MITSUBISHI ELECTRIC ENGINEERING

Analog Signal Converters

Easy installation of system monitoring and analysis using sensor information

Optimal configuration and easy wiring → **Collection and control of analog signals** → **System monitoring (Small-scale IoT)**

8-channel installation base unit spring clamp terminal type **New**

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

8-channel installation base unit screw terminal type

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

Individually mountable modules

4-channel installation base unit spring clamp terminal type screw terminal type

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

Input module
- Voltage
- Current
- Distributor
- RTD
- Thermocouple

Output module
- Voltage
- Current

Modules common for input and output
- Signal pass-through
- Dummy module (dust protector)

FAgoods Products

e-F@ctory

wire-saving and process time reduction

IT system
Edge computing
Production site

Source: Mitsubishi Electric Corporation

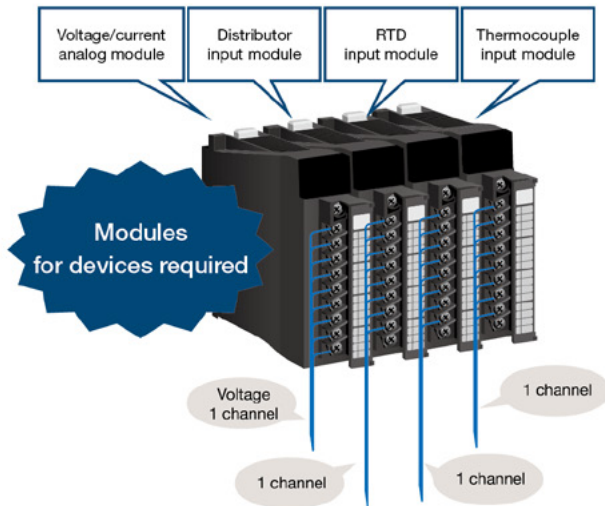**MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED**

Startup support: Flexible system design

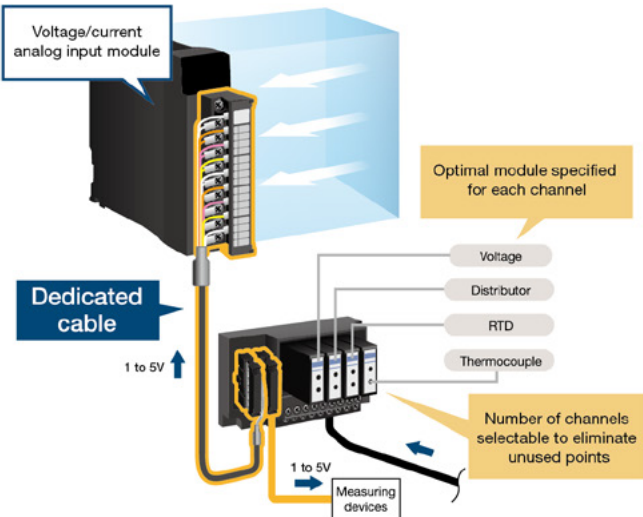## Optimal combination of devices and space saving

By selecting a module for each channel, configuration with minimum required modules is achieved. Using a dedicated cable reduces wiring time, and using fewer programmable controller modules reduces costs for maintenance modules.

Configuration

Before

- Voltage/current analog module
- Distributor input module
- RTD input module
- Thermocouple input module
- Modules for devices required
- Voltage 1 channel
- 1 channel
- 1 channel
- 1 channel

After

- Voltage/current analog input module
- Optimal module specified for each channel
- Dedicated cable
- 1 to 5V
- Voltage
- Distributor
- RTD
- Thermocouple
- Number of channels selectable to eliminate unused points
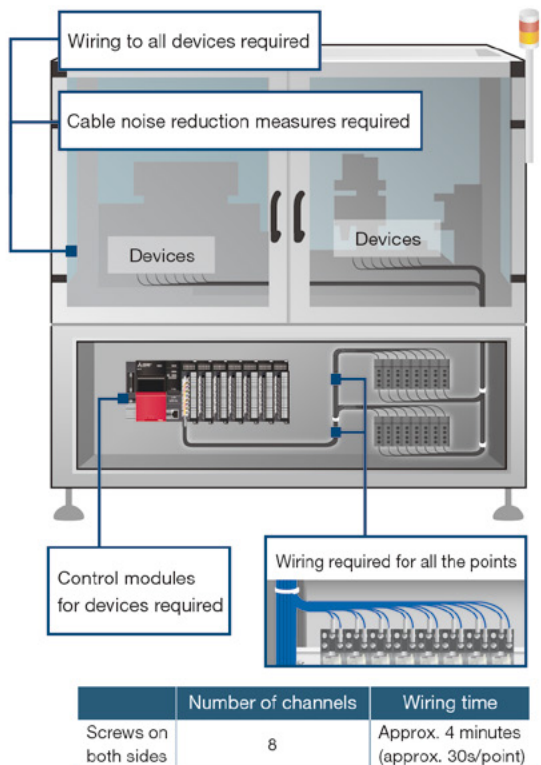- 1 to 5V
- Measuring devices

Optimal installation to meet the system needs and easy wiring

- As one analog signal converter allows connection for different analog control signals (such as temperature sensor signals), space saving can be achieved by installing them in the equipment instead of the control panel.
- Using dedicated cables and spring-clamp terminals (specific types) reduces wiring time and maintenance cost.
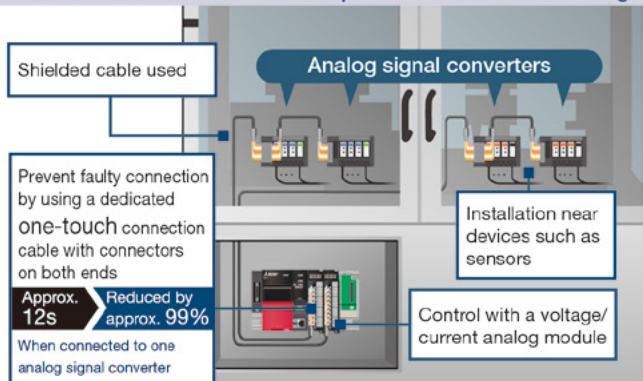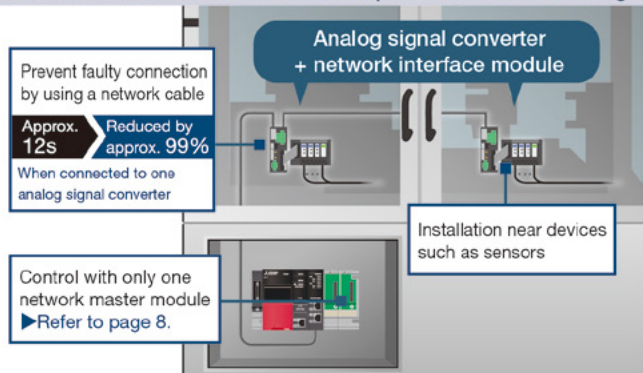
Installation

* Result of in-house testing

Before

- Wiring to all devices required
- Cable noise reduction measures required
- Devices
- Devices
- Control modules for devices required
- Wiring required for all the points

	Number of channels	Wiring time
Screws on both sides	8	Approx. 4 minutes (approx. 30s/point)

After: Dedicated cable for "device optimization" and "wire saving"

- Shielded cable used
- Analog signal converters
- Prevent faulty connection by using a dedicated **one-touch** connection cable with connectors on both ends
- Approx. 12s — Reduced by approx. 99% — When connected to one analog signal converter
- Installation near devices such as sensors
- Control with a voltage/current analog module

After: Network interface module for "device optimization" and "wire saving"

- Analog signal converter + network interface module
- Prevent faulty connection by using a network cable
- Approx. 12s — Reduced by approx. 99% — When connected to one analog signal converter
- Installation near devices such as sensors
- Control with only one network master module ▶ Refer to page 8.
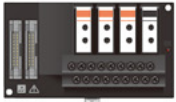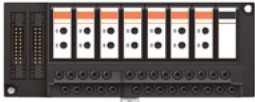
2

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

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

Installation base unit suited to the number of channels

- Dispersed installation is possible when the total number of channels is 8 or less according to system configuration.
- The spring clamp terminal type product reduces wiring time and maintenance time because screws do not need be tightened.

| 4-channel installation base unit		8-channel installation base unit	
Spring clamp terminal type	Screw terminal type	**New** Spring clamp terminal type	Screw terminal type

· Input
  voltage connection
· Output
  common for current/voltage connection
	· Input
	  voltage connection
	· Output
	  common for current/voltage connection
		· Input
		  current connection, voltage connection
		· Output
		  common for current/voltage connection
			· Input
			  current connection, voltage connection
			· Output
			  common for current/voltage connection

Selectable connection method

Direct wiring to a programmable controller	Dispersed installation in the equipment on the industrial network

For connection with a non-Mitsubishi PLC and computer, ▶ refer to page 4.

