

I/O Conversion Module, Common Module FA1-TESV32XY, FA1-TE1S32XY FA1-TE1SV16XY, FA1-TESV38COM User's Manual

Thank you for purchasing the FA Goods products.

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

mitsubishi electric engineering company limited

SAFETY PRECAUTIONS

(Read these precautions before using the FA Goods 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 the FA Goods products 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 FA Goods 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 in an output terminal module. Configure an external circuit for monitoring output signals that could cause a serious accident.
- In an output circuit of an output terminal module, 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 through an output terminal module, a large current (approximately 10 times greater than normal) may flow when the output is turned from off to on. Therefore, use an output terminal module 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 FA Goods 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 replacement relays/triacs/transistors for a terminal module or signal conversion modules, use them in the correct combination. Incorrect combination may cause failure.
- Shut off the power supply before installing/removing a replacement relay/triac/transistor for a terminal module. Failure to do so may cause failure or malfunction.
- Securely install replacement relays/triacs/transistors on a terminal module and securely mount a signal conversion modules on an 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 relay/triac/transistor modules are installed on a terminal module or a signal conversion module is mounted on the installation base, hold the terminal module or installation base to transport them or install them to a panel. Holding the relay/triac/transistor or signal conversion module may cause drop or failure of the terminal module 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 replacement relays/triacs/transistors for a terminal module or signal conversion modules, use them in the correct combination. Incorrect combination may cause failure of a programmable controller, terminal module, installation base, or external device.
- Securely install replacement relays/triacs/transistors on a terminal module and securely mount a signal conversion modules on an 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 FA Goods 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 (IEC 61131-2 compliant). 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.
- Before handling the products, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause failure or malfunction of the products.

[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*1

To ensure that FA Goods 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-TESV32XY, FA1-TE1S32XY, and FA1-TE1SV16XY are excluded.

REVISIONS

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

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1. INTRODUCTION

This manual describes the specifications and handling of the connector ↔ spring clamp conversion module used in combination with Mitsubishi Electric I/O modules.

2. GENERAL SPECIFICATIONS

Item		Specifications	
Model		FA1-TESV32XY, FA1-TE1S32XY	FA1-TE1SV16XY, FA1-TESV38COM
Operating ambient temperature		0 to 55°C	-20 to 55°C ^{*4}
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	Applicable standard		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 ² (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 ² (0.5G)
Sweep count		—	
Shock resistance		Compliant with JIS B 3502 and IEC 61131-2 (147m/s ² (15G), 3 times each in X, Y, and Z bidirections)	
Operating atmosphere		No corrosive gases	
Operating altitude ^{*1}		2000m or lower	
Installation location		Inside a control panel ^{*5} , Indoor use	
Overvoltage category ^{*2}		II or less	
Pollution degree ^{*3}		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: When the operating ambient temperature is below 0°C, use the FA2-CB1LT.

*5: 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

3-1. FA1-TESV32XY, FA1-TE1S32XY

Model		FA1-TESV32XY	FA1-TE1S32XY
Item			
Number of points, device numbers		32 points, I/O: X00 to 1F or Y10 to 1F, (V+) common: C11 to C13, (0V) common: C21 to C23	32 points, I/O: X00 to 1F or Y00 to 1F, (V+) common: C11 to C14, (0V) common: C21 to C24
Rated voltage		24VDC (CLASS 2)	24VDC(Class2 or SELV+LIM) ^{*4}
Maximum operating voltage		30VDC (CLASS 2)	30VDC(Class2 or SELV+LIM) ^{*4}
Maximum operating current ^{*1}		Signal: 1A, Common: 2A	
Wiring method for common		32 points / (V+) common 3 points + (0V) common 3 points	32 points / (V+) common 4 points + (0V) common 4 points
Terminal block	Number of terminals	38 terminals	
	Applicable wire ^{*2, *3}	0.2 to 1.5mm ² (24 to 16 AWG), sheath ϕ 2.8mm or less	
	Wire strip length	8 to 9mm (Maximum sheath outside diameter ϕ 2.8mm or less)	
Installation method	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5Al (compliant with IEC 60715)	
Withstand voltage		500VAC for 1 minute	
Insulation resistance (initial)		10M Ω or more (measured with 500VDC insulation resistance tester)	
Weight		70g	60g

*1: Evaluation for UL certification is conducted using a resistive load.

*2: Evaluation for UL certification is conducted with copper wires.

*3: Select wires depending on the current value used.

*4: 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.

3-2. FA1-TE1SV16XY

Model		FA1-TE1SV16XY
Item		
Number of points, device numbers		16 points, I/O: X0 to F ^{*4} or Y0 to F ^{*4} , common: C11 to C13, common: C21 to C23
Rated voltage		24VDC(Class2 or SELV+LIM) ^{*5}
Maximum operating voltage		30VDC(Class2 or SELV+LIM) ^{*5}
Maximum operating current ^{*1}		Signal: 1A, Common: 2A
Wiring method for common		16 points / common 3 points + common 3 points
Terminal block	Number of terminals	22 terminals
	Applicable wire ^{*2, *3}	0.2 to 1.5mm ² (24 to 16 AWG), sheath ϕ 2.8mm or less
	Wire strip length	8 to 9mm (Maximum sheath outside diameter ϕ 2.8mm or less)
Installation method	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5Al (compliant with IEC 60715)
Withstand voltage		500VAC for 1 minute
Insulation resistance (initial)		10M Ω or more (measured with 500VDC insulation resistance tester)
Weight		50g

*1: Evaluation for UL certification is conducted using a resistive load.

*2: Evaluation for UL certification is conducted with copper wires.

*3: Select wires depending on the current value used.

*4: When connecting this product to the programmable controllers of MELSEC iQ-F series or MELSEC-F series, read the signal name indications 8 to F as 0 to 7 (higher numbers).

*5: The power supply must use CLASS2 power supply or a power supply conforming to the SELV (Safety Extra-Low Voltage) and LIM (Limited Energy Circuit) circuit.

3-3. FA1-TESV38COM

Item		Model	FA1-TESV38COM
Number of points, device numbers			38 points, Common: C10 to C1J or C20 to C2J
Rated voltage			24VDC(Class2 or SELV+LIM) ^{*4} /100 to 240VAC(+10%, -15%), 50/60Hz
Maximum operating voltage			30VDC(Class2 or SELV+LIM) ^{*4} /264VAC
Maximum operating current ^{*1}			Common: 6A
Wiring method for common			Common 19 points + common 19 points
Terminal block	Number of terminals		38 terminals
	Applicable wire ^{*2, *3}		0.2 to 1.5mm ² (24 to 16 AWG) sheath φ2.8mm or less Use copper wire only
	Wire strip length		8 to 9mm (Maximum sheath outside diameter φ2.8mm or less)
Installation method	DIN rail		Applicable DIN rail: TH35-7.5Fe, TH35-7.5Al (compliant with IEC 60715)
Withstand voltage			500VAC for 1 minute
Insulation resistance (initial)			10MΩ or more (measured with 500VDC insulation resistance tester)
Weight			60g

*1: Evaluation for UL certification is conducted using a resistive load.

*2: Select wires depending on the current value used.

*3: Use copper wires having temperature rating of 75°C or more for the terminal block.

*4: 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. CONNECTABLE MODULES AND CABLES

4-1. FA1-TESV32XY,FA1-TE1S32XY

Module model for a programmable controller		Cable model		Module model
MELSEC iQ-R series connector type	RX41C4	At positive common	FA-CBL**FMV	FA1-TESV32XY ^{*1} FA1-TE1S32XY ^{*2}
	RX42C4	At negative common	FA-CBL**FMVE	
	RY41NT2P RY42NT2P RY41PT1P RY42PT1P		FA-CBL**FMV	
	RH42C4NT2P	Input side: positive common	FA-CBL**FMV	
		Input side: negative common	FA-CBL**FMVE	
		Output side	FA-CBL**FMV	
MELSEC-Q series connector type	QX41 QX41-S1 QX41-S2 QX42 QX42-S1		FA-CBL**FMV	
	QX71 QX72	At positive common	FA-CBL**FMV	
		At negative common	FA-CBL**FMVE	
	QX81 QX81-S2		FA-CBL**DMFX	
	QX82 QX82-S1		FA-CBL**FMVE	
	QY41P QY41H QY42P QY71		FA-CBL**FMV	
	QY81P		FA-CBL**DMFY	
	QY82P		FA-CBL**FMV	
	QH42P QX41Y41P		FA-CBL**FMV	
	MELSEC-L series connector type	LX41C4	At positive common	FA-CBL**FMV
LX42C4		At negative common	FA-CBL**FMVE	
LY41NT1P LY42NT1P LY41PT1P LY42PT1P			FA-CBL**FMV	
LH42C4NT1P LH42C4PT1P		Input side: positive common	FA-CBL**FMV	
		Input side: negative common	FA-CBL**FMVE	
		Output side	FA-CBL**FMV	
CC-Link connector type	AJ65SBTCF1-32D AJ65BTC1-32D	At positive common	FA-CBL**FMH FA-FCBL**FMH	
	AJ65SBTCF1-32T AJ65BTC1-32T		FA-CBL**FMH FA-FCBL**FMH	
CC-Link IE Field connector type	NZ2GFCF1-32D	At positive common	FA-CBL**FMH FA-FCBL**FMH	
	NZ2GFCF1-32T		FA-CBL**FMH FA-FCBL**FMH	

*1: Connect the power supply (V+) to the C11 to C13 terminals and the power supply (0V) to the C21 to C23 terminals.

*2: Connect the power supply (V+) to the C11 to C14 terminals and the power supply (0V) to the C21 to C24 terminals.

