

# Analog Signal Converters

4-channel installation bases, input type/output type

New Product Release | No. 21-03E

4-channel installation bases now available  
Easy and best suited installation method for more systems

Optimal configuration  
and easy wiring

Visualization of various  
analog signals

Easy startup  
and maintenance

4-channel installation base  
(spring clamp terminal type)

New



- Input (voltage connection)
- Output (common for current and voltage)

4-channel installation base  
(screw terminal type)

New



- Input (voltage connection)
- Output (common for current and voltage)

8-channel installation base  
(screw terminal type)



- Input (current connection/voltage connection)
- Output (common for current and voltage)

Individually mountable modules

Input module



- Voltage
- Current
- Distributor
- RTD
- Thermocouple

Output module



- Voltage → voltage
- Voltage → current
- Current → voltage
- Current → current

Modules common for input and output

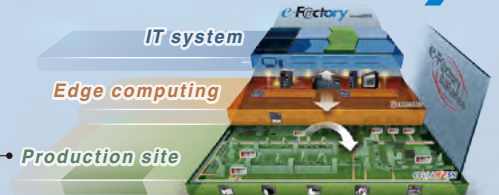


- Signal pass-through
- Dummy module (dust protector)

FA Goods  
Products

e-Factory

wire-saving and  
process time reduction



Source: Mitsubishi Electric Corporation

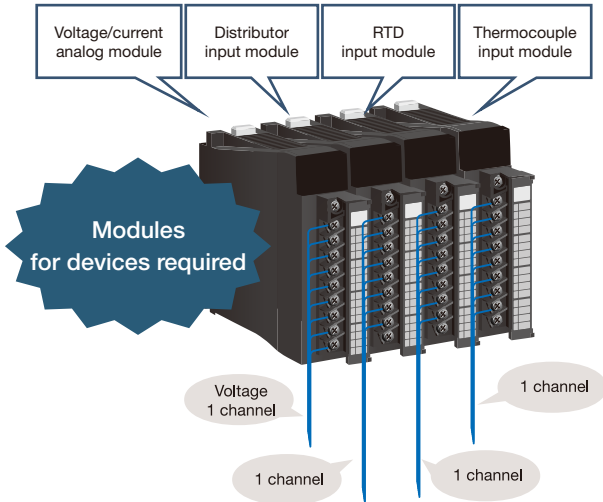
## Optimal configuration and easy wiring

### Optimal combination of devices

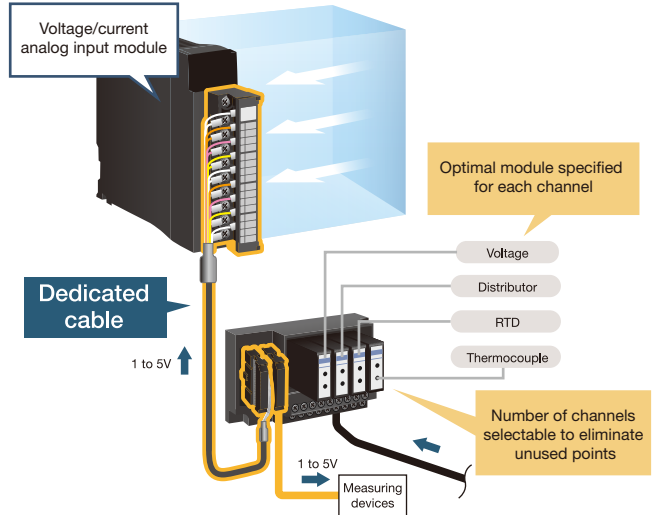
Since modules can be specified for each channel, systems can be configured with a minimum number of points. A dedicated cable reduces wiring time. Additionally, the number of programmable controller modules can be reduced, saving costs for spare modules.

### Configuration

Before



After



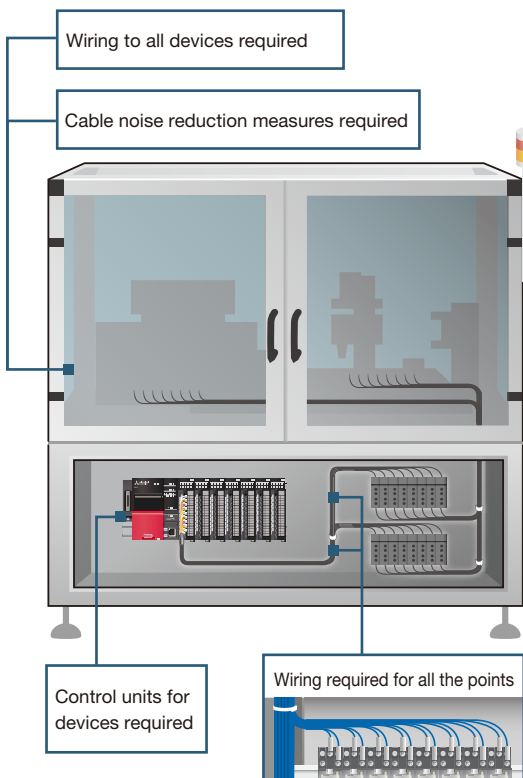
### Installation suitable for your usage

One analog signal converter can connect various analog control signals (such as temperature sensors). It can be installed in the system instead of inside the control panel, saving space in the control panel. Even when it is installed inside the control panel, space can be saved.

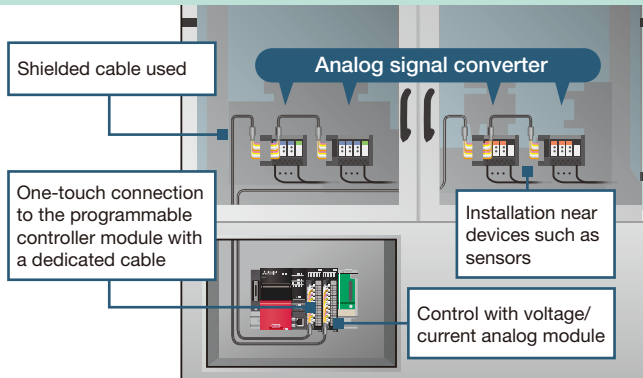
Wiring time and maintenance costs can also be reduced by using the dedicated cable and spring clamp terminal type product.

### Installation

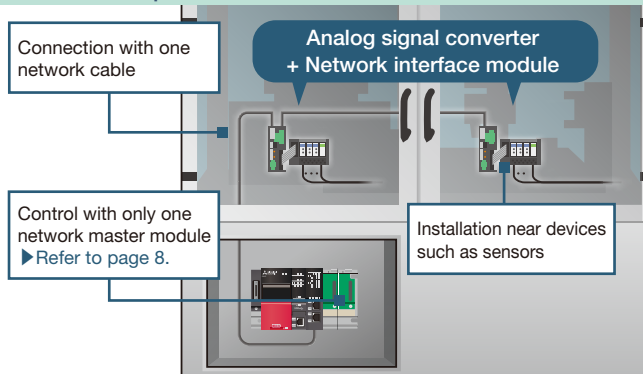
Before



After-1 Installation with a dedicated cable



After-2 Dispersed installation with network connection


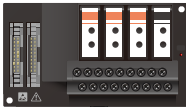
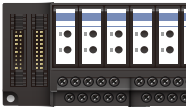


## Configuration best suited to the actual number of channels or the system used

A minimum required configuration is achieved by selecting an installation base type suited to the number of channels and an installation method suitable for the system.

### Installation base suited to the number of channels

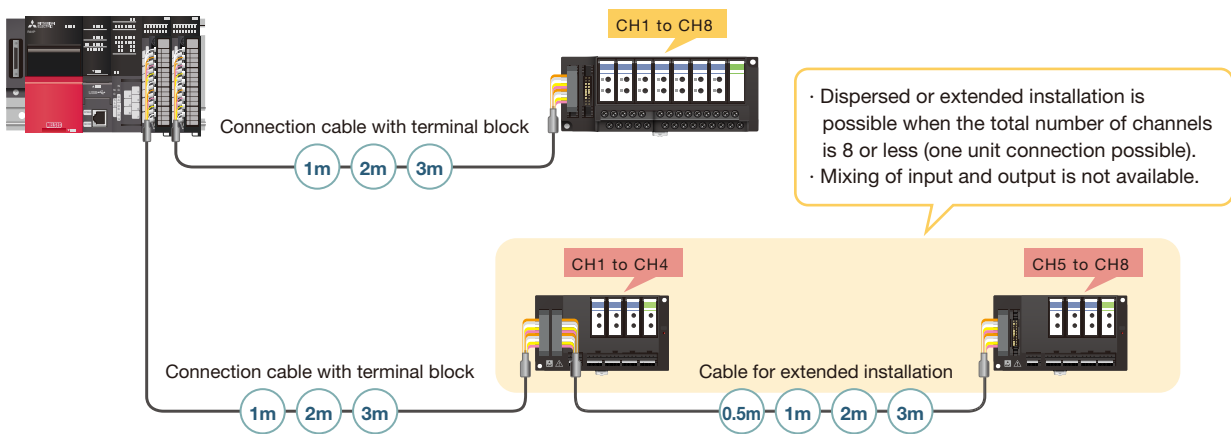
The number of unused channels can be reduced by using the 4-channel installation base instead of the 8-channel installation base, and dispersed installation is possible when the total number of channels is 8 or less. Additionally, the spring clamp terminal type product reduces wiring time and maintenance time because screws do not need to be tightened.

4-channel installation base		8-channel installation base	
<b>New</b> Spring clamp terminal type	<b>New</b> Screw terminal type	Screw terminal type	
 <ul style="list-style-type: none"> <li>· Input (voltage connection)</li> <li>· Output (common for current and voltage)</li> </ul>	 <ul style="list-style-type: none"> <li>· Input (voltage connection)</li> <li>· Output (common for current and voltage)</li> </ul>	 <ul style="list-style-type: none"> <li>· Input (current connection/voltage connection)</li> <li>· Output (common for current and voltage)</li> </ul>	

### Dispersed installation using dedicated cables

Dedicated cables can connect a programmable controller and analog signal converters.

