JY997D24901G Side B

MITSUBISHI ELECTRIC

Side A JAPANESE

Side B ENGLISH

Programmable Controller
MELSEC-F

FX3U-32DP
INSTALLATION MANUAL

FX 3U

Manual Number	JY997D24901
Revision	G
Date	December 2025

Before installation, operation, maintenance or inspection of this product, thoroughly read through and understand this manual and the associated manuals. Also, take care to handle the module properly and safely.
Store this manual in a safe place so that it can be taken out and read whenever necessary. Always forward it to the end user.

Registration
The company name and the product name to be described in this manual are the registered trademarks or trademarks of each company.

Effective December 2025
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Safety Precautions (Read these precautions before use.)

This manual classifies the safety precautions into two categories:

⚠WARNING and ⚠CAUTION .

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

Depending on circumstances, procedures indicated by ⚠CAUTION may also cause severe injury.
It is important to follow all precautions for personal safety.

Associated Manuals

Manual name	Manual No.	Description
FX3G Series User's Manual - Hardware Edition	JY997D31301	Describes FX3G Series PLC specification details for I/O, wiring, installation, and maintenance.
FX3GC Series User's Manual - Hardware Edition	JY997D45401	Describes FX3GC Series PLC specification details for I/O, wiring, installation, and maintenance.
FX3U Series User's Manual - Hardware Edition	JY997D16501	Describes FX3U Series PLC specification details for I/O, wiring, installation, and maintenance.
FX3UC Series User's Manual - Hardware Edition	JY997D28701	Describes FX3UC Series PLC specification details for I/O, wiring, installation, and maintenance.
MELSEC iQ-F FX5S/ FX5UJ/FX5U/ FX5UC User's Manual (Hardware)	SH-082452ENG	Describes the details of hardware of the FX5 CPU module, including performance specifications, wiring, installation, and maintenance.
FX3S/FX3G/FX3GC/ FX3U/FX3UC Series Programming Manual - Basic & Applied Instruction Edition	JY997D16601	Describes PLC programming for basic/applied instructions and devices.
MELSEC iQ-F FX5 Programming Manual (Instructions, Standard Functions/ Function Blocks)	JY997D55801	Describes specications of instructions and functions that can be used in programs.
FX3U-32DP User's Manual	JY997D25201	Describes details for the FX3U-32DP PROFIBUS-DP Interface Block, i.e. wiring, installation, specification and BFM allocations.
FX3U-64DP-M User's Manual	JY997D19201	Describes details for the FX3U-64DP-M PROFIBUS-DP Master Block, i.e. wiring, installation, specification and BFM allocations.
GX Configurator-DP Configuration System for Open Networks Software Manual	-	Describes the operation of GX Configurator-DP Configuration System for Open Networks Software.

How to obtain manuals
For product manuals or documents, contact with the Mitsubishi Electric dealer you purchased your product.

Certification of UL, cUL standards

The following product has UL and cUL certification.

UL, cUL File Number: E95239
Regarding the standards that comply with the main unit, please refer to either the FX series product catalog or consult with your nearest Mitsubishi product provider.

Compliance with EC directive (CE Marking)

This note does not guarantee that an entire mechanical module produced in accordance with the contents of this note will comply with the following standards.
Compliance to EMC directive and LVD directive for the entire mechanical module should be checked by the user / manufacturer. For more details please contact the local Mitsubishi Electric sales site.

Requirement for the compliance with EMC directive

The following products have shown compliance through direct testing (of the identified standards below) and design analysis (through the creation of a technical construction file) to the European Directive for Electromagnetic Compatibility (2014/30/EU) when used as directed by the appropriate documentation.

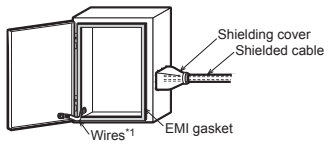
Attention
This product is designed for use in industrial applications.

