

mitsubishi

GT15

General Description

GT1595-XTBA GT1575-VNBA
GT1585-STBD GT1575-VNBD
GT1575-STBD GT1572-VNBA
GT1575-VTBD GT1572-VNBD
GT1565-VTBD GT1562-VNBA
GT1562-VNBD

Thank you for purchasing the GOT1000 Series.

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

MODEL	GT15-U-HW-Z
MODEL CODE	1D7M41
IB(NA)-0800326-C(0509)MEE	

GRAPHIC OPERATION TERMINAL

GOT1000

● 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 "DANGER" and "CAUTION".




DANGER

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]

DANGER

- 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.
- 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 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.

[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 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]

DANGER

- 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, 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 multi-color display board, wear an earth band etc. to avoid the static electricity.
Not doing so can cause a unit corruption.

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.
Overtightening 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.

[MOUNTING PRECAUTIONS]

CAUTION

- When loading the communication unit to the GOT, fit it to the connection interface of the GOT and tighten the mounting screws in the specified torque range.
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.
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.
Failure to do so may cause a malfunction due to poor contact.
- 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.
- 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.

[WIRING PRECAUTIONS]

DANGER

- 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

- Please make sure to ground FG terminal and LG 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.
- 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. 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.
- 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.

[TEST OPERATION PRECAUTIONS]

DANGER

- 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]

DANGER

- When power is on, do not touch the terminals.
Doing so can cause an electric shock or malfunction.
- Connect the battery correctly.
Do not discharge, disassemble, heat, short, solder or throw the battery into the fire.
Incorrect handling may cause the battery to generate heat, burst or take fire, resulting in injuries or fires.
- 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 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.

[STARTUP/MAINTENANCE PRECAUTIONS]

CAUTION

- 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.

[BACKLIGHT CHANGING PRECAUTIONS]

DANGER

- 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.

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.

[TRANSPORTATION PRECAUTIONS]

CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.
(Refer to GT15 User's Manual 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 GT15 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 noted at the lower right of the top cover.

Print Date	*Manual Number	Revision
Jul., 2005	IB(NA)-0800326-A	First edition
Jul., 2005	IB(NA)-0800326-B	Partial addition SAFETY PRECATIONS
Sep., 2005	IB(NA)-0800326-C	Partial additions Chapter 1, Section 2.3, 2.4, 3.2, 3.2.1, 3.2.2, 3.2.3, 3.2.5, 3.3.1, 3.3.2, 3.4, 4.2, 4.3, 6.3.3 Additions Section 3.2.4, 3.2.6

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Manuals

The following shows manuals relevant to this product.

Detailed Manual

Manual name	Manual Number (Type code)
GT15 User's Manual (Option)	SH-080528ENG (1D7M23)

Relevant Manual

For relevant manuals, refer to the PDF manual stored within the drawing software used.

Product Components

The GOT product package includes the following:

Model name	Item name	Quantity
GT1595-X	GOT	1
	Installation fitting	8
GT1585-S, GT1575-S, GT1575-V, GT1575-VN, GT1572-VN, GT1565-V, GT1562-VN	GOT	1
	Installation fitting	4

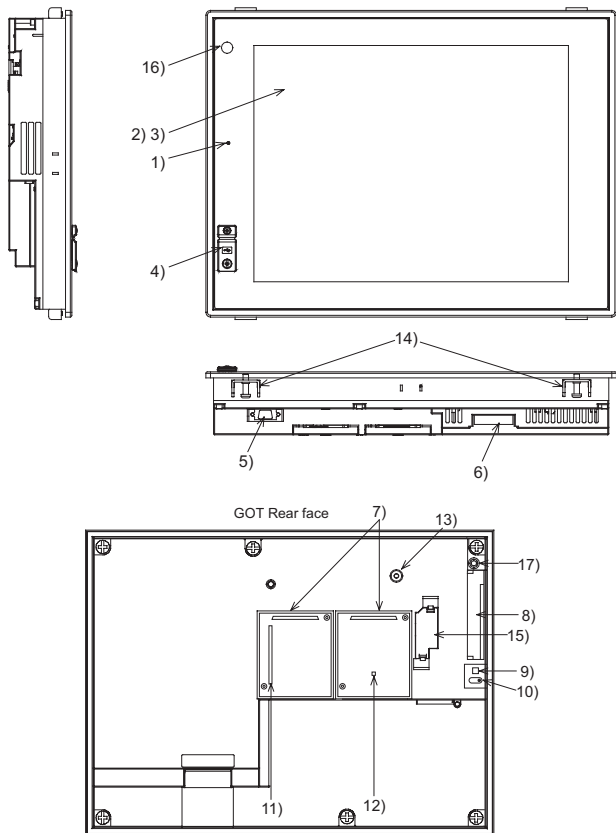
1. Features

- (1) 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.)*¹
 - 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.
- (2) 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 list, alarm history, alarm popup display) realizes more efficient alarm notification.
 - Maintenance report function is available that measures the back-light energization time and notifies of maintenance time.
- (3) Enhanced support of FA device setup tools
 - Transferring or monitoring the sequence programs using the personal computer connected to GOT, during direct connection to Q, QnA, A or FX series PLC CPU, or computer link connection to A, QnA or Q series (FA Transparent function).
 - 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.

