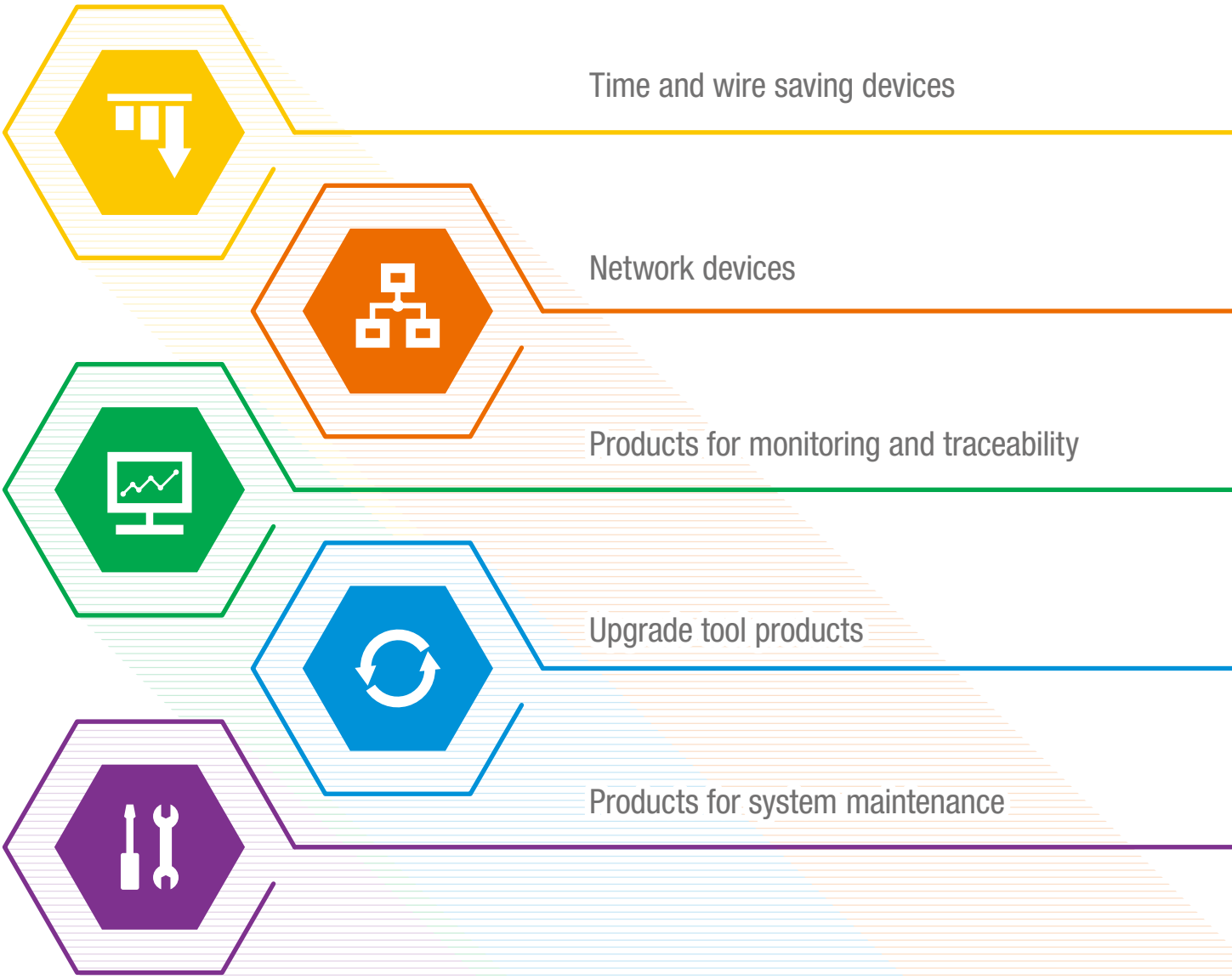
MITSUBISHI ELECTRIC ENGINEERING

FA Goods

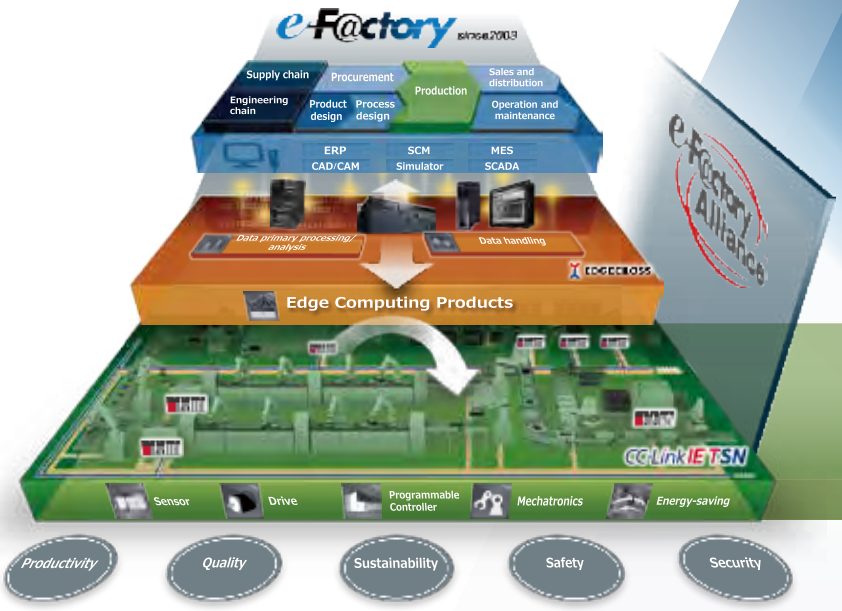
Digest edition

General Catalog



2020.9

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 P.4
01 Easy wiring for innovative solutions

Network devices P.16
02 Introduction of small-scale IoT to reform production sites

Products for monitoring and traceability P.20
03 Visualization (monitoring and diagnosis) of production sites

Upgrade tool products P.24
04 Upgrading system leading to smart factory

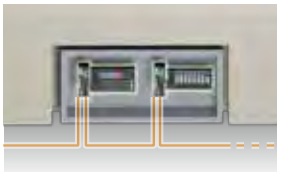
Products for system maintenance P.26
05 Stable operation for productivity improvement

Time and wire saving devices

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

Network devices

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



Products for monitoring and traceability

Our products and solutions enable monitoring and diagnosis.

Upgrade tool products

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

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

Time and wire saving devices

CHAPTER 01

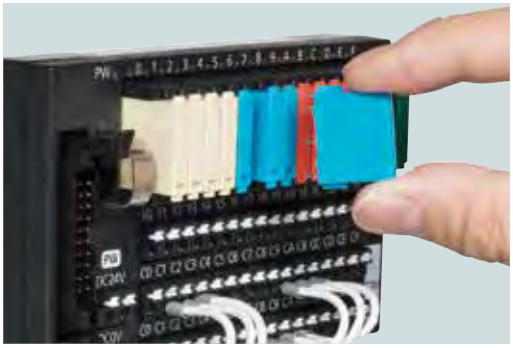
Easy wiring for innovative solutions

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

Easy push-in connection

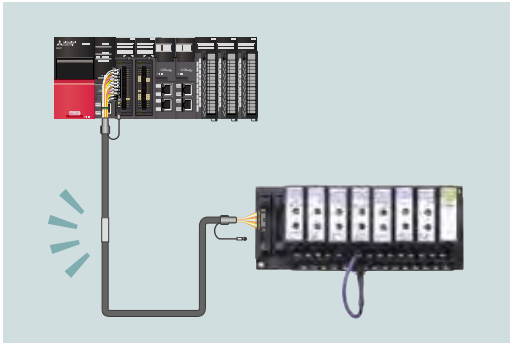
Push-in connection is available for the spring clamp terminal block, reducing cost and time for wiring and maintenance.

Customization of output modules



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

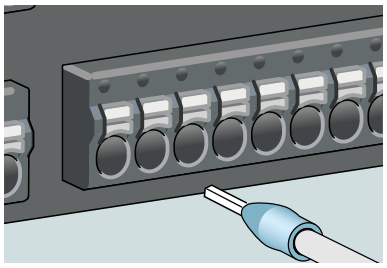
Simple wiring



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

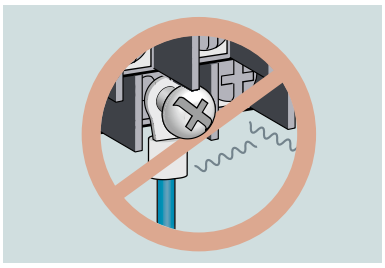
Three merits of no screw connection

Easy wiring



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

Stable connection

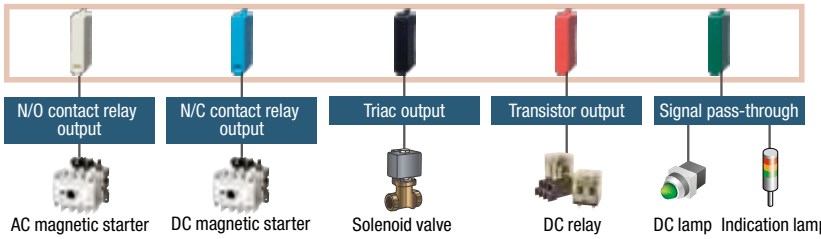


No risks arising from screw-loosening due to vibration or long-term use

Less maintenance

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

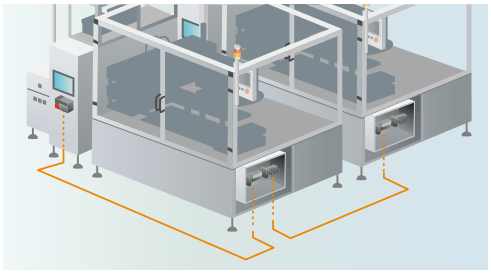
Optimum device connection with one programmable controller module



Devices in the system can be connected with one programmable controller module by combining output modules on an installation base.

