for a greener tomorrow

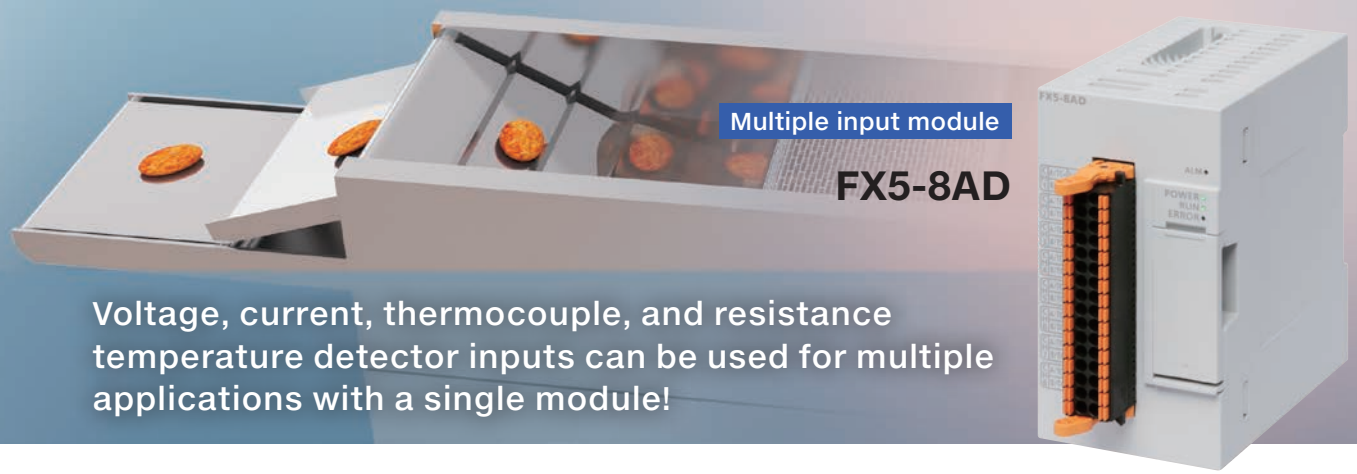
MITSUBISHI ELECTRIC
Changes for the Better

FACTORY AUTOMATION

MELSEC iQ-F Series
Intelligent Function Module

FX5-8AD, FX5-4LC, FX5-20PG-P, FX5-CCL-MS, FX5-ASL-M

MELSEC iQ-F series for various scenes and applications



Multiple input module

FX5-8AD

Voltage, current, thermocouple, and resistance temperature detector inputs can be used for multiple applications with a single module!

POINT

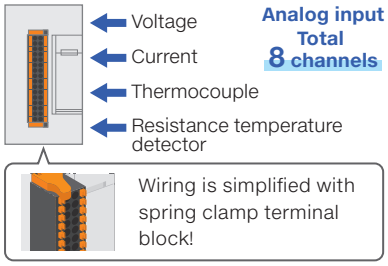
- ☐ Providing multiple support for various applications
- ☐ Voltage, current, thermocouple, and resistance temperature detector can be combined
- ☐ Auto refresh function is supported
- ☐ High-resolution*1 (312.5 μV for voltage input, 625 nA for current input, 0.1°C for thermocouple and resistance temperature detector)
- ☐ Parameters can be set with GX Works3, greatly reducing programming man-hours
- ☐ Easy wiring and improved vibration resistance realized with spring clamp terminal
- ☐ Smaller size compared to conventional model*2 (conventional model*2: W75 mm → FX5-8AD: W50 mm)

No need for multiple modules

Providing support for various applications

Voltage, current, thermocouple (K, J, T, B, R, S), and resistance temperature detector (Pt100, Ni100) inputs are supported.

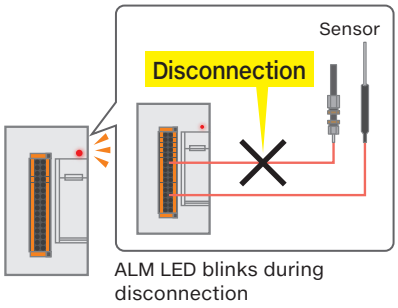
Possible to set input type per channel!



Reduce maintenance costs

Easily detect disconnection

Thermocouple and resistance temperature detector disconnection can be easily detected, so downtime and maintenance cost can be reduced.

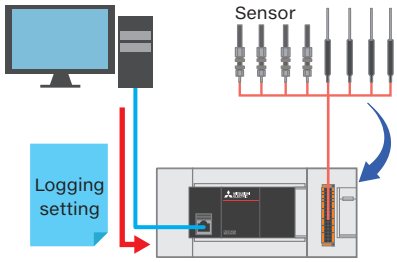


ALM LED blinks during disconnection

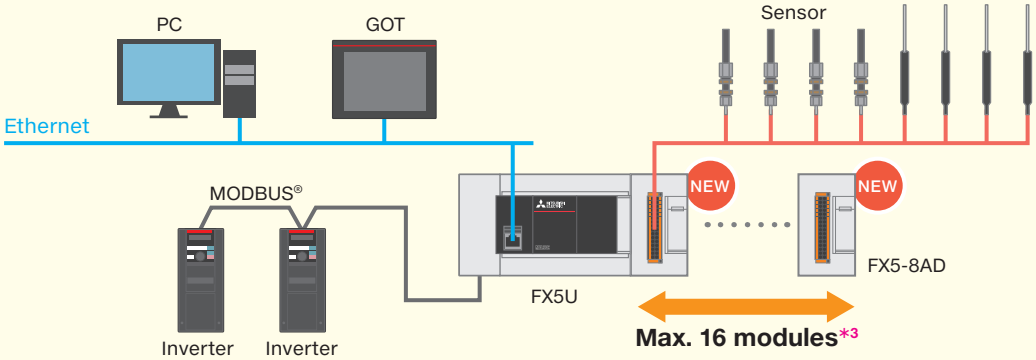
Save log when problem occurs

Analyze problems with logging function

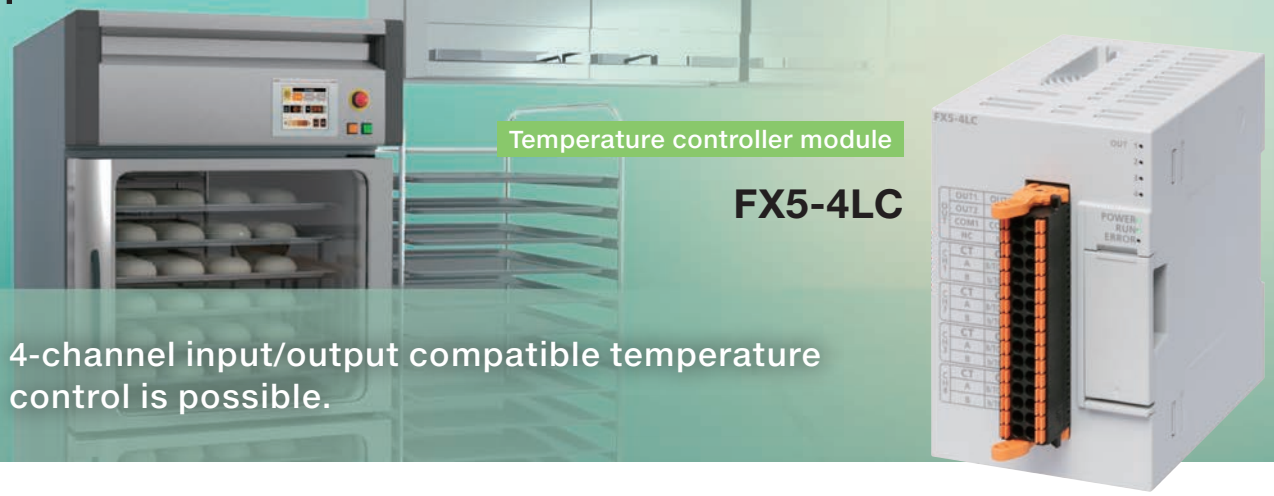
10000 points of data per channel can be logged and stored to buffer memory. If the log is saved, it can be useful in investigating the cause of the problem.



