

MITSUBISHI ELECTRIC

GS2110-WTBD-N, GS2107-WTBD-N

GS21 General Description

GOT SIMPLE Graphic Operation Terminal	Manual Number IB(NA)-0800654CHN-A
Date	Sep. 2020

This manual describes the part names, dimensions, mounting, and specifications of the product. Before use, read this manual and manuals of relevant products fully to acquire proficiency in handling and operating the product. Make sure to learn all the product information, safety information, and precautions.

And, store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

Registration
 Ethernet is a trademark of Xerox Corporation in the United States. The company name and the product name to be described in this manual are the registered trademarks or trademarks of each company.

Effective Sep. 2020
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Safety Precaution (Read these precautions before using.)
 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.

Depending on circumstances, procedures indicated by "CAUTION" may also be linked to serious results. In any case, it is important to follow the directions for usage

DESIGN PRECAUTIONS	WARNING
<ul style="list-style-type: none"> Some failures of the GOT or cable may keep the outputs on or off. Some failures of a touch panel may cause malfunction of the input objects such as a touch switch. 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. 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. Not doing so can cause an accident due to false output or malfunction. When the GOT detects its backlight failure, the GOT disables the input operation on the touch switch(es). Thus, operators cannot operate the GOT with touches. The GOT backlight failure can be checked with a system signal of the GOT. Even when the display section has dimmed due to a failure of the liquid crystal section or the backlight on the GOT, the input operation of the touch switches may still be enabled. This may cause an incorrect operation of the touch switches. For example, if an operator assumes that the display section has dimmed because of the screen save function and touches the display section to cancel the screen save, a touch switch may be activated. The GOT backlight failure can be checked with a system signal of the GOT. The display section of the GOT is an analog-resistive type touch panel. Simultaneous pressing of two or more areas on the display section may activate the switch between those areas. Do not press two or more areas simultaneously on the display section. 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 shut off the power of the GOT promptly and power on the GOT again. 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. 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. 	

DESIGN PRECAUTIONS	WARNING
<ul style="list-style-type: none"> To maintain the security (confidentiality, integrity, and availability) of the GOT and the system against unauthorized access, DoS¹ attacks, computer viruses, and other cyberattacks from unreliable networks and devices via network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions. <p>Mitsubishi Electric shall have no responsibility or liability for any problems involving GOT trouble and system trouble by unauthorized access, DoS attacks, computer viruses, and other cyberattacks.</p> <p>¹ DoS: A denial-of-service (DoS) attack disrupts services by overloading systems or exploiting vulnerabilities, resulting in a denial-of-service (DoS) state.</p>	

DESIGN PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> 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. When the GOT is connected to the Ethernet network, the available IP address is restricted according to the system configuration. <ul style="list-style-type: none"> When multiple GOTs are connected to the Ethernet network: Do not set the IP address (192.168.3.18) for the GOTs and the controllers in the network. When a single GOT is connected to the Ethernet network: Do not set the IP address (192.168.3.18) for the controllers except the GOT in the network. Doing so can cause the IP address duplication. The duplication can negatively affect the communication of the device with the IP address (192.168.3.18). The operation at the IP address duplication depends on the devices and the system. Turn on the controllers and the network devices to be ready for communication before they communicate with the GOT. Failure to do so can cause a communication error on the GOT. When the GOT is subject to shock or vibration, or some colors appear on the screen of the GOT, the screen of the GOT might flicker. 	

MOUNTING PRECAUTIONS	WARNING
<ul style="list-style-type: none"> Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT main unit to/from the panel. Not doing so can cause the unit to fail or malfunction. 	

MOUNTING PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> Use the GOT in the environment that satisfies the general specifications described in this 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 (0.36N·m to 0.48N·m) with a Phillips-head screwdriver No.2. 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. 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. Do not use the GOT in an environment with oil or chemicals. Doing so may cause failure or malfunction due to the oil or chemical entering into the GOT. 	

WIRING PRECAUTIONS	WARNING
<ul style="list-style-type: none"> 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. 	

WIRING PRECAUTIONS*	CAUTION
<ul style="list-style-type: none"> Please make sure to ground FG terminal of the GOT power supply section by applying 100Ω or less which is used exclusively for the GOT. Not doing so may cause an electric shock or malfunction. 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 (0.5N·m to 0.6N·m). 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. 	

WIRING PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> Plug the communication cable into the GOT interface or the connector of the connected unit, and tighten the mounting screws and the 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. 	

