

**mitsubishi electric engineering**

**Spring Clamp Terminal Block Conversion Adapter**

**MODEL**

**FA1-TE40PA**

**User's Manual**

(Detailed Edition)

Time and Wire Saving Devices



# SAFETY PRECAUTIONS

(Read these precautions before using the products.)

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

The precautions given in this manual are concerned with time and wire saving devices only.

For the safety precautions of the programmable controller system, refer to the user's manual for the programmable controller used.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In this manual, the safety precautions are classified into two levels: "⚠️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 minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠️CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

## [Design Precautions]



**WARNING**

- Configure safety circuits externally to ensure that the entire system operates safely even when a fault occurs in the external power supply, the programmable controller, or the products. Failure to do so may result in an accident due to an incorrect output or malfunction.
  - (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured externally.
  - (2) Outputs may remain on or off due to a failure of a component such as a relay, transistor, and triac used for digital signal converter outputs. Configure an external circuit for monitoring output signals that could cause a serious accident.
- In an output circuit for digital signal converter outputs, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.

## [Design Precautions]

### CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm (3.94 inches) or more between them. Failure to do so may result in malfunction or failure due to noise.
- When using a terminal block conversion module for a high-speed counter module, do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 150mm (5.91 inches) or more between them. Failure to do so may result in malfunction or failure due to noise.
- Keep a distance of 100mm (3.94 inches) or more between a thermocouple or RTD (Resistance Temperature Detector) and the main circuit line or AC control lines. Also, keep the thermocouple or RTD away from a circuit that includes harmonics, such as a high-voltage circuit and a load circuit of an inverter. If not, the thermocouple or RTD is more likely to be affected by noise, surges, and induction.
- At power-on or power-off, a voltage may occur or a current may flow between output terminals for a moment. To use an analog signal converter or analog terminal block conversion module, start the control after analog outputs become stable.
- Do not place an analog signal converter or analog terminal block conversion module near a device that generates magnetic noise.
- When a device such as a lamp, heater, or solenoid valve is controlled using a module for digital signal converter outputs, a large current (approximately 10 times greater than normal) may flow when the output is turned from off to on. Therefore, select a module for digital signal converter outputs that has a sufficient current rating.

## [Installation Precautions]

### WARNING

- Shut off the external power supply (all phases) used in the system before installation. Failure to do so may result in electric shock or damage to the products.

## [Installation Precautions]

### CAUTION

- Use products in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the products.
- Securely fix the products with a DIN rail or screws. Incorrect installation may cause malfunction, failure, or drop of the module. When using the products in an environment of frequent vibrations, fix the products with screws.
- Tighten the screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, or malfunction. Overtightening can damage the screw and/or products, resulting in drop, short circuit, or malfunction.
- Attach DIN rail stoppers on the right and left sides of the spring clamp conversion module to fix the module securely.
- Shut off the external power supply (all phases) used in the system before mounting or removing the products. Failure to do so may result in damage to, malfunction of, or failure of the products.
- Do not directly touch any conductive parts and electronic components of the products. Failure to do so may cause malfunction or failure of the products.
- Install the products in the correct orientation if it is specified. Failure to do so may result in damage to or deterioration of the products.
- When drilling screw holes, be careful not to drop chips into the inside of the products or conductive parts. Such foreign matter can cause a fire, failure, or malfunction.
- When using modules for replacing digital signal converters or signal conversion modules, use them in the correct combination. Incorrect combination may cause failure.
- Shut off the power supply before installing/removing a module for replacing digital signal converters. Failure to do so may cause failure or malfunction.
- Securely mount a module for replacing digital signal converters and signal conversion module on a digital signal converter and installation base. Failure to do so may cause damage to or drop of the products, or malfunction due to poor contact. Follow the correct procedure to install/remove them. Failure to do so may cause damage to or drop of the products, or malfunction due to poor contact.
- When a module for digital signal converters or signal conversion module is mounted on a digital signal converter or installation base, hold the digital signal converter or installation base to transport them or install them to a panel. Holding the module for digital signal converters or signal conversion module may cause drop or failure of the digital signal converter or installation base.

## [Wiring Precautions]

### **WARNING**

- Shut off the external power supply (all phases) used in the system before wiring. Failure to do so may result in electric shock or damage to the products.
- After wiring, attach the included terminal cover to the products before turning them on for operation. Failure to do so may result in electric shock.

## [Wiring Precautions]

### **CAUTION**

- Use applicable solderless terminals and tighten them within the specified torque range. Failure to do so may cause failure, damage, or malfunction.
- Check the rated voltage and terminal layout before wiring to the products, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- When using a terminal block conversion module for a high-speed counter module, do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 150mm (5.91 inches) or more between them. Failure to do so may result in malfunction or failure due to noise.
- Keep a distance of 100mm (3.94 inches) or more between a thermocouple or RTD (Resistance Temperature Detector) and the main circuit line or AC control lines. Also, keep the thermocouple or RTD away from a circuit that includes harmonics, such as a high-voltage circuit and a load circuit of an inverter. If not, the thermocouple or RTD is more likely to be affected by noise, surges, and induction.
- Do not place an analog signal converter or analog terminal block conversion module near a device that generates magnetic noise.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the products or cables or malfunction due to poor contact.
- Tighten the terminal screws within the specified torque range. Undertightening can cause short circuit, fire, or malfunction. Overtightening can damage the screw and/or products, resulting in drop, short circuit, or malfunction.
- Tighten the connector screws within the specified torque range. Undertightening can cause short circuit, fire, or malfunction. Overtightening can damage the screw and/or products, resulting in drop, short circuit, fire, or malfunction.
- Securely connect connectors to the products. Failure to do so may cause malfunction.
- When disconnecting a cable from the products, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the products may result in malfunction or damage to the products or cable.
- Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the products and external device.
- Prevent foreign matter such as dust or wire chips from entering the products. Such foreign matter can cause a fire, failure, or malfunction.
- The products must be installed in control panels. Connect the main power supply to the products in the control panel through a relay terminal block. Wiring and replacement of the products must be performed by qualified maintenance personnel with knowledge of protection against electric shock.
- When connecting the products with a programmable controller, check that the product configuration is correct. An incorrect configuration may cause failure or malfunction.
- Use the products with no force applied to their connectors. Applied force may cause failure or disconnection.
- Attach protective covers or signal conversion modules to unused connectors or empty slots of the products. Failure to do so may cause a fire, failure, or malfunction due to foreign matter.
- When using modules for replacing digital signal converters or signal conversion modules, use them in the correct combination. Incorrect combination may cause failure of a programmable controller, digital signal converter, installation base, or external device.
- Securely mount modules for replacing digital signal converters and signal conversion modules on a digital signal converter and installation base. Failure to do so may cause damage to or drop of the products, or malfunction due to poor contact. Follow the correct procedure to install/remove them. Failure to do so may cause damage to or drop of the products, or malfunction due to poor contact.
- Individually ground the FG terminal of the products with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.

