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

- 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)

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

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

Individually mountable modules

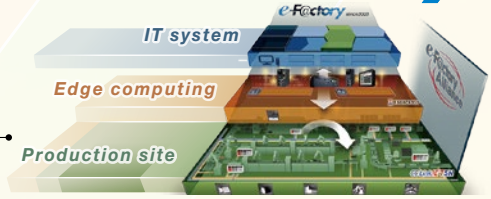
Input module
- Voltage
- Current
- Distributor
- RTD
- Thermocouple
- CT

Output module
- Voltage
- Current

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

FA products e-F@ctory

wire-saving and process time reduction



Source: Mitsubishi Electric Corporation

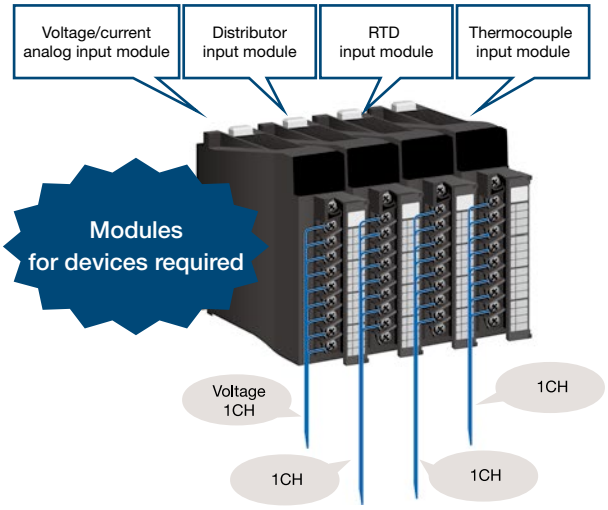
Startup support: Flexible system design

Optimal combination of devices and space saving

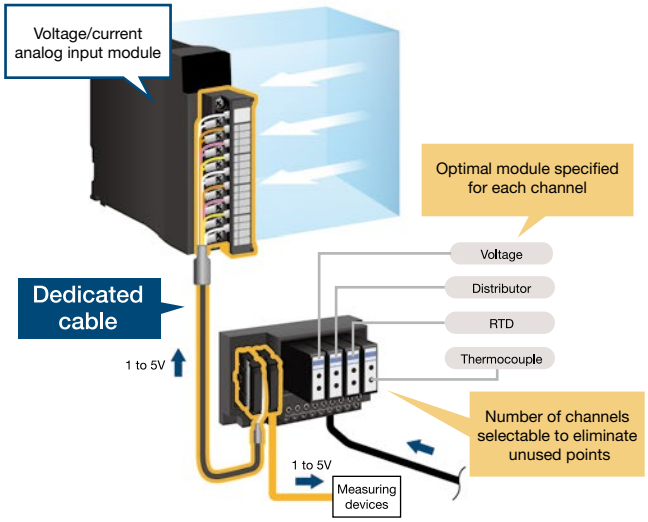
By selecting a module for each channel, configuration with minimum required modules is achieved. Using a dedicated cable reduces wiring time, and using fewer programmable controller modules reduces costs for maintenance modules.

Configuration

Before



After



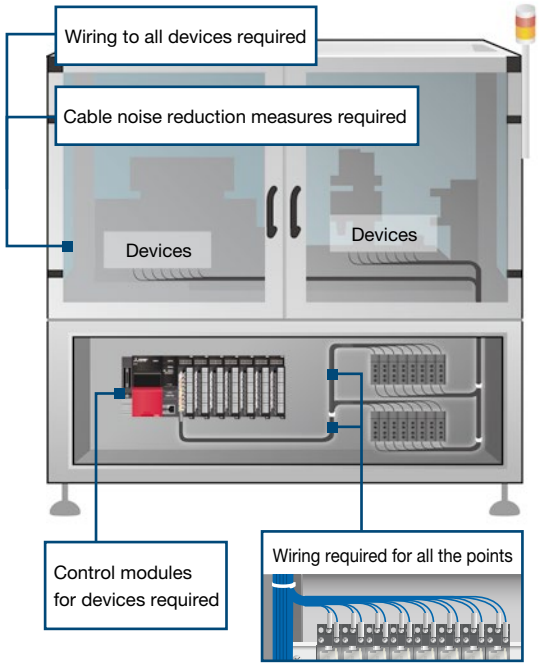
Optimal installation to meet the system needs and easy wiring

- 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

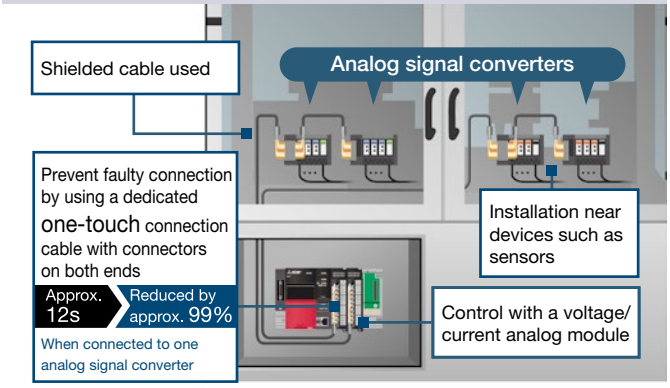
* Result of in-house testing

Before

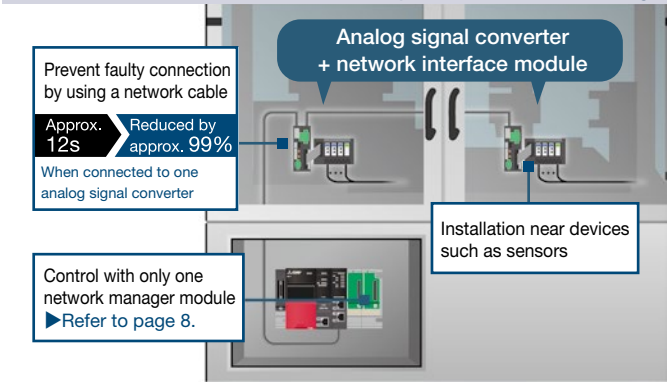


	Number of channels	Wiring time
Screws on both sides	8	Approx. 4 minutes (approx. 30s/point)

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



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

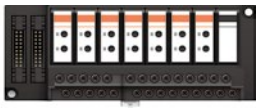


Configuration best suited to the actual number of channels or the system used

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.