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

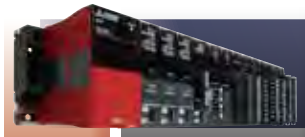
Using dedicated cables reduces cost and time for prior check of pin layout and wiring.
Easy wiring leads to innovative solutions.



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

Cable | Cable | Cable | Cable

FA goods

Junction terminal block

Junction terminal block

Junction terminal block

Digital signal converter (terminal module)

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.

CC-Link Family communication

Servo amplifier

HMI

Cable

Interface module for signal converter

CC-Link goods

Cable

Digital signal converter (terminal module)

Analog signal converter

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

Cable

Panel mount HMI speaker

GOT goods

AC/DC magnetic starter DC switch AC/DC limit switch DC pilot lamp AC relay, etc.	Temperature sensor Humidity sensor Vibration sensor Flow sensor Concentration sensor Pressure sensor Laser distance sensor, etc.	Remote I/O module	Sensor Relay Pulse generator, etc.	Temperature controller, etc.

Spring clamp junction terminal block for I/O module

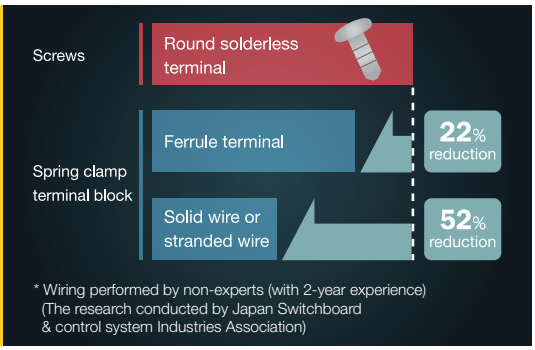
FA1-TE1S32XY, etc.

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.

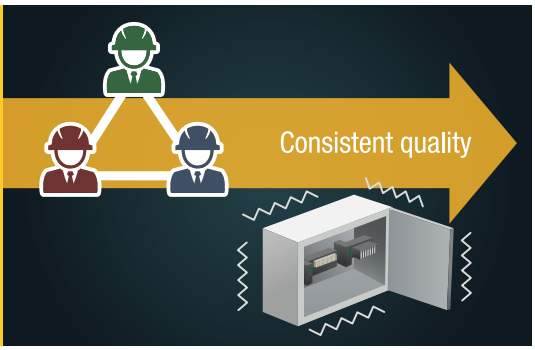
Easy wiring

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



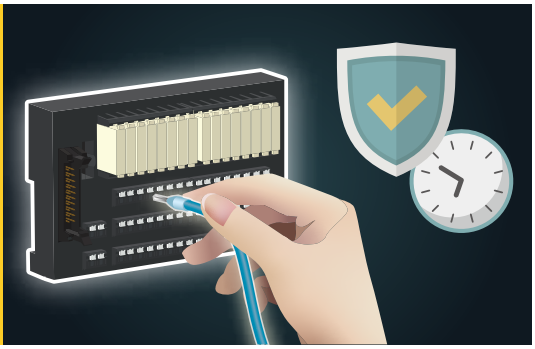
Stable connection

A wire is not loosened due to vibration as it is fixed to the terminal with the pressure of spring. Consistent connection quality is assured.



Easy maintenance

Maintenance can be performed easily as screw-tightening work is not required. The terminal block can be easily re-wired for equipment expansion or modification.



Products with spring clamp terminal block

Junction terminal block for programmable controller

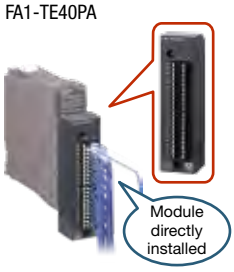
I/O module
32-point
Vertical type FA1-TESV32XY
Horizontal type FA1-TE1S32XY

I/O module
16-point
Vertical type FA1-TE1SV16XY

Common terminal block module
38-point
Vertical type FA1-TESV38COM

Spring clamp terminal block conversion adapter

I/O module
FA1-TE40PA



Digital signal converter (terminal module) for programmable controller

Modules can be combined on an installation base.

coming soon
Input module
4-point Base
FA1-TH4X2SC20S1E

coming soon
Input module
8-point Base
FA1-TH8X2SC20S1E

coming soon
Input module
16-point N/O contact
Positive common
FA1-TH16X24RA1L20S1E
Negative common
FA1-TH16X24RA1H20S1E

Output module
16-point Base
Sink type
FA1-TH16Y2SC20S1E
Source type
FA1-TH1E16Y2SC20S1E

Output module
16-point N/O contact
Sink type
FA1-TH16Y2RA20S1E
Source type
FA1-TH1E16Y2RA20S1E

Output module
16-point Triac
Sink type
FA1-TH16Y1SR20S1E
Source type
FA1-TH1E16Y1SR20S1E

Output module
16-point Transistor
Sink type
FA1-TH16Y1TR20S1E
Source type
FA1-TH1E16Y1TR20S1E

Junction terminal block for servo system

Network amplifier
Full signal 1-axis
Sink/source shared type
DG2SV3TB

Network amplifier
Mechanical signal 1-axis
Sink/source shared type
DG2SV2TB

Network amplifier
Mechanical signal 2-axis
Sink/source shared type
DG2SV2TB2

Network amplifier
Mechanical signal 3-axis
Sink/source shared type
DG2SV2TB3

Network amplifier
Brake
Sink type
DG2BK1TB-D
Source type
DG2BK1TB-P01-D

Network amplifier
Brake Screw installation available
Sink type
DG2BK1TB
Source type
DG2BK1TB-P01

General-purpose interface
Full signal
Sink/source shared type
DG2SV1TB

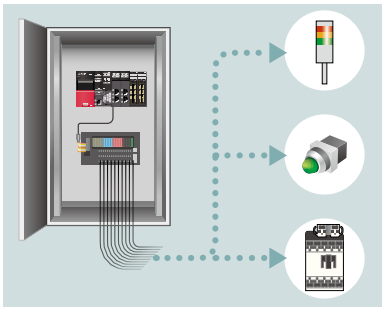
Digital signal converter (terminal module)

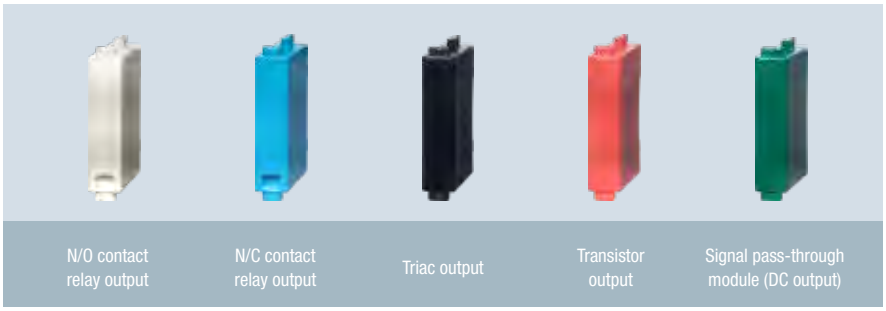
FA1-TH16Y2SC20S1E, etc.

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.

Individual customization of output modules





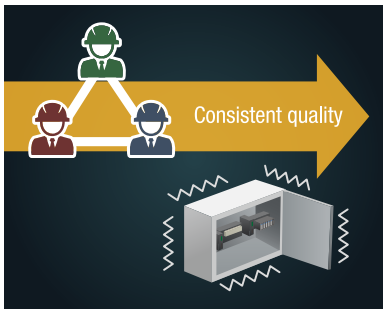
Modules can be combined individually for a module selectable type product.
One programmable controller module can be connected with multiple devices by combining 16 modules.
(When using two modules, up to 32 output modules can be combined.)

N/O contact relay, N/C contact relay	Triac	Transistor	Signal pass-through module (DC output)
· To insulate electrical signals mechanically · To drive a load with a large current capacity	· To drive a load with high switching frequency · To drive a load with a large capacity which cannot be driven by AC output of a programmable controller	· To drive a load with high switching frequency · To drive a load with a large capacity which cannot be driven by DC output of a programmable controller	· To output DC output signals from a programmable controller without any conversion

Less wiring time

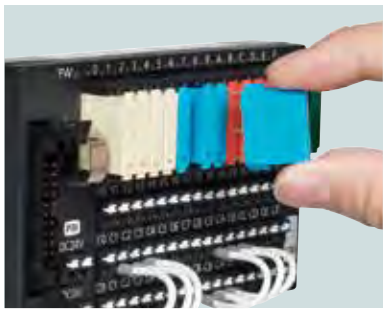
Push-in connection reduces time and cost for wiring significantly.

Stable connection



Wires are not loosened due to vibration, impact, or long-term use. Screw-tightening skill is not required.

Easy maintenance



Retightening work is not required at panel delivery or inspection. Output modules can be replaced easily without screwdrivers.

