



**MITSUBISHI ELECTRIC**

# GT21 Wide Model

## General Description

GT2107-WTBD GT2107-WTSD

Thank you for choosing Mitsubishi Electric Graphic Operation Terminal (GOT).

MODEL	GT2107-W-U-GD-EC
MODEL CODE	1D7MV6
IB(NA)-0800632ENG-C(2008)MEAMC	

This manual describes the specifications of the GT2107-WTBD, GT2107-WTSD. Before use, read this manual and manuals of relevant products fully to acquire proficiency in handling and operating the product. Make sure to learn all the product information, safety information, and precautions.

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

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

Effective: Aug. 2020

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".

<b>WARNING</b>	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
<b>CAUTION</b>	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. Failure to observe this instruction may result in an accident due to incorrect output or malfunction.</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.</li> <li>The display section of the GOT is an analog-resistive type touch panel. When multiple points of the display section are touched simultaneously, an accident may occur due to incorrect output or malfunction. Do not touch two points or more simultaneously on the display section. Doing so may cause a touch switch near the touched points to operate unexpectedly, or may cause an accident due to an 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 reset the GOT, or turn on the unit again after shutting off the power as soon as possible. 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>	

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

DESIGN PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> <li>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 100 mm apart. Not doing so may cause a malfunction.</li> <li>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.</li> <li>When the GOT connects to an Ethernet network, the IP address setting is restricted according to the system configuration. <ul style="list-style-type: none"> <li>When multiple GOTs connect to the Ethernet network: Do not set the IP address (192.168.3.18) for the GOTs and the controllers in the network.</li> <li>When one GOT connects to the Ethernet network: Do not set the IP address (192.168.3.18) for the controllers other than the GOT in the network.</li> </ul> </li> <li>Doing so can cause IP address duplication at the GOT startup, adversely affecting the communication of the device with the IP address 192.168.3.18. The operation at the IP address duplication depends on the devices and the system.</li> <li>Turn on the controllers and the network devices to be ready for communication before they communicate with the GOT. Failure to do so can cause a communication error on the GOT.</li> <li>When the GOT is subject to shock or vibration, or some colors appear on the screen of the GOT, the screen of the GOT might flicker.</li> </ul>	

MOUNTING PRECAUTIONS	WARNING
<ul style="list-style-type: none"> <li>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.</li> </ul>	

MOUNTING PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> <li>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.</li> <li>When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range (0.36 N·m to 0.48 N·m) 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.</li> <li>Remove the protective film of the GOT. When the user continues using the GOT with the protective film, the film may not be removed.</li> <li>Do not operate or store the GOT in the environment exposed to direct sunlight, rain, high temperature, dust, humidity, or vibrations.</li> <li>When using the GOT in the environment of oil or chemicals, use the protective cover for oil. Failure to do so may cause failure or malfunction due to the oil or chemical entering into the GOT.</li> </ul>	

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

WIRING PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> <li>Please make sure to ground FG terminal of the GOT power supply section by applying 100 Ω or less which is used exclusively for the GOT. Not doing so may cause an electric shock or malfunction.</li> <li>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.</li> <li>Tighten the terminal screws of the GOT power supply section in the specified torque range (0.5 N·m to 0.8 N·m). Overtightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.</li> <li>Use applicable solderless terminals for terminal processing of a wire and tighten them with the specified torque. Not doing so can cause a fire, failure or malfunction.</li> <li>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.</li> <li>Plug the communication cable into the GOT interface or the connector of the connected unit, and tighten the mounting screws and the terminal screws in the specified torque range. Overtightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.</li> </ul>	

TEST OPERATION PRECAUTIONS	WARNING
<ul style="list-style-type: none"> <li>Before testing the operation of a user-created monitor screen (such as turning on or off a bit device, changing the current value of a word device, changing the set value or current value of a timer or counter, and changing the current value of a buffer memory), thoroughly read the manual to fully understand the operating procedures. During the 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.</li> </ul>	