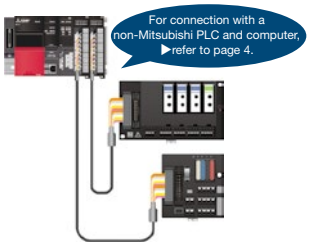
Installation base unit suited to the number of channels

- 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	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

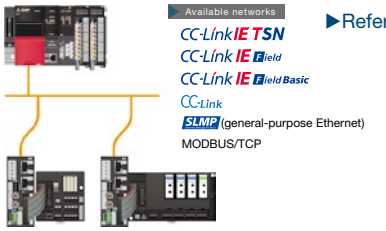
Selectable connection method

Direct wiring to a programmable controller



- One-touch connection using a dedicated cable reduces cost and time for wiring.
- Using a dedicated cable prevents faulty connection.

Dispersed installation in the equipment on the industrial network

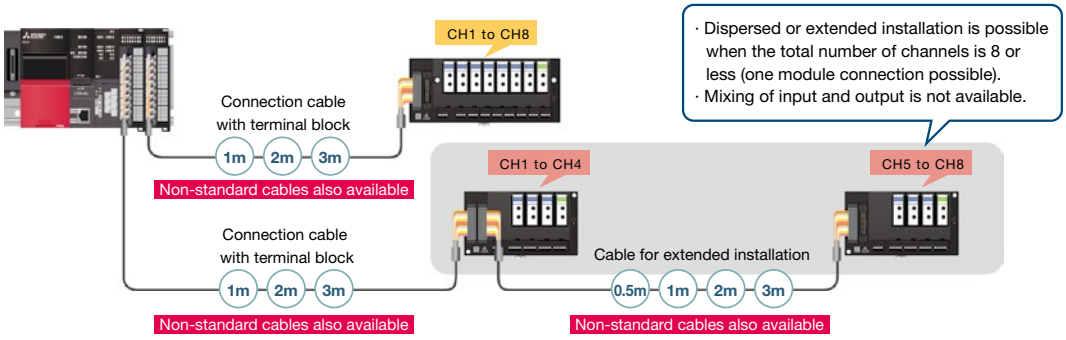


▶Refer to pages 8 and 9.

- 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.

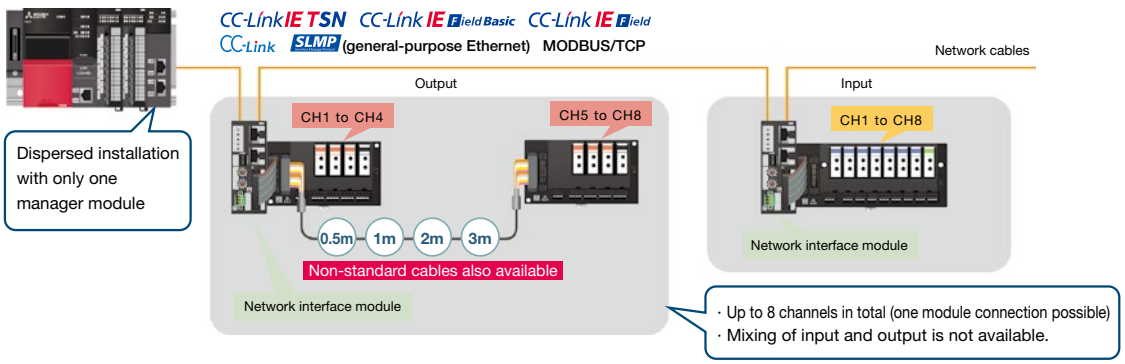
Dispersed installation using dedicated cables from a programmable controller

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.



Dispersed installation with network connection ▶Refer to page 8.

This product can be installed dispersedly using one programmable controller network manager 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.

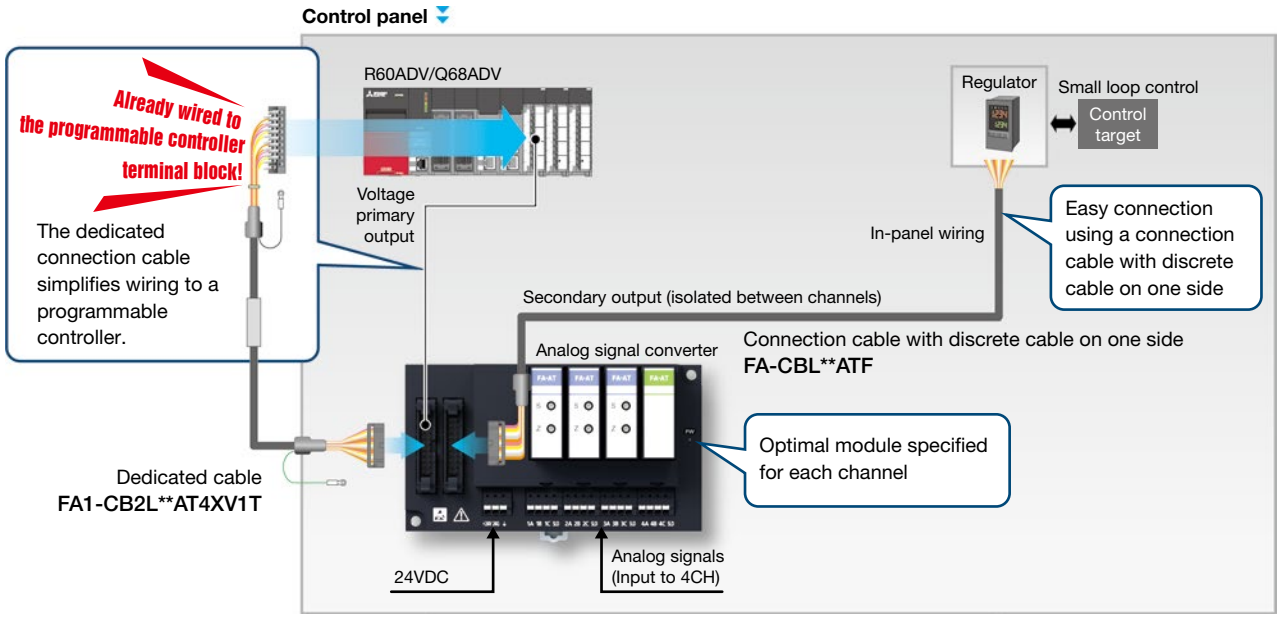


Wire saving with a dedicated cable and the secondary output function

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.

