

MITSUBISHI ELECTRIC

GT15 General Description

GT1595-XTBA	GT1595-XTBD	GT1585V-STBA	GT1585V-STBD
GT1585-STBA	GT1585-STBD	GT1575V-STBA	GT1575V-STBD
GT1575-STBA	GT1575-STBD	GT1575-VTBA	GT1575-VTBD
GT1565-VTBA	GT1565-VTBD	GT1575-VNBA	GT1575-VNBD
GT1572-VNBA	GT1572-VNBD	GT1562-VNBA	GT1562-VNBD
GT1565-VTBD	GT1565-QTBD	GT1555-QSBD	GT1550-QLBD

Thank you for purchasing the GOT1000 Series.

Prior to use, please read both this manual and the detailed manual thoroughly to fully understand the product.

MODEL	GT15-U-GD-E
Model code	1D7MP8
IB(NA)-0800546ENG-A(1410)MEE	

● **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.
 - 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.
 - 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(es) 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(es) 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 GT1595-X 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.

DESIGN PRECAUTIONS

- 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 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.
 - When multiple GOTs are connected to the Ethernet network : Do not set the IP address (192.168.0.18) 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 (192.168.0.18) 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 (192.168.0.18).
 - 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.

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 main unit to/from the panel.
 - Not doing so can cause the unit 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, printer unit, option function board or multi-color display board onto/from the GOT.
 - Not doing so can cause the unit to fail or malfunction.
 - When installing the option function board or multi-color display board, wear an earth band etc. to avoid the static electricity.
 - Not doing so can cause a unit corruption.

MOUNTING PRECAUTIONS

- CAUTION**
- 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 (0.36 to 0.48 N·m) with a Phillips-head screwdriver No. 2.
 - Under tightening 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 unit.
 - When loading the communication unit or printer unit to the GOT, fit it to the connection interface of the GOT and tighten the mounting screws in the specified torque range (0.36 to 0.48 N·m) with a Phillips-head screwdriver No. 2.
 - Under tightening 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, tighten the mounting screws within the specified torque range (0.25 to 0.35 N·m) with a Phillips-head screwdriver No. 1.
 - 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.
 - Push the option function board onto the corresponding connector until it clicks, so that it will be secured firmly.
 - Push the multi-color display board onto the corresponding connector so that it will be secured firmly.
 - When inserting a CF card into the GOT, push it into the insertion slot until the CF card eject button will pop out.
 - If not properly inserted, a bad connection may cause a malfunction.

MOUNTING PRECAUTIONS

- CAUTION**
- When inserting/removing a CF card into/from the GOT, turn the CF card access switch off in advance.
 - Failure to do so may corrupt data within the CF card due to poor contact.
 - 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.
 - Operate and store the GOT in environments without direct sunlight, high temperature, dust, humidity, and vibrations.
 - When using the GOT in the environment of oil or chemicals, use the protective cover for oil.
 - Failure to do so may cause failure or malfunction due to the oil or chemical entering into the GOT.

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.

MOUNTING PRECAUTIONS

- CAUTION**
- Always ground the FG terminal, LG terminal, and Functional ground terminal of the GOT power to the functional ground conductors dedicated to the GOT.
 - Not doing so may cause an electric shock or malfunction.
 - When tightening the terminal screws, use a Phillips-head screwdriver No. 2.
 - Terminal screws which are not to be used must be tightened always at torque 0.5 to 0.8 N·m.
 - Otherwise there will be a danger of short circuit against the solderless terminals.
 - 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 (0.5 to 0.8 N·m). Overtightening 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.
 - Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range.
 - Under tightening 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 OnA/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 perform the following actions to the battery.
 - Charging, disassembling, heating, short-circuiting, or soldering the battery, or throwing it 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.
 - Overtightening 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 cramped.
 - 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 the module or subject it to strong shock. A module damage may result.
 - 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 metals, 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 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 CHANGING PRECAUTIONS

- WARNING**
- Before changing the backlight, always switch off the GOT power externally in all phases (when the GOT is connected to the bus, the PLC CPU power must also be switched off externally in all phases) and remove the GOT from the control panel.
 - Not switching the power off in all phases may cause an electric shock.
 - Not removing the unit from the control panel can cause injury due to a drop.

BACKLIGHT CHANGING PRECAUTIONS

- CAUTION**
- When replacing the backlight, use the gloves.
 - Otherwise, it may cause you to be injured.
 - Start changing the backlight more than 5 minutes after switching the GOT power off.
 - Not doing so can cause a burn due to the heat of the backlight.

DISPOSAL PRECAUTIONS

- CAUTION**
- When disposing of the product, handle it as industrial waste.
 - When disposing of the battery, dispose of it separately based on the law in each region.
 - (Refer to the User's Manual for the GOT you are using for details of the battery regulations in the EU member countries.)

TRANSPORTATION PRECAUTIONS

- CAUTION**
- When transporting lithium batteries, make sure to treat them based on the transport regulations.
 - (Refer to the User's Manual for the GOT you are using for details of the regulated models.)
 - 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.
 - 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.

Manual

The following shows manuals relevant to this product.

Detailed Manual

Manual name	Manual number (Model code)
GT15 User's Manual (Sold separately)	SH-080528ENG (1D7M23)

For detailed manuals, refer to the PDF manuals stored in the DVD-ROM for the drawing software used.

