MITSUBISHI ELECTRIC ENGINEERING

Digital Signal Converters (Terminal Modules)

Minimum required configuration achieved by selecting the type and the number of modules

Optimal configuration and space saving → **Optimal installation and easy wiring** → **System monitoring (Small-scale IoT)**

Installation base units

4-point installation base unit
Module selectable type Spring
Module pre-mounted type Spring

8-point installation base unit
Module selectable type Spring
Module pre-mounted type Spring

16-point installation base unit
Module selectable type Spring
Module pre-mounted type Spring Screw
Module built-in type Screw

Modules

Slim type
- Input
- Output

Function type
- Input

FAgoods Products e-F@ctory

Source: Mitsubishi Electric Corporation

MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED

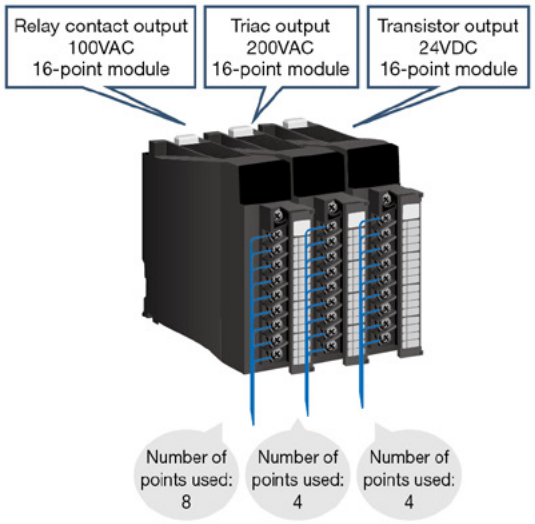
Startup support: Flexible system design

Optimal combination of devices and space saving

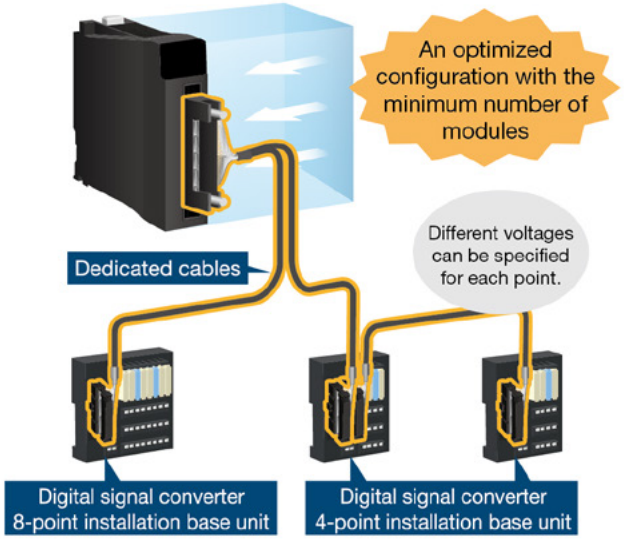
The digital signal converter (terminal module) converts various input voltages into 24VDC voltage, thereby optimizing or reducing the number of programmable controller modules. Thus, the cost required for keeping spare modules will be reduced. By using the installation base unit with selectable number of modules which enables specifying modules individually, extra unused points can be eliminated.

Configuration

Before



After



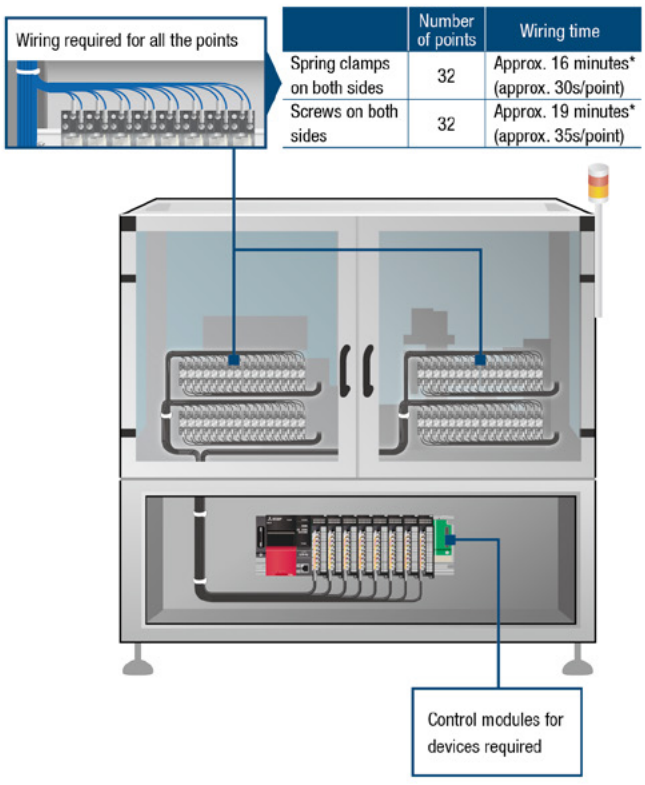
Optimal installation to meet the system needs and easy wiring

- Multiple digital signals can be assigned to the module terminals individually. The module can be installed near devices such as switches and lamps.
- By using dedicated cables or network connection, time required for wiring work can be reduced.

Installation

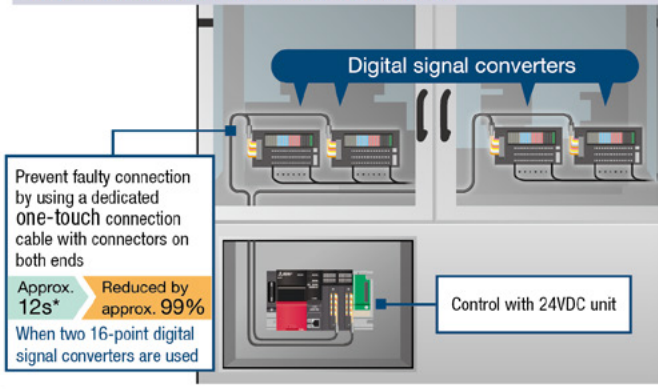
* Result of in-house testing

Before

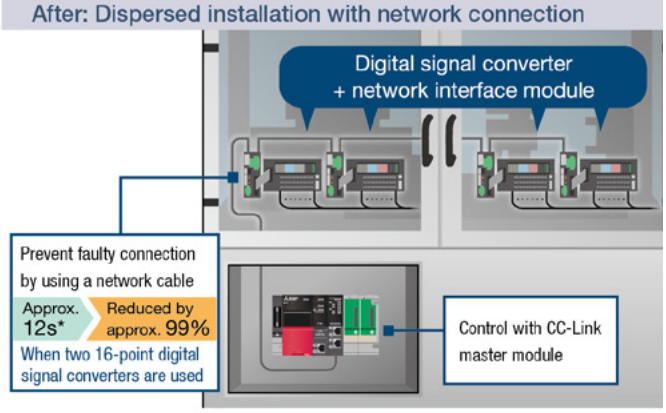


	Number of points	Wiring time
Spring clamps on both sides	32	Approx. 16 minutes* (approx. 30s/point)
Screws on both sides	32	Approx. 19 minutes* (approx. 35s/point)

After: Installation with a dedicated cable



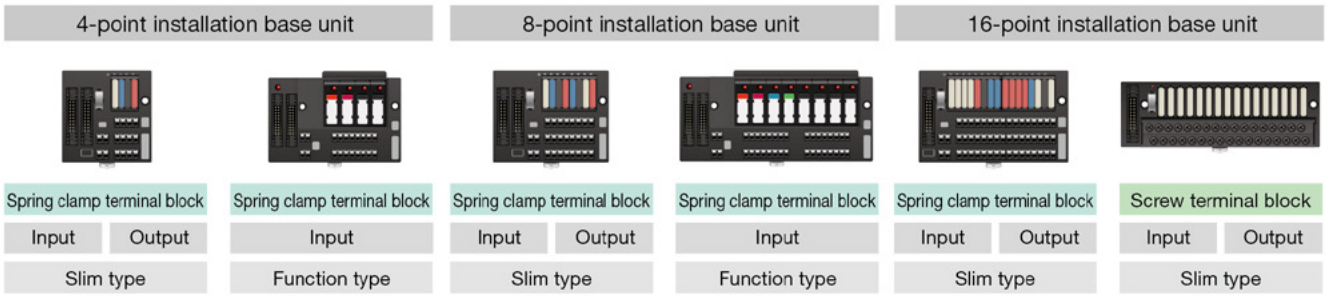
After: Dispersed installation with network connection



Selection of optimal installation base unit and modules

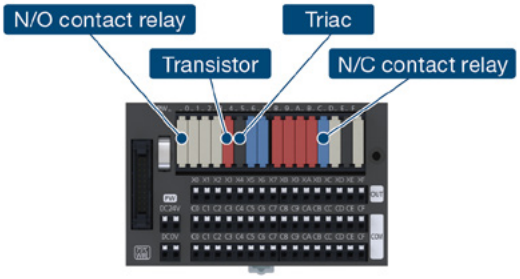
- The new 4-point and 8-point units are useful to optimize the number of points and enable dispersed installation near devices such as switches.
- Modules can be mounted or replaced individually to meet the system needs.

Installation base unit suited to the number of I/O points



Optimized module configuration

Different control methods can be specified for each terminal according to the device type.



16-point spring clamp terminal type

Digital signal converter (terminal module)

Lineup

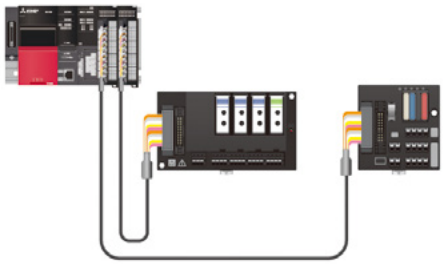
Appearance	Type		Lineup
	Slim	Input, output	N/O contact N/C contact
		Output	C/O contact Triac Transistor Signal pass-through
	Functional	Input	Relay isolation: 24VDC relay Photocoupler isolation: 24/48/100VDC, 100/200VAC Dummy module (dust protector)

Slim: The compact module is useful to save space.
Functional: The module has LEDs and can be replaced without tools.

Selectable connection method

Direct wiring to a programmable controller

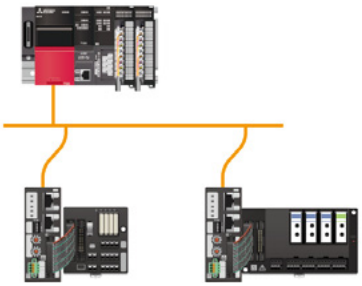
▶Refer to page 2.
▶Refer to page 4.