System configuration example



*1: For voltage analog input range 0 to 10 V, current analog input range 0 to 20 mA, thermocouple K, J, T, and resistance temperature detector (Celsius). Refer to the specifications page for other cases.
*2: Compared to FX2N-8AD
*3: Refer to each CPU module manual for details on the system configuration.
→ MELSEC iQ-F FX5U User's Manual (Hardware)
→ MELSEC iQ-F FX5UC User's Manual (Hardware)



Temperature controller module

FX5-4LC

4-channel input/output compatible temperature control is possible.

POINT

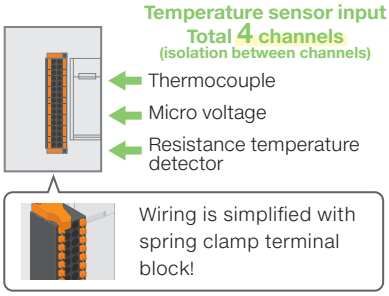
- ☐ Various temperature sensors are supported
- ☐ Auto refresh function is supported
- ☐ PID control is possible
- ☐ Using GX Works3 temperature trace, monitoring the temperature waveform in real-time is possible
- ☐ Parameters can be set with GX Works3, greatly reducing programming man-hours
- ☐ Easy wiring and improved vibration resistance realized with spring clamp terminal
- ☐ Smaller size compared to conventional model*1 (conventional model*1: W90 mm → FX5-4LC: W60 mm)

Supports a variety of applications

Various temperature sensors can be used

Supports thermocouple, resistance temperature detector, and micro voltage inputs. Possible to support a variety of applications.

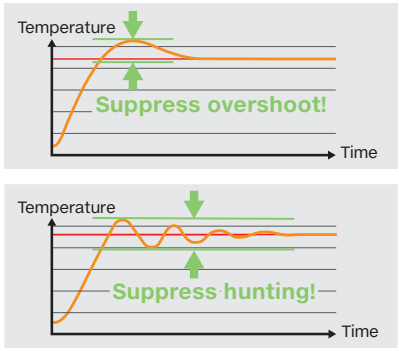
Possible to set input type per channel!



Temperature control is even easier

PID control supported

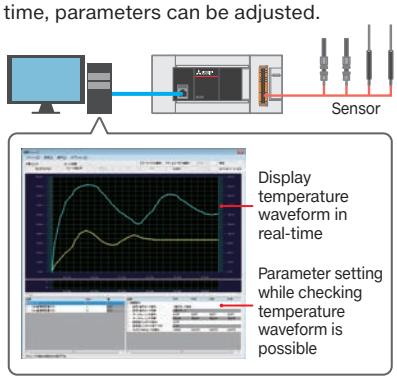
Overshooting where the output value exceeds the target value, and hunting phenomenon where vibration occurs around the target value can be suppressed.



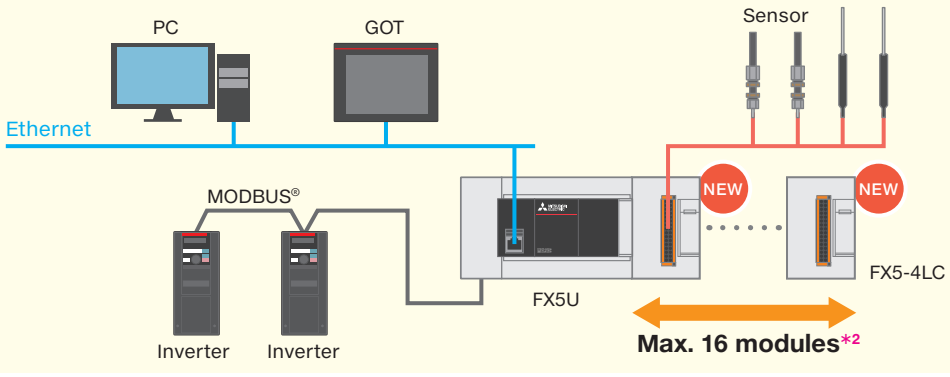
Easy to understand temperature change with waveform

Supports temperature trace

Temperature change can be checked on a waveform. While checking the temperature waveform displayed in real-time, parameters can be adjusted.



System configuration example



*1: Compared to FX3U-4LC
*2: Refer to each CPU module manual for details on the system configuration.
→ MELSEC iQ-F FX5U User's Manual (Hardware)
→ MELSEC iQ-F FX5UC User's Manual (Hardware)

2-axis pulse train positioning module

FX5-20PG-P

High-speed start increases freedom of 2-axis positioning!

POINT

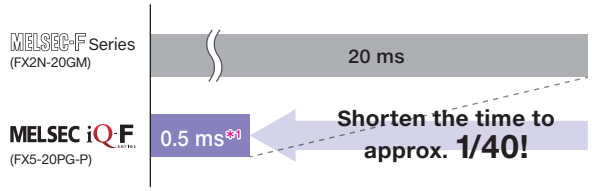
- ☐ High-speed start realized
- ☐ Quick start function supported
- ☐ Start time adjustment function supported
- ☐ Continuous positioning control and continuous path control supported
- ☐ Advanced positioning control supported (block start, etc.)
- ☐ Seamless interchangeability with MELSEC iQ-R Series
- ☐ Auto refresh function is supported
- ☐ Parameters can be set with GX Works3, greatly reducing programming man-hours

Improved efficiency with shorter starting time

High-speed start realized

The high-speed normal positioning starting process speed can shorten the starting time to 0.5 ms.

■ Comparison of starting times for 1-axis linear control

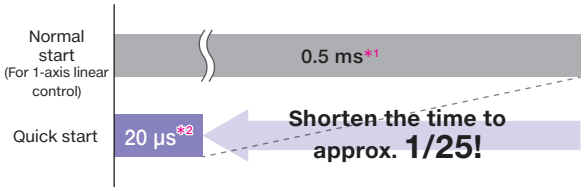


Further reducing the starting time

Quick start function supported

By pre-analyzing the positioning data to be executed immediately after starting, positioning can be started even faster than normal positioning start.

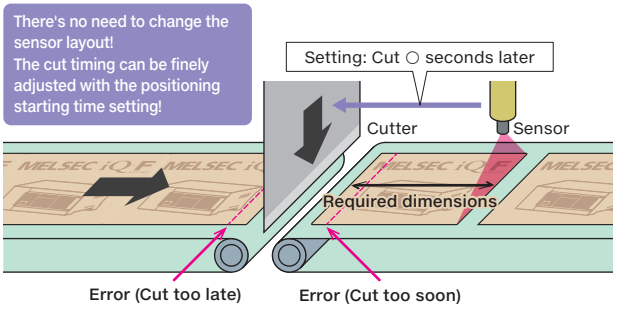
■ Comparison of starting times



Pulse output is turned ON after set time

Start time adjustment function

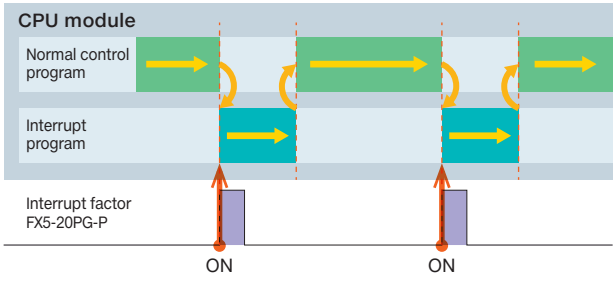
The pulse output can be started when the pre-specified time has elapsed after the start trigger is input. (Using the quick start function)



The control can be switched in a short time

Interrupt function

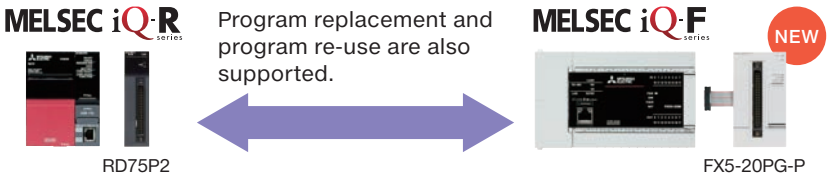
An interrupt request can be generated for the CPU module program. The target operation can be performed at a high-speed with priority according to the status of the positioning module.