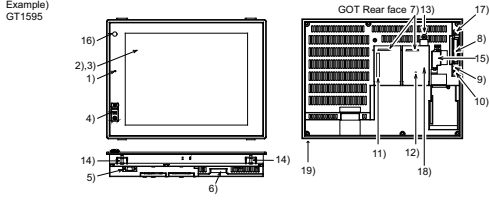
Relevant Manuals

For relevant manuals, refer to the Help or the PDF manuals stored in the DVD-ROM for the drawing software used.

The latest manuals are also available from MITSUBISHI ELECTRIC FA Global Website (<http://www.MitsubishiElectric.co.jp/fa/>).

2. Part Names and Settings

Part Names and Settings of the GT15



No.	Name	Description
1)	POWER LED	Lit in green: Power is correctly supplied, Lit in orange: Screen saving; Blinks in orange/green: Blown back light bulb, Not lit: Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen
3)	Touch key	For operating touch switches in the Utility and the user creation screen
4)	USB interface	For connecting a personal computer (Connector type: Mini-B)
5)	RS-232 interface	For communicating with a controller or connecting a personal computer/Connector type: D sub 9-pin)
6)	Power terminal	Power input terminal, LG terminal*7, FG terminal
7)	Extension interface	For installing an extension unit
8)	CF card interface	For installing a CF card
9)	CF card access	Lit: CF card accessed, Not lit: CF card not accessed
10)	CF card access switch	Used for accepting or stopping the access to the CF card before removing the CF card from the GOT ON: CF card being accessed (CF card removal prohibited) OFF: CF card not accessed (CF card removal possible)
11)	Optional function board	For installing the optional function board
12)	Multi-color display board interface*13*8	For installing the multi-color display board
13)	Reset switch	Hardware reset switch(Inoperative in the bus connection or with the bus connection unit installed)
14)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
15)	Battery holder/Video	Houses the battery
16)	Human sensor*4	Sensor that detects human movement
17)	Installation switch*5	Used for OS installations at the GOT startup
18)	Video/RGB interface*2	For installing the video input unit, RGB input unit, video/RGB input unit, or RGB output unit
19)	Functional ground terminal*6	For earthing

*1: For the multi-color display board, refer to the GT15 User's Manual.
*2: GT1585V-S and GT1575V-S only
*3: The GT1562-VN has no multi-color display board.
*4: GT1595 and GT1585 only
*5: GT1595 only
*6: GT1550 only
*7: The GT1550 has no LG terminal.
*8: The GT1575-VN, GT1572-VN, and GT1562-VN do not support the 65536-color display even if the multi-color display board is mounted.

3. Specifications

3.1 General Specifications

Item	Specifications
Operating ambient temperature	0 to 50°C 0 to 59°C
Temperature ambient de fonctionnement	0 to 55°C 0 to 59°C
Storage ambient temperature	-20 to 60°C
Operating ambient humidity	10 to 90% RH, non-condensing
Storage ambient humidity	10 to 90% RH, non-condensing
Vibration resistance ²	Compliant with IEC 61131-2 Under intermittent vibration 5 to 8.4Hz 8.4 to 150Hz 9.8ms ² Under continuous vibration 5 to 8.4Hz 8.4 to 150Hz 4.9ms ²
	Acceleration 3.5mm/s ² 1.75mm/s ²
	Half-amplitude 3.5mm 1.75mm
	Sweep count 10 times each in X, Y and Z directions

1. FEATURES

- Improved monitoring performance and connectivity to FA devices
 - Using of TFT color liquid crystal display (high intensity, wide angle view and high definition type) provides clear full-color display and displays small characters clearly. (Displays digital images of BMP and other formats in 65536 colors.)
 - Provides multi-language display function based on Unicode2.1 True Type font and high-speed drawing of beautiful text.
 - High speed monitoring through high speed communication at maximum of 115.2Kbps.
 - High speed display and high speed touch switch response.
- More efficient GOT operations including screen design, startup, adjustment, management and maintenance works
 - 9MB user memory is included as standard. (Memory capacity can be expanded up to 57MB by increasing the option memory)*1
 - CF card interface is included as standard.
 - Font installation is available to increase the system fonts.
 - Combined use of 4 types of alarms (system alarm, user alarm, alarm history, alarm popup display) realizes more efficient alarm notification.
 - Maintenance timing report function is available that measures the backlight energization time and notifies of maintenance time.
 - The USB connector is positioned on the GOT front. This enables the system startup to be performed more efficiently using FA device startup tool, and eliminates the necessity of indirect works (opening and closing the control panel, cable replacement, cable rewiring) in order to improve the working efficiency.
 - The blown backlight bulb can be confirmed even during screen saving, with the blinking POWER LED at backlight shutoff detection.
- Enhanced support of FA device setup tools
 - Transferring and monitoring sequence programs with the personal computer connected to the GOT can be executed when connecting to a PLC CPU with the direct CPU connection or bus connection. (FA transparent function)

*1: The specifications differ depending on the GOT to be used.
For the specifications, refer to the GT15 User's Manual.