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 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.</li> </ul>	

STARTUP/MAINTENANCE PRECAUTIONS	CAUTION
<ul style="list-style-type: none"> <li>Do not disassemble or modify the unit. Doing so can cause a failure, malfunction, 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. Use of any other battery may present a risk of fire or explosion.</li> <li>Dispose of used battery properly.</li> <li>Keep away from children. Do not disassemble and do not dispose of in fire.</li> <li>Be sure to shut off all phases of the external power supply before replacing the battery or using the dip switch of the terminating resistor. Not doing so can cause the unit to fail or malfunction by static electricity.</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 is removed from drive A of the GOT while being accessed by the GOT, the GOT may stop processing data for about 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. Disable the SD card access in the GOT utility, and then check that the SD card access LED is off before removing the SD card.</li> <li>If the data storage is removed from the GOT while being accessed by the GOT, the data storage and files may be damaged. Before removing the data storage from the GOT, check the SD card access LED, system signal, or others to make sure that the data storage is not accessed.</li> <li>Turning off the GOT while it accesses the SD card results in damage to the SD card and files.</li> <li>When removing the SD card from the GOT, make sure to support the SD card by hand as it may pop out. Not doing so may cause the SD card to drop from the GOT, resulting in a failure or break.</li> <li>Before removing the SD card from the GOT, follow the procedure for removal on the utility screen of the GOT. After the successful completion dialog is displayed, remove the SD card by hand carefully. Failure to do so may cause the SD card to drop from the GOT, resulting in a failure or break.</li> <li>When installing a USB memory to the GOT, make sure to install the USB memory to the USB interface firmly.</li> <li>Failure to do so may cause a malfunction due to poor contact.</li> <li>Before removing the data storage from the GOT, operate the utility screen for removal. After the successful completion dialog box is displayed, remove the data storage by hand carefully. Failure to do so may cause the data storage to drop, resulting in a damage or failure of the memory.</li> </ul>	

PRECAUTIONS FOR REMOTE CONTROL	WARNING
<ul style="list-style-type: none"> <li>Remote control is available through a network by using the VNC server function of the GOT. If the VNC function is used to perform remote control of control equipment, the field operator may not notice the remote control, possibly leading to an accident. In addition, a communication delay or interruption may occur depending on the network environment, and remote control of control equipment cannot be performed normally in some cases. Before using the VNC function to perform remote control, fully grasp the circumstances of the field site and ensure safety.</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>(Refer to the GOT2000 Series User's Manual for details of the battery directive in the 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. (Refer to the GOT2000 Series User's Manual (Hardware) for details of the regulated models.)</li> <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

- General notes on power supply
- This equipment must be powered by a UL Listed Class 2 power supply.
- Using GOT
- GOT is for use on a Flat Surface of a Type 1 or Type 4X(indoor use only) Enclosure.

### Notification of CE marking

- The following products have shown compliance through direct testing (to the identified standards) and design analysis (forming a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation.
- This product is designed for use in industrial applications
    - Type: Graphic Operation Terminal
    - Models: GOT series

Standard	EMC	Remark
EN61131-2 : 2007 Programmable controllers	EMI	Compliance with all relevant aspects of the standard. (Radiated Emissions)
Equipment, requirements and tests	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

### 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.mitsubishielectric.com/fa](http://www.mitsubishielectric.com/fa)).

### Before using the GOT.

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).