TEST OPERATION PRECAUTIONS	WARNING
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> When power is on, do not touch the terminals. Doing so can cause an electric shock or malfunction. Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases. Not doing so can cause the unit to fail 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
<ul style="list-style-type: none"> 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 from 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 the module or subject it to strong shock. A module damage may result. Before touching the unit, always touch grounded metals, etc. to discharge static electricity from human body, etc. Not doing so can cause the unit to fail or malfunction. 	

TOUCH PANEL PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> 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. 	

PRECAUTIONS WHEN THE DATA STORAGE IS IN USE	WARNING
<ul style="list-style-type: none"> If the SD card mounted on drive A of the GOT is removed while the GOT is accessed, processing for the GOT might be interrupted about for 20 seconds. The GOT cannot be operated during this period. The functions that run in the background including a screen updating, alarm, logging, scripts, and others are also interrupted. Since this interruption makes an impact to the system operation, it might cause failure. After inhibiting access to the SD card on the GOT utility screen, check that the SD card access LED is off and remove the SD card. 	

PRECAUTIONS WHEN THE DATA STORAGE IS IN USE	CAUTION
<ul style="list-style-type: none"> If the data storage mounted on the GOT is removed while the GOT is accessed, the data storage and files are damaged. To remove the data storage from the GOT, check that the access to the data storage in SD card access LED, the system signal, and others is not performed. When removing the SD card from the GOT, make sure to support the SD card by hand as it may pop out. Failure to do so may cause the SD card to drop from the GOT, resulting in a failure or break. Before removing the USB device from the GOT, follow the procedure for removal on the utility screen of the GOT. After the successful completion dialog is displayed, remove the USB device by hand carefully. Failure to do so may cause the USB device to drop from the GOT, resulting in a failure or break. 	

DISPOSAL PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> When disposing of this product, treat it as industrial waste. 	

TRANSPORTATION PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> 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 this manual, as they are precision devices. Failure to do so may cause the unit to fail. Check if the unit operates correctly after transportation. When fumigants that contain halogen materials such as fluorine, chlorine, bromine, and iodine are used for disinfecting and protecting wooden packaging from insects, they cause malfunction when entering our products. Please take necessary precautions to ensure that remaining materials from fumigant do not enter our products, or treat packaging with methods other than fumigation (heat method). Additionally, disinfect and protect wood from insects before packing products. 	

Associated Manuals
 The following manuals are relevant to this product. When these loose manuals are required, please consult with our local distributor.

Manual name	Contents	Manual Number (Model Code)
GT Works3 Installation Instructions	Installation Instructions	BCN-P5999-0066
GOT SIMPLE Series User's Manual*1 (sold separately)	Describes the GOT SIMPLE series hardware-relevant content such as part names, external dimensions, mounting, power supply wiring, specifications, and introduction to option devices	JY997D52901
GT Designer3 (GOT2000) Screen Design Manual*1 (sold separately)	Describes methods of the GT Designer3 basic operation for drawing, transmitting data to GOT SIMPLE series, and specifications and settings of the object functions used in GT Designer3	SH-081220ENG (1D7ML9)
GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1*1 (sold separately)	Describes system configurations of connection methods applicable to GOT2000 series and cable creation methods	SH-081197ENG (1D7MJ8)
GOT2000 Series Connection Manual (Non-Mitsubishi Products) for GT Works3 Version1*1	Describes system configurations of connection methods applicable to GOT2000 series and cable creation methods	SH-081198ENG
GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1*1	Describes system configurations of connection methods applicable to GOT2000 series and cable creation methods	SH-081199ENG
GOT2000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3 Version1*1	Describes system configurations of connection methods applicable to GOT2000 series and cable creation methods	SH-081200ENG

*1 The manual in PDF-format is included in the GT Works3 products. For details of a PLC to be connected, refer to the PLC user's manual respectively.