Item	Specifications
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2: 147 mis ² (15G), 3 times each in X, Y and Z directions
Operating atmosphere	No greasy fumes, corrosive gas, flammable gas, excessive conductive dust, and direct sunlight (Same as storage atmosphere)
Operating altitude ³	2000 m (6562 ft) max.
Installation location	Inside control panel
Overvoltage category ⁴	II or less
Pollution degree ⁵	2 or less
Cooling method	Self-cooling
Grounding	Grounding with a resistance of 100Ω or less

*1: When mounting MELSECNET/H communication unit (GT15-J71LP23-25, GT15-J71BR13) or CC-Link communication unit (GT15-J61BT13), the operating ambient temperature must be reduced 5°C against the maximum values described in general specifications.

Lors du montage du module de communication MELSECNET/H (GT15-J71LP23-25, GT15-J71BR13) ou du module de communication CC-Link (GT15-J61BT13), la température ambiante de fonctionnement doit être réduite de 5°C par rapport aux valeurs maximales décrites dans les spécifications générales.

*2: When using the MELSECNET/H communication unit (GT15-J71LP23-2, GT15-J71BR13-Z) or CC-Link communication unit (GT15-J61BT13-Z), refer to the manual of the communication unit you use. (Differs with the specification of GOT.)

*3: Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0m (0ft). Failure to observe this instruction may cause a malfunction.

When an air purge is made inside the control panel by adding pressure, there may be a clearance between the surface sheet and the screen making it difficult to use the touch panel, or the sheet may come off.

*4: 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 rated voltage of 300 V is 2500 V.

*5: This index indicates the degree to which conductive material 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.

*6: For the STN LCD model, the wet-bulb temperature must be 39°C or less.

Point

Refer to GT15 User's Manual for details of the performance specifications of each GOT.

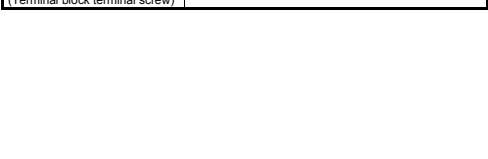
3.2 Power Supply Specifications

The following indicates the power supply specifications for GT15.

Note
Operation at momentary failure
• If an instantaneous power failure occurs in the power supply and continues for more than the permissible period, the GOT will be reset.
• Make sure to power on the unit more than 5 seconds after power-off.

3.2.1 For GOTs powered from the 100 to 240VAC power supply

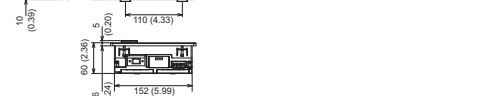
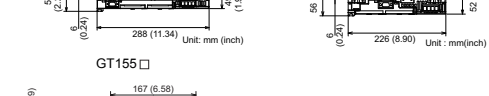
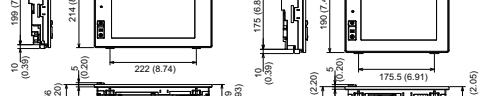
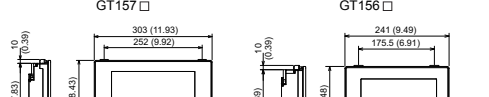
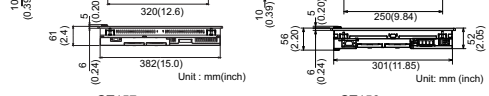
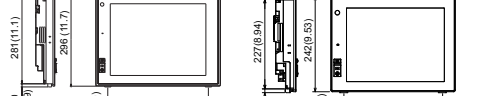
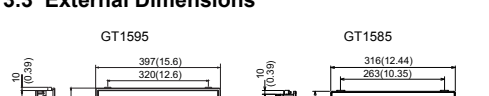
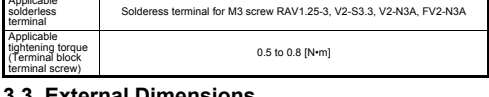
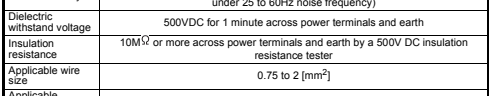
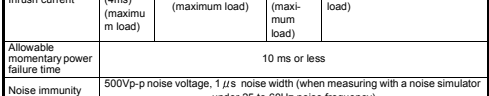
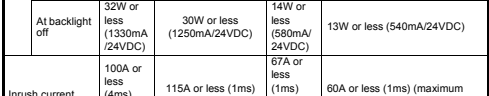
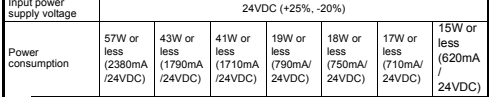
Item	Specifications
Input power supply voltage	100 to 240VAC (+10%, -15%)
Input frequency	50/60Hz±5%
Input max. apparent power	110VA (maximum load)
Power consumption	56W or less 41W or less 39W or less
[At backlight off]	30W or less 28W or less
Inrush current	50A or less (maximum load) 45A or less (maximum load) 40A or less (4ms) (maximum load)
Allowable momentary power failure time	20ms or less (100VAC or more)
Noise immunity	1,500Vp-p noise voltage, 1μs noise width (when measuring with a noise simulator under 25 to 60kHz noise frequency)
Dielectric withstand voltage	1500VAC for 1 minute across power terminals and earth
Insulation resistance	10MΩ or more across power terminals and earth by a 500V DC insulation resistance tester
Applicable wire size	0.75 to 2 [mm ²]
Applicable solderless terminal	Solderless terminal for M3 screw RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A
Applicable tightening torque (Terminal block terminal screw)	0.5 to 0.8 [N·m]