4-2. FA1-TE1SV16XY

4-2.1 MELSEC iQ-R,Q,L Series,CC-Link,CC-Link IE Field

Module model for a programmable controller		Cable model	Module model
MELSEC iQ-R series terminal type	RX40C7	At positive common	FA-CBL**TMV20 FA-CBL**YM20 FA-CBL**M20
		At negative common	FA-CBL**YM20 FA-CBL**M20
	RX40NC6B RY40NT5P RY40PT5P RY40PT5B		FA-CBL**TMV20 FA-CBL**YM20 FA-CBL**M20
MELSEC iQ-R series connector type	RX41C4 RX42C4	At positive common	FA-CBL**FM2V FA-CBL**FM2LV
	RY41NT2P RY42NT2P RY41PT1P RY42PT1P		
	RH42C4NT2P	Input side: positive common Output side	
MELSEC-Q series terminal type	QX40 QX40-S1	At positive common	FA-CBL**TMV20 FA-CBL**YM20 FA-CBL**M20
	QX70	At negative common	FA-CBL**YM20 FA-CBL**M20
	QX80 QY40P QY50 QY70 QY80		FA-CBL**TMV20 FA-CBL**YM20 FA-CBL**M20
MELSEC-Q series connector type	QX41 QX41-S1 QX41-S2 QX42 QX42-S1 QX82 QX82-S1		FA-CBL**FM2V FA-CBL**FM2LV
	QX71 QX72	At positive common	
	QY41P QY41H QY42P QY71		
	QY81P		FA-CBL**DM2FY
	QY82P		FA-CBL**FM2V FA-CBL**FM2LV
	QH42P QX41Y41P		FA-CBL**FM2V FA-CBL**FM2LV
MELSEC-L series terminal type	LX40C6 LY40NT5P LY40PT5P		FA-CBL**YM20 FA-CBL**M20
MELSEC-L series connector type	LX41C4 LX42C4	At positive common	FA-CBL**FM2V FA-CBL**FM2LV
	LY41NT1P LY42NT1P LY41PT1P LY42PT1P		
	LH42C4NT1P LH42C4PT1P	Input side: positive common Output side	
CC-Link connector type	AJ65SBTCF1-32D AJ65BTC1-32D	At positive common	FA-CBL**FM2H FA-CBL**FM2LH
	AJ65SBTCF1-32T AJ65BTC1-32T		
CC-Link IE Field connector type	NZ2GFCF1-32D	At positive common	FA-CBL**FM2H FA-CBL**FM2LH
	NZ2GFCF1-32T		

FA1-TE1SV16XY^{*1}

*1: Connect the power supply (V+) to the C11 to C13 terminals and the power supply (0V) to the C21 to C23 terminals.

4-2.2 MELSEC iQ-F,F Series

	Module model for a programmable controller	Cable model	Module model
MELSEC iQ-F series MELSEC F series connector type	FX5UC-32MT/D FX5UC-32MT/DSS FX5UC-64MT/D FX5UC-64MT/DSS FX5UC-96MT/D FX5UC-96MT/DSS FX5-C16EX/D FX5-C16EX/DS FX5-C16EYT/D FX5-C16EYT/DSS FX5-C32ET/D FX5-C32ET/DSS FX5-C32EX/D FX5-C32EX/DS FX5-C32EYT/D FX5-C32EYT/DSS FX3UC-16MT/D FX3UC-32MT/D FX3UC-32MT-LT(-LT2) FX3UC-64MT/D FX3UC-96MT/D FX3GC-32MT/D FX2NC-16EX FX2NC-16EYT FX2NC-32EX FX2NC-32EYT	FA-FXCBL**MMH20 FA2-CB1LT**MM1H20* ³	FA1-TE1SV16XY* ^{1,2}

*1: When using this product for the input of a CPU module (sink/source-input-common type), connect the same power supply as the one used for the CPU module to a common terminal.

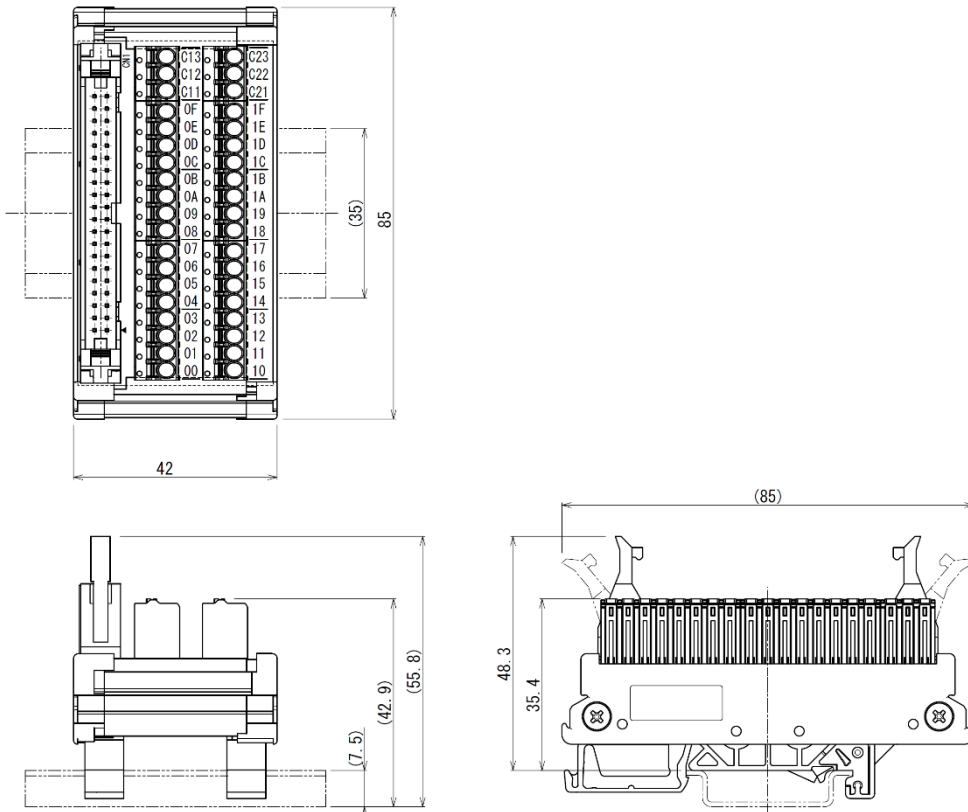
*2: Read the signal name indications 8 to F as 0 to 7 (higher numbers).

3: When the operating ambient temperature is below 0°C, use the FA2-CB1LT.

5. EXTERNAL DIMENSIONS

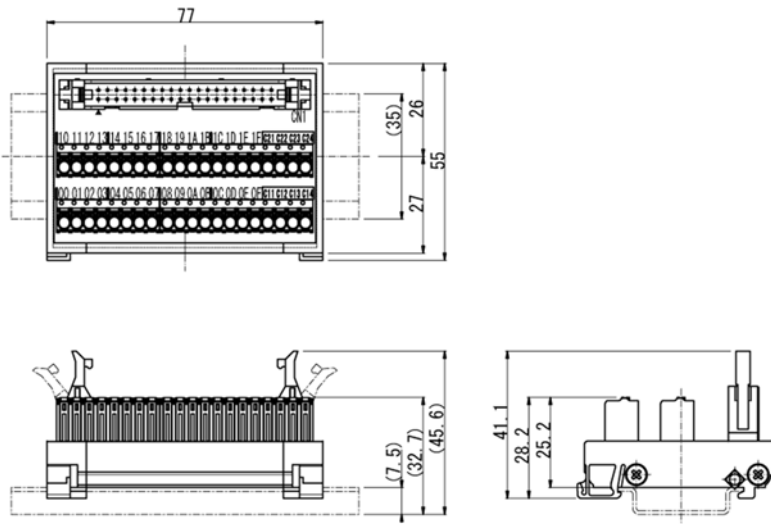
5-1. 32 point connector to spring clamp terminal converter module (FA1-TESV32XY)

[Unit : mm]



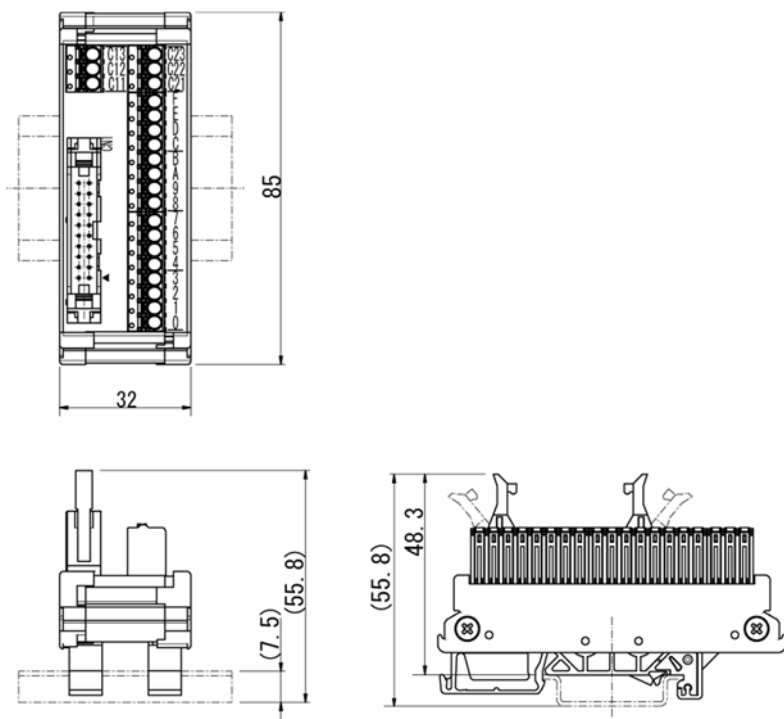
5-2. 32 point connector to spring clamp terminal converter module (FA1-TE1S32XY)

[Unit : mm]