- 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 page 4.
▶Refer to pages 6 to 9.



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

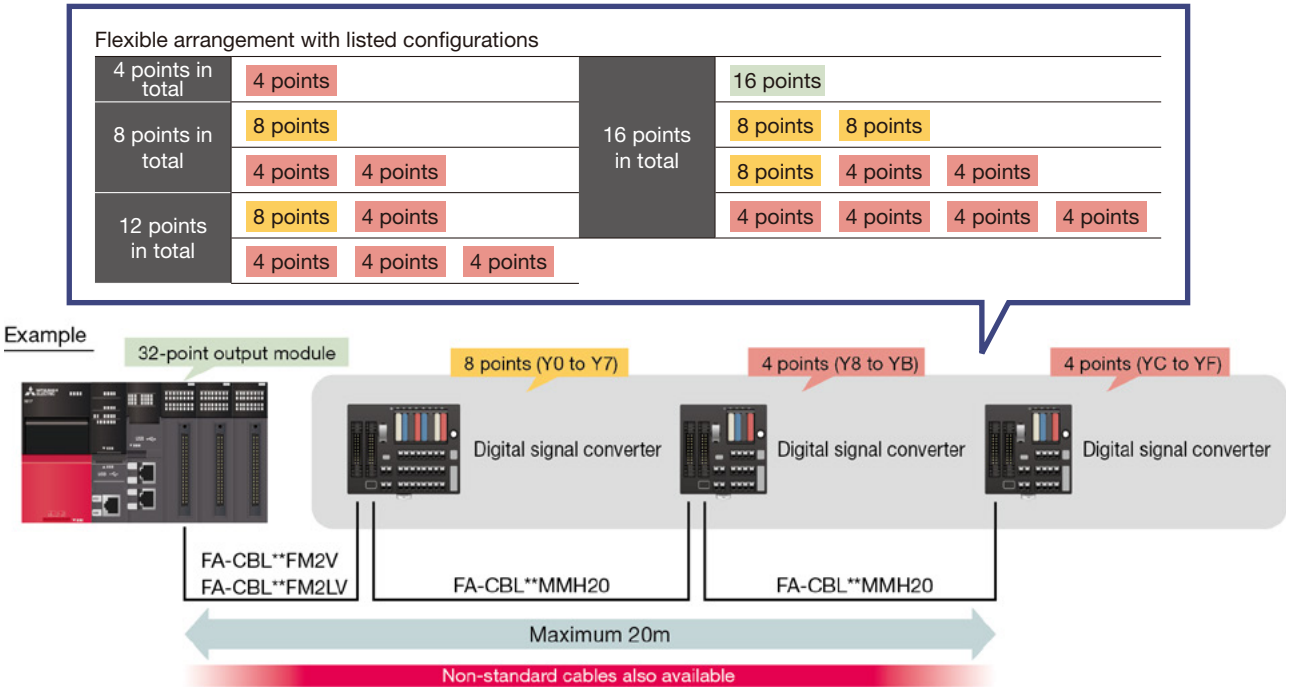
- With network connection, "installation in the equipment: installation near devices" can be achieved instead of "installation in the control panel".
- Installing the product near devices improves the maintenance efficiency.
- Collecting sensor information wirelessly and monitoring the site remotely.

Dispersed installation to meet the system needs

• The digital signal converter (terminal module) can be installed near input devices using a dedicated cable and a network interface module.
• More flexible dispersed installation is enabled by selecting the number of modules suitable for the system structure.

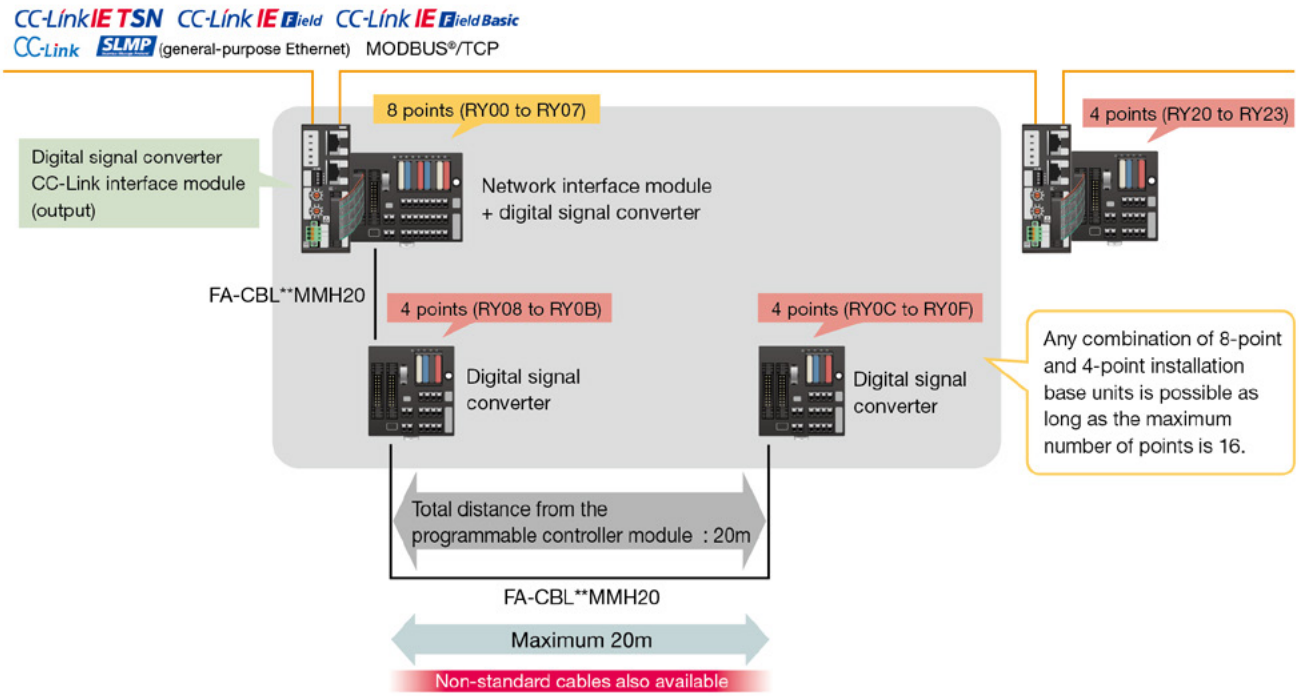
Dispersed installation using dedicated cables from a programmable controller

• A dedicated cable can be used between the input/output module of the programmable controller and the signal converter.
• Input/output numbers are automatically assigned according to the order in which modules are connected to the programmable controller module.



Dispersed installation with network connection

Dispersed installation with connection to CC-Link IE TSN, CC-Link IE Field, CC-Link IE Field Basic, CC-Link, SLMP (general-purpose Ethernet), or MODBUS/TCP.
Using the digital signal converter (terminal module) enables dispersed installation.

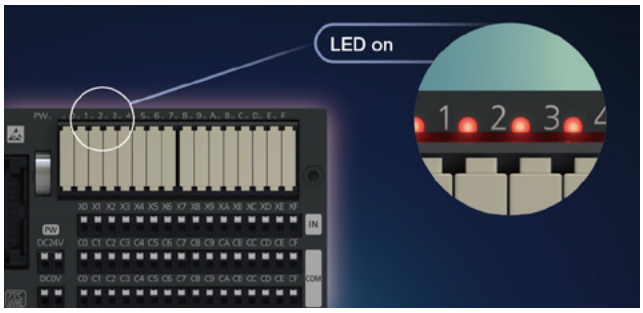


Maintenance support: Easy maintenance

LED status indicator

- The LED status indicator (red) helps identify whether input signals are on or off.
- Additionally, modules can be distinguished by marker strip color, model name, or module color.

Slim module



Functional module

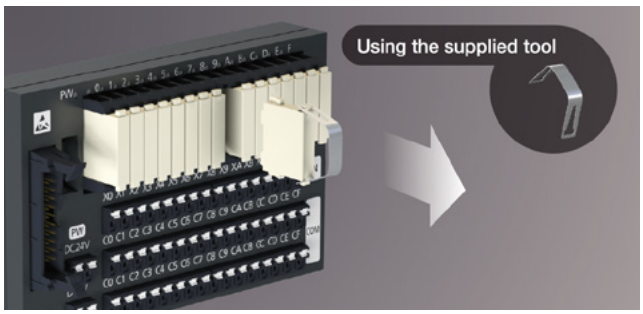
Marker strips

- The module has marker strips on the front.
- Input signals can be distinguished by marker strip color and markings.
- Information can be written in the space on the marker strip for easy management.

Module replacement

If a module malfunctions or reaches the end of its service life, the module can be replaced using the supplied tool or without tools.

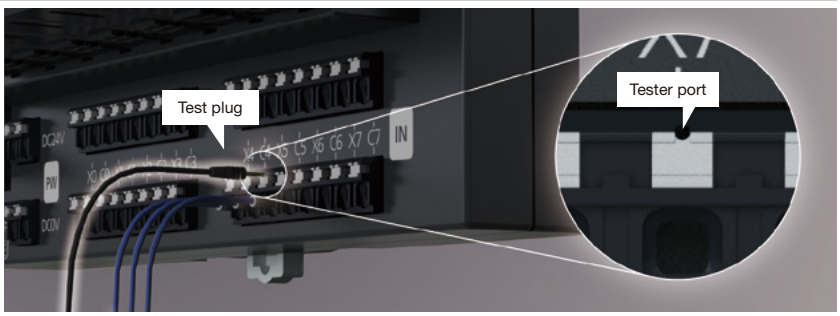
Slim module



Functional module

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.
(The test plug used here is the recommended product on page 19.)



Sharing common terminals

- Two sets of common terminals per input signal allows for common terminals to be shared.
- Pre-fabricated cables with ferrules for transition wiring of common terminals are sold separately. (Refer to page 19.)

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)

Preventive maintenance is possible because information such as the service life of relays can be visualized.