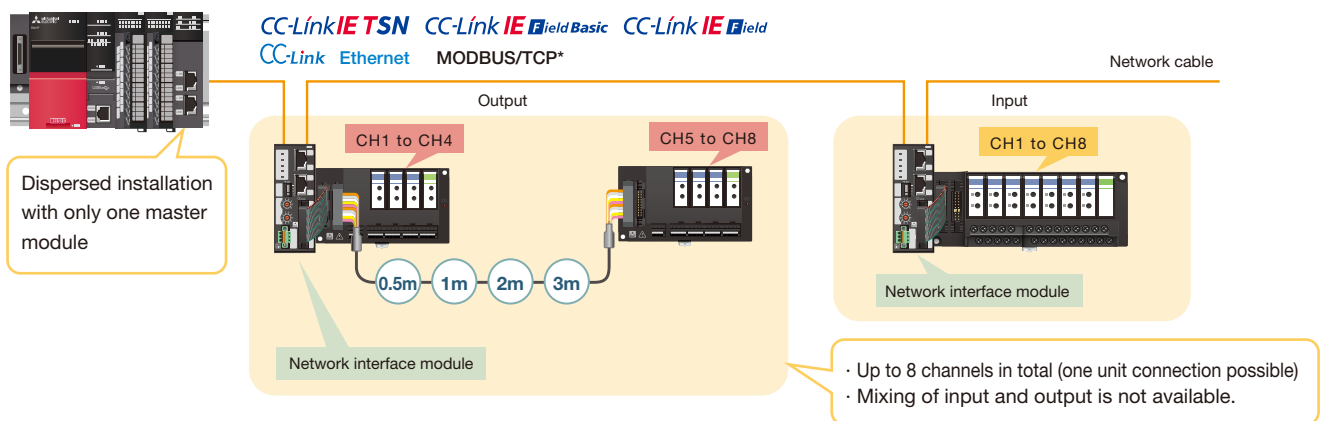
The product can be installed in dispersed areas near devices such as sensors when the total number of channels is 8 or less.



### Dispersed installation with network connection ▶ Refer to page 8.

This product can be installed dispersedly using one programmable controller network master module and one network cable.

Using just one network cable simplifies the wiring between the control panel and devices/relay box and the wiring for additional device installation.



\* CC-Link IE Field and MODBUS/TCP-compatible products will be released in the near future.

## Wire saving with a dedicated cable and the secondary output function

Time and cost for wiring are reduced significantly by using the dedicated cable for programmable controller connection and by using the secondary output function for regulator/indicator connection.

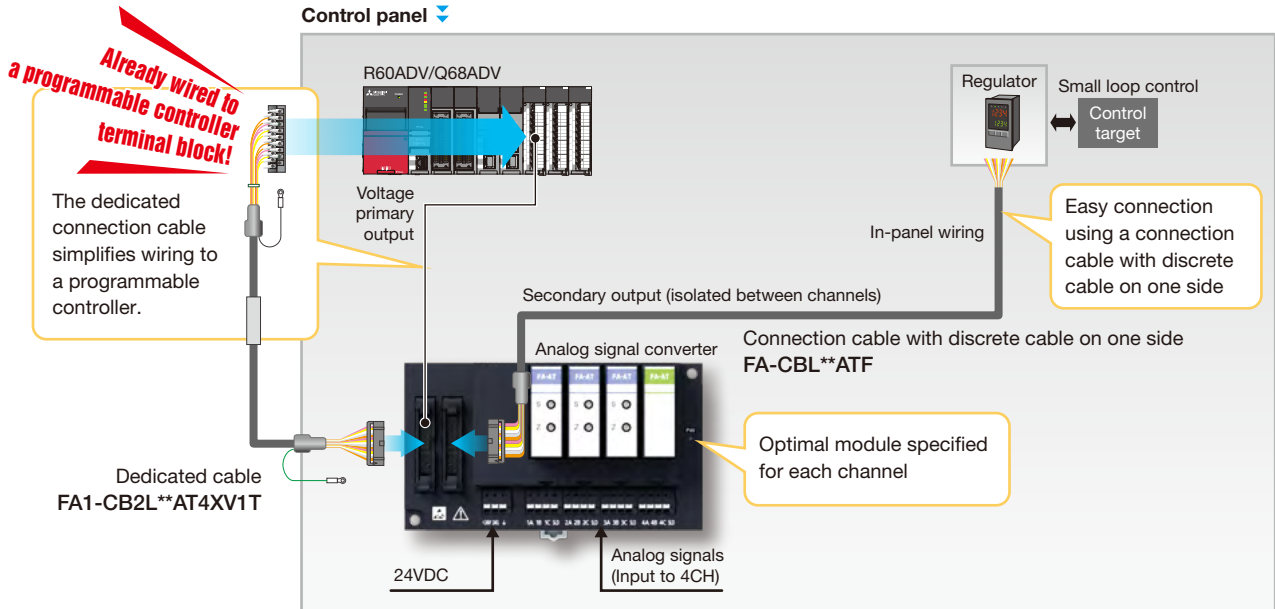
- Secondary output function [Input]

The same signal as the analog signal (voltage) input to the programmable controller is output from the secondary output terminal.

- Secondary output function [Output]

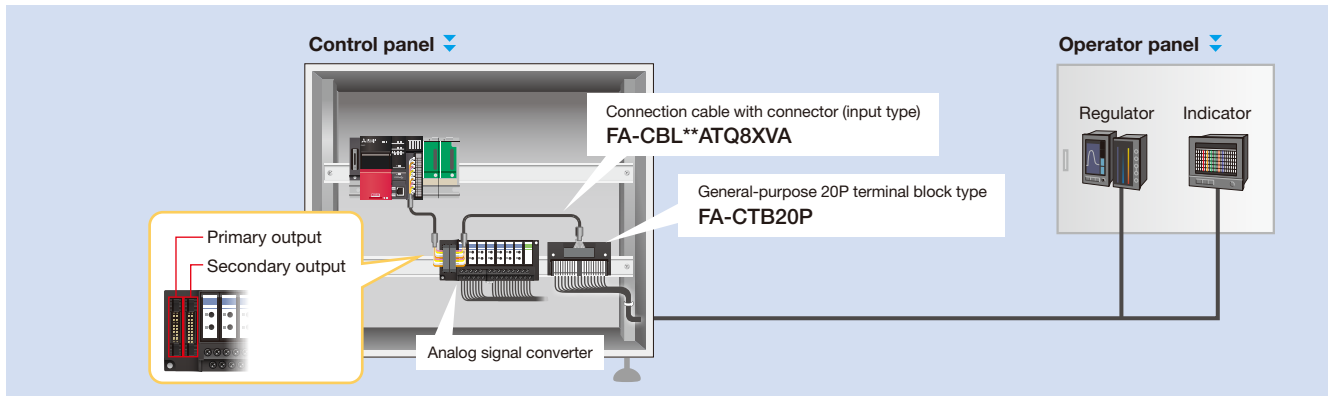
The same signal as the analog signal (voltage or current) output from the programmable controller is output from the secondary output terminal.

## Configuration example



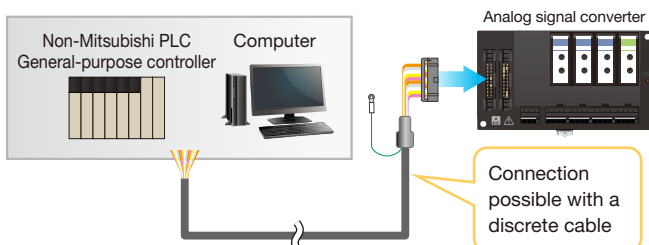
## Secondary output via terminal block

Converting the secondary output connector into a relay terminal block facilitates wiring to dispersed devices such as regulators and indicators.



## Connection with a non-Mitsubishi PLC and computer

Shielded cables with discrete cable on one side enable connection with PLCs regardless of the manufacturer.



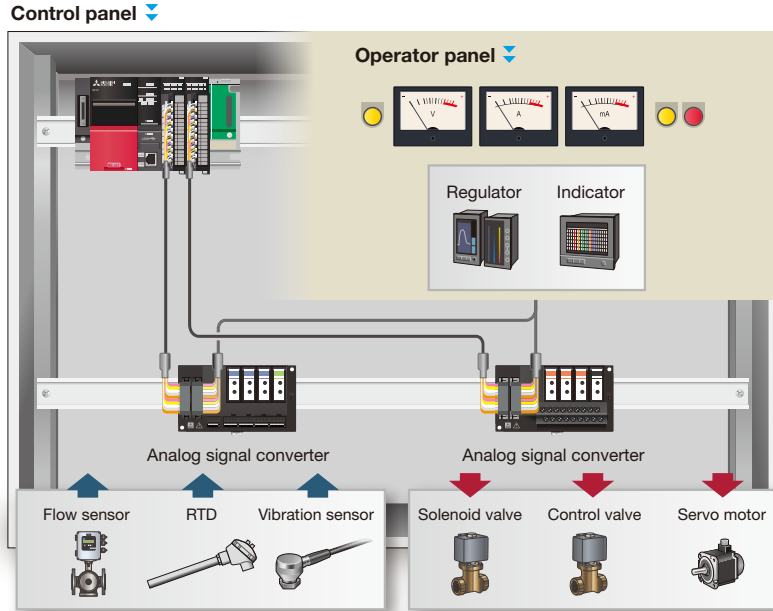
Cable length	Input model	Output model
1m	FA-CBL10ATF	FA-CBL10ATYF
2m	FA-CBL20ATF	FA-CBL20ATYF
3m	FA-CBL30ATF	FA-CBL30ATYF



# Visualization of various analog signals


## Collection and control of analog signals

An optimal module can be mounted for each channel, and using the secondary output function enables easy wiring to devices such as regulators. Thus, data of the devices such as sensors can be easily visualized.




## Various analog modules



### Input modules

	Voltage input	FA-ATSVM1XV**	0 to 5VDC, 1 to 5VDC, -10 to +10VDC	<ul style="list-style-type: none"> <li>· Humidity sensor</li> <li>· Vibration sensor</li> <li>· Pressure sensor</li> <li>· Laser distance sensor</li> <li>· Flow meter</li> <li>· Wattmeter</li> <li>or other devices</li> </ul>
	Current input	FA-ATSVM1XA420	4 to 20mADC	
	Distributor	FA-ATSVM1XD	Double wire transmitter	
	RTD input	FA-ATSVM1XR**	Pt100 (-200 to +650°C, 0 to +100/200°C) JPt100 (-200 to +600°C)	
	Thermocouple input	FA-ATSVM1XT**	Type B thermocouple (+600 to +1700°C) Type S thermocouple (0 to +1600°C) Type E thermocouple (-200 to +900°C) Type T thermocouple (-200 to +350°C) Type R thermocouple (0 to +1600°C) Type K thermocouple (-200 to +1200°C, 0 to +400/600/800°C) Type J thermocouple (-40 to +750°C) Type N thermocouple (-200 to +1250°C)	

### Output modules

	Voltage → voltage output	FA-ATSVM1YV**	0 to 5VDC, 1 to 5VDC, 0 to 10VDC, -10 to +10VDC	<ul style="list-style-type: none"> <li>· Solenoid valve</li> <li>· Recorder</li> <li>· Temperature controller</li> <li>· Indicator</li> <li>· Inverter (speed control)</li> <li>· Servo amplifier (torque control)</li> <li>or other devices</li> </ul>
	Voltage → current output	FA-ATSVM1YA**	0 to 20mADC, 4 to 20mADC	
	Current → voltage output	FA-ATSAM1YV**	0 to 5VDC, 1 to 5VDC, 0 to 10VDC, -10 to +10VDC	
	Current → current output	FA-ATSAM1YA**	0 to 20mADC, 4 to 20mADC	