3.2.2 For GOTs powered from the 24VDC power supply

Item	Specifications
Input power supply voltage	24VDC (+25%, -20%)
Power consumption	57W or less (2380mA/24VDC) 43W or less (1790mA/24VDC) 41W or less (1710mA/24VDC) 19W or less (790mA/24VDC) 18W or less (750mA/24VDC) 17W or less (710mA/24VDC) 15W or less (620mA/24VDC)
At backlight off	32W or less (1330mA/24VDC) 30W or less (1250mA/24VDC) 14W or less (580mA/24VDC) 13W or less (540mA/24VDC)
Inrush current	100A or less (4ms) (maximum load) 115A or less (1ms) (maximum load) 67A or less (1ms) (maximum load) 60A or less (1ms) (maximum load)
Allowable momentary power failure time	10 ms or less
Noise immunity	500Vp-p noise voltage, 1μs noise width (when measuring with a noise simulator under 25 to 60kHz noise frequency)
Dielectric withstand voltage	500VDC for 1 minute across power terminals and earth
Insulation resistance	10MΩ or more across power terminals and earth by a 500V DC insulation resistance tester
Applicable wire size	0.75 to 2 [mm ²]
Applicable solderless terminal	Solderless terminal for M3 screw RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A
Applicable tightening torque (Terminal block terminal screw)	0.5 to 0.8 [N·m]

Item	Specifications
Power consumption	57W or less (2380mA/24VDC) 43W or less (1790mA/24VDC) 41W or less (1710mA/24VDC) 19W or less (790mA/24VDC) 18W or less (750mA/24VDC) 17W or less (710mA/24VDC) 15W or less (620mA/24VDC)
At backlight off	32W or less (1330mA/24VDC) 30W or less (1250mA/24VDC) 14W or less (580mA/24VDC) 13W or less (540mA/24VDC)
Inrush current	100A or less (4ms) (maximum load) 115A or less (1ms) (maximum load) 67A or less (1ms) (maximum load) 60A or less (1ms) (maximum load)
Allowable momentary power failure time	10 ms or less
Noise immunity	500Vp-p noise voltage, 1μs noise width (when measuring with a noise simulator under 25 to 60kHz noise frequency)
Dielectric withstand voltage	500VDC for 1 minute across power terminals and earth
Insulation resistance	10MΩ or more across power terminals and earth by a 500V DC insulation resistance tester
Applicable wire size	0.75 to 2 [mm ²]
Applicable solderless terminal	Solderless terminal for M3 screw RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A
Applicable tightening torque (Terminal block terminal screw)	0.5 to 0.8 [N·m]



4. EMC AND LOW VOLTAGE DIRECTIVE

For the products sold in European countries, the conformance to the EMC Directive, which is one of the European Directives, has been a legal obligation since 1996. Also, conformance to the Low Voltage Directive, another European Directive, has been a legal obligation since 1997.

Manufacturers who recognize their products must conform to the EMC and Low Voltage Directive are required to declare that their products conform to these Directives and put a "CE mark" on their products.

- Authorized representative in Europe
Name: Mitsubishi Electric Europe BV
Address: Gothaer strasse 8, 40880 Ratingen, Germany

4.1 Requirements to Meet EMC Directive

EMC Directives are those which require "any strong electromagnetic force is not output to the external. Emission (electromagnetic interference)" and "It is not influenced by the electromagnetic wave from the external. Immunity (electromagnetic sensitivity)". Items 4.1.1 through 4.1.3 summarize the precautions to use GOT and configure the mechanical unit in order to match the EMC directives. Though the data described herein are produced with our best on the basis of the requirement items and standards of the restrictions gathered by Mitsubishi, they do not completely guaranteed that all mechanical unit manufactured according to the data do not always match the above directives. The manufacturer itself which manufactures the mechanical unit must finally judge the method and others to match the EMC directives.

4.1.1 EMC directive

The standards of the EMC Directive are shown below.