Referenced Standard: GB/T15969.2
(Requirement of Chinese standardized law)

Model Name	Specifications
GS2110-WTBD-N	10" (800 × 480 dots), TFT color (65536 colors), 24VDC, Memory size 15MB, Ethernet interface built-in
GS2107-WTBD-N	7" (800 × 480 dots), TFT color (65536 colors), 24VDC, Memory size 15MB, Ethernet interface built-in

Bundled item	Quantity
Mounting fitting	4
GS21 General Description (This manual)	1

1. Specifications

1.1 General Specifications

Item	Specifications																											
Operating ambient temperature	0 to 50°C ¹																											
Storage ambient temperature	-20 to 60°C																											
Operating/Storage ambient humidity	10 to 90%RH, non-condensing (The wet bulb temperature is 39°C) When the ambient temperature exceeds 40°C, maintain the absolute humidity at 40°C and 90%.																											
Vibration resistance	<table border="1"> <tr> <td rowspan="4">Conforms to IEC 61131-2</td> <td rowspan="2">Under intermittent vibration</td> <td>Frequency</td> <td>5 to 8.4Hz</td> <td>Acceleration</td> <td>--</td> <td>Half-amplitude</td> <td>3.5mm</td> <td rowspan="2">10times each in X, Y and Z directions</td> </tr> <tr> <td></td> <td>8.4 to 150Hz</td> <td>9.8m/s²</td> <td>--</td> <td></td> </tr> <tr> <td rowspan="2">Under continuous vibration</td> <td>Frequency</td> <td>5 to 8.4Hz</td> <td>Acceleration</td> <td>--</td> <td>Half-amplitude</td> <td>1.75mm</td> <td rowspan="2">--</td> </tr> <tr> <td></td> <td>8.4 to 150Hz</td> <td>4.9m/s²</td> <td>--</td> <td></td> </tr> </table>	Conforms to IEC 61131-2	Under intermittent vibration	Frequency	5 to 8.4Hz	Acceleration	--	Half-amplitude	3.5mm	10times each in X, Y and Z directions		8.4 to 150Hz	9.8m/s ²	--		Under continuous vibration	Frequency	5 to 8.4Hz	Acceleration	--	Half-amplitude	1.75mm	--		8.4 to 150Hz	4.9m/s ²	--	
Conforms to IEC 61131-2	Under intermittent vibration			Frequency	5 to 8.4Hz	Acceleration	--	Half-amplitude	3.5mm		10times each in X, Y and Z directions																	
				8.4 to 150Hz	9.8m/s ²	--																						
	Under continuous vibration		Frequency	5 to 8.4Hz	Acceleration	--	Half-amplitude	1.75mm	--																			
			8.4 to 150Hz	4.9m/s ²	--																							
Shock resistance	Conforms to IEC 61131-2 (147m/s ² , 3times each in the X, Y, and Z directions)																											
Operating atmosphere	Must be free of lamp black, corrosive gas, flammable gas, or excessive amount of electro conductive dust particles. Must be no direct sunlight. (Same as for saving)																											
Operating altitude ²	2000m (6562ft) max.																											
Installation location	Inside control panel																											
Overvoltage category ³	II or less																											
Pollution degree ⁴	2 or less																											
Cooling method	Self-cooling																											
Grounding	Grounding with a ground resistance of 100 Ω or less by using a ground cable that has a cross-sectional area of 0.14 to 1.5 mm ² (solid wire), 0.14 to 1.0 mm ² (stranded wire), or 0.25 to 0.5 mm ² (rod terminal with an insulation sleeve). If impossible, connect the ground cable to the control panel.																											

¹ Includes the temperature inside the enclosure of the control panel on which the GOT is installed.
² Do not use or store the GOT under pressures higher than the atmospheric pressure of altitude 0m (0ft). Failure to observe this instruction may cause a malfunction. When the air inside the control panel is purged by pressurization, the surface sheet may be lifted by high pressure. As a result, the touch panel may be difficult to press, and the sheet may be peeled off.
³ This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the raged voltage of 300V is 2500V.
⁴ This index indicates the degree to which conductive pollution is generated in the environment where the equipment is used. In pollution degree 2, only non-conductive pollution occurs but temporary conductivity may be produced due to condensation.