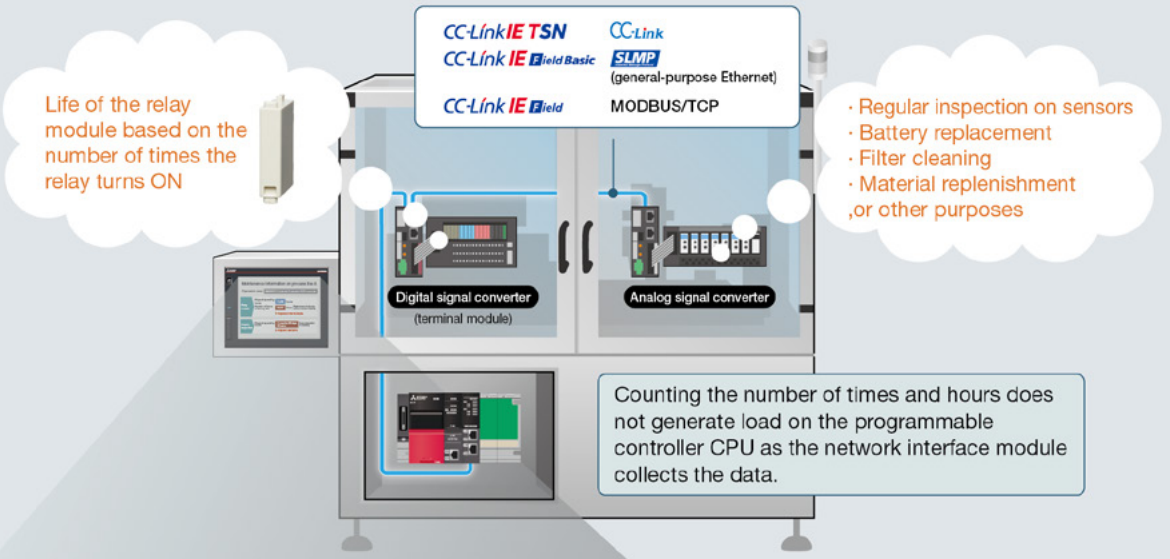
Maintenance time notification is based on how many times relay signals turn ON and operating hours. This helps prevent troubles.

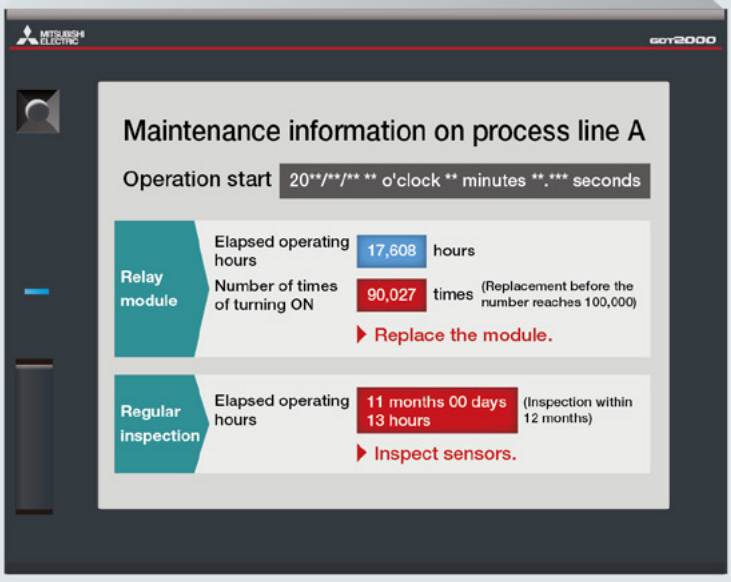
Maintenance information recording function

This function records the operation start date*1 and elapsed operating hours*1 of the network interface module and the number of times I/O signal relays of the digital signal converter turn ON*2.

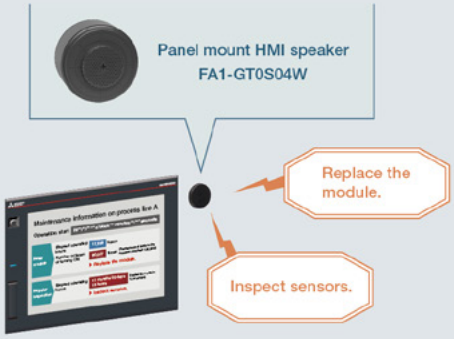
Maintenance alarm function

This function outputs an alarm signal to the master station when the specified operating hours*1 have elapsed or the number of times a relay turns ON*2 has exceeded the preset value.





Using the panel mount HMI speaker allows you to hear important information accurately in addition to visual information.



*1: Recording of the operation start date (year, month, and day) and elapsed operating hours 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: Available for network interface modules for digital signal converters (terminal modules).

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

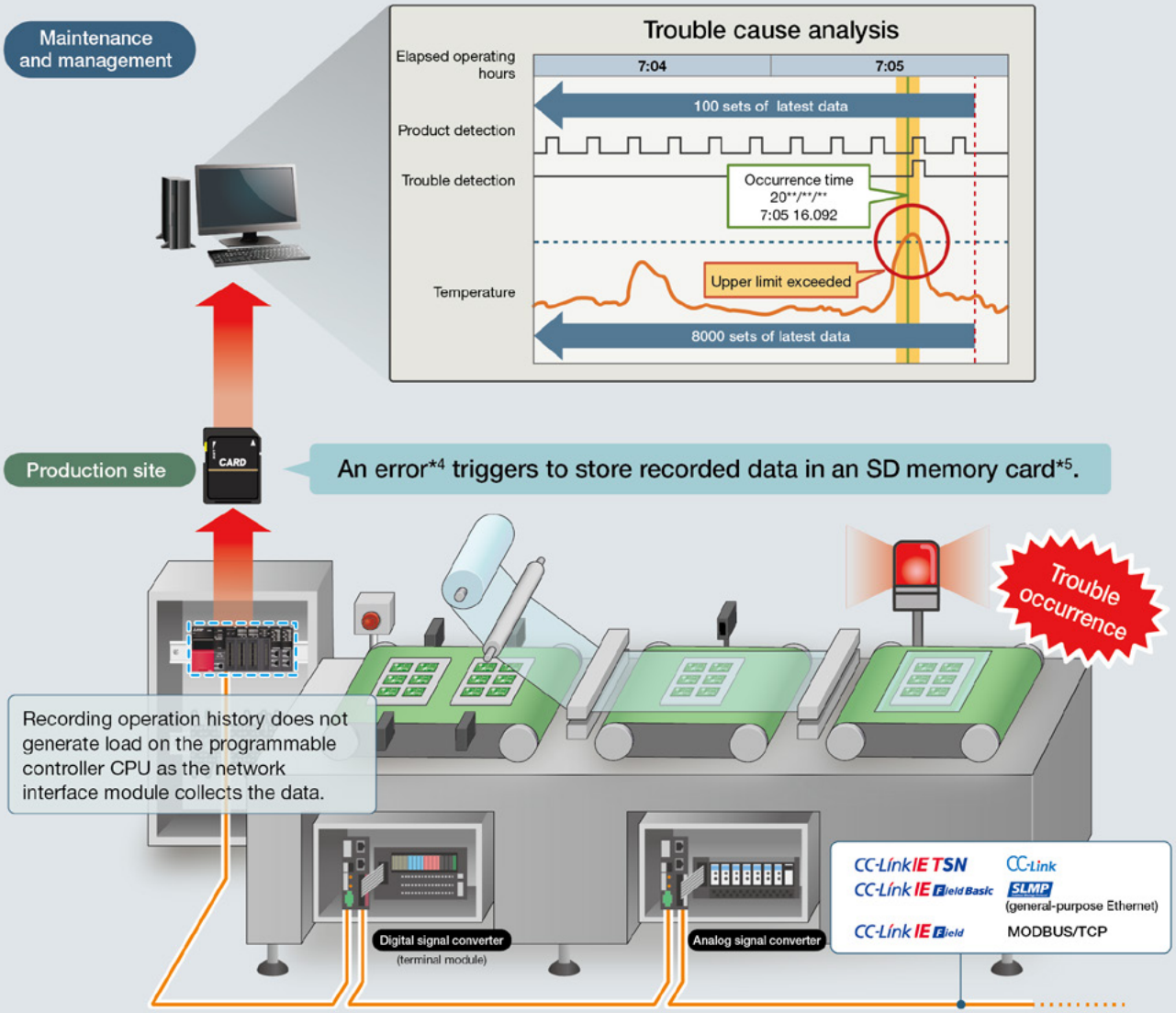
Recording the operation history of digital and analog signals allows you to investigate the cause of troubles.

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).

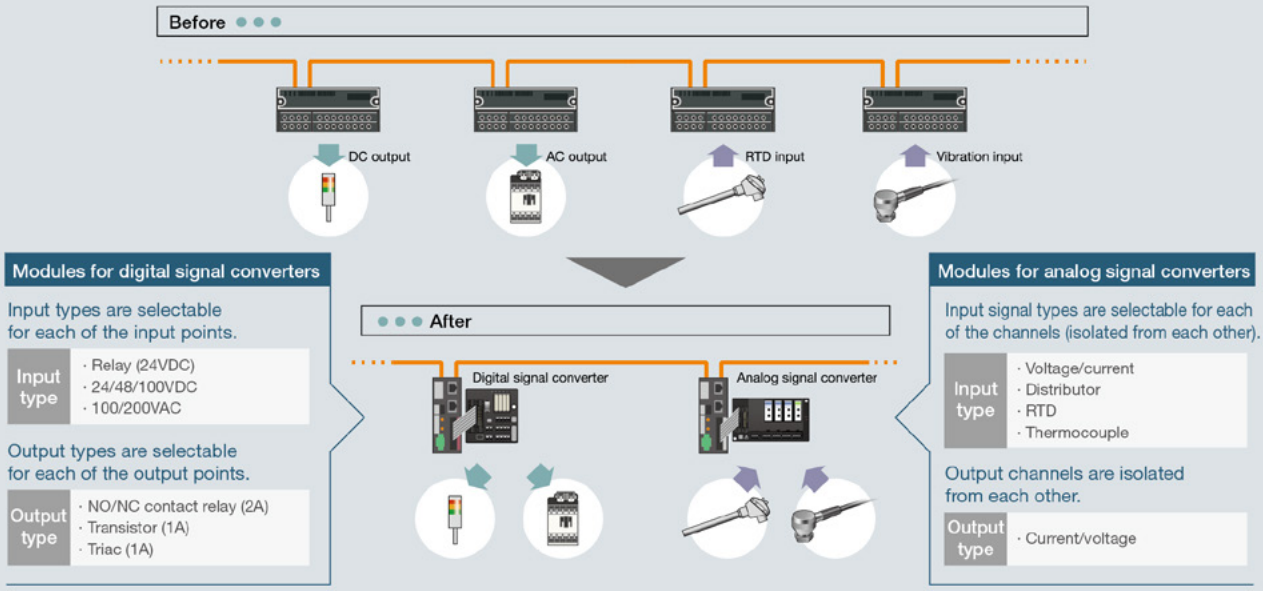


*1: Recording of occurrence times is available when the modules are used in the CC-Link IE TSN, CC-Link IE Field Network, or CC-Link IE Field Network Basic.
*2: The logging function is available when the modules are used in the CC-Link IE TSN or CC-Link IE Field Network Basic.
*3: Numerical data digitally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