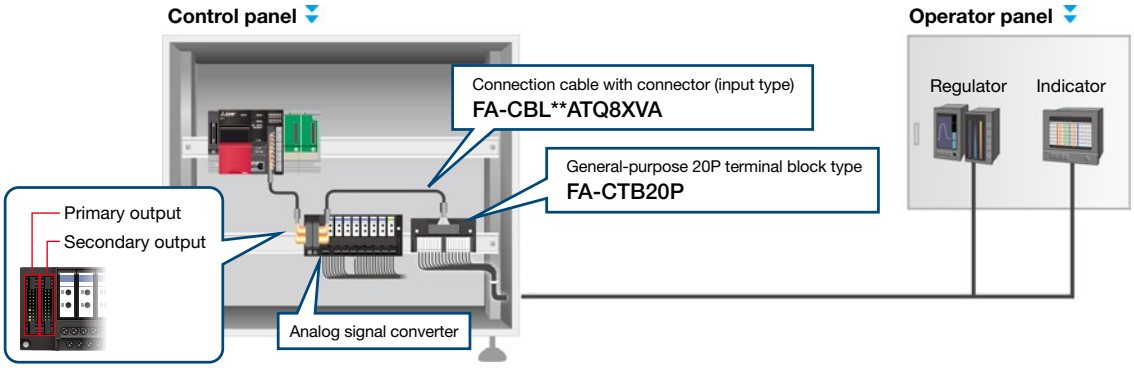
- Secondary output function [Input]
  The same signal as the analog signal (voltage) input to the programmable controller is output from the secondary output terminal.
- Secondary output function [Output]
  The same signal as the analog signal (voltage or current) output from the programmable controller is output from the secondary output terminal.

Configuration example



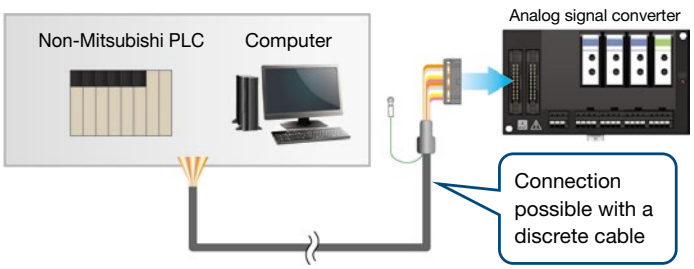
Secondary output via terminal block

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.

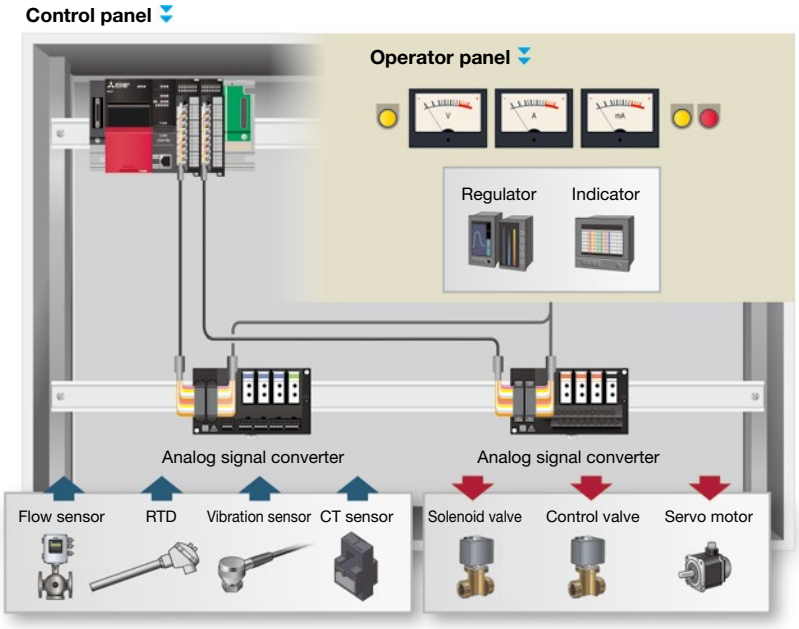


Cable length	Input model	Output model
1m	FA-CBL10ATF	FA-CBL10ATYF
2m	FA-CBL20ATF	FA-CBL20ATYF
3m	FA-CBL30ATF	FA-CBL30ATYF

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
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)
CT input	FA1-AT1CT-1-6	Range selection (AC): 0 to 600 A (4 ranges) Frequency selection: 50 Hz or 60 Hz

· Humidity sensor · Vibration sensor · Pressure sensor · Laser distance sensor · Flow meter · Wattmeter or other devices	
	· Temperature sensor
	· CT sensor

Output modules

Voltage → voltage output	FA-ATSVM1YV**	0 to 5VDC, 1 to 5VDC, 0 to 10VDC, -10 to +10VDC
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

· Solenoid valve
· Recorder
· Temperature controller
· Indicator
· Inverter (speed control)
· Servo amplifier (torque control)
or other devices

Modules common for input and output

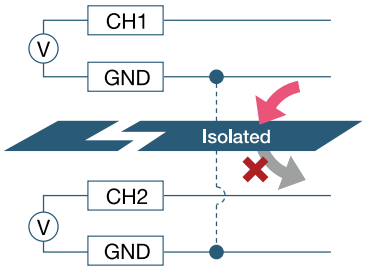
Signal pass-through	FA-ATFTMXY	· Pass-through module for non-isolated signals (The current is converted into voltage.)

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

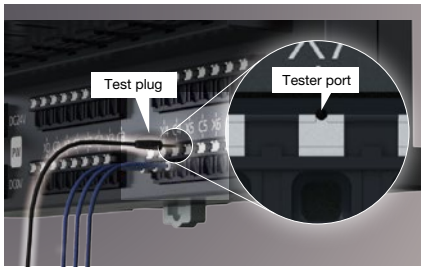
Easy startup and maintenance

Module replacement

Tools such as screwdrivers are not required for module replacement.

Continuity check using the tester port

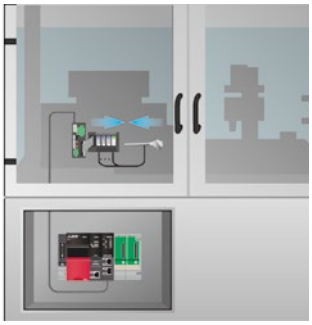
The spring clamp terminal type product has a tester port. Using the tester port reduces the time for continuity checks.



▶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.