*1 For GT1595-X, GT1585-S, GT1575-S, GT1575-V, GT1565-V

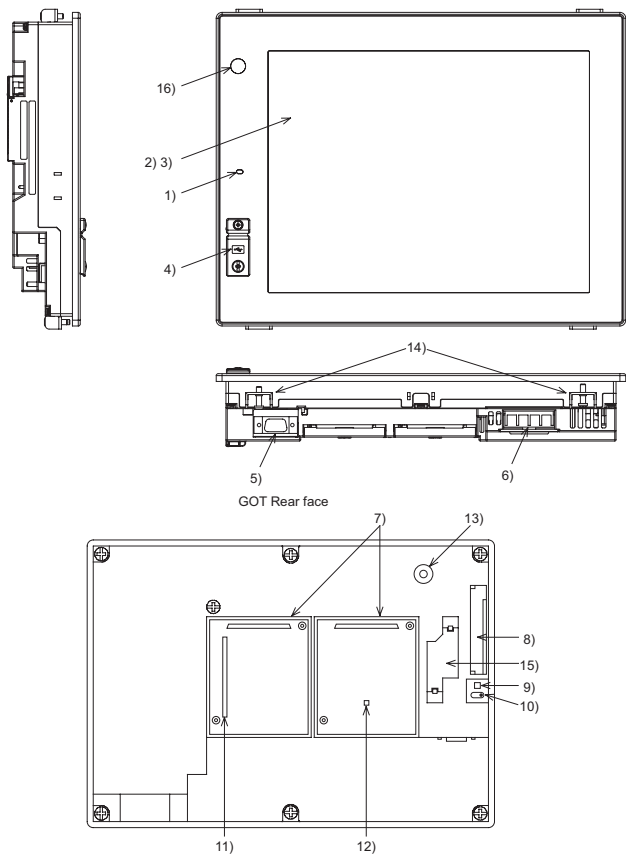
2. Part Names

2.1 Part Names and Settings of the GT1595



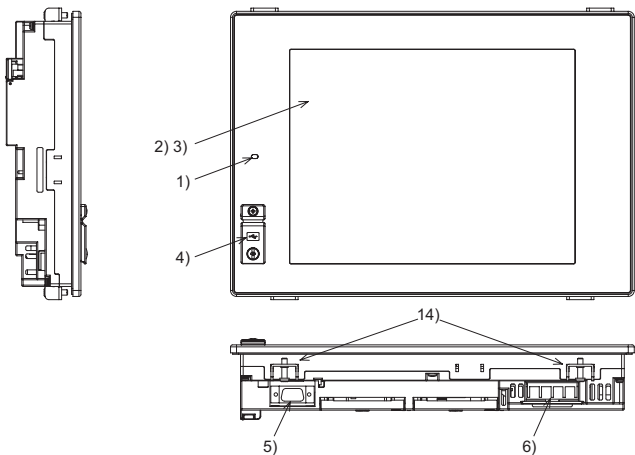
No.	Name	Description
1)	POWER LED	Lit in green: Power is correctly supplied Lit in orange: Screen saving Blinks in orange/green: Blown back light bulb Not lit: Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen.
3)	Touch key	For operating touch switches in the Utility 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, FG terminal
7)	Extension module interface	For installing a communication module
8)	CF card interface	For installing a CF card
9)	CF card access LED	Lit: CF card accessed Not lit: CF card not accessed
10)	CF card access switch	Used for 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 interface	For installing the optional function board
12)	Multi-color display board interface	For installing the multi-color display board
13)	Reset switch	Hardware reset switch (Inoperative for bus connection)
14)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
15)	Battery holder	Houses the battery.
16)	Human sensor	Sensor that detects human movement.
17)	Installation switch	Used for OS installations at the GOT startup

2.2 Part Names and Settings of the GT1585

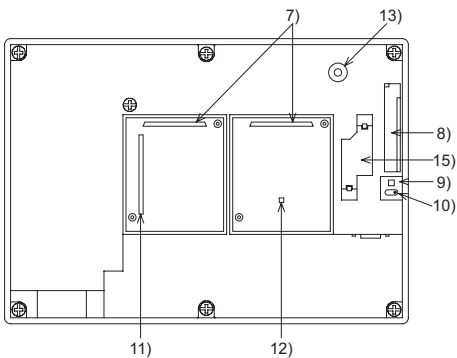


No.	Name	Description
1)	POWER LED	Lit in green: Power is correctly supplied Lit in orange: Screen saving Blinks in orange/green: Blown back light bulb Not lit: Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen.
3)	Touch key	For operating touch switches in the Utility 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, FG terminal
7)	Extension module interface	For installing a communication module
8)	CF card interface	For installing a CF card
9)	CF card access LED	Lit: CF card accessed Not lit: CF card not accessed
10)	CF card access switch	Used for 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 interface	For installing the optional function board
12)	Multi-color display board interface	For installing the multi-color display board
13)	Reset switch	Hardware reset switch (Inoperative for bus connection)
14)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
15)	Battery holder	Houses the battery.
16)	Human sensor	Sensor that detects human movement.

2.3 Part Names and Settings of the GT157

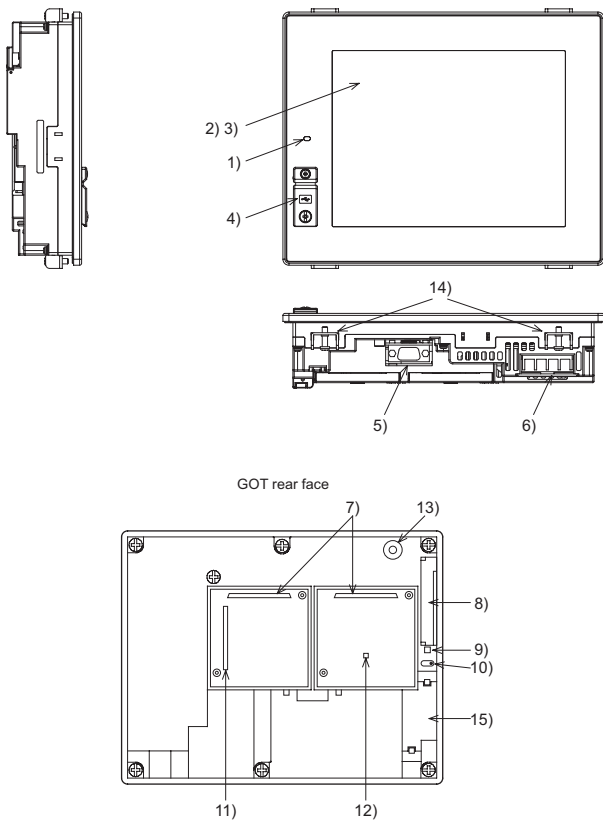


GOT rear face



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, FG terminal
7)	Extension module interface	For installing a communication module
8)	CF card interface	For installing a CF card
9)	CF card access LED	Lit: CF card accessed Not lit: CF card not accessed
10)	CF card access switch	Used for 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 interface	For installing the optional function board
12)	Multi-color display board interface	For installing the multi-color display board (For GT1575-VN, and GT1572-VN, 65536 color display is not supported even with the multi-color display board installed.)
13)	Reset switch	Hardware reset switch (Inoperative for bus connection)
14)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
15)	Battery holder	Houses the battery.

2.4 Part Names and Settings of the GT156□



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, FG terminal
7)	Extension module interface	For installing a communication module
8)	CF card interface	For installing a CF card
9)	CF card access LED	Lit: CF card accessed Not lit: CF card not accessed
10)	CF card access switch	Used for 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 interface	For installing the optional function board
12)	Multi-color display board interface	For installing the multi-color display board (For GT1562-VN, 65536 color display is not supported even with the multi-color display board installed.)
13)	Reset switch	Hardware reset switch (Inoperative for bus connection)
14)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
15)	Battery holder	Houses the battery.

3. Specifications

3.1 General Specifications

Item		Specifications					
Operating ambient temperature	Display section	0 to 50°C					
	Other than display section	0 to 55°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*1		Conforms to JIS B3502 and IEC61131-2		Frequency	Acceleration	Half-amplitude	Sweep Count
			Under intermittent vibration	5 to 9Hz	-	3.5mm	10 times each in X, Y and Z directions
				9 to 150Hz	9.8m/s ²	-	
			Under continuous vibration	5 to 9Hz	-	1.75mm	
9 to 150Hz	4.9m/s ²	-					
Shock resistance		Conforms to JIS B3502, IEC 61131-2 (147 m/s ² , 3 times each in X, Y and Z directions)					
Operating atmosphere		No corrosive gas					
Operating altitude*2		2000 m (6562 ft) max.					
Installation location		Inside control panel					
Overvoltage category*3		II or less					
Pollution degree*4		2 or less					
Cooling method		Self-cooling					

- *1 When using the MELSECNET/10 communication unit (GT15-75J71LP23-Z, GT15-75J71BR13-Z) or CC-Link communication unit (GT15-75J61BT13-Z), refer to the manual of the communication unit you use. (Differs with the specification of GOT.)
- *2 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.
- *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 rated voltage of 300 V is 2500 V.
- *4 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.

3.2 Performance Specifications

The performance specifications of the GT15 is as follows.