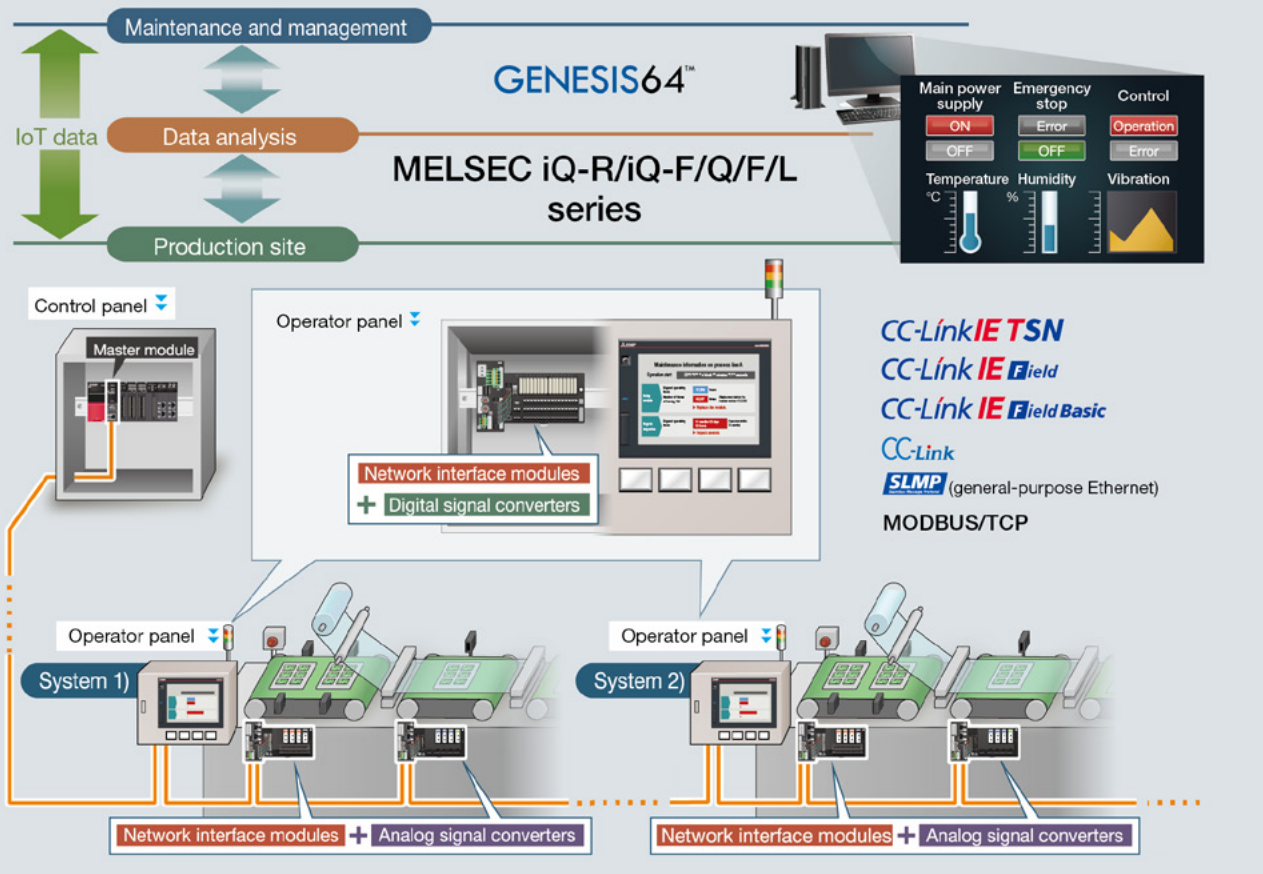
Using network interface modules for signal converters enables dispersed installation in small areas and integrated management of device data using IoT systems.

Find out more

Establishing an optimal system by selecting modules individually



System image



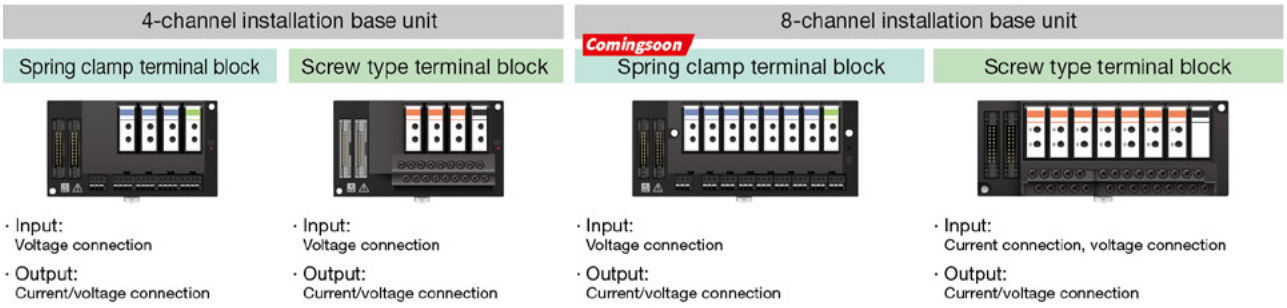
Network interface modules (for digital signal converter)

			Available network		
			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

Analog signal converter

This converter is used to convert analog signals sent between the network interface module and temperature sensors or other devices. The channels are isolated from each other.

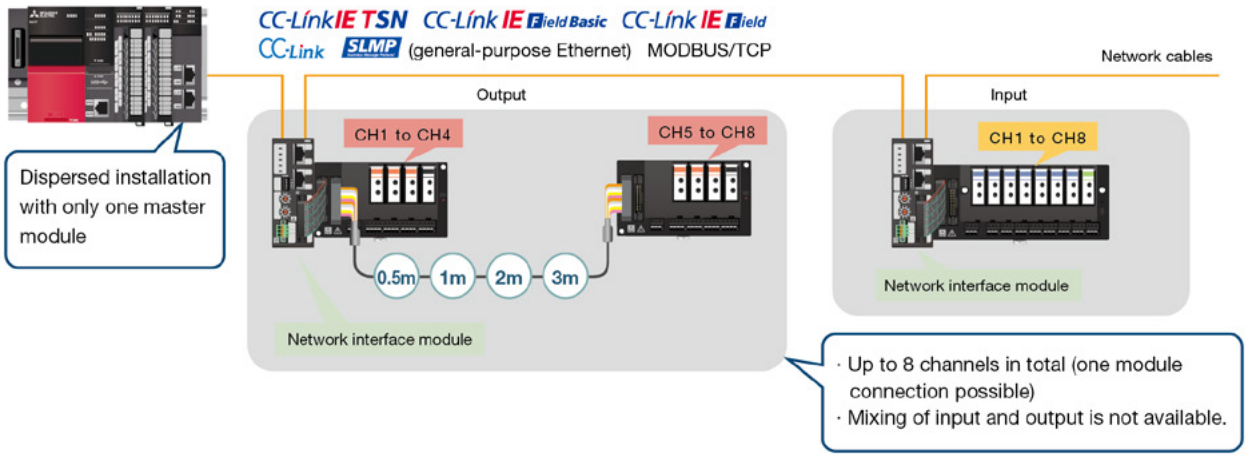
Find out more



Input models: Different types of analog inputs (voltage, current, distributor, thermocouple, resistance temperature detector) can be specified for each channel.
Output models: Different types of analog outputs (voltage, current) can be specified for each channel.

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, allowing you to configure a system with both input and output units.
Using a network cable simplifies the wiring between the control panel and devices/relay box and the wiring for device extended installation.