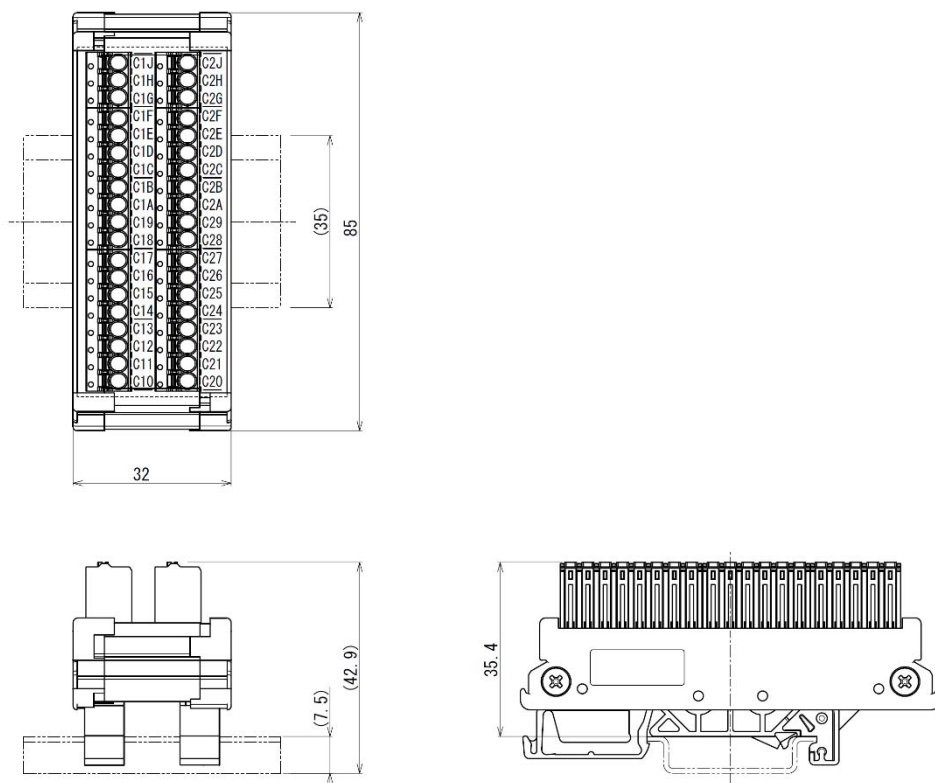
5-3. 16 point connector to spring clamp terminal converter module (FA1-TE1SV16XY)

[Unit : mm]



5-4. 38 point spring clamp terminal (FA1-TE3V38COM)

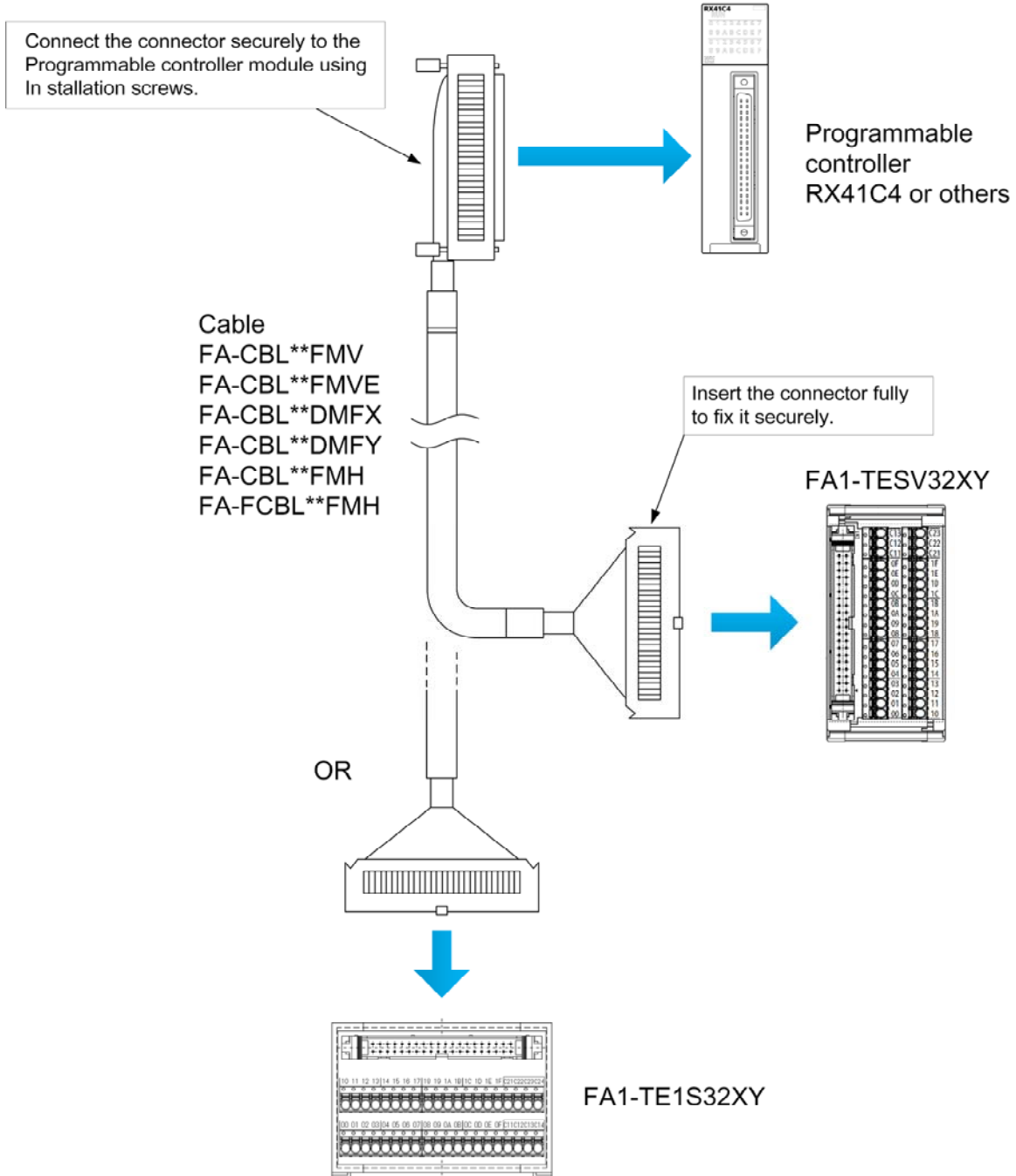
[Unit : mm]



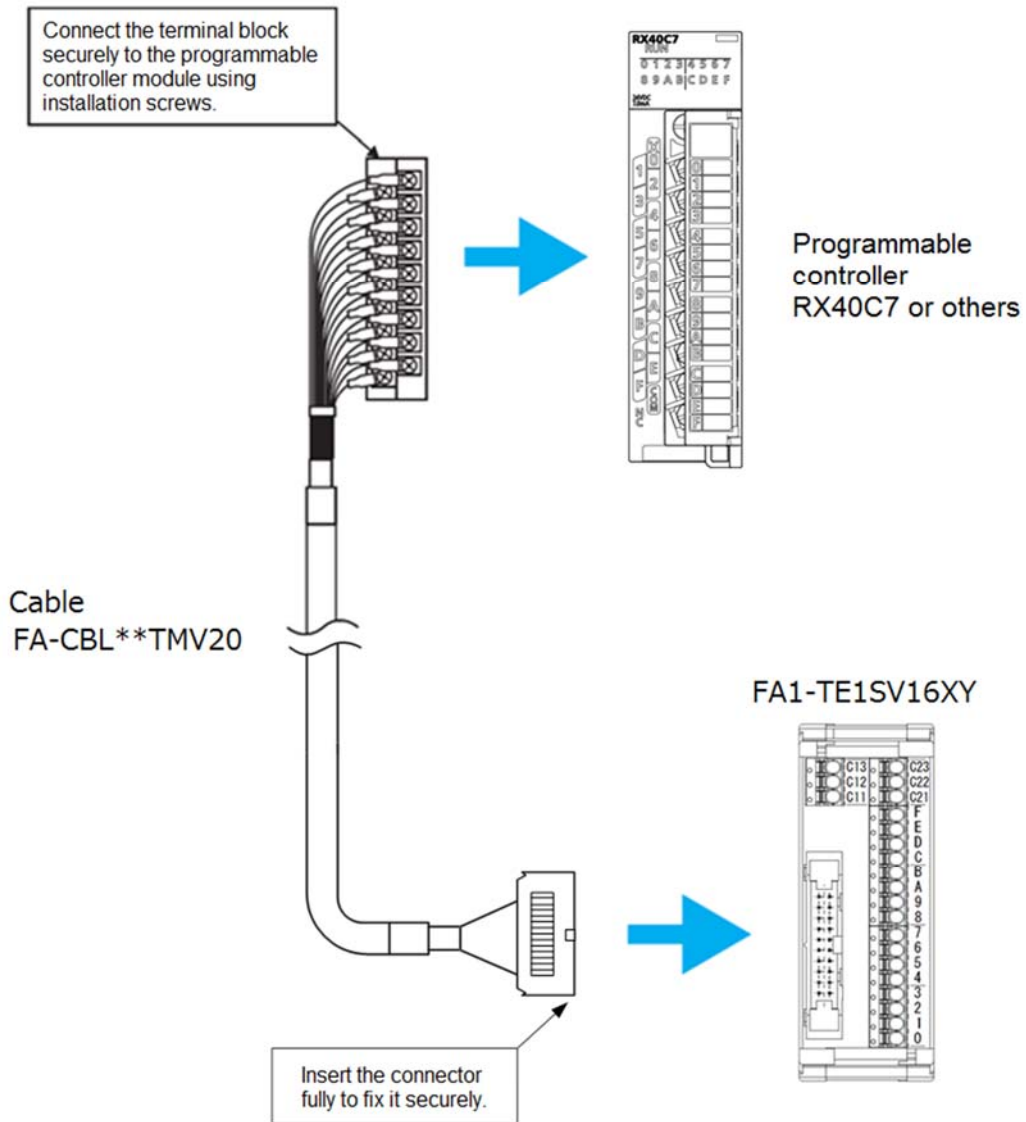
6. CONNECTING METHOD

6-1. Connection example with a connector module of a programmable controller

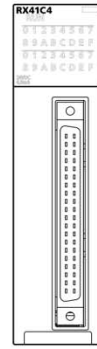
1) FA1-TESV32XY,FA1-TE1S32XY



2) FA1-TE1SV16XY



Insert the connector to the back, and then fully install the connector to the programmable controller module using the mounting screws.



Programmable controller module RX41C4 or others

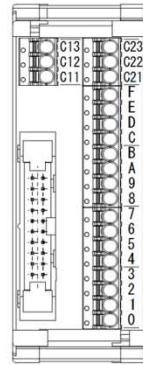
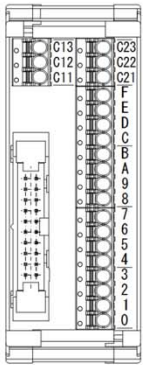
Cable
FA-CBL**FM2V
FA-CBL**FM2LV
FA-CBL**DM2FY
FA-CBL**FM2H
FA-CBL**FM2LH

Insert the connector fully to fix it securely.

Insert the connector fully to fix it securely.

FA1-TE1SV16XY

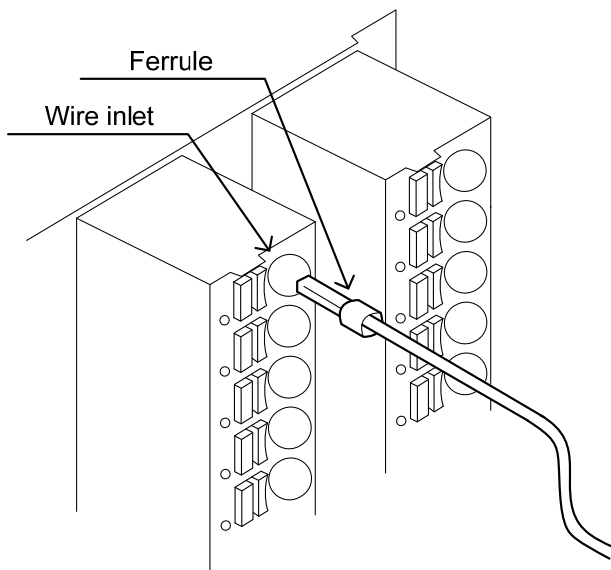
FA1-TE1SV16XY



6-2. Wiring to a spring clamp terminal block

(1) Connecting the cable

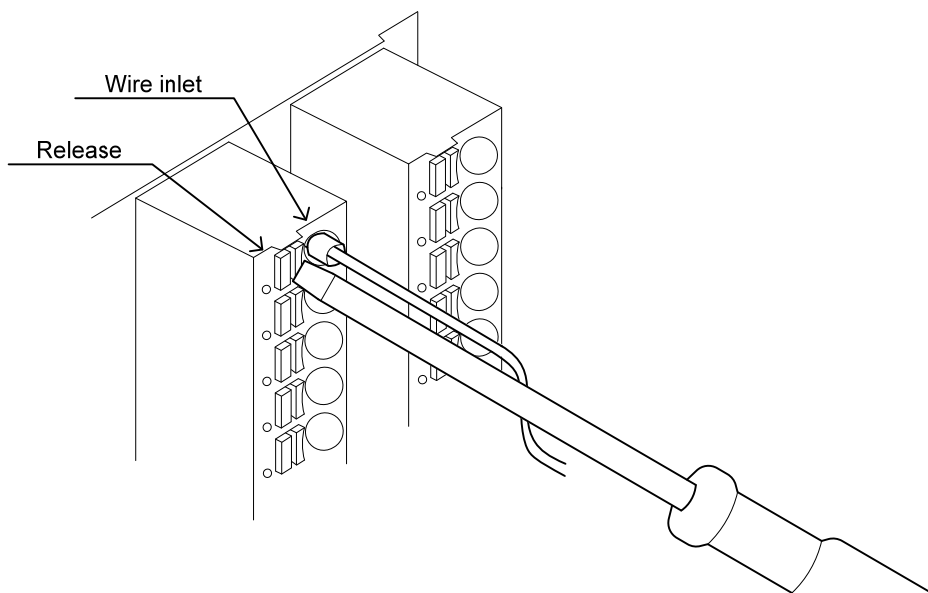
A cable with a ferrule can be inserted directly into the wire inlet. Pull the cable lightly to check that the cable has been firmly clamped.



When using a stranded wire cable, insert the cable into the wire inlet while holding down the push button with a flathead screwdriver.

(2) Removing the cable

Pull out the cable while holding down the push button to the end with a flathead screwdriver.



Use the recommended screwdrivers below to hold down the push button.

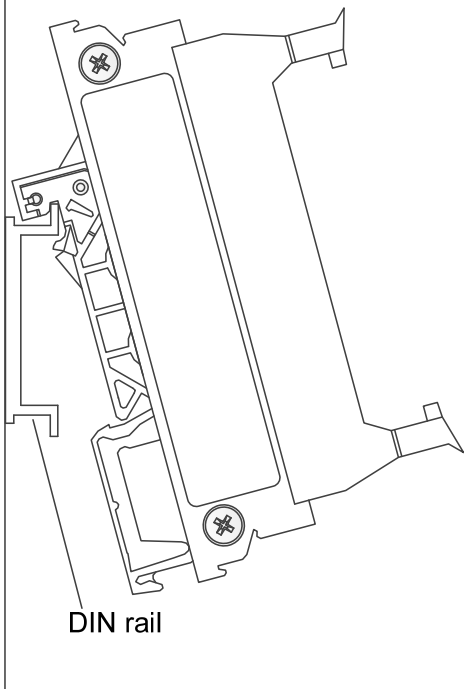
Recommended tool (screwdriver)		
Manufacturer	Item number	Blade tip size
WAGO	210-119SB (Mini type)	2.5 x 0.4mm
	210-719 (Insulated shaft type)	

6-3. Installing/removing the module to/from a DIN rail

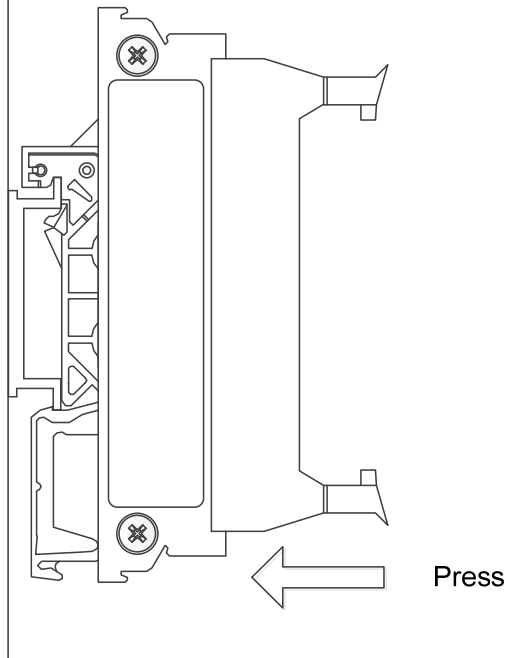
(1) Installing the module to a DIN rail

- 1) Place the DIN rail installing groove onto the DIN rail to hook the module.
- 2) Press the module against the DIN rail until it clicks.

1)



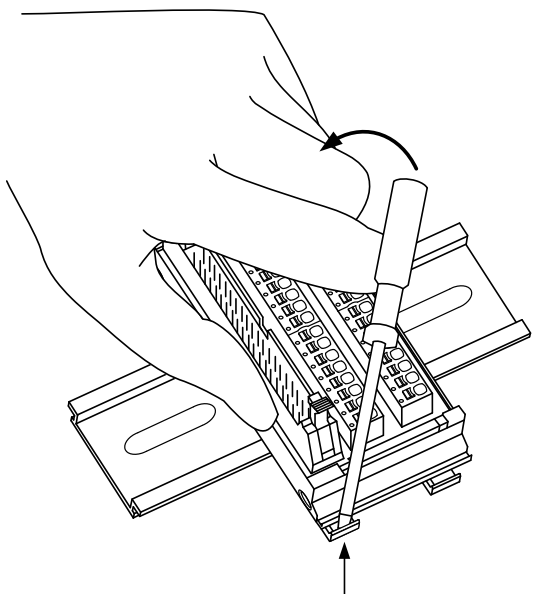
2)



(2) Removing the module from a DIN rail

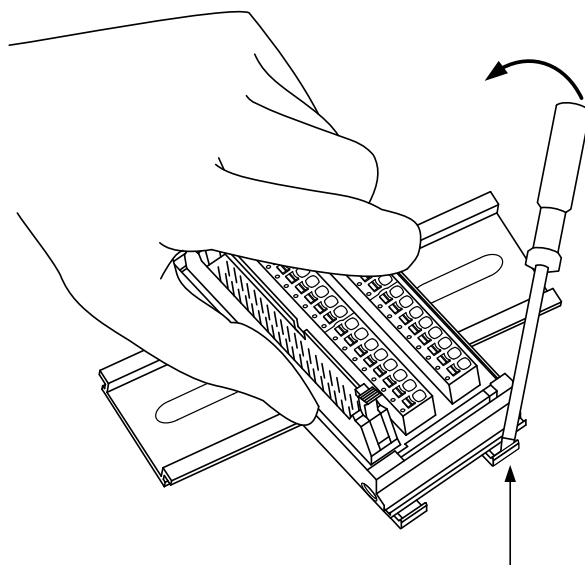
- 1) Push the hook using a flathead screwdriver to release the tab. Hold the module with the tab on one side released.
- 2) Then push the hook on the other side to remove the module from the DIN rail.

1)



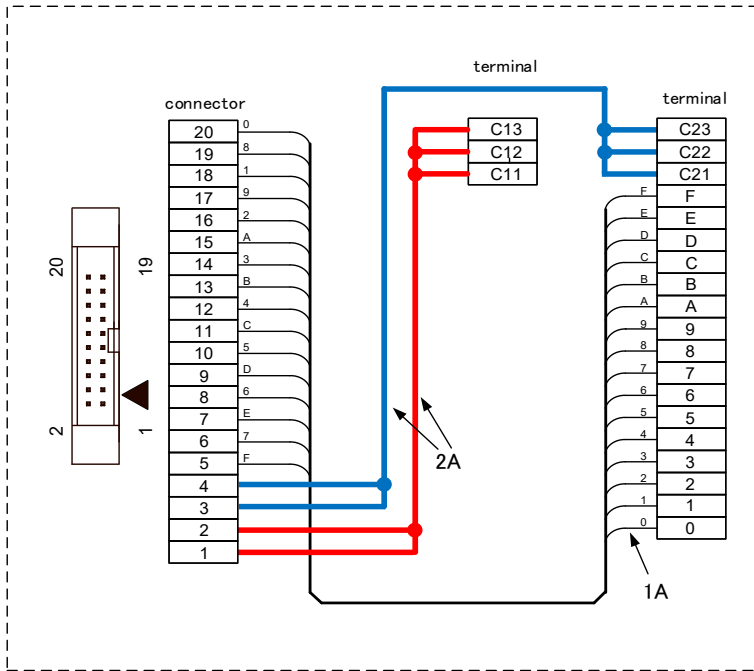
Push the hook and hold the module with the tab on one side released.

2)

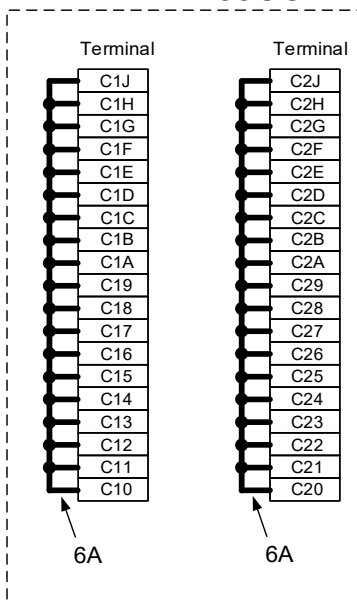


Then push the hook on the other side.

FA1-TE1SV16XY



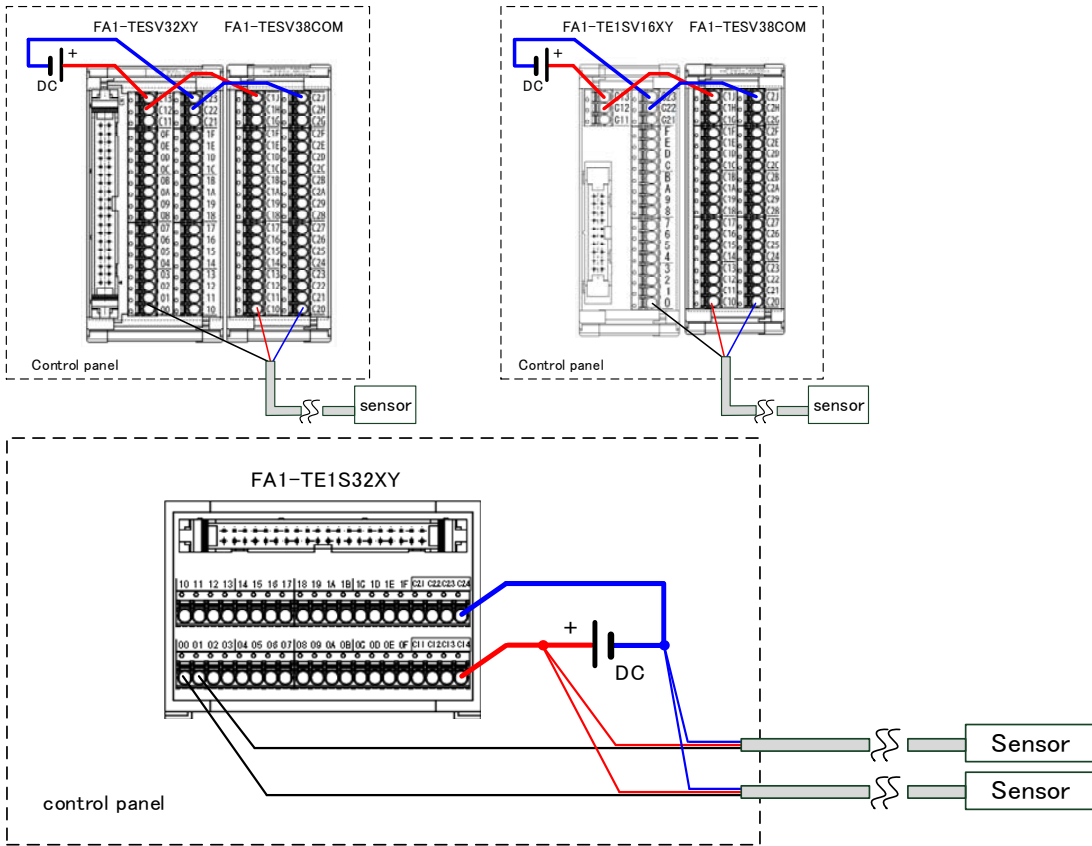
FA1-TE3V38COM



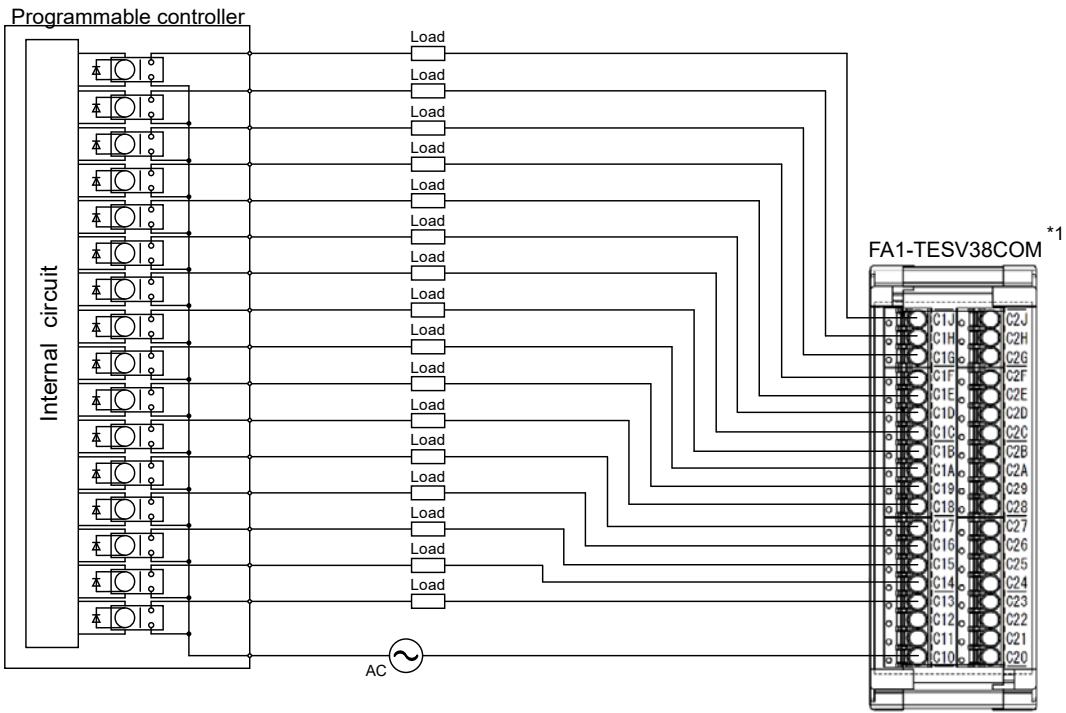
7-2. WIRING EXAMPLE

This section provides the wiring examples of the products. When wiring the products, refer to the manual of the programmable controller module to be connected, published by Mitsubishi Electric.

<For DC connection>



<For AC connection>

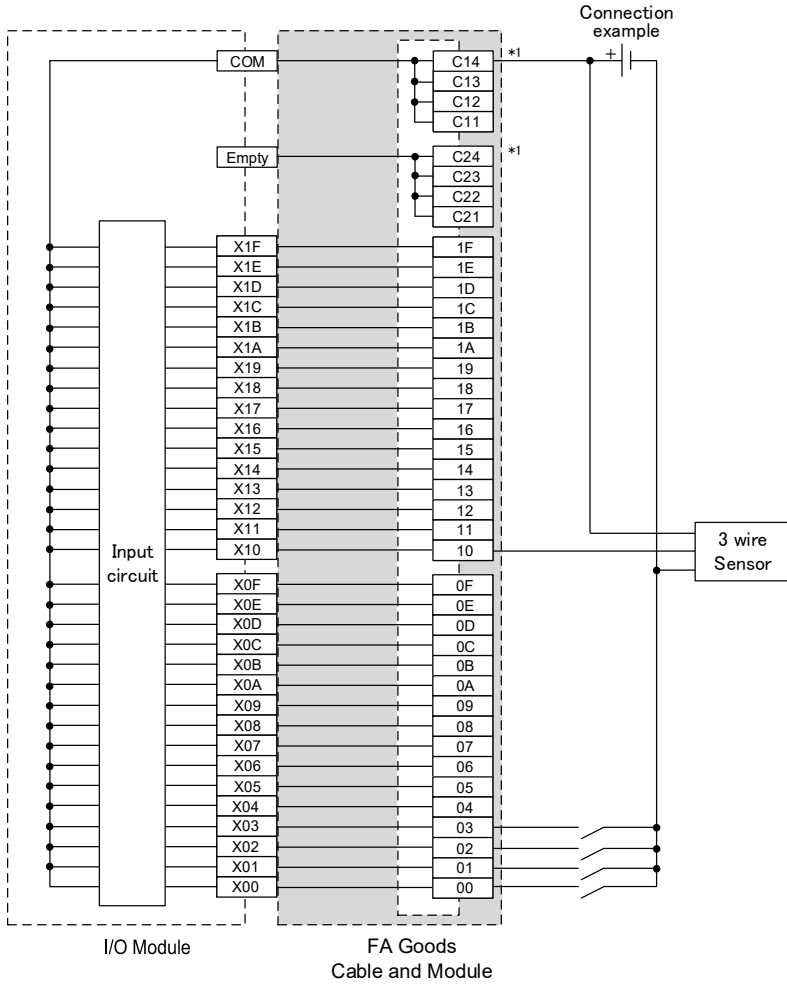


*1: Do not combine an accessible circuit (such as SELV or PELV circuit) and AC power supplies in combination.

7-2.1 When MELSEC iQ-R,Q,L,CC-Link, CC-Link IE Field series using

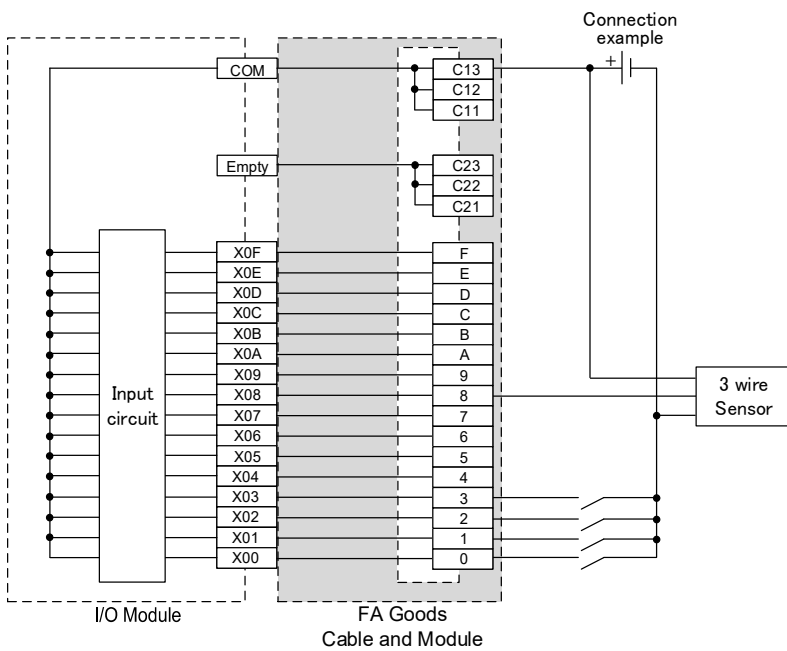
(1) When the positive common input module connection

<With FA1-TE5V32XY or FA1-TE1S32XY wiring>

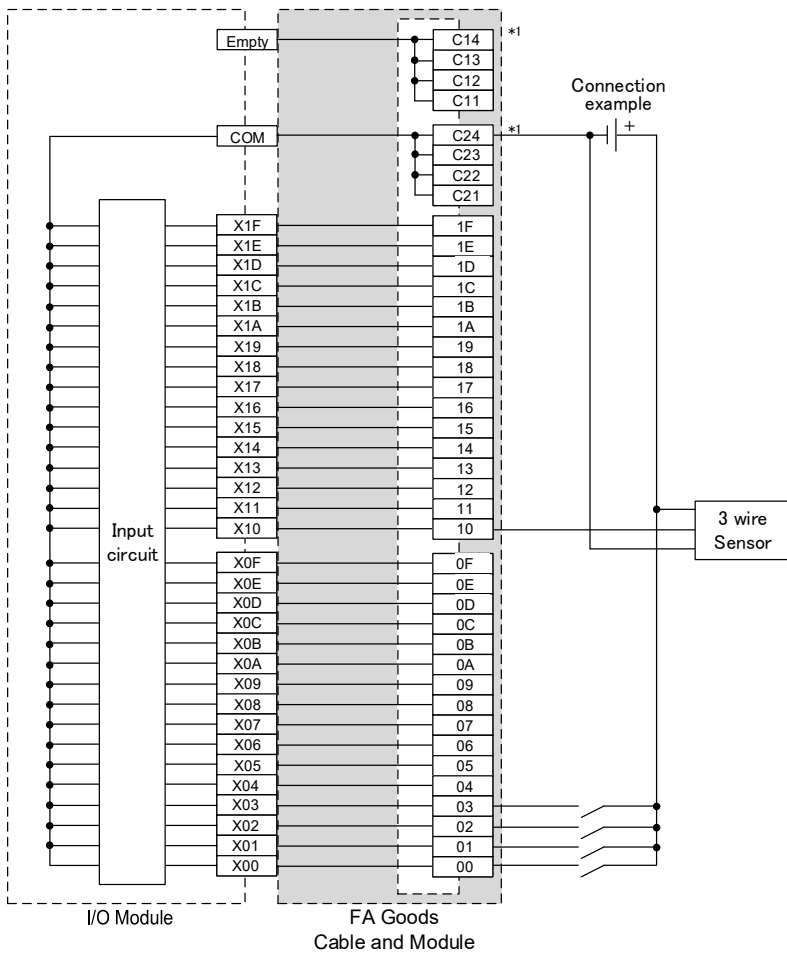


*1: The C14 and C24 terminals are for the FA1-TE1S32XY only.

<With FA1-TE1SV16XY wiring>

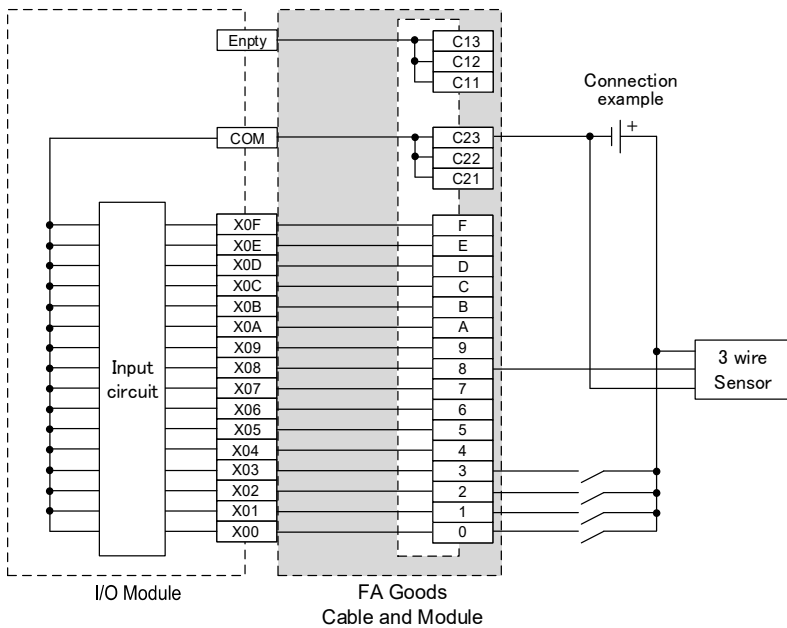


(2) When the negative common input module connection
 <With FA1-TE1S32XY or FA1-TE1S32XY wiring>

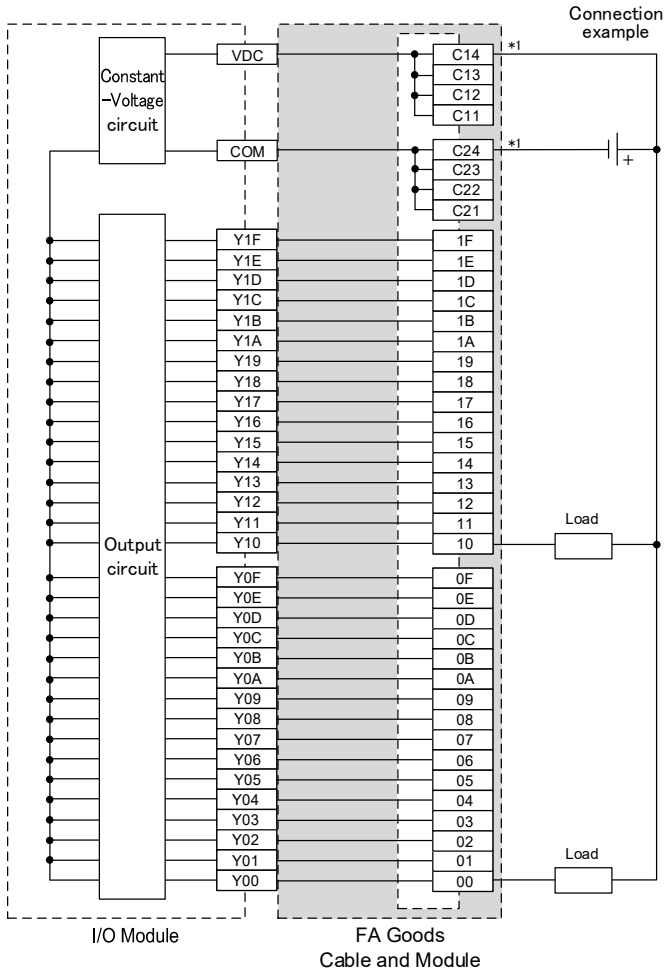


*1: The C14 and C24 terminals are for the FA1-TE1S32XY only.

<With FA1-TE1SV16XY wiring>

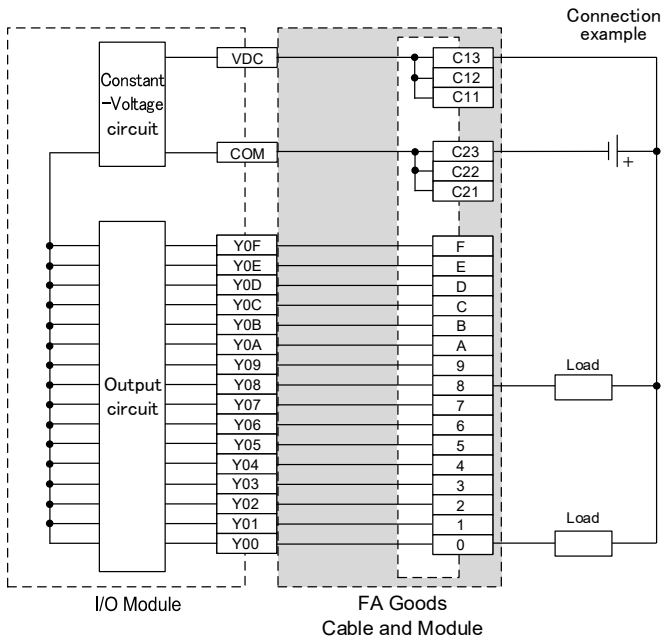


(3) When the sink output module connection
 <With FA1-TE1S32XY or FA1-TE1S32XY wiring>

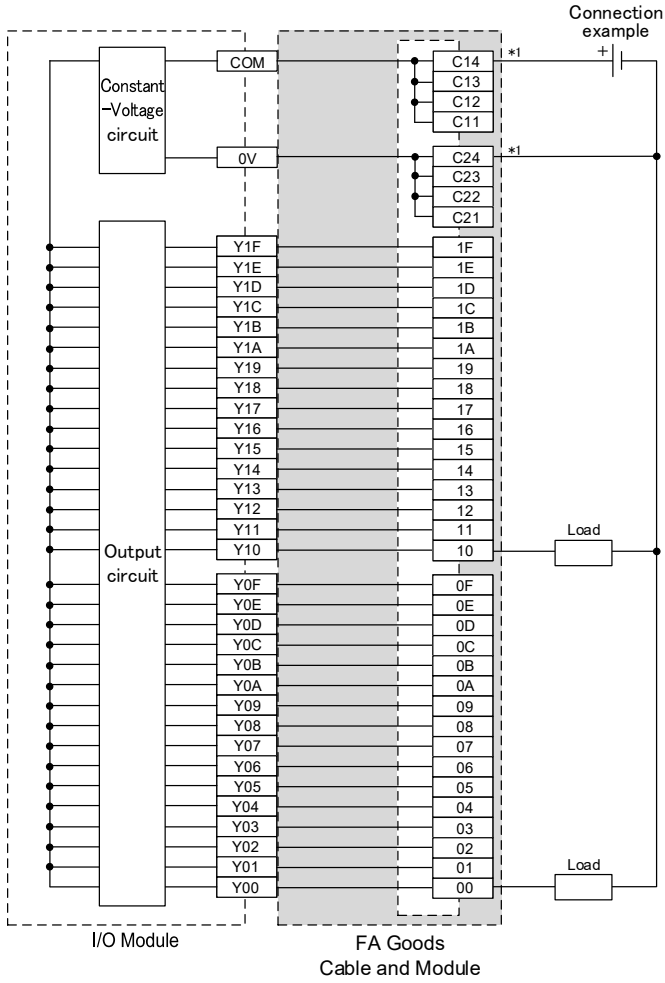


*1: The C14 and C24 terminals are for the FA1-TE1S32XY only.

<With FA1-TE1SV16XY wiring>

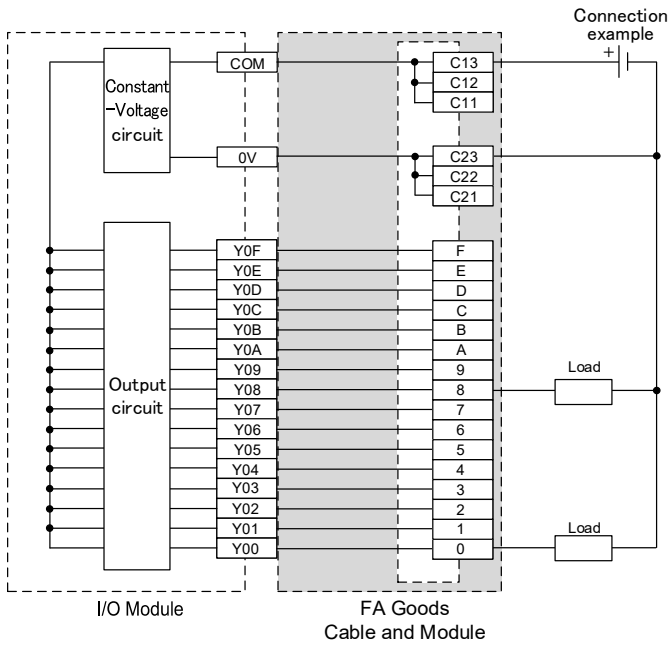


(4) When the source output module connection
 <With FA1-TE1S32XY or FA1-TE1S32XY wiring>

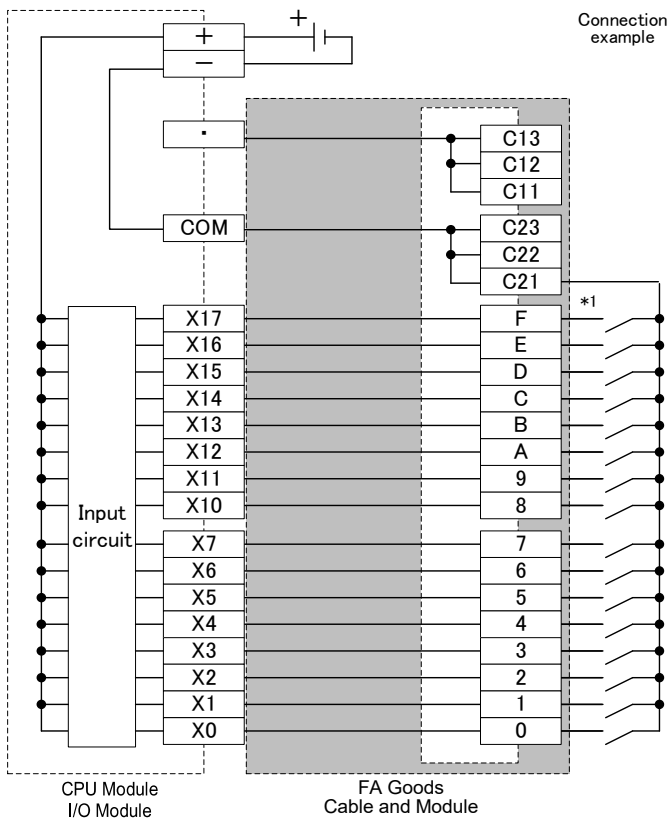


*1: The C14 and C24 terminals are for the FA1-TE1S32XY only.

<With FA1-TE1SV16XY wiring>



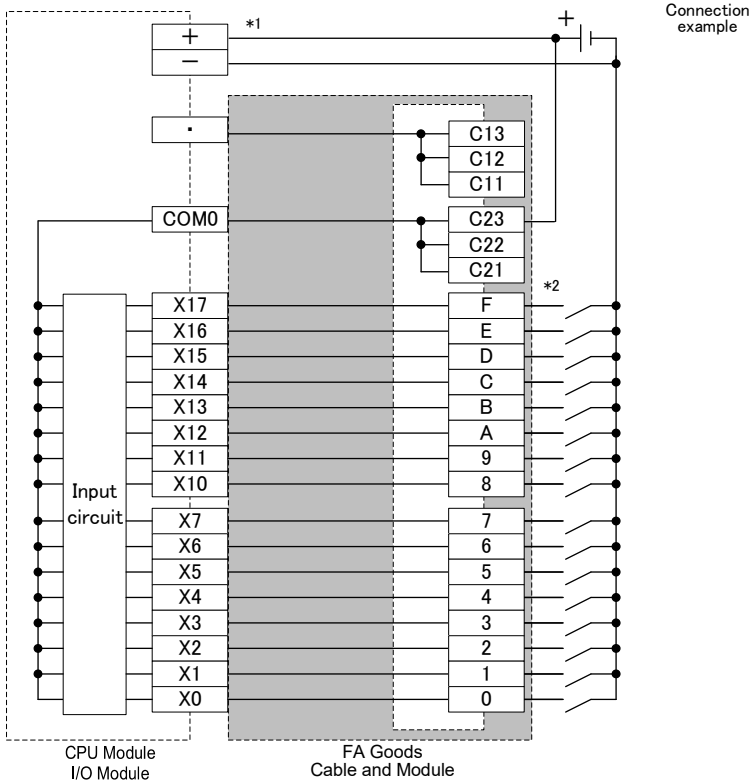
7-2.1 When MELSEC iQ-F series using
 (1) When the sink input module connection
 <With FA1-TE1SV16XY wiring>



*1: Read the signal name indications 8 to F as 0 to 7 (higher numbers).

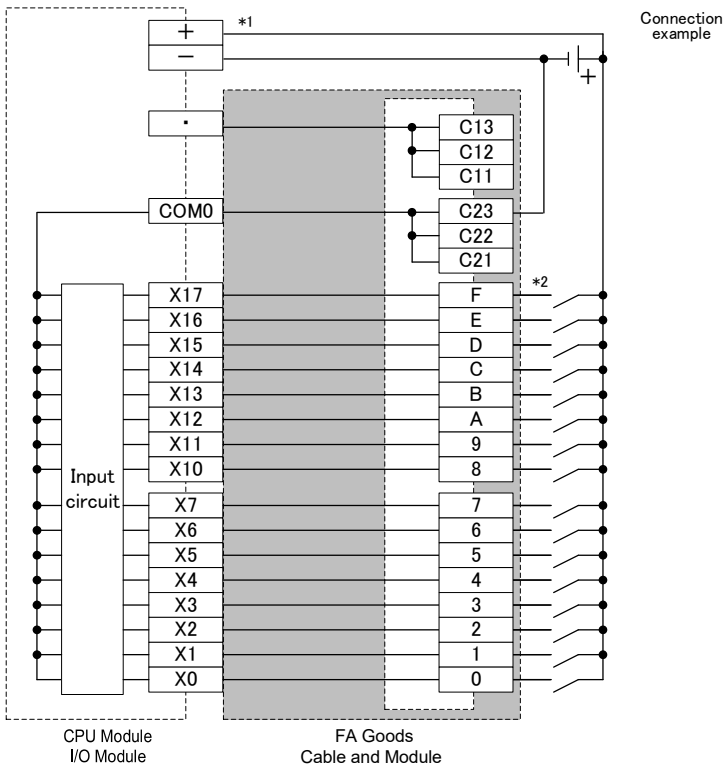
(2) When the sink/source input module connection
 <With FA1-TE1SV16XY wiring>

1) Sink input



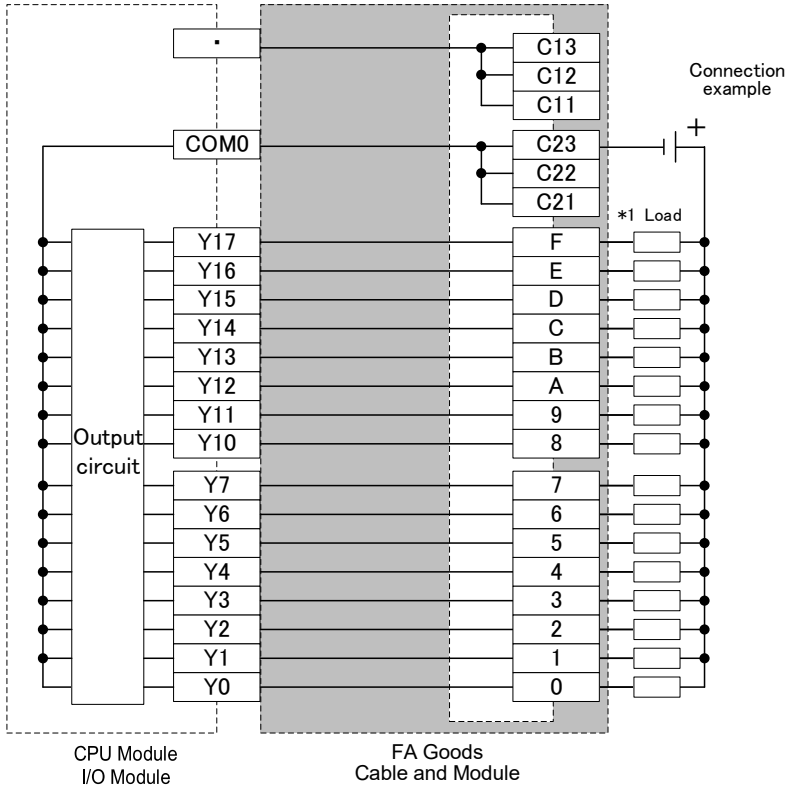
- *1: When using this product for the input of a CPU module (sink/source-input-common type), connect the same power supply as the one used for the CPU module to a common terminal.
- *2: Read the signal name indications 8 to F as 0 to 7 (higher numbers).

2) Source input



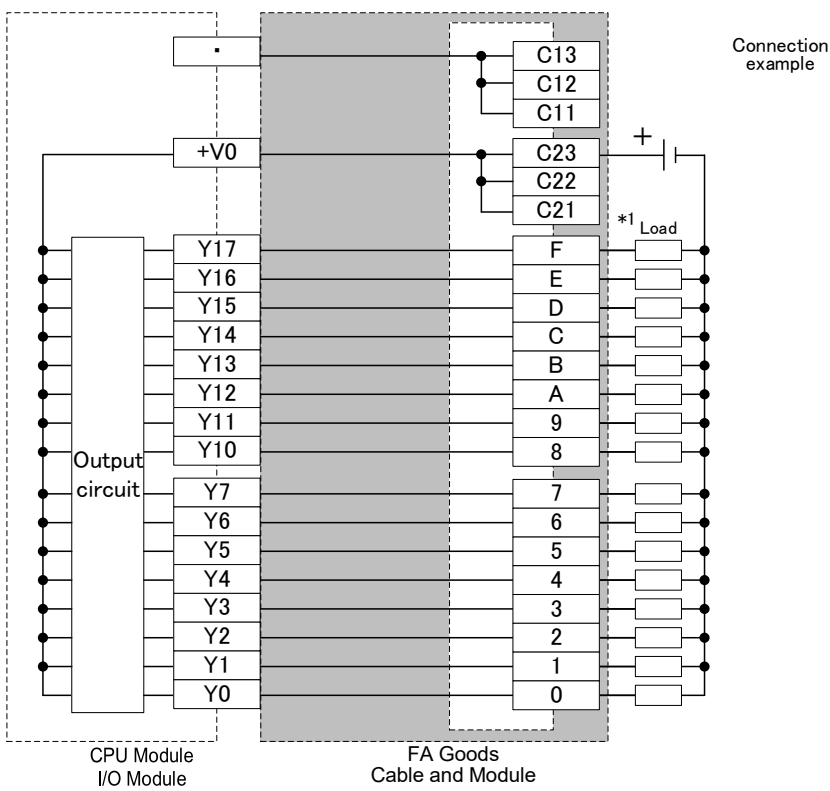
- *1: When using this product for the input of a CPU module (sink/source-input-common type), connect the same power supply as the one used for the CPU module to a common terminal.
- *2: Read the signal name indications 8 to F as 0 to 7 (higher numbers).

(3) When the sink output module connection



*1: Read the signal name indications 8 to F as 0 to 7 (higher numbers).

(4) When the source output module connection



*1: Read the signal name indications 8 to F as 0 to 7 (higher numbers).

8. APPLICABLE SOLDERLESS TERMINALS(Ferrule)

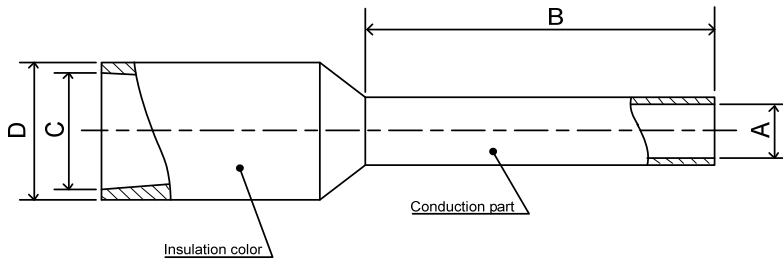
Manufacturer	Type	Applicable ferrule*1	Crimp tool
	Applicable wire size		
WAGO	0.08 to 0.34 mm ² (28 to 22 AWG)	216-302	206-220
	0.34 mm ² (24 and 22 AWG)	216-302	206-204
	0.5 mm ² (22 and 20 AWG)	216-201	
	0.75 mm ² (20 and 20 AWG)	216-202	

*1: UL certification is obtained by solid/stranded wires.

● Ferrule dimensions

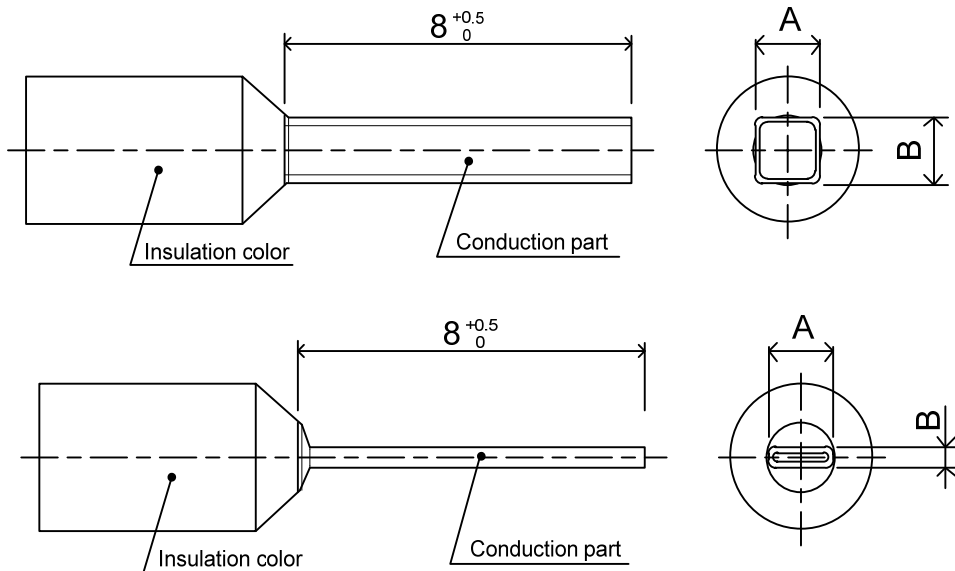
[Unit : mm]

(1) Dimensions before crimping



Dimensions				
	A	B	C	D
MAX	1.3	8	2.8	3.5
MIN	0.8	8	2.0	-

(2) Dimensions after crimping

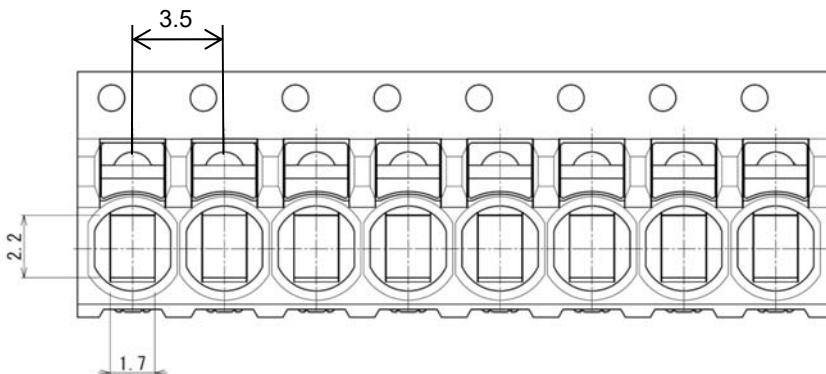


Dimensions*1		
	A	B
MAX	1.6	1.6
MIN	0.3	0.3

*1: Conductor cross-sectional area is not less than 0.48 mm².

● Spring clamp terminal block shape

[Unit : mm]



9. PRECAUTIONS

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

10. 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.

- 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.

11. 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.

12. TRADEMARKS

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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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Specifications subject to change without notice.

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