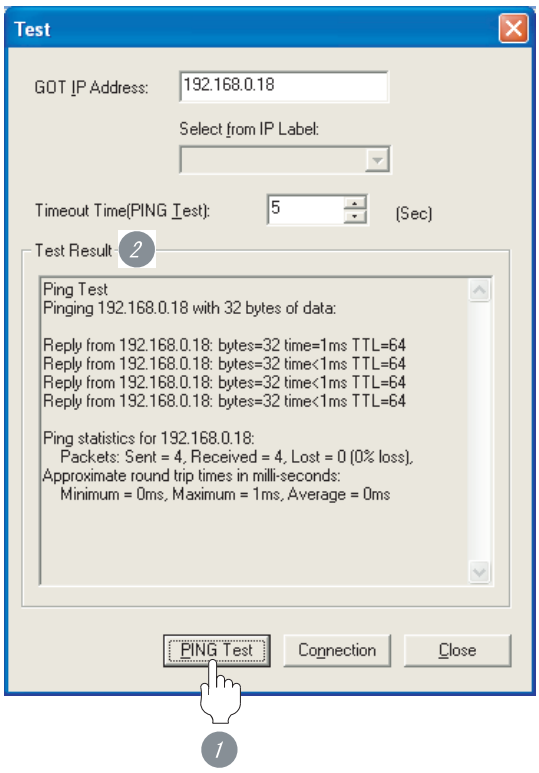
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication

C:\>Ping 192.168.0.18
Request timed out.

(2) When using the [PING Test] of GT Designer2

Select [Communication] → [Communication configuration] → [Ethernet] and Test to display [PING Test].



1 Specify the [GOT IP address] of the [PING Test] and click on the PING Test button.

2 The [Test Result] is displayed after the [PING Test] is finished.

(3) When abnormal communication

At abnormal communication, check the followings and execute the Ping command again.

- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of [Communication Settings]
- IP address of GOT specified by Ping command

Point

Ethernet diagnostics of GX Developer (available only with Mitsubishi PLCs)

Ethernet diagnostics of GX Developer is available to a Ping test from the PLC.
For details of Ethernet diagnostics of GX Developer, refer to the following manual.

☞ User's Manual of the Ethernet module

All settings related to communications are complete now.

Create screens on GT Designer2 and download the project data again.

Point

If all the communication settings are completed

Set up the MES interface function to be used.

☞ GOT1000 Series MES Interface Function Manual

56.3 List of Functions Added by Version Upgrade

The following describes the function added by version upgrade of GT Designer2 or OS.
For using the function below, use the GT Designer2 or OS of the stated version or later.

Item	Description	Version of GT Designer2	Version of OS
MES interface function	Function to realize data linkage between the control system and the information system.	2.43V	Standard monitor OS [03.01.**] Option OS • MES Interface [03.01.**]
MES interface function	Supporting the MODBUS® /TCP connection	2.73B	Communication driver MODBUS/TCP, Gateway [03.09.**]
MES interface function	Supporting the connections to GT16	2.90U	Standard monitor OS [04.02.**] Option OS MES Interface [04.02.**]

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WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expence.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(2) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(3) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
5. Replacing consumable parts such as the battery, backlight and fuses.
6. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
7. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
8. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation equipment for recreation and amusement, and safety devices, shall also be excluded from the graphic operation terminal range of applications.
However, in certain cases, some applications may be possible, providing the user consults the local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at our discretion.
In some of three cases, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required.

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GRAPHIC OPERATION TERMINAL

GOT1000

GOT1000 Series Connection Manual 3/3

MODEL	GT1000-U(CON)-E
MODEL CODE	1D7M26
SH(NA)-080532ENG-Q 3/3(1209)MEE	

MITSUBISHI ELECTRIC CORPORATION

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