▶ Refer to pages 8 and 9.

Available networks
CC-Link IE TSN
CC-Link IE Field
CC-Link IE Field Basic
CC-Link
SLMP (general-purpose Ethernet)
MODBUS/TCP

- One-touch connection using a dedicated cable reduces cost and time for wiring.
- Using a dedicated cable prevents faulty connection.
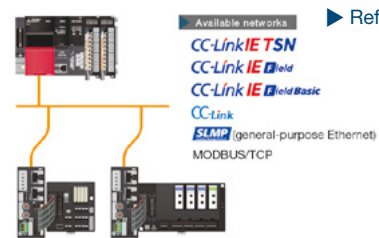
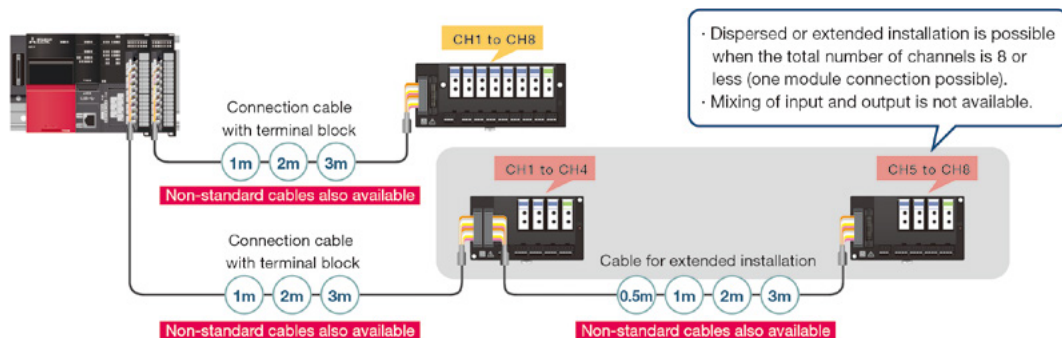- With network connection, "installation in the equipment" can be achieved instead of "installation in the control panel".
- Installing the product near devices improves the maintenance efficiency.
- Collecting sensor information wirelessly and monitoring the site remotely.
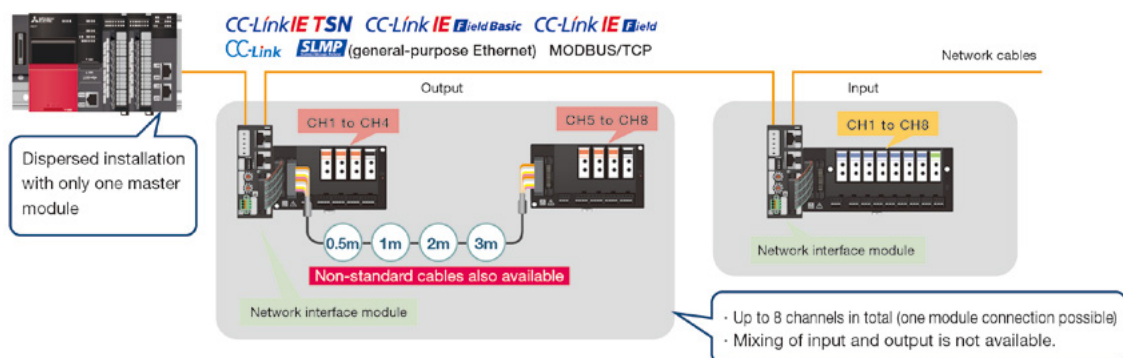
Dispersed installation using dedicated cables from a programmable controller

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.

CH1 to CH8

Connection cable with terminal block
1m 2m 3m
Non-standard cables also available

Connection cable with terminal block
1m 2m 3m
Non-standard cables also available

· Dispersed or extended installation is possible when the total number of channels is 8 or less (one module connection possible).
· Mixing of input and output is not available.

CH1 to CH4 CH5 to CH8
Cable for extended installation
0.5m 1m 2m 3m
Non-standard cables also available

Dispersed installation with network connection ▶ Refer to page 8.

This product can be installed dispersedly using one programmable controller network master module and network cables.
Using a network cable simplifies the wiring between the control panel and devices/relay box and the wiring for device extended installation.

CC-Link IE TSN CC-Link IE Field Basic CC-Link IE Field
CC-Link SLMP (general-purpose Ethernet) MODBUS/TCP

Network cables

Output

Input

CH1 to CH4 CH5 to CH8

CH1 to CH8

Dispersed installation with only one master module

0.5m 1m 2m 3m
Non-standard cables also available

Network interface module

Network interface module

· Up to 8 channels in total (one module connection possible)
· Mixing of input and output is not available.

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
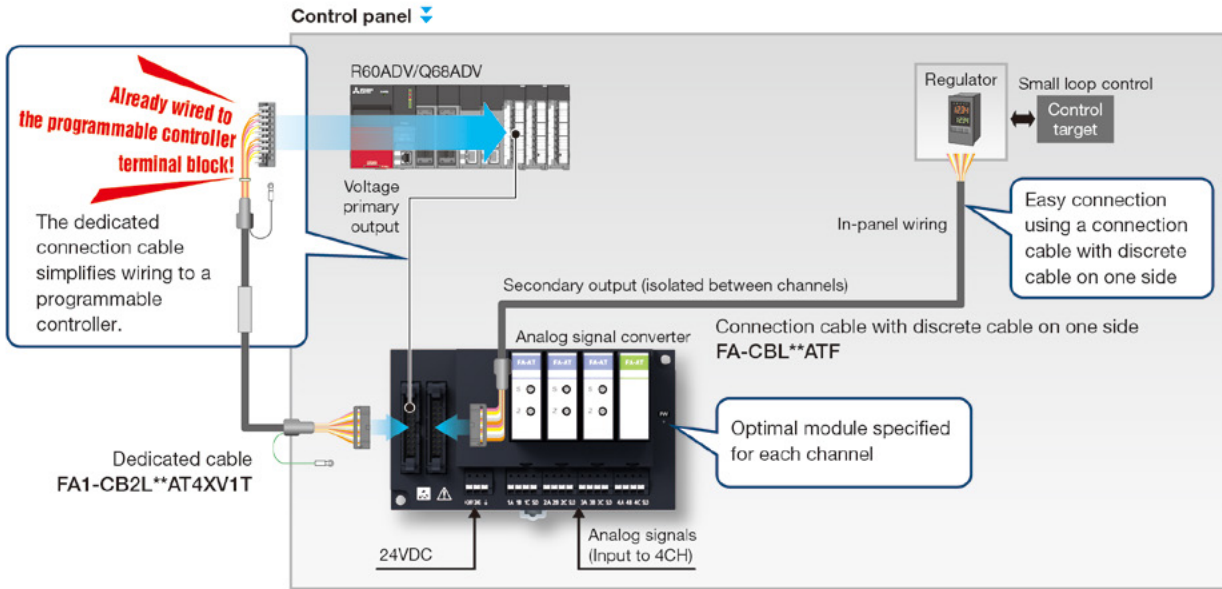
Secondary output via terminal block

Converting the secondary output connector into a relay terminal block facilitates wiring to dispersed devices such as regulators and indicators.
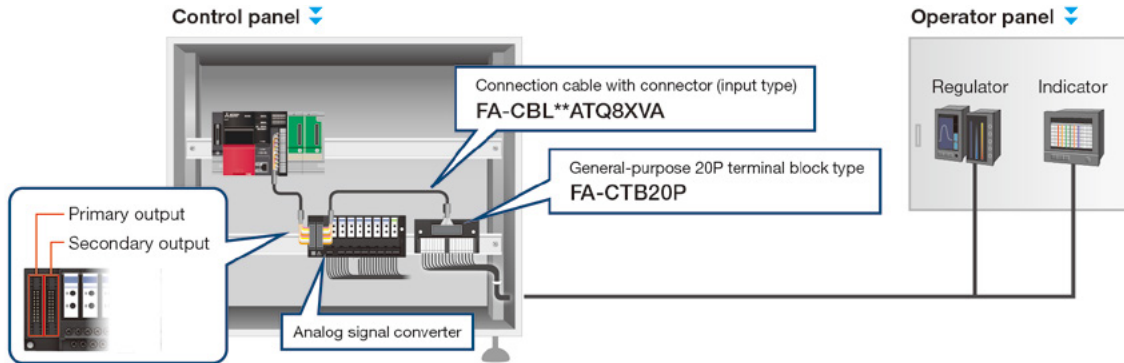
Connection with a non-Mitsubishi PLC and computer

