MITSUBISHI

GT16

General Description

GT1695M-XTBA GT1695M-XTBD GT1685M-STBA GT1685M-STBD

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	GT16-U(HW)			
MODEL CODE	1D7M79			
IB(NA)-0800434-B(0811)MEE				

GRAPHIC OPERATION TERMINAL



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".



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]

	① 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 GT16 is an analog-resistive type touch panel. If you touch the display section simultaneously in 2 points or more, the switch that is located around the center of the touched point, if any, may operate. Do not touch the display section in 2 points or more simultaneously. Doing so may cause an accident due to incorrect output or malfunction.
•	When programs or parameters of the controller (such as a PLC) that is monitored by the GOT are changed, be sure to reset the GOT or shut off the power of the GOT at the same time. Not doing so can cause an accident due to failse output or malfunction.

[DESIGN PRECAUTIONS]

- 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]

OANGER

- 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 doine 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 onto/from the GOT.
 Not doing so can cause the unit to fail or maifunction.
- When installing the option function board, wear an earth band etc. to avoid the static electricity. Not doing so can cause a unit corruption.

- 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. Undertightening can cause the GOT to drop, short circuit or malfunction. Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT.
- When loading the communication unit 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 option function board on 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.
- Connect the option function board to the corresponding connector so that the board is 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.

[MOUNTING PRECAUTIONS]

- 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.
- When installing a USB memory to the GOT, make sure to install the USB memory to the USB interface firmly. Failure to do so may cause a malfunction due to poor contact.
- Before removing the USB memory from the GOT, operate the utility screen for removal. After the successful
 completion dialog box is displayed, remove the memory by hand carefully.
 Failure to do so may cause the USB memory to drop, resulting in a damage or failure of the memory.
- For closing the USB environmental protection cover, fix the cover by pushing the
 <u>∧</u> mark on the latch firmly
 to comply with the protective structure.
- Remove the protective film of the GOT. When the user continues using the GOT with the protective film, the film may not be removed.
- Operate and store the GOT in environments without direct sunlight, high temperature, dust, humidity, and vibrations.

[WIRING PRECAUTIONS]

 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.

- Always ground the FG terminal, LG terminal, and protective ground terminal of the GOT power to the
 protective ground conductors dedicated to 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.

[WIRING PRECAUTIONS]

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

[TEST OPERATION PRECAUTIONS]

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

- 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.

[STARTUP/MAINTENANCE PRECAUTIONS]

- · 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.

[BACKLIGHT CHANGING PRECAUTIONS]

OANGER

 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.

- 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]

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 of the GOT to be used for details of the battery regulations in the EU member countries.)

[TRANSPORTATION PRECAUTIONS]

- When transporting lithium batteries, make sure to treat them based on the transport regulations. (Refer to GT16 User's Manual for details of the regurated 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
Aug., 2008	IB(NA)-0800434-A	First edition
Nov., 2008	IB(NA)-0800434-B	Partial corrections Section 2.1, Section 2.2, Section 3.1 Partial additions SAFETY PRECAUTIONS, Section 3.1

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CONTENTS

1
2
2
3
4
4
5

Manuals					
The following shows manuals relevant to this product.					
Detailed Manual					
Manual name	Manual Number (Model code)				
GT16 User's Manual (Sold separately)	SH-080778ENG (1D7M88)				
Relevant Manual For relevant manuals, refer to the PDF manuals stored in the GT Desig	jner2 CD-ROM.				

 For details on GT16 specifications, installing procedure, EMC Directive, wiring, maintenance and inspection, or checking method for the version and the compatible standard, refer to GT16 User's Manual.

Packing List

The GOT product package includes the following:

Model name	Product	Quantity	
GT1695M-X	GOT	1	
GT 1095M-A	Installation fitting	8	
07400704.0	GOT	1	
GT1685M-S	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.)
 - Provides multi-language display function based on Unicode2.1 True Type font and highspeed 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.
 - · The operation performance is improved by the analog touch panel.
 - · All models of the video/RGB unit and the multimedia unit are applicable.
- (2) More efficient GOT operations including screen design, startup, adjustment, management and maintenance works
 - · 15MB user memory is included as standard.
 - · The RS-232 interface is included as standard.
 - · The RS-422/485 interface is included as standard.
 - · The CF card interface is included as standard.
 - · The Ethernet 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 interface 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 blinked POWER LED at backlight shutoff detection.
- (3) 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)

2.Part Names

2.1 Part Names and Settings of the GT1695





No	Name	Description			
140.	Hadille	Lit in green : Power is correctly supplied			
1)	POWER LED	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 (Device)	For connecting a personal computer (Connector type: MINI-B)			
5)	USB interface (Host)	For data transfer and storage (Connector type: TYPE-A)			
6)	RS-232 interface	For communicating with a controller or connecting a personal computer (Connector type: D sub 9-pin)			
7)	Ethernet interface	For communicating with a controller or using the gateway function (Connector type: RJ-45 (modular jack))			
8)	RS-422/485 interface	For communicating with a controller (Connector type: 14-pin (female))			
9)	Power terminal	Power input terminal, LG terminal, FG terminal			
10)	Extension interface1	For installing an extension unit (Interface-1)			
11)	Extension interface2	For installing an extension unit (Interface-2)			
12)	CF card interface	For installing a CF card			
13)	CF card access LED	Lit :CF card accessed Not lit :CF card not accessed			
14)	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)			
15)	Video/RGB interface	For mounting the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit			
16)	Terminating resistor setting switch	For switching on and off of the terminating resistor for the RS-422/485 communication port			
17)	Optional function board interface	For installing the optional function board			
18)	Reset switch	Hardware reset switch (Inoperative in the bus connection or with the bus connection unit installed)			
19)	Hole for unit installation fitting	Hole for inserting the unit installation fitting			
20)	Battely holder	Houses the battery			
21)	Human sensor	Sensor that detects human movement			
22)	Installation switch	Used for OS installations at the GOT startup			

2.2 Part Names and Settings of the GT1685



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- 13) - 14)

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.				
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4)	USB interface (Device)	For connecting a personal computer (Connector type: MINI-B)				
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9)	Power terminal	Power input terminal, LG terminal, FG terminal				
10)	Extension interface1	For installing an extension unit (Interface-1)				
11)	Extension interface2	For installing an extension unit (I/F-2)				
12)	CF card interface	For installing a CF card				
13)	CF card access LED	Lit :CF card accessed Not lit :CF card not accessed				
14)	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)				
15)	Video/RGB interface	For mounting the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit				
16)	Terminating resistor setting switch	For switching on and off of the terminating resistor for the RS-422/485 communication port				
17)	Optional function board interface	For installing the optional function board				
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20)	Battely holder	Houses the battery				
21)	Human sensor	Sensor that detects human movement				
22)	Installation switch	Used for OS installations at the GOT startup				

3.Specifications

3.1 General Specifications

Item		Specifications					
Operating ambient temperature*1 Display section Other than the display section		0 to 50°C					
		0 to 55°C					
Storage ambient	temperature			-20 to	o 60°C		
Operating ambien	nt humidity ^{*5}			10 to 90% RH,	non-condensing		
Storage ambient	humidity			10 to 90% RH,	non-condensing		
				Frequency	Acceleration	Half- amplitude	Sweep count
		Compliant with JIS B3502 and IEC61131-2	Under intermittent vibration	5 to 9Hz	-	3.5mm	10 times each in X, Y and Z directions
Vibration resistar	ice			9 to 150Hz	9.8m/s ²	-	
			Under	5 to 9Hz	-	1.75mm	
			continuous vibration	9 to 150Hz	4.9m/s ²	-	
Shock resistance		Compliant with JIS B3502 and IEC61131-2 (147 m/s ² , 3 times each in X, Y and Z direction				nd Z directions)	
Operating atmos	phere	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					
Grounding		Grounding with a resistance of 100Ω or less					

 When mounting a multimedia unit (GT16M-MMR), 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.
 When using the GOT with a fingerprint unit (GT15-80FPA) mounted, the operating ambient temperature must be in the range of 0 to 40°C.
 Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0m

- 2 Do not use or store the GO1 under pressure nighter than the atmosphenc pressure of alittude 0m (oft.). Failure to observe this instruction may cause a matfunction. 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.
- *3 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises.

Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the raged voltage of 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 solution degree 2, exhu an executive pollution secure but temporary conductivity may be an executive to the environment of the en

In pollution degree 2, only non-conductive pollution occurs but temporary conductivity may be produced due to condensation.

*5 When using the GOT with a fingerprint unit (GT15-80FPA) mounted, the operating ambient humidity must be in the range of 10 to 85%RH and there must be no condensation.

Point	
Refer to 0	GT16 User's Manual for details of the performance specifications of each GOT.

3.2 External Dimensions

(1) GT1695



(2) GT1685



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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