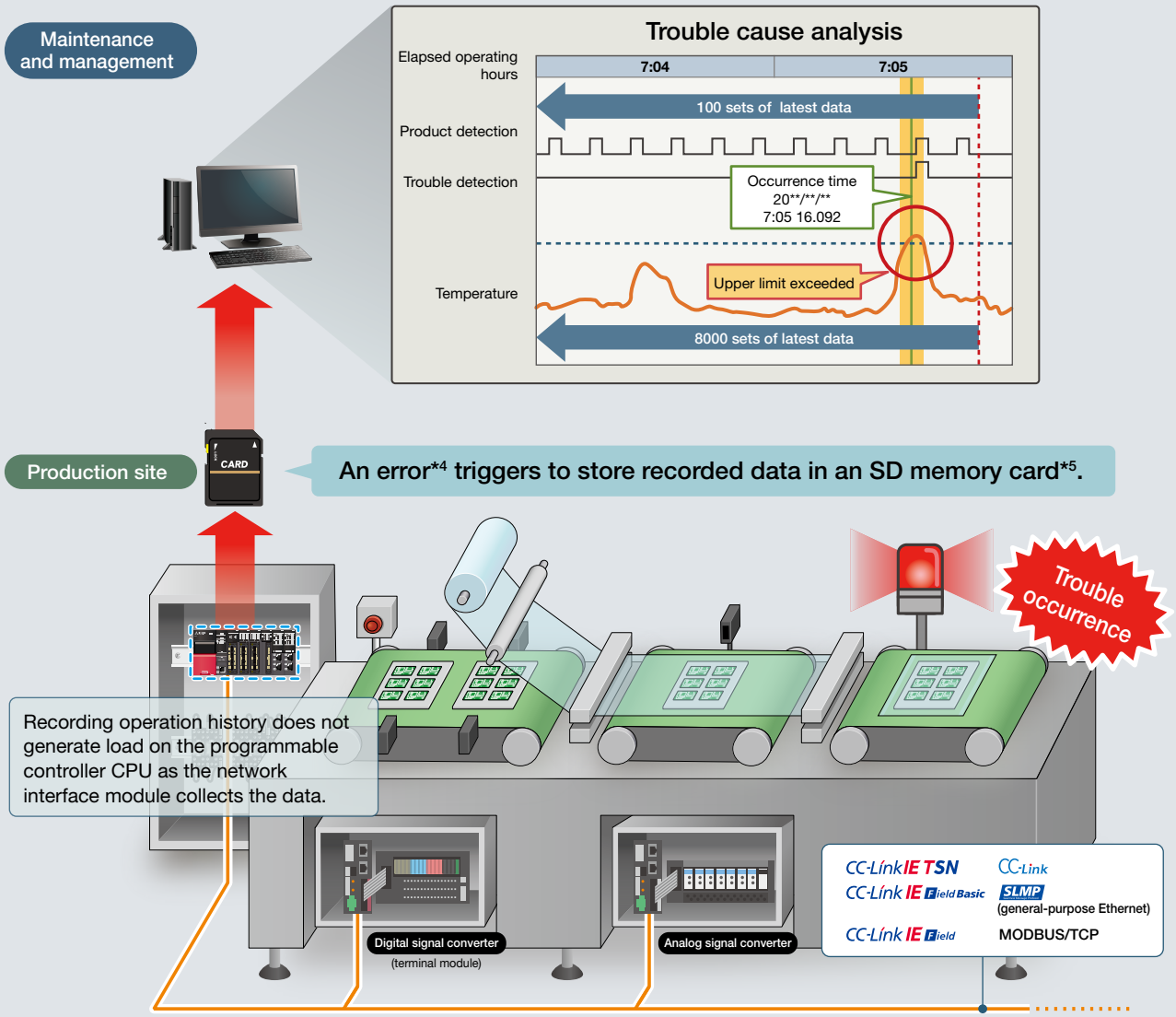
Recording the operation history of digital and analog signals allows you to investigate the cause of troubles.

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).

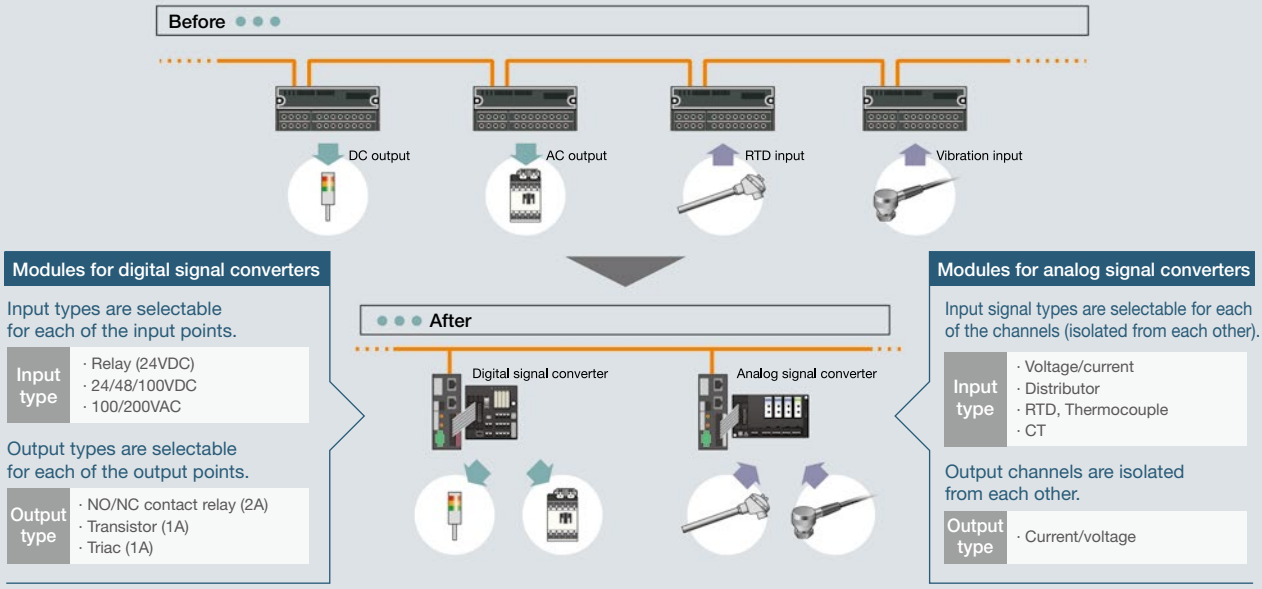


*1: Recording of occurrence times is available when the modules are used in the CC-Link IE TSN, CC-Link IE Field Network, or CC-Link IE Field Network Basic.
*2: The logging function is available when the modules are used in the CC-Link IE TSN or CC-Link IE Field Network Basic.
*3: Numerical data digitally 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.