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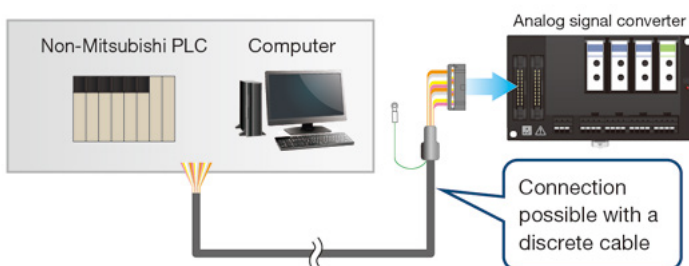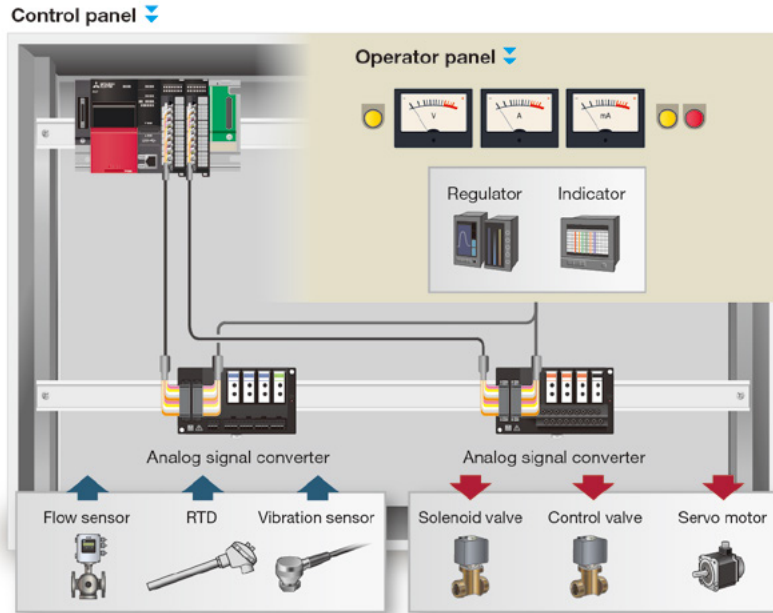

Cable length	Input model	Output model
1m	FA-CBL10ATF	FA-CBL10ATYF
2m	FA-CBL20ATF	FA-CBL20ATYF
3m	FA-CBL30ATF	FA-CBL30ATYF

Collection and control of analog signals

Visualization of various analog signals

An optimal module can be mounted for each channel, and using the secondary output function enables easy wiring with 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	· Humidity sensor · Vibration sensor · Pressure sensor · Laser distance sensor · Flow meter · Wattmeter 　　or other devices
	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)	· Temperature sensor

Output modules

|				
	Voltage → voltage output	FA-ATSVM1YV**	0 to 5VDC, 1 to 5VDC, 0 to 10VDC, -10 to +10VDC	· Solenoid valve · Recorder · Temperature controller · Indicator · Inverter 　(speed control) · Servo amplifier 　(torque control) 　　or other devices
	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-ATFTMXY	· Pass-through module for non-isolated signals (The current is converted into voltage.)
	Dummy module	FA-ATNDM5	· Dust protector · Quantity: 5

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)
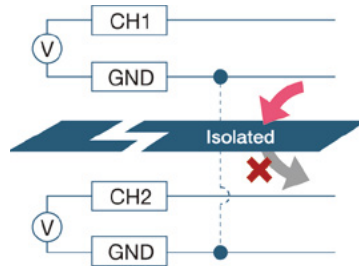
Shielded cables

The cable to connect between the programmable controller and installation base unit is a shielded cable with a terminal block on the programmable controller side.
The cable to connect between installation base units is a shielded cable.

Connection cables between programmable controllers and installation base units

MELSEC iQ-R/-Q series terminal block

Cable with spring clamp terminal block

Connection cable between installation base units

Discrete cable

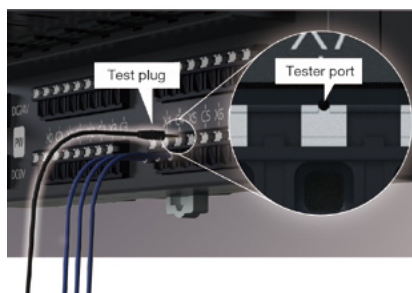# Easy startup and maintenance

Module replacement

Tools such as screwdrivers are not required for module replacement.
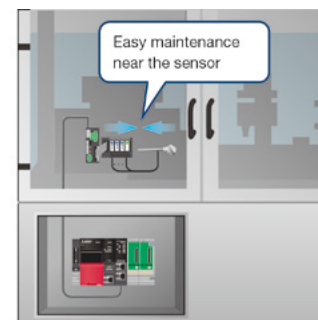

Continuity check using the tester port

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 page 18.

Installation near devices

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

System monitoring: Small-scale IoT

The operation data recording function is available for preventing and solving troubles.
(A function dedicated for CC-Link IE TSN/Ethernet network interface modules)

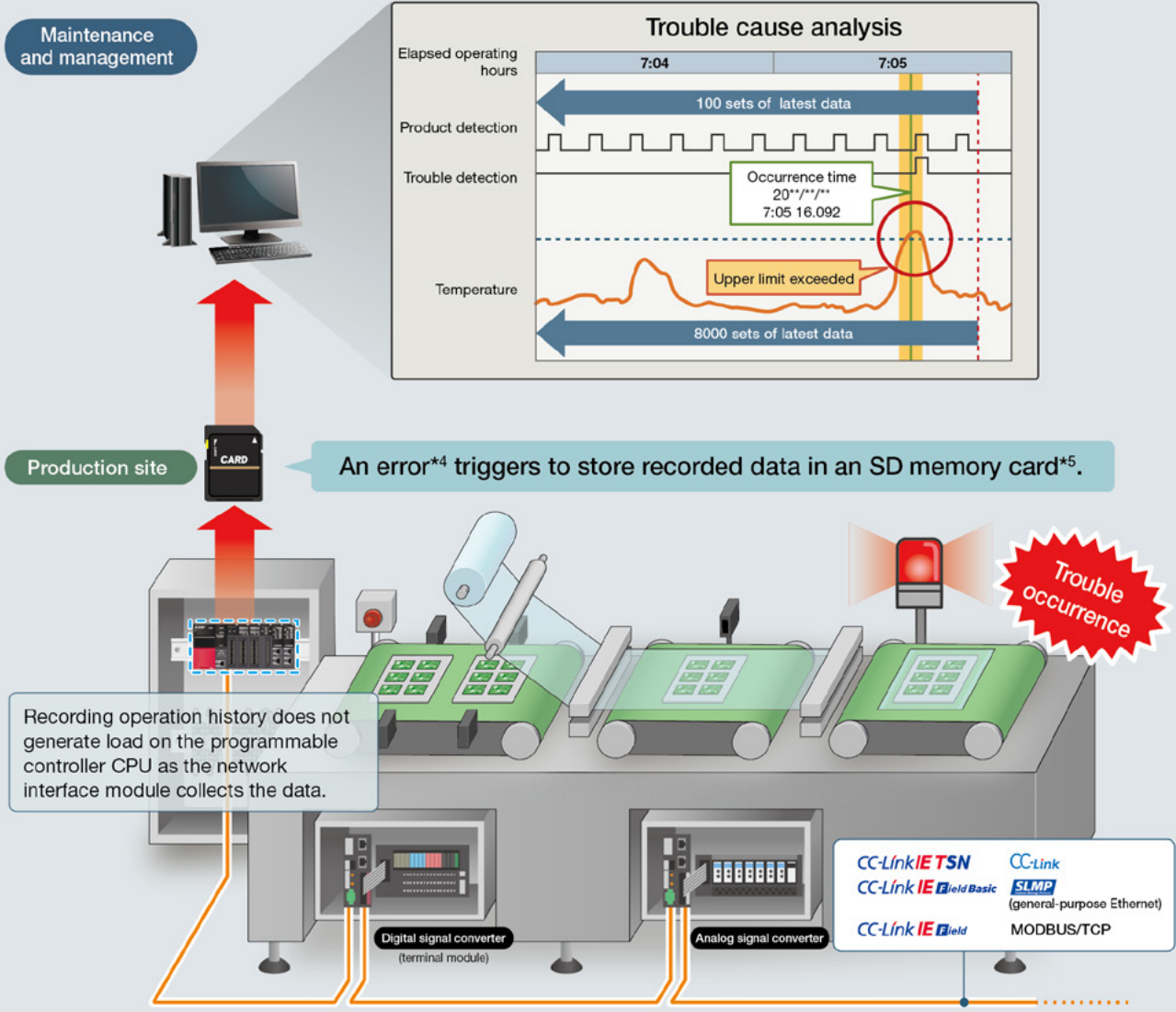## The cause of troubles can be investigated through analysis of operation history.