- 3.2.1 GT1595-X
- 3.2.2 GT1585-S
- 3.2.3 GT1575-S, GT1575-V
- 3.2.4 GT1575-VN, GT1572-VN
- 3.2.5 GT1565-V
- 3.2.6 GT1562-VN

3.2.1 GT1595-X

Item		Specifications
		GT1595-XTBA
Display section*1	Type	TFT color liquid crystal (LCD of high indensity and wide angle view)
	Screen size	15"
	Resolution	1,024 × 768 dots
	Display size	304.1(12.0)(W) × 228.1(8.98)(H) [mm](inch)
	Display character	16-dot standard font: 64 characters × 48 lines 12-dot standard font: 85 characters × 64 lines
	Display color	256color/65536color*2
	Display angle	Left/Right : 75 degrees Top : 50 degrees Bottom : 60 degrees
	Intensity of LCD only	450 [cd/m ²]
	Intensity adjustment	8-level adjustment
	Life	Approx. 52,000 h (Operating ambient temperature : 25°C)
Backlight		Cold cathode fluorescent tube (replaceable) backlight shutoff detection function is included. Backlight off/screen saving time can be set.
	Life ³	Approx. 50,000 h or longer (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)
Touch panel	Number of touch keys	3,072 objects/screen (64 lines × 48 columns)
	Key size	Minimum 16 × 16 dots (per key)
	Number of objects that can be simultaneously touched	Simultaneous presses not allowed (Only 1 point can be touched)
	Life	1 million times or more (operating force 0.98N max.)

Item		Specifications
		GT1595-XTBA
Human Sensor	Detection length	1(39.37) [m](inch)
	Detection range	Left/Right/Top/Bottom: 70 degrees
	Detection delay time	0 to 4s
Memory*4	C drive	Built-in flash memory 9Mbytes (for storing project data and OS)
	Life (Number of write times)	100,000 times
Battery		GT15-BAT lithium battery (Option)
	Backup target	Clock data and maintenance time notification data
	Life	Approx. 5 years (Operatomh ambient temperature of 25°C)
Built-in interface	RS-232	RS-232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600 /4,800 bps Connector shape : D-sub 9-pin (Male) Application : For communicating with a controller or connecting a personal computer (Project data upload/download, OS installation, transparent function)
	USB	USB (Full Speed 12Mbps), 1ch Connector shape : Mini-B Application : PC communication (screen data upload/download, OS installation and FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape : TYPE I Application : Data transfer, data storage
	Option function board	For option function board mounting, 1ch
	Multi-color display board	For multi-color display board mounting, 1ch
	Communication unit/Option unit	For communication unit/option unit mounting, 2ch
	Buzzer output	Single tone (tone length adjustable)
Protective structure	Inside the enclosure: IP67 *5 Outside the enclosure: IP2X	
External dimensions (Excluding USB environmental protection cover)	397(15.6)(W) × 296(11.7)(H) × 61(2.40)(D) [mm](inch)	
Panel cutting dimensions	383.5(15.1)(W) × 282.5(11.1)(H) [mm](inch)	
Weight	4.9 kg (mounting fixtures are not included)	
Compatible software package (GT Designer2 Version)	2.04E 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. Please note that these dots appear due to its characteristic and are not caused by product defect.
- *2 Full-color display (66536 colors) is available when the multi-color display board is mounted.
- *3 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- *4 ROM in which new data can be written without deleting the written data.
- *5 Compliant with IP67 when the USB environmental protection cover is attached. Compliant with IP2X at the USB interface only when a USB cable is connected. Note that this does not guarantee all users' operation environment.

3.2.2 GT1585-S

Item		Specifications
		GT1585-STBD
Display section*1	Type	TFT color liquid crystal (LCD of high intensity and wide angle view)
	Screen size	12.1"
	Resolution	800 × 600 dots
	Display size	246(9.69)(W) × 184.5(7.26)(H) [mm](inch)
	Display character	16-dot standard font: 50 characters × 37 lines 12-dot standard font: 66 characters × 50 lines
	Display color	256color/65536color*2
	Display angle	Left/Right : 60 degrees Top : 40 degrees Bottom : 50 degrees
	Intensity of LCD only	350 [cd/m ²]
	Intensity adjustment	8-level adjustment
	Life	Approx. 50,000 h (Operating ambient temperature : 25°C)
Backlight		Cold cathode fluorescent tube (replaceable) backlight shutoff detection function is included. Backlight off/screen saving time can be set.
	Life*3	Approx. 50,000 h or longer (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)
Touch panel	Number of touch keys	1,900 objects/screen (Matrix structure of 38 lines × 50 columns)
	Key size	Minimum 16 × 16 dots (per key)
	Number of objects that can be simultaneously touched	Maximum of 2 objects
	Life	1 million times or more (operating force 0.98N max.)
Human Sensor	Detection length	1(39.37) [m](inch)
	Detection range	Left/Right/Top/Bottom: 70 degrees
	Detection delay time	0 to 4s
Memory*4	C drive	Built-in flash memory 9Mbytes (for storing project data and OS)
	Life (Number of write times)	100,000 times
Battery		GT15-BAT lithium battery (Option)
	Backup target	Clock data and maintenance time notification data
	Life	Approx. 5 years (Operatomh ambient temperature of 25°C)

Item		Specifications
		GT1585-STBD
Built-in interface	RS-232	RS-232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600 /4,800 bps Connector shape : D-sub 9-pin (Male) Application : For communicating with a controller or connecting a personal computer (Project data upload/download, OS installation, transparent function)
	USB	USB (Full Speed 12Mbps), 1ch Connector shape : Mini-B Application : PC communication (screen data upload/download, OS installation and FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape : TYPE I Application : Data transfer, data storage
	Option function board	For option function board mounting, 1ch
	Multi-color display board	For multi-color display board mounting, 1ch
	Communication unit/Option unit	For communication unit/option unit mounting, 2ch
Buzzer output		Single tone (tone length adjustable)
Protective structure		Inside the enclosure: IP67 *5 Outside the enclosure: IP2X
External dimensions (Excluding USB environmental protection cover)		316(12.44)(W) × 242(9.53)(H) × 52(2.05)(D) [mm](inch)
Panel cutting dimensions		302(11.89)(W) × 228(8.98)(H)[mm](inch)
Weight		2.8 kg (mounting fixtures are not included)
Compatible software package (GT Designer2 Version)		2.15R 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. Please note that these dots appear due to its characteristic and are not caused by product defect.

*2 Full-color display (66536 colors) is available when the multi-color display board is mounted.

*3 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.

*4 ROM in which new data can be written without deleting the written data.

*5 Compliant with IP67 when the USB environmental protection cover is attached. Compliant with IP2X at the USB interface only when a USB cable is connected. Note that this does not guarantee all users' operation environment.

3.2.3 GT1575-S, GT1575-V

Item		Specifications	
		GT1575-STBD	GT1575-VTBD
Display section*1	Type	TFT color liquid crystal (LCD of high intensity and wide angle view)	
	Screen size	10.4"	
	Resolution	800 × 600 dots	640 × 480 dots
	Display size	211(8.31)(W) × 158(6.22)(H) [mm](inch)	
	Display character	16-dot standard font: 50 characters × 37 lines 12-dot standard font: 66 characters × 50 lines	16-dot standard font: 40 characters × 30 lines 12-dot standard font: 53 characters × 40 lines
	Display color	256color/65536color*2	
	Display angle	Left/Right : 50 degrees Top : 35 degrees Bottom : 45 degrees	Left/Right/Top/Bottom: 85 degrees
	Intensity of LCD only	280 [cd/m ²]	380 [cd/m ²]
	Intensity adjustment	8-level adjustment	
	Life	Approx. 50,000 h (Operating ambient temperature : 25°C)	Approx. 41,000 h (Operating ambient temperature : 25°C)
Backlight	Cold cathode fluorescent tube (replaceable) backlight shutoff detection function is included. Backlight off/screen saving time can be set.		
	Life*3	Approx. 40,000 h or longer (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	
Touch panel	Number of touch keys	1,900 objects/screen (Matrix structure of 38 lines × 50 columns)	1,200 objects/screen (Matrix structure of 30 lines × 40 columns)
	Key size	Minimum 16 × 16 dots (per key)	
	Number of objects that can be simultaneously touched	Maximum of 2 objects	
	Life	1 million times or more (operating force 0.98N max.)	
Human Sensor	Detection length	None	
	Detection range	None	
	Detection delay time	None	
Memory*4	C drive	Built-in flash memory 9Mbytes (for storing project data and OS)	
	Life (Number of write times)	100,000 times	