**Referenced Standard: GB/T 19893.2 (Requirement of Chinese standardized law)**

### Bundled Items

Model name	Remark
GT2107-WTBD GT2107-WTSD	GOT main unit (The maintenance supplies below are packed with the product.)
Bundled item	Quantity
Panel Mounting Bracket (with M4 × 15 screws)	4
GT21 Wide Model General Description (This manual)	1

## 1. Specifications

### 1.1 General Specifications

Item	Specifications																					
Operating ambient temperature <sup>*1</sup>	0°C to 55°C <sup>*6</sup> (Horizontal installation), 0°C to 50°C (Vertical installation)																					
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	<table border="1"> <thead> <tr> <th rowspan="2">Compliant with JIS B3502 and IEC61131-2</th> <th rowspan="2">Under intermittent vibration</th> <th>Frequency</th> <th>Acceleration</th> <th>Half amplitude</th> <th rowspan="2">Sweep Count</th> </tr> </thead> <tbody> <tr> <td>5 Hz to 8.4 Hz</td> <td>-</td> <td>3.5 mm</td> </tr> <tr> <td rowspan="2">Under continuous vibration</td> <td rowspan="2">8.4 Hz to 150 Hz</td> <td>9.8m/s<sup>2</sup></td> <td>-</td> <td>-</td> </tr> <tr> <td>5 Hz to 8.4 Hz</td> <td>-</td> <td>1.75 mm</td> </tr> <tr> <td rowspan="2">8.4 Hz to 150 Hz</td> <td>4.9m/s<sup>2</sup></td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Compliant with JIS B3502 and IEC61131-2	Under intermittent vibration	Frequency	Acceleration	Half amplitude	Sweep Count	5 Hz to 8.4 Hz	-	3.5 mm	Under continuous vibration	8.4 Hz to 150 Hz	9.8m/s <sup>2</sup>	-	-	5 Hz to 8.4 Hz	-	1.75 mm	8.4 Hz to 150 Hz	4.9m/s <sup>2</sup>	-	-
Compliant with JIS B3502 and IEC61131-2	Under intermittent vibration			Frequency	Acceleration	Half amplitude		Sweep Count														
		5 Hz to 8.4 Hz	-	3.5 mm																		
Under continuous vibration	8.4 Hz to 150 Hz	9.8m/s <sup>2</sup>	-	-																		
		5 Hz to 8.4 Hz	-	1.75 mm																		
8.4 Hz to 150 Hz	4.9m/s <sup>2</sup>	-	-																			
	Shock resistant	Compliant with JIS B3502 and IEC 61131-2 (147m/s <sup>2</sup> (15G), 3 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.																					

\*1 Includes the temperature inside the enclosure of the control panel on which the GOT is installed.

\*2 If the ambient temperature exceeds 40°C, the absolute humidity must not exceed 90% at 40°C.

\*3 Do not use or store the GOT under a pressure higher than the atmospheric pressure at altitude 0 m.

Doing so may cause a malfunction.

Air purging by applying pressure to the control panel may create clearance between the surface sheet and the touch panel. This may cause the touch panel to be not sensitive enough or the sheet to 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 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
Display device	TFT color LCD
Screen size	7" Wide
Resolution	800 × 480 dots
Display size	152.4(6.00) (W) × 91.44(3.60) (H) mm (inch)
Number of displayed characters	16-dot standard font: 50 characters × 30 lines (two-byte characters) 12-dot standard font: 66 characters × 40 lines (two-byte characters)
Display color	65536 colors
Brightness Adjustment	32 levels
Backlight	LED (Not replaceable)
Backlight life <sup>*3</sup>	Approx. 50000 h (operating ambient temperature: 25°C, display intensity: 50%)
Type	Analog resistive film
Key size	Minimum 2 × 2 dots <sup>*7</sup> (per a key)
Simultaneous press	Not available <sup>*5</sup> (Only 1 point can be touched.)
Life	1 million times or more (Operating force: 0.98 N or less)
User memory capacity	Memory for storage (ROM): 15 MB
Life (number of write times)	100000 times
Battery	GT11-50BAT lithium battery
Life	Approx. 5 years (operating ambient temperature: 25°C)
RS-232	1 channel, Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: D-sub 9-pin (Male)
Built-in interface	1 channel, Transmission speed: 115200/57600/38400/19200/9600/4800 bps Connector shape: D-sub 9-pin (Female) Terminating resistor <sup>*9</sup> : OPEN/110 Ω/330 Ω (Switched with the terminating resistor setting switch)