Recording the operation history of digital and analog signals allows you to investigate the cause of troubles.

Operation history recording function
(digital signal converters)

This function records the times at which I/O signals turn ON or OFF[1] (up to 100 data sets per signal).

Logging function[2]
(analog signal converters)

For analog input, this function records digital values at intervals specified with a digital conversion value[3] (1ms to 3600s) and occurrence times. For analog output, it records the digital value settings and occurrence times (a total of 8000 data sets in all I/O channels).

Maintenance and management

Trouble cause analysis

Elapsed operating hours	7:04	7:05

100 sets of latest data

Product detection

Trouble detection

Occurrence time
20**/**/**
7:05 16.092

Temperature

Upper limit exceeded

8000 sets of latest data

Production site

An error[4] triggers to store recorded data in an SD memory card[5].

Trouble occurrence

Recording operation history does not generate load on the programmable controller CPU as the network interface module collects the data.

Digital signal converter
(terminal module)

Analog signal converter

CC-Link IE TSN   CC-Link
CC-Link IE Field Basic   SLMP
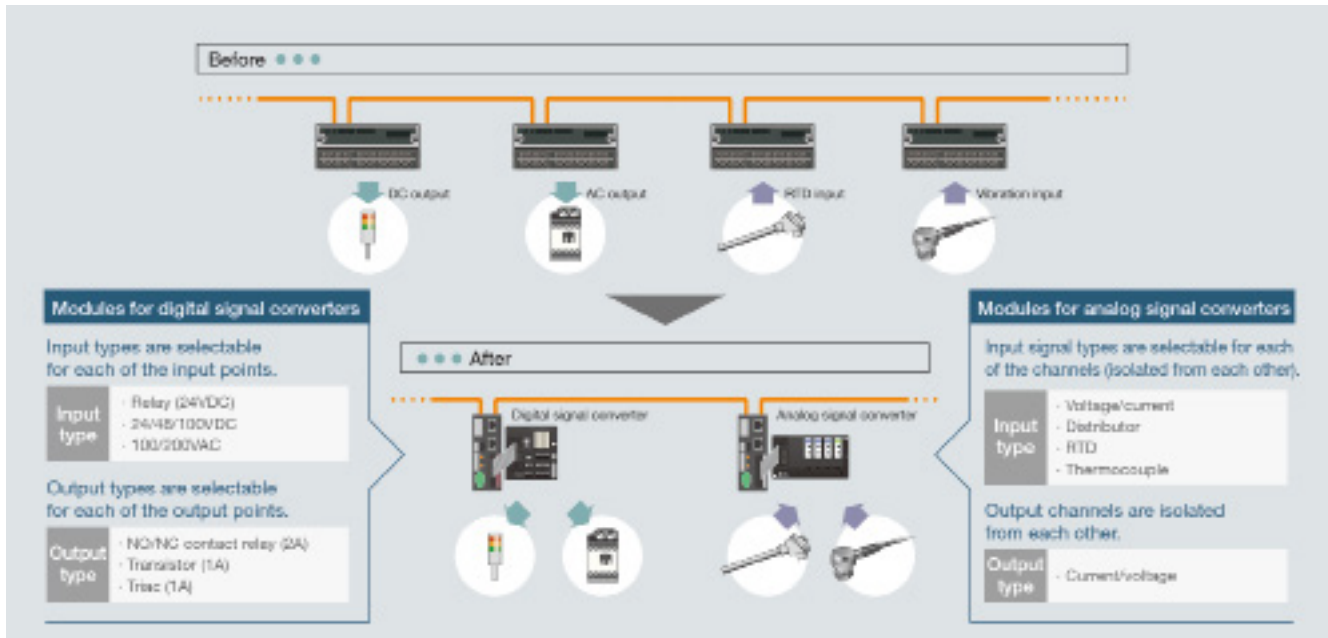(general-purpose Ethernet)
CC-Link IE Field   MODBUS/TCP

*1: Recording of occurrence times is available when the modules are used in the CC-Link IE TSN, CC-Link IE Field Network, or CC-Link IE Field Network Basic.
*2: The logging function is available when the modules are used in the CC-Link IE TSN or CC-Link IE Field Network Basic.
*3: Numerical data digitally converted by the network interface module
*4: Configure your system so that it detects errors.
*5: The sequence program (function block) saves data in the SD memory card inserted into the programmable controller CPU as a CSV file.

Using network interface modules enables dispersed installation in small areas and integrated management of device data using IoT systems.
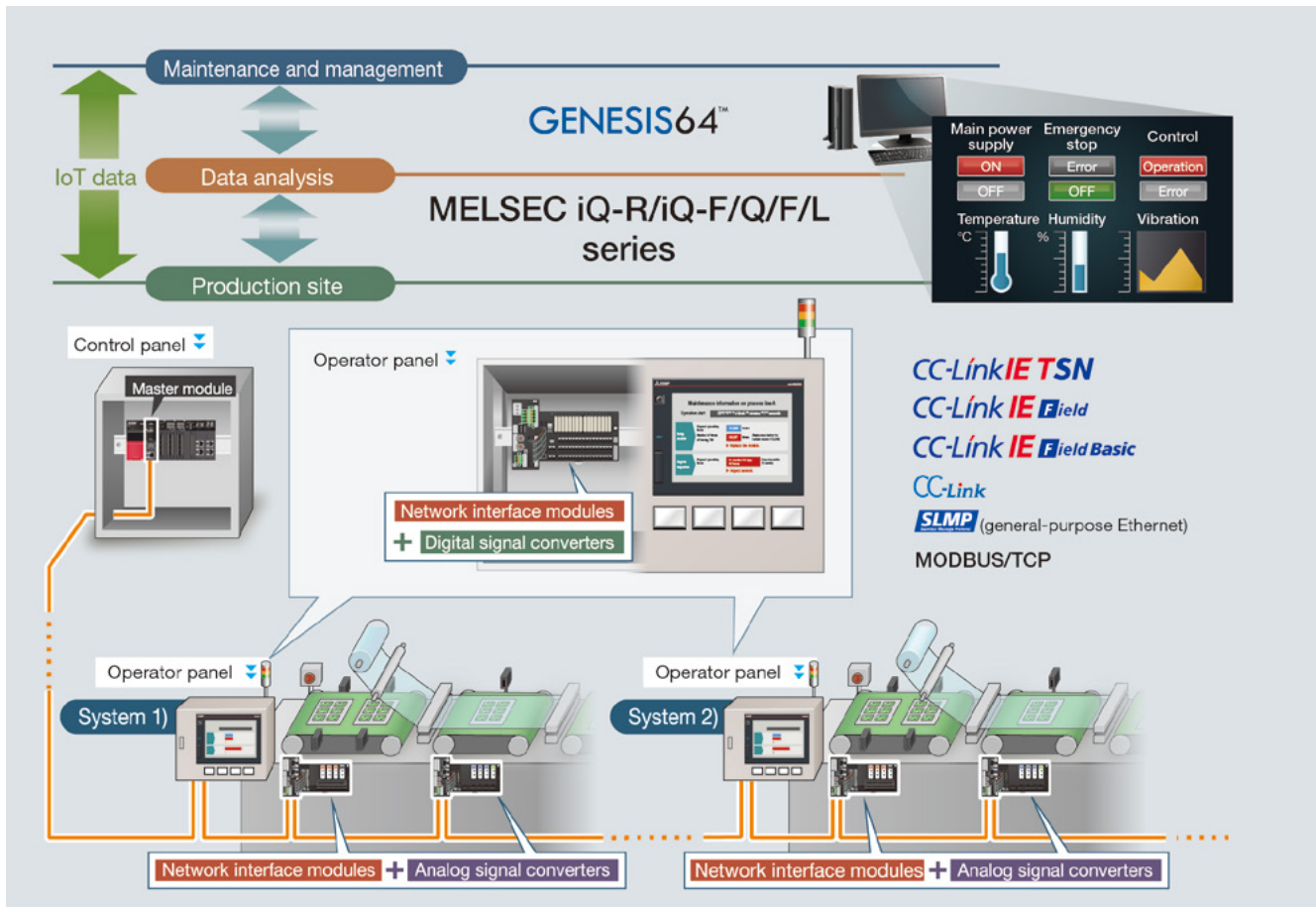
Establishing an optimal system by selecting modules individually

Before • • •

DC output   AC output   RTD input   Vibration input

Modules for digital signal converters

Input types are selectable for each of the input points.

| Input type | · Relay (24VDC)
· 24/48/100VDC
· 100/200VAC |

Output types are selectable for each of the output points.

| Output type | · NO/NC contact relay (2A)
· Transistor (1A)
· Triac (1A) |

• • • After

Digital signal converter   Analog signal converter

Modules for analog signal converters

Input signal types are selectable for each of the channels (isolated from each other).