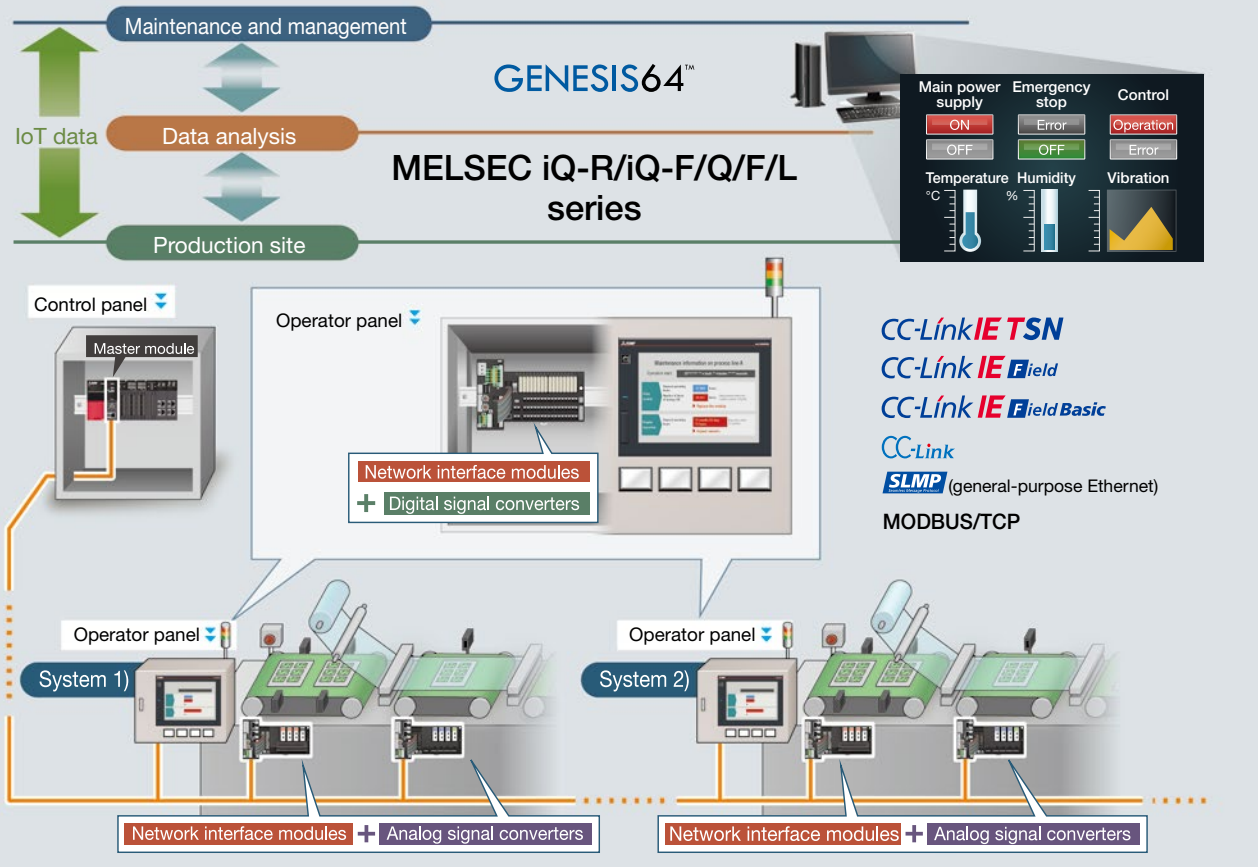
Using network interface modules enables dispersed installation in small areas and integrated management of device data using IoT systems.

Find out more

Establishing an optimal system by selecting modules individually



System image



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

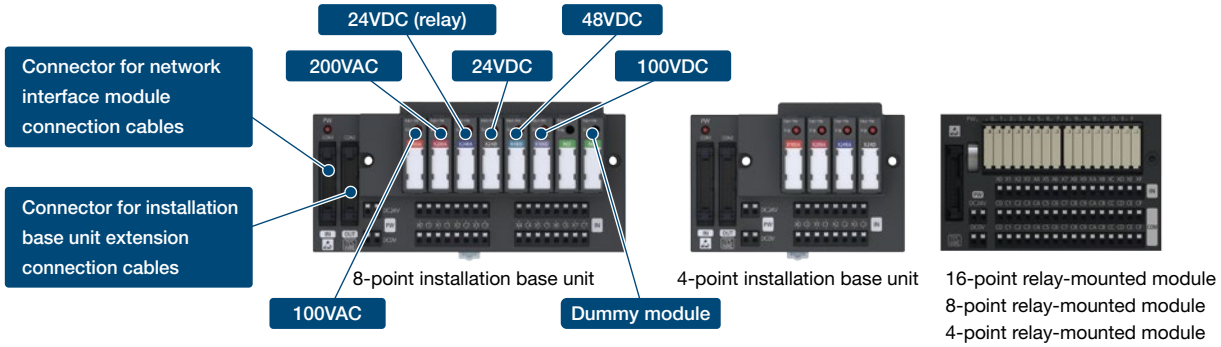
Digital signal converter (terminal module)

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.



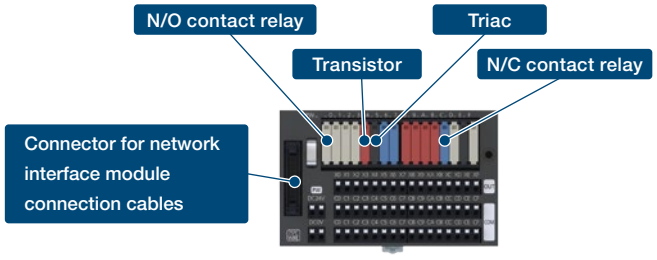
8-point installation base unit

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.



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

4-point relay-mounted module

8-point relay-mounted module

Application examples

Solution by visualizing the machine status

Problem

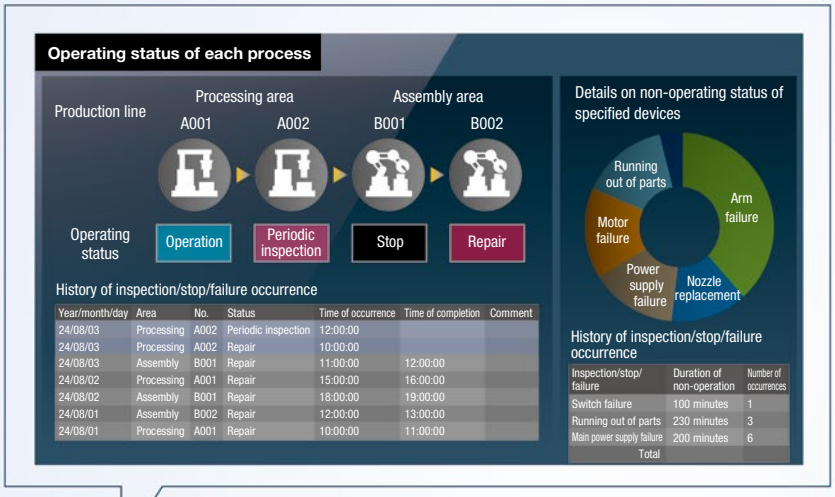
- It is essential to visualize the operating status of each machine, but there is no idea of where to start.
- Major renovation work is difficult.