Item	Specifications	
	GT1575-STBD	GT1575-VTBD
Battery	GT15-BAT lithium battery (Option)	
	Backup target	Clock data and maintenance time notification data
	Life	Approx. 5 years (Operatomh ambient temperature of 25°C)
Built-in interface	RS-232	RS-232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600 /4,800 bps Connector shape : D-sub 9-pin (Male) Application : For communicating with a controller or connecting a personal computer (Project data upload/download, OS installation, transparent function)
	USB	USB (Full Speed 12Mbps), 1ch Connector shape : Mini-B Application : PC communication (screen data upload/download, OS installation and FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape : TYPE I Application : Data transfer, data storage
	Option function board	For option function board mounting, 1ch
	Multi-color display board	For multi-color display board mounting, 1ch
	Communication unit/Option unit	For communication unit/option unit mounting, 2ch
Buzzer output	Single tone (tone length adjustable)	
Protective structure	Inside the enclosure: IP67 *5 Outside the enclosure: IP2X	
External dimensions (Excluding USB environmental protection cover)	303(11.93)(W) × 214(8.43)(H) × 49(1.93)(D) [mm](inch)	
Panel cutting dimensions	289(11.38)(W) × 200(7.87)(H) [mm](inch)	
Weight	2.4 kg (mounting fixtures are not included)	2.3 kg (mounting fixtures are not included)
Compatible software package (GT Designer2 Version)	2.15R 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. Please note that these dots appear due to its characteristic and are not caused by product defect.
- *2 Full-color display (66536 colors) is available when the multi-color display board is mounted.
- *3 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- *4 ROM in which new data can be written without deleting the written data.
- *5 Compliant with IP67 when the USB environmental protection cover is attached. Compliant with IP2X at the USB interface only when a USB cable is connected. Note that this does not guarantee all users' operation environment.

3.2.4 GT1575-VN, GT1572-VN

Item		Specifications	
		GT1575-VNBA, GT1575-VNBD	GT1572-VNBA, GT1572-VNBD
Display section*1	Type	TFT color liquid crystal	
	Screen size	10.4"	
	Resolution	640 × 480 dots	
	Display size	211(8.31)(W) × 158(6.22)(H) [mm](inch)	
	Display character	16-dot standard font: 40 characters × 30 lines 12-dot standard font: 53 characters × 40 lines	
	Display color	256 color	16 color
	Display angle	Left/Right : 45 degrees Top : 30 degrees Bottom : 20 degrees	
	Intensity of LCD only	200 [cd/m ²]	
	Intensity adjustment	4-level adjustment	
	Life	Approx. 41,000 h (Operating ambient temperature : 25°C)	
Backlight		Cold cathode fluorescent tube (replaceable) backlight shutoff detection function is included. Backlight off/screen saving time can be set.	
	Life*2	Approx. 40,000 h or longer (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	
Touch panel	Number of touch keys	1,200 objects/screen (Matrix structure of 30 lines × 40 columns)	
	Key size	Minimum 16 × 16 dots (per key)	
	Number of objects that can be simultaneously touched	Maximum of 2 objects	
	Life	1 million times or more (operating force 0.98N max.)	
Human Sensor	Detection length	None	
	Detection range	None	
	Detection delay time	None	
Memory*3	C drive	Built-in flash memory 5Mbytes (for storing project data and OS)	
	Life (Number of write times)	100,000 times	

Item	Specifications	
	GT1575-VNBA, GT1575-VNBD	GT1572-VNBA, GT1572-VNBD
Battery	GT15-BAT lithium battery (Option)	
Backup target	Clock data and maintenance time notification data	
Life	Approx. 5 years (Operatomh ambient temperature of 25°C)	
Built-in interface	RS-232	RS-232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600 /4,800 bps Connector shape : D-sub 9-pin (Male) Application : For communicating with a controller or connecting a personal computer (Project data upload/download, OS installation, transparent function)
	USB	USB (Full Speed 12Mbps), 1ch Connector shape : Mini-B Application : PC communication (screen data upload/download, OS installation and FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape : TYPE I Application : Data transfer, data storage
	Option function board	For option function board mounting, 1ch
	Multi-color display board	Cannot be used. (Even installed, 65536 colors will not be displayed.)
	Communication unit/Option unit	For communication unit/option unit mounting, 2ch
Buzzer output	Single tone (tone length adjustable)	
Protective structure	Inside the enclosure: IP67 ^{*4} Outside the enclosure: IP2X	
External dimensions (Excluding USB environmental protection cover)	303(11.93)(W) × 214(8.43)(H) × 49(1.93)(D) [mm](inch)	
Panel cutting dimensions	289(11.38)(W) × 200(7.87)(H) [mm](inch)	
Weight	2.4 kg (mounting fixtures are not included)	2.3 kg (mounting fixtures are not included)
Compatible software package (GT Designer2 Version)	2.17T 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. Please note that these dots appear due to its characteristic and are not caused by product defect.
- *2 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- *3 ROM in which new data can be written without deleting the written data.
- *4 Compliant with IP67 when the USB environmental protection cover is attached. Compliant with IP2X at the USB interface only when a USB cable is connected. Note that this does not guarantee all users' operation environment.

3.2.5 GT1565-V

Item		Specifications
		GT1565-VTBD
Display section*1	Type	TFT color liquid crystal (LCD of high intensity and wide angle view)
	Screen size	8.4"
	Resolution	640 × 480 dots
	Display size	171(6.73)(W) × 128(5.04)(H) [mm](inch)
	Display character	16-dot standard font: 40 characters × 30 lines 12-dot standard font: 53 characters × 40 lines
	Display color	256color/65536color*2
	Display angle	Left/Right : 65 degrees Top : 50 degrees Bottom : 60 degrees
	Intensity of LCD only	380 [cd/m ²]
	Intensity adjustment	8-level adjustment
	Life	Approx. 41,000 h (Operating ambient temperature : 25°C)
Backlight		Cold cathode fluorescent tube (replaceable) backlight shutoff detection function is included. Backlight off/screen saving time can be set.
	Life*3	Approx. 40,000 h or longer (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)
Touch panel	Number of touch keys	1,200 objects/screen (Matrix structure of 30 lines x 40 columns)
	Key size	Minimum 16 × 16 dots (per key)
	Number of objects that can be simultaneously touched	Maximum of 2 objects
	Life	1 million times or more (operating force 0.98N max.)
Human Sensor	Detection length	None
	Detection range	None
	Detection delay time	None
Memory*4	C drive	Built-in flash memory 9Mbytes (for storing project data and OS)
	Life (Number of write times)	100,000 times
Battery		GT15-BAT lithium battery (Option)
	Backup target	Clock data and maintenance time notification data
	Life	Approx. 5 years (Operatomh ambient temperature of 25°C)

Item		Specifications
		GT1565-VTBD
Built-in interface	RS-232	RS-232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600 /4,800 bps Connector shape : D-sub 9-pin (Male) Application : For communicating with a controller or connecting a personal computer (Project data upload/download, OS installation, transparent function)
	USB	USB (Full Speed 12Mbps), 1ch Connector shape : Mini-B Application : PC communication (screen data upload/download, OS installation and FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape : TYPE I Application : Data transfer, data storage
	Option function board	For option function board mounting, 1ch
	Multi-color display board	For multi-color display board mounting, 1ch
	Communication unit/Option unit	For communication unit/option unit mounting, 2ch
Buzzer output		Single tone (tone length adjustable)
Protective structure		Inside the enclosure: IP67 *5 Outside the enclosure: IP2X
External dimensions (Excluding USB environmental protection cover)		241(9.49)(W) × 190(7.48)(H) × 52(2.05)(D) [mm](inch)
Panel cutting dimensions		227(8.94)(W) × 176(6.93)(H) [mm](inch)
Weight		1.9 kg (mounting fixtures are not included)
Compatible software package (GT Designer2 Version)		2.15R 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. Please note that these dots appear due to its characteristic and are not caused by product defect.