| Input type | · Voltage/current
· Distributor
· RTD
· Thermocouple |

Output channels are isolated from each other.

| Output type | · Current/voltage |

System image

Maintenance and management

IoT data

Data analysis

Production site

GENESIS64™

MELSEC iQ-R/iQ-F/Q/F/L series

	Main power supply	Emergency stop	Control
	ON	Error	Operation
	OFF	OFF	Error

Temperature   Humidity   Vibration

Control panel
Master module

Operator panel

Network interface modules
+ Digital signal converters

CC-Link **IE TSN**
CC-Link **IE Field**
CC-Link **IE Field Basic**
CC-Link
SLMP (general-purpose Ethernet)
MODBUS/TCP

Operator panel
System 1)

Operator panel
System 2)

Network interface modules + Analog signal converters

Network interface modules + Analog signal converters

Network interface modules

			Available networks		
			CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (general-purpose Ethernet) MODBUS TCP/IP	CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (general-purpose Ethernet)	CC-Link
Digital signal converter (terminal module)	Input (sink/source)	Connection cable included	FA3-TH1M16XC-01C	FA3-TH1T16XC-01C	FA3-TH1C16XC-01C
		Connection cable not included	FA3-TH1M16XC	FA3-TH1T16XC	FA3-TH1C16XC
	Output (sink)	Connection cable included	FA3-TH1M16Y-01C	FA3-TH1T16Y-01C	FA3-TH1C16Y-01C
		Connection cable not included	FA3-TH1M16Y	FA3-TH1T16Y	FA3-TH1C16Y
	Output (source)	Connection cable included	FA3-TH1M16YE-01C	FA3-TH1T16YE-01C	FA3-TH1C16YE-01C
		Connection cable not included	FA3-TH1M16YE	FA3-TH1T16YE	FA3-TH1C16YE
Analog signal converter	Input	Connection cable included	FA3-AT1M8X-01C	FA3-AT1T8X-01C	FA3-AT1C8X-01C
		Connection cable not included	FA3-AT1M8X	FA3-AT1T8X	FA3-AT1C8X
	Output	Connection cable included	FA3-AT1M8Y-01C	FA3-AT1T8Y-01C	FA3-AT1C8Y-01C
		Connection cable not included	FA3-AT1M8Y	FA3-AT1T8Y	FA3-AT1C8Y

Digital signal converter (terminal module)

This converter is used to convert digital signals sent between the network interface module and sensors or other devices.
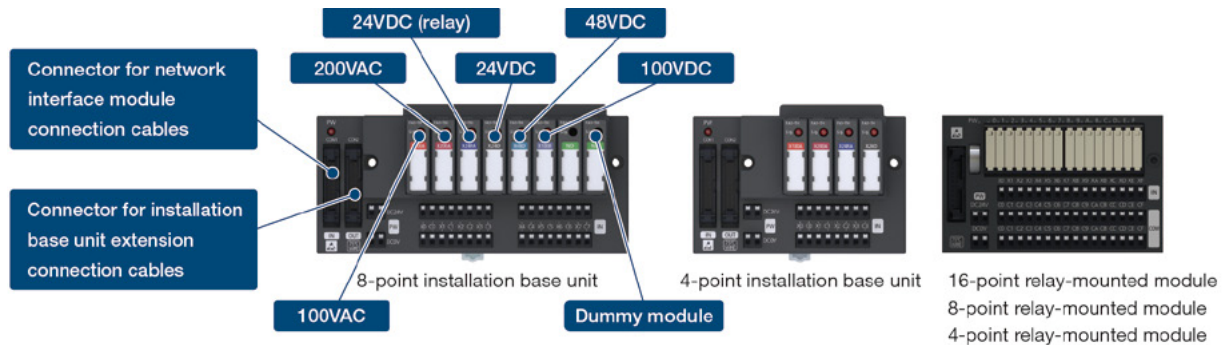There are two types of terminal blocks: spring clamp type and screw type.
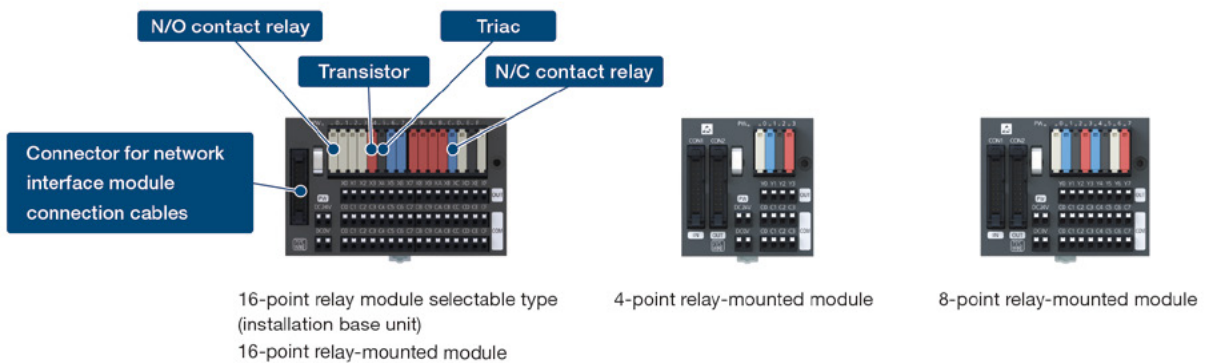
Find out more

● 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.

24VDC (relay)   48VDC
200VAC   24VDC   100VDC

Connector for network interface module connection cables

Connector for installation base unit extension connection cables

100VAC   Dummy module

8-point installation base unit

4-point installation base unit

16-point relay-mounted module
8-point relay-mounted module
4-point relay-mounted module
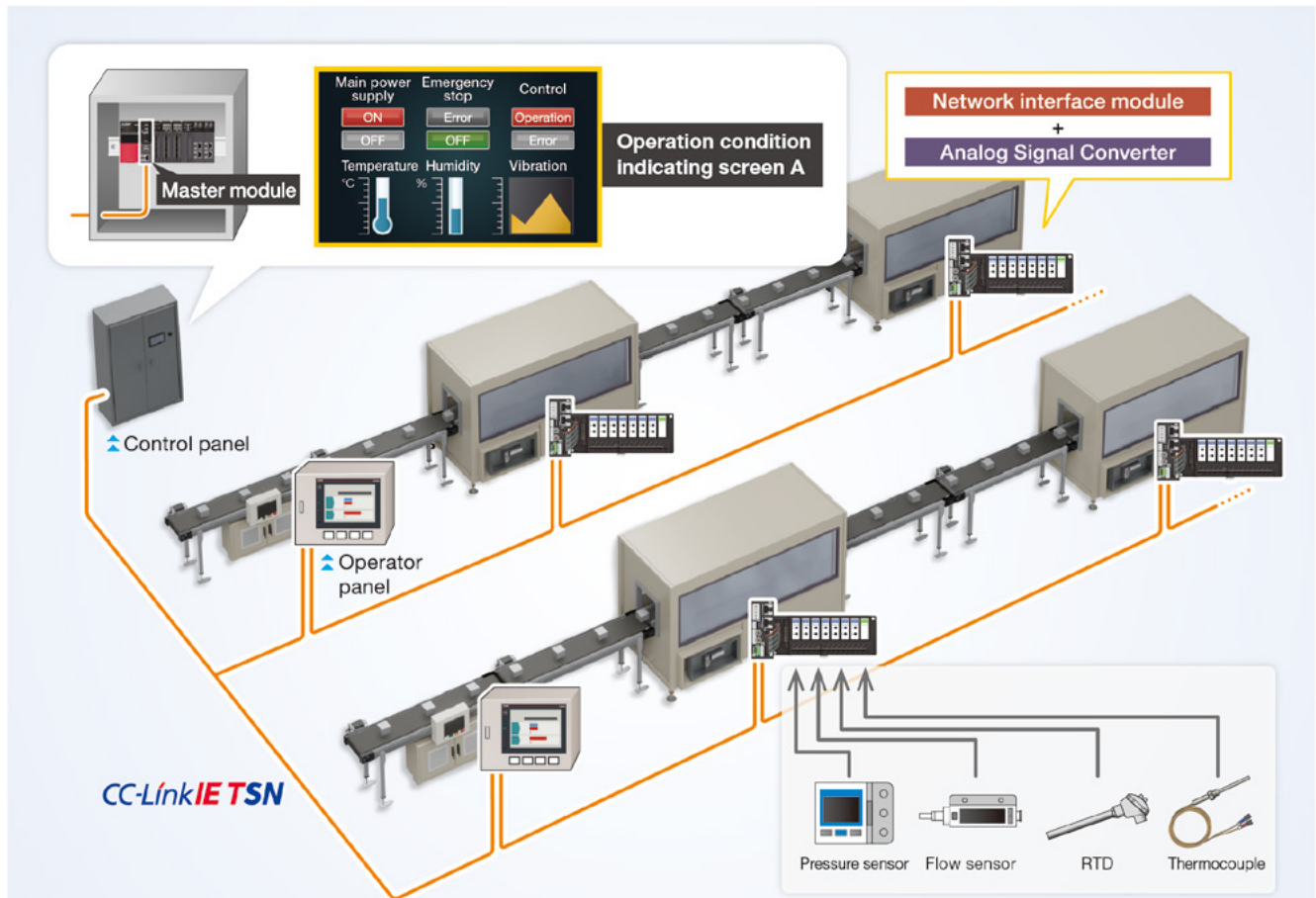
● Output   Spring clamp terminal type   Screw terminal type