Type: Programmable Controller (Open Type Equipment)
Models: MELSEC FX3U series manufactured
from March 1st, 2007 FX3U-32DP

Standard	Tests
EN61131-2:2007 Programmable controllers - Equipment requirements and tests	Compliance with all relevant aspects of the standard. **EMI** • Radiated Emission • Conducted Emission **EMS** • Radiated electromagnetic field • Fast transient burst • Electrostatic discharge • High-energy surge • Voltage drops and interruptions • Conducted RF • Power frequency magnetic field

Cautions for compliance with EC Directive

- Installation in Enclosure
  Programmable controllers are open-type devices that must be installed and used within conductive control cabinets. Please use the programmable controller while installed within a conductive shielded control cabinet. Please secure the cabinet door to the control cabinet (for conduction). Installation within a control cabinet greatly affects the safety of the system and aids in shielding noise from the programmable controller.
- Control cabinet
  - The control cabinet must be conductive.
  - Ground the control cabinet with the thickest possible grounding cable.
  - To ensure that there is electric contact between the control cabinet and its door, connect the cabinet and its doors with thick wires.
  - In order to suppress the leakage of radio waves, the control cabinet structure must have minimal openings. Also, wrap the cable holes with a shielding cover or other shielding devices.
  - The gap between the control cabinet and its door must be as small as possible by attaching EMI gaskets between them.



*1 These wires are used to improve the conductivity between the door and control cabinet.

- Caution for wiring
  To avoid malfunctions by noise, lay the twisted-pair PROFIBUS cable so that more than 50 mm (1.97") is touching the grounding plate connected to the ground terminal.
  → **For details on wiring, refer to Section 3.2**

Compliance with UKCA marking

The requirements for compliance with UKCA marking are the same as that with EC directive (CE marking).

1. Introduction

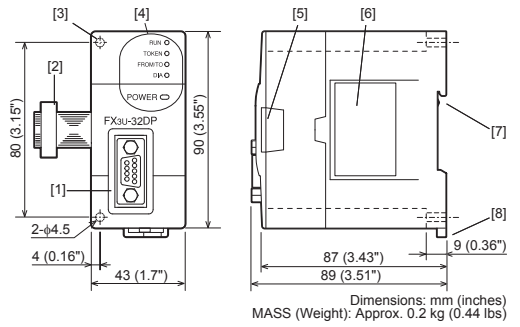
The FX3U-32DP PROFIBUS-DP Interface Block (hereinafter called 32DP) enables users to integrate the MELSEC FX3G/FX3GC*1/FX3U/FX3UC*1/FX5U*2/FX5UC*2 PLC into any existing PROFIBUS- DP network (DP-V0/DP-V1) as a DP-Slave.
The 32DP links the FX3G/FX3GC*1/FX3U/FX3UC*1/FX5U*2/FX5UC*2 PLC with PROFIBUS-DP decentralized control tasks. The module connects the PLC system to the DP-Master in the PROFIBUS-DP network for efficient and easy data exchange.
→ **For details, refer to FX3U-32DP User's Manual**

*1 An FX2NC-CNV-IF or FX3UC-1PS-5V is necessary to connect to the 32DP with the FX3GC/FX3UC Series PLC.
However, the 32DP cannot be connected to the FX3UC-32MT-LT(-2).
*2 An FX5-CNV-BUS or FX5-CNV-BUSC is necessary to connect to the 32DP with the FX5U/FX5UC PLC.

1.1 Incorporated Items

Included Item	
FX3U-32DP	1 unit
GSD file (CD-ROM)	1 piece
Special Unit/Block No. label	1 sheet
Dust proof sheet	1 sheet
Manuals (Japanese version, English version)	1 manual each

1.2 External Dimensions and Part Names



Dimensions: mm (inches)
MASS (Weight): Approx. 0.2 kg (0.44 lbs)

[1] PROFIBUS-DP port (9-pin D-SUB Connector: #4-40unc inch screw thread)
[2] Extension cable
[3] Direct mounting hole:2 holes of ϕ4.5 (0.18") (mounting screw: M4 screw)
[4] Status LED