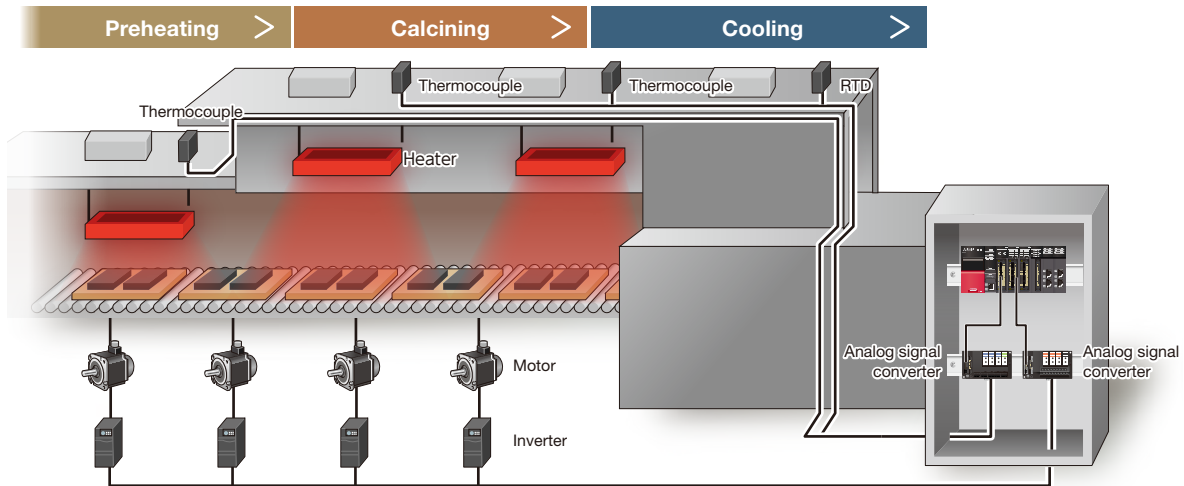
### Modules common for input and output

	Signal pass-through	FA-ATFTMX	<ul style="list-style-type: none"> <li>· Pass-through module for non-isolated signals (The current is converted into voltage.)</li> <li>· 1 to 5VDC, 4 to 20mADC</li> </ul>
	Dummy module	FA-ATNDM5	<ul style="list-style-type: none"> <li>· Dust protector</li> <li>· Quantity: 5</li> </ul>

## Electric furnace

Application in an electric furnace system for heat treatment processing

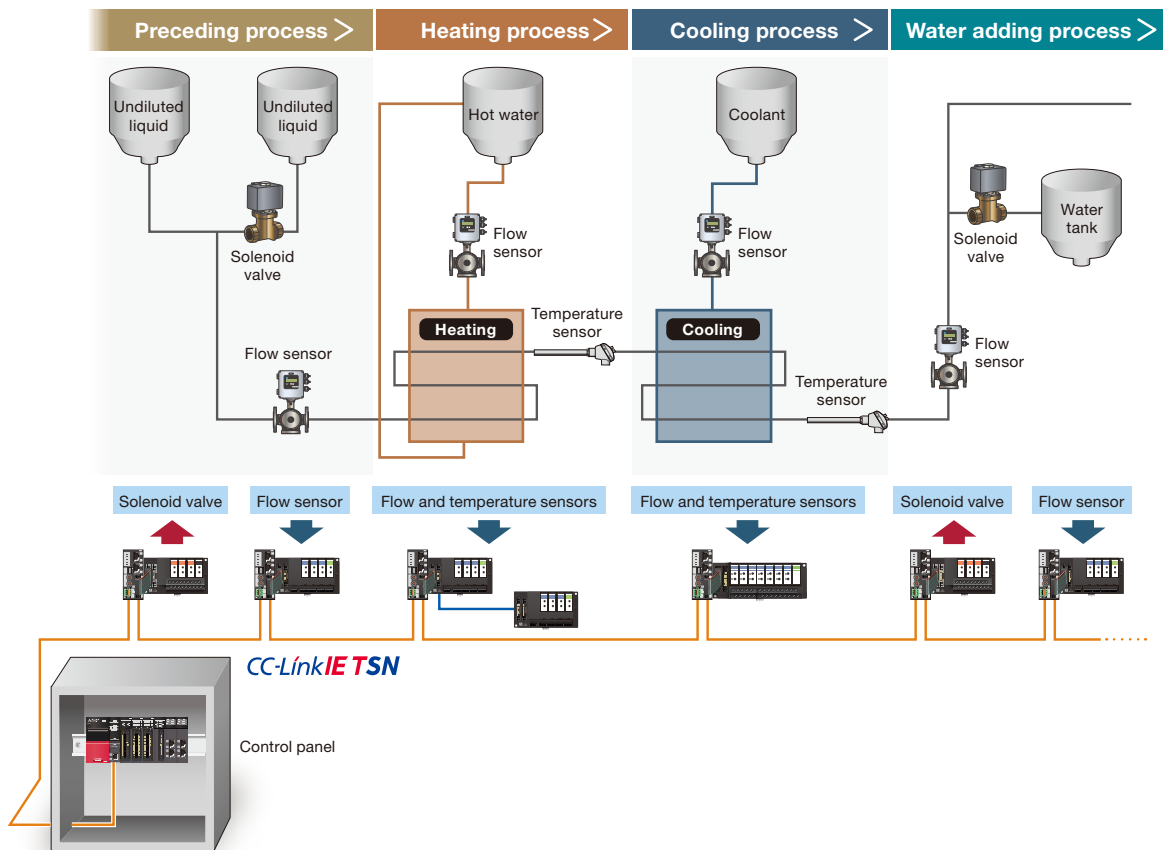
The analog signal converter installed in the control panel collects temperature data from the modules connected to various sensors in each process. Analog signals are isolated to ensure equipment stability.



## Sterilization system

Application in a liquid sterilization system

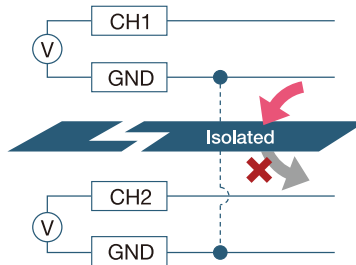
Combining a network interface module and analog signal converter, and installing them near the sensors and solenoid valves in each process reduce wiring time and facilitate maintenance. Additionally, sensor data is collected to convert signals for water flow control of the solenoid valves.



# Noise immunity

## Isolation between channels

The circuit is isolated to prevent each channel from being affected by other channels (analog signals). (Not applicable to signal pass-through modules)



## Shielded cables

The connection cable between the programmable controller and installation base is a shielded cable with a terminal block on the programmable controller side. The connection cable between installation bases is a shielded cable.

### Connection cables between programmable controllers and installation bases

MELSEC iQ-R/-Q series terminal block



Cable with spring clamp terminal block



Connection cable between installation bases



Discrete cable



# Easy startup and maintenance

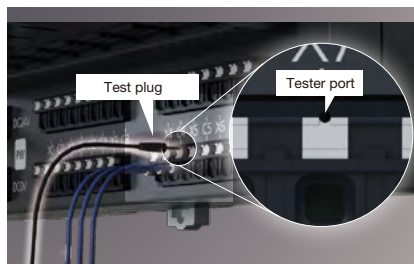
## Module replacement

Tools such as screwdrivers are not required for module replacement.



## Continuity check using the tester port

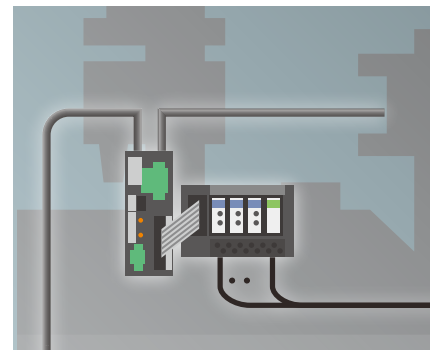
The spring clamp terminal type product has a tester port. Using the tester port reduces the time for continuity checks.



► For information on the test plug, refer to the back cover.

## Installation near devices

Installing the product near devices such as sensors improves the efficiency in wiring checks during maintenance.



# Small IoT system using a digital signal converter (terminal module)/ analog signal converter

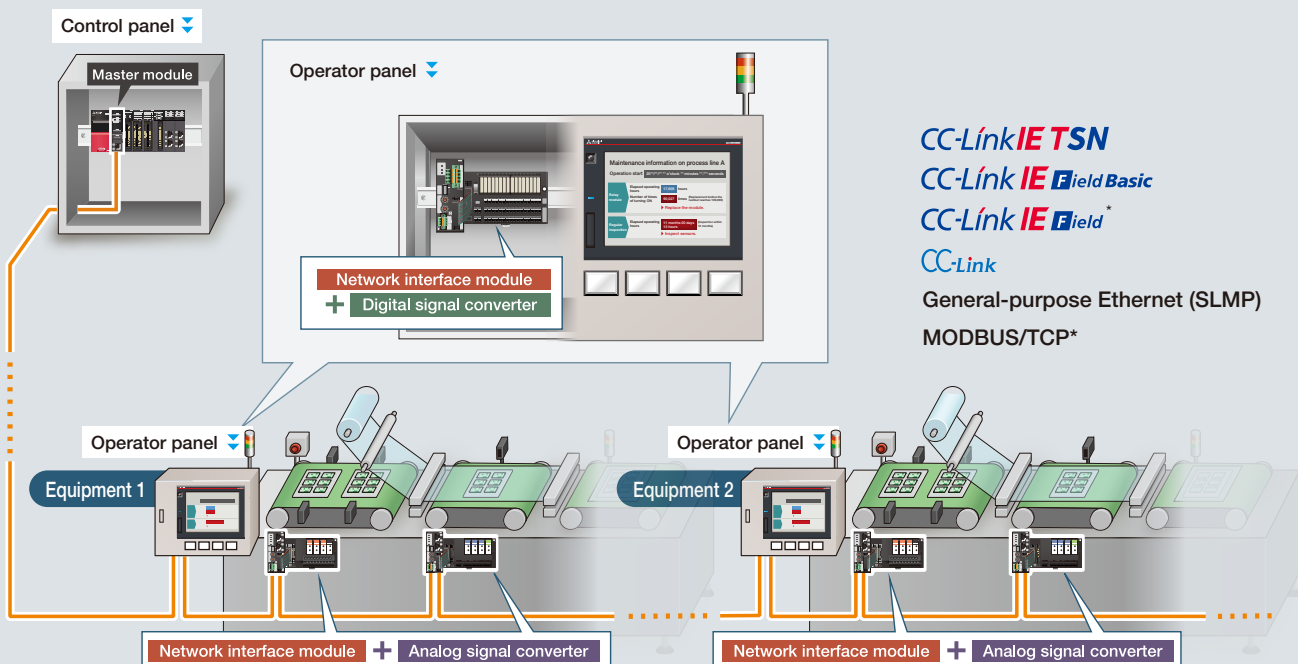
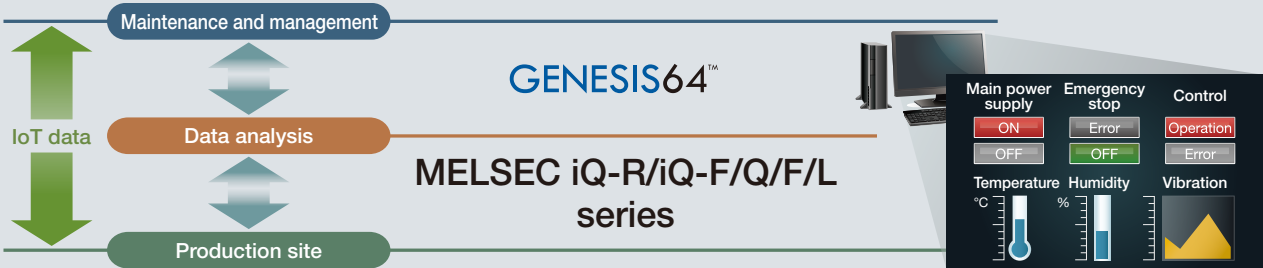
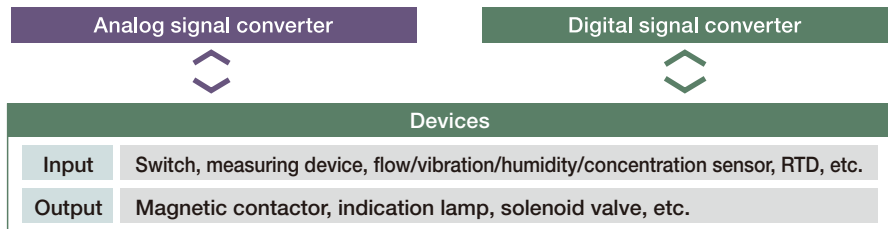
Using network interface modules for signal converters enables dispersed installation in small areas and integrated management of device data using IoT systems.