*2 Full-color display (66536 colors) is available when the multi-color display board is mounted.

*3 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.

*4 ROM in which new data can be written without deleting the written data.

*5 Compliant with IP67 when the USB environmental protection cover is attached. Compliant with IP2X at the USB interface only when a USB cable is connected. Note that this does not guarantee all users' operation environment.

3.2.6 GT1562-VN

Item		Specifications
		GT1562-VNBA, GT1562-VNBD
Display section*1	Type	TFT color liquid crystal
	Screen size	8.4"
	Resolution	640 × 480 dots
	Display size	171(6.73)(W) × 128(5.04)(H) [mm](inch)
	Display character	16-dot standard font: 40 characters × 30 lines 12-dot standard font: 53 characters × 40 lines
	Display color	16 color
	Display angle	Left/Right : 45 degrees Top : 20 degrees Bottom : 20 degrees
	Intensity of LCD only	150 [cd/m ²]
	Intensity adjustment	4-level adjustment
	Life	Approx. 41,000 h (Operating ambient temperature : 25°C)
Backlight		Cold cathode fluorescent tube (replaceable) backlight shutoff detection function is included. Backlight off/screen saving time can be set.
	Life*2	Approx. 40,000 h or longer (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)
Touch panel	Number of touch keys	1,200 objects/screen (Matrix structure of 30 lines x 40 columns)
	Key size	Minimum 16 × 16 dots (per key)
	Number of objects that can be simultaneously touched	Maximum of 2 objects
	Life	1 million times or more (operating force 0.98N max.)
Human Sensor	Detection length	None
	Detection range	None
	Detection delay time	None
Memory*3	C drive	Built-in flash memory 5Mbytes (for storing project data and OS)
	Life (Number of write times)	100,000 times
Battery		GT15-BAT lithium battery (Option)
	Backup target	Clock data and maintenance time notification data
	Life	Approx. 5 years (Operatomh ambient temperature of 25°C)

Item		Specifications
		GT1562-VNBA, GT1562-VNBD
Built-in interface	RS-232	RS-232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600 /4,800 bps Connector shape : D-sub 9-pin (Male) Application : For communicating with a controller or connecting a personal computer (Project data upload/download, OS installation, transparent function)
	USB	USB (Full Speed 12Mbps), 1ch Connector shape : Mini-B Application : PC communication (screen data upload/download, OS installation and FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape : TYPE I Application : Data transfer, data storage
	Option function board	For option function board mounting, 1ch
	Multi-color display board	Cannot be used. (Even installed, 65536 colors will not be displayed.)
	Communication unit/Option unit	For communication unit/option unit mounting, 2ch
Buzzer output		Single tone (tone length adjustable)
Protective structure		Inside the enclosure: IP67 *4 Outside the enclosure: IP2X
External dimensions (Excluding USB environmental protection cover)		241(9.49)(W) × 190(7.48)(H) × 52(2.05)(D) [mm](inch)
Panel cutting dimensions		227(8.94)(W) × 176(6.93)(H) [mm](inch)
Weight		1.9 kg (mounting fixtures are not included)
Compatible software package (GT Designer2 Version)		2.17T 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. Please note that these dots appear due to its characteristic and are not caused by product defect.
- *2 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- *3 ROM in which new data can be written without deleting the written data.
- *4 Compliant with IP67 when the USB environmental protection cover is attached. Compliant with IP2X at the USB interface only when a USB cable is connected. Note that this does not guarantee all users' operation environment.

3.3 Power Supply Specifications

The following describes the power supply specifications for the GT15.



- 3.3.1 For GOTs powered from the 100 to 240VAC power supply
- 3.3.2 For GOTs powered from the 24VDC power supply

Remarks

Operation at momentary power 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.

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

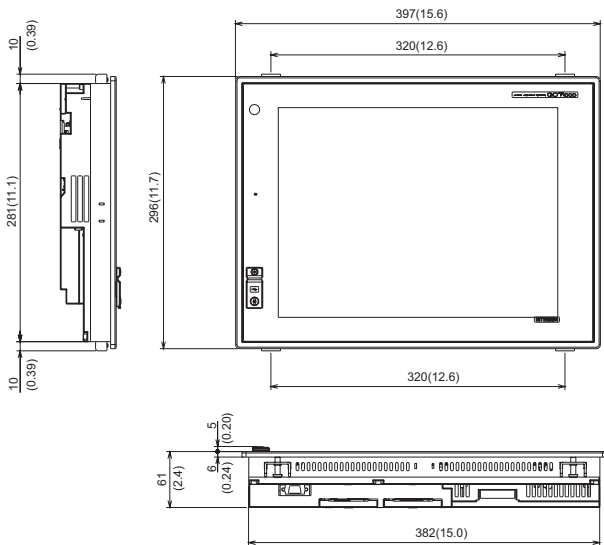
Item	Specifications	
	GT1595-XTBA	GT1575-VNBA, GT1572-VNBA, GT1562-VNBA,
Input power supply voltage	AC100 to 240V(+10%, -15%)	
Input frequency	50/60Hz ± 5%	
Input max. apparent power	110VA (maximum load)	
Power consumption	51W or less	26W or less
	At backlight off 28W or less	
Inrush current	50A or less (4ms) (maximum load)	40A or less (4ms) (maximum load)
Permissible instantaneous power failure time	20ms or less (100VAC or more)	
Noise immunity	By noise simulator of 1,500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	
Dielectric withstand voltage	1500VAC for 1 minute across AC external terminals and earth	
Insulation resistance	10MΩ or larger by 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]	

3.3.2 For GOTs powered from the 24VDC power supply

Item	Specifications	
	GT1585-STBD	GT1575-STBD, GT1575-VTBD, GT1575-VNBD, GT1572-VNBD, GT1565-VTBD, GT1562-VNBD
Input power supply voltage	DC19.2 to 30.0V (+25%, -20%)	
Power consumption	31W or less	26W or less
At backlight off	20W or less	
Inrush current	115A or less (1ms) (maximum load)	
Permissible instantaneous power failure time	10ms or less (19.2VDC or more)	
Noise immunity	By noise simulator of 500Vp-p noise voltage, 1 μ s noise width and 25 to 60Hz noise frequency	
Dielectric withstand voltage	500VAC for 1 minute across DC external terminals and earth	
Insulation resistance	10M Ω or larger by 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]	