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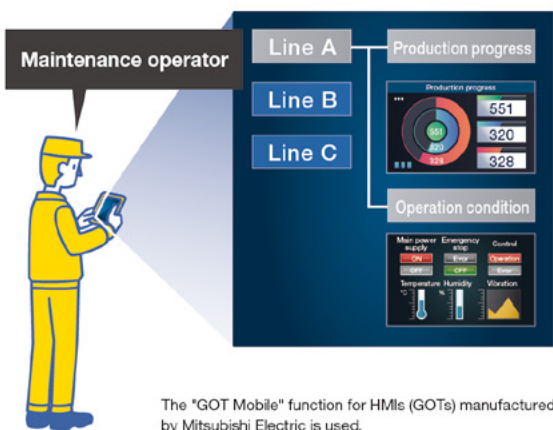

N/O contact relay   Triac
Transistor   N/C contact relay

Connector for network interface module connection cables

16-point relay module selectable type
(installation base unit)
16-point relay-mounted module

4-point relay-mounted module

8-point relay-mounted module

9

Application examples

Parts production line: Labor saving for collecting information such as temperature, pressure, and flow rate from sensors

Problem	The entire number of sensors were visually inspected several times a day, and the condition of the production line was checked.
What you want to achieve	• Visualizing the sensor information that is being visually inspected, as a part of the visualization of the production line • Using the sensor information for preventive maintenance by digitizing and storing it into the programmable controller to output an alarm
Point	• Dispersed installation via network connection allows installation of products near sensors, thereby easy maintenance. • Analog signal converters can be selected individually according to the optimal configuration. • By having unused points left, even if a sensor is added, it is only needed to install the module in the empty slot.

Main power supply / Emergency stop / Control
ON / OFF / Error / OFF / Operation / Error
Temperature °C / Humidity % / Vibration

Operation condition indicating screen A

Master module

Network interface module + Analog Signal Converter

Control panel

Operator panel

CC-Link IE TSN

Pressure sensor   Flow sensor   RTD   Thermocouple

A maintenance operator can monitor information on a tablet from anywhere.

Maintenance operator

Line A / Line B / Line C — Production progress

Operation condition

The "GOT Mobile" function for HMIs (GOTs) manufactured by Mitsubishi Electric is used.

Integrated management of sensor information in the monitoring control room away from the production line

Monitoring control room

Line A / Line B / Line C — Production progress / Operation condition

Electric furnace: Cost and time saving for temperature sensor information collection

Problem	Temperature control is not performed effectively because there are many devices in the control panel.
What you want to achieve	• Performing various temperature measurements because the equipment performs heat treatment processing • Making a device configuration simple and improving maintenance efficiency • Stabilizing the equipment by isolating the analog signal
Point	• Minimum required configuration is achieved by individually selecting modules according to the sensor used, making maintenance easier. Also, selecting the optimal module reduces maintenance costs. • The isolation between the channels allows the device to be stabilized.
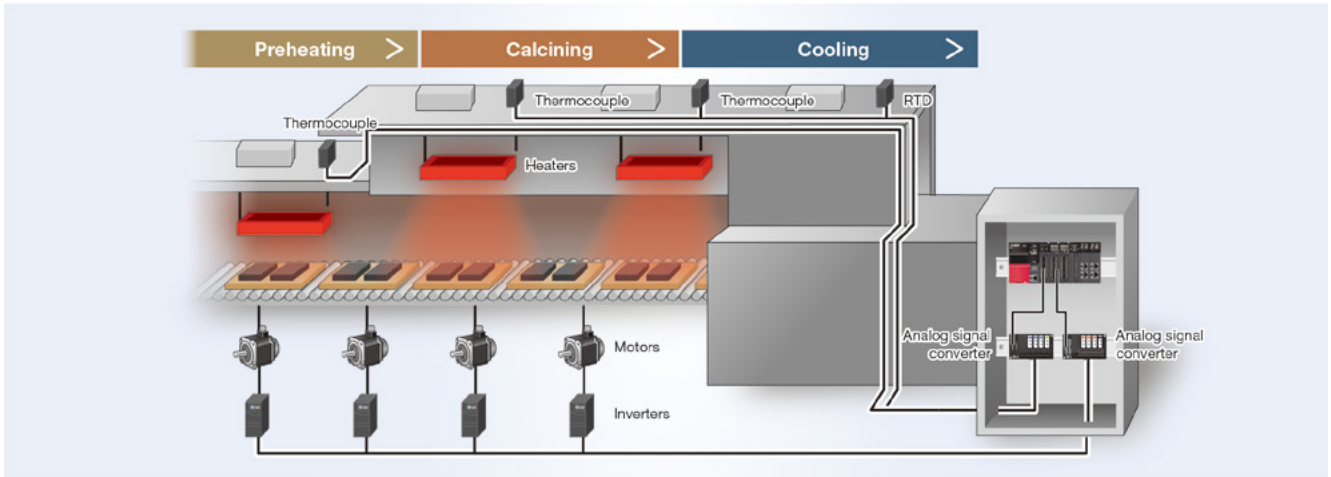
Sterilizer: Cost and time saving for flow rate monitoring and control

Problem	The flow rate is monitored by installing a control panel at each process, but maintenance is not performed effectively because the control panel is far from the sensor.
What you want to achieve	• Installing the device near the sensor for easy maintenance • Monitoring and controlling information more effectively
Point	• By using network cables, the products can be installed in dispersed areas from the programmable controller master module. • Only the minimum required devices can be installed near the sensors. • The 4-point type is also available so the number of unused points can be reduced.
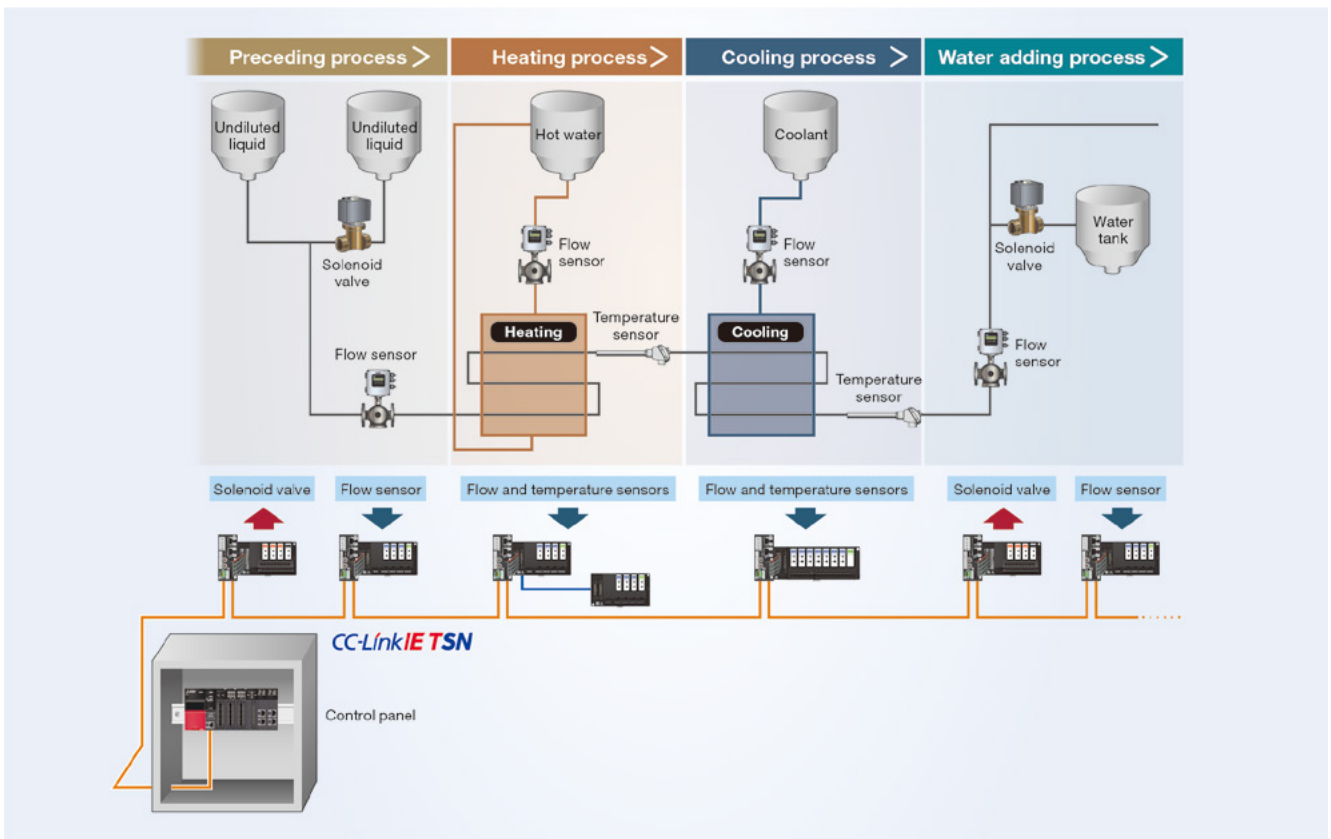
■ Selection charts