Product list

Digital signal converter (terminal module) for input signals

Control method			Connection method	Module replacement	Module mixing	Model
Module selectable type		8 points, independent	Spring clamp	Possible	Possible	FA1-TH8X2SC20S1E coming soon
		4 points, independent		Possible	Possible	FA1-TH4X2SC20S1E coming soon
Module pre-mounted type	24VDC	16 points, independent (N/O contact, positive)	Spring clamp	Possible	Possible	FA1-TH16X24RA1L20S1E coming soon
		16 points, independent (N/O contact, negative)		Possible	Possible	FA1-TH16X24RA1H20S1E coming soon
		16 points, independent (N/O contact)	Screw (M3)	Possible	Possible	FA-TH16XRA20S
Module built-in type	24VDC	16 points/common, 2-wire type	Screw (M3)	Not possible	Not possible	FA-TH16X24D31
			Screw (M3.5)	Not possible	Not possible	FA-TH16X24D31L
	48VDC	16 points/common, 2-wire type	Screw (M3.5)	Not possible	Not possible	FA-TH16X48D31L
	100VDC	16 points/common, 2-wire type	Screw (M3.5)	Not possible	Not possible	FA-TH16X100D31L
	100VAC	16 points/common, 2-wire type	Screw (M3)	Not possible	Not possible	FA-TH16X100A31
			Screw (M3.5)	Not possible	Not possible	FA-TH16X100A31L
	200VAC	16 points/common, 2-wire type	Screw (M3)	Not possible	Not possible	FA-TH16X200A31
			Screw (M3.5)	Not possible	Not possible	FA-TH16X200A31L

Digital signal converter (terminal module) for output signals

Control method			Connection method	Module replacement	Module mixing	Model
Module selectable type		16 points, independent (sink)	Spring clamp	Possible	Possible	FA1-TH16Y2SC20S1E
		16 points, independent (source)		Possible	Possible	FA1-TH1E16Y2SC20S1E
Module pre-mounted type	NO contact relay module pre-mounted	16 points, independent (sink)	Spring clamp	Possible	Possible	FA1-TH16Y2RA20S1E
		16 points, independent (source)		Possible	Possible	FA1-TH1E16Y2RA20S1E
		16 points, independent (sink)	Screw (M3)	Possible	Possible	FA-TH16YRA20S
				Not possible	Not possible	FA-TH16YRA20
			Screw (M3.5)	Possible	Possible	FA-TH16YRA20SL
		16 points, independent (source)	Screw (M3)	Possible	Possible	FA1-TH1E16Y2RA20S
		16 points/common, 1-wire type	Screw (M3)	Possible	Not possible	FA-TH16YRA11S
				Not possible	Not possible	FA-TH16YRA11
		16 points/common, 2-wire type	Screw (M3)	Possible	Not possible	FA-TH16YRA21S
				Not possible	Not possible	FA-TH16YRA21
	N/C contact relay module pre-mounted	16 points, independent	Screw (M3.5)	Possible	Possible	FA-TH16YRAB20SL
	C/O contact relay module pre-mounted	16 points, independent	Screw (M3)	Possible	Not possible	FA-TH16YRAC20S
	Triac module pre-mounted	16 points, independent (sink)	Spring clamp	Possible	Possible	FA1-TH16Y1SR20S1E
		16 points, independent (source)		Possible	Possible	FA1-TH1E16Y1SR20S1E
		16 points, independent (sink)	Screw (M3)	Possible	Possible	FA-TH16YSR20S
		16 points/common, 1-wire type		Possible	Not possible	FA-TH16YSR11S
		16 points/common, 2-wire type		Possible	Not possible	FA-TH16YSR21S
	Transistor module pre-mounted	16 points, independent (sink)	Spring clamp	Possible	Possible	FA1-TH16Y1TR20S1E
		16 points, independent (source)		Possible	Possible	FA1-TH1E16Y1TR20S1E
		16 points/common, 1-wire type (sink)	Screw (M3)	Possible	Possible	FA-TH16YTH11S
		16 points/common, 1-wire type (sink)		Possible	Not possible	FA-TH16YTL11S
		16 points/common, 2-wire type (sink)		Possible	Not possible	FA-TH16YTL21S
		16 points/common, 1-wire type (source)		Possible	Not possible	FA-TH16YTR20S
		16 points/common, 1-wire type (source)		Possible	Not possible	FA-THE16YTH11S
		16 points, independent (source)		Possible	Possible	FA-THE16YTR20S
Module built-in type	Transistor module pre-mounted	16 points, independent (2A output) (sink common)	Screw (M3)	Not possible	Not possible	FA-TH16Y2TR20

Input module (for replacement/mixing)

Control method	Color	Model
N/O contact relay (quantity: 4)	Beige	FA-NYP24WK4
N/C contact relay (quantity: 4)	Sky blue	FA-NYBP24WK4
100VAC photocoupler	Orange	FA1-TM1X100A coming soon
200VAC photocoupler	Red	FA1-TM1X200A coming soon
24VDC photocoupler	Black	FA1-TM1X24D coming soon
48VDC photocoupler	Blue	FA1-TM1X48D coming soon
100VDC photocoupler	Purple	FA1-TM1X100D coming soon
24VDC relay	Navy blue	FA1-TM1X24RA coming soon
Dummy	Green	FA1-TM1ND4 coming soon

Output module (for replacement/mixing)

Control method	Color	Model
N/O contact relay (quantity: 4)	Beige	FA-NYP24WK4
N/C contact relay (quantity: 4)	Sky blue	FA-NYBP24WK4
C/O contact relay (quantity: 4)	White	FA-LYCA024VSK4
Triac (quantity: 4)	Black	FA-SN24A01FS4
Transistor (quantity: 4)	Red	FA-SN24D01HZS4
Signal pass-through (quantity: 4)	Green	FA-SN00SS4

Analog signal converter

FA-ATB8XTB, etc.

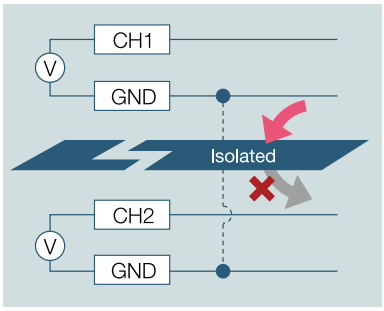
Features of the analog signal converter

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.

Individual customization of conversion modules

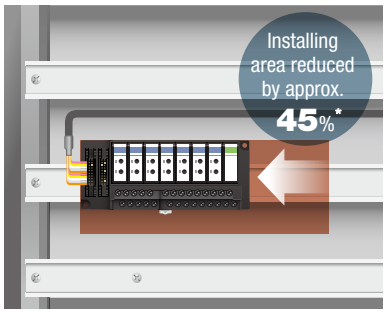
Signal conversion modules can be selected individually according to the sensor type. Modules can be easily replaced separately without screwdrivers.

Isolation between channels



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

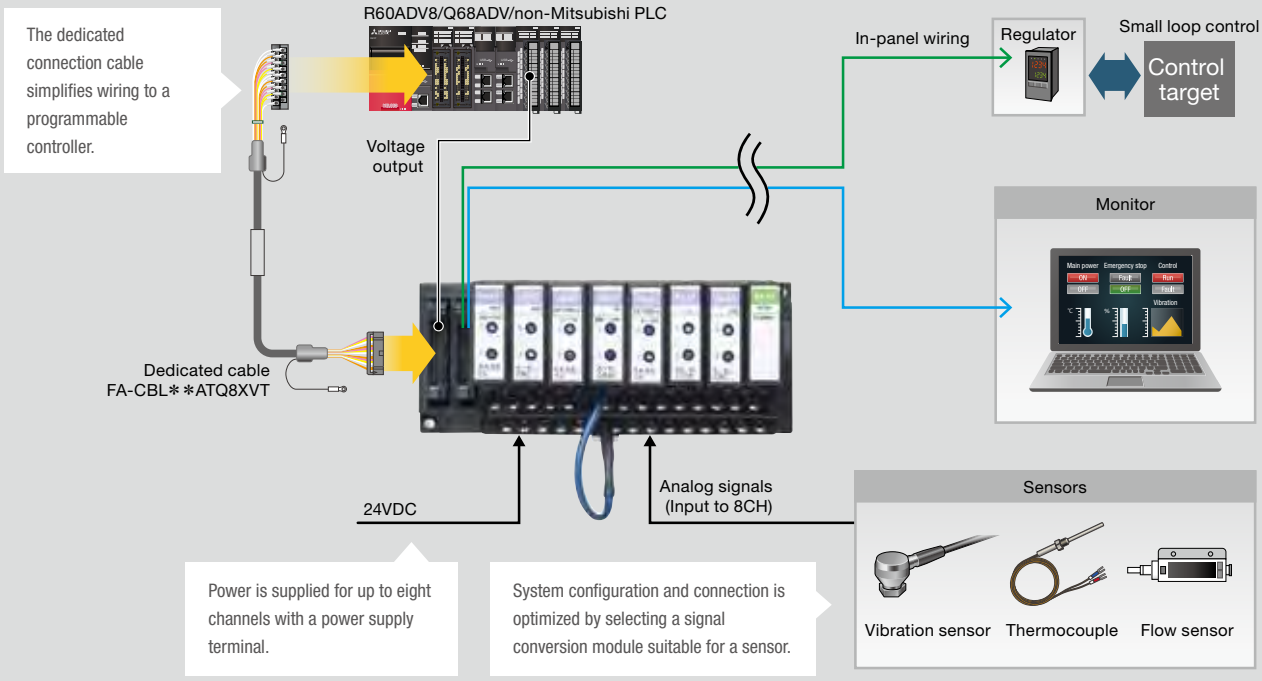
Small installation space



Compact product body requires less installation space in the control panel or the system.

* Comparison with a competitor's product (according to our investigation in 2019)

System configuration example



Product list

Analog signal converter for input signals

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

Type					Model
Installation base	Screw (M3)	Modules: 8 points / external power supply: 24VDC			FA-ATB8XTB
	Screw (M3)	For adapter installation. Modules: 8 points / external power supply: 24VDC			FA-ATKB8XTB
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
Distributor	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	Modules to protect empty slots of an installation base from dust (quantity: 5).				FA-ATNDM5

Analog signal converter for output signals

Type					Model
Installation base	Screw (M3)	Modules: 8 points			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 5V) · Current to voltage conversion available by shorting external terminals (4 to 20mA converted to 1 to 5V)				FA-ATFTMXY
Dummy module	Modules to protect empty slots of an installation base from dust (quantity: 5).				FA-ATNDM5

* The current is converted to voltage.