LED Name	Color	Description
POWER	Green	ON: Correct power supply from the PLC → **For other status, refer to FX3U-32DP User's Manual**
FROM/TO	Green	ON: Constant FROM/TO access within 200ms intervals
RUN	Green	ON: In cyclic data exchange mode Flashing: DP-Master is in clear mode, or DP-Slave is in Fail/Safe state.
DIA	Red	OFF: Normal Operation without errors Otherwise: An error detected → **For error details, refer to FX3U-32DP User's Manual**
TOKEN	Green	ON: Estabilished connection with the DP-Master

[5] Extension port under the top cover
[6] Name plate
[7] DIN rail mounting groove (DIN rail: DIN46277)
[8] DIN rail mounting hook

1.3 Pin configuration of PROFIBUS-DP Connector

The connector is a 9-pin D-SUB (#4-40unc inch screw thread) type, with the following pin assignment.



● Assigned
○ Not assigned

Pin No.	Signal Name	Meaning
3	RXD/TXD-P	Receive/Transmit-Data-P
4	RTS	Ready to send
5	DGND	Data Ground
6	VP	Voltage-Plus (5V, 90mA)
8	RXD/TXD-N	Receive/transmit-Data-N
1, 2, 7, 9	NC	Pin not assigned

2. Installation

INSTALLATION PRECAUTIONS ⚠WARNING

- Cut off all phases of the power supply externally before installation or wiring work in order to avoid damage to the product or electric shock.

INSTALLATION PRECAUTIONS ⚠CAUTION

- Use the product within the generic environment specifications described in the PLC main unit manual (Hardware Edition).
  Never use the product in areas with excessive dust, oily smoke, conductive dusts, corrosive gas (salt air, Cl_2, H_2S, SO_2 or NO_2), flammable gas, vibration or impacts, or expose it to high temperature, condensation, or rain and wind.
  If the product is used in such conditions, electric shock, fire, malfunctions, deterioration or damage may occur.
- Install the product securely using the DIN rail or screws.
- Install the product on a flat surface. If the mounting surface is rough, undue force will be applied to the PC board, thereby causing nonconformity.
- When drilling screw holes or wiring, make sure or cutting or wire debris does not enter the ventilation slits.
  Failure to do so may cause fire, equipment failures or malfunctions.
- Be sure to remove the dust proof sheet from the PLC's ventilation slits when installation work is completed.
  Failure to do so may cause fire, equipment failures or malfunctions.
- Connect the extension cables and communication cables securely to the designated connectors. Contact failures may cause malfunctions.
- Do not touch the conductive parts of the product directly to avoid failure or malfunctions.

2.1 Connection with PLC

The FX3U-32DP connects on the right side of a PLC main unit or extension unit/ block (including special function units/blocks).
An FX2NC-CNV-IF or FX3UC-1PS-5V is necessary to connect to the 32DP with the FX3GC/FX3UC Series PLC. However, the 32DP cannot be connected to the FX3UC-32MT-LT(-2).
An FX5-CNV-BUS or FX5-CNV-BUSC is necessary to connect to the 32DP with the FX5U/FX5UC PLC.
For details, refer to the respective PLC manual.
→ **FX3G Series User's Manual - Hardware Edition**
→ **FX3GC Series User's Manual - Hardware Edition**
→ **FX3U Series User's Manual - Hardware Edition**
→ **FX3UC Series User's Manual - Hardware Edition**
→ **MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)**

2.2 Mounting

The 32DP can be mounted on a DIN rail (DIN46227) or mounted directly to the mounting surface with screws.
→ **FX3G Series User's Manual - Hardware Edition**
→ **FX3GC Series User's Manual - Hardware Edition**
→ **FX3U Series User's Manual - Hardware Edition**
→ **FX3UC Series User's Manual - Hardware Edition**
→ **MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)**

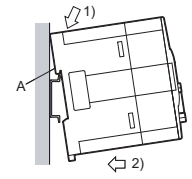
2.2.1 Direct Mounting

The 32DP can be directly mounted with M4 screws.
An interval space of 1 to 2 mm (0.04" to 0.08") between each unit is necessary.
→ **For details on the mounting hole pitch, refer to Section 1.2**

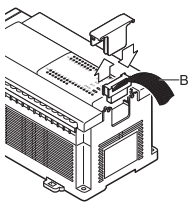
2.2.2 DIN Rail Mounting

The 32DP can be mounted on a DIN rail (DIN46227, 35mm width).