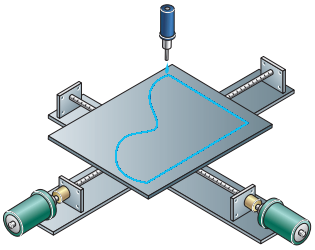
*1: For 1-axis linear control, 1-axis speed control. Refer to the manual for other control methods.
*2: When starting with the external command signal. Starting with the positioning signal takes 30 µs.

Compatible with MELSEC iQ-R Series (RD75P2), program assets can be reused

Buffer memories other than the FX5-20PG-P native buffer memory are interchangeable with the RD75P2. The program can be replaced easily, so program assets can be used effectively.

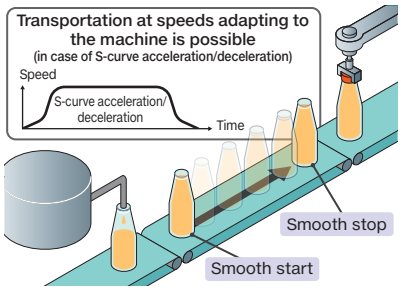


Ample positioning control functions



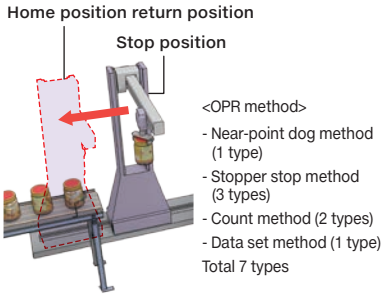
Interpolation control function

Interpolation control using multiple axes is possible. (2-axis linear interpolation control, 2-axis fixed-feed control, 2-axis circular interpolation control, 2-axis speed control)



Acceleration/deceleration processing function

The acceleration/deceleration curve can be adjusted to fit the machine. Trapezoidal or S-curve acceleration/deceleration can be selected, and four settings can be made for acceleration time and deceleration time each. In the case of S-curve acceleration/deceleration, S-curve ratio can also be set.



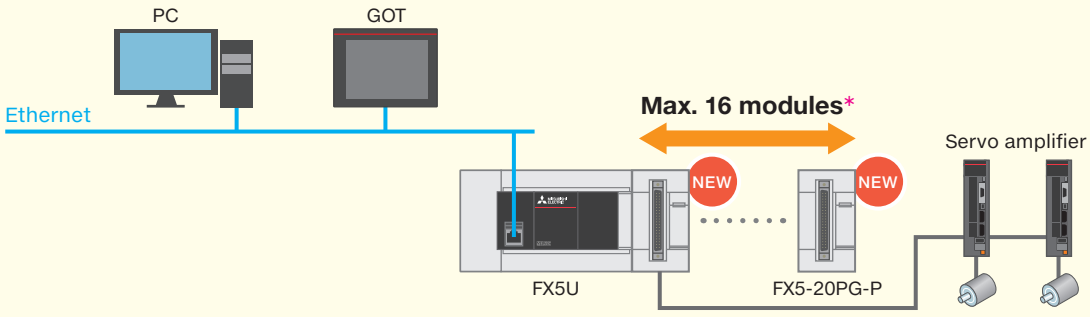
OPR retry function

When the power is turned ON, home position return can be started regardless of the machine stop position.

Other control

• Linear control • Fixed-feed control • Speed control • Speed-position switching control
• Position-speed switching control • JOG operation • Inching operation • Manual pulse generator operation

System configuration example



Must be prepared by user

The external device connection connector and connection cable, etc., are not enclosed with the product. The user must prepare these accessories.

■ Options

- External device connection connector (40-pin)

Model	Type
A6CON1	Soldered type (straight type)
A6CON2	Crimped type (straight type)
A6CON4	Soldered type (both straight/inclined protrusion type)

*: Refer to each CPU module manual for details on the system configuration.
→ MELSEC iQ-F FX5U User's Manual (Hardware)
→ MELSEC iQ-F FX5UC User's Manual (Hardware)

CC-Link system master/intelligent device module

FX5-CCL-MS

Build a CC-Link V2 network system affordably!

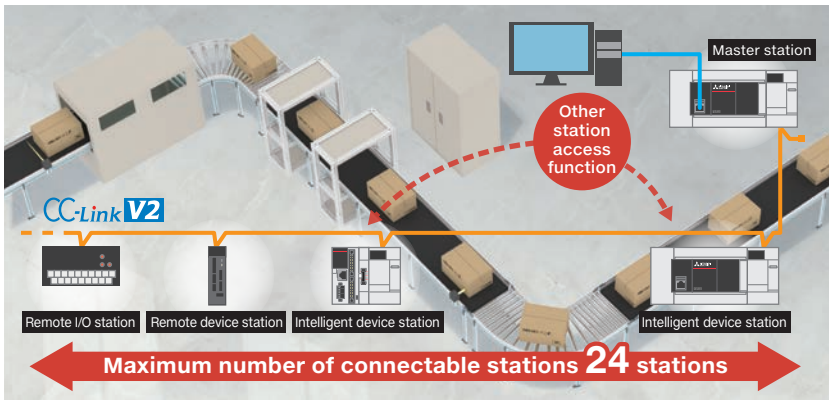
POINT

- ☐ Build a system including CC-Link V2 compatible slave station
- ☐ Equipped with master station/intelligent device station functions
- ☐ Auto refresh function is supported
- ☐ Parameters can be set with GX Works3, greatly reducing programming man-hours
- ☐ System status check via CC-Link diagnostics is possible
- ☐ Increased maximum number of connectable stations

Seamlessly access other stations

Other station access function supported

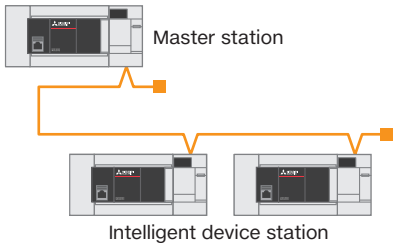
Perform program write/read and device monitoring, etc. for another station's PLC within the same network using the GX Works3 connected to own station. There's no need to connect GX Works3 and perform programming for each MELSEC iQ-F Series module, so programming man-hours can be reduced.



Use as either station

Equipped with master station/ intelligent device station functions

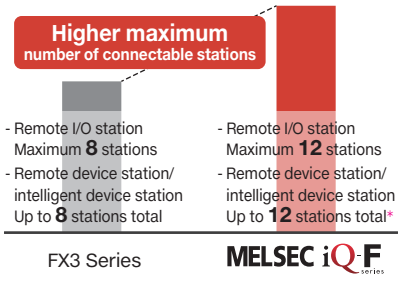
The module is equipped with both the master station and intelligent device station functions, so it can be used for either type of station by changing the parameter.