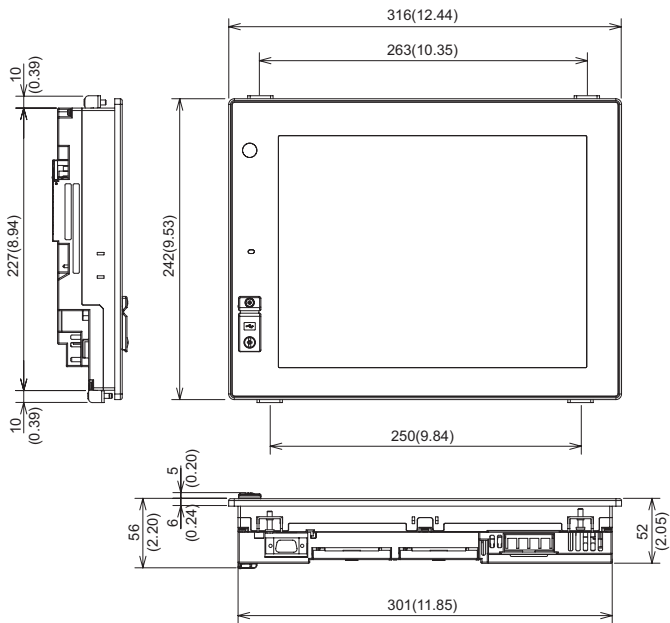
3.4 External Dimensions

(1) GT1595



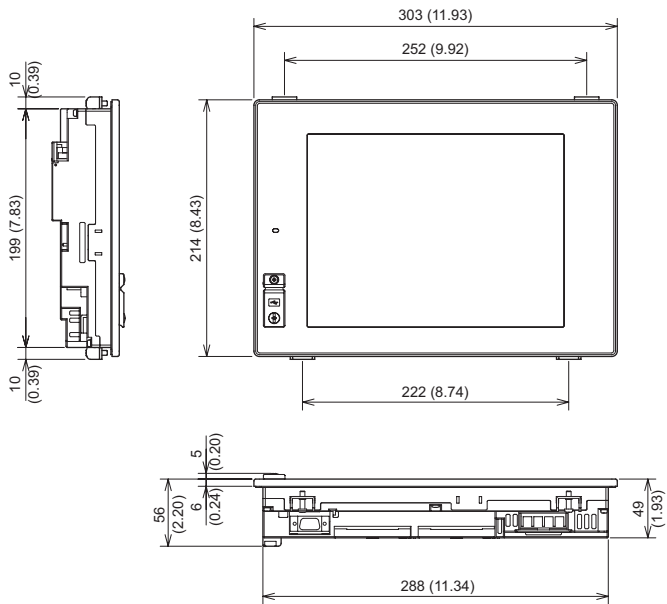
Unit:mm(inch)

(2) GT1585



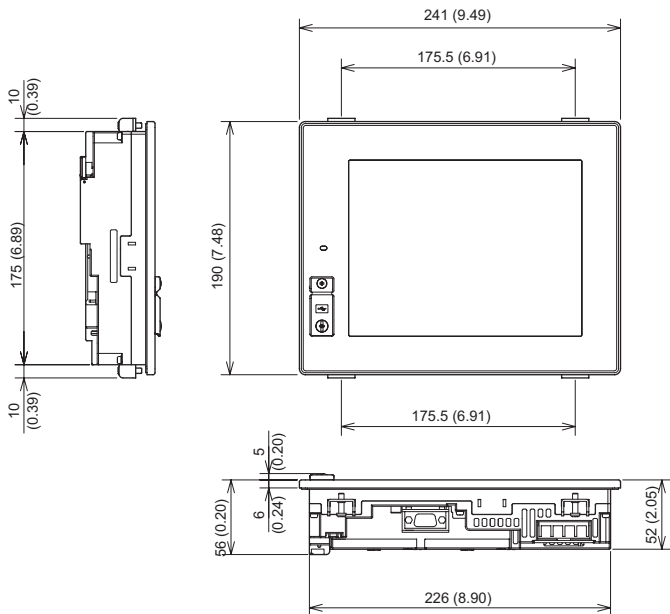
Unit: mm (inch)

(3) GT157□



Unit: mm (inch)

(4) GT156 □



Unit: mm (inch)

4. Installation

4.1 Control Panel Inside Dimensions for Mounting GOT

Mount the GOT onto the control panel while considering the control panel inside dimensions.

POINT

Applicable cable

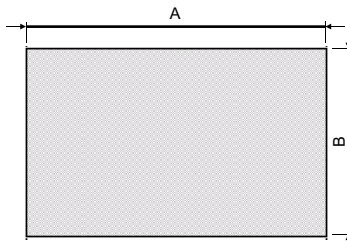
Some cables may need to be longer than the specified dimensions when connecting to the GOT.

Therefore, consider the connector dimensions and bending radius of the cable as well for installation.

4.2 Panel Cutting Dimensions

Make holes in the panel according to the dimensions list below.

Also, ensure 10mm spaces in upper and lower parts of the panel for mounting fixtures.

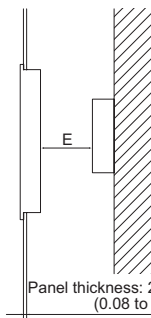
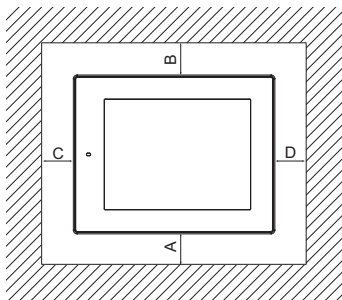


* Panel thickness: 2 to 4 mm
or less

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))

4.3 Mounting Position

When mounting the GOT, the following clearances must be left from the other device.



Panel thickness: 2 to 4mm
(0.08 to 0.16inch)

Type	GT1595	GT1585	GT157□	GT156□	
A	GOT or Bus connection unit* ¹ is fitted	50(1.97) or more [20(0.79) or more]	50(1.97) or more [31(1.22) or more]	50(1.97) or more [36(1.47) or more]	
	Bus connection unit* ² or serial communication unit fitted	50(1.97) or more [20(0.79) or more]	50(1.97) or more [31(1.22) or more]	50(1.97) or more [36(1.47) or more]	
	RS-422 Conversion unit is fitted	50(1.97) or more	51(2.01) or more	68(2.68) or more	73(2.87) or more
	Ethernet communication unit, MELSECNET/10 communication unit (coaxial), CC-Link communication unit fitted.	50 (1.97) or more [20 (0.79) or more]			
	MELSECNET/10 communication unit (optical) fitted.	50(1.97) or more [20(0.79) or more]	50(1.97) or more [26(1.02) or more]	50(1.97) or more [43(1.69) or more]	50(1.97) or more [48(1.89) or more]
B	80(3.15) or more [20(0.79) or more]				
C, D	50(19.7) or more [20(0.79) or more]				
E	100(39.4) or more [20(0.79) or more]				

Unit: mm (inch)

*1 For GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL,
GT15-75ABUS2L only

*2 For GT15-QBUS, GT15-QBUS, CGT15-ABUS, GT15-ABUS2 only

The values enclosed in parenthesis apply to the case where no other equipment generating radiated noise (such as a contactor) or heat is installed. However, keep the ambient temperature of the GOT to 55°C or lower even in such a case.

The required lead-in allowance for cables may be larger than the size of A above depending on the unit or cable used.

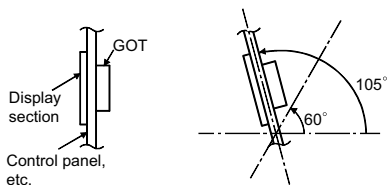
For the lead-in allowance for cables at the bottom of the GOT, refer to the following.

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4.4 Control Panel Inside Temperature and Mounting Angle

When mounting the main unit to a control panel or similar, set the display section as shown below.

- When the temperature inside the control panel is 40 to 55°C or less, the mounting angle should be in the range 60 to 105 degrees.