The following tables list some system configuration examples using Mitsubishi Electric programmable controller modules.
For the system configuration that is not listed below, check the manuals on our website or check with the selection tool.

8-channel input installation base units

Programmable controller module		Input range	Installation base unit	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-ATFTMXY	FA-CBL**ATQ8XVT
					FA-CBL**ATQ8XVA[*1]
MELSEC-Q series	Q68ADI	4 to 20mA			FA-CBL**ATQ8XVT
					FA-CBL**ATQ8XVA[*1]
	Q64AD-GH				FA-CBL**ATF
MELSEC-L series	L60ADIL8	4 to 20mA			
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			
Non-Mitsubishi PLC	General-purpose analog input module	4 to 20mA			
Computer from various manufacturers		4 to 20mA			
MELSEC iQ-R series	R60ADV8	1 to 5V	New 8-channel spring clamp terminal block FA1-AT1B8X1TE 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-ATFTMXY	FA-CBL**ATQ8XVT
					FA-CBL**ATQ8XVA[*1]
MELSEC-Q series	Q68ADV	1 to 5V			FA-CBL**ATQ8XVT
					FA-CBL**ATQ8XVA[*1]
	Q64AD-GH				FA-CBL**ATF
MELSEC-L series	L60ADVL8	1 to 5V			
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	1 to 5V			
	FA3-AT1T8X-01C				Use the cable that comes with the product.
	FA3-AT1T8X				FA3-CB2L**MM1H20
CC-Link IE Field	NZ2GFCE-60ADV8 NZ2GF2BN-60AD4	1 to 5V			FA-CBL**ATF
CC-Link	AJ65SBT-64AD	1 to 5V			
	AJ65SBT2B-64AD				
	FA3-AT1C8X-01C				Use the cable that comes with the product.
	FA3-AT1C8X				FA3-CB2L**MM1H20
Non-Mitsubishi PLC	General-purpose analog input module	1 to 5V			FA-CBL**ATF
Computer from various manufacturers		1 to 5V			

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

8-channel output installation base units

Programmable controller module		Output range	Installation base unit	Signal conversion module	Connection cable
MELSEC iQ-R series	R60DAI8	4 to 20mA			FA-CBL**ATQ8YT
					FA-CBL**ATQ8YA[1]
MELSEC-Q series	Q68DAIN	4 to 20mA			FA-CBL**ATQ8YT
			New 8-channel spring clamp terminal block		FA-CBL**ATQ8YA[1]
MELSEC-L series	L60DAIL8	4 to 20mA	FA1-AT1B8Y1TE	Voltage output FA-ATSAM1YV05 FA-ATSAM1YV010 FA-ATSAM1YV15 FA-ATSAM1YV1010 Current output FA-ATSAM1YA020 FA-ATSAM1YA420 Signal pass-through FA-ATFTMXY	
MELSEC-F series	FX3U-4DA FX3U-4DA-ADP	4 to 20mA			
CC-Link IE TSN	NZGN2B-60DA4	4 to 20mA	8-channel screw terminal block		
CC-Link IE Field	NZ2GFCE-60DAI8 NZ2GF2BN-60DA4	4 to 20mA	FA-ATB8YTB		FA-CBL**ATYF
CC-Link	AJ65SBT2B-64DA	4 to 20mA			
Non-Mitsubishi PLC	General-purpose analog output module	4 to 20mA			
Computer from various manufacturers		4 to 20mA			
MELSEC iQ-R series	R60DAV8	1 to 5V			FA-CBL**ATQ8YT
					FA-CBL**ATQ8YA[1]
MELSEC-Q series	Q68DAVN	1 to 5V			FA-CBL**ATQ8YT
			New 8-channel spring clamp terminal block		FA-CBL**ATQ8YA[1]
MELSEC-L series	L60DAVL8	1 to 5V	FA1-AT1B8Y1TE	Voltage output FA-ATSVM1YV05 FA-ATSVM1YV010 FA-ATSVM1YV15 FA-ATSVM1YV1010 Current output FA-ATSVM1YA020 FA-ATSVM1YA420 Signal pass-through FA-ATFTMXY	FA-CBL**ATYF
MELSEC-F series	FX3U-4DA FX3U-4DA-ADP	1 to 5V			
CC-Link IE TSN	NZGN2B-60DA4	1 to 5V			Use the cable that comes with the product.
	FA3-AT1T8Y-01C		8-channel screw terminal block		FA3-CB2L**MM1H20
	FA3-AT1T8Y		FA-ATB8YTB		
CC-Link IE Field	NZ2GFCE-60DAV8 NZ2GF2BN-60DA4	1 to 5V			FA-CBL**ATYF
CC-Link	AJ65SBT2B-64DA	1 to 5V			Use the cable that comes with the product.
	FA3-AT1C8Y-01C				FA3-CB2L**MM1H20
	FA3-AT1C8Y				
Non-Mitsubishi PLC	General-purpose analog output module	1 to 5V			FA-CBL**ATYF
Computer from various manufacturers		1 to 5V			

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

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Website www.mitsubishielectricengineering.com/sales/fa/meefan/ ▶Contact US

▼ Manual

You can find manuals on the product page by entering the target model name in the search box.

▼ Selection tool

You can select connectable devices by entering/selecting the target programmable controller module.
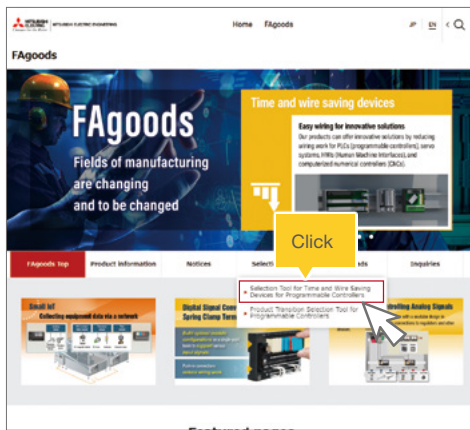
Easy selection

The selection tool on our website helps select the optimum terminal blocks and cables for Mitsubishi Electric programmable controllers and HMIs (GOTs).
The connectable models are displayed by entering/selecting the model name of the programmable controller or HMI (GOT).

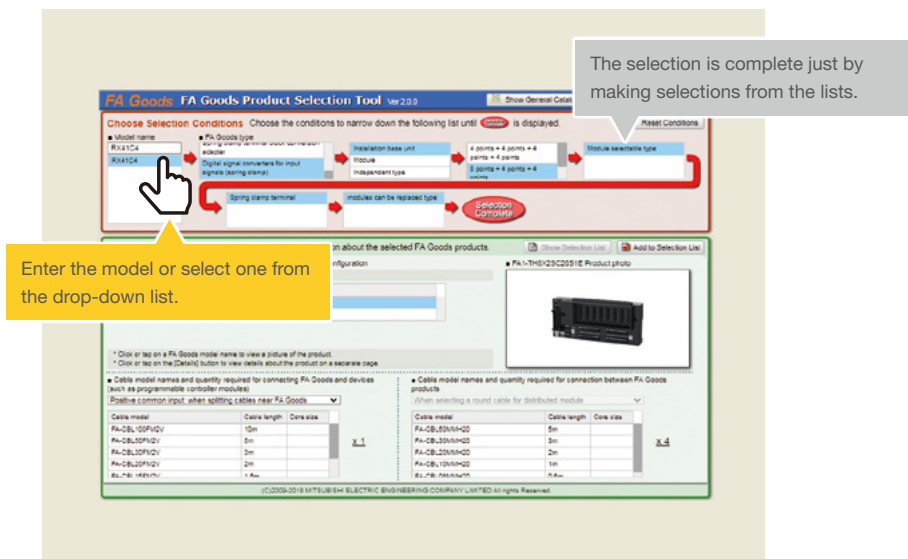| Website | www.mitsubishielectricengineering.com/sales/fa/meefan/ | ▶ | FAgoods product selection tool |

From our website
(www.mitsubishielectricengineering.com/sales/fa/meefan/)

1 Select "Selection Tool for Time and Wire Saving Devices for Programmable Controllers" from the opening page of MEEFAN.

Click

2 Click the [FAgoods product selection tool] button under "Startup method".

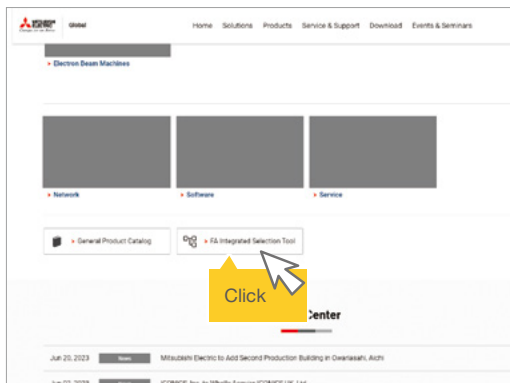Click the button.