Simplifying network control

Increased maximum number of connectable stations

The maximum number of stations has been increased compared to conventional models, so a variety of network environments are supported.

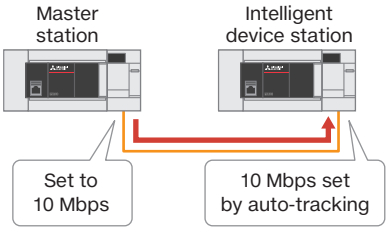


*: In case of CC-Link Ver. 2, the number of connectable stations changes depending on the extended cyclic setting of slave stations.

Control the entire system with master station settings

Transmission speed auto-tracking function

When using as the intelligent device station, the transmission speed can be set to “auto-tracking”. The master station's transmission speed is automatically tracked, thereby eliminating setting mistakes.



AnyWireASLINK system master module

FX5-ASL-M

Connect as the master station for the AnyWireASLINK system!

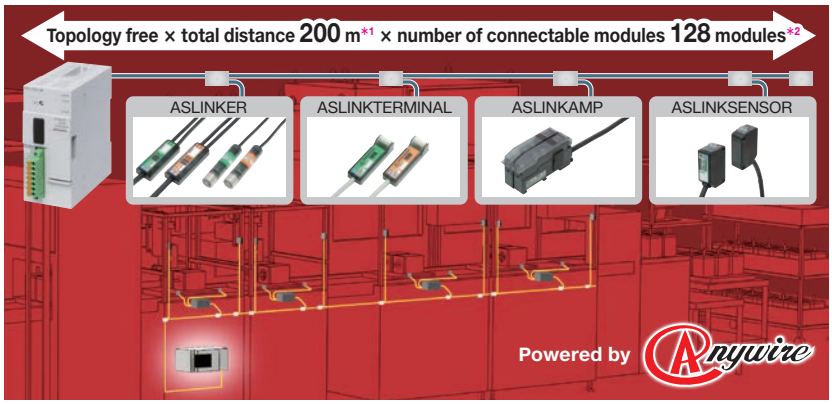
POINT

- ☐ Reinforcing "monitoring" of sensor status through collaboration of sensor and Mitsubishi Electric FA products
- ☐ Connection to the Anywire Co., Ltd. AnyWireASLINK system supported
- ☐ The sensor disconnection detection, etc. are helpful for preventive maintenance
- ☐ Auto refresh function is supported
- ☐ Parameters can be set with GX Works3, greatly reducing programming man-hours
- ☐ Easy wiring and improved vibration resistance realized with spring clamp terminal

Building a system with sensors

» Connection to the Anywire Co., Ltd. AnyWireASLINK system supported

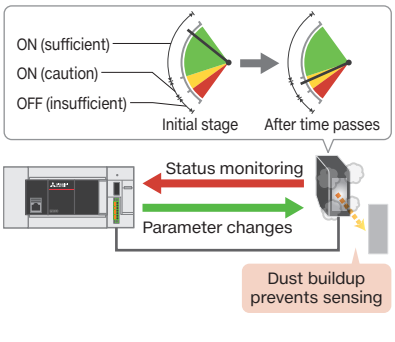
The AnyWireASLINK system performs central monitoring of the sensor status from the PLC, and can be used to detect disconnection/ short circuit, to set the sensor sensitivity, and to monitor the status, etc. Flexible branching and connections are possible as there are no restrictions to the minimum distance between each terminal, and the arrangement method can be selected freely from T-branch, multi-drop or star formats.



Before trouble occurs

» Supporting preventive maintenance

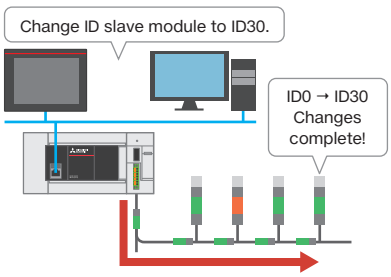
By monitoring the sensor status from the PLC, the occurrence of faults such as a drop in sensor light receiving amount can be predicted, and production line stops can be prevented beforehand.



Equipment at a remote location is also supported

» Remote address change function

The ID (address) for one slave unit can be changed from the buffer memory without using an address writer. The slave ID can be changed even from a remote location.



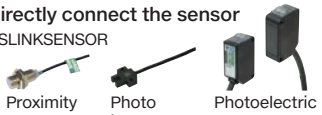
Contact Anywire Co., Ltd. for details on slave units compatible with the remote address change function.

A diverse range of sensors from Anywire Co., Ltd. can be used.

For I/O up to 2-point I/O
ASLINKER
Cable type / Connector type

General-purpose sensor head connection
ASLINKAMP

Directly connect the sensor
ASLINKSENSOR



For I/O up to 8-point I/O
ASLINKTERMINAL

*1: Total length including branch lines
*2: Number of modules varies depending on the current consumption of each slave module

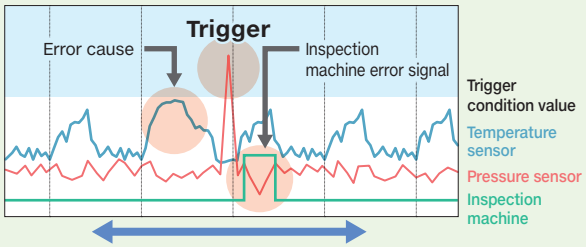
Increased functionality introduces new possibilities to industry.

The MELSEC iQ-F Series functions have been strengthened to support “The next level of industry”.

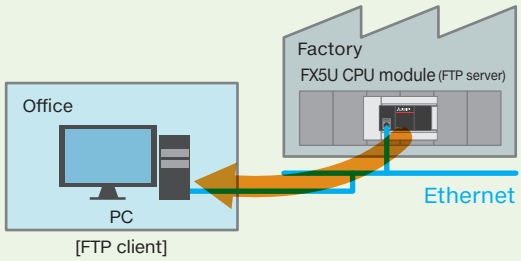
Pinpoint the cause of errors at the site from the office

Data logging function*1*2

Information from the computer or network devices can be periodically saved on the SD memory card. Use the saved data to efficiently analyze the system's operation status and the cause of trouble. Simple settings using the logging setting tool*3 eliminate the need for additional programs.



Trouble can be efficiently analyzed using [Trigger Logging] that limits the data to the situation before and after the trouble occurred. Data save can be limited to important data by setting the conditions.

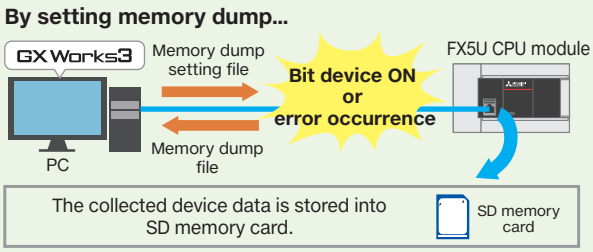


By using the FTP server function*4, the logging data from a remote location can be retrieved without going to the site. Batch-controlling multiple logging files from the office computer can reduce management and maintenance work.

Repeat and re-confirm errors

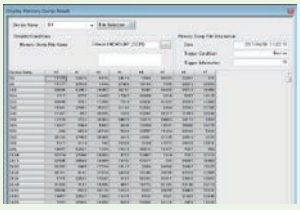
Memory dump function*2*5

The CPU module device value can be saved in the SD memory card at an arbitrary timing.
By setting the trigger to be established when an error occurs, the status at error occurrence can be confirmed. This is helpful in investigating and pinpointing the cause.