- The GOT will be deteriorated earlier if it is used at the mounting angle other than the above. Therefore, the temperature inside the control panel should be within 40°C.

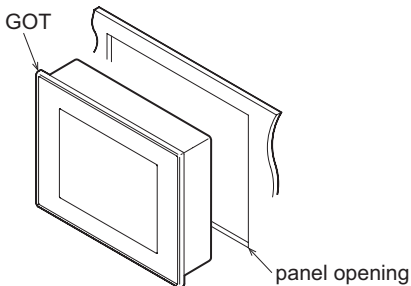
4.5 Installation Procedure

The GOT mounting procedure is as follows.

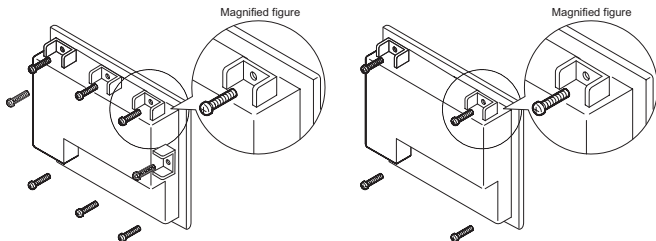
For the panel cutting dimension of each GOT, refer to the following.

 4.2 Panel Cutting Dimensions

(1) Insert the GOT into the panel opening from the front side.



(2) Place the mounting fixtures (included with GOT) on the mounting fixture attaching part of the GOT, and fix them by tightening the mounting screws in the torque range of 0.36 to 0.48N•m.
(Failure to do so may distort the panel and make a surface waviness on the protective sheet.)



- For GT1595-X: Fix the GOT with 8 mounting fixtures.

- For other than GT1595-X: Fix the GOT with 4 mounting fixtures.

(3) A protection film is attached on the display section of GOT prior to shipment.

Remove the film when the installation is completed.

5. Wiring

5.1 Wiring Precautions

DANGER

- Before starting wiring, always switch off the GOT power externally in all phases.
Not doing so may cause an electric shock, product damage or malfunction.

CAUTION

- Please make sure to ground FG terminal and LG 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.
- 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.

This section describes wiring to the GOT power supply section.
For the connection to controller, refer to the following.



GOT1000 Series Connection Manual

Remarks

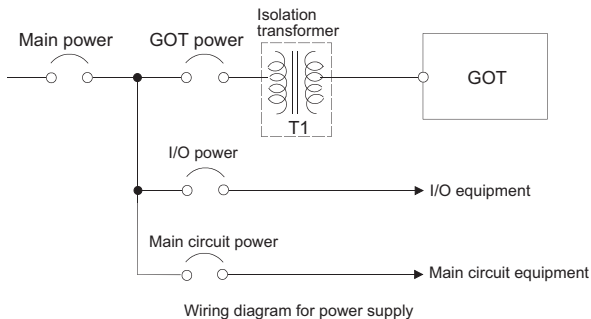
General preventive measures against noise

There are two kinds of noises: Radiated noise that is transmitted into the air and conductive noise that is directly transmitted through connected lines. In noise countermeasures, the both two types of noise should be taken into account. As the noise countermeasures, there are the following three methods.

- (1) Protecting against noise
 - (a) Keep signal lines away from possible noise sources such as power cables or high-power driving circuits.
 - (b) Shield signal lines.
- (2) Reducing generated noise
 - (a) Use a noise filter, etc. to reduce the noise generated from high-power motor drive circuits.
- (3) Releasing noise to the ground
 - (a) Make sure to connect the ground cable to the ground.
 - (b) Use a ground cable as short and thick as possible to lower its impedance.
 - (c) Separate the grounding between power and control systems.

5.2 Power Supply Wiring

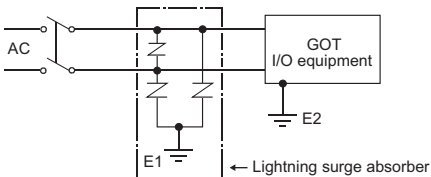
- Make wiring connections to the power supply, I/O equipment and power equipment separately by system as shown below. When frequent noise is identified, connect an isolation transformer.



- Twist 100V AC, 200V AC or 24V DC cable as closely as possible and connect the cable between modules at the minimum length. Also, use the thickest cable as possible (0.75 to 2mm²) to minimize the voltage drop. Use M3 solderless terminals and securely tighten them with a tightening torque of 0.5 to 0.8N•m so that no problem will result.
- Separate the 100V AC, 200V AC or 24V DC cable from the main circuit lines (high voltage, large current) and/or I/O signal lines. Keep a distance of 100mm or more.

- As measures against surge due to lightning, connect a lightning surge absorber as shown below.

Lightning surge absorber connection



POINT

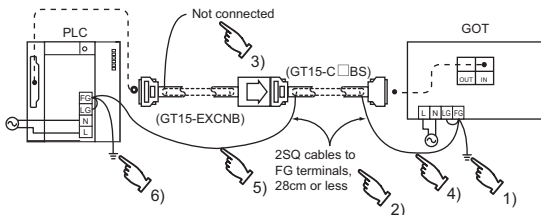
- Separate the grounding of the lightning surge absorber (E1) from the grounding of the GOT (E2).
- Select an appropriate lightning surge absorber so that the supply voltage does not exceed the maximum allowable circuit voltage of the surge absorber even when it rises to the maximum.

5.3 Wiring of Connection Cables

Keep the connection cables away from the main circuit lines (high voltage, large current) or I/O signal lines.

When using GT15-C □ EXSS-1 or GT15C □ BS, perform the grounding in the following steps.

(1) When using GT15-C □ EXSS-1



- Connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.
- Use the GT15-C □ BS's FG cable of 28cm or less.
- Do not connect the GT15-EXCNB's FG ground cable.
- 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.

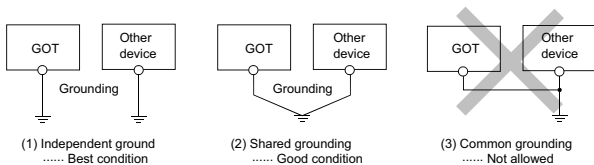
(2) When using GT15-C □ BS

For the both side GOTs, connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.

5.4 Grounding

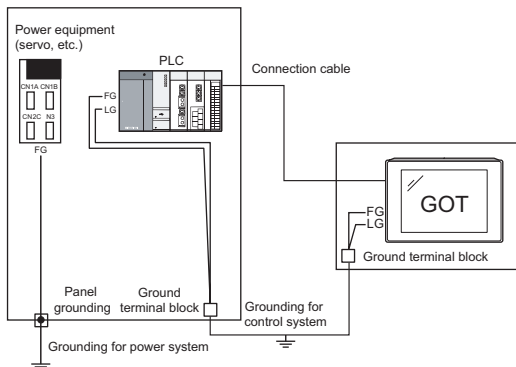
Make sure to carry out the followings for grounding.

- Carry out the independent grounding if possible.
- If the independent grounding is impossible, carry out the shared grounding as shown in fig.2) below.



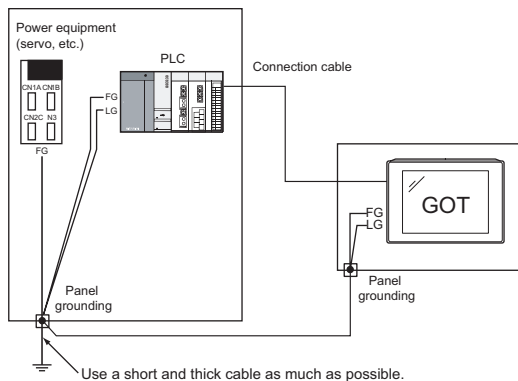
- Use the cable of 2mm² or more for grounding.
Set the grounding point closer to the GOT to make the ground-
ing cable short as possible.