Applied standard	Test standard	Test details	Standard value
EN61131-2 : 2007	CISPR16-2-3 Radiated noise ^{*1}	Electromagnetic emissions from the product are measured. 30M-230MHz QP: 30dB _μ V/m (30m in measurement range) ^{2, *3} 230M-1000MHz QP: 37dB _μ V/m (30m in measurement range) ^{2, *3}	
	CISPR16-2-1 Conducted noise ^{*1}	Electromagnetic emissions from the product to the power line is measured. 150K-500kHz QP: 79dB, Mean: 66dB ² 500K-30MHz QP: 73dB, Mean: 60dB ²	
	IEC61000-4-2 Electrostatic immunity ^{*1}	Immunity test in which static electricity is applied to the cabinet of the equipment. ± 4kV Contact discharge ± 8kV Aerial discharge	
	IEC61000-4-3 Radiated electromagnetic field AM modulation	Immunity test in which field is irradiated to the product. 80-1000MHz: 10V/m 1.4-2GHz: 3V/m 2.0-2.7GHz: 1V/m 80%AM modulation @ 1kHz	
EN61131-2 : 2007	IEC61000-4-4 Fast transient burst noise ^{*1}	Immunity test in which burst noise is applied to the power line and signal lines. Power line: 2kV Digital I/O(24V or higher): 1kV (Digital I/O(24V or less)) > 250V (Analog I/O, signal lines) > 250V	
	IEC61000-4-5 Surge immunity ^{*1}	Immunity test in which lightning surge is applied to the product. AC power type Power line (between line and ground): ± 2kV Power line (between lines): ± 1kV Data communication port: ± 1kV DC power type Power line (between line and ground): ± 0.5kV Power line (between lines): ± 0.5kV Data communication port: ± 1kV	
	IEC61000-4-6 Conducted RF immunity ^{*1}	Immunity test in which a noise induced on the power and signal lines is applied. Power line: 10V Data communication port: 10V	
EN61000-4-11 EN61000-4-29	Test for checking normal operations at instantaneous power failure and voltage dips immunity Test for checking normal operations at instantaneous power failure.	30 A/m AC power type 0.5 cycle 0% (interval 1 to 10s) 250/300 cycle 0% 10/12 cycle 40% 25/30 cycle 70%	

*1: The GOT is an open type device (device installed to another device) and must be installed in a conductive control panel.
The above test items are conducted in the condition where the GOT is installed on the conductive control panel and combined with the Mitsubishi PLC.

- *2: QP (Quasi-Peak): Quasi-peak value, Mean: Average value
*3: The above test items are conducted in the following conditions.
30M-230MHz QP : 40dB_μV/m (10m in measurement range)
230M-1000MHz QP : 47dB_μV/m (10m in measurement range)

4.1.2 Control panel

The GOT is an open type device (device installed to another device) and must be installed in a conductive control panel. It not only assure the safety but also has a large effect to shut down the noise generated from GOT, on the control panel.

- (a) The control panel must be conductive.
(b) When fixing a top or bottom plate of the control panel with bolts, do not coat the plate and bolt surfaces so that they will come into contact.
(c) When using an inner plate to ensure electric conductivity with the control panel, do not coat the fixing bolt area of the inner plate and control panel to ensure conductivity in the largest area as possible.
(d) Ground the control panel using a thick grounding cable in order to ensure the low impedance under high frequency.
(e) The diameter of cable holes in the control panel must be 10cm (3.94in.). In order to reduce the chance of radio waves leaking out, ensure that the space between the control panel and its door is small as possible.
Paste the EMI gasket directly on the painted surface to seal the space so that the leak of electric wave can be suppressed.

Manufacturer	Series model name
KITAGAWA INDUSTRIES CO., LTD.	UC series (Recommended Product)

Our test has been carried out on a panel having the damping characteristics of 37dB max. and 30dB mean (measured by 3m method with 30 to 300MHz).

- (2) Connection of power and ground wires
Ground and power supply wires for the GOT must be connected as described below.
(a) Provide a grounding point near the GOT. Short-circuit the LG and FG terminals of the GOT (LG: line ground, FG: frame ground) and ground them with the thickest and shortest wire possible (The wire length must be 30cm (11.81in.) or shorter.)
The LG and FG terminals function is to pass the noise generated in the PC system to the ground, so an impedance that is as low as possible must be ensured. As the wires are used to relieve the noise, the wire itself carries a large noise content and thus short wiring means that the wire is prevented from acting as an antenna.
Note) A long conductor will become a more efficient antenna at high frequency.
(b) The earth wire led from the earthing point must be twisted with the power supply wires.
By twisting with the earthing wire, noise flowing from the power supply wires can be relieved to the earthing. However, if a filter is installed on the power supply wires, the wires and the earthing wire may not need to be twisted.

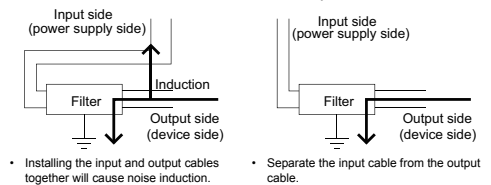
4.1.3 Noise filter (power supply line filter)

The noise filter (power supply line filter) is a device effective to reduce conducted noise. Except some models, installation of a noise filter onto the power supply lines is not necessary. However conducted noise can be reduced if it is installed. (The noise filter is generally effective for reducing conducted noise in the band of 10MHz or less.) Usage of the following filters is recommended.

Model name	FN343-3/01	FN660-6/06	ZHC2203-11
Manufacturer	SCHAFFNER	SCHAFFNER	TDK
Rated current	3A	6A	3A
Rated voltage	250V		

The precautions required when installing a noise filter are described below.

- (1) Do not install the input and output cables of the noise filter together to prevent the output side noise will be inducted into the input side cable where noise has been eliminated by the noise filter.



- Installing the input and output cables together will cause noise induction.
- Separate the input cable from the output cable.

- (2) Connect the noise filter's ground terminal to the control panel with the shortest cable as possible (approx. 10cm (3.94 in.) or less).