Use the information when debugging systems under development, or for troubleshooting when trouble occurs at a remote location, etc.

Memory dump results display screen



The collection results can be confirmed with GX Works3.
The device list can be displayed in the memory dump results display, and the memory dump conditions can be repeated on the offline monitor.

*1: FX5U/FX5UC Ver. 1.040 and later, with serial No. 16Y**** and later supported, GX Works3 Ver. 1.030G and later supported, CPU module logging configuration tool Ver. 1.64S and later supported
*2: The data logging function and memory dump function cannot be used simultaneously.
*3: For the CPU module logging configuration tool, contact your local Mitsubishi Electric representative.
*4: FX5U/FX5UC Ver. 1.040 and later, with serial No. 16Y**** and later supported, GX Works3 Ver. 1.030G and later supported
*5: FX5U/FX5UC Ver. 1.050 and later, with serial No. 16Y**** and later supported, GX Works3 Ver. 1.035M and later supported

Program with intuitive operation engineering software GX Works3

GX Works3

This software comprehensively supports sequence programming and maintenance. Programming is simple by "selecting" using graphical and intuitive operations. The troubleshooting compatible diagnosis function helps reduce engineering costs.

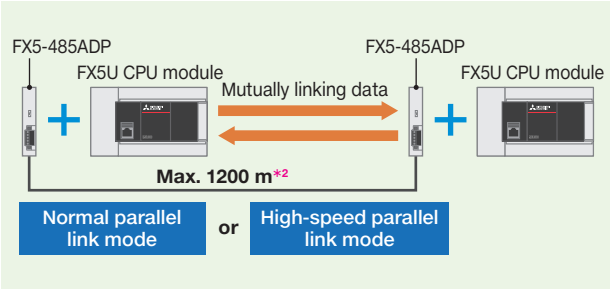
- **Reduce programming man-hours with graphical and intuitive operations.**
- **Complete motion control programming and debugging with just "GX Works3".**
- **Multi-language compatibility supports global development.**

Refer to the catalogs on the right for details on GX Works3. (L(NA)08334ENG)

Automatically establish a data link by connecting two CPU modules

Parallel link function*1

This function connects two CPU modules and automatically links mutual device data. ON/OFF status and data register values of the other station can be checked.

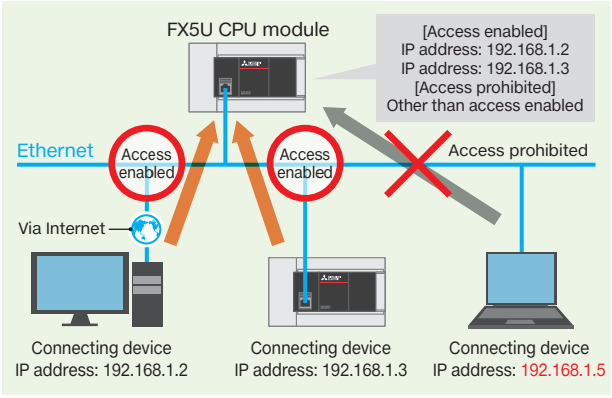


Normal parallel link mode/high-speed parallel link mode can be selected depending on the desired number of link points and link time. Parallel link can only be used on one channel of the CPU module.

Prevent illegal access

IP filter function*1

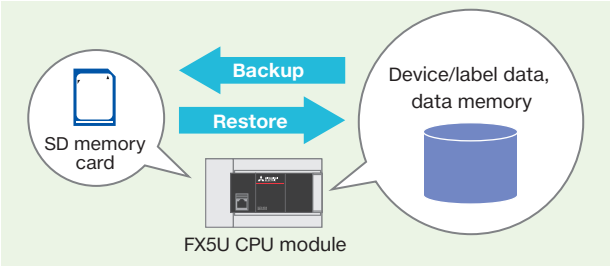
When the IP address to be permitted or blocked is set in the parameters, access from specific devices are restricted. The access source IP address can be identified to prevent accessing from illegal IP addresses.



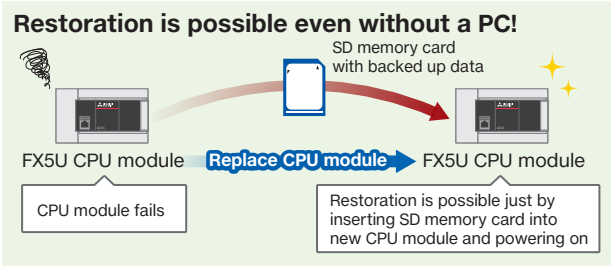
For preventive maintenance and high-volume programming

Data backup/restoration function (Device/label data*3*4, data memory*5)

The device/label data in the CPU module and the data memory can be backed up onto the SD memory card.*6
The backed up data can be restored as needed.



When the SD memory card is mounted in the CPU module, the data can be backed up at a random timing. The backed up data can be restored at a random timing.



By setting automatic restoration, SD memory card data is restored at power ON or reset. When the CPU module fails, restoration can be performed quickly without PC.

⚠ Caution	If the CPU module contains data that is protected with the file password function, it cannot be backed up or restored. When the security key authentication function is set, the program cannot be executed until the security key is written into the CPU module.

*1: FX5U/FX5UC Ver. 1.050 and later supported, GX Works3 Ver. 1.035M and later supported
*2: 50 m or less when including built-in RS-485 port and FX5-485-BD
*3: FX5U/FX5UC Ver. 1.045 and later supported
*4: Excluding intelligent function module buffer memory
*5: FX5U/FX5UC Ver. 1.050 and later supported
*6: FX5U/FX5UC serial numbers 16Y**** and later supported

Multiple input module
FX5-8AD

■ Power supply specifications

Items		Specifications
External power supply	Power supply voltage	24 V DC +20%, -15%
	Allowable instantaneous power failure time	Operation continues when the instantaneous power failure is shorter than 5 ms.
	Current consumption	100 mA
Internal power supply	Power supply voltage	24 V DC
	Current consumption	40 mA

■ Performance specifications

Items		Specifications
Number of input points		8 points (8 channels)
Conversion speed	Voltage/Current	1 ms/ch*1
	Thermocouple/Resistance temperature detector	40 ms/ch
Isolation method		Between input terminal and PLC: Photocoupler
		Between input terminal and channels: Non-isolation
Number of occupied I/O points		8 points
Applicable CPU module*2		FX5U/FX5UC CPU module: Ver. 1.050 or later
Applicable engineering tool		GX Works3: Ver. 1.035M or later

*1: In the case of 2 CH conversion mode, conversion speed is 1 ms/2 ch.
*2: FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-8AD to the FX5UC CPU module.