1) Fit the upper edge of the DIN rail mounting groove (right fig. A) onto the DIN rail.
2) Push the product onto the DIN rail.



3) Connect the 32DP's extension cable to the extension port of the main unit, I/O extension unit/block, or special function unit/block.
→ **FX3G Series User's Manual - Hardware Edition**
→ **FX3GC Series User's Manual - Hardware Edition**
→ **FX3U Series User's Manual - Hardware Edition**
→ **FX3UC Series User's Manual - Hardware Edition**
→ **MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)**



3. Wiring

DESIGN PRECAUTIONS ⚠CAUTION

- Make sure to observe the following precautions in order to prevent any damage to the machinery or accidents due to abnormal data written to the PLC under the influence of noise:
  1) Do not bundle the main circuit line together with or lay it close to the main circuit, high-voltage line, or load line.
     Otherwise, noise disturbance and/or surge induction are likely to take place. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit, high-voltage line, or load line.
  2) Ground the shield wire or shield of the shielded cable at one point on the PLC. However, do not ground them at the same point as the high-voltage lines.
- Install module so that excessive force will not be applied to the peripheral device connectors. Failure to do so may result in wire damage/breakage or PLC failure.

WIRING PRECAUTIONS ⚠WARNING

- Cut off all phases of the power supply externally before installation or wiring work in order to avoid damage to the product or electric shock.

WIRING PRECAUTIONS ⚠CAUTION

- When drilling screw holes or wiring, make sure cutting or wire debris does not enter the ventilation slits.
  Failure to do so may cause fire, equipment failures or malfunctions.

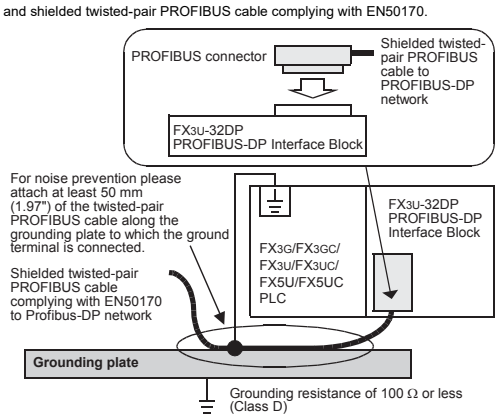
3.1 Applicable Cable and Connector

The following table shows the applicable cable and connector for a PROFIBUS-DP network.

Item	Description
PROFIBUS-DP network cable	Shielded twisted-pair PROFIBUS cable complying with EN50170
Connector	Applicable only to PROFIBUS connector (9-pin D-SUB Connector: #4-40unc inch screw thread) → **For PROFIBUS connectors see the PROFIBUS connector manual**

3.2 Wiring

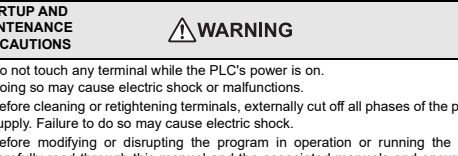
To connect the 32DP to a PROFIBUS-DP network, use the PROFIBUS connector and shielded twisted-pair PROFIBUS cable complying with EN50170.



3.3 Grounding

Ground the cable as stated below.

- Use a grounding resistor of 100Ω or less.
- Ground the cables indepently for best results.
  When independent grounding is not used, use "shared grounding" as follows.
  → **For details, refer to the FX3G Series User's Manual - Hardware Edition.**
  → **For details, refer to the FX3GC Series User's Manual - Hardware Edition.**
  → **For details, refer to the FX3U Series User's Manual - Hardware Edition.**
  → **For details, refer to the FX3UC Series User's Manual - Hardware Edition.**
  → **For details, refer to the MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware).**



- The grounding wire size should be AWG 14 (2 mm^2) or larger.
- The grounding point should be as close to the PLC as possible, and all grounding wire should be as short as possible.

3.4 Bus Terminator

To avoid the signal reflections, connect a self-terminating DP-Connector/Device at each end of the PROFIBUS-DP Network.

Note

The FX3U-32DP is not self-terminated.