Junction terminal block for input/output module

FA-TBS32XY, etc.

Features of junction terminal block

The junction terminal block helps signal transmissions between a programmable controller and devices such as sensors in connection methods suitable for applications.

Easy to distinguish wiring locations

Black screws provided every five terminals prevent wiring mistakes.

Easy connection of round terminals

Wiring work is easy as terminals can be inserted with screws raised.

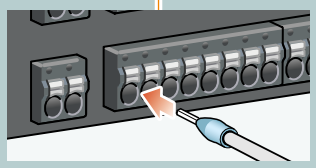
Screw fall prevention

Screw fall prevention mechanism makes wiring work easier.

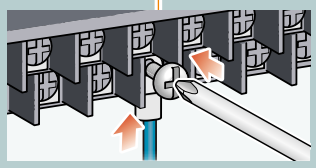
Various products available

The most suitable model can be selected from approx. 250 models according to system configuration.

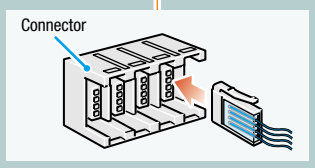
MELSEC iQ-R/MELSEC iQ-F/MELSEC-Q/
MELSEC-F/MELSEC-L series



Spring clamp terminal block



Screw terminal block



e-CON, one-touch connector

FA goods

1-wire type + Common terminal block + 2-wire type, 3-wire type

1-wire type, 2-wire type, 3-wire type

3-wire type

Devices (such as switches and sensors)

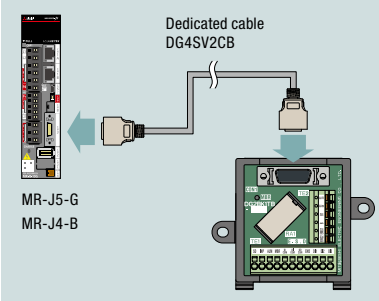
Junction terminal block for servo motors with brakes

DG2BK1TB, etc.

Features of the junction terminal block for servo motors with brakes

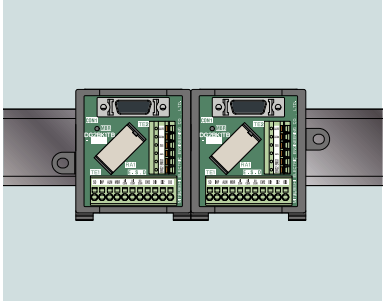
Our recommended brake sequence circuit is built in the junction terminal block for servo motors with brakes. The brake circuit of the servo motor with brake can be smaller.

Less wiring



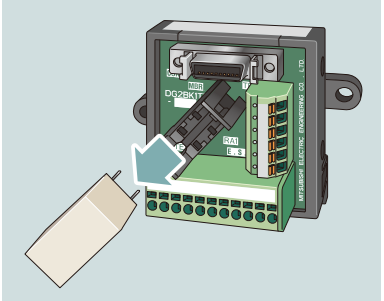
- Easy and reliable wiring connection with a servo amplifier using a dedicated cable
- No need for screwdrivers due to push-in connection

Space saving



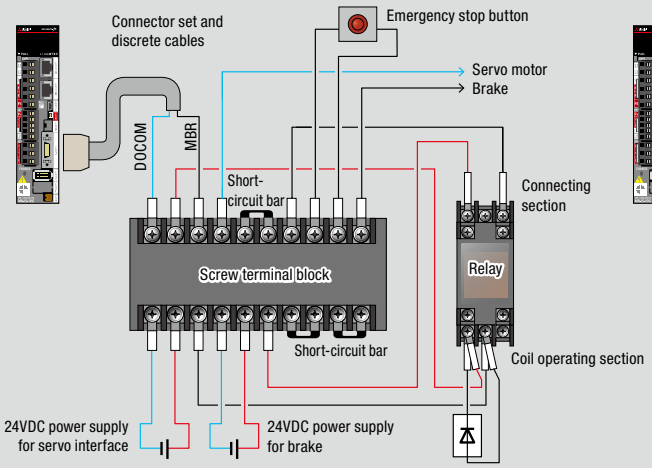
- Compact body with a built-in relay for the brake sequence circuit
- Less installation space due to side-by-side installation on the DIN rail

Easy maintenance

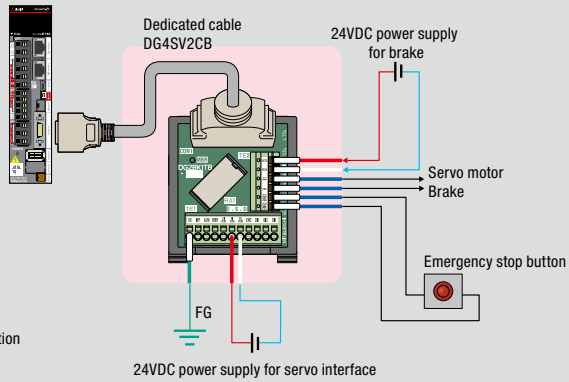


The built-in relay can be replaced without tools.

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.

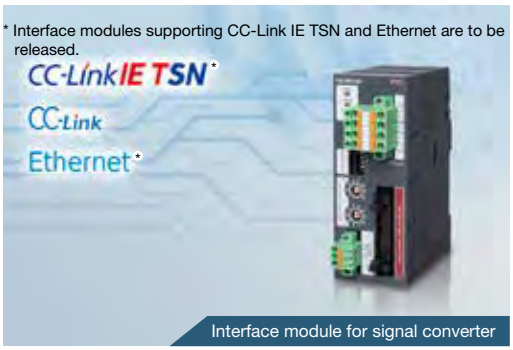
Network devices

CHAPTER 02

Introduction of small-scale IoT to reform production sites

We provide products to be connected to industrial networks, which is 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



Interface module for signal converter

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

Traceability

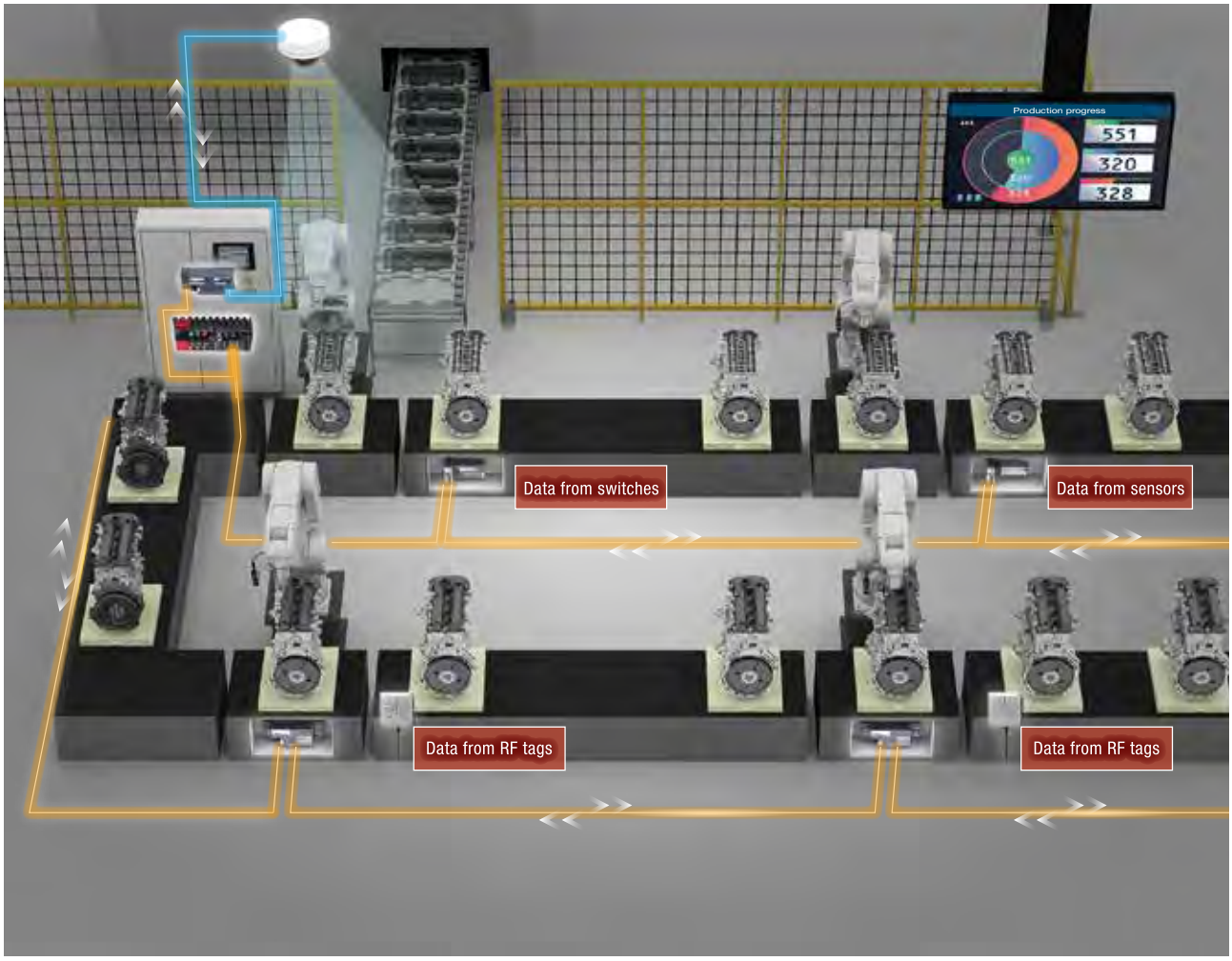
RFID interface module

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



Open network connection

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

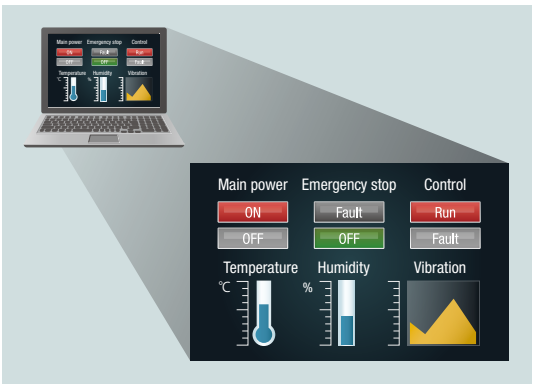
CC-Link IE TSN / CC-Link / Ethernet compatible Interface module for signal converter

FA3-AT1C8X, etc.

Features of the interface module for signal converter

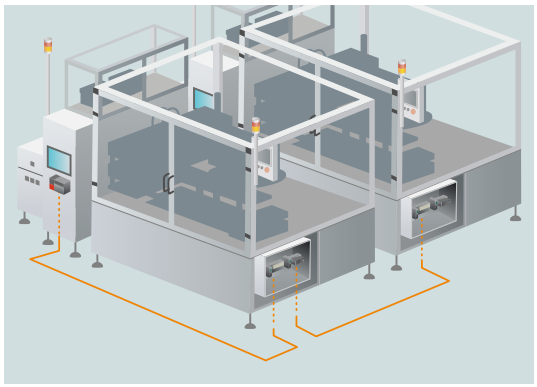
The interface module for signal converter easily connects analog signal converters and digital signal converters (terminal modules) to CC-Link Family networks. Data is collected from devices, enabling small-scale IoT.

Central control of data by small-scale IoT



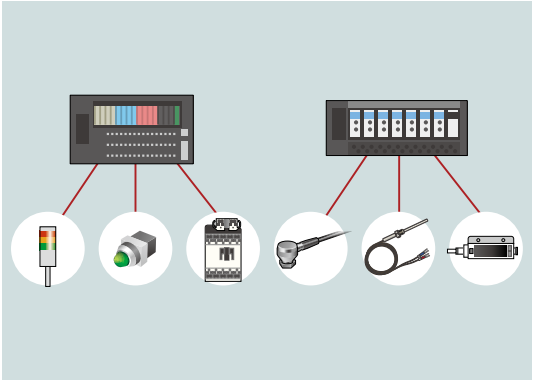
An analog signal converter connected to network digitalizes analog signals from devices such as flow/temperature sensors. Collected sensor data can be used to monitor the on-site operating conditions.

Saving cost and time for wiring in control panel and system



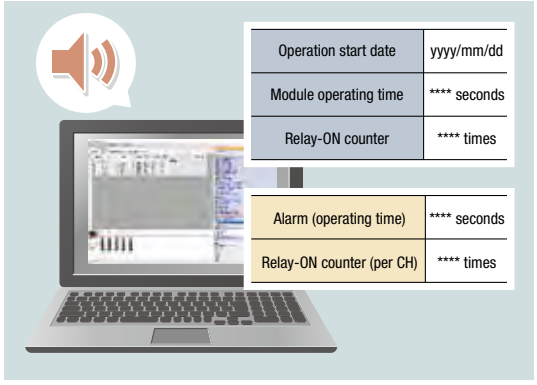
Devices can be easily installed at dispersed sites with network cables. Less wiring distances between devices reduce cost and time for wiring and cable routing.

Customization of output/conversion modules

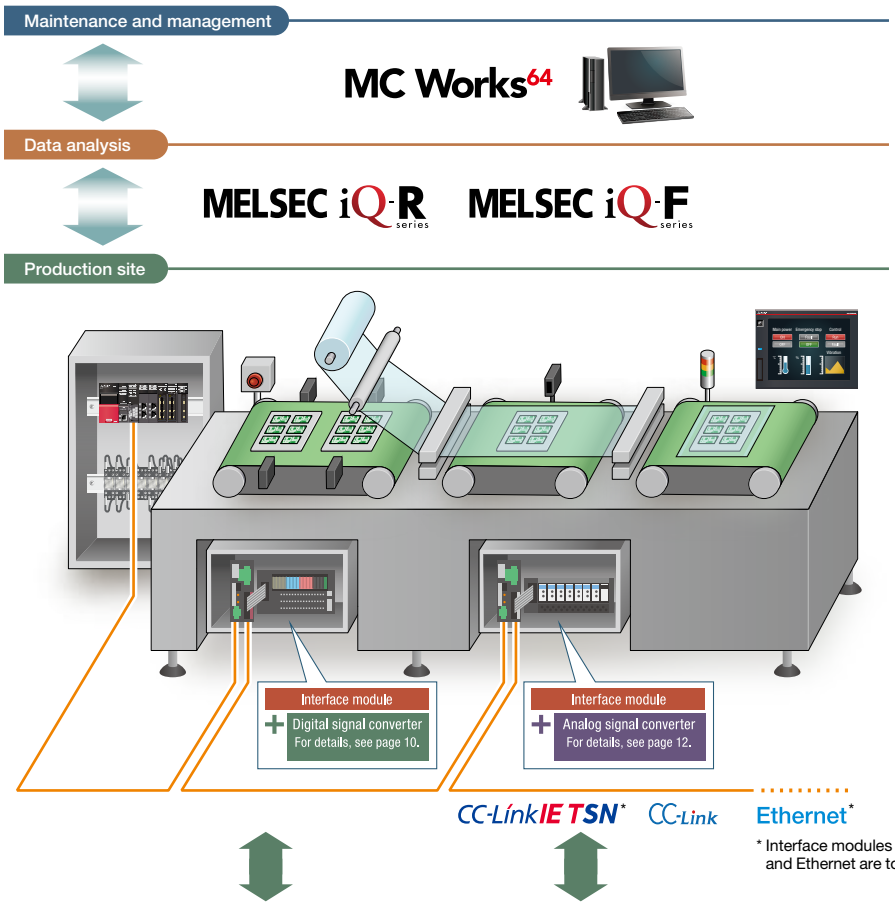


A digital signal converter (terminal module) and an analog signal converter can be customized according to application, as output modules and signal conversion modules can be combined separately.

Supporting prediction maintenance



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



* Interface modules supporting CC-Link IE TSN and Ethernet are to be released.

Devices	
Input	Switch, measuring instrument, temperature/humidity/vibration/flow/pressure/laser distance sensor, resistance temperature detector, etc.
Output	Magnetic starter, indication lamp, solenoid valve, etc.

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

CC-Link IE TSN and Ethernet

coming soon

Digital signal converter (terminal module)		
Input (sink/source)	Connection cable enclosed	FA3-TH1T16XC-01C
	Connection cable not enclosed	FA3-TH1T16XC
Output (sink)	Connection cable enclosed	FA3-TH1T16Y-01C
	Connection cable not enclosed	FA3-TH1T16Y
Output (source)	Connection cable enclosed	FA3-TH1T16YE-01C
	Connection cable not enclosed	FA3-TH1T16YE

Analog signal converter		
Input	Connection cable enclosed	FA3-AT1T8X-01C
	Connection cable not enclosed	FA3-AT1T8X
Output	Connection cable enclosed	FA3-AT1T8Y-01C
	Connection cable not enclosed	FA3-AT1T8Y

CC-Link

Digital signal converter (terminal module)		
Input (sink/source)	Connection cable enclosed	FA3-TH1C16XC-01C
	Connection cable not enclosed	FA3-TH1C16XC
Output (sink)	Connection cable enclosed	FA3-TH1C16Y-01C
	Connection cable not enclosed	FA3-TH1C16Y
Output (source)	Connection cable enclosed	FA3-TH1C16YE-01C
	Connection cable not enclosed	FA3-TH1C16YE

Analog signal converter		
Input	Connection cable enclosed	FA3-AT1C8X-01C
	Connection cable not enclosed	FA3-AT1C8X
Output	Connection cable enclosed	FA3-AT1C8Y-01C
	Connection cable not enclosed	FA3-AT1C8Y

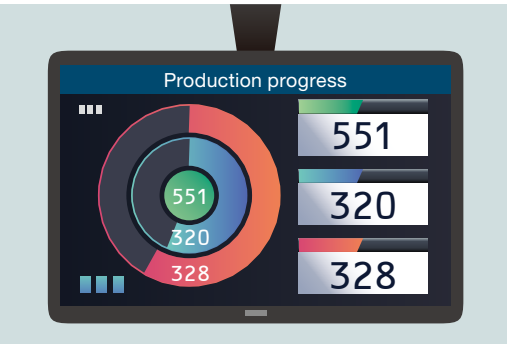
Products for monitoring and traceability

CHAPTER 03

Visualization (monitoring and diagnosis) of production sites

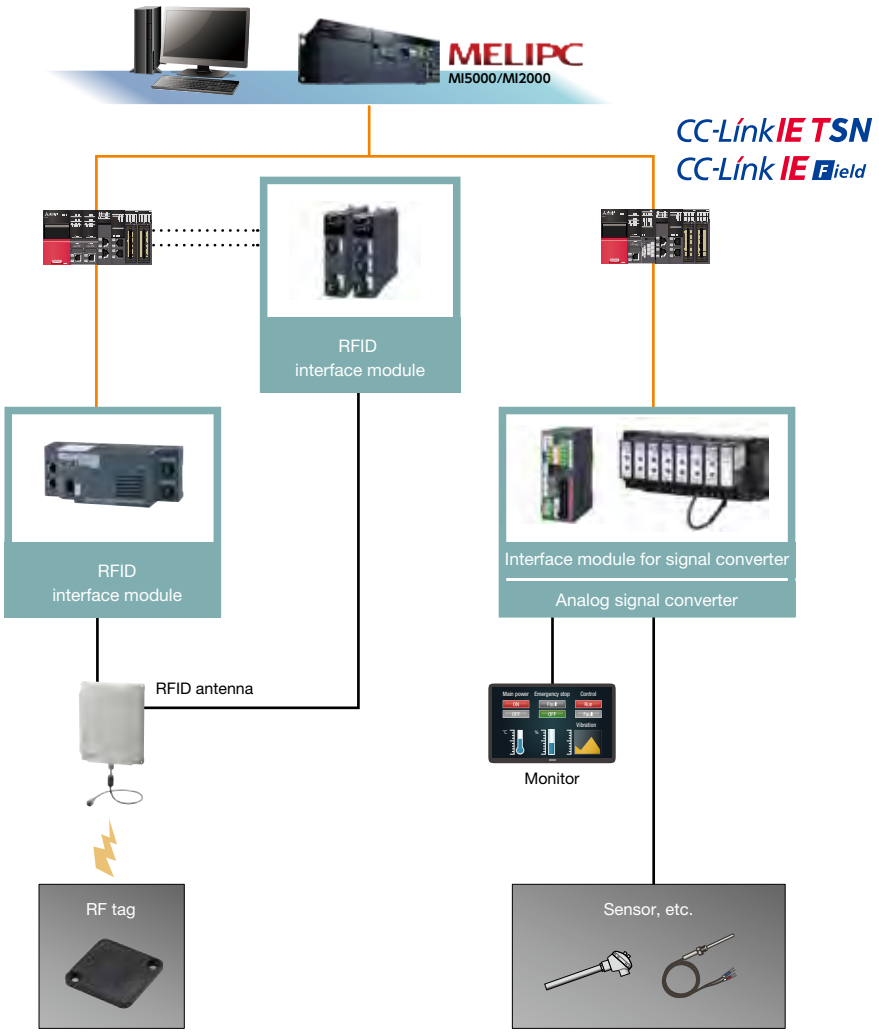
The idea of smart factory is leading to a new era of manufacturing, in which data and information can be shared between production sites and offices.
Our products enable visualization (monitoring and diagnosis) and sharing of various data and information, including the operating condition of each process,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

Monitoring and diagnosis

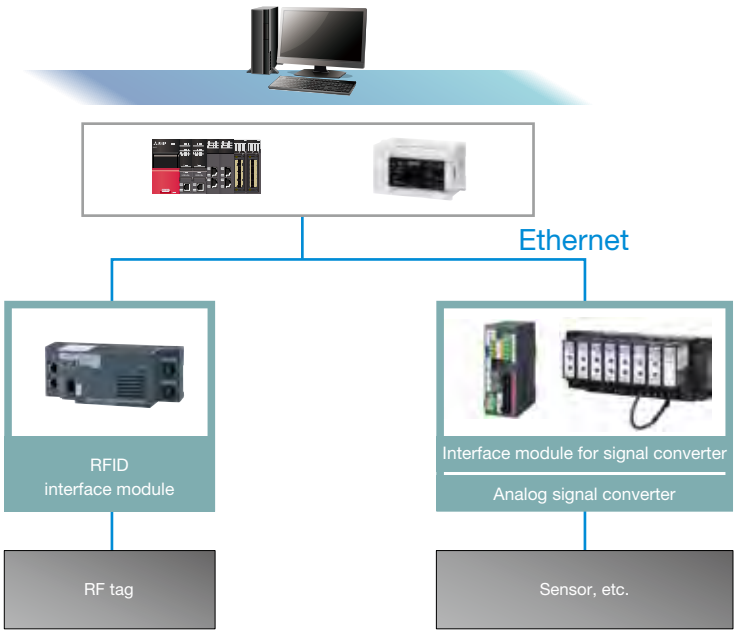


- "Writing commands for the production process" and "Reading data of the working process" using RF tags can be controlled together.
- Data is collected from sensors such as temperature sensors and flow sensors.

Factory



Building



SPOTLIGHT »

RFID interface module

ER-1V680D1, etc.

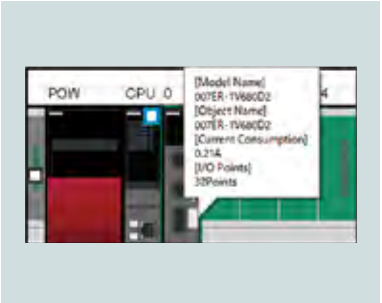
Features of the RFID interface module

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

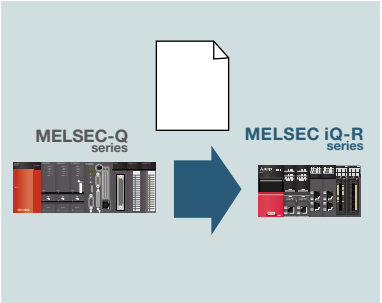
Present production status can be monitored by reading test data, results of testing, and actual progress against the production plan using RF tags.

Easy system start-up

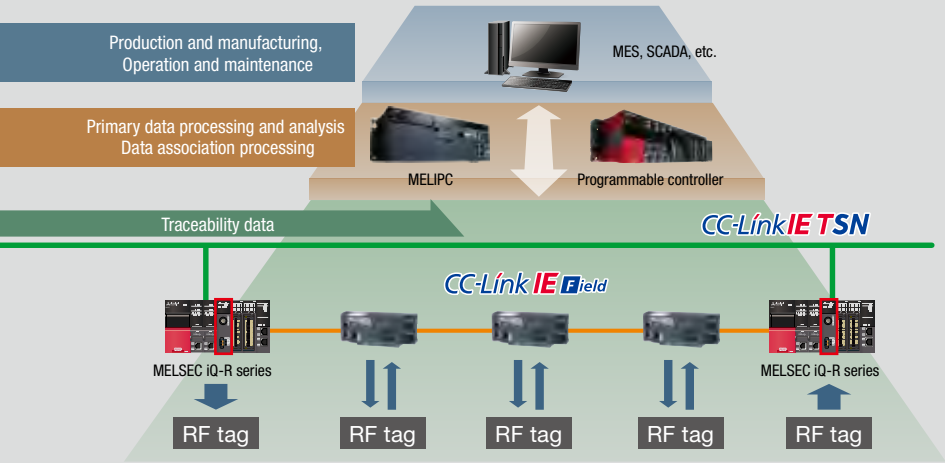


- Graphical start-up setting by GX Works3
- A wealth of test and measurement functions as standard

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

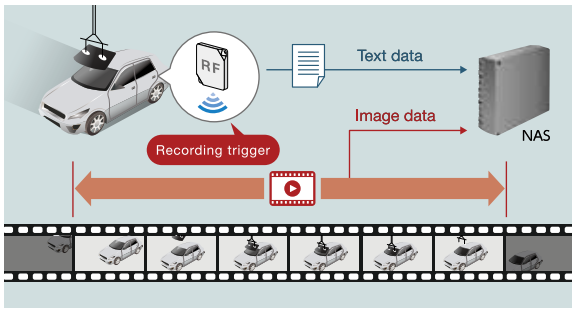
Products	Model	Number of channels
MELSEC iQ-R series slot-in type	ER-1V680D1	1ch
	ER-1V680D2	2ch
MELSEC-Q series slot-in type	EQ-V680D1	1ch
	EQ-V680D2	2ch
CC-Link IE Field Network compatible dispersed installation type	ECLEF-V680D2	2ch
CC-Link system dispersed installation type	ECL2-V680D1	1ch

System configuration

Enhanced traceability using event recorder

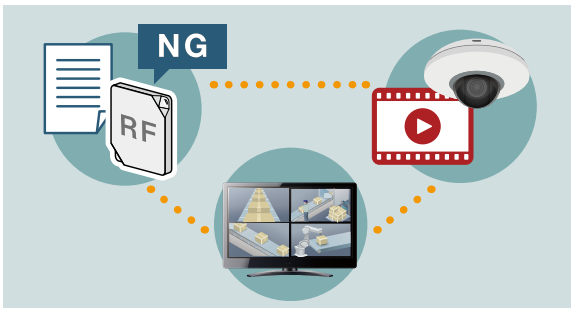
More effective traceability system using data from RF tags and camera monitoring

Images and data to control production status



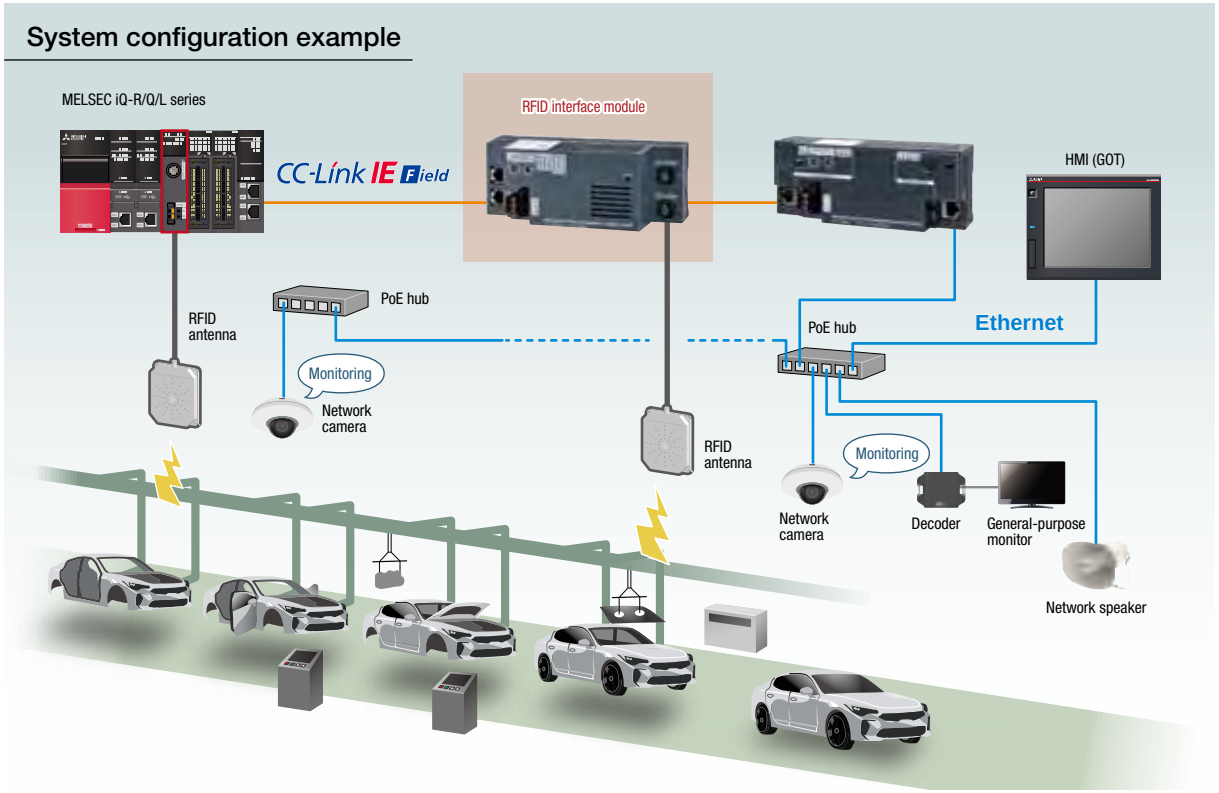
A failure can be analyzed using the images recorded by the event recorder before and after occurrence of the failure. (Recording is triggered by data sent from RF tags.)

Data associated with a product



Data read from RF tags can be associated with data for individual management of products and images recorded by cameras. Associated data can be sent via network and analyzed at remote location.

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

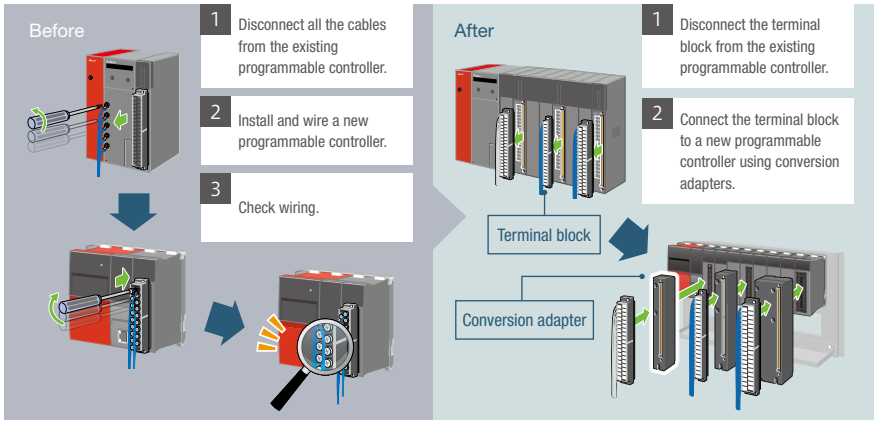
IoT greatly affects industries in the world.
Manufacturing needs to be optimized by introducing IoT throughout factories to survive the fierce competition.
Programmable controllers, which enable such optimization, can be easily replaced in short time.
Easy system upgrading will contribute to your first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



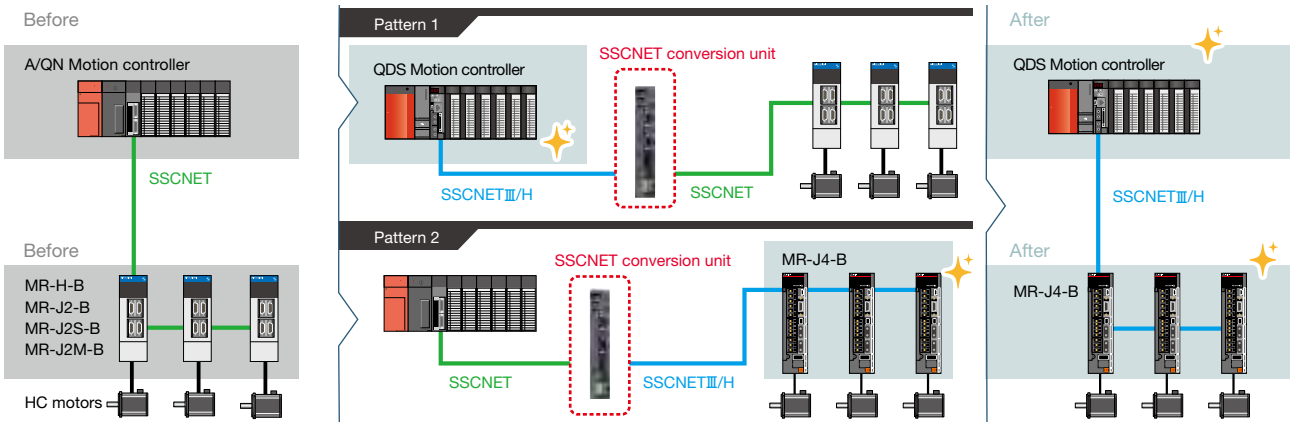
Replaceable combinations

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.
Machine downtime is less than that when all devices are replaced all at once, and the cost can be divided.



Pattern 1: Replacing a controller (servo system controller) first
Pattern 2: Replacing driving devices (servo amplifiers or servo motors) first

Products for system maintenance

CHAPTER 05

Stable operation for productivity improvement

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

Measures against instantaneous power failure


Instantaneous power failure protection module for servo amplifiers

If an instantaneous power failure occurs, operation can stop properly as energy will be supplied to servo amplifiers to secure the power failure tolerance time for the main circuit.

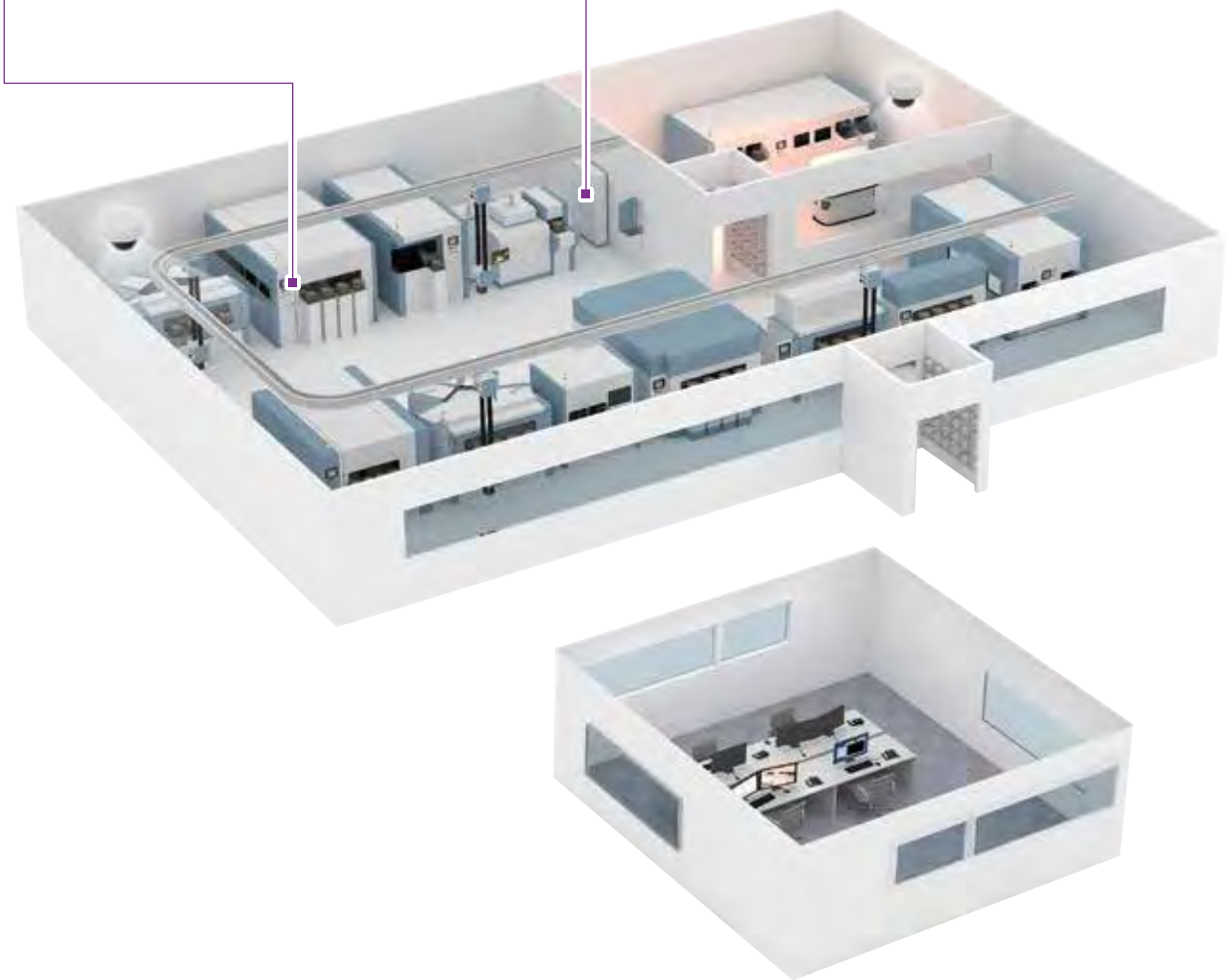
Voice alerts


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.

Protection against an instantaneous power failure

Voice alerts for an operator away from the system



Instantaneous power failure protection module for servo amplifiers

DG2CP1

Features of the instantaneous power failure protection module for servo amplifiers

Stored energy can be supplied to servo amplifiers when an instantaneous power failure is caused by lightning or other reasons. This reduces the system downtime and prevents wasting time and material, enabling stable system operation.

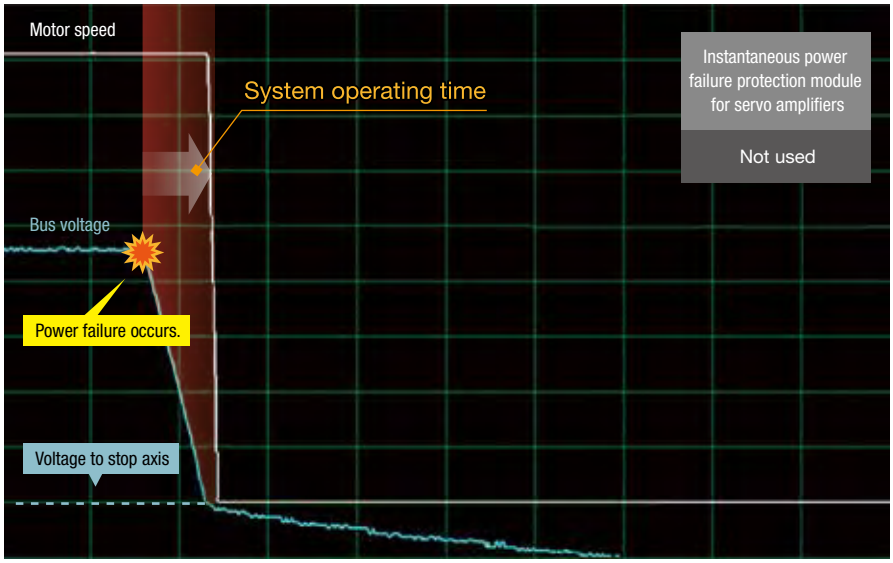
Measures against instantaneous power failure

Stored energy is supplied to secure the power failure tolerance time for the main circuit of the servo amplifier.

Problem — No measure taken against instantaneous power failure

Operation will stop unexpectedly when a power failure occurs.

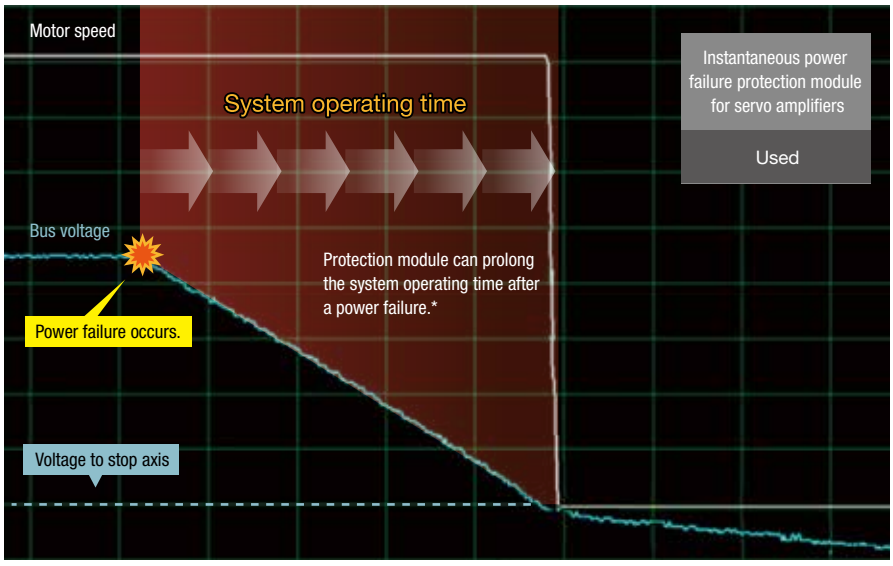
Operation cannot restart smoothly, and material will be wasted.



Solution — Using instantaneous power failure protection module for servo amplifiers

Operation can stop properly as stored energy will be supplied to servo amplifiers to secure the power failure tolerance time.

Operation can restart smoothly, and material waste will be reduced.



* The power failure tolerance time varies depending on the voltage conditions, capacity, and load conditions.

Effect of measures

Conditions	Motor speed: 3000 [r/min] Initial bus voltage: 290VDC Bus voltage when axis stops: 200VDC

The power failure tolerance time increases from 0.73s to 4.6s.

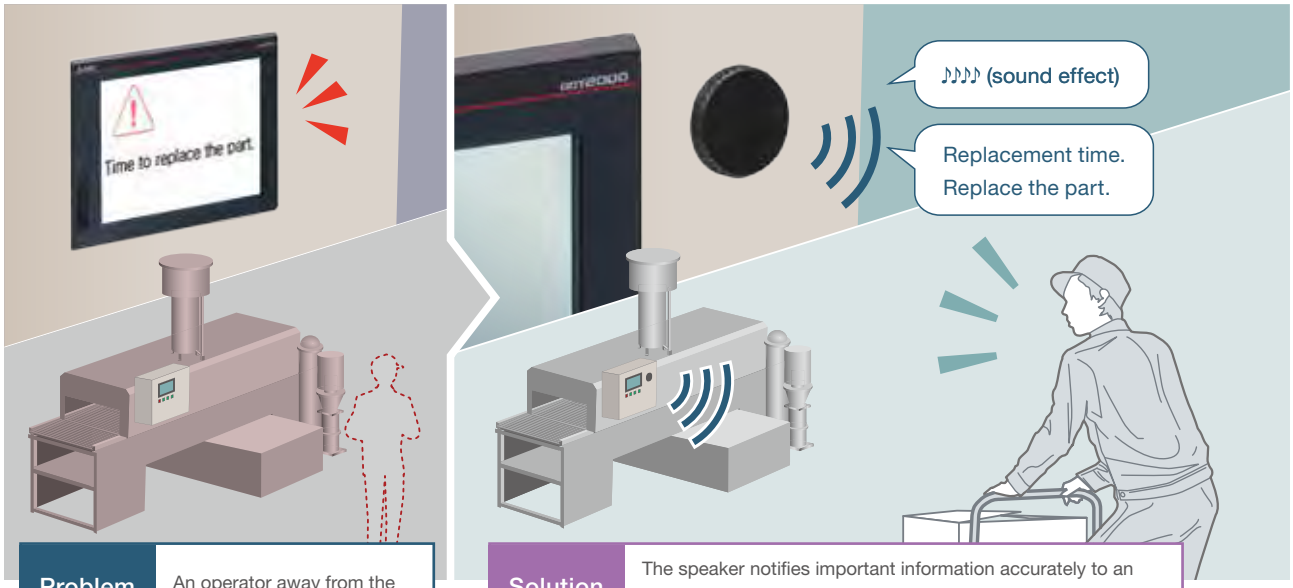
*** Tolerance time differs depending on the motor load at a power failure.**

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.

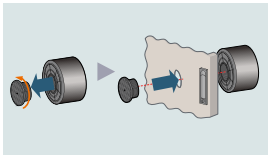


Problem An operator away from the HMI may not notice information on the display.

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.)

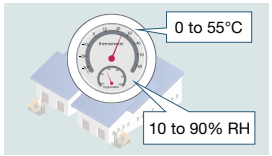
Incorrect operation prevention

When a touch switch is pressed, the operation guidance or precautions are given by voice.



Easy installation

The speaker just needs to be attached from the front and back of the panel. Only one audio cable is required to connect the speaker and the HMI.

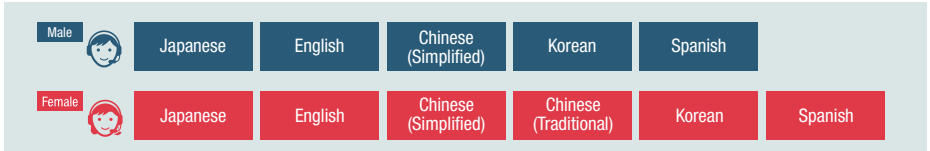


Environmental resistance

The speaker can be used at temperatures and humidities in factories.

Volume control function

The voice volume can be selected among 10 levels (Max. 90dB) according to the environment.



Language selection

Six languages are supported.

Related products

New Product Releases

MELSEC iQ-R series compatible RFID interface module

Panel mount HMI speaker

CC-Link interface module

Leaflets

Analog signal converter

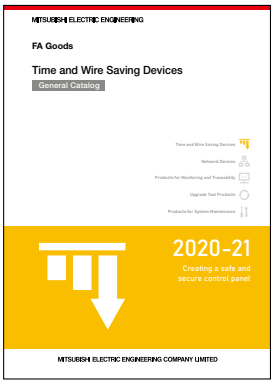
Spring clamp junction terminal block for Mitsubishi Electric AC servo system

MEMO

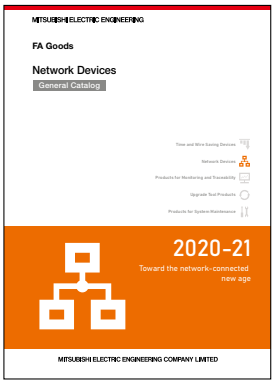
Catalogs

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

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