With network interface modules

Digital signal converters (terminal modules) and analog signal converters can be installed efficiently in dispersed areas near devices such as sensors.

Connection between devices and upper hierarchical levels for data transmission via network

On-site operation data is collected, stored, visualized, and analyzed to be used for device control.



CC-Link I<sup>E</sup> TSN  
 CC-Link I<sup>E</sup> Field Basic  
 CC-Link I<sup>E</sup> Field\*  
 CC-Link  
 General-purpose Ethernet (SLMP)  
 MODBUS/TCP\*

\* CC-Link IE Field and MODBUS/TCP-compatible products will be released in the near future.

## Network interface modules

Product	Type	Dedicated cable	Model
Network interface module for CC-Link IE TSN, CC-Link IE Field Network Basic, CC-Link IE Field Network, general-purpose Ethernet (SLMP), MODBUS/TCP	For analog signal converters	Included	Input
			Output
		Not included	Input
			Output
Network interface module for CC-Link IE TSN, CC-Link IE Field Network Basic, general-purpose Ethernet (SLMP)	For analog signal converters	Included	Input
			Output
		Not included	Input
			Output
CC-Link network interface module	For analog signal converters	Included	Input
			Output
		Not included	Input
			Output

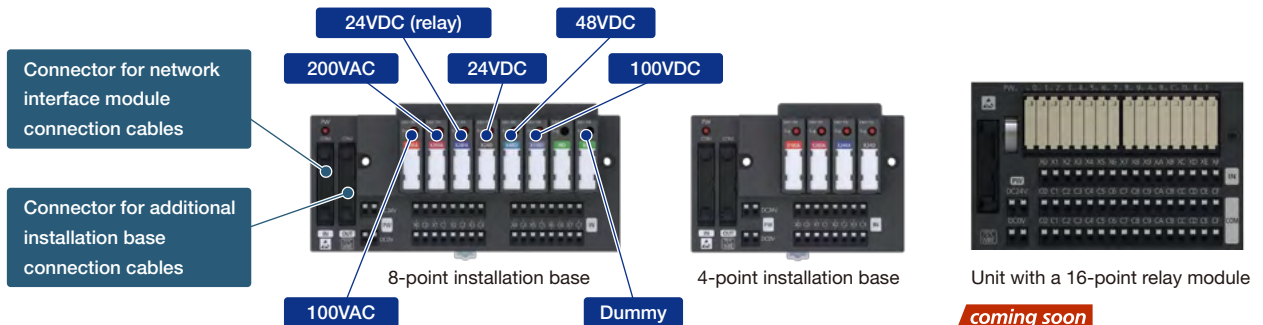
### Digital signal converter (terminal module)

This converter is used to convert digital signals sent between the network interface module and sensors or other devices.

There are two types of terminal blocks available: spring clamp type and screw type.

- Input  Spring clamp terminal type  Screw terminal type

Different input voltages (24VDC, 48VDC, 100VDC, 100VAC, 200VAC) can be specified for each terminal according to the device type.

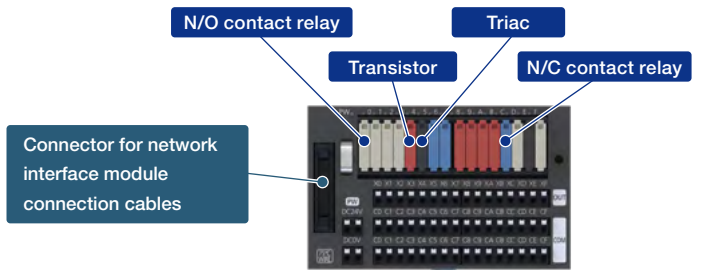


**coming soon**

Unit with a 16-point relay module  
Unit with a 8-point relay module  
Unit with a 4-point relay module

- Output  Spring clamp terminal type  Screw terminal type

Different control methods (relay, triac, transistor) can be specified for each terminal according to the device type.



16-point relay module selectable type (installation base)  
Unit with a 16-point relay module

**coming soon**

Unit with a 8-point relay module  
Unit with a 4-point relay module





## 8-channel input installation bases

Programmable controller module		Input range	Installation base	Signal conversion module	Connection cable			
MELSEC iQ-R series	R60ADI8	4 to 20mA	8-channel screw terminal block FA-ATKB8XTB + Conversion adapter FA-ATKAA8XM	Voltage input FA-ATSVM1XV05 FA-ATSVM1XV15 FA-ATSVM1XV1010 Current input FA-ATSVM1XA420 Distributor FA-ATSVM1XD Thermocouple temperature input FA-ATSVM1XTB FA-ATSVM1XTR FA-ATSVM1XTS FA-ATSVM1XTK FA-ATSVM1XTK0040 FA-ATSVM1XTK0060 FA-ATSVM1XTK0080 FA-ATSVM1XTE FA-ATSVM1XTJ FA-ATSVM1XTT FA-ATSVM1XTN RTD input FA-ATSVM1XRPT FA-ATSVM1XRPT0010 FA-ATSVM1XRPT0020 FA-ATSVM1XRJPT Signal pass-through FA-ATFTMX	FA-CBL**ATQ8XVT			
							FA-CBL**ATQ8XVA <sup>*1</sup>	
MELSEC-Q series	Q68ADI	4 to 20mA					FA-CBL**ATQ8XVT	
	Q64AD-GH						FA-CBL**ATQ8XVA <sup>*1</sup>	
MELSEC-L series	L60ADIL8	4 to 20mA					FA-CBL**ATF	
MELSEC iQ-F series	FX5-8AD	4 to 20mA					FA2-CB2L**AT8XV1E	
MELSEC-F series	FX3U-4AD FX3U-4AD-ADP FX3UC-4AD FX2N-8AD	4 to 20mA					FA-CBL**ATF	
CC-Link IE TSN	NZ2GN2B-60AD4	4 to 20mA						
CC-Link IE Field	NZ2GFCE-60ADI8 NZ2GF2BN-60AD4	4 to 20mA						
CC-Link	AJ65SBT-64AD AJ65SBT2B-64AD	4 to 20mA						
Programmable controllers from various manufacturers	General-purpose analog input module	4 to 20mA						
Computers from various manufacturers		4 to 20mA						
MELSEC iQ-R series	R60ADV8	1 to 5V			8-channel screw terminal block FA-ATB8XTB	Voltage input FA-ATSVM1XV05 FA-ATSVM1XV15 FA-ATSVM1XV1010 Current input FA-ATSVM1XA420 Distributor FA-ATSVM1XD Thermocouple temperature input FA-ATSVM1XTB FA-ATSVM1XTR FA-ATSVM1XTS FA-ATSVM1XTK FA-ATSVM1XTK0040 FA-ATSVM1XTK0060 FA-ATSVM1XTK0080 FA-ATSVM1XTE FA-ATSVM1XTJ FA-ATSVM1XTT FA-ATSVM1XTN RTD input FA-ATSVM1XRPT FA-ATSVM1XRPT0010 FA-ATSVM1XRPT0020 FA-ATSVM1XRJPT Signal pass-through FA-ATFTMX		FA-CBL**ATQ8XVT
								FA-CBL**ATQ8XVA <sup>*1</sup>
MELSEC-Q series	Q68ADV	1 to 5V						FA-CBL**ATQ8XVT
	Q64AD-GH							FA-CBL**ATQ8XVA <sup>*1</sup>
MELSEC-L series	L60ADV8	1 to 5V					FA-CBL**ATF	
MELSEC iQ-F series	FX5-8AD	1 to 5V					FA2-CB2L**AT8XV1E	
MELSEC-F series	FX3U-4AD FX3U-4AD-ADP FX3UC-4AD FX2N-8AD	1 to 5V					FA-CBL**ATF	
CC-Link IE TSN	NZ2GN2B-60AD4 FA3-AT1T8X-01C FA3-AT1T8X	1 to 5V					Use the cable that comes with the product.	
							FA3-CB2L**MM1H20	
CC-Link IE Field	NZ2GFCE-60ADV8 NZ2GF2BN-60AD4	1 to 5V					FA-CBL**ATF	
CC-Link	AJ65SBT-64AD AJ65SBT2B-64AD FA3-AT1C8X-01C FA3-AT1C8X	1 to 5V					Use the cable that comes with the product.	
							FA3-CB2L**MM1H20	
Programmable controllers from various manufacturers	General-purpose analog input module	1 to 5V					FA-CBL**ATF	
Computers from various manufacturers		1 to 5V						

\*1: When the FA-Q6TCA is used on the MELSEC iQ-R/Q series programmable controller side