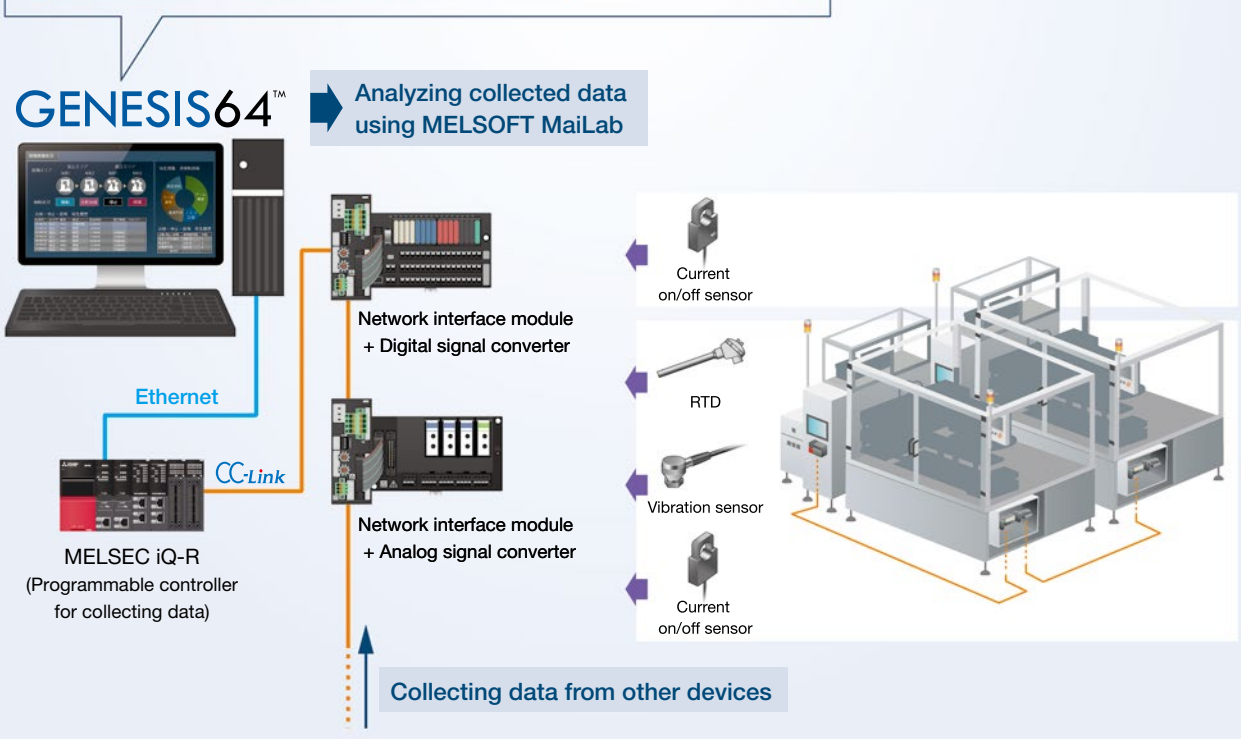
What you want to achieve

- Easily installing sensors to collect data
- Displaying sensor information in graphs to visualize the facility status
- In the future, using collected data to improve production efficiency and diagnose machine failures

Point

- A single network cable is used for wiring and sensor data is collected to programmable controllers.
- External measurement data is used via a network, eliminating the need for machine modification.
- An applicable module can be selected for each sensor.
- Various networks, including CC-Link family networks and MODBUS/TCP network, are supported.





■ 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

<table>
<tr><th colspan="2">Programmable controller module</th><th>Input range</th><th>Installation base unit</th><th>Signal conversion module</th><th>Connection cable</th></tr>
<tr><td>MELSEC iQ-R series</td><td>R60ADI8</td><td>4 to 20mA</td><td rowspan="16">8-channel
screw terminal block
FA-ATKB8XTB
+
Conversion adapter
FA-ATKAA8XM</td><td rowspan="16">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
CT input
FA1-AT1CT-1-6
Signal pass-through
FA-ATFTMXY</td><td>FA-CBL**ATQ8XVT</td></tr>
<tr><td rowspan="2">MELSEC-Q series</td><td rowspan="2">Q68ADI</td><td rowspan="2">4 to 20mA</td><td>FA-CBL**ATQ8XVA*1</td></tr>
<tr><td>FA-CBL**ATQ8XVT</td></tr>
<tr><td></td><td></td><td>FA-CBL**ATQ8XVA*1</td></tr>
<tr><td></td><td>Q64AD-GH</td><td></td><td>FA-CBL**ATF</td></tr>
<tr><td>MELSEC-L series</td><td>L60ADIL8</td><td>4 to 20mA</td><td></td></tr>
<tr><td>MELSEC iQ-F series</td><td>FX5-8AD</td><td>4 to 20mA</td><td>FA2-CB2L**AT8XV1E</td></tr>
<tr><td>MELSEC-F series</td><td>FX3U-4AD
FX3U-4AD-ADP
FX3UC-4AD
FX2N-8AD</td><td>4 to 20mA</td><td rowspan="9">FA-CBL**ATF</td></tr>
<tr><td>CC-Link IE TSN</td><td>NZ2GN2B-60AD4</td><td>4 to 20mA</td></tr>
<tr><td>CC-Link IE Field</td><td>NZ2GFCE-60ADI8
NZ2GF2BN-60AD4</td><td>4 to 20mA</td></tr>
<tr><td>CC-Link</td><td>AJ65SBT-64AD
AJ65SBT2B-64AD</td><td>4 to 20mA</td></tr>
<tr><td>Non-Mitsubishi PLC</td><td>General-purpose analog input module</td><td>4 to 20mA</td></tr>
<tr><td colspan="2">Computer from various manufacturers</td><td>4 to 20mA</td></tr>
<tr><td>MELSEC iQ-R series</td><td>R60ADV8</td><td>1 to 5V</td><td rowspan="25">8-channel
spring clamp terminal block
FA1-AT1B8X1TE
8-channel
screw terminal block
FA-ATB8XTB</td><td rowspan="25">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
CT input
FA1-AT1CT-1-6
Signal pass-through
FA-ATFTMXY</td><td>FA-CBL**ATQ8XVT</td></tr>
<tr><td rowspan="2">MELSEC-Q series</td><td rowspan="2">Q68ADV</td><td rowspan="2">1 to 5V</td><td>FA-CBL**ATQ8XVA*1</td></tr>
<tr><td>FA-CBL**ATQ8XVT</td></tr>
<tr><td></td><td></td><td>FA-CBL**ATQ8XVA*1</td></tr>
<tr><td></td><td>Q64AD-GH</td><td></td><td>FA-CBL**ATF</td></tr>
<tr><td>MELSEC-L series</td><td>L60ADVL8</td><td>1 to 5V</td><td></td></tr>
<tr><td>MELSEC iQ-F series</td><td>FX5-8AD</td><td>1 to 5V</td><td>FA2-CB2L**AT8XV1E</td></tr>
<tr><td>MELSEC-F series</td><td>FX3U-4AD
FX3U-4AD-ADP
FX3UC-4AD
FX2N-8AD</td><td>1 to 5V</td><td>FA-CBL**ATF</td></tr>
<tr><td rowspan="3">CC-Link IE TSN</td><td>NZ2GN2B-60AD4</td><td rowspan="3">1 to 5V</td><td></td></tr>
<tr><td>FA3-AT1T8X-01C</td><td>Use the cable that comes with the product.</td></tr>
<tr><td>FA3-AT1T8X</td><td>FA3-CB2L**MM1H20</td></tr>
<tr><td>CC-Link IE Field</td><td>NZ2GFCE-60ADV8
NZ2GF2BN-60AD4</td><td>1 to 5V</td><td rowspan="4">FA-CBL**ATF</td></tr>
<tr><td rowspan="4">CC-Link</td><td>AJ65SBT-64AD</td><td rowspan="4">1 to 5V</td></tr>
<tr><td>AJ65SBT2B-64AD</td></tr>
<tr><td>FA3-AT1C8X-01C</td><td>Use the cable that comes with the product.</td></tr>
<tr><td>FA3-AT1C8X</td><td>FA3-CB2L**MM1H20</td></tr>
<tr><td>Non-Mitsubishi PLC</td><td>General-purpose analog input module</td><td>1 to 5V</td><td>FA-CBL**ATF</td></tr>
<tr><td colspan="2">Computer from various manufacturers</td><td>1 to 5V</td></tr>
</table>