Operational procedures are provided.
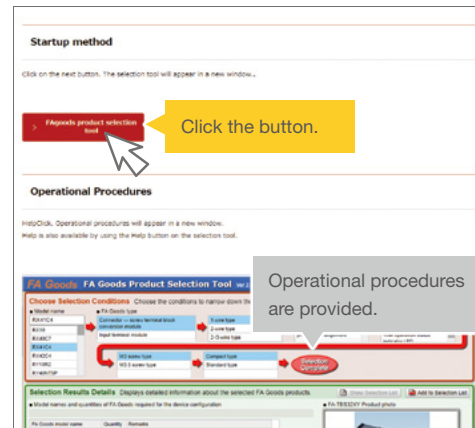
3 The following window appears.
Enter the model name of the MELSEC series module in the "Model name" field. (Alternatively, select the model from the drop-down list.)
In the "FA Goods type" field, select the product and its specifications from the lists. The connectable terminal blocks and connection cables between the programmable controller and the terminal block are also displayed.


The selection is complete just by making selections from the lists.

Enter the model or select one from the drop-down list.

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Go to the Mitsubishi Electric FA website.
(www.mitsubishielectric.com/fa/)

FA Integrated Selection Tool enables you to select multiple models of modules such as MELSEC series, remote I/Os, AC servos (MELSERVO), and HMIs (GOTs) and select equipment/entire system.

1 Go to the opening page of the Mitsubishi Electric FA website and click the [FA Integrated Selection Tool] button.

2 To select a device, select the MELSEC series, CPU module, base unit, power supply module, and modules in this order.
Click the added module, and click the [Select the external wiring option] button.

Select in order

Add a module, and click the module.
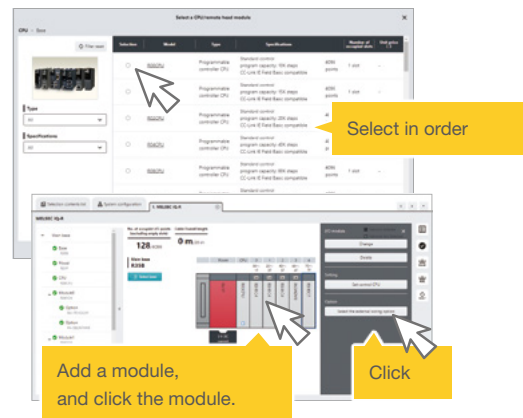
Click

3 FAgoods terminal blocks and signal converters corresponding to the programmable controller that you have selected are displayed. Click on the applicable model and cable.
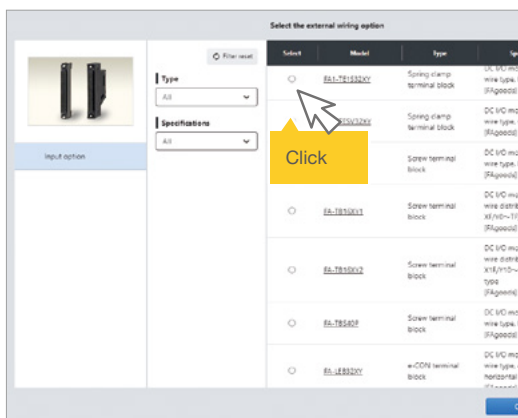
4 Click the "System configuration" icon in the upper right corner of the window to display the system configuration including the programmable controller selected.
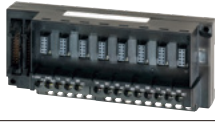
Click

Click
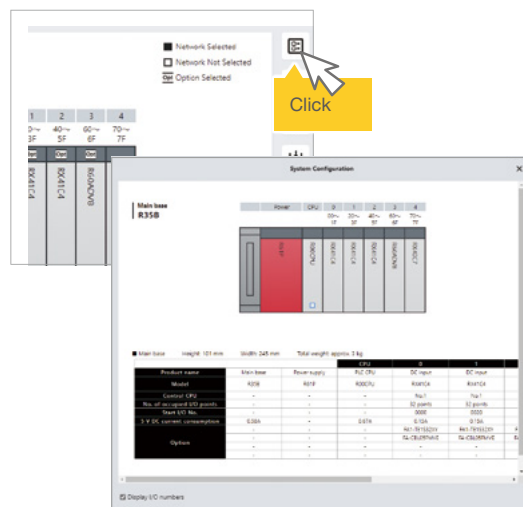
Remarks   Network interface modules can be selected from the selection of remote I/O devices.

* For information on the selection of modules that can be installed, please check our website (MEEFAN).

■ Product list

Installation base units

Connected programmable controller (analog module)	Shape	Connection method	Specifications		Model
Voltage input		Spring clamp	4 points	1 to 5V input to the programmable controller	FA1-AT1B4X1TE
Current output Voltage output				1 to 5V or 4 to 20mA output from the programmable controller	FA1-AT1B4Y1TE
Voltage input	New		8 points	1 to 5V input to the programmable controller	FA1-AT1B8X1TE
Current output Voltage output				1 to 5V or 4 to 20mA output from the programmable controller	FA1-AT1B8Y1TE
Voltage input		Screw (M3)	4 points	1 to 5V input to the programmable controller	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 installation base unit with a conversion adapter.)			8 points	4 to 20mA input to the programmable controller	FA-ATKB8XTB
					FA-ATKAA8XM
Voltage input				1 to 5V input to the programmable controller	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	Cable 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
		8-channel input Cable with spring clamp terminal block	1m	FA2-CB2L10AT8XV1E
			2m	FA2-CB2L20AT8XV1E
			3m	FA2-CB2L30AT8XV1E
CC-Link IE TSN		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	Cable 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	Cable length	Model
FA1-AT1B4*1T*		4-channel installation base unit 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	· Humidity sensor · Vibration sensor · Pressure sensor · Laser distance sensor · Flow meter · Wattmeter	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	FA-ATSVM1XRPT
	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[1]	Non-isolated		FA-ATFTMXY
Dummy module[2]			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	· Solenoid valve · Recorder · Temperature controller · Indicator · Inverter (speed control) · Servo amplifier (torque control)	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[1]	0 to 5V		FA-ATSAM1YV05
	1 to 5V		FA-ATSAM1YV15
	0 to 10V		FA-ATSAM1YV010
	-10 to 10V		FA-ATSAM1YV1010
Current → current[1]	0 to 20mA		FA-ATSAM1YA020
	4 to 20mA		FA-ATSAM1YA420
Signal pass-through[1]	Non-isolated		FA-ATFTMXY
Dummy module[2]			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	Crimping tool	Manufacturer
0.25mm² (24 AWG)	AI 0,25-10 YE (10mm)		
0.34mm² (22 AWG)	AI 0,34-10 TQ (10mm)		
0.5mm² (20 AWG)	AI 0,5-10 WH (10mm)	CRIMPFOX 6	PHOENIX CONTACT GmbH & Co. KG
0.75mm² (18 AWG)	AI 0,75-10 GY (10mm)		
1.0mm² (18 AWG)	AI 1-10 RD (10mm)		
1.5mm² (16 AWG)	AI 1,5-10 BK (10mm)		

■ Recommended product

Item	Specifications
Name	Test plug
Model	MPS-MT 1-S
Manufacturer	PHOENIX CONTACT GmbH & Co. KG
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

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MITSUBISHI ELECTRIC ENGINEERING

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General Catalog

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Network devices

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■ Related leaflets

Digital Signal Converters (Terminal Modules) (MEIC224E·226)

Network Interface Modules (MEIC215E·214)

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