(1) Example of independent grounding



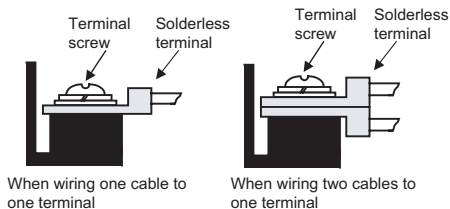
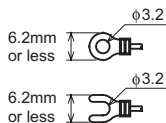
* Ground the control system, especially modules communicating each other, to one end.

(2) Example of shared grounding



* Ground the system to one end.

Recommended terminal shape

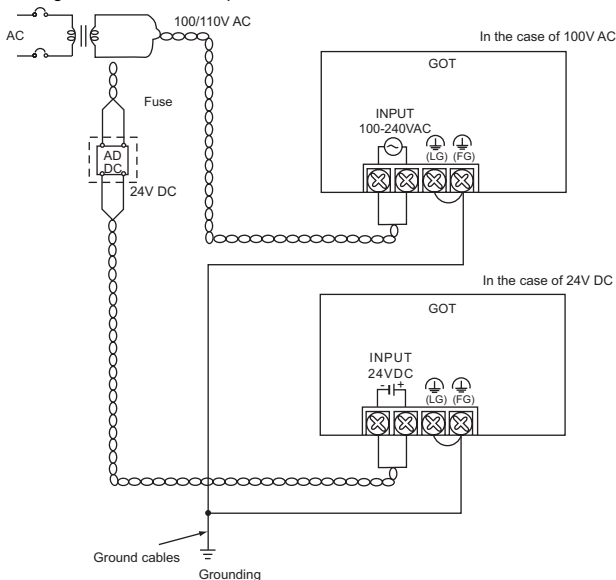


Applicable solderless terminal

RAV1.25- 3, V2- S3.3, V2- N3A, FV2- N3A

5.5 Power Terminal Connection

This section provides an example for connecting power cables and ground cables to the power terminals situated on the back of the GOT.



POINT

1. For 100V AC, 200V AC or 24V DC cable, use the thickest cable as possible (0.75 to 2mm^2) and start twisting them at the position closest to the connected terminals.
To prevent a short circuit due to loose screws, use the solderless terminal with insulation sleeve.
2. When connection is made between LG and FG terminals, be sure to connect them to the ground.
Otherwise, the system becomes susceptible to noise.
Since the LG terminal has potential equal to a half of the input voltage, touching the terminal may lead to an electric shock.

6. Maintenance and Inspection

6.1 Daily Inspection

Daily inspection items

No.	Inspection Item		Inspection Method	Criterion	Action
1	GOT mounting status		Check for loose mounting screws.	Securely mounted	Retighten screws within the specified torque range.
2	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose	Retighten terminal screws
		Proximate solderless terminals	Visual check	Proper intervals	Correct
		Loose connectors	Visual check	Not loose	Retighten connector fixing screws
3	Usage status	Dirt on protection sheet	Visual check	Not outstanding	Replace with new one
		Foreign material attachment	Visual check	No foreign matter sticking	Remove, clean

For applicable protective sheet model or replacement procedure, refer to GT15 User's Manual.

6.2 Periodic Inspection

Yearly or half-yearly inspection items

The following inspection should also be performed when equipment has been moved or modified or the wiring changed.

No.	Inspection Item		Inspection Method	Criterion		Action	
1	Surrounding environment	Ambient temperature	Make measurement with thermometer or hygrometer	Display section	0 to 40°C	For use in control panel, temperature inside control panel is ambient temperature	
		Ambient humidity		Other portions	0 to 55°C		
		Atmosphere	Measure corrosive gas		10 to 90%RH		
					No corrosive gas		
2	GOT powered from 100-240VAC power	Power supply voltage check	Measure voltage across terminals of 100-240VAC power.	85AC to 242V		Change supply power	
	GOT powered from 24VDC power	Input polarity of 24VDC power	Measure voltage across terminals of 24VDC power.	Left : - Right : +		Change wiring	
3	Mounting status	Looseness	Move module	Should be mounted firmly		Retighten screws	
		Dirt, foreign matter	Visual check	No dirt, foreign matter sticking		Remove, clean	
4	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose		Retighten terminal screws	
		Proximate solderless terminals	Visual check	Proper intervals		Correct	
		Loose connectors	Visual check	Not loose		Retighten connector fixing screws	
5	Battery		Check "GOT internal battery voltage status" in "Time setting & display" of the Utility. (Refer to the GT15 User's Manual.)	No alarm appears		Replace with new battery when the current battery has reached the specified life span, even if battery voltage low is not displayed.	

6.3 Battery Voltage Low Detection and Battery Replacement

Battery is used to store the current time or maintenance time notification data.

It is recommended to replace battery periodically.

6.3.1 Applicable Battery

The following battery is applicable for GT15 □ □.

Model	Description
GT15-BAT	Battery for backup of clock data and maintenance time notification data.

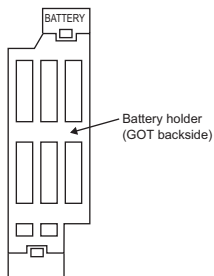
6.3.2 Battery Specifications

Item	Specifications
Type	Magnesium manganese dioxide lithium primary battery
Initial voltage	3.0V
Nominal current	1800mAh
Storage life	Approx.5 years (Operating ambient temperature of 25°C)
Total power stoppage time	Refer to Section 6.3.4.
Lithium content	0.49 g
Application	For backup of clock data and maintenance time notification data.

6.3.3 Battery Replacement Procedure

Replace battery periodically by referring to Section 6.3.4 Battery Life.

- (1) Keep the GOT power supply on for 10 minutes or more, and turn it off.
(Executes step 2 to 6 within 5 minutes of powering the GOT power supply off.)
- (2) Remove the battery folder from the GOT backside.
- (3) Remove the old battery from the folder and disconnect the connector.
- (4) Connect the new battery to the connector.



- (5) Insert the battery into the folder and set it into the GOT backside.
- (6) Turn the GOT power supply on.
- (7) Check if the battery condition is normal within the utility.
For details, refer to the GT15 User's Manual.

POINT

1. Precautions after battery replacement
Make sure to turn on the GOT power supply once upon completion of battery replacement.
Failure to do so may decrease the battery life.
2. When the bus connection unit (GT15-QBUS2/GT15-ABUS2/GT15-75ABUSL/GT15-75ABUS2L) is connected to GT156□
Before installing or replacing the battery, disconnect the bus connection cable.
(When connecting or disconnecting the bus connection cable, be sure to power off the GOT and PLC.)

6.3.4 Battery Life

Life span of the battery set in the GOT is shown below.

Battery life		
Operating ambient temperature of 0 to 45°C	Operating ambient temperature of 45 to 55°C	Data backup time after detection of battery voltage low*
5 years	3 years	14 days

*: In the following conditions, the data backup time is 5 minutes after the power supply is turned off.

- The battery connector is disconnected.
- The battery lead is disconnected.

POINT

Battery life and replacement time

1. Battery life reference: Approx.5 years in actual use (Operating ambient temperature of 25°C)
Battery replacement time reference: 4 to 5 years
Calculate the natural discharge amount of the battery, as necessary.
2. Check if the battery condition is normal within the utility.
For details, refer to the GT15 User's Manual.

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.

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