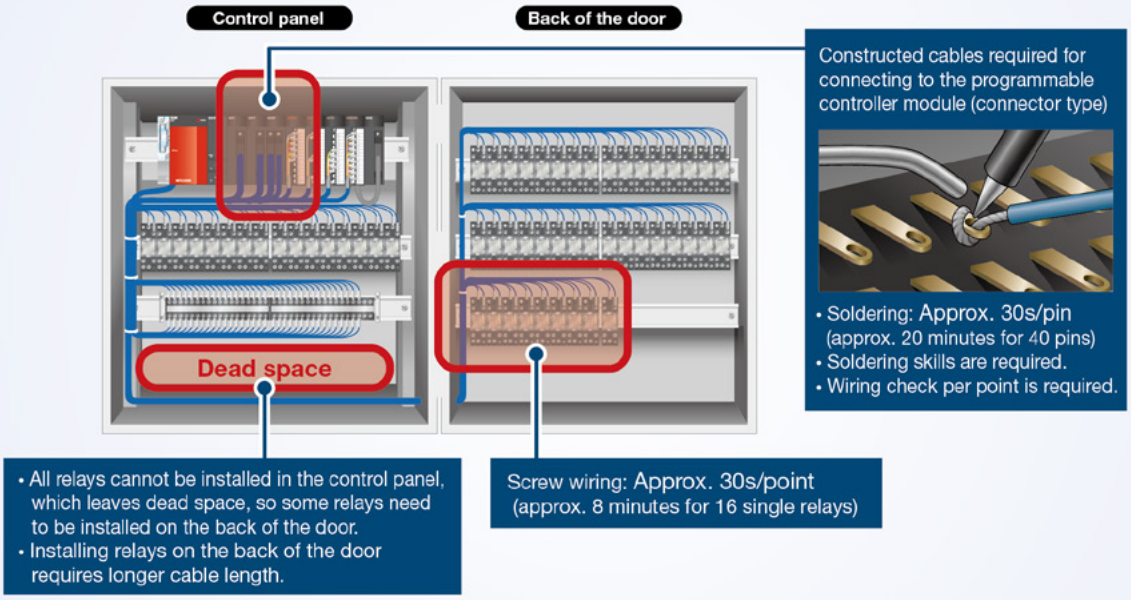


Application examples

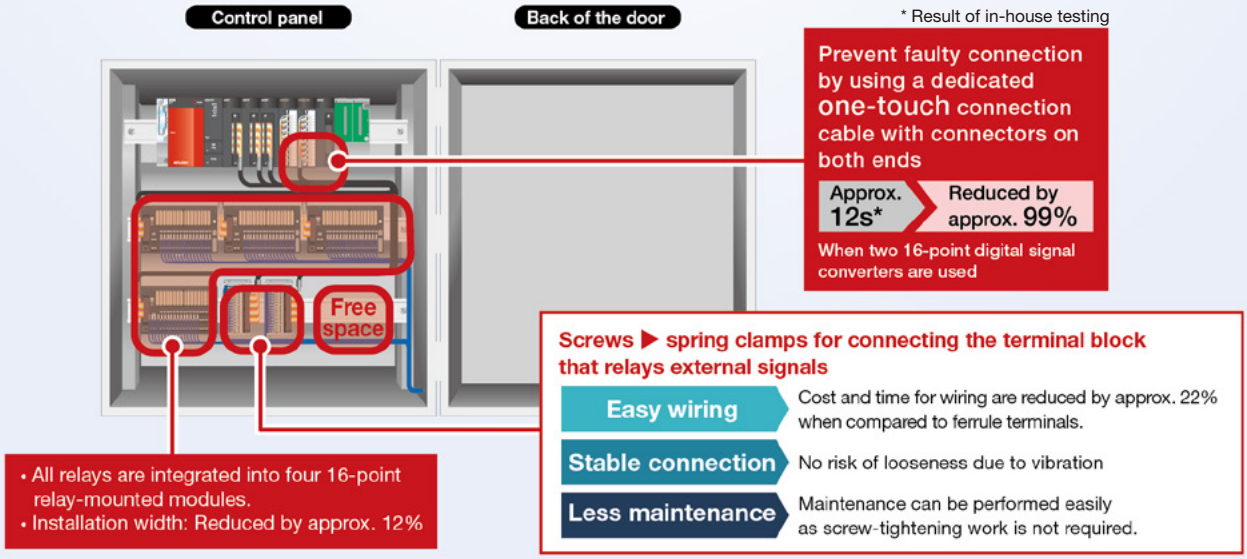
Device manufacturer: The installation width is reduced by approx. 67% and the wiring cost and time is reduced by approx. 99% by replacing non-Mitsubishi relays with digital signal converters.

Problem	Since there was not enough space to install relays, these relays were installed on the back of the door and constructed cables were required.
What you want to achieve	• Organizing the inside of the control panel neatly • Improving productivity (Offering innovative solutions by reducing the time for manufacturing the control panel)
Point	• 57 single relays are replaced with four digital signal converters so that the relays do not need to be installed on the back of the door. (Installation width: Reduced by approx. 67%) • By connecting the MELSEC I/O module with a dedicated cable, no constructed cable is required. (Cost and time for wiring between the MELSEC I/O module and signal converters: Reduced by approx. 99%) • The unused relay 7 points can be reserved by installing the signal pass-through module.

Before



After



Wire saving and space saving, and flexible system design by "individually selecting modules" ▶Page 11

point

Reduction of maintenance time by prolonging the service life of relays

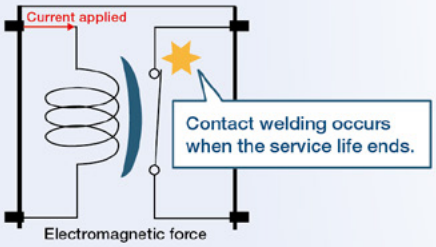
Problem If the contact is open/closed at high frequency, the service life of relays ends at an early stage and contact welding occurs.

What you want to achieve
- Reducing the frequency of contact welding and reducing cost and time for maintenance

Point
- Modules can be installed individually. Thus, signals with high frequency of contact open/close operation can be changed to the DC output (transistor) or the AC output (triac).

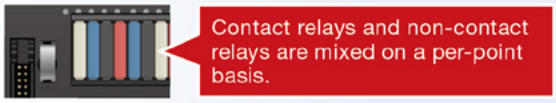
Before

● Contact relay image

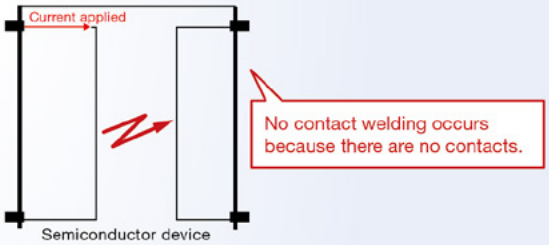


If contact welding occurs, signals will always be ON/OFF, resulting in equipment operation failure. Therefore, equipment needs to be investigated and devices need to be replaced.

After



● Non-contact relay image



By installing non-contact relays for device signals with high frequency of contact open/close operation, the service life of contacts does not need to be considered and maintenance work such as equipment investigation and device replacement is reduced.

* Excluding product service life and maintenance work of other devices

Connecting devices with different contact open/close speed

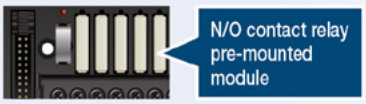
Problem There are devices that need to be controlled faster than the following: ON for 1 second or more and OFF for 1 second or more (contact relay, N/O contact).

* The programmable controller response time is not included.

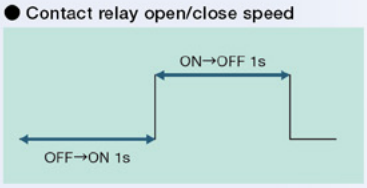
What you want to achieve
- Changing the contact open/close speed according to the connected device

Point
- By using a transistor (DC control) together, the load of contact open/close speed request can be supported individually in accordance with the connected device. (ON for 0.001 seconds/OFF for 0.001 seconds*)
- Modules can be mixed in one unit without having unused points.

Before

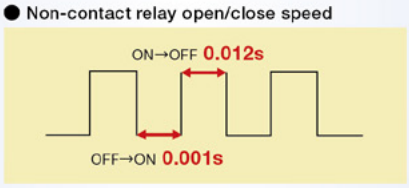


● Contact relay open/close speed

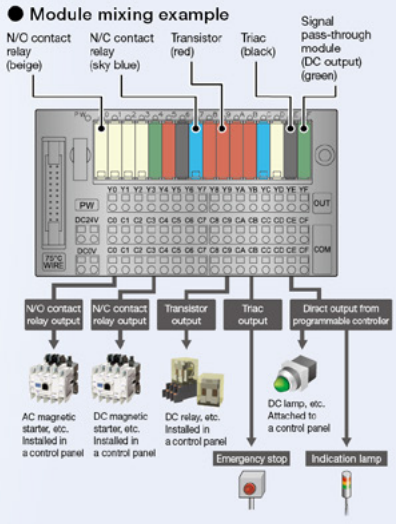


After

● Non-contact relay open/close speed



● Module mixing example



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

■ 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.

4-point/8-point input, slim type, module pre-mounted type

Programmable controller module			Module type				Module model	Connection cable
MELSEC iQ-R series	RX40C7	Positive common	Spring clamp	24VDC N/O contact relay (positive common) / 24VDC N/O contact relay (negative common)	Module mixing possible	Independent	FA1-TH□X24RA1L20S1E / FA1-TH□X24RA1H20S1E	FA-CBL**M20 / FA-CBL**YM20 / FA-CBL**TMV20 / FA-CBL**MMH20 (for dispersed installation)
	RX41C4 / RX41C6HS / RX42C4 / RH42C4NT2P*1	Positive common	Spring clamp	24VDC N/O contact relay (positive common) / 24VDC N/O contact relay (negative common)	Module mixing possible	Independent	FA1-TH□X24RA1L20S1E / FA1-TH□X24RA1H20S1E	FA-CBL**FM2V / FA-CBL**FM2LV / FA-CBL**MMH20 (for dispersed installation)
	RX40C7-TS	Positive common	Spring clamp	24VDC N/O contact relay (positive common) / 24VDC N/O contact relay (negative common)	Module mixing possible	Independent	FA1-TH□X24RA1L20S1E / FA1-TH□X24RA1H20S1E	FA1-CB1L**EM1F18 / FA-CBL**MMH20 (for dispersed installation)
	RX41C4-TS	Positive common	Spring clamp	24VDC N/O contact relay (positive common) / 24VDC N/O contact relay (negative common)	Module mixing possible	Independent	FA1-TH□X24RA1L20S1E / FA1-TH□X24RA1H20S1E	FA1-CB1L**EM2F34 / FA-CBL**MMH20 (for dispersed installation)
MELSEC iQ-F series	FX5-C32ET/D*1 / FX5-C16EX/D / FX5-C32EX/D / FX5UC-32MT/D*1 / FX5UC-64MT/D*1 / FX5UC-96MT/D*1	Sink input	Spring clamp	24VDC N/O contact relay (positive common) / 24VDC N/O contact relay (negative common)	Module mixing possible	Independent	FA1-TH□X24RA1L20S1E / FA1-TH□X24RA1H20S1E	FA-FXCBL**MMH20 / FA2-CB1LT**MM1H20 / FA-CBL**MMH20 (for dispersed installation)
	FX5-C16EX/DS / FX5-C32EX/DS / FX5-C32ET/DSS*1 / FX5UC-32MT/DSS*1 / FX5UC-64MT/DSS*1 / FX5UC-96MT/DSS*1	Sink input	Spring clamp	24VDC N/O contact relay (positive common) / 24VDC N/O contact relay (negative common)	Module mixing possible	Independent	FA1-TH□X24RA1L20S1E / FA1-TH□X24RA1H20S1E	FA-FXCBL**MMH20E / FA2-CB1LT**MM1H20E / FA-CBL**MMH20 (for dispersed installation)
	FX5-C32ET/DS-TS / FX5-C32ET/DSS-TS / FX5UC-32MT/DS-TS / FX5UC-32MT/DSS-TS / FX5-C32EX/DS-TS	Sink input	Spring clamp	24VDC N/O contact relay (positive common) / 24VDC N/O contact relay (negative common)	Module mixing possible	Independent	FA1-TH□X24RA1L20S1E / FA1-TH□X24RA1H20S1E	FA2-CB1L**EM1F18E / FA-CBL**MMH20 (for dispersed installation)

*1: Input side only

□ = 4: 4-point type, 8: 8-point type

4-point/8-point output, slim type, module selectable type

Programmable controller module			Module type				Module model	Connection cable
MELSEC iQ-R series	RY40NT5P / RY40PT5P / RY40PT5B		Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH□Y2SC20S1E / FA1-TH1E□Y2SC20S1E	FA-CBL**M20 / FA-CBL**YM20 / FA-CBL**TMV20 / FA-CBL**MMH20 (for dispersed installation)
	RY41NT2P / RY42NT2P / RY41NT2H / RH42C4NT2P*2 / RY41PT1P / RY42PT1P / RY41PT2H		Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH□Y2SC20S1E / FA1-TH1E□Y2SC20S1E	FA-CBL**FM2V / FA-CBL**FM2LV / FA-CBL**MMH20 (for dispersed installation)
	RY40NT5P-TS / RY40PT5P-TS		Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH□Y2SC20S1E / FA1-TH1E□Y2SC20S1E	FA1-CB1L**EM1F18 / FA-CBL**MMH20 (for dispersed installation)
	RY41NT2P-TS / RY41PT1P-TS		Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH□Y2SC20S1E / FA1-TH1E□Y2SC20S1E	FA1-CB1L**EM2F34 / FA-CBL**MMH20 (for dispersed installation)
MELSEC iQ-F series	FX5UC-32MT/D / FX5-C32ET/D / FX5UC-64MT/D / FX5UC-96MT/D / FX5-C16EYT/D / FX5-C32EYT/D	Sink output	Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH□Y2SC20S1E	FA-FXCBL**MMH20 / FA2-CB1LT**MM1H20 / FA-CBL**MMH20 (for dispersed installation)
	FX5UC-32MT/DS-TS / FX5-C32ET/DS-TS / FX5-C32EYT/D-TS	Sink output	Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH□Y2SC20S1E	FA2-CB1L**EM1F18 / FA-CBL**MMH20 (for dispersed installation)
	FX5UC-32MT/DSS / FX5-C32ET/DSS / FX5UC-64MT/DSS / FX5UC-96MT/DSS / FX5-C16EYT/DSS / FX5-C32EYT/DSS	Source output	Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH1E□Y2SC20S1E	FA2-CB1L**MM1H20E / FA2-CB1LT**MM1H20E / FA-CBL**MMH20 (for dispersed installation)
	FX5UC-32MT/DSS-TS / FX5-C32ET/DSS-TS / FX5-C32EYT/DSS-TS	Source output	Spring clamp	Installation base unit	Module selectable type	Independent	FA1-TH1E□Y2SC20S1E	FA2-CB1L**EM1F18E / FA-CBL**MMH20 (for dispersed installation)

*2: Output side only

□ = 4: 4-point type, 8: 8-point type

Connection with network interface modules

Ensure compliance with required international standards also for other products used in combination.

4-point/8-point input, slim type, module pre-mounted type

Available network	Model	Interface module cable		Module model
CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (general-purpose Ethernet) MODBUS/TCP	FA3-TH1M16XC-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*1 (for dispersed installation)	FA1-TH4X24RA1L20S1E FA1-TH4X24RA1H20S1E FA1-TH8X24RA1L20S1E FA1-TH8X24RA1H20S1E
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*1 (for dispersed installation)	
	FA3-TH1M16XC	Signal converter connection extension cable		
CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (general-purpose Ethernet)	FA3-TH1T16XC-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*1 (for dispersed installation)	
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*1 (for dispersed installation)	
	FA3-TH1T16XC	Signal converter connection extension cable		
CC-Link	FA3-TH1C16XC-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*1 (for dispersed installation)	
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*1 (for dispersed installation)	
	FA3-TH1C16XC	Signal converter connection extension cable		

*1: Use the same power supply for two digital signal converters (terminal modules) to be connected.

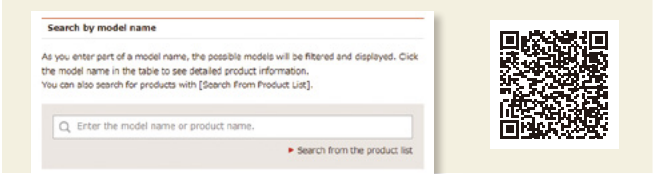
4-point/8-point output, slim type, module pre-mounted type

Available network	Model	Interface module cable		Module model
CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (general-purpose Ethernet) MODBUS/TCP	FA3-TH1M16Y-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*2 (for dispersed installation)	FA1-TH4Y2SC20S1E FA1-TH8Y2SC20S1E
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*2 (for dispersed installation)	
	FA3-TH1M16Y	Signal converter connection extension cable		
	FA3-TH1M16YE-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*2 (for dispersed installation)	FA1-TH1E4Y2SC20S1E FA1-TH1E8Y2SC20S1E
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*2 (for dispersed installation)	
	FA3-TH1M16YE	Signal converter connection extension cable		
CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (general-purpose Ethernet)	FA3-TH1T16Y-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*2 (for dispersed installation)	FA1-TH4Y2SC20S1E FA1-TH8Y2SC20S1E
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*2 (for dispersed installation)	
	FA3-TH1T16Y	Signal converter connection extension cable		
	FA3-TH1T16YE-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*2 (for dispersed installation)	FA1-TH1E4Y2SC20S1E FA1-TH1E8Y2SC20S1E
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*2 (for dispersed installation)	
	FA3-TH1T16YE	Signal converter connection extension cable		
CC-Link	FA3-TH1C16Y-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*2 (for dispersed installation)	FA1-TH4Y2SC20S1E FA1-TH8Y2SC20S1E
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*2 (for dispersed installation)	
	FA3-TH1C16Y	Signal converter connection extension cable		
	FA3-TH1C16YE-01C	Dedicated cable (Included with the CC-Link interface module)	- FA-CBL**MMH20*2 (for dispersed installation)	FA1-TH1E4Y2SC20S1E FA1-TH1E8Y2SC20S1E
		Signal converter connection extension cable	FA3-CB2L**MM1H20 FA-CBL**MMH20*2 (for dispersed installation)	
	FA3-TH1C16YE	Signal converter connection extension cable		

*2: Use the same power supply for two digital signal converters (terminal modules) to be connected.

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

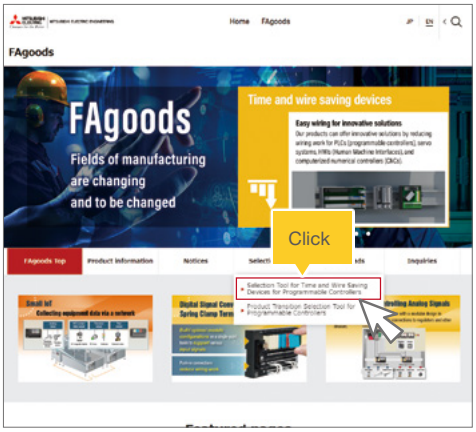
The selection tool on our website helps select the optimum terminal blocks and cables for Mitsubishi Electric programmable controllers and HMIs (GOTs).
The connectable models are displayed by entering/selecting the model name of the programmable controller or HMI (GOT).

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

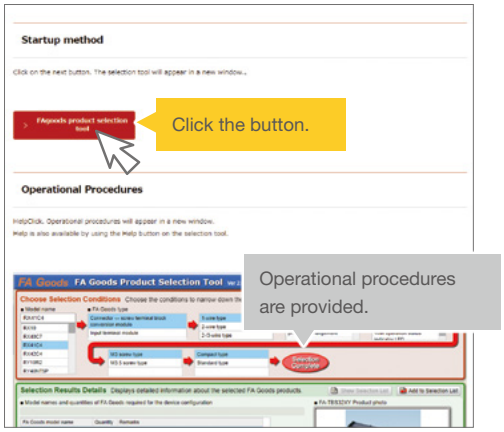
FAgoods product selection tool

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

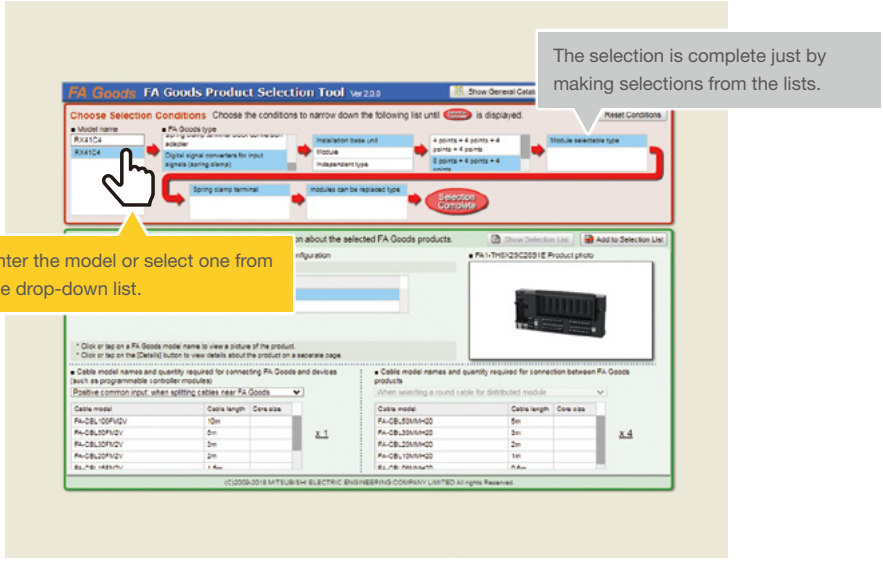
1 Select "Selection Tool for Time and Wire Saving Devices for Programmable Controllers" from the opening page of MEEFAN.



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



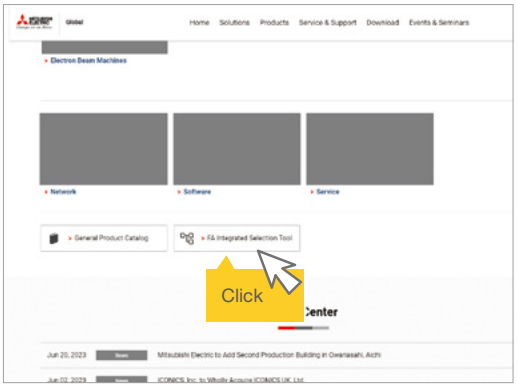
3 The following window appears.
Enter the model name of the MELSEC series module in the "Model name" field. (Alternatively, select the model from the drop-down list.)
In the "FA Goods type" field, select the product and its specifications from the lists. The connectable terminal blocks and connection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



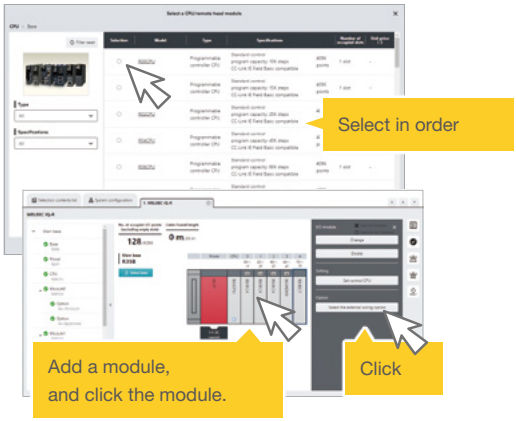
Go to the Mitsubishi Electric FA website.
(www.mitsubishielectric.com/fa/)

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.

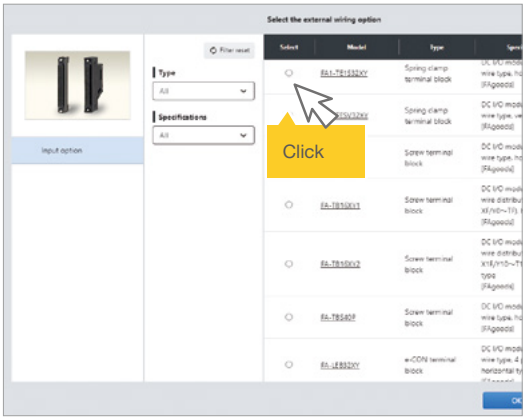
1 Go to the opening page of the Mitsubishi Electric FA website and click the [FA Integrated Selection Tool] button.



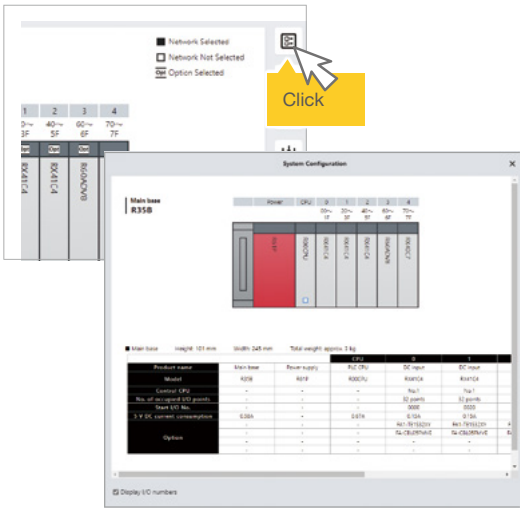
2 To select a device, select the MELSEC series, CPU module, base unit, power supply module, and modules in this order.
Click the added module, and click the [Select the external wiring option] button.



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

Digital signal converters (terminal modules)

Input **Spring clamp terminal type**

Programmable controller control method	Unit			Module		Model
	Shape	Control method		Replacement (type)	Mixing	
Positive common		Module pre-mounted unit (24VDC, N/O contact)	4 points, independent (positive common)	Possible (slim type)	(1)	FA1-TH4X24RA1L20S1E
			4 points, independent (negative common)	Possible (slim type)	(1)	FA1-TH4X24RA1H20S1E
			8 points, independent (positive common)	Possible (slim type)	(1)	FA1-TH8X24RA1L20S1E
			8 points, independent (negative common)	Possible (slim type)	(1)	FA1-TH8X24RA1H20S1E
			16 points, independent (positive common)	Possible (slim type)	(1)	FA1-TH16X24RA1L20S1E
			16 points, independent (negative common)	Possible (slim type)	(1)	FA1-TH16X24RA1H20S1E
	 Module mixing example	Installation base unit (Module selectable type)	4 points, independent	Possible (function type)	Possible	FA1-TH4X2SC20S1E
			8 points, independent	Possible (function type)	Possible	FA1-TH8X2SC20S1E

(1): Only N/O and N/C contact modules can be mixed.

Input **Screw terminal type**

Programmable controller control method	Unit			Module		Model
	Shape	Control method		Replacement (type)	Mixing	
Positive common		Module pre-mounted unit (24VDC, N/O contact)	16 points, independent	Possible (slim type)	(1)	FA-TH16XRA20S
		Module built-in unit (24VDC)	16 points/common, 2-wire type	Not possible	Not possible	FA-TH16X24D31
				Not possible	Not possible	FA-TH16X24D31L
		Module built-in unit (48VDC)	16 points/common, 2-wire type	Not possible	Not possible	FA-TH16X48D31L
		Module built-in unit (100VDC)	16 points/common, 2-wire type	Not possible	Not possible	FA-TH16X100D31L
		Module built-in unit (100VAC)	16 points/common, 2-wire type	Not possible	Not possible	FA-TH16X100A31
				Not possible	Not possible	FA-TH16X100A31L
		Module built-in unit (200VAC)	16 points/common, 2-wire type	Not possible	Not possible	FA-TH16X200A31
				Not possible	Not possible	FA-TH16X200A31L

(1): Only N/O and N/C contact modules can be mixed.

Output **Spring clamp terminal type**

Programmable controller control method	Unit			Module		Model
	Shape	Control method		Replacement (type)	Mixing	
Sink	 Module mixing example	Installation base unit (module selectable type)	4 points, independent (sink)	Possible (slim type)	(2)	FA1-TH4Y2SC20S1E
			8 points, independent (sink)	Possible (slim type)	(2)	FA1-TH8Y2SC20S1E
			16 points, independent (sink)	Possible (slim type)	(2)	FA1-TH16Y2SC20S1E
		Module pre-mounted unit (N/O contact)	16 points, independent (sink)	Possible (slim type)	(2)	FA1-TH16Y2RA20S1E
		Module pre-mounted unit (triac)	16 points, independent (sink)	Possible (slim type)	(2)	FA1-TH16Y1SR20S1E
		Module pre-mounted unit (transistor)	16 points, independent (sink)	Possible (slim type)	(2)	FA1-TH16Y1TR20S1E
Source	 Module mixing example	Installation base unit (module selectable type)	4 points, independent (source)	Possible (slim type)	(3)	FA1-TH1E4Y2SC20S1E
			8 points, independent (source)	Possible (slim type)	(3)	FA1-TH1E8Y2SC20S1E
			16 points, independent (source)	Possible (slim type)	(3)	FA1-TH1E16Y2SC20S1E
		Module pre-mounted unit (N/O contact relay)	16 points, independent (source)	Possible (slim type)	(3)	FA1-TH1E16Y2RA20S1E
		Module pre-mounted unit (triac)	16 points, independent (source)	Possible (slim type)	(3)	FA1-TH1E16Y1SR20S1E
		Module pre-mounted unit (transistor)	16 points, independent (source)	Possible (slim type)	(3)	FA1-TH1E16Y1TR20S1E

(2): Only N/O contact, N/C contact, triac, transistor, and signal pass-through modules can be mixed. (3): Only N/O contact, N/C contact, triac, and transistor modules can be mixed.

Output **Screw terminal type**

Programmable controller control method	Unit			Module		Model
	Shape	Control method		Replacement (type)	Mixing	
Sink		Module pre-mounted unit (N/O contact relay)	16 points, independent	Possible (slim type)	(2)	FA-TH16YRA20S
				Not possible	Not possible	FA-TH16YRA20
				Possible (slim type)	(2)	FA-TH16YRA20SL
			16 points/common, 1-wire type	Possible (slim type)	Not possible	FA-TH16YRA11S
				Not possible	Not possible	FA-TH16YRA11
			16 points/common, 2-wire type	Possible (slim type)	Not possible	FA-TH16YRA21S
				Not possible	Not possible	FA-TH16YRA21
		Module pre-mounted unit (N/C contact relay)	16 points, independent	Possible (slim type)	(2)	FA-TH16YRAB20SL
		Module pre-mounted unit (C/O contact relay)	16 points, independent	Possible (slim type)	Not possible	FA-TH16YRAC20S
		Module pre-mounted unit (triac)	16 points, independent	Possible (slim type)	(2)	FA-TH16YSR20S
			16 points/common, 1-wire type	Possible (slim type)	Not possible	FA-TH16YSR11S
			16 points/common, 2-wire type	Possible (slim type)	Not possible	FA-TH16YSR21S
		Module pre-mounted unit (transistor)	16 points/common, 1-wire type (sink)	Possible (slim type)	Not possible	FA-TH16YTL11S
			16 points/common, 2-wire type (sink)	Possible (slim type)	Not possible	FA-TH16YTL21S
			16 points/common, 1-wire type (source)	Possible (slim type)	Not possible	FA-TH16YTH11S
			16 points, independent (sink/source common)	Possible (slim type)	(2)	FA-TH16YTR20S
		Module built-in unit (transistor)	16 points, independent 2A (sink/source common)	Not possible	Not possible	FA-TH16Y2TR20
Source		Module pre-mounted unit (N/O contact relay)	16 points, independent (source)	Possible (slim type)	(3)	FA1-TH1E16Y2RA20S
		Module pre-mounted unit (transistor)	16 points, independent (sink/source common)	Possible (slim type)	(3)	FA-THE16YTR20S
			16 points/common, 1-wire type (source)	Possible (slim type)	Not possible	FA-THE16YTH11S

(2): Only N/O contact, N/C contact, triac, transistor, and signal pass-through modules can be mixed. (3): Only N/O contact, N/C contact, triac, and transistor modules can be mixed.

Modules

Slim type

Connection method	Shape	Input/output voltage	Color	Quantity	Model
Input Output		N/O contact relay (24VDC, 100 to 240VAC, 2A)	Beige	2	FA-NYP24WK2
				4	FA-NYP24WK4
		N/C contact relay (24VDC, 100 to 240VAC, 2A)	Sky blue	2	FA-NYBP24WK2
				4	FA-NYBP24WK4
Output		C/O contact relay (24VDC, 100 to 240VAC, 6A)	White	4	FA-LYCA024VSK4
		Triac (30 to 240VAC, 1A)	Black	2	FA-SN24A01FS2
				4	FA-SN24A01FS4
		Transistor (3 to 30VDC, 1A)	Red	2	FA-SN24D01HZS2
				4	FA-SN24D01HZS4
		Signal pass-through*1	Green	2	FA-SN00SS2
				4	FA-SN00SS4

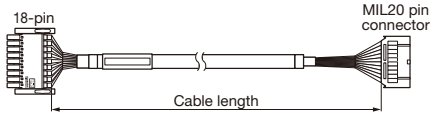
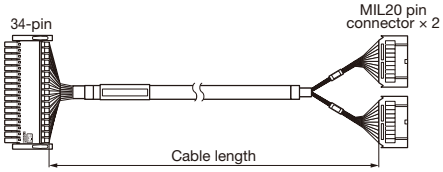
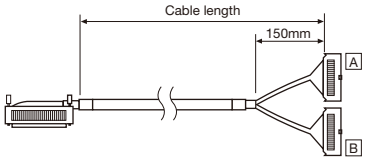
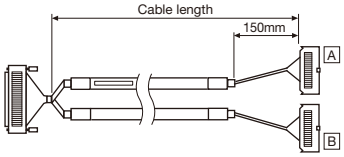
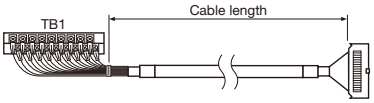
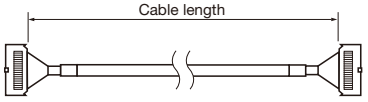
*1: Not available when the signal converter interface module (FA3-TH1C16Y, FA3-TH1C16Y-01C) is connected.

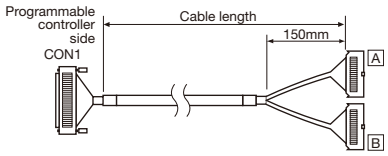
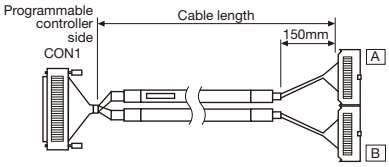
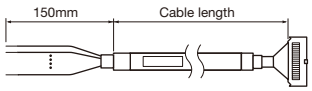
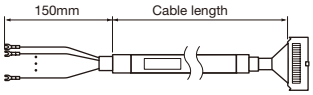
Function type

Connection method	Shape	Input voltage	Color	Quantity	Model
Input		24VDC (relay isolation)	Navy blue	1	FA1-TM1X24RA
				2	FA1-TM1X24RA-2
				4	FA1-TM1X24RA-4
		24VDC (photocoupler isolation)	Black	1	FA1-TM1X24D
				2	FA1-TM1X24D-2
				4	FA1-TM1X24D-4
		48VDC (photocoupler isolation)	Sky blue	1	FA1-TM1X48D
				2	FA1-TM1X48D-2
				4	FA1-TM1X48D-4
		100VDC (photocoupler isolation)	Purple	1	FA1-TM1X100D
				2	FA1-TM1X100D-2
				4	FA1-TM1X100D-4
		100VAC (photocoupler isolation)	Orange	1	FA1-TM1X100A
				2	FA1-TM1X100A-2
				4	FA1-TM1X100A-4
		200VAC (photocoupler isolation)	Red	1	FA1-TM1X200A
				2	FA1-TM1X200A-2
				4	FA1-TM1X200A-4
		Dummy module (dust protector)	Green	4	FA1-TM1ND4

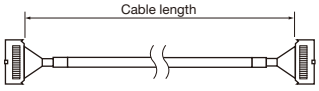
Cables

Connection cables

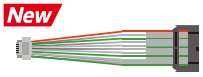
Name		Shape	Remarks	Cable length	Model
MELSEC iQ-R series	Cable for I/O module, 18-pin			1m	FA1-CB1L10EM1F18
				2m	FA1-CB1L20EM1F18
				3m	FA1-CB1L30EM1F18
MELSEC iQ-F series	Cable for sink I/O, 18-pin			1m	FA2-CB1L10EM1F18
				2m	FA2-CB1L20EM1F18
				3m	FA2-CB1L30EM1F18
	Cable for source I/O, 18-pin			1m	FA2-CB1L10EM1F18E
				2m	FA2-CB1L20EM1F18E
				3m	FA2-CB1L30EM1F18E
CC-Link IE TSN series	Cable for input module, 18-pin			1m	FA3-CB1L10EM1F18X
				2m	FA3-CB1L20EM1F18X
				3m	FA3-CB1L30EM1F18X
	Cable for output module, 18-pin			1m	FA3-CB1L10EM1F18Y
				2m	FA3-CB1L20EM1F18Y
				3m	FA3-CB1L30EM1F18Y
MELSEC iQ-R series	Cable for I/O module, 34-pin			1m	FA1-CB1L10EM2F34
				2m	FA1-CB1L20EM2F34
				3m	FA1-CB1L30EM2F34
CC-Link IE TSN series CC-Link IE Field Basic series	Cable for input module, 34-pin			1m	FA3-CB1L10EM2F34X
				2m	FA3-CB1L20EM2F34X
				3m	FA3-CB1L30EM2F34X
	Cable for output module, 34-pin			1m	FA3-CB1L10EM2F34Y
				2m	FA3-CB1L20EM2F34Y
				3m	FA3-CB1L30EM2F34Y
MELSEC iQ-R/Q/L series	Branch cable for I/O (vertical connector)			0.6m	FA-CBL06FM2V
				1m	FA-CBL10FM2V
				1.5m	FA-CBL15FM2V
				2m	FA-CBL20FM2V
				3m	FA-CBL30FM2V
				5m	FA-CBL50FM2V
				10m	FA-CBL100FM2V
	Split cable for I/O (vertical connector)			0.6m	FA-CBL06FM2LV
				1m	FA-CBL10FM2LV
				2m	FA-CBL20FM2LV
				3m	FA-CBL30FM2LV
				5m	FA-CBL50FM2LV
				10m	FA-CBL100FM2LV
MELSEC iQ-R/Q series	Terminal block cable for I/O			0.6m	FA-CBL06TMV20
				1m	FA-CBL10TMV20
				2m	FA-CBL20TMV20
				3m	FA-CBL30TMV20
MELSEC iQ-F/F series	Straight power cable (sink)			0.6m	FA-FXCBL06MMH20
				1m	FA-FXCBL10MMH20
				1.5m	FA-FXCBL15MMH20
				2m	FA-FXCBL20MMH20
				3m	FA-FXCBL30MMH20
	Crossover power cable (source)			0.6m	FA2-CB1L06MM1H20E
				1m	FA2-CB1L10MM1H20E
				1.5m	FA2-CB1L15MM1H20E
				2m	FA2-CB1L20MM1H20E
				3m	FA2-CB1L30MM1H20E
	Straight power cable for temperatures down to -20°C (sink)			1m	FA2-CB1LT10MM1H20
				2m	FA2-CB1LT20MM1H20
				3m	FA2-CB1LT30MM1H20
	Crossover power cable for temperatures down to -20°C (source)			1m	FA2-CB1LT10MM1H20E
				2m	FA2-CB1LT20MM1H20E
				3m	FA2-CB1LT30MM1H20E

Name		Shape	Remarks	Cable length	Model
CC-Link IE Field series CC-Link series	Horizontal branch cable for I/O			0.3m	FA-CBL03FM2H
				1m	FA-CBL10FM2H
				2m	FA-CBL20FM2H
				3m	FA-CBL30FM2H
	Split cable for I/O (horizontal connector)			1m	FA-CBL10FM2LH
				2m	FA-CBL20FM2LH
				3m	FA-CBL30FM2LH
				5m	FA-CBL50FM2LH
CC-Link IE TSN series CC-Link IE Field series CC-Link IE Field Basic series Non-Mitsubishi PLC	Discrete cable for I/O			0.6m	FA-CBL06M20
				1m	FA-CBL10M20
				2m	FA-CBL20M20
	Y-shaped crimp terminal cable for I/O			1m	FA-CBL10YM20
				2m	FA-CBL20YM20
				3m	FA-CBL30YM20
				5m	FA-CBL50YM20

Cable for dispersed installation of 8-point/4-point installation base units

Name	Shape	Remarks	Cable length	Model
Cable for dispersed installation of 8-point/4-point installation base units			0.6m	FA-CBL06MMH20
			1m	FA-CBL10MMH20
			2m	FA-CBL20MMH20
			3m	FA-CBL30MMH20
			5m	FA-CBL50MMH20

ASLINKTERMINAL connection cable

Name	Shape	Remarks	Cable length	Model
Connection cable between AnyWire small 8-point terminal and digital signal converter	New 	ASLINKTERMINAL connection cable	0.1m	FA4-CB4L01ZM12

Cable for transition wiring of common terminals

Name	Shape	Remarks	Quantity	Cable length	Model
Pre-fabricated cable with ferrules for transition wiring of common terminals		• This is used to wire the common terminals of spring clamp terminals. • Common terminals can be shared according to the customer's needs. Example: Connecting C0 through CF indicates 16 points/common Example: Connecting C0 through C3 indicates 4 points/common	A set of 15 cables	60mm	FA1-SC1W006F-15

■ Applicable ferrules and crimping tools

Applicable wire size	Applicable ferrule	Crimping tool	Manufacturer
0.25mm^2 / 24 AWG	AI 0,25-8 YE	CRIMPFOX 6	PHOENIX CONTACT GmbH & Co. KG
0.3 and 0.34mm^2 / 22 AWG	AI 0,34-8 TQ		
0.5mm^2 / 20 AWG	AI 0,5-8 WH		
0.75mm^2 / 18 AWG	AI 0,75-8 GY		
0.08 to 0.34mm^2 / 28 to 22 AWG	216-302	206-220	WAGO Company of Japan, Ltd
0.34mm^2 / 24 and 22 AWG	216-302	206-204 206-1204	
0.5mm^2 / 22 and 20 AWG	216-201		
0.75mm^2 / 20 and 18 AWG	216-202		

■ Recommended product

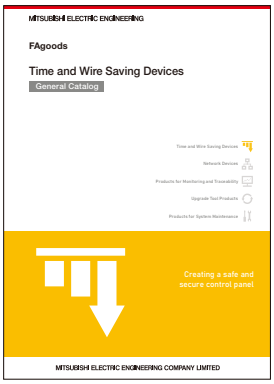
Item	Specifications
Name	Test plug
Model	MPS-MT 1-S
Manufacturer	PHOENIX CONTACT GmbH & Co. KG
Test pin	Φ 1.0mm
Socket*1	Φ 2.0mm
Cable length	150mm

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

■ Related catalogs

Digest edition

Time and Wire Saving Devices



■ Related leaflets

Analog Signal Converters (MEIC220E·21Y)

Network Interface Modules (MEIC215E·214)

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