4. Specifications

DESIGN PRECAUTIONS ⚠WARNING

- Make sure to have the following safety circuits outside of the PLC to ensure safe system operation even during external power supply problems, communication errors or PLC failure. Otherwise, malfunctions may cause serious accidents.
  1) Most importantly, have the following: an emergency stop circuit, a protection circuit, an interlock circuit for opposite movements (such as normal vs. reverse rotation), and an interlock circuit (to prevent damage to the equipment at the upper and lower positioning limits).
  2) Note that when the PLC CPU detects an error, such as a watchdog timer error, during self-diagnosis, all outputs are turned off. Also, when an error that cannot be detected by the PLC CPU occurs in an input/output control block, output control may be disabled. External circuits and mechanisms should be designed to ensure safe machinery operation in such a case.
  3) Note that when an error occurs in a relay, triac or transistor output device, the output could be held either on or off. For output signals that may lead to serious accidents, external circuits and mechanisms should be designed to ensure safe machinery operation in such a case

DESIGN PRECAUTIONS ⚠CAUTION

- Make sure to observe the following precautions in order to prevent any damage to the machinery or accidents due to abnormal data written to the PLC under the influence of noise:
  1) Do not bundle the main circuit line together with or lay it close to the main circuit, high-voltage line, or load line.
     Otherwise, noise disturbance and/or surge induction are likely to take place. As a guideline, lay the control line at least 100mm (3.94") or more away from the main circuit, high-voltage line, or load line.
  2) Ground the shield wire or shield of the shielded cable at one point on the PLC. However, do not ground them at the same point as the high-voltage lines.
- Install module so that excessive force will not be applied to the connectors. Failure to do so may result in wire damage/breakage or PLC failure.

STARTUP AND MAINTENANCE PRECAUTIONS ⚠WARNING

- Do not touch any terminal while the PLC's power is on.
  Doing so may cause electric shock or malfunctions.
- Before cleaning or retightening terminals, externally cut off all phases of the power supply. Failure to do so may cause electric shock.
- Before modifying or disrupting the program in operation or running the PLC, carefully read through this manual and the associated manuals and ensure the safety of the operation.
  An operation error may damage the machinery or cause accidents.

STARTUP AND MAINTENANCE PRECAUTIONS ⚠CAUTION

- Do not disassemble or modify the PLC.
  Doing so may cause fire, equipment failures, or malfunctions.
  For repair, contact your local Mitsubishi Electric representative.
- Do not drop the product or expose the product to strong impacts, as doing so may cause product damage.
- Turn off the power to the PLC before connecting or disconnecting any extension cable.Failure to do so may cause equipment failures or malfunctions.

DISPOSAL PRECAUTIONS ⚠CAUTION

- Please contact a certified electronic waste disposal company for the environmentally safe recycling and disposal process for your device.

TRANSPORTATION AND STORAGE PRECAUTIONS ⚠CAUTION

- The product is a precision instrument. During transportation, avoid impacts larger than those specified in the general specifications by using dedicated packaging boxes and shock-absorbing palettes. Failure to do so may cause failures in the product. After transportation, verify operation of the product and check for damage of the mounting part, etc.

4.1 Applicable PLC

Model name	Applicability
FX3G Series PLC	Ver. 1.00 or later
FX3GC Series PLC*1	Ver. 1.40 or later
FX3U Series PLC	Ver. 2.21 or later
FX3UC Series PLC*1	Ver. 2.21 or later
FX5U PLC*2	From first production
FX5UC PLC*2	From first production

*1 An FX2NC-CNV-IF or FX3UC-1PS-5V is necessary to connect to the 32DP with the FX3GC/FX3UC Series PLC.
However, the 32DP cannot be connected to the FX3UC-32MT-LT(-2).
*2 An FX5-CNV-BUS or FX5-CNV-BUSC is necessary to connect to the 32DP with the FX5U/FX5UC PLC.