#### 4-channel output installation bases

Programmable controller module		Number of channels	Output range	Installation base	Signal conversion module	Connection cable				
MELSEC iQ-R series	R60DAI8	8	4 to 20mA	4-channel spring clamp terminal block FA1-AT1B4Y1TE  4-channel screw terminal block FA1-AT1B4Y1TB	Voltage output FA-ATSAM1YV05 FA-ATSAM1YV010 FA-ATSAM1YV15 FA-ATSAM1YV1010 Current output FA-ATSAM1YA020 FA-ATSAM1YA420 Signal pass-through FA-ATFTMX	FA-CBL**ATQ8YT				
	R60DAH4 R60DA4	4				FA-CBL**ATQ8YA <sup>1)</sup>				
MELSEC-Q series	Q68DAIN	8	4 to 20mA			4-channel spring clamp terminal block FA1-AT1B4Y1TE  4-channel screw terminal block FA1-AT1B4Y1TB	Voltage output FA-ATSAM1YV05 FA-ATSAM1YV010 FA-ATSAM1YV15 FA-ATSAM1YV1010 Current output FA-ATSAM1YA020 FA-ATSAM1YA420 Signal pass-through FA-ATFTMX	FA1-CB2L**AT4YA1T		
	Q64DAH Q64DAN	4						FA-CBL**ATQ8YT		
MELSEC-L series	L60DA4	4	4 to 20mA					4-channel spring clamp terminal block FA1-AT1B4Y1TE  4-channel screw terminal block FA1-AT1B4Y1TB	Voltage output FA-ATSAM1YV05 FA-ATSAM1YV010 FA-ATSAM1YV15 FA-ATSAM1YV1010 Current output FA-ATSAM1YA020 FA-ATSAM1YA420 Signal pass-through FA-ATFTMX	FA-CBL**ATQ8YA <sup>1)</sup>
MELSEC iQ-F series	FX5-4DA	4	4 to 20mA							FA1-CB2L**AT4YA1T
MELSEC-F series	FX3U-4DA FX3U-4DA-ADP	4	4 to 20mA							FA-CBL**ATQ8YT
CC-Link IE TSN	NZ2GN2S-60DA4 NZ2GN2B-60DA4	4	4 to 20mA							FA-CBL**ATQ8YA <sup>1)</sup>
CC-Link IE Field	NZ2GF2BN-60DA4	4	4 to 20mA							FA1-CB2L**AT4YA1T
CC-Link	AJ65SBT2B-64DA	4	4 to 20mA							FA-CBL**ATYF
Programmable controllers from various manufacturers	General-purpose analog output module	Differs depending on the module.	4 to 20mA	FA-CBL**ATYF						
Computers from various manufacturers		Differs depending on the computer.	4 to 20mA	FA-CBL**ATYF						
MELSEC iQ-R series	R60DAV8	8	1 to 5V	4-channel spring clamp terminal block FA1-AT1B4Y1TE  4-channel screw terminal block FA1-AT1B4Y1TB	Voltage output FA-ATSVM1YV05 FA-ATSVM1YV010 FA-ATSVM1YV15 FA-ATSVM1YV1010 Current output FA-ATSVM1YA020 FA-ATSVM1YA420 Signal pass-through FA-ATFTMX	FA-CBL**ATQ8YT				
	R60DAH4 R60DA4	4				FA-CBL**ATQ8YA <sup>1)</sup>				
MELSEC-Q series	Q68DAVN	8	1 to 5V			4-channel spring clamp terminal block FA1-AT1B4Y1TE  4-channel screw terminal block FA1-AT1B4Y1TB	Voltage output FA-ATSVM1YV05 FA-ATSVM1YV010 FA-ATSVM1YV15 FA-ATSVM1YV1010 Current output FA-ATSVM1YA020 FA-ATSVM1YA420 Signal pass-through FA-ATFTMX	FA1-CB2L**AT4YV1T		
	Q64DAH Q64DAN	4						FA-CBL**ATQ8YT		
MELSEC-L series	L60DA4	4	1 to 5V					FA-CBL**ATQ8YA <sup>1)</sup>		
MELSEC iQ-F series	FX5-4DA	4	1 to 5V					FA1-CB2L**AT4YV1T		
MELSEC-F series	FX3U-4DA FX3U-4DA-ADP	4	1 to 5V					FA-CBL**ATYF		
CC-Link IE TSN	FA3-AT1T8Y-01C	8	1 to 5V					4-channel spring clamp terminal block FA1-AT1B4Y1TE  4-channel screw terminal block FA1-AT1B4Y1TB	Voltage output FA-ATSVM1YV05 FA-ATSVM1YV010 FA-ATSVM1YV15 FA-ATSVM1YV1010 Current output FA-ATSVM1YA020 FA-ATSVM1YA420 Signal pass-through FA-ATFTMX	Use the cable that comes with the product.
	FA3-AT1T8Y	4								FA3-CB2L**MM1H20
	NZ2GN2S-60DA4 NZ2GN2B-60DA4	4								FA3-CB2L**AT4YV1E
CC-Link IE Field	NZ2GF2BN-60DA4	4	1 to 5V	FA-CBL**ATYF						
CC-Link	FA3-AT1C8Y-01C	8	1 to 5V	4-channel spring clamp terminal block FA1-AT1B4Y1TE  4-channel screw terminal block FA1-AT1B4Y1TB	Voltage output FA-ATSVM1YV05 FA-ATSVM1YV010 FA-ATSVM1YV15 FA-ATSVM1YV1010 Current output FA-ATSVM1YA020 FA-ATSVM1YA420 Signal pass-through FA-ATFTMX					Use the cable that comes with the product.
	FA3-AT1C8Y	4				FA3-CB2L**MM1H20				
	AJ65SBT2B-64DA	4				FA-CBL**ATYF				
Programmable controllers from various manufacturers	General-purpose analog output module	Differs depending on the module.	1 to 5V			FA-CBL**ATYF				
Computers from various manufacturers		Differs depending on the computer.	1 to 5V			FA-CBL**ATYF				
MELSEC iQ-R series	R60DAI8	8	4 to 20mA			4-channel spring clamp terminal block FA1-AT1B4Y1TE × 2  4-channel screw terminal block FA1-AT1B4Y1TB × 2  Cable for dispersed installation FA1-CB2L**AT4EX	Voltage output FA-ATSAM1YV05 FA-ATSAM1YV010 FA-ATSAM1YV15 FA-ATSAM1YV1010 Current output FA-ATSAM1YA020 FA-ATSAM1YA420 Signal pass-through FA-ATFTMX			FA-CBL**ATQ8YT
MELSEC-Q series	Q68DAIN	8	4 to 20mA					FA-CBL**ATQ8YA <sup>1)</sup>		
	MELSEC-L series	L60DAIL8	8					4 to 20mA	FA-CBL**ATQ8YT	
Programmable controllers from various manufacturers		General-purpose analog output module	Differs depending on the module.					4 to 20mA	FA-CBL**ATQ8YA <sup>1)</sup>	
Computers from various manufacturers		Differs depending on the computer.	4 to 20mA					FA-CBL**ATYF		

Programmable controller module		Number of channels	Output range	Installation base	Signal conversion module	Connection cable
MELSEC iQ-R series	R60DAV8	8	1 to 5V	4-channel spring clamp terminal block FA1-AT1B4Y1TE × 2  4-channel screw terminal block FA1-AT1B4Y1TB × 2  Cable for dispersed installation FA1-CB2L**AT4EX	Voltage output FA-ATSVM1YV05 FA-ATSVM1YV010 FA-ATSVM1YV15 FA-ATSVM1YV1010 Current output FA-ATSVM1YA020 FA-ATSVM1YA420 Signal pass-through FA-ATFTMX	FA-CBL**ATQ8YT
MELSEC-Q series	Q68DAVN	8	1 to 5V			FA-CBL**ATQ8YA <sup>*1</sup>
MELSEC-L series	L60DAVL8	8	1 to 5V			FA-CBL**ATQ8YT
CC-Link IE TSN	FA3-AT1T8Y-01C	8	1 to 5V			FA-CBL**ATQ8YA <sup>*1</sup>
	FA3-AT1T8Y					FA-CBL**ATYF
CC-Link	FA3-AT1C8Y-01C	8	1 to 5V			Use the cable that comes with the product.
	FA3-AT1C8Y					FA3-CB2L**MM1H20
	AJ65VBTCU-68DAVN	4				Use the cable that comes with the product.
Programmable controllers from various manufacturers	General-purpose analog output module	Differs depending on the module.	1 to 5V			FA3-CB2L**MM1H20
Computers from various manufacturers		Differs depending on the computer.	1 to 5V			FA-CBL**ATYF

\*1: When the FA-Q6TCA is used on the MELSEC iQ-R/Q series programmable controller side

### 8-channel output installation bases

Programmable controller module		Output range	Installation base	Signal conversion module	Connection cable	
MELSEC iQ-R series	R60DAI8	4 to 20mA	8-channel screw terminal block  FA-ATB8YTB	Voltage output FA-ATSAM1YV05 FA-ATSAM1YV010 FA-ATSAM1YV15 FA-ATSAM1YV1010 Current output FA-ATSAM1YA020 FA-ATSAM1YA420 Signal pass-through FA-ATFTMX	FA-CBL**ATQ8YT	
MELSEC-Q series	Q68DAIN	4 to 20mA			FA-CBL**ATQ8YA <sup>*1</sup>	
MELSEC-L series	L60DAIL8	4 to 20mA			FA-CBL**ATQ8YT	
MELSEC-F series	FX3U-4DA FX3U-4DA-ADP	4 to 20mA			FA-CBL**ATQ8YA <sup>*1</sup>	
CC-Link IE TSN	NZGN2B-60DA4	4 to 20mA			Voltage output FA-ATSVM1YV05 FA-ATSVM1YV010 FA-ATSVM1YV15 FA-ATSVM1YV1010 Current output FA-ATSVM1YA020 FA-ATSVM1YA420 Signal pass-through FA-ATFTMX	FA-CBL**ATYF
CC-Link IE Field	NZ2GFCE-60DAI8 NZ2GF2BN-60DA4	4 to 20mA				FA-CBL**ATYF
CC-Link	AJ65SBT2B-64DA	4 to 20mA				FA-CBL**ATYF
Programmable controllers from various manufacturers	General-purpose analog output module	4 to 20mA				FA-CBL**ATYF
Computers from various manufacturers		4 to 20mA				FA-CBL**ATYF
MELSEC iQ-R series	R60DAV8	1 to 5V				8-channel screw terminal block  FA-ATB8YTB
MELSEC-Q series	Q68DAVN	1 to 5V	FA-CBL**ATQ8YA <sup>*1</sup>			
MELSEC-L series	L60DAVL8	1 to 5V	FA-CBL**ATQ8YT			
MELSEC-F series	FX3U-4DA FX3U-4DA-ADP	1 to 5V	FA-CBL**ATQ8YA <sup>*1</sup>			
CC-Link IE TSN	NZGN2B-60DA4	1 to 5V	FA-CBL**ATYF			
	FA3-AT1T8Y-01C		Use the cable that comes with the product.			
CC-Link IE Field	FA3-AT1T8Y	1 to 5V	FA3-CB2L**MM1H20			
	NZ2GFCE-60DAV8 NZ2GF2BN-60DA4		FA-CBL**ATYF			
CC-Link	AJ65SBT2B-64DA	1 to 5V	Use the cable that comes with the product.			
	FA3-AT1C8Y-01C		FA3-CB2L**MM1H20			
CC-Link	FA3-AT1C8Y	1 to 5V	FA-CBL**ATYF			
	General-purpose analog output module		1 to 5V	FA-CBL**ATYF		
Computers from various manufacturers		1 to 5V	FA-CBL**ATYF			