1.2 Performance Specifications

Item	Specifications	
	GS2110-WTBD-N	GS2107-WTBD-N
Display section ¹	Type	TFT color liquid crystal display
	Screen size	10" / 7"
	Resolution	800 × 480 dots
	Display size	W222(8.74) × H132.5(5.22) [mm](inch) (Horizontal format) / W154(6.06) × H85.9(3.38) [mm](inch) (Horizontal format)
	Display character	16-dot standard font; 50 characters 30 lines (Horizontal format)
	Display color	65536 colors
Backlight	LED-type (no replacement required) Backlight off/screen saving time can be set.	
	Type	Analog-resistive film type
Touch panel ²	Key size	Minimum 2 × 2 [dots] (per key)
	Number of points touched simultaneously	Simultaneous 2-point presses prohibited (Only one point can be touched.)
Memory	Life	1 million times (operating force 0.98N max.)
	C drive	Flash memory (Internal) (15MB), for storing project data, OS Life (Number of write times) 100000 times
Built-in interface	RS-422/485	RS-422/485, 1ch Transmission speed: 115200/57600/38400/19200/9600/4800bps Connector shape: D-sub 9 pins (Female) Application: For communication with FA devices Terminating resistor: 330Ω/110Ω/OPEN (Switched with the terminating resistor setting switch)
	RS-232	RS-232, 1ch Transmission speed: 115200/57600/38400/19200/9600/4800bps Connector shape: D-sub 9 pins (Male) Application: For communication with controllers and a bar code reader For PC connection (Project data read/write, FA transparent function)
Ethernet	Ethernet	Data Transfer method: 100BASE-TX, 10BASE-T, 1ch Connector shape: RJ-45 (modular jack) Application: For communication with controllers For PC connection (Project data read/write, FA transparent function)
	USB (Device)	1 channel (side face) USB version: USB1.1 (Full-Speed 12 Mbps), Connector shape: USB Mini-B Application: For PC connection (Project data read/write, FA transparent function)
	SD card	Conforms to the SD standard, 1ch Supported memory card: SDHC memory card, SD memory card Application: Project data read/write, logging data save

Item	Specifications	
	GS2110-WTBD-N	GS2107-WTBD-N
Buzzer output	Single tone (LONG/SHORT/OFF adjustable)	
Protective structure ³	IP65F (only the front part of the panel)	
External dimensions	W272(10.71) × H214(8.43) × D56(2.21) [mm] (inch)	W206(8.11) × H155(6.11) × D50(1.97) [mm] (inch)
Panel cutting dimensions	W258(10.16) × H200(7.88) [mm] (inch) (Horizontal format)	W191(7.52) × H137(5.40) [mm](inch) (Horizontal format)
Weight	Approx. 1.3(2.9) [kg] (lb) (Excluding mounting fixtures)	Approx. 0.9(2.0) [kg] (lb) (Excluding mounting fixtures)
Compatible software package (Version of GT Designer3)	Version1.250L or later	

*1 Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. Flickers and partial discoloration may be generated on the liquid crystal display panel due to individual differences of panels. Please note that these phenomena appear due to its characteristic and are not caused by product defect.
*2 The touch panel is an analog-resistive type. Simultaneous pressing of two or more areas on the touch panel may activate the switch between those areas. Do not press two or more areas simultaneously on the touch panel.
*3 Note that this does not guarantee all users' operation environment. In addition, the product may not be used in environments under exposition of oil or chemicals for a long period of time, or in environments filled with oil-mist.

1.3 Power Supply Specifications

Item	Specifications	
	GS2110-WTBD-N	GS2107-WTBD-N
Input power supply voltage	24VDC (+10% -15%), ripple voltage 200mV or less	
Power consumption	7.6W (317mA/24V) or less	6.5W (271mA/24V) or less
	At backlight off	3.8W (158mA/24V) or less
Inrush current	17A or less (6ms, 25°C, at the maximum load)	
Permissible instantaneous power failure time	Within 5ms	
Noise immunity	Conforms to IEC61000-4-4, 2kV (power supply line)	
Dielectric withstand voltage	350VAC for 1 minute (across power supply terminals and earth)	
Insulation resistance	500VDC across power terminals and earth, 10 MΩ or more by an insulation resistance tester	

2. Notification of CE marking

The following products have shown compliance through direct testing (to the identified standards) and design analysis (forming a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation.

- This product is designed for use in industrial applications
- Authorized Representative in the European Community: Mitsubishi Electric Europe BV, Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany
- Type: Graphic Operation Terminal
- Models: GOT SIMPLE series

Standard	Remark	
EN61131-2: 2007 Programmable controllers - Equipment, requirements and tests	EMI	Compliance with all relevant aspects of the standard. (Radiated Emissions)
	EMS	Compliance with all relevant aspects of the standard. (ESD, RF electromagnetic field, EFTB, Surge, RF conducted disturbances and Power frequency magnetic field)

For more details please contact your local Mitsubishi Electric sales site. For details of CE marking, refer to the following.
→GOT SIMPLE series User's Manual

This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Corporation cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

Warranty
 Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; opportunity loss or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

For safe use
<ul style="list-style-type: none"> This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life. Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric. This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.