4.2 General Specifications

For the general specification, refer to the PLC main unit manual.
The items other than the following are equivalent to those of the PLC main unit.
However, do not perform any dielectric withstand voltage tests or insulation resistance tests on this product.
→ **Refer to FX3G Series User's Manual - Hardware Edition**
→ **Refer to FX3GC Series User's Manual - Hardware Edition**
→ **Refer to FX3U Series User's Manual - Hardware Edition**
→ **Refer to FX3UC Series User's Manual - Hardware Edition**
→ **Refer to MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)**

Item	Specifications	
Withstand voltage	500V AC for 1 min	Between communication connector frame and ground terminal of PLC main unit
Insulation resistance	5 MΩ or higher by 500 V DC insulation resistance tester	

4.3 Power Supply Specifications

Item	Specifications
Internal Power Supply	145 mA at 24V DC is supplied from the internal service power in the main unit via extension cable

4.4 Performance Specifications

Item		Specifications	
Transmission Type		Bus network	
Unit Type		PROFIBUS-DP Slave	
Transmission Data (Maximum Exchanged Data Length)		• Cyclic Data : 144 Byte • Acyclic Data : 140 Byte	
Maximum Number of FX3U-32DP at one PLC		8 units	
Supported Transmission speed (bps) and Bus Length	9.6k, 19.2k, 45.45k, 93.75k	1,200 m (3,937') / segment	See Section 4.5
	187.5k	1,000 m (3,281') / segment	
	500k	400 m (1,312') / segment	
	1.5 M	200 m (656') / segment	
	3M, 6M, 12M	100 m (328') / segment	
PROFIBUS Module ID		"F332" hex	
Connector	PROFIBUS-DP Network	PROFIBUS-DP network (9 pin D-SUB)	
Global Control		Supports SYNC, UNSYNC, FREEZE, and UNFREEZE modes	
Terminal Resistor		Not built in.	

4.5 Maximum Bus Length and Baud Rate

The following table shows the acceptable bus length.
Maximum Bus Length = (No. of repeaters + 1) * (Bus Length / segment)

Baud Rate (bps)	Maximum Bus Length			
	No repeater	1 repeater	2 repeaters	3 repeaters
9.6k, 19.2k, 45.45k, 93.75k	1,200 m (3,937')	2,400 m (7,874')	3,600 m (11,811')	4,800 m (15,748')
187.5k	1,000 m (3,281')	2,000 m (6,562')	3,000 (9,843')	4,000 m (13,123')
500k	400 m (1,312')	800 m (2,625')	1,200 m (3,937')	1,600 m (5,249')
1.5 M	200 m (656')	400 m (1,312')	600 m (1,969')	800 m (2,625')
3M, 6M, 12M	100 m (328')	200 m (656')	300 m (984')	400 m (1,312')

「电器电子产品有害物质限制使用标识要求」的表示方式

产品正常使用终结废弃时，有关电子信息产品的回收，
再利用等要遵守各自治体的法律法规的要求。
Note: This symbol mark is for China only.

含有有害10物质的名称，含有量，含有部品
本产品中所含有的有害10物质的名称，含有量，含有部品如下表所示。

产品中有害物质的名称及含信息表

部件名称	有害物质					
	铅（Pb）	汞（Hg）	镉（Cd）	六价铬（Cr(VI)）	多溴联苯（PBBs）	多溴二苯醚（PBDEs）
外壳	○	○	○	○	○	○
印刷基板	×	○	○	○	○	○

部件名称	有害物质			
	邻苯二甲酸二正丁酯（DBP）	邻苯二甲酸二异丁酯（DIBP）	邻苯二甲酸丁苄酯（BBP）	邻苯二甲酸二(2-乙基)己酯（DEHP）
外壳	○	○	○	○
印刷基板	○	○	○	○

注1 ○:表示该有害物质在该部件所有均质材料中的含量均不超出电器电子产品有害物质限制使用国家标准要求。
×:表示该有害物质至少在该部件的某一均质材料中的含量超出电器电子产品有害物质限制使用国家标准要求。
注2 以上未列出的部件，表明其有害物质含量均不超出电器电子产品有害物质限制使用国家标准要求。

基于中国标准法的参考规格:GB/T15969.2

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 shall not be liable for compensation to:
(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

⚠ 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 Electric.
- 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.

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN