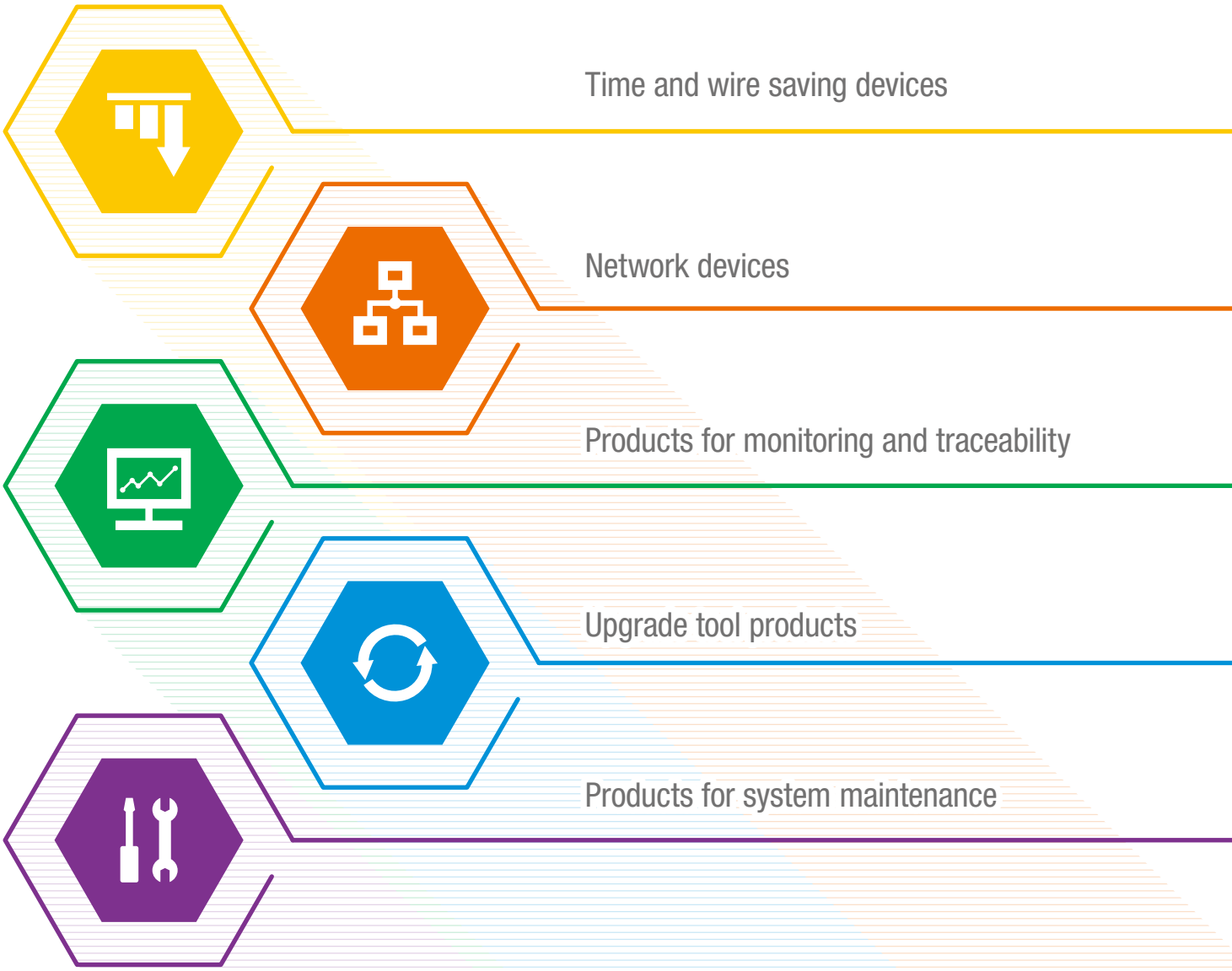
MITSUBISHI ELECTRIC ENGINEERING

FAgoods

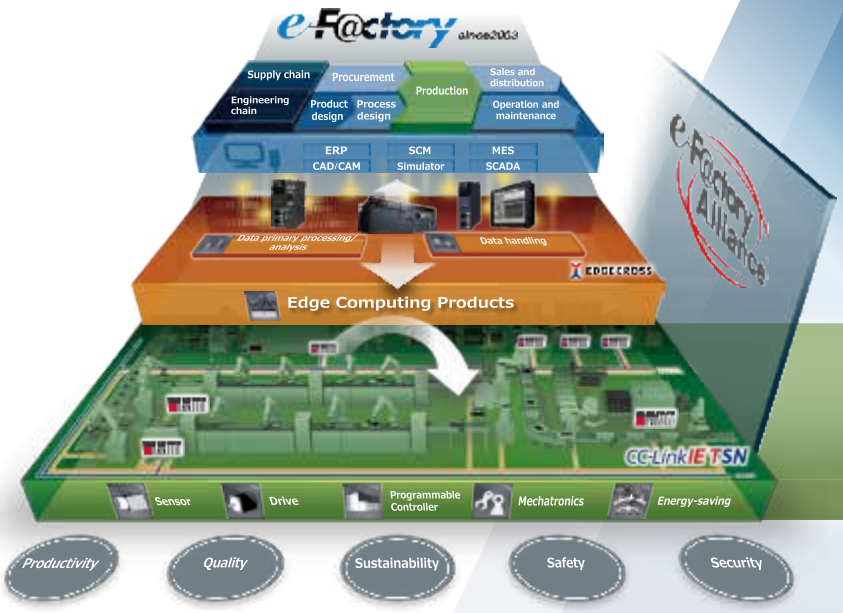
Digest edition

General Catalog



2022-23

MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED



Source: Mitsubishi Electric Corporation

e-F@ctory

Manufacturing can be optimized by analyzing and utilizing the data collected from various devices and equipment connected with IoT in developing, manufacturing, and logistics processes.
Our high technical capability and quality and technique to link FA devices and IT system will offer solutions for next-generation manufacturing such as mass customization, preventive maintenance, and traceability.

Fields of manufacturing are changing and to be changed

Labor-saving will support future manufacturing as the number of workers is decreasing today.
Our products provide five methods for innovative solutions according to fields of manufacturing.

Five methods for smart factory

Time and wire saving devices

Easy wiring for innovative solutions

Our products can offer innovative solutions by reducing wiring work for PLCs (programmable controllers), servo systems, HMIs (Human Machine Interfaces), and computerized numerical controllers (CNCs).

Network devices

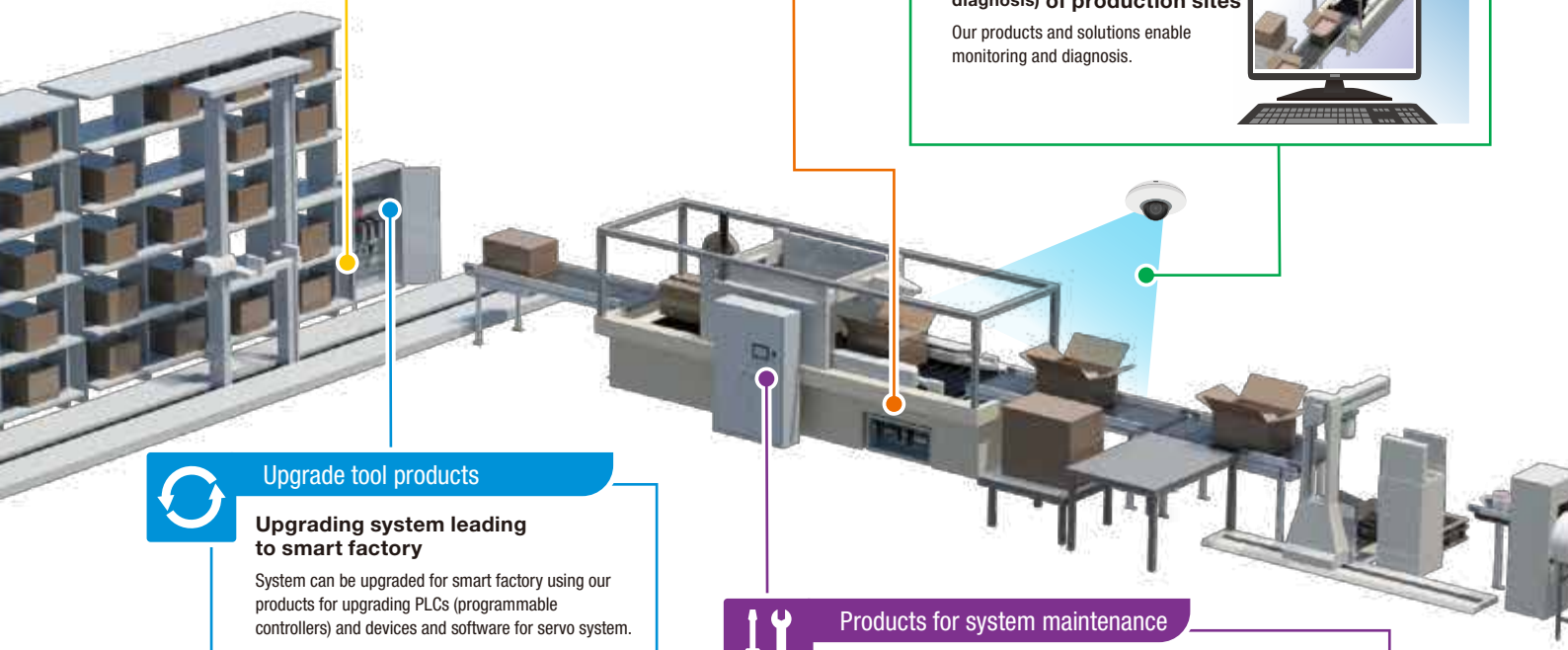
Introduction of small-scale IoT to reform production sites

We provide products to use the CC-Link family, SSCNET, or FL-net communication.

Products for monitoring and traceability

Visualization (monitoring and diagnosis) of production sites

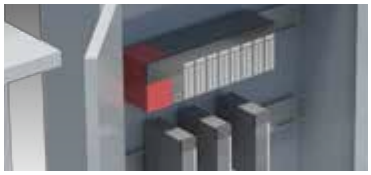
Our products and solutions enable monitoring and diagnosis.



Upgrade tool products

Upgrading system leading to smart factory

System can be upgraded for smart factory using our products for upgrading PLCs (programmable controllers) and devices and software for servo system.



Products for system maintenance

Stable operation for productivity improvement

We provide products to reduce cost and time for maintenance in production sites.

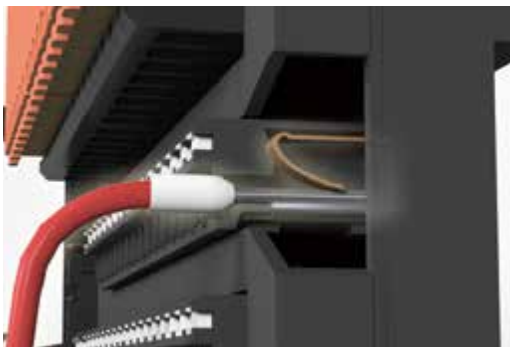
Time and wire saving devices

CHAPTER 01

Easy wiring for innovative solutions

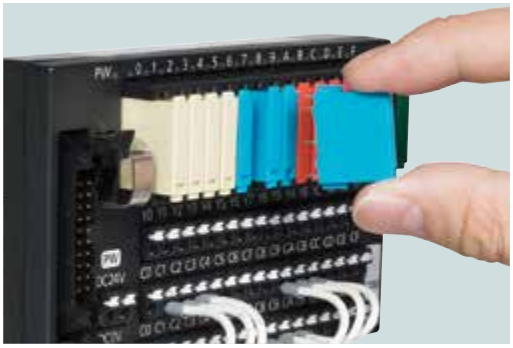
Our products can offer innovative solutions by reducing wiring work for Mitsubishi Electric programmable controllers, servo systems, HMIs (GOTs), and computerized numerical controllers (CNCs).
Our products are also available for non-Mitsubishi PLCs.

Easy push-in connection



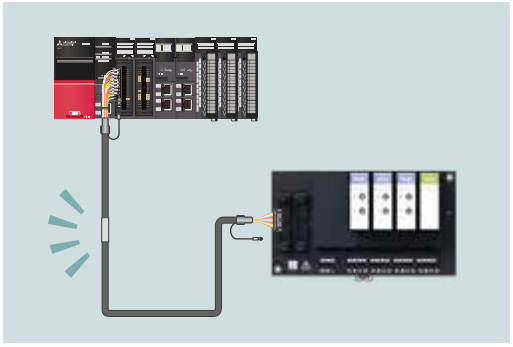
Push-in connection is available for the spring clamp terminal block, reducing cost and time for wiring and maintenance.

Customization of output modules



Cost and time for wiring and initial/ maintenance cost can be reduced by combining output modules on an installation base unit.

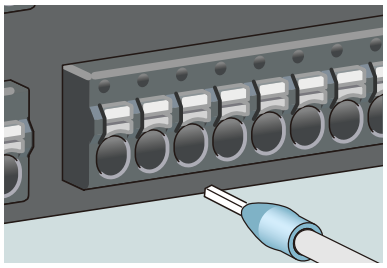
Simple wiring



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

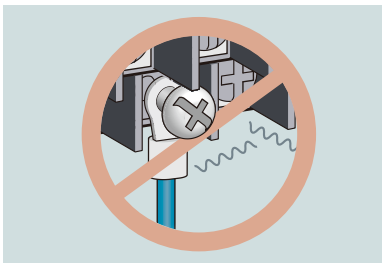
Three merits of no screw connection

Easy wiring



- Significant reduction in cost and time for screw-tightening
- No need for a screwdriver due to push-in connection
- Reduction in cost and time for wire-modification (stranded/solid wire)

Stable connection



No risks arising from screw-loosening due to vibration or long-term use

Less maintenance

No need for retightening work at delivery or inspection of the control panel or devices

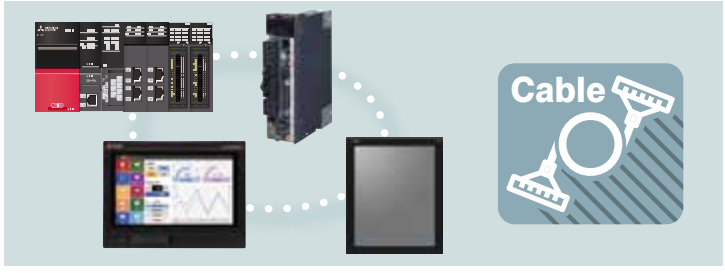
Optimum device connection with one programmable controller module

Digital signal converter for input signals		Digital signal converter for output signals		Analog signal converter for input signals		Analog signal converter for output signals	
New Spring clamp type (4/8/16-point)	Screw type (16-point)	New Spring clamp type (4/8/16-point)	Screw type (16-point)	New Spring clamp type (4-channel)	New Screw type (4/8-channel)	New Spring clamp type (4-channel)	New Screw type (4/8-channel)

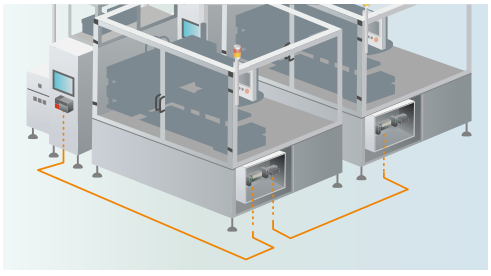



Devices		Devices	
Input	Switch, limit switch, proximity sensor, etc.	Input	Temperature/humidity/vibration/flow/pressure sensor, laser distance sensor, etc.
Output	Magnetic starter, indication lamp, etc.	Output	Solenoid valve, recorder, etc.

Easy wiring for programmable controller, servo, and HMI with one cable



Using dedicated cables reduces cost and time for prior check of pin layout and wiring.
Easy wiring leads to innovative solutions.



Network connection makes wiring easier between the control panel and devices.
(For details, refer to pages 18 and 19.)

Configuration diagram

CONTROLLER

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

CPU module
I/O module
Analog module
High-speed counter module
Positioning module

CC-Link IE TSN
CC-Link IE Field
CC-Link IE Field Basic
CC-Link family networks
Network

Cable
Cable
Cable
Cable

Network interface module

Junction terminal block
Junction terminal block
Junction terminal block

Cable

FA goods

Digital signal converter (terminal module)
Analog signal converter
Analog signal converter

DEVICE

HMI
Computer, etc.

AC/DC magnetic starter
DC switch
AC/DC limit switch
DC pilot lamp
AC relay, etc.

Servo amplifier (torque control)
Inverter (speed control), etc.

Temperature sensor
Humidity sensor
Vibration sensor
Flow sensor
Concentration sensor
Pressure sensor
Laser distance sensor, etc.

Encoder
Pulse generator
Servo amplifier, etc.

Temperature sensor
Humidity sensor
Vibration sensor
Flow sensor
Concentration sensor
Pressure sensor
Laser distance sensor, etc.

SLMP
CC-Link
AnyWireASLINK
MODBUS/TCP
Other network

MR-J5 series MR-J4 series
Servo amplifier

GT2000 series GT1000 series
HMI

M800/M80 series
Computerized numerical controller (CNC)
Remote I/O module

Cable

Anywire's ASLINKTERMINAL

CC-Link goods

Digital signal converter (terminal module)

FLS/RLS/DOG signal-specialized network amplifier terminal block

Network amplifier junction terminal block

Junction terminal block for servo motors with brakes

General-purpose interface amplifier junction terminal block

Panel mount HMI speaker

GOT goods

Junction terminal block

AC/DC magnetic starter DC switch AC/DC limit switch DC pilot lamp AC relay, etc.	Remote I/O module	Sensor Relay Pulse generator, etc.	Temperature controller, etc.	AC/DC magnetic starter DC switch AC/DC limit switch DC pilot lamp AC relay, etc.

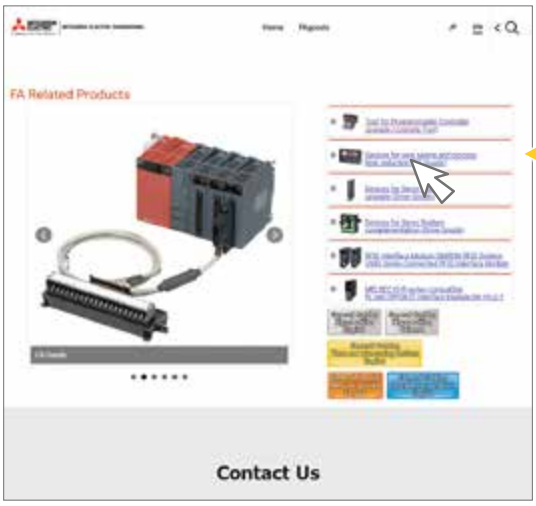
Easy selection

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).

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

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

1 Click "Devices for wire saving and process time reduction (FAgoods)".



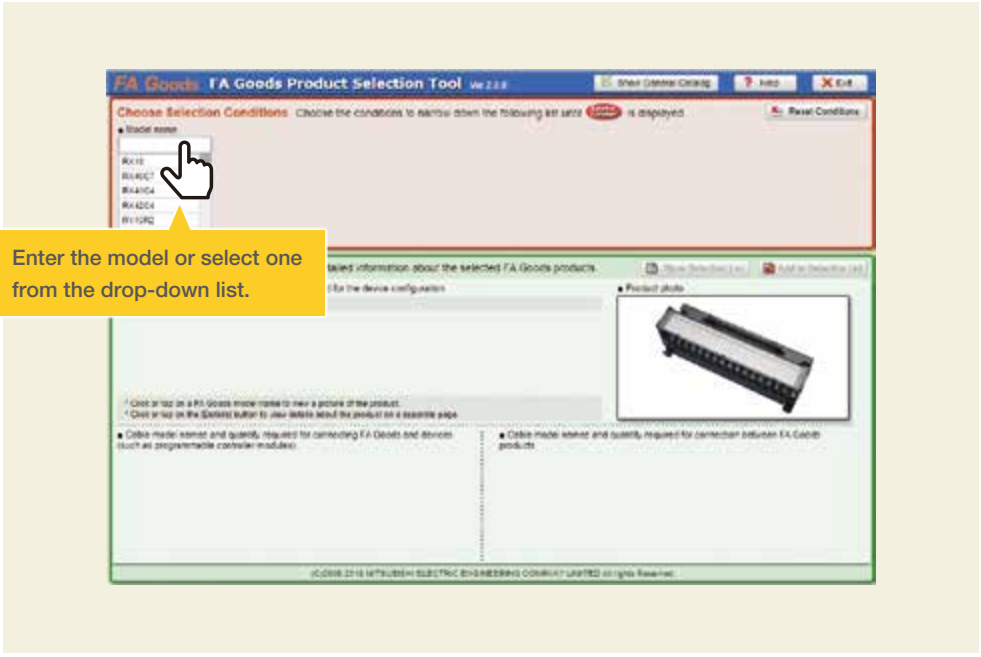
Click

2 Click the [FAgoods Product Selection Tool] button.

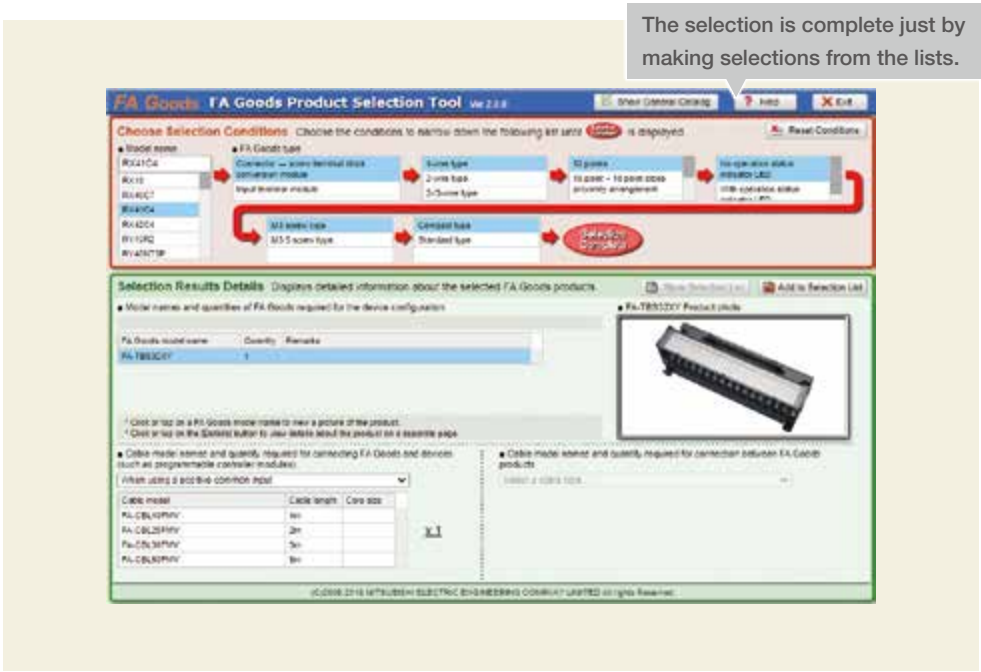
Click

The FAgoods product selection tool starts.

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.)



4 In the "FAgoods 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.



SPOTLIGHT »

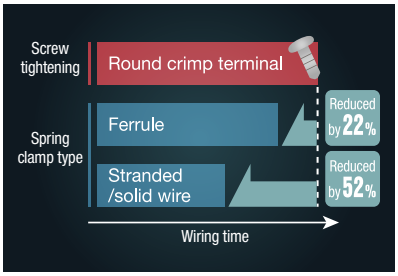
Spring clamp terminal block

FA1-TESV32XY, etc.

Features of the spring clamp terminal block

The spring clamp terminal block does not require screws.
Wires can be easily pushed into the conductive terminals without using a screwdriver.

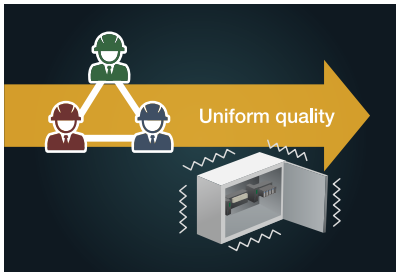
Easy wiring



Wiring time can be significantly reduced by push-in connection.

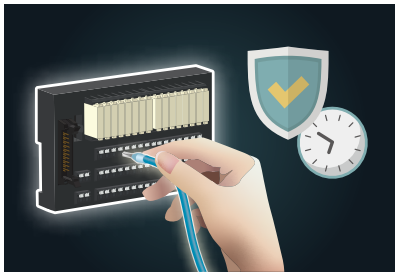
* Calculated by comparing the time taken by non-experts with two years of experience (Data sourced from Japan Switchboard & control system Industries Association)

Stable connection



Screws are vibration resistant. Uniform quality is guaranteed for wiring since no special skills are required.

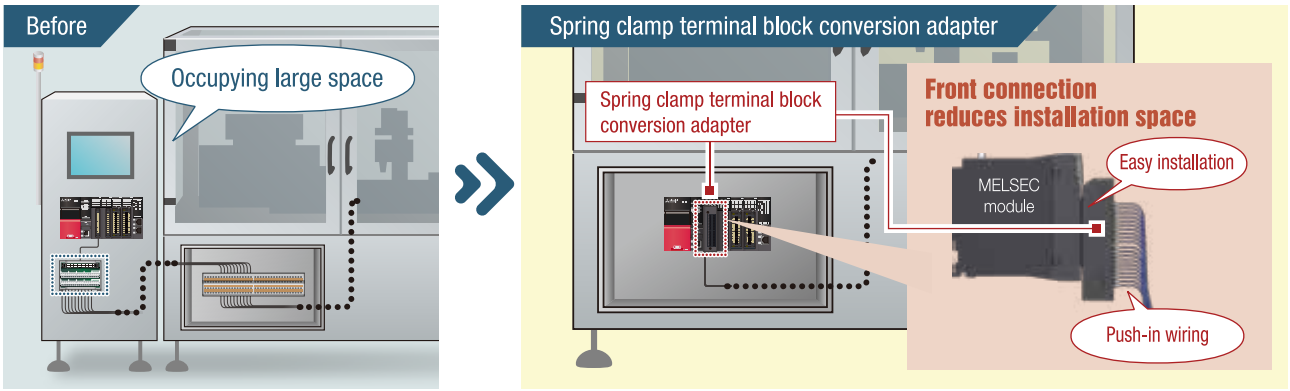
Less maintenance



Screw tightening during maintenance is not required, reducing work load of workers. Rewiring work is also facilitated by push-in connection.

Changing from connector type to spring clamp type enabling wire saving, connection quality stability, and reduction in cost and time for maintenance

Replacement



Less space is required as the conversion adapter is installed on the front of the module and an external terminal block is not required.

Products with spring clamp terminal block

For programmable controllers and computerized numerical controllers (CNCs)

Specifications				Model
Junction terminal block 	I/O module	32-point	Vertical type	FA1-TESV32XY
			Horizontal type	FA1-TE1S32XY
		16-point	Vertical type	FA1-TE1SV16XY
	Common terminal block module	38-point	Vertical type	FA1-TESV38COM

For programmable controllers

Cable with spring clamp terminal block P.16 >

Specifications					Model	
Spring clamp terminal block conversion adapter 		40-point	Vertical type		FA1-TE40PA	
Digital signal converter (terminal module) 	Input module	4-point	Installation base unit (module selectable type)	Functional module	Positive/negative shared type	FA1-TH4X2SC20S1E
		8-point				FA1-TH8X2SC20S1E
		4-point	Module pre-mounted type (N/O contact)	Slim module	Positive common	FA1-TH4X24RA1L20S1E New
					Negative common	FA1-TH4X24RA1H20S1E New
		8-point			Positive common	FA1-TH8X24RA1L20S1E New
					Negative common	FA1-TH8X24RA1H20S1E New
		16-point			Positive common	FA1-TH16X24RA1L20S1E
					Negative common	FA1-TH16X24RA1H20S1E
	Output module	4-point	Installation base unit (module selectable type)	Slim module	Sink	FA1-TH4Y2SC20S1E New
					Source	FA1-TH1E4Y2SC20S1E New
		8-point			Sink	FA1-TH8Y2SC20S1E New
					Source	FA1-TH1E8Y2SC20S1E New
		16-point	Installation base unit (module selectable type)		Sink	FA1-TH16Y2SC20S1E
					Source	FA1-TH1E16Y2SC20S1E
			Module pre-mounted type (N/O contact)		Sink	FA1-TH16Y2RA20S1E
					Source	FA1-TH1E16Y2RA20S1E
			Module pre-mounted type (triac)		Sink	FA1-TH16Y1SR20S1E
					Source	FA1-TH1E16Y1SR20S1E
			Module pre-mounted type (transistor)		Sink	FA1-TH16Y1TR20S1E
					Source	FA1-TH1E16Y1TR20S1E
Analog signal converter 	Voltage input	4-point	Installation base unit (module selectable type)	Input to programmable controller: 1 to 5V	FA1-AT1B4X1TE	New
	Current/voltage output			Output from programmable controller: 4 to 20mA, 1 to 5V	FA1-AT1B4Y1TE	New

For servo systems

Specifications				Model
Junction terminal block for servo motors with brakes 	Screw installation available	1-axis	Sink/source shared type	DG2BK1TB
	DIN rail installation			DG2BK1TB-D
General-purpose interface amplifier junction terminal block 	Full signal	1-axis		DG2SV1TB
Network amplifier junction terminal block 	Full signal	1-axis		DG2SV3TB
FLS/RLS/DOG signal-specialized network amplifier terminal block 	Mechanical signal	1-axis		DG2SV2TB
		2-axis		DG2SV2TB2
		3-axis		DG2SV2TB3

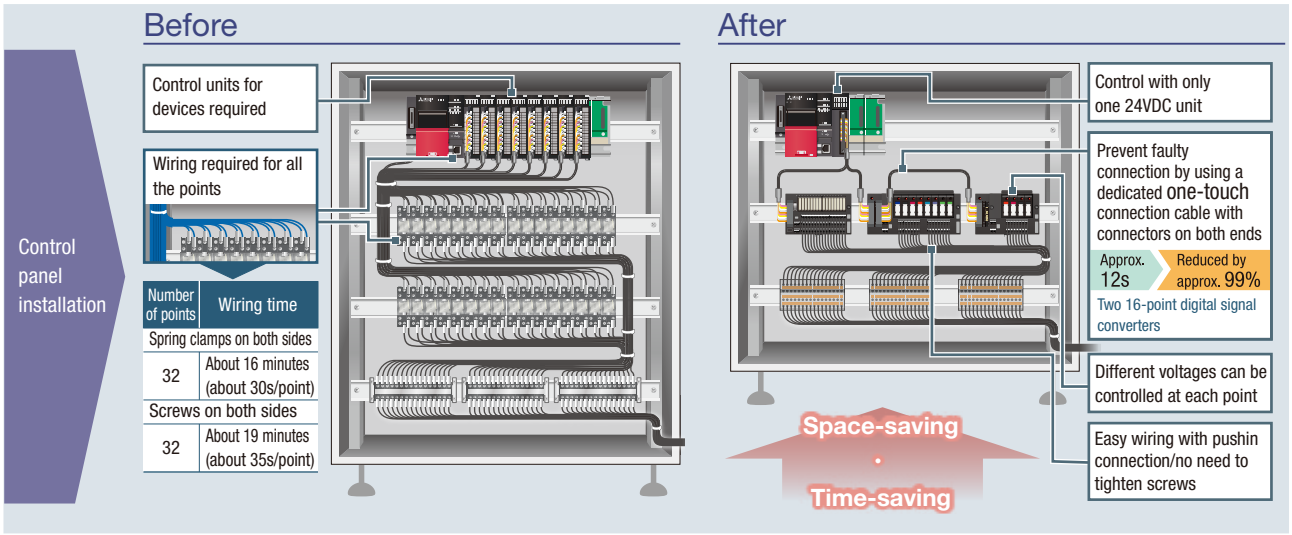
Digital signal converter (terminal module)

FA1-TH4X24RA1L20S1E, etc.

Features of the digital signal converter (terminal module)

Digital signals from a programmable controller can be converted to signals suitable for the connected devices such as a magnetic starter (example: from 24VDC signal to 200VAC signal).
One terminal module supports connections with multiple devices with different voltage loads.

System optimization and time, wire saving



One digital signal converter (terminal module) can be used to connect input signals from devices with different voltages. This helps save space in the control panel. Wiring time and maintenance costs can also be reduced thanks to a dedicated cable and spring clamp terminal block.

Dispersed installation near devices

Optimum configuration using applicable combinations of devices

4 points in total	4-point			
8 points in total	8-point			
	4-point	4-point		
12 points in total	8-point	4-point		
	4-point	4-point	4-point	
16 points in total	16-point			
	8-point	8-point		
	8-point	4-point	4-point	
	4-point	4-point	4-point	4-point

8-point and 4-point installation base units can be combined (max. 16 points).

Module lineup

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

Slim module: Less space is required as the terminal module is also compact.

Functional module: No dedicated tools are required for replacement. An LED is provided on a module.

Product list

Digital signal converter (terminal module) for input signals

Installation base unit					Module			Model
Specifications					Type	Replacement	Mixing	
Installation base unit (module selectable type)		Spring clamp	4-point	Independent (positive/negative shared type)	Functional	Possible	Possible	FA1-TH4X2SC20S1E
			8-point	Independent (positive/negative shared type)	Functional	Possible	Possible	FA1-TH8X2SC20S1E
Module pre-mounted type	N/O contact relay module pre-mounted	Spring clamp	4-point	Independent (positive)	Slim	Possible	Possible	FA1-TH4X24RA1L20S1E New
				Independent (negative)		Possible	Possible	FA1-TH4X24RA1H20S1E New
			8-point	Independent (positive)	Slim	Possible	Possible	FA1-TH8X24RA1L20S1E New
				Independent (negative)		Possible	Possible	FA1-TH8X24RA1H20S1E New
			16-point	Independent (positive)	Slim	Possible	Possible	FA1-TH16X24RA1L20S1E
				Independent (negative)		Possible	Possible	FA1-TH16X24RA1H20S1E
	24VDC relay module pre-mounted	Screw (M3)	16-point	Independent (N/O contact)		Possible	Possible	FA-TH16XRA20S
Module built-in type	24VDC relay module pre-mounted	Screw (M3)	16-point	1-common, 2-wire type	-	Not possible	Not possible	FA-TH16X24D31
		Screw (M3.5)				Not possible	Not possible	FA-TH16X24D31L
	48VDC relay module pre-mounted	Screw (M3.5)	16-point	1-common, 2-wire type		Not possible	Not possible	FA-TH16X48D31L
	100VDC relay module pre-mounted	Screw (M3.5)	16-point	1-common, 2-wire type		Not possible	Not possible	FA-TH16X100D31L
	100VAC relay module pre-mounted	Screw (M3)	16-point	1-common, 2-wire type		Not possible	Not possible	FA-TH16X100A31
		Screw (M3.5)				Not possible	Not possible	FA-TH16X100A31L
	200VAC relay module pre-mounted	Screw (M3)	16-point	1-common, 2-wire type		Not possible	Not possible	FA-TH16X200A31
		Screw (M3.5)				Not possible	Not possible	FA-TH16X200A31L

Digital signal converter (terminal module) for output signals

Installation base unit					Module			Model
Specifications					Type	Replacement	Mixing	
Installation base unit (module selectable type)		Spring clamp	4-point	Independent (sink)	Slim	Possible	Possible	FA1-TH4Y2SC20S1E New
				Independent (source)		Possible	Possible	FA1-TH1E4Y2SC20S1E New
			8-point	Independent (sink)	Slim	Possible	Possible	FA1-TH8Y2SC20S1E New
				Independent (source)		Possible	Possible	FA1-TH1E8Y2SC20S1E New
			16-point	Independent (sink)	Slim	Possible	Possible	FA1-TH16Y2SC20S1E
				Independent (source)		Possible	Possible	FA1-TH1E16Y2SC20S1E
Module pre-mounted type	N/O contact relay module pre-mounted	Spring clamp	16-point	Independent (sink)	Slim	Possible	Possible	FA1-TH16Y2RA20S1E
				Independent (source)		Possible	Possible	FA1-TH1E16Y2RA20S1E
		Screw type (M3)	16-point	Independent (sink)	Slim	Possible	Possible	FA-TH16YRA20S
						Not possible	Not possible	FA-TH16YRA20
		Screw (M3.5)	16-point			Possible	Possible	FA-TH16YRA20SL
		Screw (M3)	16-point	Independent (source)	Slim	Possible	Possible	FA1-TH1E16Y2RA20S
		Screw (M3)	16-point	1-common, 1-wire type	Slim	Possible	Not possible	FA-TH16YRA11S
						Not possible	Not possible	FA-TH16YRA11
		Screw (M3)	16-point	1-common, 2-wire type	Slim	Possible	Not possible	FA-TH16YRA21S
						Not possible	Not possible	FA-TH16YRA21
	N/C contact relay module pre-mounted	Screw (M3.5)	16-point	Independent	Slim	Possible	Possible	FA-TH16YRAB20SL
	C/O contact relay module pre-mounted	Screw (M3)	16-point	Independent	Slim	Possible	Not possible	FA-TH16YRAC20S
	Triac module pre-mounted	Spring clamp	16-point	Independent (sink)	Slim	Possible	Possible	FA1-TH16Y1SR20S1E
				Independent (source)		Possible	Possible	FA1-TH1E16Y1SR20S1E
		Screw (M3)	16-point	Independent (sink)	Slim	Possible	Possible	FA-TH16YSR20S
				1-common, 1-wire type		Possible	Not possible	FA-TH16YSR11S
				1-common, 2-wire type		Possible	Not possible	FA-TH16YSR21S
	Transistor module pre-mounted	Spring clamp	16-point	Independent (sink)	Slim	Possible	Possible	FA1-TH16Y1TR20S1E
				Independent (source)		Possible	Possible	FA1-TH1E16Y1TR20S1E
		Screw (M3)	16-point	1-common, 1-wire type (sink)		Possible	Possible	FA-TH16YTH11S
				1-common, 1-wire type (sink)		Possible	Not possible	FA-TH16YTL11S
				1-common, 2-wire type (sink)		Possible	Not possible	FA-TH16YTL21S
				1-common, 1-wire type (source)		Possible	Not possible	FA-TH16YTR20S
				1-common, 1-wire type (source)		Possible	Not possible	FA-THE16YTH11S
				Independent (source)		Possible	Possible	FA-THE16YTR20S
Module built-in type	Transistor module pre-mounted	Screw (M3)	16-point	Independent (2A output) (sink common)	-	Not possible	Not possible	FA-TH16Y2TR20

Slim module

Type	Color	Model
N/O contact relay (quantity: 2 or 4)	Beige	FA-NYP24WK*
N/C contact relay (quantity: 2 or 4)	Sky blue	FA-NYBP24WK*
C/O contact relay (quantity: 4)	White	FA-LYCA024VSK4
Triac (quantity: 2 or 4)	Black	FA-SN24A01FS*
Transistor (quantity: 2 or 4)	Red	FA-SN24D01HZS*
Signal pass-through (quantity: 4)	Green	FA-SN00SS4

The asterisk in the model name is replaced by a number indicating the quantity.
It is replaced by "2" when the quantity is two, or "4" when the quantity is four.

Functional module

Type	Color	Model
100VAC photocoupler	Orange	FA1-TM1X100A-*
200VAC photocoupler	Red	FA1-TM1X200A-*
24VDC photocoupler	Black	FA1-TM1X24D-*
48VDC photocoupler	Blue	FA1-TM1X48D-*
100VDC photocoupler	Purple	FA1-TM1X100D-*
24VDC relay	Navy blue	FA1-TM1X24RA-*
Dummy	Green	FA1-TM1ND4

The asterisk in the model name is replaced by a number indicating the quantity.
It is replaced by "2" when the quantity is two, or "4" when the quantity is four.

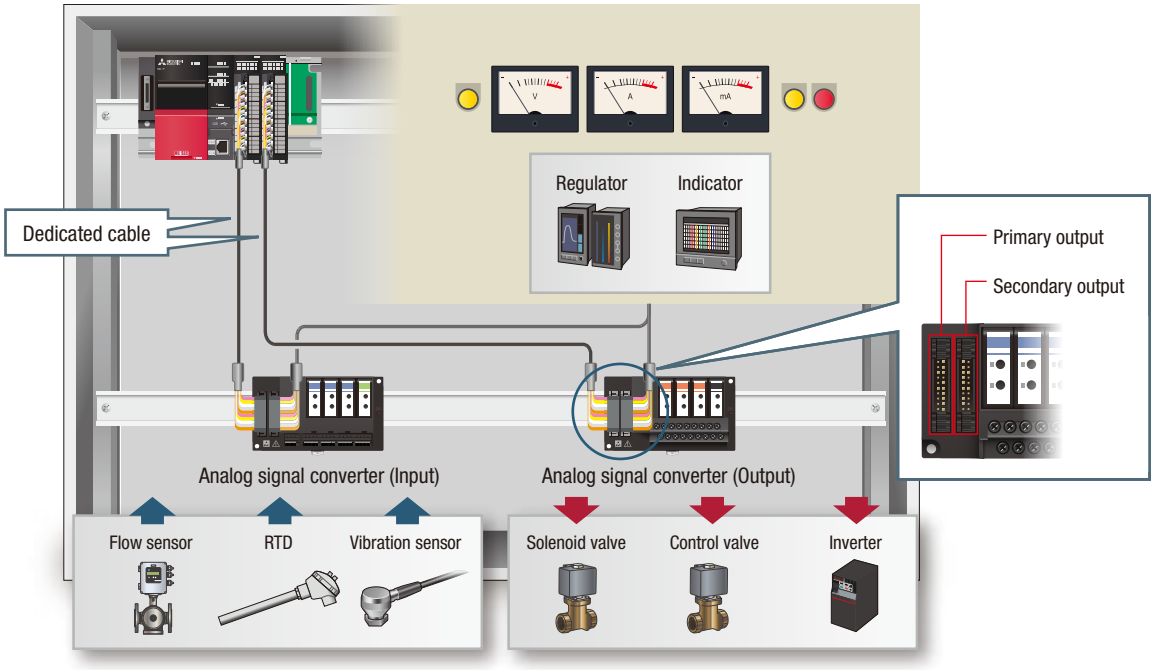
Analog signal converter

FA1-AT1B4X1TE, etc.

Features of the analog signal converter

Analog signals from the connected devices such as sensors can be converted to signals suitable for a programmable controller (example: from a temperature signal to a voltage signal).
Data from sensors can be visualized easily, and small-scale IoT can be introduced.

Visualization of various analog signals

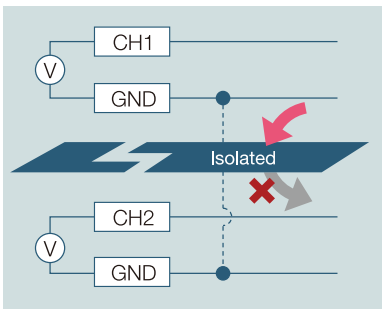


An optimal module can be mounted for each channel, and using the secondary output function enables easy wiring to devices such as regulators. Thus, data of the devices such as sensors can be easily visualized.
In addition, the dedicated cables enable time and wire saving for connection of a programmable controller module.

Individual customization of conversion modules

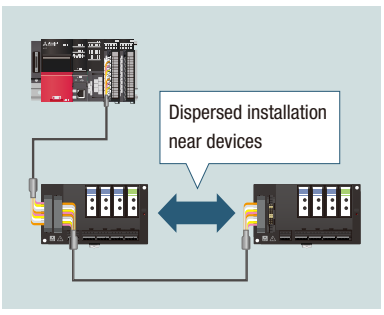
Signal conversion modules can be selected individually for the sensor type. Modules can be easily replaced separately without a screwdriver.

Isolation between channels



Isolation between channels prevents the undesirable current from flowing and improves the noise resistance.

Optimum installation



Modules for eight channels can be mounted individually in the signal converters at dispersed sites near devices such as sensors.
The signal converters can be connected using the dedicated cables or via network.

Product list

Analog signal converter for input signals

For details on the input ranges of RTD and thermocouple temperature, contact us.

Type					Model
Installation base unit	4-channel	Spring clamp	External power supply: 24VDC		FA1-AT1B4X1TE New
		Screw (M3)			FA1-AT1B4X1TB New
	8-channel	Screw (M3)	External power supply: 24VDC		FA-ATB8XTB
			For adapter installation. External power supply: 24VDC		FA-ATKB8XTB
Conversion adapter	Output 1: 4 to 20mA, Allowable load resistance: 250 to 350Ω Output 2: 4 to 20mA, Allowable load resistance: 600Ω or less				FA-ATKAA8XM
Voltage input module	Isolator	0 to 5V	Connectable device	· Humidity sensor · Vibration sensor · Flow meter · Wattmeter · Pressure sensor · Laser distance sensor	FA-ATSVM1XV05
		1 to 5V			FA-ATSVM1XV15
		-10 to 10V			FA-ATSVM1XV1010
Current input module	Isolator	4 to 20mA			FA-ATSVM1XA420
2-wire transmitter module	Distributor	4 to 20mA			FA-ATSVM1XD
RTD input module	RTD	JPt100, -200 to 600°C		· Thermocouple · RTD	FA-ATSVM1XRJPT
		Pt100, -200 to 650°C			FA-ATSVM1XRPT
		Pt100, 0 to 100°C			FA-ATSVM1XRPT0010
		Pt100, 0 to 200°C			FA-ATSVM1XRPT0020
Thermocouple temperature input module	Thermocouple	Type B thermocouple, +600 to +1700°C		· RTD	FA-ATSVM1XTB
		Type S thermocouple, 0 to +1600°C			FA-ATSVM1XTS
		Type E thermocouple, -200 to +900°C			FA-ATSVM1XTE
		Type T thermocouple, -200 to +350°C			FA-ATSVM1XTT
		Type R thermocouple, 0 to +1600°C			FA-ATSVM1XTR
		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 J thermocouple, -40 to +750°C			FA-ATSVM1XTJ
		Type N thermocouple, -200 to +1250°C			FA-ATSVM1XTN
Pass-through module	· Pass-through module for non-isolated signals (1 to 5VDC) · Current to voltage conversion available by shorting external terminals (4 to 20mA converted to 1 to 5VDC)				FA-ATFTMXY
Dummy module	Module to protect empty slots of an installation base unit from dust (quantity: 5).				FA-ATNDM5

Analog signal converter for output signals

Type					Model
Installation base unit	4-channel	Spring clamp	External power supply: 24VDC		FA1-AT1B4Y1TE New
		Screw (M3)			FA1-AT1B4Y1TB New
	8-channel	Screw (M3)	External power supply: 24VDC		FA-ATB8YTB
Voltage output module	Voltage isolator	0 to 5V	Connectable device	· Solenoid valve · Recorder · Temperature controller · Indicator · Inverter (speed control) · Servo amplifier (torque control)	FA-ATSAM1YV05
		1 to 5V			FA-ATSAM1YV15
		0 to 10V			FA-ATSAM1YV010
		-10 to 10V			FA-ATSAM1YV1010
Current output module		0 to 20mA			FA-ATSAM1YA020
		4 to 20mA			FA-ATSAM1YA420
Voltage output module	Current isolator	0 to 5V			FA-ATSVM1YV05
		1 to 5V			FA-ATSVM1YV15
		0 to 10V			FA-ATSVM1YV010
		-10 to 10V			FA-ATSVM1YV1010
Current output module		0 to 20mA			FA-ATSVM1YA020
		4 to 20mA			FA-ATSVM1YA420
Pass-through module	· Pass-through module for non-isolated signals (1 to 5VDC) · Current to voltage conversion available by shorting external terminals (4 to 20mA converted to 1 to 5VDC)				FA-ATFTMXY
Dummy module	Module to protect empty slots of an installation base unit from dust (quantity: 5).				FA-ATNDM5

Cable with spring clamp terminal block

FA1-CB3L03SQ10E1F18, etc.

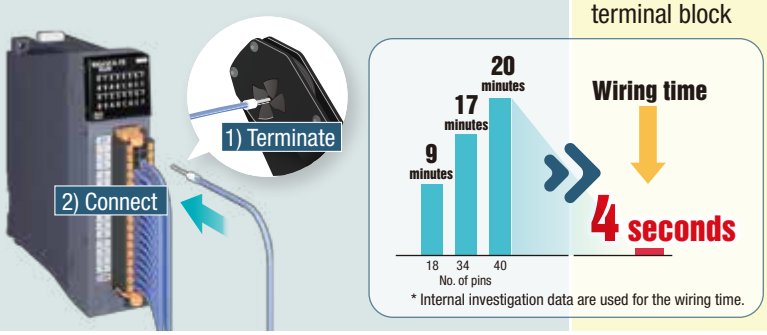
Features of the cable with spring clamp terminal block

Cables are connected in advance to a spring clamp terminal block which can be connected to a control device (programmable controller).

Two processes improved for innovative wiring solutions

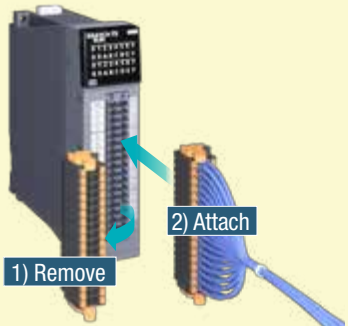
Before

Wire ends terminated / wires connected one by one



After

Just remove and attach the cable with spring clamp terminal block

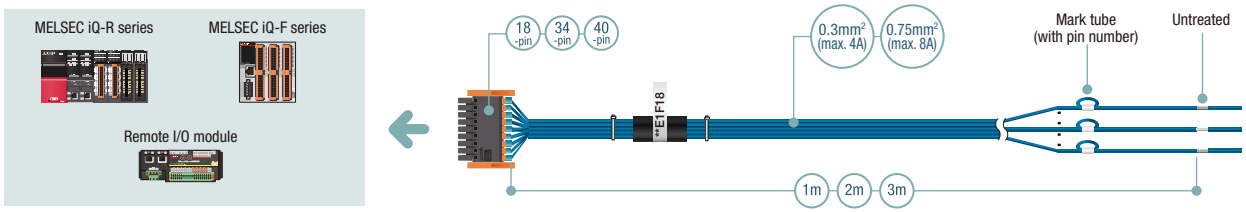


Wiring work is reduced by 99% as cables need not be terminated or connected individually (according to our investigation).

Lineup

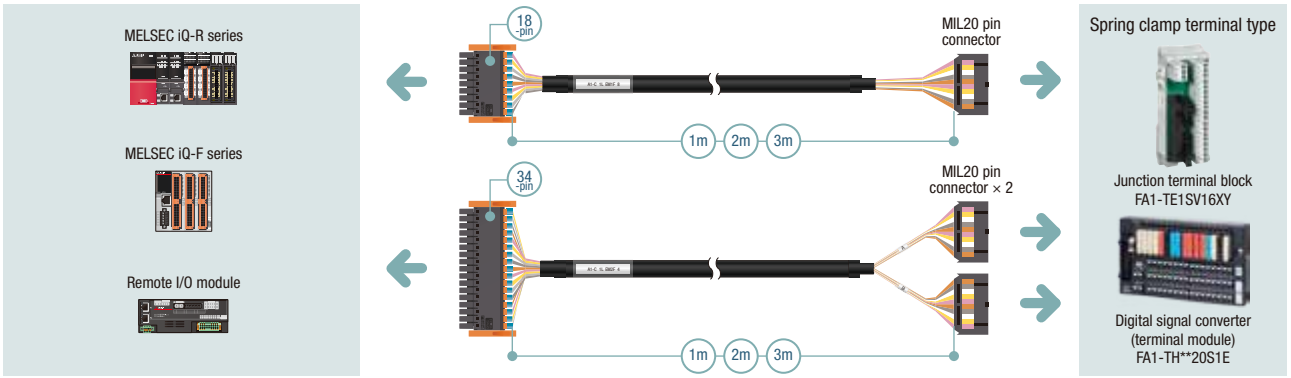
Discrete cable

The cables are used to connect a programmable controller and desired devices.
As the cables are provided for each ampere capacity and not terminated, they can be used freely.



Cable with connector

The cables are used to connect a programmable controller, a junction terminal block, and a digital signal converter.
Using the cables for our products further reduces wiring work.



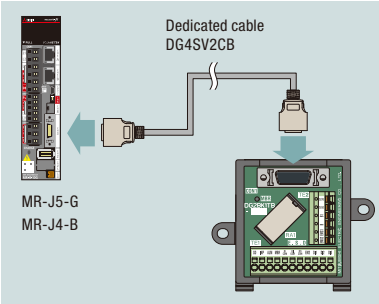
Junction terminal block for servo motors with brakes

DG2BK1TB, etc.

Features of the junction terminal block for servo motors with brakes

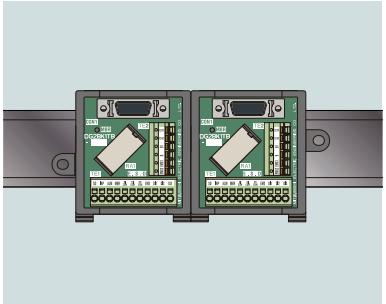
Our recommended brake sequence circuit is built in the junction terminal block for servo motors with brakes. The brake circuit of the servo motor with brake can be smaller.

Less wiring



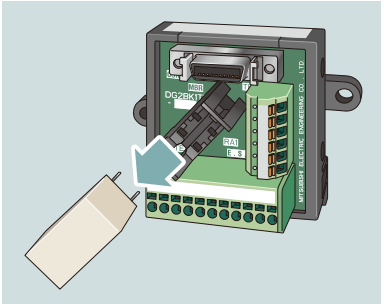
- Easy and reliable wiring connection with a servo amplifier using a dedicated cable
- No need for a screwdriver due to push-in connection

Space saving



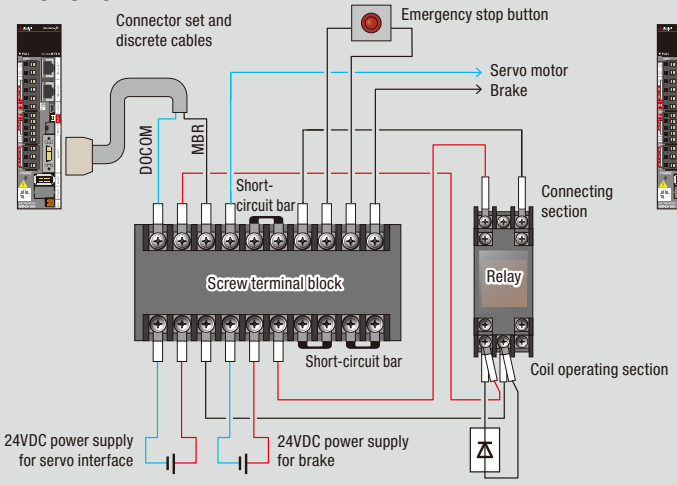
- Compact body with a built-in relay for the brake sequence circuit
- Less installation space due to side-by-side installation on the DIN rail

Easy maintenance

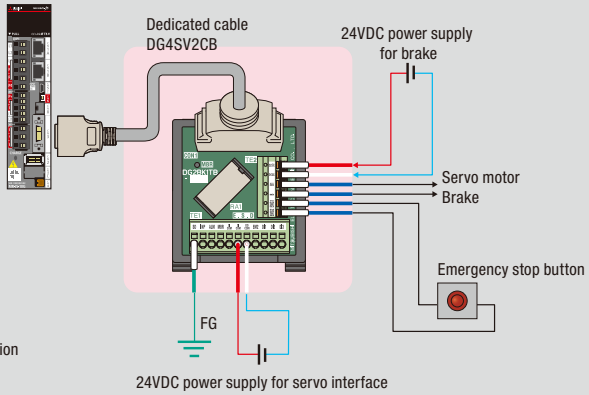


The built-in relay can be replaced without tools.

Before



After



Wiring work for **14** terminals reduced

Wiring with screws for **24** terminals

Push-in connection for **10** terminals (Retightening not required)

When the existing terminal block does not have a built-in relay

When an external relay is used, wiring is required to connect a servo amplifier, junction terminal block, and terminal block of the relay. The junction terminal block for servo motors with brakes has a built-in relay, which enables wire and space savings.

Network devices

CHAPTER 02

Introduction of small-scale IoT to reform production sites

We provide products to be connected to industrial networks, which are necessary to rapidly-advancing introduction of IoT in factories.
We support introduction of IoT in factories by providing methods to use networks to visualize data and images and to link devices and machines, and providing contracted development of network devices.

Introduction of small-scale IoT

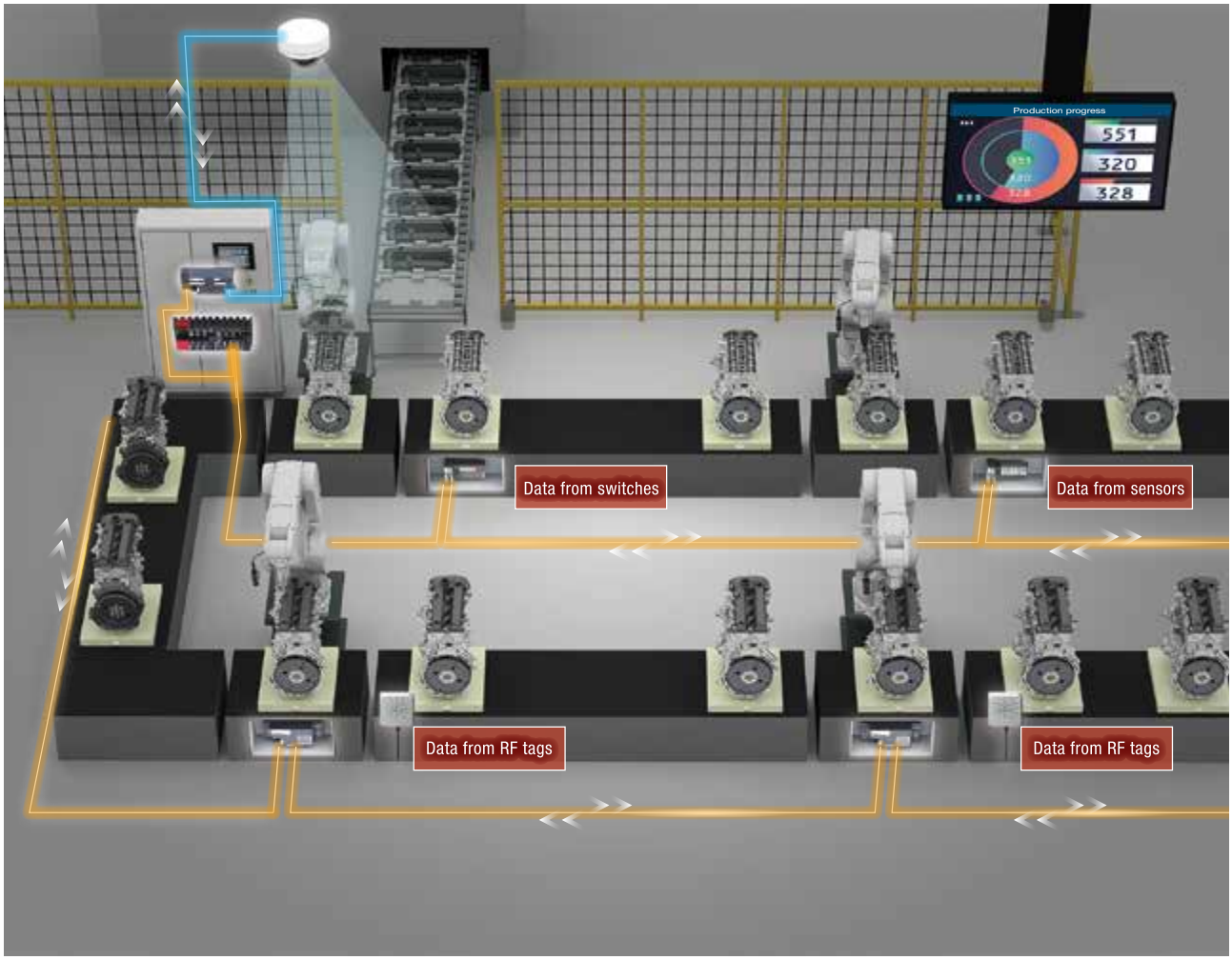
Data from sensors and switches can be visualized by connecting digital signal converters (terminal modules) and analog signal converters to CC-Link family networks.

Open network connection

FL-net(OPCN-2) system can be configured using MELSEC iQ-R series.

Traceability

Using RF tags can associate data of history management with the related data and visualize the production operating ratio. Suitable devices can be selected from the extensive product lineup for the system.



Easy control of hydraulic pressure with SSCNETIII/H

SSCNET-compatible hydraulic control unit

A hydraulic cylinder, which is not compatible with SSCNETIII/H, can be connected to SSCNETIII/H. Interpolation control and advanced control are also available.

Visualization of production sites using camera monitoring

Network camera interface unit

Using this product with an HMI (GOT) enables checking images recorded by cameras, controlling camera shooting directions, or recording images when a downtime occurs.

For details, refer to page 27.

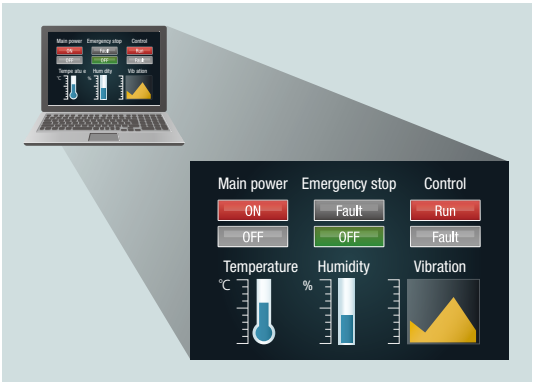
Network interface module

FA3-AT1C8X, etc.

Features of the network interface modules

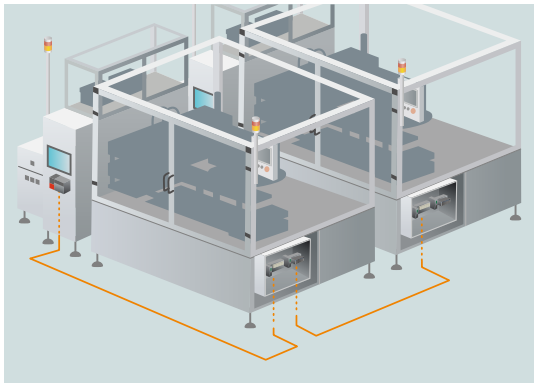
The interface module for signal converter easily connects analog signal converters and digital signal converters (terminal modules) to CC-Link family networks. Data is collected from devices, enabling small-scale IoT.

Central control of data by small-scale IoT



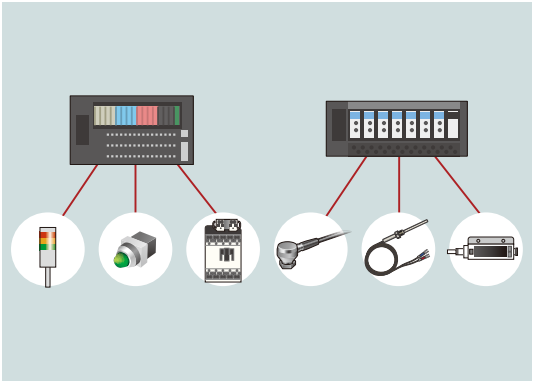
An analog signal converter connected to network digitalizes analog signals from devices such as flow/temperature sensors. Collected sensor data can be used to monitor the on-site operating conditions.

Saving cost and time for wiring in control panel and system



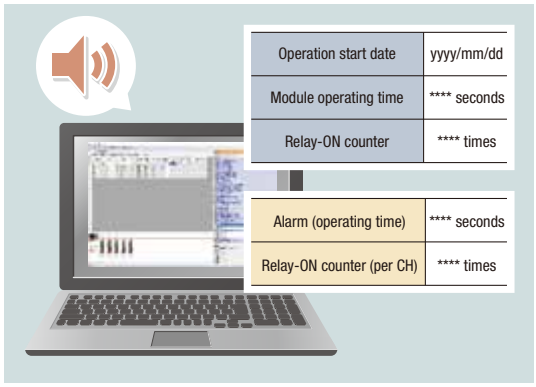
Devices can be easily installed at dispersed sites with network cables. Less wiring distances between devices reduce cost and time for wiring and cable routing.

Customization of output/conversion modules

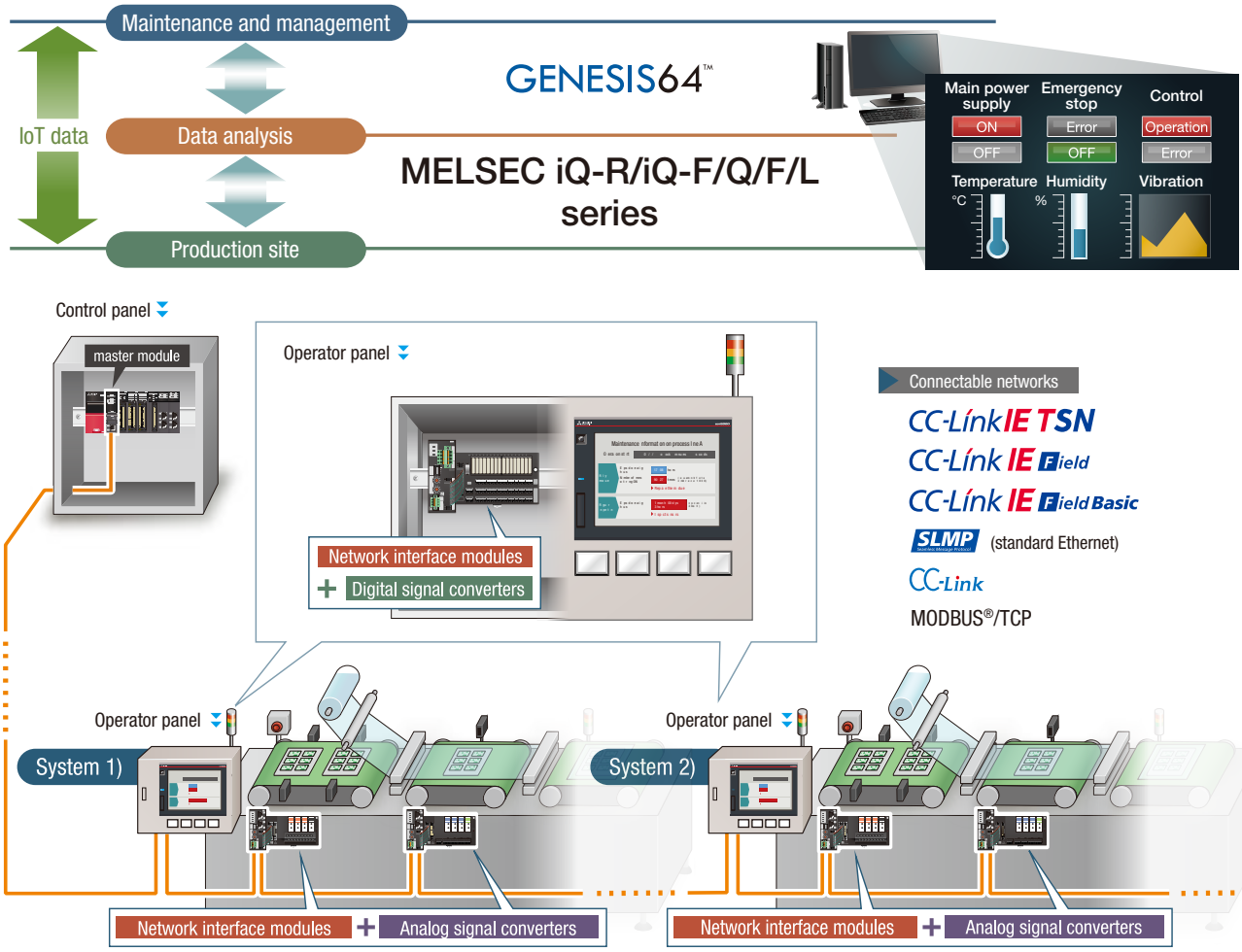


A digital signal converter (terminal module) and an analog signal converter can be customized according to application, as output modules and signal conversion modules can be combined separately.

Supporting prediction maintenance



Temperature fluctuation and system operating conditions can be logged along the time axis. Prediction based on the logged data streamlines maintenance.



Slim control panel

One master module enables cable routing to devices and collects data from sensors.

Simple wiring

Devices and remote panels can be easily connected to the control panel with network cables.

Easy installation and inspection

Additional installation and inspection of devices can be performed independently from other systems, reducing working time and downtime.

Related products

			Supported network		
			CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (standard Ethernet) Modbus TCP/IP	CC-Link IE TSN CC-Link IE Field CC-Link IE Field Basic SLMP (standard 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

SSCNET-compatible hydraulic control unit

DG2AF3N, etc.

Features of the SSCNET-compatible hydraulic control unit

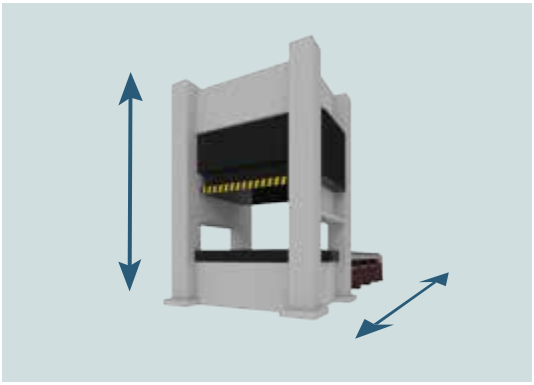
Positioning control or pressure control for hydraulic cylinder can be performed when the SSCNET-compatible hydraulic control unit is connected with a Motion controller or Simple Motion module through SSCNET III/H, Mitsubishi Electric servo system network.

Connectable models

Connectable products	
Motion controller	Q173DSCPU
	Q172DSCPU
	Q170MSCPU(-S1)
Simple Motion module	RD77MS□
	QD77MS□
	LD77MS□

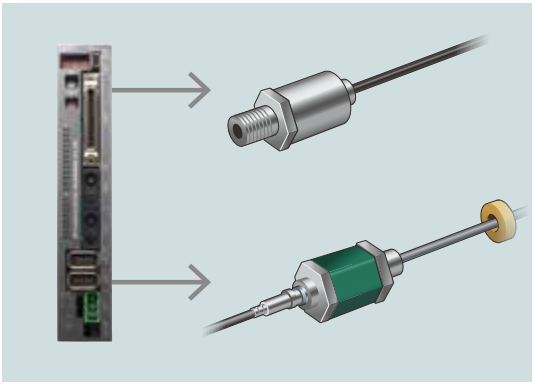
For details on the connectable Motion controller operating systems and Simple Motion modules, refer to our website.

Hybrid drive



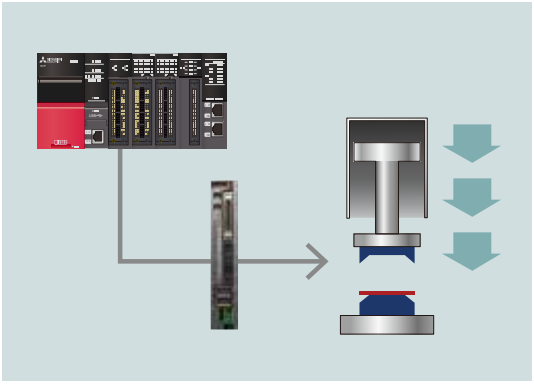
Interpolation control and synchronous control are available when a hydraulic cylinder and a servo motor are used.

Compatible position sensors



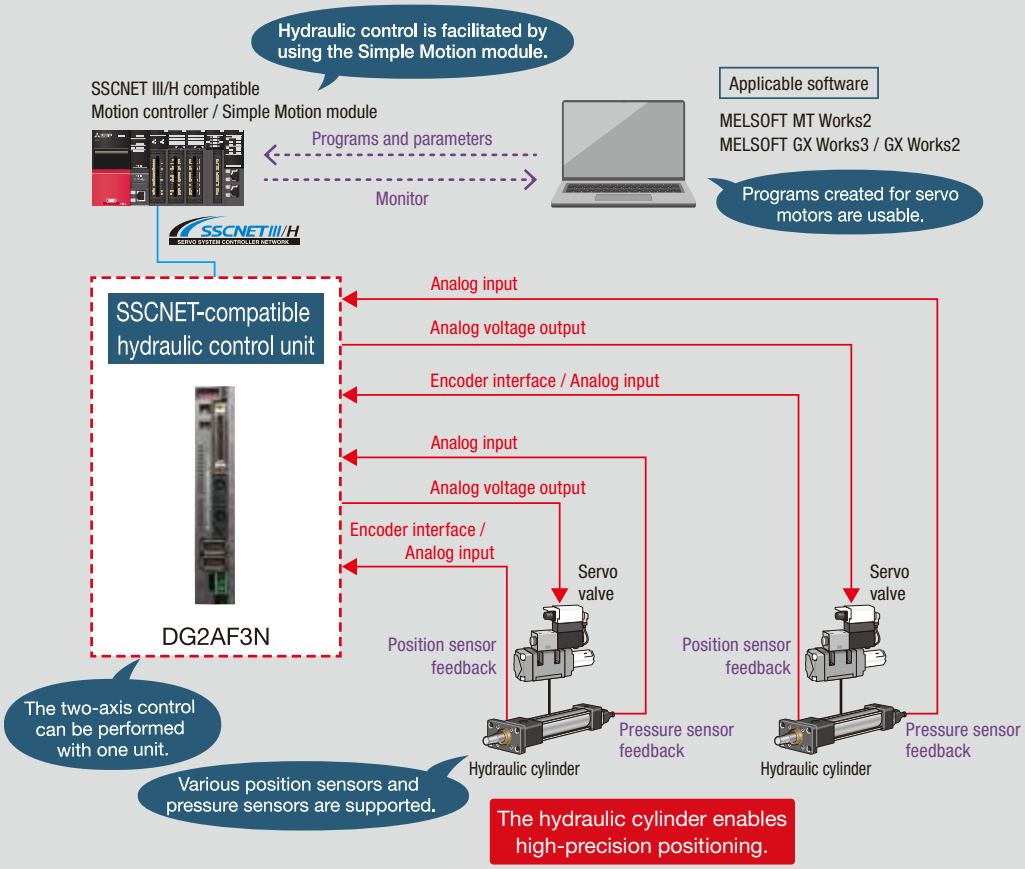
An analog input module (16-bit), a pulse encoder (A/B-phase), a Mitsubishi Electric serial encoder, and an SSI encoder can be used as a position sensor.

Pressure control without A/D converter module

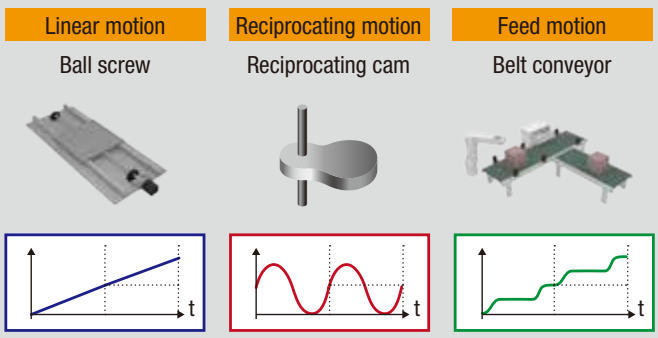


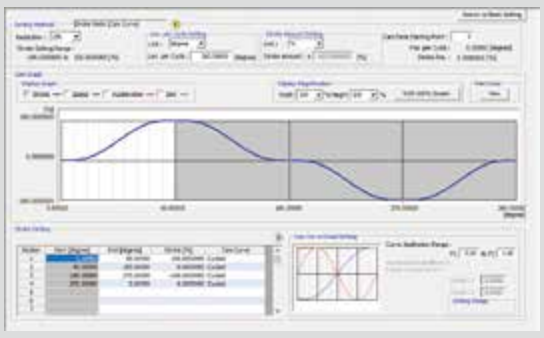
Pressure control is available with a Motion controller and a Simple Motion module.

System configuration example



In addition to the interpolation control, the advanced synchronous control are also available. Synchronous operation can be easily performed by parameter settings.





Related products

Item	Model	Specifications
SSCNET-compatible hydraulic control unit	DG2AF3N	Voltage analog input
	DG2AF3N-P01	Current analog input
Junction terminal block	DG2SV1TB	Our general-purpose interface amplifier junction terminal block (sink/source shared type, full signal) is available.
Connection cable for junction terminal block	DG4AF3CB05	Length: 0.5m
	DG4AF3CB10	Length: 1m

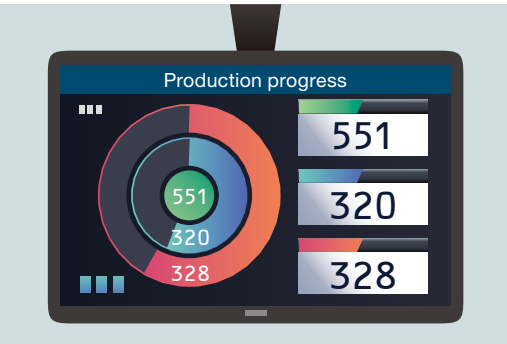
Products for monitoring and traceability

CHAPTER 03

Visualization (monitoring and diagnosis) of production sites

The idea of smart factory is leading to a new era of manufacturing, in which data and information can be shared between production sites and offices.
Our products enable visualization (monitoring and diagnosis) and sharing of various data and information, including the operating condition of each process, current state of production sites, and data from sensors.

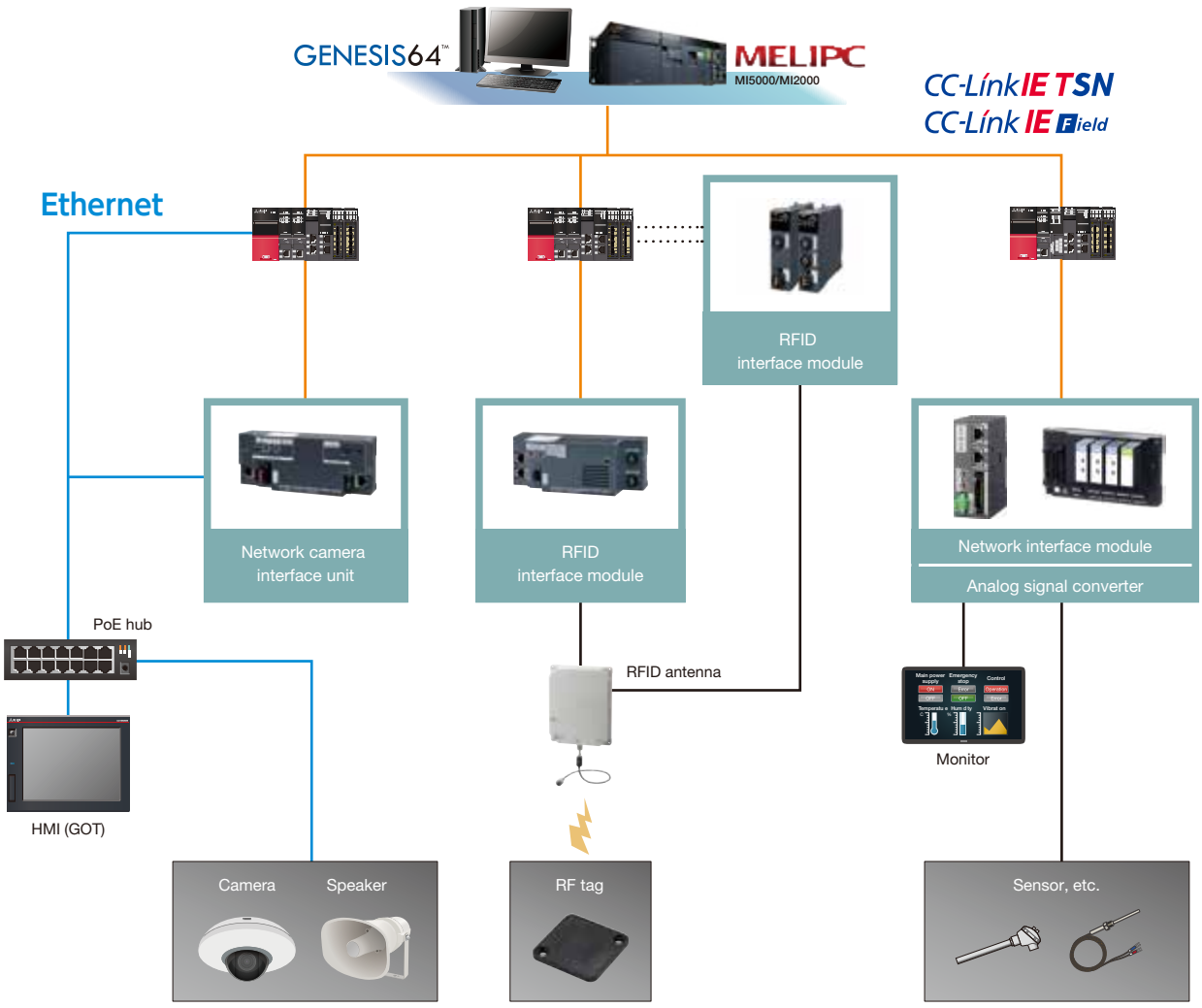
Monitoring and diagnosis



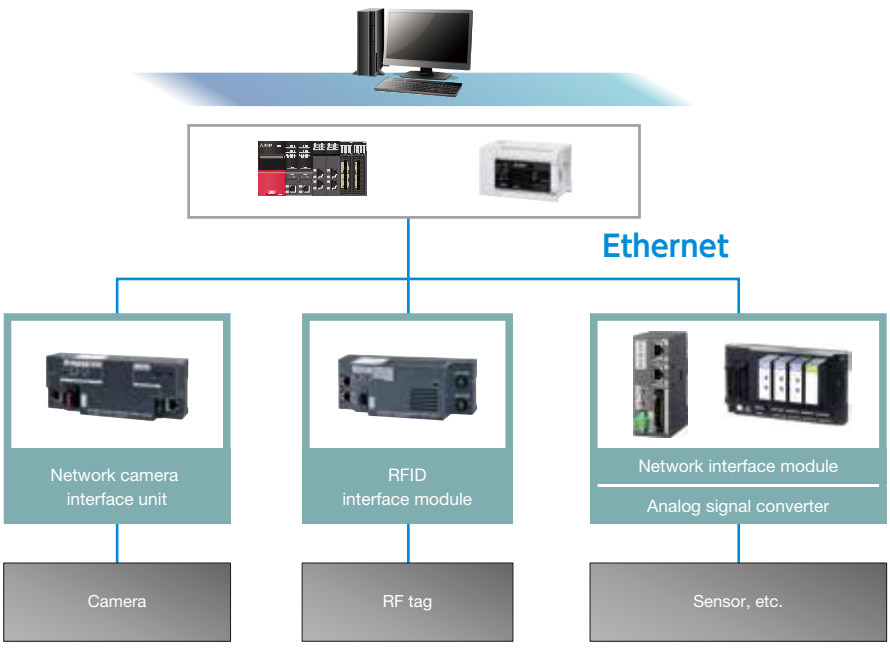
- "Writing commands for the production process" and "Reading data of the working process" using RF tags can be controlled together.
- Data is collected from sensors such as temperature sensors and flow sensors.

Cooperation with cameras enables display of images of the production site and a quick resolution of a downtime.

Factory



Building



SPOTLIGHT »

RFID interface module

ER-1V680D1, etc.

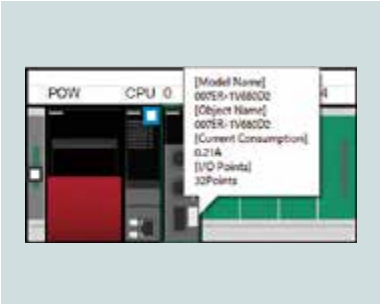
Features of the RFID interface module

Mitsubishi Electric programmable controller can be easily connected with Omron RFID system V680 series by using the RFID interface module. RFID system can be used for the individual management (history management) of products and monitoring of the production status.

Monitoring of production status

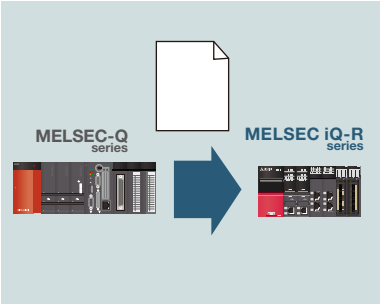
Present production status can be monitored by reading test data, results of testing, and actual progress against the production plan using RF tags.

Easy system start-up

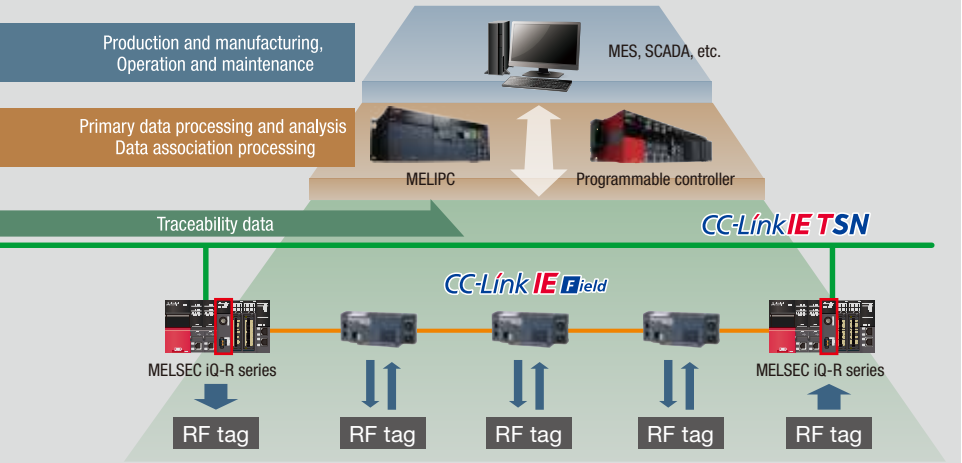


- Graphical start-up setting by GX Works3
- A wealth of test and measurement functions as standard

Use of the existing system



Programs for MELSEC-Q series compatible products can be used.



Data read from or writing to RF tags in manufacturing sites can be sent to superordinate devices via CC-Link family network, then can be displayed on ANDON or controlled in control buildings.

Product list

Products	Model	Number of channels
MELSEC iQ-R series slot-in type	ER-1V680D1	1ch
	ER-1V680D2	2ch
MELSEC-Q series slot-in type	EQ-V680D1	1ch
	EQ-V680D2	2ch
CC-Link IE Field Network compatible dispersed installation type	ECLEF-V680D2	2ch
CC-Link system dispersed installation type	ECL2-V680D1	1ch

Network camera interface unit

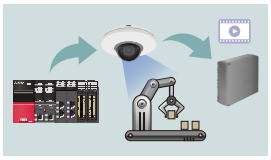
ECLEF-NV1G-04, etc.

Features of the Network camera interface unit

The network camera interface unit used with an HMI (GOT) enables checking images recorded by cameras, controlling camera shooting directions, or recording images when a downtime occurs.
This product can control network devices other than network cameras by using the Hypertext Transfer Protocol (Common Gateway Interface).

Displaying images

An operator can change camera shooting directions while checking images on the screen of the HMI (GOT).

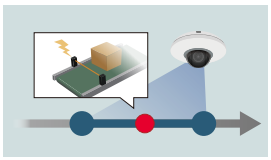


Sending commands for recording

Commands to start or stop recording can be sent.

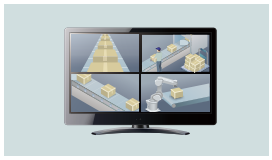
Switching between cameras

The monitored image can be switched to images recorded by other cameras.



Monitoring for trouble analysis

When a trouble occurs, the production status before and after the trouble occurrence can be recorded and used for the trouble analysis.



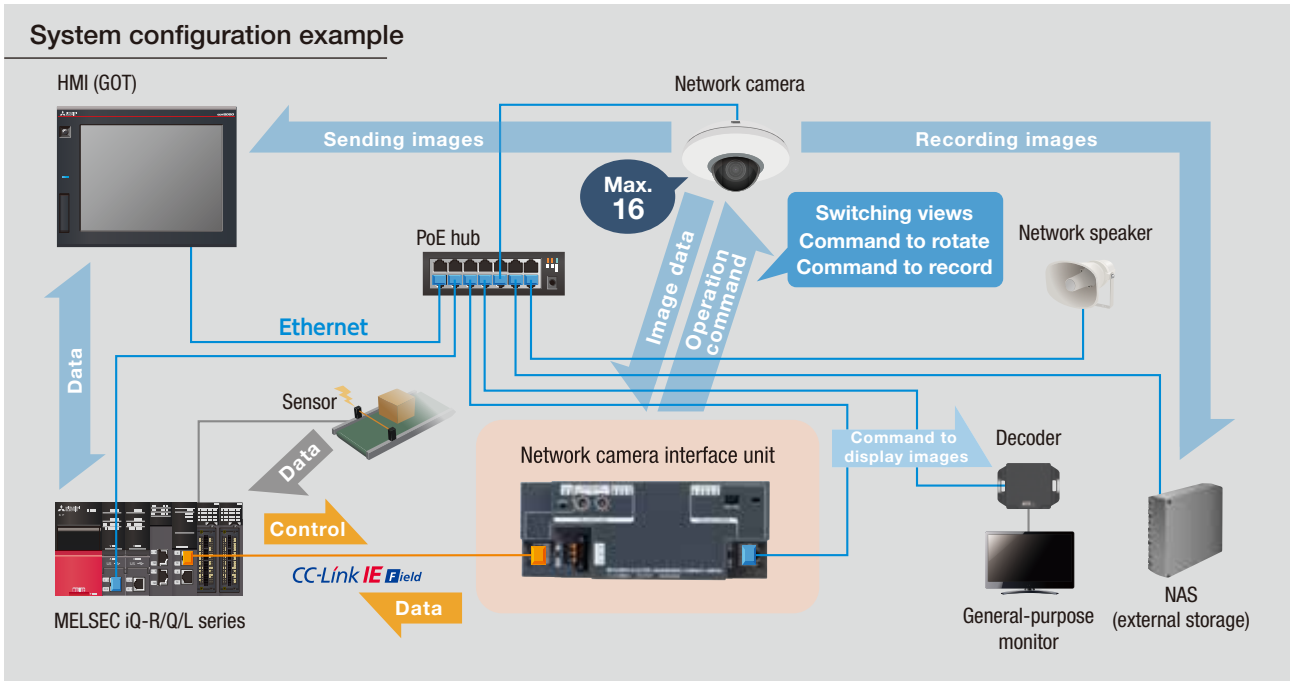
Large-scale split screen display

Images can be displayed on a split screen on the HMI (GOT) or a general-purpose monitor.

Voice messages via a speaker

Error messages or the like are given by voice using a network speaker.

System configuration example



Upgrade tool products

CHAPTER 04

Upgrading system leading to smart factory

As operation in production lines must be stable, devices in the system should be replaced as required.
During replacement, a production line is stopped, resulting in production stop.
Replacement should be performed in as short time as possible.
Our products can minimize production line downtime.

e-F@ctory

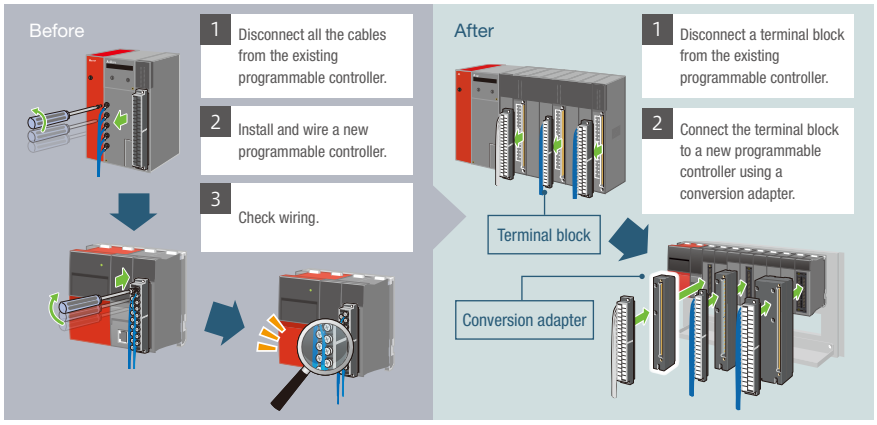
IoT greatly affects industries in the world.
Manufacturing needs to be optimized by introducing IoT throughout factories to survive the fierce competition.
Programmable controllers, which enable such optimization, can be easily replaced in short time.
Easy system upgrading will contribute to your first step to next-generation manufacturing.

Preventive maintenance

Programmable controllers and servo system contribute to manufacturing.
When devices are used for a long period of time, production line downtime at a failure may be prolonged due to supply stop of spare parts or other reasons.
The existing devices can be replaced separately to make downtime shorter.

Easy replacement with the newest programmable controller

The existing programmable controller can be replaced easily by using upgrade tool products. Wiring with conversion adapters requires only two steps to disconnect the existing programmable controller and install a new programmable controller.
Disconnecting and wiring all the cables, modifying cables, and checking wiring are not required.
Therefore, the wiring work time can be reduced significantly.



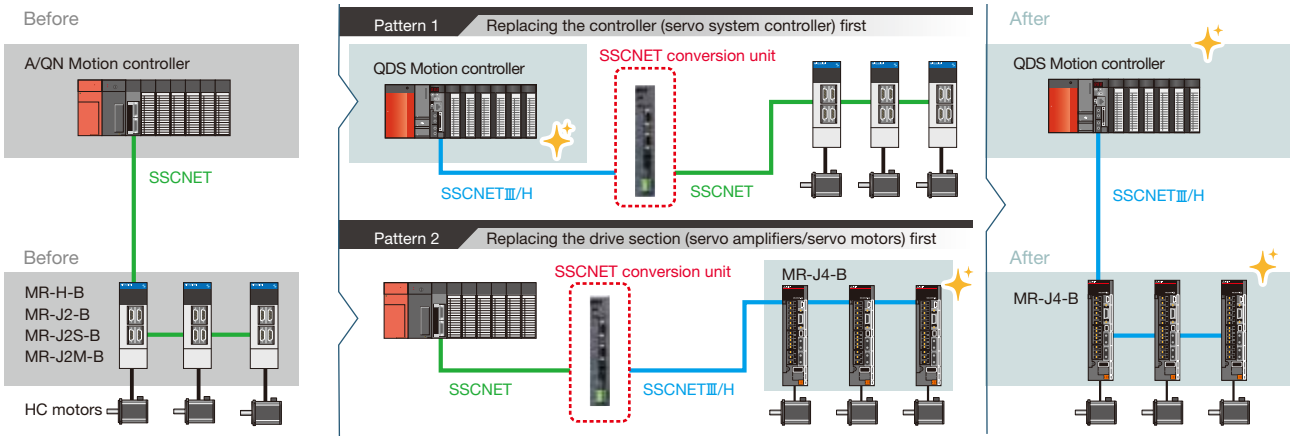
Replaceable combinations

Existing programmable controller	Replacing programmable controller
Mitsubishi Electric MELSEC-A/AnS series	MELSEC iQ-R series
	MELSEC-Q series
	MELSEC-L series
PLCs manufactured by OMRON*, YASKAWA, SHARP, or other manufacturers	MELSEC iQ-R series
	MELSEC-Q series

* Program converter is available for replacing OMRON's PLCs.

Replacing devices in servo system separately

The servo system controller (Motion controller or Simple Motion module) and servo amplifiers/motors can be replaced separately by using the SSCNET conversion unit.
Machine downtime is less than that when all devices are replaced all at once, and the cost can be divided.



Easy selection

The selection tool on our website helps replace Mitsubishi Electric programmable controllers.
New modules and the upgrade tool products are displayed by selecting the model names of the existing MELSEC series modules.

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

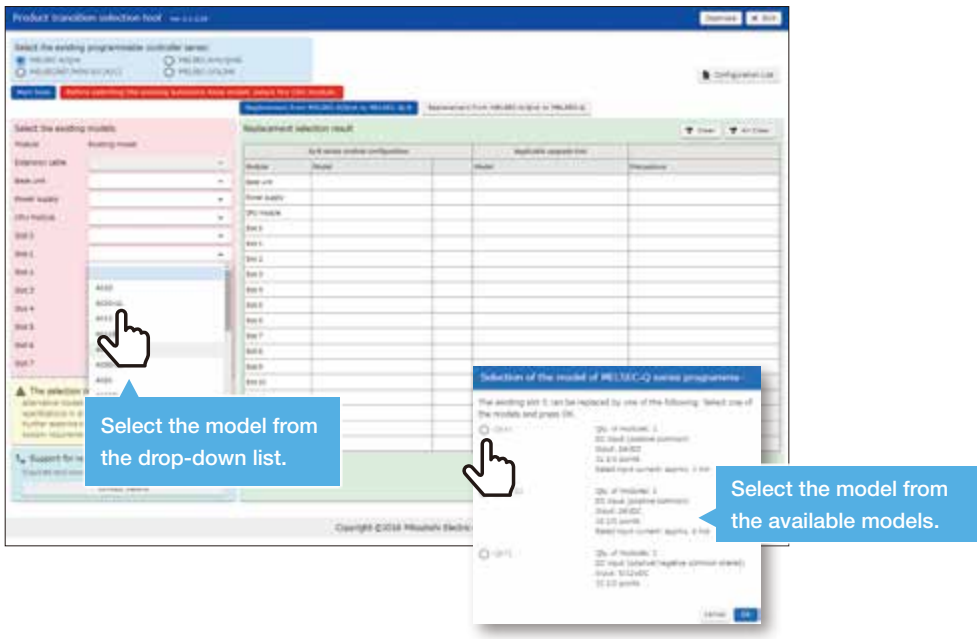
From our website
(www.mitsubishielectricengineering.com/sales/fa/meefan/)

1 Click "Tool for Programmable Controller upgrade (Upgrade Tool)".

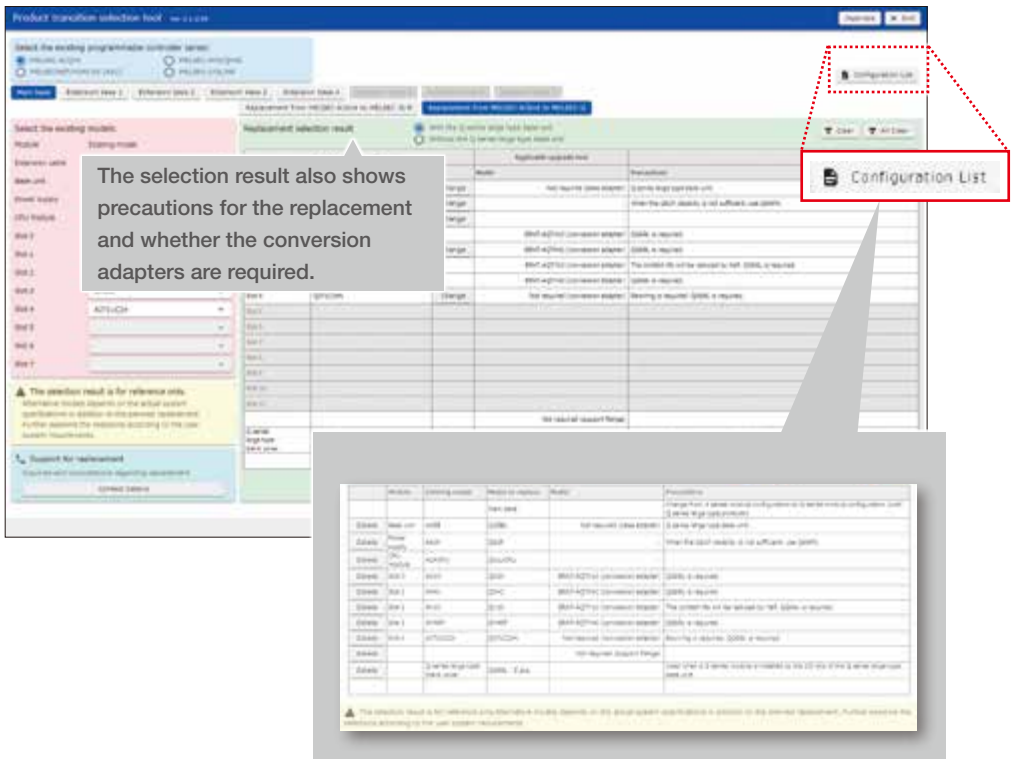
2 Click the [Product transition selection tool] button.

The product transition selection tool starts.

3 On the left of the window, select the model names of the existing MELSEC series modules from the drop-down lists.



4 After the existing modules are selected as required, new MELSEC series modules and the conversion adapters are displayed.



Products for system maintenance

CHAPTER 05

Stable operation for productivity improvement

Product line downtime sometimes occurs unexpectedly.
Taking measures contributes to safe operation.

Voice alerts


Panel mount HMI speaker

Voice alerts are given so that an operator away from the system can notice the alerts. Voice volume and language can be selected according to the operating environment.

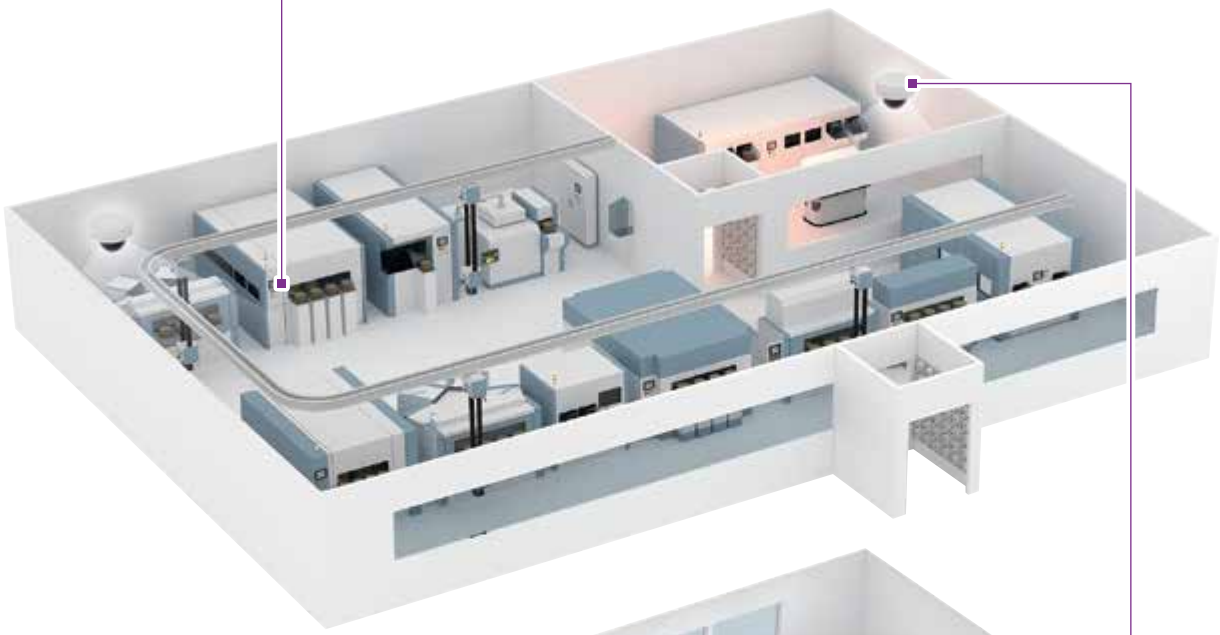
Visualization of production sites using camera monitoring

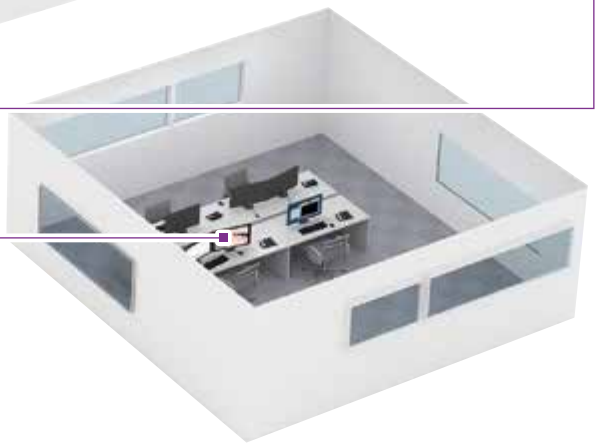

Network camera interface unit

Using this product with an HMI (GOT) enables checking images recorded by cameras, controlling camera shooting directions, or recording images when a downtime occurs.

For details, refer to page 27.

Voice alerts for an operator away from the system





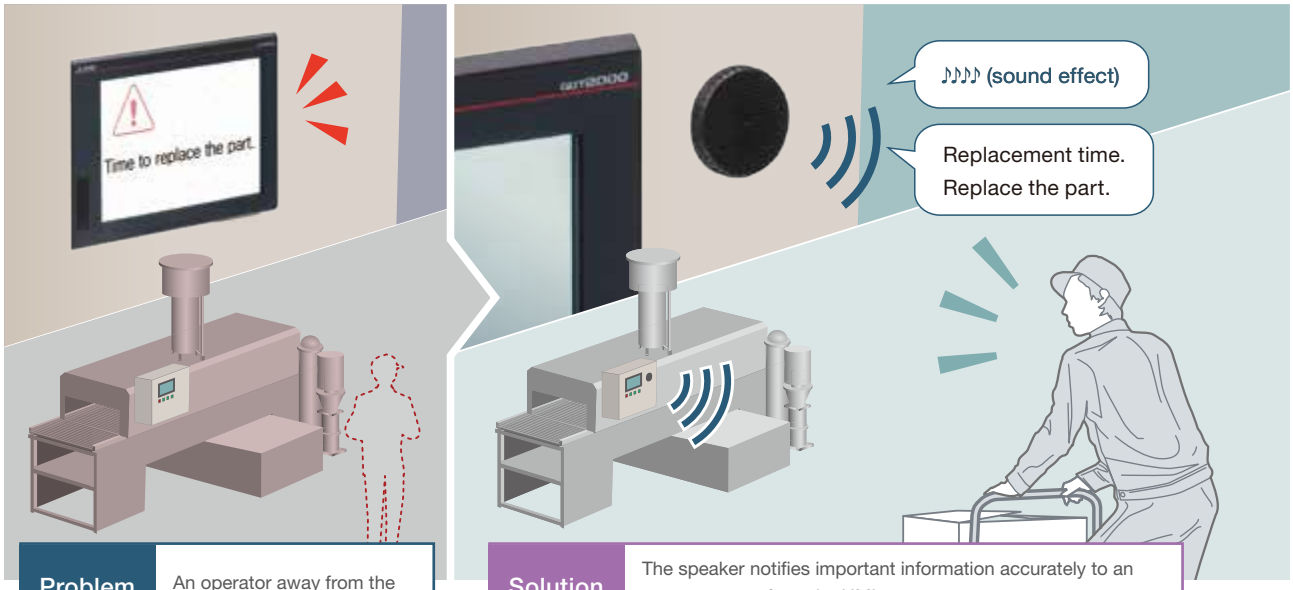
Monitoring production status at a remote location

Panel mount HMI speaker

FA1-GT0S04W

Features of the HMI speaker

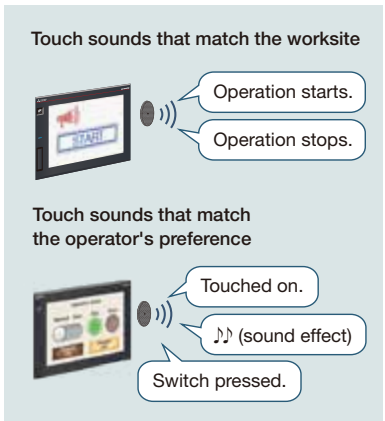
Important information in production sites can be accurately notified to an operator by using the sound output function of the HMI speaker.



Problem An operator away from the HMI may not notice information on the display.

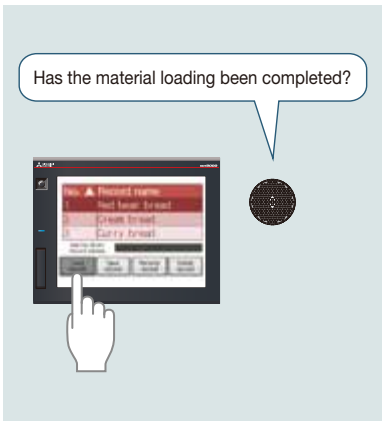
Solution The speaker notifies important information accurately to an operator away from the HMI.
Maintenance/work efficiency will be improved.
(Sounds can be output in screen saver mode.)

Various touch sounds



Touch sounds can be changed depending on the worksite and operator's preference.

Incorrect operation prevention

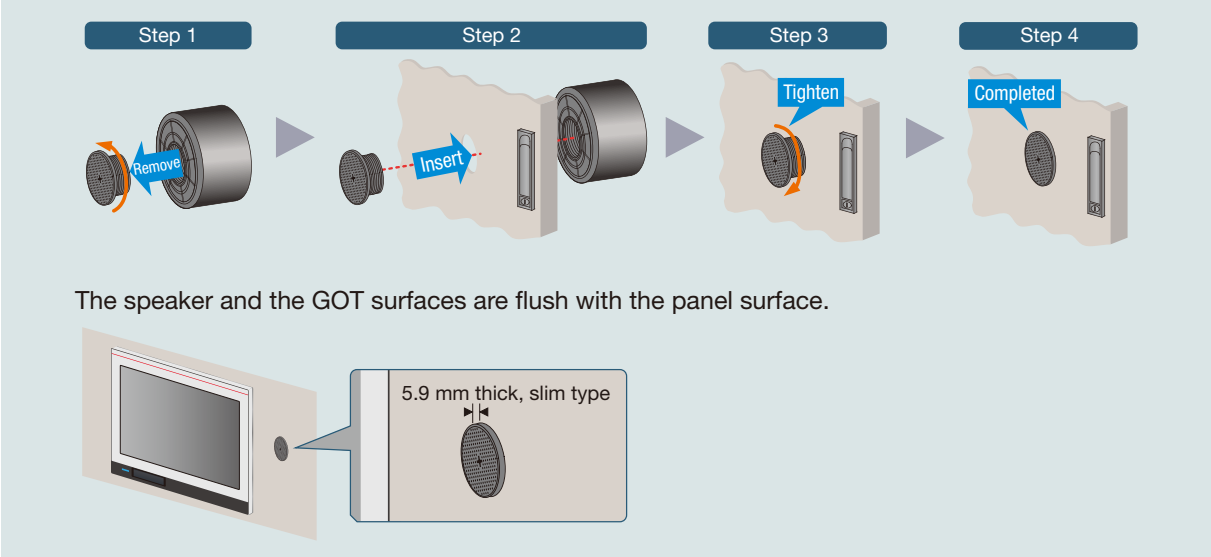


When a touch switch is pressed, the next operation and precautions are voiced, which prevents incorrect operation.

Voice guidance

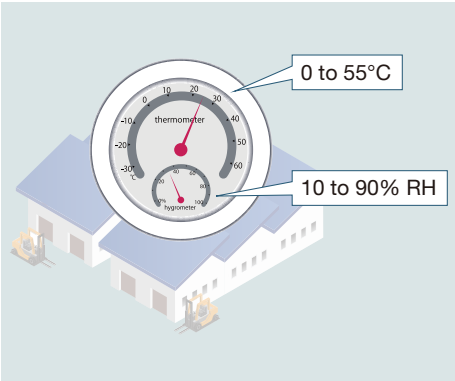
The announcement in multiple languages in order is available at a worksite where the operators speak in different languages.

Easy to install



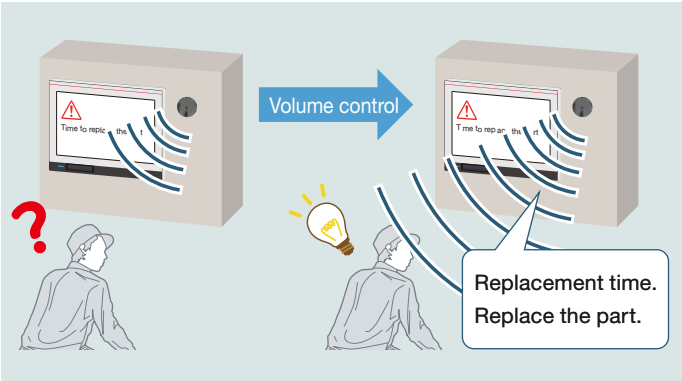
The speaker just needs to be attached from the front and back of the panel such as the control panel and operation panel.

Rugged



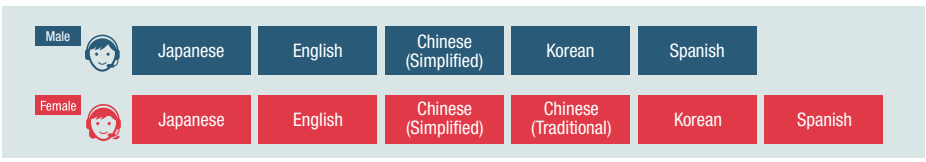
Usable at factory temperature and humidity

Volume control function



The volume is adjustable in 10 levels (90 dB max.) depending on the noise environment.

Language selection



Six languages are supported.

Related products

New product releases

Cable with spring clamp terminal block

Analog signal converter

Digital signal converter

Network interface module

Leaflets

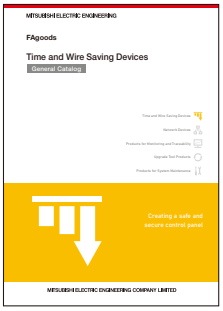
Spring clamp junction terminal block for Mitsubishi Electric AC servo system

SSCNET-compatible hydraulic control unit

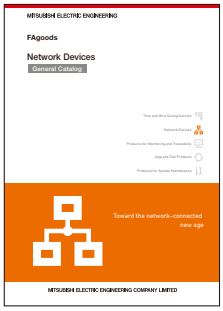
Catalogs

Digest edition

Time and wire saving devices



Network devices



Upgrade tool products

MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED

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

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

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