4.2 Requirements for Compliance with the Low Voltage Directive

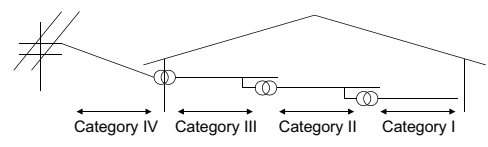
The Low Voltage Directive requires each device which operates with power supply ranging from 50VAC to 1000V and 75VDC to 1500V to satisfy necessary safety items. In the Sections from 4.2.1 to 4.2.5, cautions on installation and wiring of the GOT to conform to the Low Voltage Directive are described. We have put the maximum effort to develop this material based on the requirements and standards of the Directive that we have collected. However, compatibility of the devices which are fabricated according to the contents of this manual to the above Directive is not guaranteed. Each manufacturer who fabricates such device should make the final judgement about the application method of the Low Voltage Directive and the product compatibility.

4.2.1 Standard subject to GOT

- Standard applied to GOT :
- EN61131-2 Programmable controllers - Equipment requirements and tests
 - EN60950-1 Safety of Information Technology Equipment

4.2.2 Power supply

The insulation specification of the GOT was designed assuming installation category II. Be sure to use the installation category II power supply to the GOT.
The installation category indicates the durability level against surge voltage generated by lightning strike.
Category I has the lowest durability, category IV has the highest durability.



Category II indicates a power supply whose voltage has been reduced by two or more levels of isolating transformers from the public power distribution.

4.2.3 Control panel

Because the GOT is open type equipment (device designed to be stored within another device), be sure to use it only when installed in a control panel.

- (1) Shock Protection
In order to prevent those who are unfamiliar with power facility, e.g., an operator, from getting a shock, make sure to take the following measures on the control panel.
(a) Store the GOT within the control panel locked, and allow only those who are familiar with power facility to unlock the panel.
(b) Build the structure in order that the power supply will be shut off when the control panel is opened.
- (2) Dustproof and waterproof features
The control panel also provides protection from dust, water and other substances. Insufficient ingress protection may lower the insulation withstand voltage, resulting in insulation destruction. The insulation in the GOT is designed to cope with the pollution level 2, so use in an environment with pollution level 2 or better.
Pollution level 1: An environment where the air is dry and conductive dust does not exist.
Pollution level 2: An environment where conductive dust does not usually exist, but occasional temporary conductivity occurs due to the accumulated dust.
Generally, this is the level for inside the control panel equivalent a control room or on the floor of a typical factory.
Pollution level 3: An environment where conductive dust exists and conductivity may be generated due to the accumulated dust.
Pollution level 4: An environment for a typical factory floor.
Continuous conductivity may occur due to rain, snow, etc. An outdoor environment.

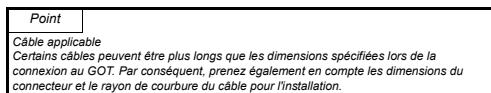
4.2.4 Grounding

The following are applicable ground terminals. Use them in the grounded state.
Be sure to ground the GOT for ensuring the safety and complying with the EMC Directive.
Functional grounding ↓: Improves the noise resistance.

5. INSTALLATION

5.1 Dimensions intérieures du tableau de commande pour le montage du GOT

Installez le GOT sur le tableau de commande en laissant de l'espace pour le dispositif à l'intérieur du tableau de commande. N'installez pas le GOT et le module dans des zones où l'installation est interdite.



5.2 Cotes de découpe du panneau

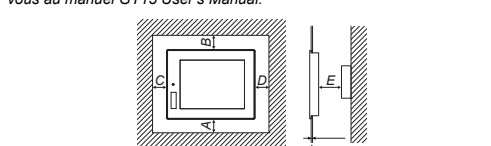
Faites un trou d'installation sur le tableau de commande avec les dimensions indiquées ci-dessous. Laissez un espace de 10mm au-dessus et sous le trou respectivement pour les attaches de montage.

GOT	Épaisseur du panneau : 2 à 4mm ou moins	
	A [mm] [pouce]	B [mm] [pouce]
GT1595	383.5 (15.10) +2 (0.08) 0 (0)	282.5 (11.12) +2 (0.08) 0 (0)
GT1585	302 (11.89) +2 (0.08) 0 (0)	228 (8.98) +2 (0.08) 0 (0)
GT157□	289 (11.38) +2 (0.08) 0 (0)	200 (7.87) +2 (0.08) 0 (0)
GT156□	227 (8.94) +2 (0.08) 0 (0)	176 (6.93) +2 (0.08) 0 (0)
GT155□	153(6.02) +2 (0.08) 0 (0)	121(4.76) +2 (0.08) 0 (0)

5.3 Position de montage

Lors du montage du GOT, laissez les espaces suivants pour les autres structures et dispositifs.

En fonction des modules et des câbles connectés au GOT, il peut être nécessaire de laisser des espaces plus importants que les dimensions indiquées. Par conséquent, prenez également en compte les dimensions du connecteur et le rayon de courbure du câble pour l'installation.

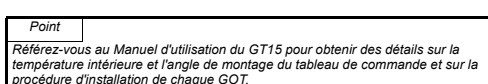


Laissez les espaces entre le GOT et les autres dispositifs en fonction des dimensions contenues dans le tableau suivant. Les valeurs entre parenthèses s'appliquent au cas où aucun dispositif générant des émissions sonores (comme un contacteur) ou de la chaleur n'est installé près du GOT.
Toutefois, maintenez la température ambiante du GOT à 55°C ou moins.