Item	Specifications	
Ethernet	1 channel, Data transfer method: 10BASE-T/100BASE-TX Connector shape: RJ-45 (modular jack)	
Built-in interface	USB (Host)	1 channel (rear face) USB version: USB1.1 (Full-Speed 12 Mbps), Connector shape: USB-A
	USB (Device)	1 channel (front face) USB version: USB1.1 (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	Front: IP67F <sup>16</sup> In control panel: IP2X	
External dimensions	189(7.44) (W) × 142(5.59) (H) × 48(1.89) (D) mm (inch)	
Panel cut dimensions	180.5(7.11) (W) × 133.5(5.26) (H) mm (inch)	
Weight (excluding a fitting)	0.7(1.54) kg(lb)	
Compatible software package	GT Works3 Version1.170C or later	

\*1 As a characteristic of liquid crystal display panels, bright dots (always lit) and dark dots (never lit) may appear on the panel.

Since liquid crystal display panels comprise a great number of display elements, the appearance of bright and dark dots cannot be reduced to zero. Individual differences in liquid crystal display panels may cause differences in color, uneven brightness and flickering.

Note that these phenomena are characteristics of liquid crystal display panels and it does not mean the products are defective or damaged.

\*2 Flickering may occur due to vibration, shock, or the display colors.

\*3 To prevent the display section from burning in and lengthen the backlight life, enable the screen save function and turn off the backlight.

\*4 When a stylus is used, the touch panel has a life of 100 thousand touches.

The stylus must satisfy the following specifications.

- Material: Polyacetal resin

- Tip radius: 0.8 mm or more

\*5 If you touch two points or more simultaneously on the touch panel, a touch switch near the touched points may operate unexpectedly.

Do not touch two points or more simultaneously on the touch panel.

\*6 To conform to IP67F, close the USB environmental protection cover by pushing the [PULL] mark firmly.

(The GOT conforms to IP2X when the USB environmental protection cover is open.)

Note that the structure does not guarantee protection in all users' environments.

The GOT may not be used in an environment where the GOT is exposed to oil or chemicals for a long time, or where oil mist fills the air.

\*7 The minimum size of a key that can be arranged.

To ensure safe use of the product, the following settings are recommended.

- Key size: 16 × 16 dots or larger

\*8 The suffix "F" of IP67F is a symbol that indicates protection rate against oil.

It is described in the Appendix of Japanese Industrial Standard JIS C 0920.

\*9 Set the terminating resistor selector switch of the GOT in accordance with the connection type when adopting GOT multidrop connection.

### 1.3 Power Supply Specifications

Item	Specifications	
Power supply voltage	24 V DC (+10%, -15%)	
Power consumption	Under the maximum load	11.3 W or less
	At backlight off	7.0 W
Inrush current	35 A or less (3ms, ambient temperature: 25°C, under the maximum load)	
Permissible instantaneous power failure time	5 ms or less	
Noise immunity	Noise voltage: 1000 Vp-p, noise width: 1 μs, measured by a noise simulator with noise frequency ranging from 30 Hz to 100 Hz.	
Withstand voltage	500 V AC for 1 minute across power supply terminals and earth	
Insulation resistance	500 V DC across power supply terminals and earth, 10 MΩ or more by an insulation resistance tester	
Applicable wire size	For power supply: 0.75[mm <sup>2</sup> ] or more, For grounding: 2[mm <sup>2</sup> ] or more	
Applicable solderless terminal	Solderless terminal for M3 screw RAV1.25-3, V2-N3A, FV2-N3A	
Applicable tightening torque (Terminal block terminal screw)	0.5 to 0.8 N·m	

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

**Warranty**  
Exclusion of loss in opportunity and secondary loss from warranty liability. Regardless of the gratis warranty term, Mitsubishi Electric shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi Electric.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi Electric products.