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

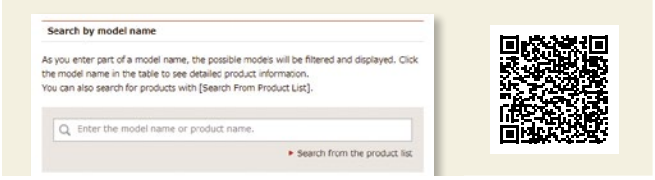
8-channel output installation base units

Programmable controller module		Output range	Installation base unit	Signal conversion module	Connection cable
MELSEC iQ-R series	R60DAI8	4 to 20mA	8-channel spring clamp terminal block: FA1-AT1B8Y1TE 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-ATFTMXY	FA-CBL**ATQ8YT FA-CBL**ATQ8YA*1
MELSEC-Q series	Q68DAIN	4 to 20mA			FA-CBL**ATQ8YT FA-CBL**ATQ8YA*1
MELSEC-L series	L60DAIL8	4 to 20mA			FA-CBL**ATYF
MELSEC-F series	FX3U-4DA FX3U-4DA-ADP	4 to 20mA			
CC-Link IE TSN	NZGN2B-60DA4	4 to 20mA			
CC-Link IE Field	NZ2GFCE-60DAI8 NZ2GF2BN-60DA4	4 to 20mA			
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	8-channel spring clamp terminal block: FA1-AT1B8Y1TE 8-channel screw terminal block: FA-ATB8YTB	Voltage output: FA-ATSVM1YV05, FA-ATSVM1YV010, FA-ATSVM1YV15, FA-ATSVM1YV1010 Current output: FA-ATSVM1YA020, FA-ATSVM1YA420 Signal pass-through: FA-ATFTMXY	FA-CBL**ATQ8YT FA-CBL**ATQ8YA*1
MELSEC-Q series	Q68DAVN	1 to 5V			FA-CBL**ATQ8YT FA-CBL**ATQ8YA*1
MELSEC-L series	L60DAVL8	1 to 5V			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-CB2L**MM1H20
	FA3-AT1T8Y-01C				
	FA3-AT1T8Y				
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-CB2L**MM1H20
	FA3-AT1C8Y-01C				
	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

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

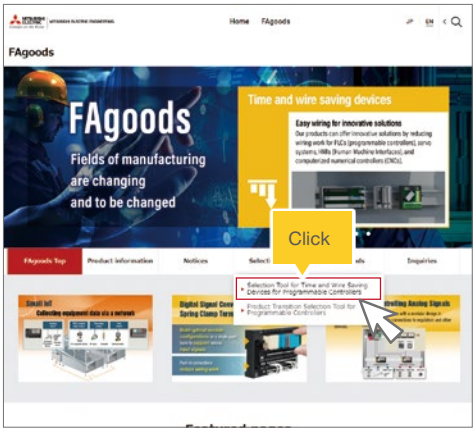
The selection tool on our website helps select the optimum terminal blocks and cables for Mitsubishi Electric programmable controllers and HMIs (GOTs).
The connectable models are displayed by entering/selecting the model name of the programmable controller or HMI (GOT).