Article	Unité : mm (pouce)		
	GT1595	GT1585	GT157□ / GT156□ / GT155□
GOT uniquement	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [21 (0,83) ou plus]	49 (1,92) ou plus
Unité de connexion de bus encastrée	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [35 (1,38) ou plus]	50 (1,97) ou plus [40 (1,57) ou plus]
Module de communication série encastré	50 (1,97) ou plus [39 (1,54) ou plus]	50 (1,97) ou plus [21 (0,83) ou plus]	49 (1,92) ou plus
Unité de conversion RS-422 encastrée	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [39 (1,54) ou plus]	53 (2,09) ou plus
Module de communication Ethernet encastré	50 (1,97) ou plus [20 (0,79) ou plus]		

Article	GT1595	GT1585	GT157□	GT156□	GT155□
Module de communication MELSECNET/10 (coaxial) encastré	50 (1,97) ou plus [20 (0,79) ou plus]	-	-	-	-
Module de communication CC-Link (GT15-7S, J61B13-Z) encastré	50 (1,97) ou plus [20 (0,79) ou plus]	-	-	-	-
Module de communication CC-Link (GT15-J61B13) encastré	50 (1,97) ou plus [20 (0,79) ou plus]	-	-	-	50 (1,97) ou plus [32 (1,26) ou plus]
Module de communication MELSECNET/10 (optique) encastré	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [26 (1,02) ou plus]	50 (1,97) ou plus [43 (1,69) ou plus]	50 (1,97) ou plus [48 (1,89) ou plus]	-
Module de communication MELSECNET/H (coaxial) encastré	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [30 (1,18) ou plus]	50 (1,97) ou plus [35 (1,38) ou plus]	50 (1,97) ou plus [42 (1,65) ou plus]	64 (2,52) ou plus
Module de communication MELSECNET/H (optique) encastré	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [23 (0,91) ou plus]	50 (1,97) ou plus [37 (1,46) ou plus]	50 (1,97) ou plus [42 (1,65) ou plus]	79 (3,11) ou plus
Module réseau de contrôle CC-Link IE champ CC-Link IE	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [23 (0,91) ou plus]	50 (1,97) ou plus [28 (1,10) ou plus]	50 (1,97) ou plus [28 (1,10) ou plus]	57 (2,24) ou plus
Module d'entrée vidéo encastré	-	61 (2,40) ou plus ²	75 (2,95) ou plus ²	-	-
Module d'entrée RGB encastré	-	50 (1,97) ou plus ³	50 (1,97) ou plus ³	-	-
Module d'entrée vidéo/ RGB encastré	-	61 (2,40) ou plus ^{2,3}	75 (2,95) ou plus ^{2,3}	-	-
Module de sortie RGB encastré	-	50 (1,97) ou plus [20 (0,79) ou plus]	-	-	-
Module de carte CF	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [20 (0,79) ou plus]
Module d'extension de carte CF	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [49 (1,93) ou plus]	63 (2,48) ou plus	68 (2,68) ou plus	97 (3,82) ou plus
Module de sortie/ entrée	50 (1,97) ou plus [20 (0,79) ou plus]	50 (1,97) ou plus [24 (0,94) ou plus]	50 (1,97) ou plus [29 (1,14) ou plus]	50 (1,97) ou plus [29 (1,14) ou plus]	58 (2,28) ou plus
Module d'interface acoustique	50 (1,97) ou plus [20 (0,79) ou plus]				
B	80 (3,15) ou plus [20 (0,79) ou plus]				
C	50 (1,97) ou plus [20 (0,79) ou plus]				
D	50 (1,97) ou plus [20 (0,79) ou plus]				
E	100 (3,94) ou plus [20 (0,79) ou plus]				

- *1 : Cette valeur diffère selon le câble utilisé.000
Contactez le bureau local Mitsubishi Electric System & Service Co., Ltd.
La valeur indiquée dans le tableau est une référence.
*2 : Cette valeur est utilisée pour le câble coaxial 3C-2V (JIS C 3501).
Pour connaître les spécifications du câble, référez-vous au MODEL GT15V-75V4R1 Video/RGB Input Unit MODEL GT15V-75V4 Video Input Unit MODEL GT15V-75R1 RGB Input Unit User's Manual (Section 2.4.1 Spécifications des câbles (câbles coaxiaux) utilisés lors de l'affichage d'images vidéo).
*3 : Cette valeur diffère selon le câble utilisé.
Si le rayon de courbure du câble utilisé est supérieur à la valeur spécifiée ci-dessus, appliquez la valeur du câble utilisé.



6. MAINTENANCE AND INSPECTION

Refer to the GT15 User's Manual for maintenance and inspection for the GOT.

4.2.5 External wiring

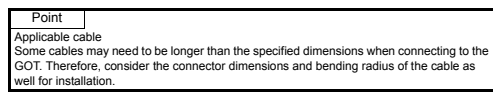
- (1) External devices
When a device with a hazardous voltage circuit is externally connected to the GOT, select a model which complies with the Low Voltage Directive's requirements for isolation between the primary and secondary circuits.
- (2) Insulation requirements
Dielectric withstand voltages are shown in the following table.
Reinforced Insulation Withstand Voltage
(Installation Category II, source : IEC664)

Rated voltage of hazardous voltage area	Surge withstand voltage (1.2/50μs)
150 VAC or below	2500V
300 VAC or below	4000V

5. INSTALLATION

5.1 Control Panel Inside Dimensions for Mounting GOT

Install the GOT on the control panel out of the way for the equipment inside the control panel. Do not install the GOT and the unit in prohibited areas for the installation.