## [Startup and Maintenance Precautions]

### WARNING

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Shut off the external power supply (all phases) used in the system before cleaning the products or retightening the terminal screws, connector screws, or products fixing screws. Failure to do so may result in electric shock or cause failure or malfunction of the products. Undertightening can cause drop of the screw, short circuit, or malfunction. Overtightening can damage the screw and/or products, resulting in drop, short circuit, or malfunction.

## [Startup and Maintenance Precautions]

### CAUTION

- Do not disassemble or modify the products. Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm away in all directions from the programmable controller and products. Failure to do so may cause malfunction.
- Shut off the external power supply (all phases) used in the system before mounting or removing the products. Failure to do so may cause failure or malfunction of or damage to the products.
- After the first use of the products, do not connect/remove the products and cables more than 50 times. Exceeding the limit may cause malfunction.
- Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.
- The ESD susceptibility symbol shown below is placed on the products. This symbol products is susceptible static electricity passed. Before handling the connector, touch a conducting object such as a grounded metal to release the static electricity from your body. Failure to do so may cause the products to fail or malfunction. Do not touch the connector when the products is powered. Doing so may result in injury or cause the products to malfunction due to the static electricity in your body.



## [Disposal Precautions]

### CAUTION

- When disposing of the products, treat them as industrial waste.

## [Transportation Precautions]

### CAUTION

- Do not apply shock that exceeds the shock resistance described in the general specifications during transportation since the products are precision devices. Doing so may cause failure of the module.
- The halogens (such as fluorine, chlorine, bromine, and iodine), which are contained in a fumigant used for disinfection and pest control of wood packaging materials, may cause failure of the products. Prevent the entry of fumigant residues into the product or consider other methods (such as heat treatment) instead of fumigation. The disinfection and pest control measures must be applied to unprocessed raw wood.

## EMC and Low Voltage Directives

Compliance with the EMC Directive, which is one of the EU directives, has been mandatory for products sold within EU member states since 1996 as well as compliance with the Low Voltage Directive since 1997.

For products compliant to the EMC and Low Voltage Directives, their manufacturers are required to declare compliance and affix the CE marking.

### (1) Sales representative in EU member states

The sales representative in EU member states is:

Company: MITSUBISHI ELECTRIC EUROPE B.V.

Address: Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany

### (2) Method of ensuring compliance\*<sup>1</sup>

To ensure that products maintain EMC and Low Voltage Directives when incorporated into other machinery or equipment, certain measures may be necessary. Please refer to "EMC and Low Voltage Directives Compliant Manual" (50D-FA9010-108).

\*1: The FA1-TE40PA are excluded.

## REVISIONS

\*The manual number is given on the bottom left of the last page.

Print Date	*Manual Number	Revision
August, 2020	50D-FG0474	First edition
September, 2020	50D-FG0474-A	Added parts Connectable modules addition : RD77MS2, QD77MS2 5-2. Wiring to a spring clamp terminal block, 8.CONNECTABLE MODULES
September, 2023	50D-FG0474-B	Added parts Connectable modules addition : Q172DLX, Q172LX Q173DPX, Q173PX, Q173PX-S1 5-2. Wiring to a spring clamp terminal block 8. CONNECTABLE MODULES

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## 1. INTRODUCTION

This manual describes the specifications and handling of the spring clamp terminal block conversion adapter used in combination with Mitsubishi Electric Corporation programmable controller I/O modules, high-speed counter modules, or Positioning modules.

## 2. GENERAL SPECIFICATIONS

Item		Specifications	
Model		FA1-TE40PA	
Operating ambient temperature		0 to 55°C (When an extended temperature range base unit is not used) 0 to 60°C (When an extended temperature range base unit is used)	
Storage ambient temperature		-25 to 75°C	
Operating ambient humidity		5 to 95%RH, non-condensing	
Storage ambient humidity		5 to 95%RH, non-condensing	
Vibration resistance	Compliance with standards		JIS B 3502, IEC 61131-2
	Under intermittent vibration	5 to 8.4Hz	Half amplitude: 3.5mm
		8.4 to 150Hz	Constant acceleration: 9.8m/s <sup>2</sup> (1G)
		Sweep count	10 times each in X, Y, and Z directions
	Under continuous vibration	5 to 8.4Hz	Half amplitude: 1.75mm
		8.4 to 150Hz	Constant acceleration: 4.9m/s <sup>2</sup> (0.5G)
Sweep count		—	
Shock resistance		Compliant with JIS B 3502 and IEC 61131-2 (147m/s <sup>2</sup> (15G), 3 times each in X, Y, and Z bidirections)	
Operating atmosphere		No corrosive gases	
Operating altitude <sup>*1</sup>		2000m or lower	
Installation location		Inside a control panel <sup>*4</sup> , Indoor use	
Overvoltage category <sup>*2</sup>		II or less	
Pollution degree <sup>*3</sup>		2 or less	

\*1: Do not use or store the products under pressure higher than the atmospheric pressure of altitude 0m. Doing so may cause malfunction.

\*2: This category 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 premises.

\*3: This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.

\*4: The enclosure is suitably designed for those specific environmental conditions, as applicable, and enclosure rate meets IP20 and minimum type 1 of UL 50.



### 3. PERFORMANCE SPECIFICATIONS

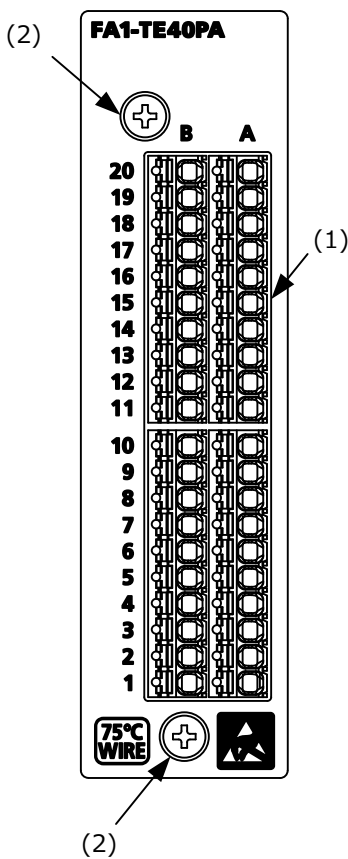
Item		Model	FA1-TE40PA
Number of points			40 points
Rated voltage			24VDC(Class2 or SELV+LIM) <sup>*3</sup>
Maximum operating voltage			30VDC(Class2 or SELV+LIM) <sup>*3</sup>
Maximum operating current			0.5A/pt, 2A/pt(1A,2A,1B,2B)
Terminal block	Number of terminals		40 terminals
	Applicable wire <sup>*1*2</sup>	When a ferrule is not used (stranded wire or solid wire)	0.2 to 1.5mm <sup>2</sup> (24 to 16 AWG), Copper wire with a temperature rating of 75°C or more
		When a ferrule is used (stranded wire)	0.08 to 0.75mm <sup>2</sup> (28 to 18 AWG), Copper wire with a temperature rating of 75°C or more
	Wire strip length		8mm
Applicable tightening torque	Mounting bracket fixing screw (M2.6×4)		0.20 to 0.29N·m
	Conversion adapter anchor base installation screw (M3×20)		0.43 to 0.57N·m
Withstand voltage			500VAC for 1 minute
Insulation resistance (initial)			10MΩ or more (measured with 500VDC insulation resistance tester)
Weight			About 100g (including the mounting bracket and screws)

\*1: Select wires depending on the current value used.

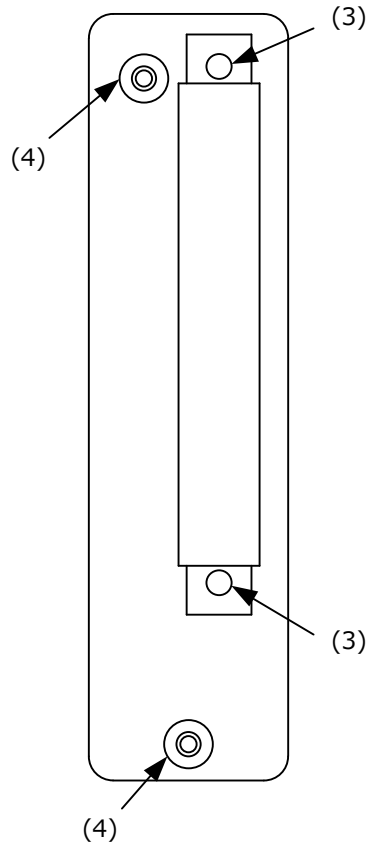
\*2: For UL certification, suitable for field wiring when a ferrule is not used.

\*3: The power supply must use CLASS 2 power supply or a power supply conforming to the SELV (Safety Extra-Low Voltage) and LIM(Limited Energy Circuit) circuit.

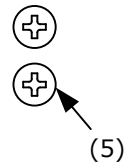
## 4. PART NAMES



Conversion adapter



Mounting bracket(included item)

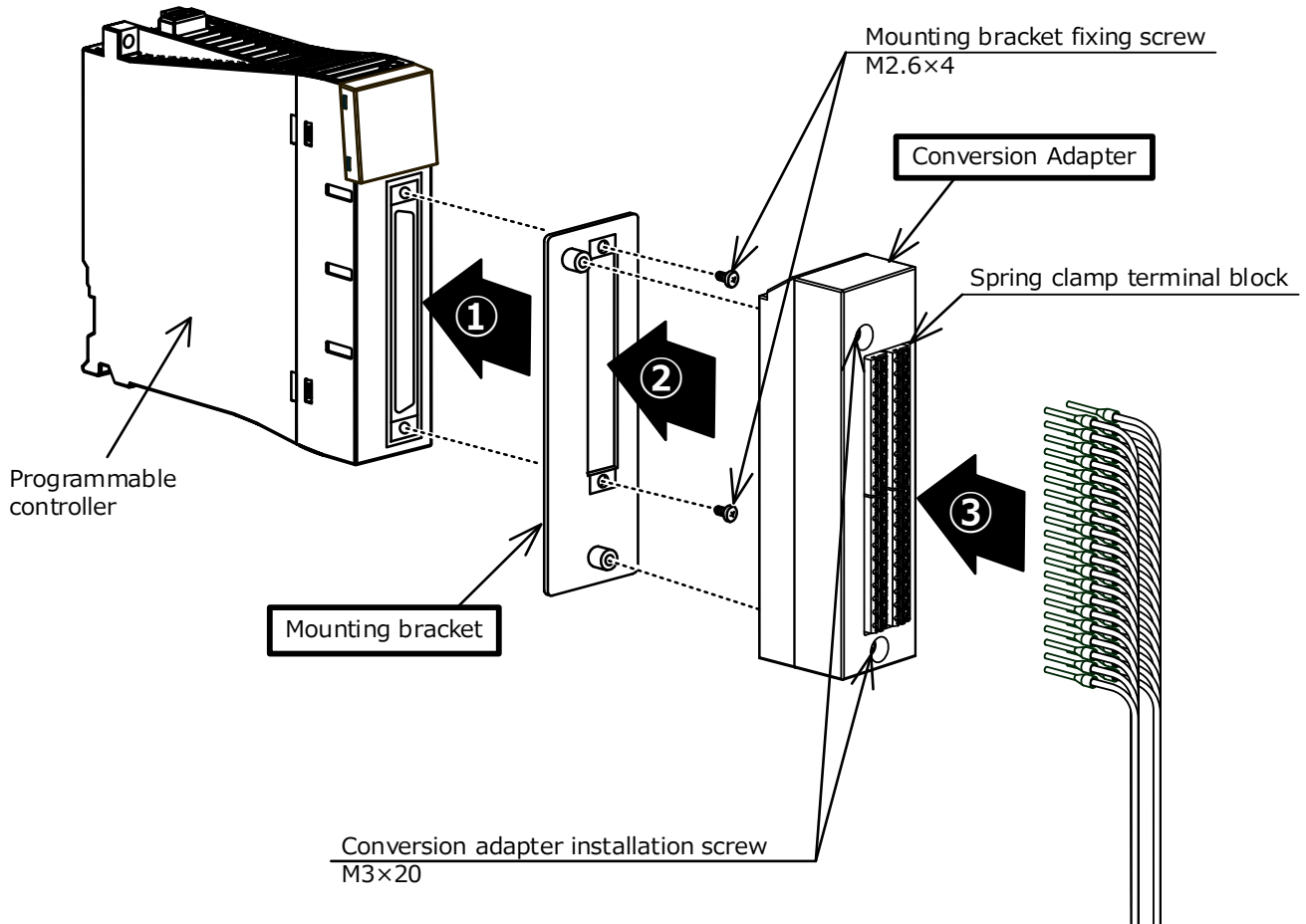


Mounting bracket fixing screw  
(M2.6×4)(included item)

No.	name	Description
(1)	Spring clamp terminal block	This is a terminal block to connect external signals.
(2)	Conversion adapter installation screw (M3×20)	This is a screw to install the conversion adapter on the mounting bracket.
(3)	Mounting bracket fixing hole	This is a hole to fix the mounting bracket to a programmable controller.
(4)	Conversion adapter mounting hole	This is a hole to fix the conversion adapter to the mounting bracket.
(5)	Mounting bracket fixing screw (M2.6×4)(included item)	This is a screw to fix the mounting bracket to a programmable controller.

## 5. CONNECTING METHOD

### 5-1. Connection to a programmable controller



- ① Secure the mounting bracket to the Programmable Controller Module using the Mounting bracket fixing screws (M2.6x4 ; 2 upper/lower locations)
- ② Mount the Conversion Adapter onto the Mounting Bracket, and secure the Conversion Adapter Using the Conversion Adapter installation screws (M3x20 ; 2 locations)

#### Precaution

Before tightening the installation screws, check that the Conversion Adapter has been securely installed on the Programmable controller. Tightening the screws in floating-off state or tilting state will damage the Conversion Adapter installation screws and the Mounting Bracket.

- ③ Install wires to the spring clamp terminal block.

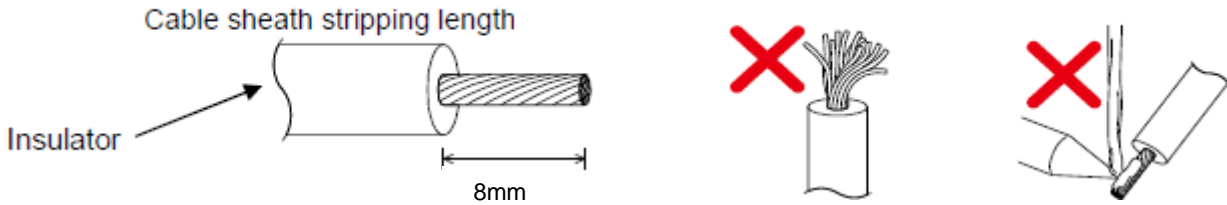
## 5-2. Wiring to a spring clamp terminal block

### (1) Wires routing

#### (a) Fabrication on cable insulator

Strip the wire as follows. If the length of the sheath peeled is too long, a short circuit may occur with neighboring

wires. If the length is too short, wires might come off. Wire the stripped cable after twisting it to prevent it from becoming loose. In addition, do not solder it.



#### (b) Using a ferrule terminal

Insert wires to a ferrule terminal and crimp it. Make sure that core wire slightly comes out of the ferrule.

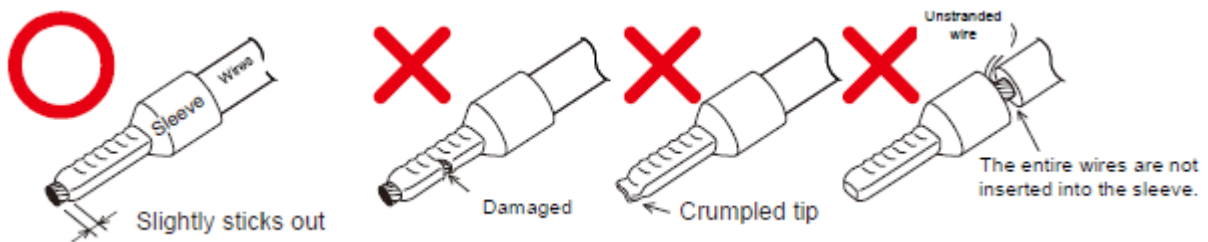
Check the condition of the ferrule terminal after crimping. Do not use a ferrule terminal of which the crimping is inappropriate, or the face is damaged.

Refer to chapter 9 for the applicable ferrule terminal.

\* Ferrule terminals crimped onto one wire are applicable to the terminal block of this product.

If multiple wires need to be installed (such as for the power supply), provide an external common terminal.

(For example, ABCOM of a high-speed counter module or COM of a simple motion module)



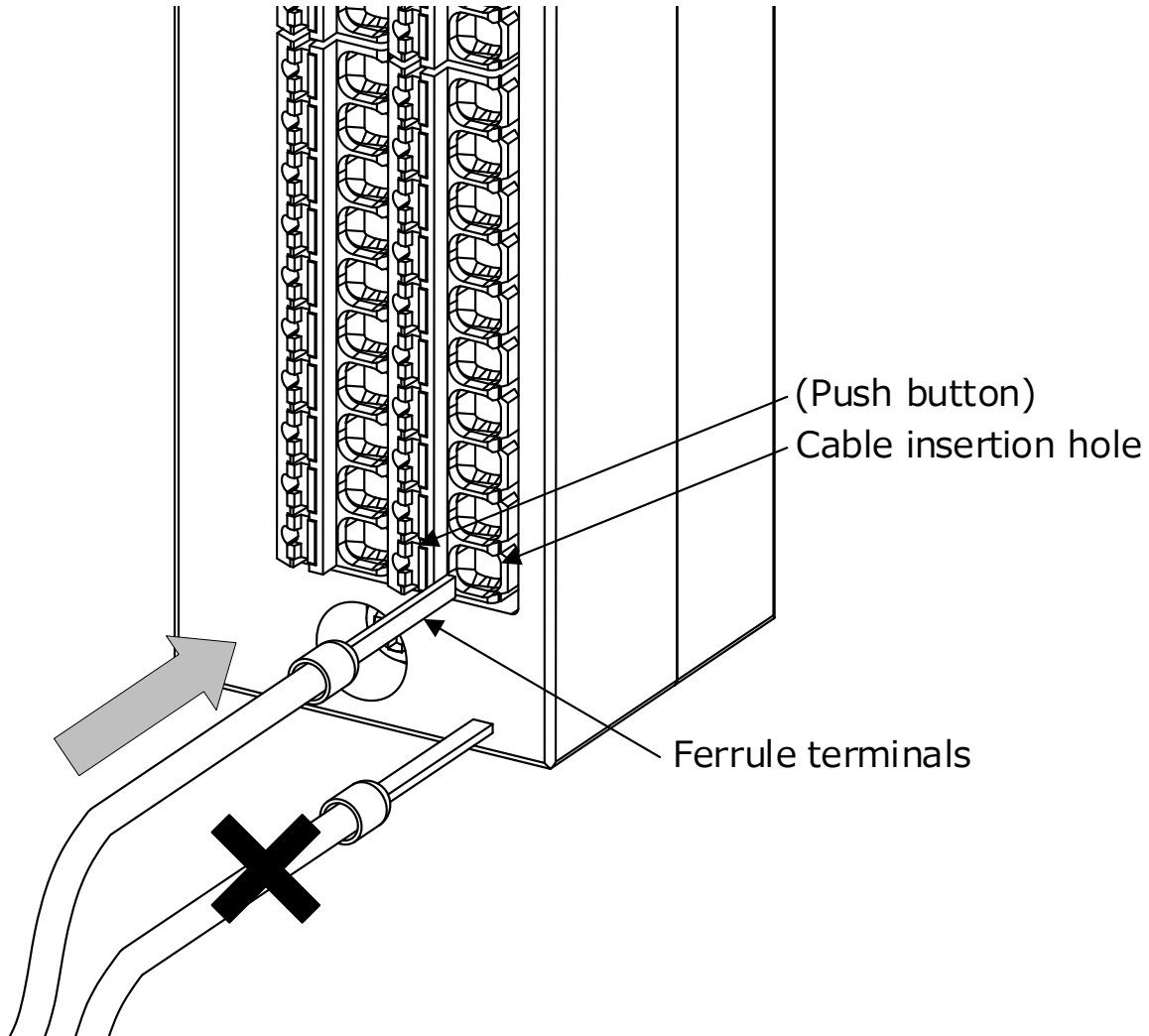
(c) Inserting wires

The wire with ferrule or solid cable can be inserted into the wire insertion hole. After inserting, pull the wire lightly to confirm that the wire is surely connected.

For the correct terminal insertion direction, refer to the figure below.

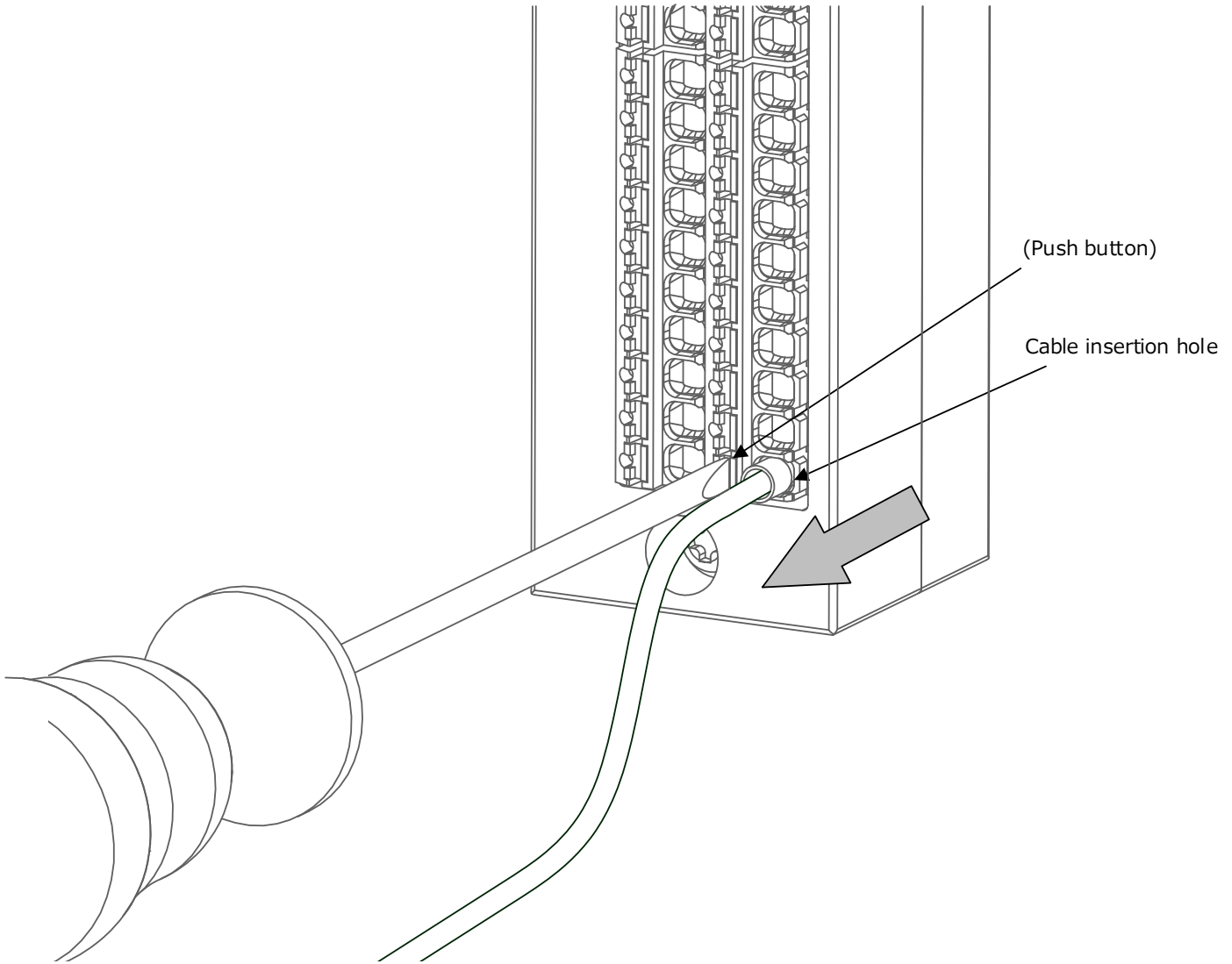
When binding twisted wires, press the push button using the screw driver, then insert the twisted wires into the wire insertion hole.

\* Make sure to insert the wire straight and vertically as far as it will go.



(2) Wires removal

Press the push button all the way using the screw driver, then pull out the wire.

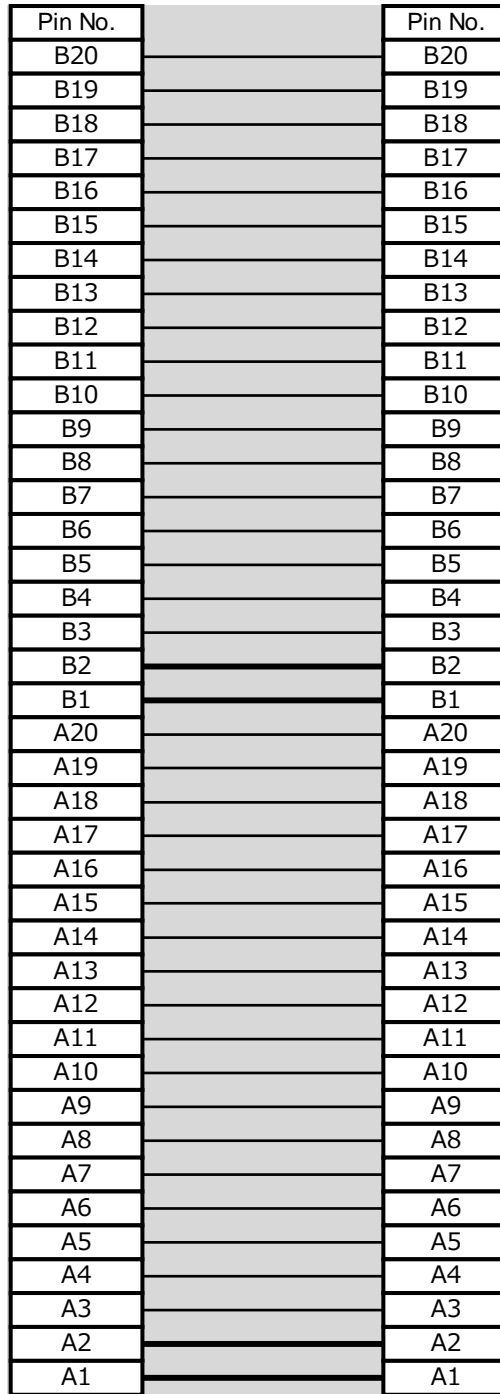
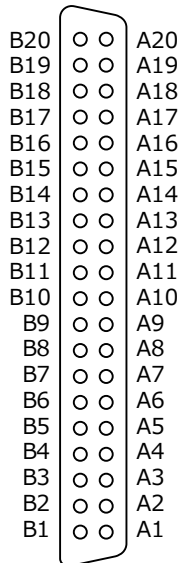


Use the screw driver shown in the table below.

Recommended tool (screw driver)		
Manufacturer	Model	Blade edge size
PHOENIX CONTACT	SZS 0,4×2,5 VDE	2.5x0.4mm

## 6. INTERNAL WIRING DIAGRAM

40-pin connector



Conversion Adapter

Spring clamp terminal block

B20	A20
B19	A19
B18	A18
B17	A17
B16	A16
B15	A15
B14	A14
B13	A13
B12	A12
B11	A11
B10	A10
B9	A9
B8	A8
B7	A7
B6	A6
B5	A5
B4	A4
B3	A3
B2	A2
B1	A1

Rated current value

— : 2.0A

— : 0.5A

## 7. APPLICABLE SOLDERLESS TERMINALS(Ferrule)

Type		Applicable ferrule	Crimp tool
Manufacturer	Applicable wire size		
PHOENIX CONTACT	0.25/24	AI 0.25-8 YE	CRIMPFOX 6
	0.3, 0.34/22	AI 0.34-8 TQ	
	0.5/20	AI 0.5-8 WH	
	0.75/18	AI 0.75-8 GY	
WAGO	0.08 to 0.34 mm <sup>2</sup> /AWG28 to 22	216-302	206-220
	0.34 mm <sup>2</sup> /AWG24 and 22	216-302	206-1204, 206-204
	0.5 mm <sup>2</sup> /AWG22 and 20	216-201	
	0.75 mm <sup>2</sup> /AWG20 and 18	216-202	



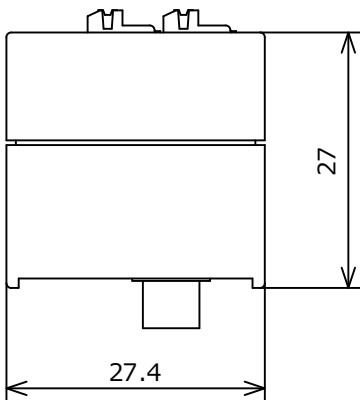
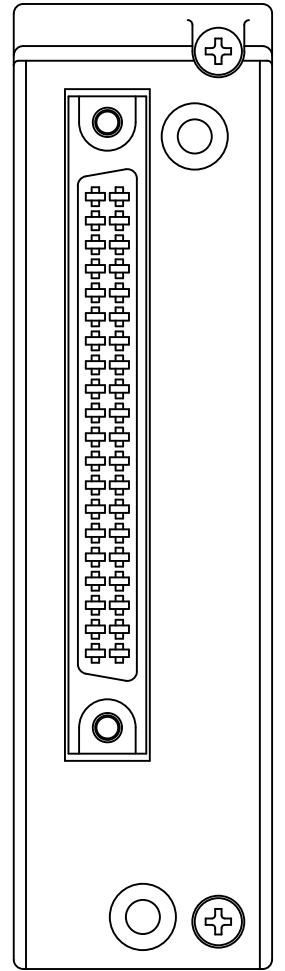
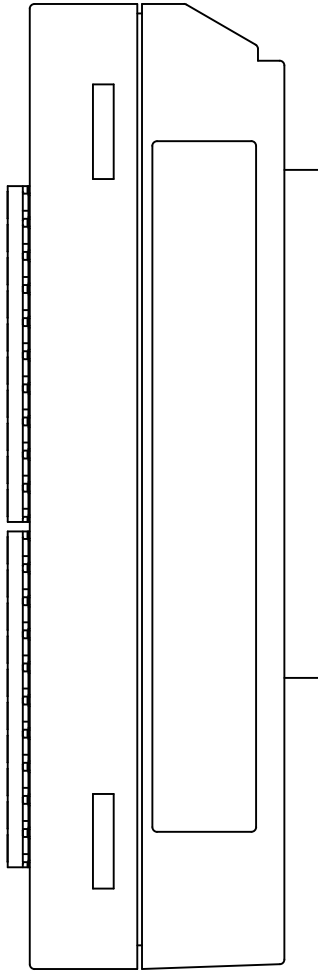
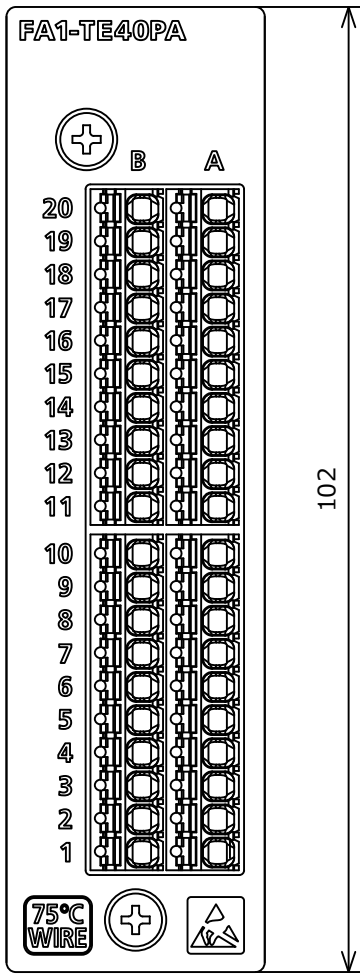
## 8. CONNECTABLE MODULES

Module model for a programmable controller			Module model
MELSEC iQ-R series Connector type	Input modules	RX41C4 RX41C6HS RX71C4 RX61C6HS	FA1-TE40PA
	Output modules	RY41NT2P RY41PT1P RY41NT2H RY41PT2H	
	High-Speed Counter Module	RD62P2 RD62P2E RD62D2	
	Positioning Module	RD75P2	
	Simple Motion Module	RD77MS2	
MELSEC-Q series Connector type	Input modules	QX41 QX41-S1 QX41-S2 QX71	
	Output modules	QY41P QY41H QY71	
	High-Speed Counter Module	QD62 QD62E QD62D QD63P6 QD64D2	
	Positioning Module	QD75P1/QD75P1N QD75D1/QD75D1N QD75P2/QD75P2N QD75D2/QD75D2N QD70P4	
	Simple Motion Module	QD77MS2	
	Servo external signals interface module	Q172DLX/Q172LX	
	Manual pulse generator interface module	Q173DPX/Q173PX/Q173PX-S1	
MELSEC-L series Connector type	Input modules	LX41C4	
	Output modules	LY41NT1P LY41PT1P	
	High-Speed Counter Module	LD62 LD62D	
	Positioning Module	LD75P1 LD75D1 LD75P2 LD75D2	

# 9. EXTERNAL DIMENSIONS

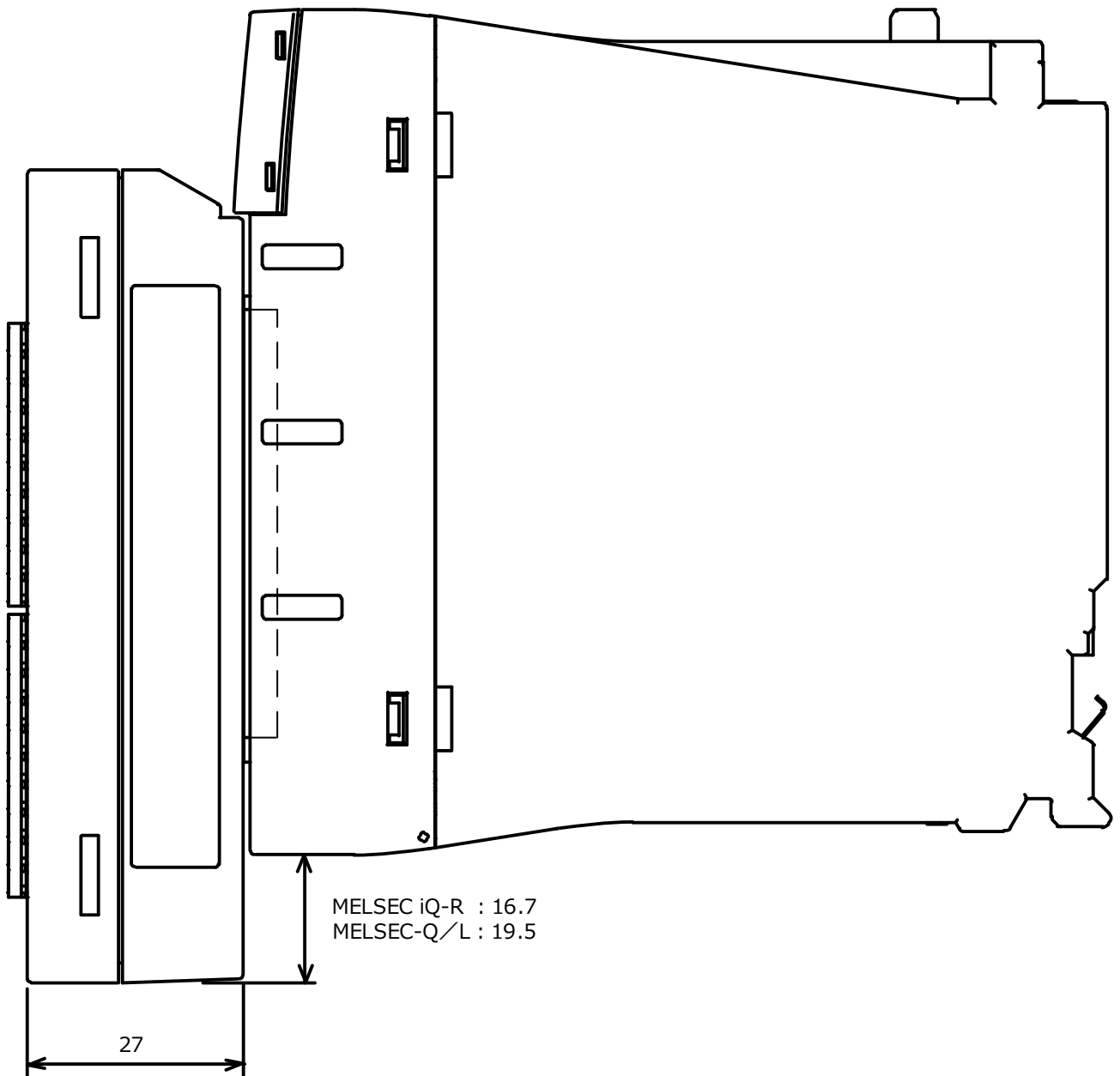
## 9-1. Spring Clamp Terminal Block Conversion Adapter (FA1-TE40PA)

[Unit : mm]



## 9-2. Depth and height

[Unit : mm]



## 10. PRECAUTIONS

- (1) For wiring to the terminal block, refer to the manual of the programmable controller module to be connected, published by Mitsubishi Electric.

## 11. GRATIS WARRANTY TERMS AND GRATIS WARRANTY RANGE

If any fault or defect (hereinafter referred to as "Failure") attributable to Mitsubishi Electric Engineering should occur within the gratis warranty period, Mitsubishi Electric Engineering shall replace the product free of charge via the distributor from whom you made your purchase.

### ● Gratis warranty period

The gratis warranty period of this product shall be one (1) year from the date of purchase or delivery to the designated place.

Note that after manufacture and shipment from MEE, the maximum distribution period shall be six (6) months, and the gratis warranty period after manufacturing shall be limited to eighteen (18) months.

In addition, the gratis warranty period for repaired products shall not exceed the gratis warranty period established prior to repair.

### ● Gratis warranty range

- (1) The gratis warranty range shall be limited to normal use based on the usage conditions, methods and environment, etc., defined by the terms and precautions, etc., given in the instruction manual, user's manual, and caution labels on the product.
- (2) In the following cases, a repair fee shall be applied even if within the gratis warranty period.
  - 1) Failure resulting from inappropriate storage or handling, carelessness or negligence by the user, or Failure caused by the user's hardware or software design.
  - 2) Failure caused by unapproved modifications, etc., to the product by the user.
  - 3) Failure that could have been avoided if, when the Mitsubishi Electric Engineering product was assembled into the user's device, safeguards defined by legal regulations applicable to the user's device or functions or structures considered standard by the industry had been provided.
  - 4) Failure recognized as preventable if the consumed products specified in instruction manuals, etc., were normally maintained or replaced.
  - 5) Replacement of consumable parts (relays, etc.).
  - 6) Failure caused by external factors beyond anyone's control such as fires or abnormal voltage, and Failure caused by Force Majeure such as earthquakes, lightning, or wind and water damage.
  - 7) Failure caused by reasons unpredictable by scientific technology standards at the time of shipment from Mitsubishi Electric Engineering.
  - 8) Any other failure not attributable to Mitsubishi Electric Engineering or found by the user to not be attributable to Mitsubishi Electric Engineering.

## 12. EXCLUSION FROM LIABILITY FOR OPPORTUNITY LOSS AND SECONDARY LOSS

Regardless of the gratis warranty period, Mitsubishi Electric Engineering shall not be liable for compensation for damages arising from causes not attributable to Mitsubishi Electric Engineering, opportunity losses or lost profits incurred by the user due to Failures of Mitsubishi Electric Engineering products, damages or secondary damages arising from special circumstances, whether foreseen or unforeseen by Mitsubishi Electric Engineering, compensation for accidents, compensation for damages to products other than Mitsubishi Electric Engineering products, or compensation for replacement work, readjustment of onsite machinery and equipment, startup test runs or other duties carried out by the user.

## 13. TRADEMARKS

MELSEC, MELSEC iQ-R, CC-Link, CC-Link IE, and CC-Link/LT are trademarks or registered trademarks of Mitsubishi Electric Corporation. Other company names and product names in the text are trademarks or registered trademarks of each company.

In some cases, trademark symbols such as '™' or '®' are not specified in this manual.



## FOR SAFE OPERATIONS

- 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 Engineering.
- 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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