\*1: When the FA-Q6TCA is used on the MELSEC iQ-R/Q series programmable controller side

## ■ Product specifications

### ● Installation bases

#### Common specifications

Item	Specifications
Operating ambient temperature	0 to 55°C
Operating ambient humidity	5 to 95%RH, non-condensing
Compliance with global standards	CE, UKCA

#### 4-channel spring clamp terminal type **New**

Item		FA1-AT1B4X1TE	FA1-AT1B4Y1TE
Type		Input (voltage connection)	Output (common for current and voltage)
Number of slots		4	
Terminal block	Number of terminals	19 (power supply: 2, FG: 1, input: 4 channels)	19 (power supply: 2, FG: 1, output: 4 channels)
	Applicable wire	0.25 to 1.5mm <sup>2</sup> (24 to 16AWG)	
	Wire strip length	10mm	
Module installation	Installation screw	M4 × 0.7mm × 20mm or longer Tightening torque: 78 to 118N-cm (8 to 12kgf-cm)	
	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5Al (JIS C 2812 compliant)	
External power supply		24VDC ±10%	
Current consumption (24VDC)		6mA or less (current consumption of the signal conversion module not included)	
Dielectric strength voltage and resistance		Among input, output, and power supply: 750VAC for one minute, 10MΩ or more	
Weight		Approx. 160g	

#### 4-channel screw terminal type **New**

Item		FA1-AT1B4X1TB	FA1-AT1B4Y1TB
Type		Input (voltage connection)	Output (common for current and voltage)
Number of slots		4	
Terminal block	Number of terminals	18 (power supply: 2, FG: 1, NC: 1, input: 4 channels, shielded terminal: 2)	18 (power supply: 2, FG: 1, NC: 3, output: 4 channels)
	Terminal block screw	M3 screw, 7.62mm pitch, spring-up screw with finger protection cover Terminal screw tightening torque: 58.8 to 88.2N-cm (6 to 9kgf-cm) Tightening torque value that meets the UL standard: 59N-cm	
	Applicable wire	22 to 14AWG: 0.3 to 2.0mm <sup>2</sup> (with solderless terminal used)	
Module installation	Installation screw	M4 × 0.7mm × 20mm or longer Tightening torque: 78 to 118N-cm (8 to 12kgf-cm)	
	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5Al (JIS C 2812 compliant)	
External power supply		24VDC ±10%	
Current consumption (24VDC)		6mA or less (current consumption of the signal conversion module not included)	
Dielectric strength voltage and resistance		Among input, output, and power supply: 750VAC for one minute, 10MΩ or more	
Weight		Approx. 220g	

#### 8-channel screw terminal type


Item		FA-ATKB8XTB	FA-ATB8XTB	FA-ATB8YTB
Type		Input, current connection (for conversion adapter mounting)	Input, voltage connection	Output
Number of slots		8		
Terminal block	Number of terminals	54 (power supply: 2, FG: 2, NC: 7, input: 8 channels, secondary output: 8 channels)	28 (power supply: 2, FG: 2, NC: 1, input/output: 8 channels)	
	Terminal block screw	M3 spring-up screw, 7.62mm pitch		
	Applicable wire	0.3 to 2mm <sup>2</sup> (with solderless terminal used), 58.8 to 88.2N-cm (6 to 9kgf-cm)		
Module installation	Installation screw	M4 × 0.7mm × 20mm or more, tightening torque: 78 to 118N-cm (8 to 12kgf-cm)		
	DIN rail	Applicable DIN rail: TH35-7.5Fe, TH35-7.5Al (JIS C 2812 compliant)		
External power supply		24VDC ±10%		
Current consumption (24VDC)		6mA or less (current consumption of the conversion adapter and module not included)		
Dielectric strength voltage and resistance		Among input, output, and power supply: 750VAC for one minute, 10MΩ or more		
Weight		Approx. 370g	Approx. 320g	



• Connection cables

Connection cables between programmable controller modules and 4-channel installation bases [screw terminal block type] **New**

Item		FA1-CB2L10AT4XV1T FA1-CB2L10AT4YV1T FA1-CB2L10AT4YA1T	FA1-CB2L20AT4XV1T FA1-CB2L20AT4YV1T FA1-CB2L20AT4YA1T	FA1-CB2L30AT4XV1T FA1-CB2L30AT4YV1T FA1-CB2L30AT4YA1T
Length		1m	2m	3m
Cable		20 cores, shielded, black		
Connector	Programmable controller side	With terminal block for the MELSEC iQ-R/Q series		
	Installation base side	MIL20P connector		
Cable	Conductor resistance (20°C)	0.232Ω/m or less		
Weight		Approx. 165g	Approx. 280g	Approx. 390g

Connection cables between programmable controller modules and 4-channel installation bases [spring clamp terminal block type] **New** 

Item		FA2-CB2L10AT4XV1E FA2-CB2L10AT4YV1E FA2-CB2L10AT4YA1E FA3-CB2L10AT4XV1E FA3-CB2L10AT4YV1E FA3-CB2L10AT4YA1E	FA2-CB2L20AT4XV1E FA2-CB2L20AT4YV1E FA2-CB2L20AT4YA1E FA3-CB2L20AT4XV1E FA3-CB2L20AT4YV1E FA3-CB2L20AT4YA1E	FA2-CB2L30AT4XV1E FA2-CB2L30AT4YV1E FA2-CB2L30AT4YA1E FA3-CB2L30AT4XV1E FA3-CB2L30AT4YV1E FA3-CB2L30AT4YA1E
Length		1m	2m	3m
Cable		20 cores, shielded, black		
Connector	Programmable controller side	Spring clamp terminal, 18P connector		
	Installation base side	MIL20P connector		
Cable	Conductor resistance (20°C)	0.232Ω/m or less		
Weight		Approx. 130g	Approx. 240g	Approx. 350g

Connection cables between programmable controller modules and 8-channel installation bases [spring clamp terminal block type] **New** 

Item		FA2-CB2L10AT8XV1E	FA2-CB2L20AT8XV1E	FA2-CB2L30AT8XV1E
Length		1m	2m	3m
Cable		20 cores, shielded, black		
Connector	Programmable controller side	Spring clamp terminal, 32P connector		
	Installation base side	MIL20P connector		
Cable	Conductor resistance (20°C)	0.232Ω/m or less		
Weight		Approx. 135g	Approx. 245g	Approx. 360g

Connection cables for additional 4-channel installation bases **New**

Item		FA1-CB2L05AT4EX	FA1-CB2L10AT4EX	FA1-CB2L20AT4EX	FA1-CB2L30AT4EX
Length		0.5m	1m	2m	3m
Cable		20 cores, shielded, black			
Connector	First installation base side	MIL20P connector			
	Second installation base side	MIL20P connector			
Cable	Conductor resistance (20°C)	0.232Ω/m or less			
Weight		Approx. 65g	Approx. 120g	Approx. 230g	Approx. 345g

Connection cables between programmable controller modules and 8-channel installation bases [with 20P connector / screw terminal block]

Item		FA-CBL10ATQ8XVA FA-CBL10ATQ8YA	FA-CBL20ATQ8XVA FA-CBL20ATQ8YA	FA-CBL30ATQ8XVA FA-CBL30ATQ8YA	FA-CBL10ATQ8XVT FA-CBL10ATQ8YT	FA-CBL20ATQ8XVT FA-CBL20ATQ8YT	FA-CBL30ATQ8XVT FA-CBL30ATQ8YT
Length		1m	2m	3m	1m	2m	3m
Cable		20 cores, shielded, black					
Connector	Programmable controller side	20P connector			With terminal block for the MELSEC iQ-R/Q series		
	Installation base side	MIL20P connector					
Cable	Conductor resistance (20°C)	0.232Ω/m or less					

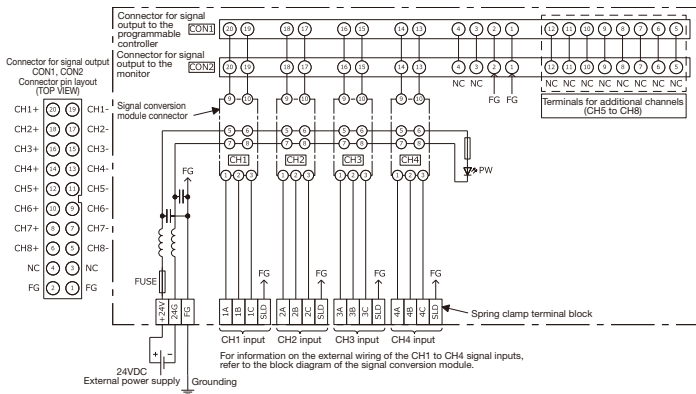
Connection cables between programmable controller modules and 8-channel installation bases [discrete cables]

Item		FA-CBL10ATF FA-CBL10ATYF	FA-CBL20ATF FA-CBL20ATYF	FA-CBL30ATF FA-CBL30ATYF
Length		1m	2m	3m
Cable		20 cores, shielded, black		
Connector	Programmable controller side	Discrete cable		
	Installation base side	MIL20P connector		
Cable	Conductor resistance (20°C)	0.232Ω/m or less		

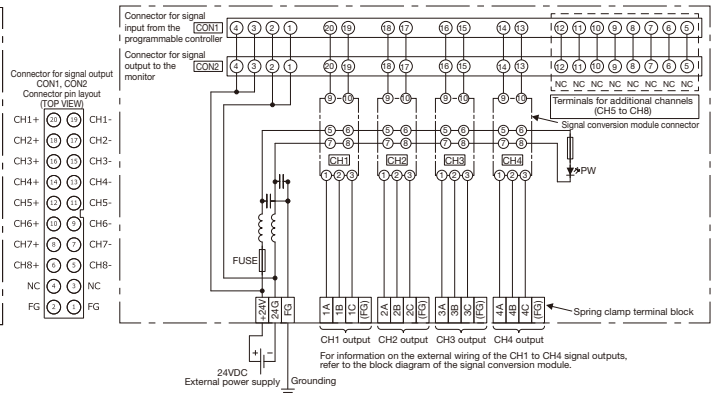
## Wiring diagrams

### 4-channel spring clamp terminal type **New**

#### Input model: FA1-AT1B4X1TE

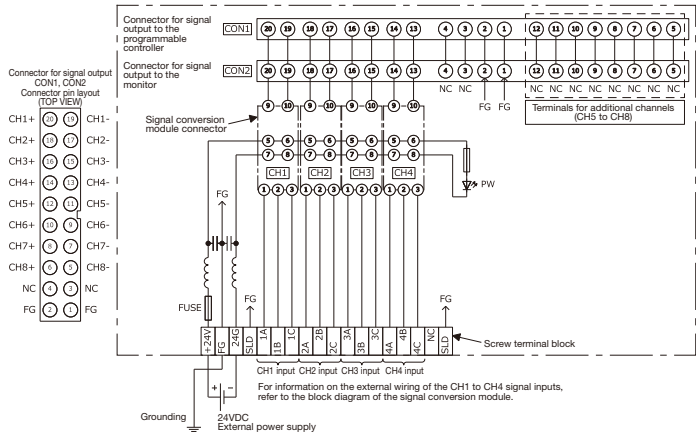


#### Output model: FA1-AT1B4Y1TE

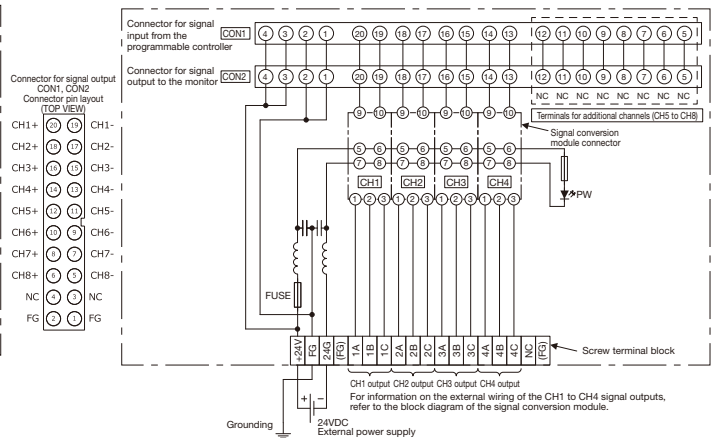


### 4-channel screw terminal type **New**

#### Input model: FA1-AT1B4X1TB

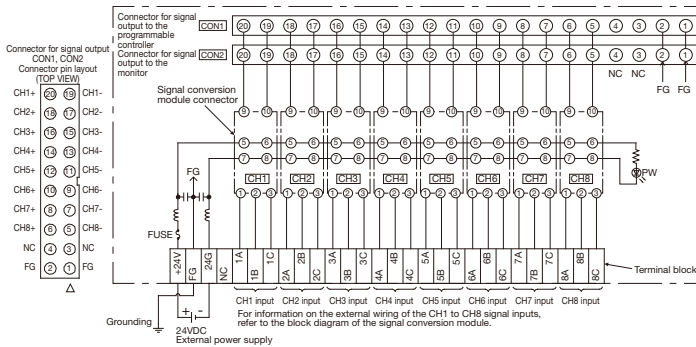


#### Output model: FA1-AT1B4Y1TB

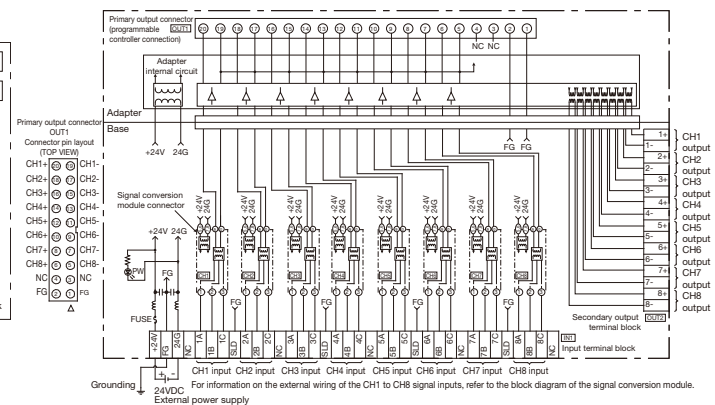


### 8-channel screw terminal type

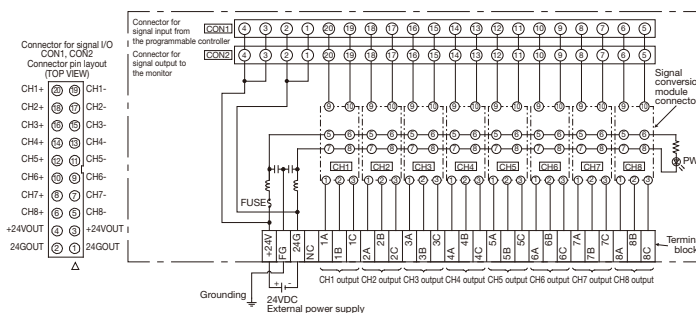
#### Input model: FA-ATB8XTB



#### Voltage to current conversion adapter FA-ATKAA8XM



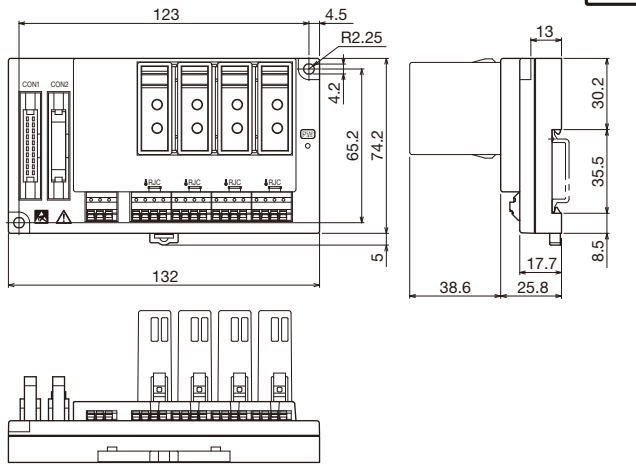
#### Output model: FA-ATB8YTB



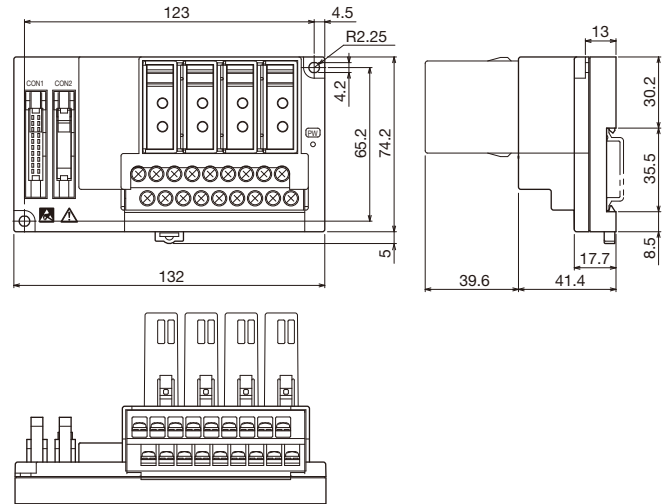
External dimensions (installation bases)

(Unit: mm)

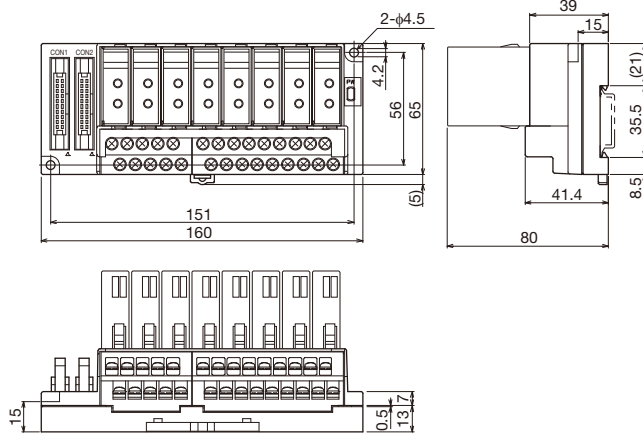
4-channel spring clamp terminal type **New**



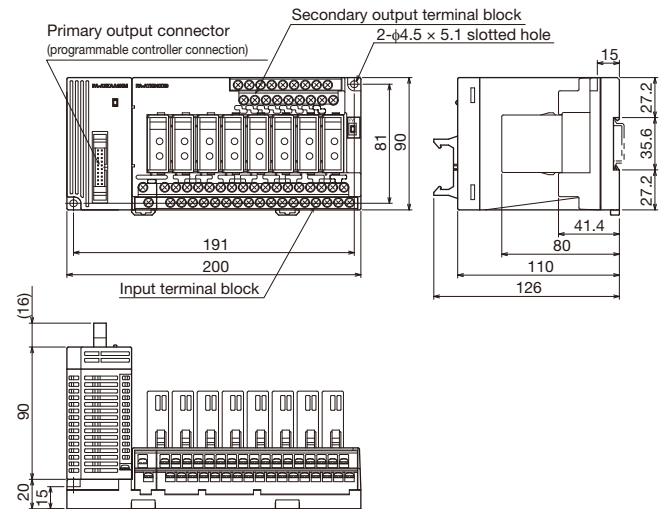
4-channel screw terminal type **New**



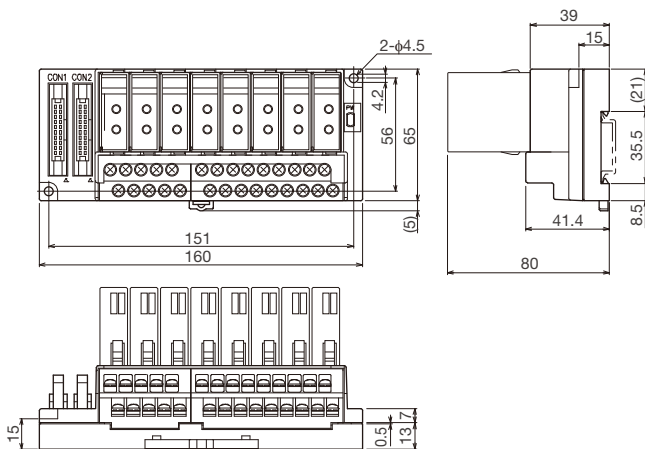
8-channel screw terminal type input



8-channel screw terminal type input  
(for conversion adapter mounting)










8-channel screw terminal type output













## Product list

### Installation bases


Connected programmable controller (analog module)	Shape	Specifications	Connection method	Model
Voltage input	 	1 to 5V input to the programmable controller	Spring clamp	FA1-AT1B4X1TE
Current output Voltage output		1 to 5V or 4 to 20mA output from the programmable controller		FA1-AT1B4Y1TE
Voltage input	 	1 to 5V input to the programmable controller	Screw (M3)	FA1-AT1B4X1TB
Current output Voltage output		1 to 5V or 4 to 20mA output from the programmable controller		FA1-AT1B4Y1TB
Current input (The photo shows the base with a conversion adapter.)		Installation base (Module selectable type)		FA-ATKB8XTB
				FA-ATKAA8XM
Voltage input		1 to 5V input to the programmable controller	Screw (M3)	FA-ATB8XTB
Current output Voltage output		1 to 5V or 4 to 20mA output from the programmable controller		FA-ATB8YTB

### Connection cables

Connected programmable controller (series)	Shape	Specifications	Length	Model
MELSEC iQ-R MELSEC-Q	 	4-channel input Cable with screw terminal block	1m	FA1-CB2L10AT4XV1T
			2m	FA1-CB2L20AT4XV1T
			3m	FA1-CB2L30AT4XV1T
		4-channel voltage output Cable with screw terminal block	1m	FA1-CB2L10AT4YV1T
			2m	FA1-CB2L20AT4YV1T
			3m	FA1-CB2L30AT4YV1T
		4-channel current output Cable with screw terminal block	1m	FA1-CB2L10AT4YA1T
			2m	FA1-CB2L20AT4YA1T
			3m	FA1-CB2L30AT4YA1T
MELSEC iQ-F	 	4-channel input Cable with spring clamp terminal block	1m	FA2-CB2L10AT4XV1E
			2m	FA2-CB2L20AT4XV1E
			3m	FA2-CB2L30AT4XV1E
		4-channel voltage output Cable with spring clamp terminal block	1m	FA2-CB2L10AT4YV1E
			2m	FA2-CB2L20AT4YV1E
			3m	FA2-CB2L30AT4YV1E
		4-channel current output Cable with spring clamp terminal block	1m	FA2-CB2L10AT4YA1E
			2m	FA2-CB2L20AT4YA1E
			3m	FA2-CB2L30AT4YA1E
CC-Link IE TSN	 	8-channel input Cable with spring clamp terminal block	1m	FA2-CB2L10AT8XV1E
			2m	FA2-CB2L20AT8XV1E
			3m	FA2-CB2L30AT8XV1E
		4-channel input Cable with spring clamp terminal block	1m	FA3-CB2L10AT4XV1E
			2m	FA3-CB2L20AT4XV1E
			3m	FA3-CB2L30AT4XV1E
		4-channel voltage output Cable with spring clamp terminal block	1m	FA3-CB2L10AT4YV1E
			2m	FA3-CB2L20AT4YV1E
			3m	FA3-CB2L30AT4YV1E
4-channel current output Cable with spring clamp terminal block	1m	FA3-CB2L10AT4YA1E		
	2m	FA3-CB2L20AT4YA1E		
	3m	FA3-CB2L30AT4YA1E		
MELSEC iQ-R MELSEC-Q MELSEC-L	 	8-channel input Connection cable with connector	1m	FA-CBL10ATQ8XVA
			2m	FA-CBL20ATQ8XVA
			3m	FA-CBL30ATQ8XVA
		8-channel output Connection cable with connector	1m	FA-CBL10ATQ8YA
			2m	FA-CBL20ATQ8YA
			3m	FA-CBL30ATQ8YA

Connected programmable controller (series)	Shape	Specifications	Length	Model
MELSEC iQ-R MELSEC-Q		8-channel input Connection cable with screw terminal block	1m	FA-CBL10ATQ8XVT
			2m	FA-CBL20ATQ8XVT
			3m	FA-CBL30ATQ8XVT
		8-channel output Connection cable with screw terminal block	1m	FA-CBL10ATQ8YT
			2m	FA-CBL20ATQ8YT
			3m	FA-CBL30ATQ8YT
MELSEC iQ-R MELSEC-Q MELSEC-L MELSEC iQ-F MELSEC-F CC-Link Family Non-Mitsubishi PLCs Computers Measuring devices		Discrete cable on one side for input Connection cable	1m	FA-CBL10ATF
			2m	FA-CBL20ATF
			3m	FA-CBL30ATF
		Discrete cable on one side for output Connection cable	1m	FA-CBL10ATYF
			2m	FA-CBL20ATYF
			3m	FA-CBL30ATYF

#### Connection cable for extended installation

Connected device (analog signal converter)	Shape	Specifications	Length	Model
FA1-AT1B4*1*		4-channel installation base Connection cable for extended installation	0.5m	FA1-CB2L05AT4EX
			1m	FA1-CB2L10AT4EX
			2m	FA1-CB2L20AT4EX
			3m	FA1-CB2L30AT4EX

#### Input modules

	Specifications	Device example	Model
Voltage input	0 to 5V	<ul style="list-style-type: none"> <li>Humidity sensor</li> <li>Vibration sensor</li> <li>Pressure sensor</li> <li>Laser distance sensor</li> <li>Flow meter</li> <li>Wattmeter</li> </ul>	FA-ATSVM1XV05
	1 to 5V		FA-ATSVM1XV15
	-10 to 10V		FA-ATSVM1XV1010
Current input	4 to 20mA		FA-ATSVM1XA420
Distributor	4 to 20mA		FA-ATSVM1XD
RTD input	Pt 100 -200 to +650°C		· RTD
	Pt 100 0 to +100°C	FA-ATSVM1XRPT0010	
	Pt 100 0 to +200°C	FA-ATSVM1XRPT0020	
	JPt 100 -200 to +600°C	FA-ATSVM1XRJPT	
Thermocouple input	Type B thermocouple +600 to +1700°C	· Thermocouple	FA-ATSVM1XTB
	Type R thermocouple 0 to +1600°C		FA-ATSVM1XTR
	Type S thermocouple 0 to +1600°C		FA-ATSVM1XTS
	Type K thermocouple -200 to +1200°C		FA-ATSVM1XTK
	Type K thermocouple 0 to +400°C		FA-ATSVM1XTK0040
	Type K thermocouple 0 to +600°C		FA-ATSVM1XTK0060
	Type K thermocouple 0 to +800°C		FA-ATSVM1XTK0080
	Type E thermocouple -200 to +900°C		FA-ATSVM1XTE
	Type J thermocouple -40 to +750°C		FA-ATSVM1XTJ
	Type T thermocouple -200 to +350°C		FA-ATSVM1XTT
	Type N thermocouple -200 to +1250°C		FA-ATSVM1XTN
Signal pass-through <sup>*1</sup>	Non-isolated		FA-ATFTMX
Dummy module <sup>*2</sup>			FA-ATNDM5

\*1: Not available when the network interface module (FA3-AT1C8X, FA3-AT1C8X-01C) is connected. \*2: Includes five dummy modules.

#### Output modules

	Specifications	Device example	Model
Voltage → voltage	0 to 5V	<ul style="list-style-type: none"> <li>Solenoid valve</li> <li>Recorder</li> <li>Temperature controller</li> <li>Indicator</li> <li>Inverter (speed control)</li> <li>Servo amplifier (torque control)</li> </ul>	FA-ATSVM1YV05
	1 to 5V		FA-ATSVM1YV15
	0 to 10V		FA-ATSVM1YV010
	-10 to 10V		FA-ATSVM1YV1010
Voltage → current	0 to 20mA		FA-ATSVM1YA020
	4 to 20mA		FA-ATSVM1YA420
Current → voltage <sup>*1</sup>	0 to 5V		FA-ATSAM1YV05
	1 to 5V		FA-ATSAM1YV15
	0 to 10V		FA-ATSAM1YV010
	-10 to 10V		FA-ATSAM1YV1010
Current → current <sup>*1</sup>	0 to 20mA		FA-ATSAM1YA020
	4 to 20mA	FA-ATSAM1YA420	
Signal pass-through <sup>*1</sup>	Non-isolated		FA-ATFTMX
Dummy module <sup>*2</sup>			FA-ATNDM5


\*1: Not available when the network interface module (FA3-AT1C8Y, FA3-AT1C8Y-01C) is connected. \*2: Includes five dummy modules.



## ■ Applicable ferrules and crimping tools

Applicable wire size	Applicable ferrule (sleeve length)	Crimping tool	Manufacturer
0.25mm <sup>2</sup> (24AWG)	AI 0,25-10 YE (10mm)	CRIMPFOX 6	PHOENIX CONTACT GmbH & Co. KG
0.34mm <sup>2</sup> (22AWG)	AI 0,34-10 TQ (10mm)		
0.5mm <sup>2</sup> (20AWG)	AI 0,5-10 WH (10mm)		
0.75mm <sup>2</sup> (18AWG)	AI 0,75-10 GY (10mm)		
1.0mm <sup>2</sup> (18AWG)	AI 1-10 RD (10mm)		
1.5mm <sup>2</sup> (16AWG)	AI 1,5-10 BK (10mm)		

## ■ Recommended product

Item	Specifications
Name	Test plug
Model	MPS-MT 1-S
Manufacturer	PHOENIX CONTACT GmbH & Co. KG
Type	
Test pin	φ 1.0mm
Socket *1	φ 2.0mm
Cable length	150mm

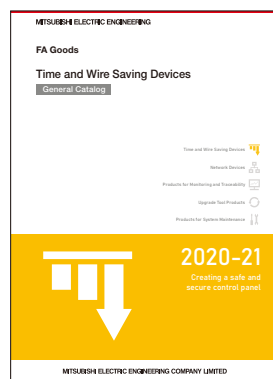
\*1: The socket into which the end of the test lead is inserted

## ■ Related catalogs

### Digest edition



### Time and Wire Saving Devices



## ■ Related leaflets

### Digital Signal Converter (Terminal Module) Input Spring Clamp Terminals (MEIC208E-20Y)



### Network Interface Modules (MEIC215E-214)



Modbus is a registered trademark of Schneider Electric USA Inc.  
The company names and product names mentioned in this document are either registered trademarks or trademarks of their respective companies.

# MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED

NAGOYA ENGINEERING OFFICE | 1-9, Daiko-Minami, 1-Chome, Higashi-ku, Nagoya, Aichi 461-0047 Japan

## Precautions for Choosing the Products

Mitsubishi Electric Engineering will not be held liable for damage caused by factors found not to be the cause of Mitsubishi Electric Engineering; opportunity losses or lost profits caused by faults in the Mitsubishi Electric Engineering products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi Electric Engineering; damages to products other than Mitsubishi Electric Engineering products; and to other duties.

## For safe use

- To use the products given in this publication properly, always read the relevant manuals before beginning operation.
- The products have been manufactured as general-purpose parts for general industries, and are not designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the products for special purposes such as nuclear power, electric power, aerospace, medicine or passenger-carrying vehicles, consult with Mitsubishi Electric Engineering.
- The products have been manufactured under strict quality control. However, when installing the products where major accidents or losses could occur if the products fail, install appropriate backup or fail-safe functions in the system.