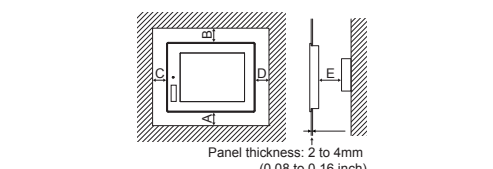
5.2 Panel Cutting Dimensions

Make an installation hole on the control panel with the dimensions shown below.
Make space of 10mm above and below the hole respectively for the installation fittings.

GOT	A [mm] (inch)	B [mm] (inch)
GT1595	383.5 (15.10) +2 (0.08) 0 (0)	282.5 (11.12) +2 (0.08) 0 (0)
GT1585	302 (11.89) +2 (0.08) 0 (0)	228 (8.98) +2 (0.08) 0 (0)
GT157□	289 (11.38) +2 (0.08) 0 (0)	200 (7.87) +2 (0.08) 0 (0)
GT156□	227 (8.94) +2 (0.08) 0 (0)	176 (6.93) +2 (0.08) 0 (0)
GT155□	153(6.02) +2 (0.08) 0 (0)	121(4.76) +2 (0.08) 0 (0)

5.3 Mounting Position

When mounting the GOT, the following clearances must be maintained from other structures and devices.
Depending on the units and cables connected to the GOT, clearances more than the described dimensions can be required.
Therefore, consider the connector dimensions and bending radius of the cable as well for installation.
For the lead-in allowance for cables at the bottom of the GOT, refer to the GT15 User's Manual.



According to the dimensions in the following table, leave clearances between the GOT and the other devices. The values enclosed in square brackets apply to the case where no other equipment generating radiated noise (such as a contactor) or heat is installed near the GOT. However, keep the ambient temperature of the GOT to 55°C or lower.

Warranty

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage 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

- 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.
- 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.

Country/Region	Sales office/Tel
U.S.A	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061, U.S.A. Tel : +1-847-478-2100
Brazil	MELCO-TEC Rep. Com.e Assessoria Tecnica Ltda. Rua Cordeiro Dias, 184, Edifício Paraiso Trade Center-8 andar Paraiso, Sao Paulo, SP Brazil Tel : +55-11-5908-8331
Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8 D-40880 Ratingen, GERMANY Tel : 49-2102-486-0
U.K	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, U.K. Tel : +44-1707-278100
Italy	Mitsubishi Electric Europe B.V. Italian Branch Control Dir. Colleoni, Pal. Perseo-Ing.r.2 Via Paracelso 12, I-20041 Agrate Brianza., Milano, Italy Tel : +39-039-60531
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France	Mitsubishi Electric Europe B.V. French Branch 25, Boulevard des Bouvets, F-92741 Nanterre Cedex, France Tel : +33-1-5568-5568
South Africa	Circuit Breaker Industries Ltd. Private Bag 2016, ZA-1600 Isando, South Africa Tel : +27-11-928-2000
Hong Kong	Mitsubishi Electric Automation (Hong Kong) Ltd. 10th Floor, Manulife Tower, 169 Electric Road, North Point, Hong Kong Tel : +852-2887-8870
China	Mitsubishi Electric Automation (China) Ltd. 4/F Zhi Fu Plaza, No.80 Xin Chang Road, Shanghai 200003, China Tel : +86-21-6120-0808
Taiwan	Settsuyo Enterprises Co., Ltd. 6F No.105 Wu-Kung 3rd.Rd, Wu-Ku Hsiang, Taipei Hsine, Taiwan Tel : +886-2-2299-2499
Korea	Mitsubishi Electric Automation Korea Co., Ltd. 1480-6, Gayang-dong, Gangseo-ku Seoul 157-200, Korea Tel : +82-2-3660-9552
Singapore	Mitsubishi Electric Asia Pte. Ltd. 307 Alexandra Road #05-01/02, Mitsubishi Electric Building, Singapore 159943 Tel : +65-6470-2460
Thailand	Mitsubishi Electric Automation (Thailand) Co., Ltd. Bang-Chan Industrial Estate No.111 Moo 4, Serinthi Rd, T.Kannayao, A.Kannayao, Bangkok 10230 Thailand Tel : +66-2-517-1328
Indonesia	P. T. Autoteknik Sumber Makmur Muara Karang Selatan, Block A/Utaru No.1 Kav. No.11 Kawasan Industri Pergudangan Jakarta - Utara 14440, P.O.Box 5045 Jakarta, 11050 Indonesia Tel : +62-21-6630833
India	Messung Systems Pvt. Ltd., Electronic Sadan NO.III Unit No15, M.I.D.C Bhosari, Pune-411026, India Tel : +91-20-2712-3130
Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road, Rydalmere, N.S.W.2116, Australia Tel : +61-2-9684-7777

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HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU