

IB-0800589-G



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JAPANESE  
ENGLISH



# GT21

## General Description

GT2104-PMBD GT2104-PMBDS  
GT2104-PMBDS2 GT2104-PMBLS

Thank you for purchasing Mitsubishi Electric Graphic Operation Terminal.

MODEL	GT2104-P-U-GD-JE
Model code	1D7MT2
IB(NA)-0800589-G(2405)MEE	

This manual describes the part names, dimensions, mounting, and specifications of the product. Before use, read this manual and manuals of relevant products fully to acquire proficiency in handling and operating the product. Make sure to learn all the product information, safety information, and precautions. And, store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

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Effective: May 2024  
Specifications are subject to change without notice.

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### ●Safety Precaution●

(Read these precautions before using.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product. In this manual, the safety precautions are ranked as "WARNING" and "CAUTION".

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

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

[DESIGN PRECAUTIONS]	
⚠WARNING	
<ul style="list-style-type: none"><li>Some failures of the GOT or cable may keep the outputs on or off. Some failures of a touch panel may cause malfunction of the input objects such as a touch switch. An external monitoring circuit should be provided to check for output signals which may lead to a serious accident. Not doing so can cause an accident due to false output or malfunction.</li><li>Do not use the GOT as the warning device that may cause a serious accident. An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning. Not doing so can cause an accident due to false output or malfunction.</li><li>When the GOT detects its backlight failure, the GOT disables the input operation on the touch switch(s). Thus, operators cannot operate the GOT with touches. The GOT backlight failure can be checked with a system signal of the GOT.</li><li>Even when the display section has dimmed due to a failure of the liquid crystal section or the backlight on the GOT, the input operation of the touch switches may still be enabled. This may cause an incorrect operation of the touch switches. For example, if an operator assumes that the display section has dimmed because of the screen save function and touches the display section to cancel the screen save, a touch switch may be activated, h touches. The GOT backlight failure can be checked with a system signal of the GOT.</li><li>The display section of the GOT is an analog-resistive type touch panel. Simultaneous pressing of two or more areas on the display section may activate the switch between those areas. Do not press two or more areas simultaneously on the display section. Doing so may cause an accident due to incorrect output or malfunction.</li><li>When programs or parameters of the controller (such as a PLC) that is monitored by the GOT are changed, be sure to shut off the power of the GOT promptly and power on the GOT again. Not doing so can cause an accident due to false output or malfunction.</li><li>If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative. A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur. Not doing so can cause an accident due to false output or malfunction.</li></ul>	

## 1. GOT SERIES USER'S MANUAL SPECIFICATIONS

### 1.1 General Specifications

Item	Specifications					
Operating ambient temperature <sup>*1</sup>	0 to 55°C <sup>*7</sup> (When mounted horizontally), 0 to 50°C (When mounted vertically)					
Storage ambient temperature	-20 to 60°C					
Operating ambient humidity	10% RH to 90% RH, non-condensing <sup>*2</sup>					
Storage ambient humidity	10% RH to 90% RH, non-condensing <sup>*2</sup>					
Vibration resistance	Compliant with JIS B3502 and IEC61131-2	Under intermittent vibration	Frequency	Acceleration	Half amplitude	Sweep Count
			5 to 8.4 Hz	-	3.5 mm	
		Under continuous vibration	8.4 to 150 Hz	9.8m/s <sup>2</sup>	-	10 times in each X, Y, or Z direction
			5 to 8.4 Hz	-	1.75 mm	
				8.4 to 150 Hz	4.9m/s <sup>2</sup>	
Shock resistant	Compliant with JIS B3502 and IEC61131-2 147m/s <sup>2</sup> (15G) Three times in each X, Y, or Z direction					
Operating atmosphere	No greasy fumes, corrosive gas, flammable gas, excessive conductive dust, and direct sunlight (as well as at storage)					
Operating altitude <sup>*3</sup>	2000 m or less					
Installation location	Inside control panel					
Overvoltage category <sup>*4</sup>	II or less					
Pollution degree <sup>*5</sup>	2 or less					
Cooling method	Self-cooling					
Grounding	Grounding with a ground resistance of 100 Ω or less by using a ground cable that has a cross-sectional area of 2 mm <sup>2</sup> or more. If impossible, connect the ground cable to the control panel. <sup>*6</sup>					

\*1 The operating ambient temperature indicates the temperature inside the enclosure of the control panel to which the GOT is installed.  
\*2 If the ambient temperature exceeds 40°C, the absolute humidity must not exceed 90%RH at 40°C.  
\*3 Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0 m. Doing so may cause a malfunction. When an air purge is made inside the control panel by adding pressure, there may be a clearance between the surface sheet and the screen, making you difficult to use the touch panel, or the sheet may come off.  
\*4 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The withstand surge voltage for the equipment with the rated voltage up to 300 V is 2500 V.  
\*5 This indicates the occurrence rate of conductive material in an environment where a device is used. Pollution degree 2 indicates an environment where only non-conductive pollution occurs normally and a temporary conductivity caused by condensation shall be expected depending on the conditions.  
\*6 DC5V type is not required ground.  
\*7 When a protective cover for oil is mounted on the GOT, the maximum operating ambient temperature must be 5°C lower than the one described above.

### 1.2 Performance Specifications

Item	Specifications			
	GT2104-PMBD	GT2104-PMBDS	GT2104-PMBDS2	GT2104-PMBLS
Display section <sup>*1,2</sup>	Display device	TFT monochrome display		
	Screen size	4.5"		
	Resolution	384 × 128 dots		
	Display size	109.4(4.31) (W) × 36.5(1.44) (H) mm(inch)		
	Displayed number of characters	16-dot standard font: 24 characters × 8 lines (two-byte characters) 12-dot standard font: 32 characters × 10 lines (two-byte characters)		
	Display color	Monochrome (black and white) 32 scales		
	Brightness Adjustment	32 levels		
	Backlight	5 colors LED (white, green, pink, orange, red) (Not replaceable)		
	Backlight life <sup>*3</sup>	Approx. 50000 h (operating ambient temperature: 25°C, display intensity: 50%)		
	Type	Analog resistive film		
Touch panel <sup>*4</sup>	Key size	Minimum 2 × 2 dots (per a key)		
	Simultaneous press	Simultaneous press prohibited <sup>*5</sup> (only 1 point can be pressed)		
User memory capacity	Life	1 million times or more (Operating force: 0.98 N or less)		
	User memory capacity	Memory for storage (ROM): 6 MB		
Battery	Life (number of write times)	100000 times		
	Battery	Battery GT11-50BAT lithium battery		
Life	Life	Life Approx. 5 years (operating ambient temperature: 25°C)		
	RS-232 (rear face)	-	1 channel Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: MINI-DIN6-pin (female)	1 channel Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: MINI-DIN6-pin (female)
Built-in interface	RS-232 (side face)	-	1 channel Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: terminal block 9-pin	1 channel Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: terminal block 9-pin
	RS-422/485	1 channel Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: terminal block 5-pin Terminating resistor <sup>*6</sup> : OPEN/110 Ω/330 Ω (Switched with the terminating resistor setting switch)	1 channel Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: terminal block 9-pin Terminating resistor <sup>*6</sup> : OPEN/110 Ω/330 Ω (Switched with the terminating resistor setting switch)	-
Built-in interface	RS-422	-	-	1 channel Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: terminal block 9-pin

[STARTUP/MAINTENANCE PRECAUTIONS]	
⚠WARNING	
<ul style="list-style-type: none"><li>When power is on, do not touch the terminals. Doing so can cause an electric shock or malfunction.</li><li>Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases. Not doing so can cause the unit to fail or malfunction. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.</li></ul>	
⚠CAUTION	
<ul style="list-style-type: none"><li>Do not disassemble or modify the unit. Doing so can cause a failure, malfunction, injury or fire.</li><li>Do not touch the conductive and electronic parts of the unit directly. Doing so can cause a unit malfunction or failure.</li><li>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.</li><li>When unplugging the cable connected to the unit, do not hold and pull from the cable portion. Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.</li><li>Do not drop the module or subject it to strong shock. A module damage may result.</li><li>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.</li><li>Replace battery with GT11-50BAT by Mitsubishi electric Co. only.</li><li>Use of another battery may present a risk of fire or explosion.</li><li>Dispose of used battery promptly.</li><li>Keep away from children. Do not disassemble and do not dispose of in fire.</li></ul>	
[TOUCH PANEL PRECAUTIONS]	
⚠CAUTION	
<ul style="list-style-type: none"><li>For the analog-resistive film type touch panels, normally the adjustment is not required. However, the difference between a touched position and the object position may occur as the period of use elapses. When any difference between a touched position and the object position occurs, execute the touch panel calibration.</li><li>When any difference between a touched position and the object position occurs, other object may be activated. This may cause an unexpected operation due to incorrect output or malfunction.</li></ul>	
[PRECAUTIONS WHEN THE DATA STORAGE IS IN USE]	
⚠WARNING	
<ul style="list-style-type: none"><li>If the SD card mounted on drive A of the GOT is removed while the GOT is accessing, processing for the GOT might be interrupted about for 20 seconds. The GOT cannot be operated during this period. The functions that run in the background including a screen updating, alarm, logging, scripts, and others are also interrupted. Since this interruption makes an impact to the system operation, it might cause failure. After inhibiting access to the SD card on the GOT utility screen, check that the SD card access LED is off and remove the SD card.</li></ul>	
⚠CAUTION	
<ul style="list-style-type: none"><li>Do not remove the data storage from the GOT while the data storage is being accessed by the GOT, or the data storage and files may be damaged.</li><li>Before removing the data storage, check the SD card access LED, relevant system signal, or others to make sure that the data storage is not being accessed.</li><li>Turning off the GOT while it accesses the SD card results in damage to the SD card and files.</li><li>After inserting an SD card into the SD card unit, make sure to enable the SD card access in the GOT utility.</li><li>Not doing so causes the data not to be read or written.</li><li>When removing the SD card from the GOT, make sure to support the SD card by hand as it may pop out.</li><li>Not doing so may cause the SD card to drop from the GOT, resulting in a failure or break.</li><li>After removing the data storage from the GOT, follow the procedure for removal on the GOT utility screen.</li><li>After the successful completion dialog is displayed, remove the data storage by hand carefully.</li><li>Not doing so may cause the data storage to drop from the GOT, resulting in a failure or break.</li></ul>	
[PRECAUTIONS FOR USE]	
⚠CAUTION	
<ul style="list-style-type: none"><li>Do not touch the edges of the touch panel (display section) repeatedly.</li><li>Doing so may result in a failure.</li><li>Do not turn off the GOT while data is being written to the storage memory (ROM) or SD card.</li><li>Doing so may corrupt the data, rendering the GOT inoperative.</li></ul>	
[DISPOSAL PRECAUTIONS]	
⚠CAUTION	
<ul style="list-style-type: none"><li>When disposing of this product, treat it as industrial waste.</li><li>When disposing of batteries, separate them from other wastes according to the local regulations.</li><li>(For details on the battery regulations in the EU member states, refer to "Handling of Batteries in EU Member States".)</li></ul>	
[TRANSPORTATION PRECAUTIONS]	
⚠CAUTION	
<ul style="list-style-type: none"><li>When transporting lithium batteries, make sure to treat them based on the transport regulations.</li><li>(Refer to the GOT2000 Series User' Manual (Hardware) for details of the regulated models.)</li></ul>	

⚠CAUTION	
<ul style="list-style-type: none"><li>Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of this manual, as they are precision devices. Failure to do so may cause the unit to fail. Check if the unit operates correctly after transportation.</li><li>When fumigants that contain halogen materials such as fluorine, chlorine, bromine, and iodine are used for disinfecting and protecting wooden packaging from insects, they cause malfunction when entering our products. Please take necessary precautions to ensure that remaining materials from fumigant do not enter our products, or treat packaging with methods other than fumigation (heat method). Additionally, disinfect and protect wood from insects before packing products.</li></ul>	
Certification of UL, cUL standards	
<ul style="list-style-type: none"><li>Using GOT</li><li>GOT is for use on a Flat Surface of a Type 1 Enclosure.</li></ul>	
Notification of CE marking	
<p>The following products have shown compliance through direct testing (to the identified standards) and design analysis (forming a technical construction file) to the European Directive for Electromagnetic Compatibility when used as directed by the appropriate documentation.</p> <ul style="list-style-type: none"><li>This product is designed for use in industrial applications</li><li>Type: Graphic operation terminal</li><li>- Models: GOT2000 series</li></ul>	
Standard	Remark
EN61131-2: 2007 Programmable controllers - Equipment, requirements and tests	EMI Compliance with all relevant aspects of the standard. (Radiated Emissions)
	EMS Compliance with all relevant aspects of the standard. (ESD, RF electromagnetic field, EFTB, Surge, RF conducted disturbances and Power frequency magnetic field)
For more details please contact your local Mitsubishi Electric sales site. For details of CE marking, refer to the following. →GOT2000 Series User's Manual (Hardware)	
Compliant with the UKCA marking	
Requirements for compliance with the UKCA marking are the same with the EC Directives (CE marking).	
Manual	
The following shows manuals relevant to this product.	
Detailed Manual	
Manual name	Manual number (Model code)
GOT2000 Series User's Manual (Hardware)	SH-081194ENG (1D7MJ5)
GOT2000 Series User's Manual (Utility)	SH-081195ENG (1D7MJ6)
For detailed manuals, refer to the PDF manuals stored in the DVD-ROM for the drawing software used.	
Relevant Manuals	
For relevant manuals, refer to the Help or the PDF manuals stored in the DVD-ROM for the drawing software used. The latest manuals are also available from MITSUBISHI ELECTRIC FA Global Website (www.mitsubishi-electric.com/fa).	
Before using the GOT	
Connect the connector of the GOT to the connector of the battery. Refer to the GOT2000 Series User's Manual (Hardware) for the connection instructions. For details on the GOT specifications, installing instructions, wiring, maintenance and inspection, or checking procedure for the version and the compatible standard, refer to the GOT2000 Series User's Manual (Hardware).	
Handling of Batteries in EU Member States	
<div><div><div>(1)</div><div></div></div><div><div>(2)</div><div></div></div></div> <p>* The symbols on the left are specified according to the following: (1): EU Battery Directive (2006/66/EC) (to be repealed on August 18, 2025) (1) and (2): EU Battery Regulation (EU 2023/1542)</p>	
<ul style="list-style-type: none"><li>Symbol (1) indicates that batteries need to be disposed of separately from other wastes.</li><li>When batteries are sold or exported to EU member states, the following measures are required.<ul style="list-style-type: none"><li>- Displaying the symbols on the battery (or on the manual and packaging if not possible)</li><li>- Explaining the symbols in the manual</li></ul></li><li>If any chemical metal is printed under the symbol (1), it indicates that the battery contains heavy metals at or above the following concentrations.<ul style="list-style-type: none"><li>- Hg: Mercury (0.0005%), Cd: Cadmium (0.002%), Pb: Lead (0.004%)</li></ul></li></ul>	
Bundled Items	
Model name	Remark
GT2104-PMBD/ PMBDS/ PMBDS2/ PMBLS	GOT main unit (The maintenance supplies below are packed with the product.)
Bundled item	Quantity
PLC Communication Connector	1
Panel Mounting Bracket (with M4 × 20 screws)	4
Panel Mounting Packing	1
GT21 General Description (This manual)	1
Referenced Standard: GB/T15969.2 (Requirement of Chinese standardized law)	

Item	Specifications			
	GT2104-PMBD	GT2104-PMBDS	GT2104-PMBDS2	GT2104-PMBLS
Built-in interface	Ethernet	1 channel Data transfer method: 10BASE-T/ 100BASE-TX Connector shape: RJ45 (modular jack) AUTO MDI/MDI-X	-	-
	USB (Device)	1 ch Maximum transfer rate: Full-Speed 12 Mbps Connector shape: USB Mini-B	-	-
	SD card	1 channel SDHC card supported (max. 32 GB)	-	-
	Buzzer output	Single tone (tone length adjustable)	-	-
Productive structure	Outside the enclosure: IP67F <sup>*7,8</sup> Inside the enclosure: IP2X			
External dimensions	145(5.7) (W) × 76(3.0) (H) × 32.5(1.28) (D) mm			
Panel cut dimensions	137(5.4) (W) × 66(2.6) (H) mm			
Weight (excluding a fitting)	0.3kg			0.28kg
Compatible software package	GT Works3 Version1.131M or later			

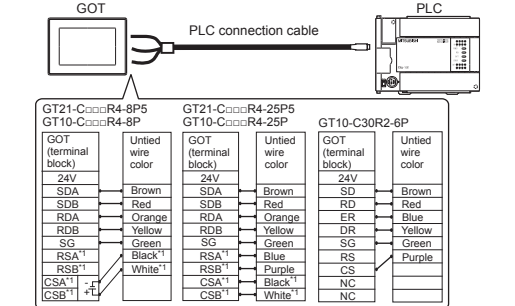
\*1 Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel due to its characteristics. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. In addition, color tone difference, unevenness of brightness, or flickers may occur due to individual differences of liquid crystal display panels. Please note that these symptoms occur due to GOT's characteristic and are not caused by product defect.  
\*2 Flicker may occur due to vibration, shock, or display color.  
\*3 Settings the screen saving backlight to OFF prevents the display screen from burn-in and enables the backlight to lengthen its life.  
\*4 When using a stylus pen, it will be 100,000 times. (The specifications must be satisfied the following condition.)  
- Material: Polyacetal resin - Tip radius: 0.8 mm or more  
\*5 If you touch two points or more simultaneously on the touch panel, a switch in an unintended location may operate. Do not touch two or more points on the touch panel simultaneously.  
\*6 Set the terminating resistor selector switch of the GOT in accordance with the connection type when adopting GOT multidrop connection.  
\*7 Note that this does not guarantee all users' operation environment. In addition, the GOT may not be usable in the environment where oil or chemicals are splashed over for a long time or where oil mist is filled.  
\*8 The suffix "F" of IP67F is a symbol that indicates protection rate against oil. It is described in the Appendix of JIS C 0920 of the Japanese Industrial Standards.

### 1.3 Power Supply Specifications

Item		Specifications			
		GT2104-PMBD	GT2104-PMBDS	GT2104-PMBDS2	GT2104-PMBLS
Input power supply voltage		DC24 V (+10%, -15%)			DC5V (±5%)
Power consumption	Under the maximum load	2.9 W or less	2.2 W or less		1.1W or less
	At backlight off	2.2 W	1.5 W		0.7W
Inrush current		30 A or less (1ms, 25°C, at the maximum load)			-
Permissible instantaneous power failure time		Within 5ms			-
Noise immunity		Noise voltage: 1000 Vp-p, Noise width: 1 μs (by noise simulator of 30 to 100 Hz noise frequency)			
Dielectric withstand voltage		500 VAC for 1 minute (between the GOT's power supply terminals and the GOT's grounding terminal)			-
Insulation resistance		10 MΩ or larger by insulation resistance tester (between the GOT's power supply terminals and the GOT's grounding terminal)			-
Electrical wire size		No. of wire per terminal: 1 Solid wire 0.14 to 1.5 mm <sup>2</sup> AWG26 to AWG16, Stranded wire 0.14 to 1.0 mm <sup>2</sup> AWG26 to AWG18, Ferrules with plastic sleeve 0.25 to 0.5 mm <sup>2</sup> AWG24 to AWG20 No. of wire per terminal: 2 Solid wire 0.14 to 0.5 mm <sup>2</sup> AWG26 to AWG20, Stranded wire 0.14 to 0.2 mm <sup>2</sup> AWG26 to AWG24			
Wire type		Use copper or copper-clad aluminum conductors.			
Temperature rating of a wire		More than 70°C			
Ferrules with plastic sleeve		AI 0.25-6BU (AWG24), AI 0.34-6TQ (AWG22), AI 0.5-6WH (AWG20) (Phoenix Contact Inc.)			
Crimper type		CRIMPFOXZA3 (Phoenix Contact Inc.)			
Tightening torque (terminal screws)		0.22 to 0.25 N·m			

## 2. WIRING OF CONNECTION CABLE

The diagram below shows cable assignment for GOT port.  
Cables for GT2104-PMBD: GT21-C00QR4-8P5, GT21-C00QR4-25P5  
Cables for GT2104-PMBDS: GT10-C00QR4-8P, GT10-C00QR4-25P  
Cables for GT2104-PMBDS2: GT10-C30R2-6P  
Cables for GT2104-PMBLS: GT10-C00QR4-8P



\*1 The cable for GT2104-PMBD does not have the connection to a signal name (RSA, RSB, CSA, CSB). User-made cable is necessary, depending on the PLC. For the detail, refer to GOT2000 Series Connection Manual.

Cable jacket to remove	7 mm (0.27")
Tightening torque	0.22 to 0.25 N·m
Recommended Tool (Screwdriver)	SZS 0.4 × 2.5 (Phoenix Contact Inc.)

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