Website www.mitsubishielectricengineering.com/sales/fa/meefan/

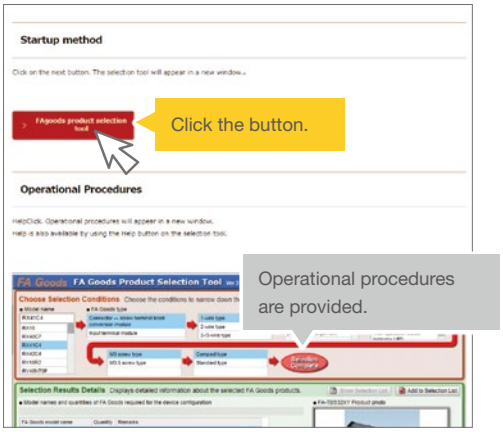
FAgoods product selection tool

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

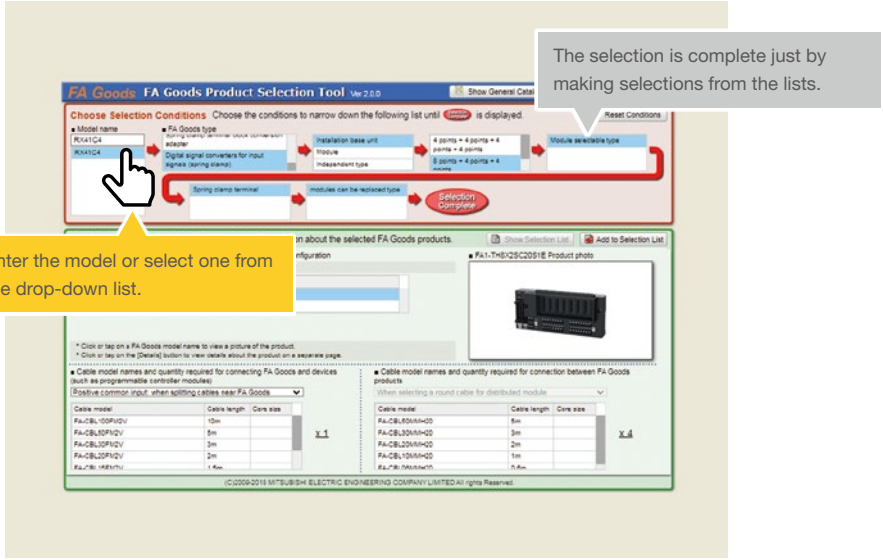
1 Select "Selection Tool for Time and Wire Saving Devices for Programmable Controllers" from the opening page of MEEFAN.



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



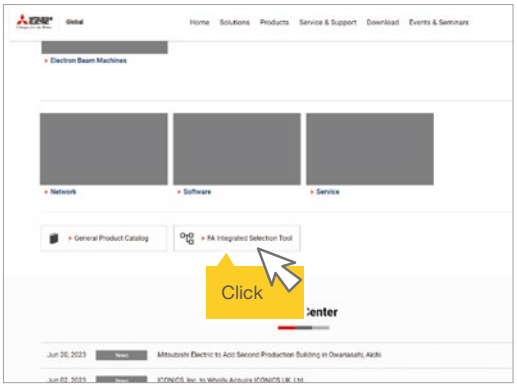
3 The following window appears.
Enter the model name of the MELSEC series module in the "Model name" field. (Alternatively, select the model from the drop-down list.)
In the "FA Goods type" field, select the product and its specifications from the lists. The connectable terminal blocks and connection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



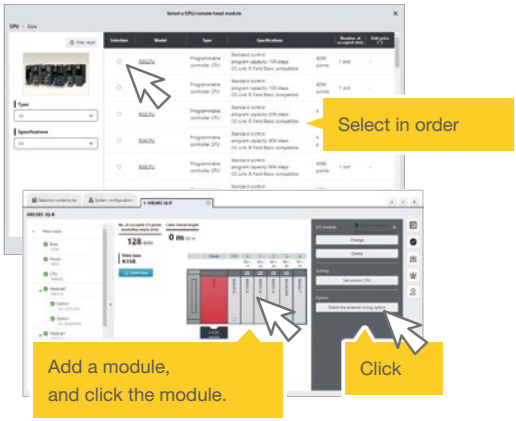
Go to the Mitsubishi Electric FA website.
(www.mitsubishielectric.com/fa/)

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.

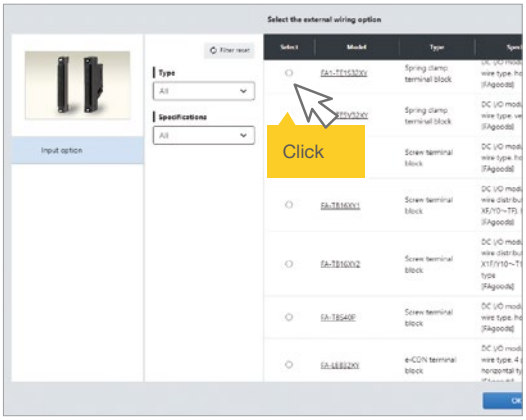
1 Go to the opening page of the Mitsubishi Electric FA website and click the [FA Integrated Selection Tool] button.



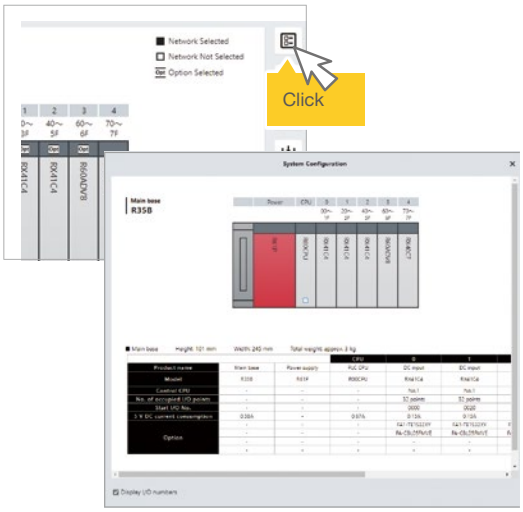
2 To select a device, select the MELSEC series, CPU module, base unit, power supply module, and modules in this order.
Click the added module, and click the [Select the external wiring option] button.



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.



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			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
CT input	Range selection (AC): 0 to 600 A (4 ranges), Frequency selection: 50 Hz or 60 Hz		FA1-AT1CT-1-6
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
0.25mm^2 (24 AWG)	AI 0,25-10 YE (10mm)	CRIMPFOX 6	PHOENIX CONTACT GmbH & Co. KG
0.34mm^2 (22 AWG)	AI 0,34-10 TQ (10mm)		
0.5mm^2 (20 AWG)	AI 0,5-10 WH (10mm)		
0.75mm^2 (18 AWG)	AI 0,75-10 GY (10mm)		
1.0mm^2 (18 AWG)	AI 1-10 RD (10mm)		
1.5mm^2 (16 AWG)	AI 1,5-10 BK (10mm)		

■ Recommended product

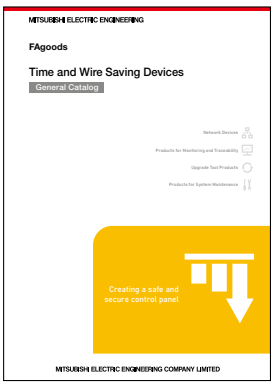
Item	Specifications
Name	Test plug
Model	MPS-MT 1-S
Manufacturer	PHOENIX CONTACT GmbH & Co. KG
Test pin	Φ 1.0mm
Socket*1	Φ 2.0mm
Cable length	150mm

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

■ Related catalogs

Digest edition

Time and Wire Saving Devices



■ Related leaflets

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

Network Interface Modules (MEIC215E·214)

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MEIC220E·21YC

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