■ Voltage/current input specifications

Items			Specifications	
Analog input voltage			-10 to 10 V DC (Input resistance 1 MΩ)	
Analog input current			-20 to +20 mA DC (Input resistance 250 Ω)	
Digital output value			16-bit signed binary (-32000 to +32000)	
Input characteristics, resolution*	Analog input range		Digital output value	Resolution
	Voltage	0 to 10 V	0 to 32000	312.5 μV
		0 to 5 V	0 to 32000	156.25 μV
		1 to 5 V	0 to 32000	125 μV
		-10 to +10 V	-32000 to +32000	312.5 μV
	Current	0 to 20 mA	0 to 32000	625 nA
		4 to 20 mA	0 to 32000	500 nA
		-20 to +20 mA	-32000 to +32000	625 nA
Accuracy (accuracy for the full scale digital output value)			Ambient temperature 25 ± 5°C: within ±0.3% (±192 digits) Ambient temperature -20 to 55°C: within ±0.5% (±320 digits)	
Absolute maximum input			Voltage: ±15 V, Current: ±30 mA	

*: For the input characteristic, refer to the following.
→MELSEC iQ-F FX5 User's Manual (Analog Control - Intelligent function module)

■ Thermocouple input specifications

Items		Specifications	
Usable thermocouple		K, J, T, B, R, S	
Resolution		K, J, T: 0.1°C (0.1 to 0.2°F) B, R, S: 0.1 to 0.3°C (0.1 to 0.6°F)	
Temperature measuring range		K: -200 to +1200°C (-328.0 to +2192.0°F) J: -40 to +750°C (-40.0 to +1382.0°F) T: -200 to +350°C (-328.0 to +662.0°F) B: 600 to 1700°C (1112.0 to 3092.0°F) R: 0 to 1600°C (32.0 to 2912.0°F) S: 0 to 1600°C (32.0 to 2912.0°F)	
Digital output value (16-bit signed binary)		K: -2000 to +12000 (-3280 to +21920) J: -400 to +7500 (-400 to +13820) T: -2000 to +3500 (-3280 to +6620) B: 6000 to 17000 (11120 to 30920) R: 0 to 16000 (320 to 29120) S: 0 to 16000 (320 to 29120)	
Accuracy*	Ambient temperature 25±5°C	K: ±3.5°C (-200°C to -150°C) K: ±1.5°C (-100°C to +1200°C) T: ±3.5°C (-200°C to -150°C) T: ±1.5°C (-100°C to +350°C) R: ±2.5°C	K: ±2.5°C (-150°C to -100°C) J: ±1.2°C T: ±2.5°C (-150°C to -100°C) B: ±2.3°C S: ±2.5°C
	Ambient temperature -20 to 55°C	K: ±8.5°C (-200°C to -150°C) K: ±6.5°C (-100°C to +1200°C) T: ±5.2°C (-200°C to -150°C) T: ±3.1°C (-100°C to +350°C) R: ±6.5°C	K: ±7.5°C (-150°C to -100°C) J: ±3.5°C T: ±4.2°C (-150°C to -100°C) B: ±6.5°C S: ±6.5°C

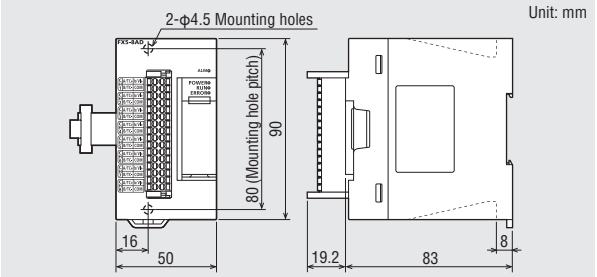
*: To stabilize the accuracy, warm-up (supply power) the system for 30 minutes or more after power-on.

■ Resistance temperature detector input specifications

Items		Specifications
Usable resistance temperature detector*		Pt100, Ni100
Resolution		0.1°C (0.2°F)
Temperature measuring range		Pt100: -200 to +850°C (-328 to +1562°F) Ni100: -60 to +250°C (-76 to +482°F)
Digital output value (16-bit signed binary)		Pt100: -2000 to +8500 (-3280 to +15620) Ni100: -600 to +2500 (-760 to +4820)
Accuracy	Ambient temperature 25±5°C	Pt100: ±0.8°C Ni100: ±0.4°C
	Ambient temperature -20 to +55°C	Pt100: ±2.4°C Ni100: ±1.2°C

*: Only 3-wire type resistance temperature detectors can be used.

■ External dimensions



MASS (Weight): Approx. 0.3 kg
Outer painting color: Munsell 0.6B7.6/0.2

Temperature control module
FX5-4LC

■ Power supply specifications

Items		Specifications
External power supply	Power supply voltage	24 V DC +20%, -15%
	Allowable instantaneous power failure time	Operation continues when the instantaneous power failure is shorter than 5 ms.
	Current consumption	25 mA
Internal power supply	Power supply voltage	5 V DC
	Current consumption	140 mA

■ Performance specifications

Items	Specifications
Control method	Two-position control, PID control, Heating/cooling PID control, Cascade control
Control operation period	250 ms/4 ch
Process temperature range	K: -200 to +1300°C (-100 to +2400°F) J: -200 to +1200°C (-100 to +2100°F) T: -200 to +400°C (-300 to +700°F) S: 0 to 1700°C (0 to 3200°F) R: 0 to 1700°C (0 to 3200°F) E: -200 to +1000°C (0 to 1800°F) B: 0 to 1800°C (0 to 3000°F) N: 0 to 1300°C (0 to 2300°F) PL II: 0 to 1200°C (0 to 2300°F) W5Re/W26Re: 0 to 2300°C (0 to 3000°F) U: -200 to +600°C (-300 to +700°F) L: 0 to 900°C (0 to 1600°F) Micro voltage input: DC0 to 10 mV, DC0 to 100 mV Pt100 (3-wire type): -200 to +600°C (-300 to +1100°F) JPt100 (3-wire type): -200 to +500°C (-300 to +900°F) Pt1000 (2-wire type/3-wire type): -200.0 to +650.0°C (-328 to +1184°F)
Heater disconnection detection	Alert is detected (Variable within range from 0.0 to 100.0 A by GX Works3.)
Operation mode	0: Not used 1: Monitor 2: Monitor + Alert 3: Monitor + Alert + Control (Selected by GX Works3)
Insulation method	• The photocoupler is used to insulate the analog input area and transistor output area from the PLC. • The DC/DC converter is used to insulate the power supply from the analog input area and transistor output area. • Channels are insulated from each other.
Number of occupied I/O points	8 points
Applicable CPU module*	FX5U/FX5UC CPU module: Ver. 1.050 or later
Applicable engineering tool	GX Works3: Ver. 1.035M or later

*: FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-4LC to the FX5UC CPU module.

■ Input specifications

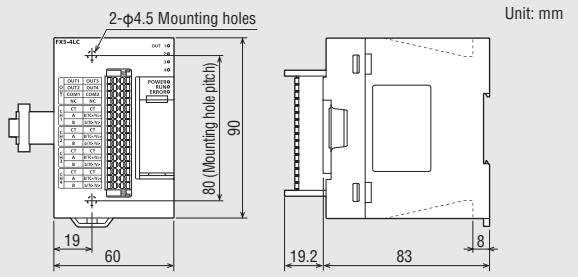
Items		Specifications
Number of input points		4 points
Input type*1	Thermocouple	K, J, R, S, E, T, B, N JIS C 1602-1995, PL II, W5Re/W26Re, U, L
	Resistance thermometer	3-wire Pt100 JIS C 1604-1997 3-wire JPt100 JIS C 1604-1981 2-wire/3-wire Pt1000 JIS C 1604-2013
	Micro voltage input	
Measurement precision*2		Refer to MELSEC iQ-F FX5 User's Manual (Temperature Control)
Cold contact temperature compensation error	When ambient temperature is 0 to 55°C	Within ±1.0°C However, within ±2.0°C while input value is -150 to -100°C / within ±3.0°C while input value is -200 to -150°C
	When ambient temperature is -20 to 0°C	Within ±1.8°C However, within ±3.6°C while input value is -150 to -100°C / within ±5.4°C while input value is -200 to -150°C
Resolution		0.1°C (0.1°F), 1.0°C (1.0°F), 0.5 μV, or 5.0 μV Varies depending on input range of used sensors.
Sampling period		250 ms/4 ch
Effect of external resistance (When thermocouple is used)		Approx. 0.125 μV/Ω
Effect of input lead wire resistance (When resistance thermometer is used)	3-wire type	Approx. 0.03%/Ω of full scale. 10 Ω or less per 1-wire
	2-wire type	Approx. 0.04%/Ω of full scale. 7.5 Ω or less per 1-wire
Input impedance		1 MΩ or more
Sensor current		Approx. 0.20 mA (When resistance thermometer is used)
Operation when input is disconnected/Operation when input is short-circuited		Upscale/Downscale (When resistance thermometer is used)

*1: A different input can be selected for each channel.
*2: To stabilize the measurement precision, warm-up (supply power) the system for 30 minutes or more after power-on.

■ Output specifications

Items	Specifications
Number of output points	4 points
Output method	NPN open collector transistor output
Rated load voltage	5 to 24 V DC
Maximum load voltage	30 V DC or less
Maximum load current	100 mA
Leak current in OFF status	0.1 mA or less
ON voltage	1.5 V (When maximum load current)
Control output cycle	0.5 to 100.0 sec.

■ External dimensions



MASS (Weight): Approx. 0.3 kg
Outer painting color: Munsell 0.6B7.6/0.2

2-axis pulse train positioning module
FX5-20PG-P

■ Power supply specifications

Item		Specifications
External power supply	Power supply voltage	24 V DC +20%, -15%
	Allowable instantaneous power failure time	Operation continues when the instantaneous power failure is shorter than 5 ms.
	Current consumption	120 mA

■ Performance specifications

Item	Specifications
Number of control axes	2 axes
Pulse output form	Transistor
Interpolation function	2-axis linear interpolation, 2-axis circular interpolation
Control method	PTP (Point To Point) control, path control (line and arc can be set), speed control, speed-position switching control, position-speed switching control
Control units	mm, inch, degree, pulse
Positioning data	600 data/axis
Maximum connection distance between servos	2 m
Number of write accesses to flash ROM	100000 times maximum
Number of occupied I/O points	8 points
Applicable CPU module*	FX5U/FX5UC CPU module: Ver. 1.050 or later
Applicable engineering tool	GX Works3: Ver. 1.035M or later

*: FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-20PG-P to the FX5UC CPU module.

■ Input specifications

• Drive unit READY signal (READY), Stop signal (STOP), Upper limit signal (FLS), Lower limit signal (RLS)

Item	Specifications
Signal voltage	24 V DC
Input current	5 mA
ON current	3.5 mA or more
OFF current	1.7 mA or less
Signal format	No-voltage contact input Sink: NPN open collector transistor Source: PNP open collector transistor
Response time	4 ms or less
Insulation of circuit	Photo-coupler insulation
Indication of operation	None (Operation check via buffer memory is possible.)

• Zero signal (PG05/PG024)
• Manual pulse generator A phase (PULSER A)/ Manual pulse generator B phase (PULSER B)

Items	Specifications		
	Zero signal		Manual pulse generator A phase / B phase
	PG05	PG024	
Signal voltage	5 V DC	24 V DC	5 V DC
Input current	5 mA		14 mA
ON current	2 mA or more	3 mA or more	2 mA or more
OFF current	0.5 mA or less	0.2 mA or less	0.2 mA or less
Signal format	NPN open collector transistor		NPN open collector transistor
Response time	1 ms or less		—
Response frequency	—		100 kHz
Insulation of circuit	Photo-coupler insulation		
Indication of operation	None (Operation check via buffer memory is possible.)		

• Near-point dog signal (DOG) • External command signal (CHG)

Items	Specifications	
	Near-point dog signal	External command signal
Signal voltage	24 V DC	
Input current	5 mA	
ON current	3.5 mA or more	2.7 mA or more
OFF current	1.7 mA or less	0.8 mA or less
Signal format	No-voltage contact input Sink: NPN open collector transistor Source: PNP open collector transistor	
Response time	1 ms or less	20 µs
Insulation of circuit	Photo-coupler insulation	
Indication of operation	None (Operation check via buffer memory is possible.)	

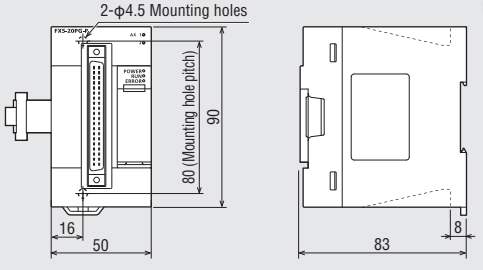
■ Output specifications

• Deviation counter clear signal (CLEAR) • Pulse output (PULSE R/ PULSE F)

Items	Specifications	
	Deviation counter clear signal	Pulse output
Pulse output form	Transistor	
Signal output time	1 to 65535 ms	—
Output form	—	PULSE/SIGN mode, CW/CCW mode, A phase/B phase (multiple of 4), A phase/B phase (multiple of 1)
Output frequency	—	1 pps to 200 kpps
Rated load voltage	5 to 24 V DC	
Max. load current	100 mA	50 mA
Output ON voltage	1.5 V or less	1.0 V or less
Indication of operation	None (Operation check via buffer memory is possible.)	

■ External dimensions

Unit: mm



MASS (Weight): Approx. 0.2 kg
Outer painting color: Munsell 0.6B7.6/0.2

CC-Link system master/intelligent device module
FX5-CCL-MS

■ Power supply specifications

Item		Specifications
External power supply	Power supply voltage	24 V DC + 20%, -15%
	Allowable instantaneous power failure time	Operation continues when the instantaneous power failure is shorter than 1 ms.
	Current consumption	100 mA

■ Performance specifications

Item		Description
CC-Link applicable version		Ver. 2.00 (Ver. 1.10 also supported.)
Station type		Master station or intelligent device station
Station number		• Master station: 0 • Intelligent device station: 1 to 64
Connectable station type (master station)		Remote I/O station, remote device station and intelligent device station (local station and standby master station cannot be connected)
Number of connectable units		One unit of each station type can be connected to a CPU module. • Master station: 1*1 • Intelligent device station: 1*2
Transmission speed		• Master station: 156 kbps/625 kbps/2.5 Mbps/5 Mbps/10 Mbps • Intelligent device station: 156 kbps/625 kbps/2.5 Mbps/5 Mbps/10 Mbps/Auto-tracking
Maximum number of connectable stations (master station)		• Remote I/O stations: 12 maximum (The total number of I/O points of remote I/O station is 384 or less.) • The total number of remote device stations + intelligent device stations: 12 maximum (The total number of I/O points of intelligent device station + remote device station is 384 or less.)
Number of occupied stations (intelligent device station)		1 to 4 stations (The number of stations can be changed using the engineering tool.)
Maximum number of link points per system (master station)	CC-Link Ver. 1	• Remote I/O (RX, RY): 768 points (Remote I/O station: 384 points*3 + remote device station + intelligent device station: 384 points) • Remote register (RWw): 48 points • Remote register (RWr): 48 points
	CC-Link Ver. 2	• Remote I/O (RX, RY): 768 points (Remote I/O station: 384 points*3 + remote device station + intelligent device station: 384 points) • Remote register (RWw): 96 points • Remote register (RWr): 96 points
Number of link points by the number of occupied stations		Refer to List of link points by number of occupied stations
Communication method		Broadcast polling method
Synchronization method		Frame synchronization method
Encoding method		NRZI method
Network topology		Bus (RS-485)
Transmission format		HDLC compliant
Error control system		CRC ($X^{16}+X^{12}+X^5+1$)
Connection cable		Ver. 1.10 compatible CC-Link dedicated cable
Transmission distance		1200 m maximum (varies depending on the transmission speed.)
Number of occupied I/O points		8 points
Applicable CPU module*4		FX5U/FX5UC CPU module: Ver. 1.050 or later
Applicable engineering tool		GX Works3: Ver. 1.035M or later

*1: When FX5-CCL-MS is being used as the master station, FX3U-16CCL-M cannot be used.
*2: When FX5-CCL-MS is being used as the the intelligent device station, FX3U-64CCL cannot be used.
*3: The number of available remote I/O points per system varies depending on the number of I/O points of the extension devices. For the limit of I/O points, refer to the following manual.
→MELSEC iQ-F FX5U User's Manual (Hardware)
→MELSEC iQ-F FX5UC User's Manual (Hardware)
*4: FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-CCL-MS to the FX5UC CPU module.

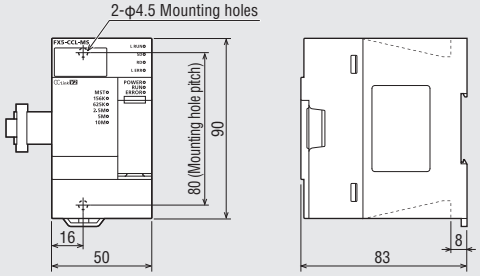
■ Number of link points for each number of occupied stations

Item			CC-Link Ver. 1	CC-Link Ver. 2			
				Extended cyclic setting			
				Single	Double	Quadruple	Octuple
Number of link points for each number of occupied stations	1 Station occupied	Remote input/output (RX, RY)	32 points (16 points)	32 points (16 points)	32 points (16 points)	64 points (48 points)	128 points (112 points)
		Remote register (RWw)	4 points	4 points	8 points	16 points	32 points
		Remote register (RWr)	4 points	4 points	8 points	16 points	32 points
	2 Stations occupied	Remote input/output (RX, RY)	64 points (48 points)	64 points (48 points)	96 points (80 points)	192 points (176 points)	384 points (368 points)
		Remote register (RWw)	8 points	8 points	16 points	32 points	64 points
		Remote register (RWr)	8 points	8 points	16 points	32 points	64 points
	3 Stations occupied	Remote input/output (RX, RY)	96 points (80 points)	96 points (80 points)	160 points (144 points)	320 points (304 points)	—
		Remote register (RWw)	12 points	12 points	24 points	48 points	—
		Remote register (RWr)	12 points	12 points	24 points	48 points	—
	4 Stations occupied	Remote input/output (RX, RY)	128 points (112 points)	128 points (112 points)	224 points (208 points)	—	—
		Remote register (RWw)	16 points	16 points	32 points	—	—
		Remote register (RWr)	16 points	16 points	32 points	—	—

The values in parenthesis are the number of available points in the intelligent device station.

■ External dimensions

Unit: mm



MASS (Weight): Approx. 0.3 kg
Outer painting color: Munsell 0.6B7.6/0.2

PROGRAMMABLE CONTROLLERS
MELSEC iQ-F Series

AnyWireASLINK system master module
FX5-ASL-M

■ Power supply specifications

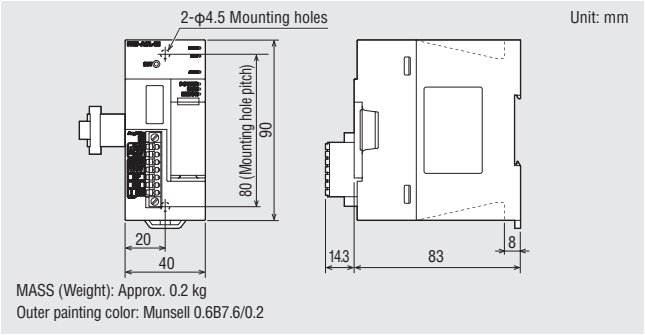
Items		Specifications
External power supply	Power supply voltage	24 V DC +15%, -10%, ripple voltage 0.5 Vp-p or lower Recommended voltage: 26.4 V DC (24 V DC +10%) ∗: Please use a UL Class 2 power supply
	Current consumption	100 mA
	Transmission cable supply current	MAX 2 A
Internal power supply	Power supply voltage	5 V DC
	Current consumption	200 mA

■ Performance specifications

Items	Specifications
Transmission clock	27.0 kHz
Maximum transmission distance (total length)	200 m∗1
Transmission system	DC power superimposed total frame cyclic system
Connection type	Bus topology (multidrop system, T-branch system, tree branch system)
Transmission protocol	Dedicated protocol (AnyWireASLINK)
Error control	Checksum, double-check system
Number of connected I/O points	384 points maximum∗2 (input: maximum 256 points, output: maximum 256 points)
Number of connected slave modules	128 maximum (varies depending on the current consumption of each slave module)
External interface (power supply part/communication part)	Push-in type 7-piece spring clamp terminal block
RAS function	• Disconnected transmission cable location detection function • Transmission cable short detection function • Transmission cable voltage drop detection function
Transmission cable (DP, DN)	• UL-listed general-purpose 2-wire cable • UL-listed general-purpose wire • Dedicated flat cable
Power supply cable (24V, 0V)	
Memory	Built-in EEPROM (Number of times of overwrite : 100000 times)
Number of occupied I/O points	8 points
Number of connectable units	1 module∗3
Applicable CPU module∗4	FX5U/FX5UC CPU module: Ver. 1.050 or later
Applicable engineering tool	GX Works3: Ver. 1.035M or later

∗1: For slave modules with integrated transmission cables (DP, DN), the length of the transmission cables (DP, DN) is included in the total length. For wiring of 50m or more with 4 wires (DP, DN, 24V, 0V), insert the noise filter for power supply cables between the power supply and cables. For details, refer to the manual for the AnyWireFILTER (ANF-01) manufactured by Anywire Corporation.
∗2: The number of available remote I/O points per system varies depending on the number of I/O points of the extension devices. For the limit of I/O points, refer to the following manual.
→ MELSEC iQ-F FX5U User's Manual (Hardware)
→ MELSEC iQ-F FX5UC User's Manual (Hardware)
∗3: FX5-ASL-M and FX3U-128ASL-M cannot be used together.
∗4: FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect FX5-ASL-M to the FX5UC CPU module.

■ External dimensions



MASS (Weight): Approx. 0.2 kg
Outer painting color: Munsell 0.6B7.6/0.2

Product list

Items		Specifications
FX5-8AD		Multiple input module
FX5-4LC		Temperature controller module
FX5-20PG-P		2-axis pulse train positioning module
FX5-CCL-MS		CC-Link system master/intelligent device module
FX5-ASL-M		AnyWireASLINK system master module
Options	A6CON1	External device connection connector (40-pin) Soldered type (straight protrusion)
	A6CON2	External device connection connector (40-pin) Crimped type (straight protrusion)
	A6CON3	External device connection connector (40-pin) Soldered type (both straight/inclined protrusion type)
FX5U-U-HW-E		MELSEC iQ-F FX5U User's Manual (Hardware) Model code: 09R536
FX5UC-U-HW-E		MELSEC iQ-F FX5UC User's Manual (Hardware) Model code: 09R558
FX5-U-ANALOG-I-E		MELSEC iQ-F FX5 User's Manual (Analog Control - Intelligent function module) Model code: 09R571
FX5-U-LC-E		MELSEC iQ-F FX5 User's Manual (Temperature Control) Model code: 09R570
FX5-U-POS-I-E		MELSEC iQ-F FX5 User's Manual (Positioning Control - Intelligent function module) Model code: 09R572
FX5-U-CCL-E		MELSEC iQ-F FX5 User's Manual (CC-Link) Model code: 09R568
FX5-U-ANYWIRE-E		MELSEC iQ-F FX5 User's Manual (ASLINK) Model code: 09R569

⚠ Safety Warning

To ensure proper use of the products in this document, please be sure to read the instruction manual prior to use.

Registration

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
http://Global.MitsubishiElectric.com

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