MITSUBISHI ELECTRIC

*Changes for the Better*

for a greener tomorrow eco Changes

# MELSEC iQ-F Series
# iQ Platform-compatible PLC

## The next level of industry

MELSEC iQ-F series


iQ Platform

# MELSEC iQ-F series

Designed on the concepts of outstanding performance, superior drive control and user centric programming, Mitsubishi's MELSEC-F Series has been reborn as the MELSEC iQ-F Series.

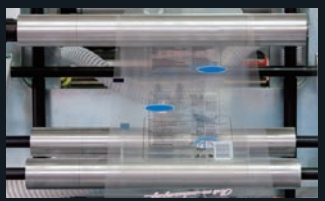
From stand alone use to networked system applications, MELSEC iQ-F Series brings your business to the next level of industry.

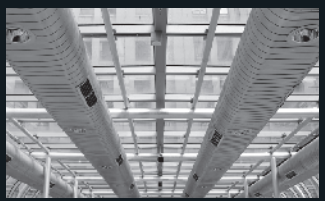

## The next level of industry

The newly reborn MELSEC iQ-F Series reaches to new areas of application with a high-speed system bus, extensive built-in functions and network support.


Conveyance


Food & Beverage


Packaging

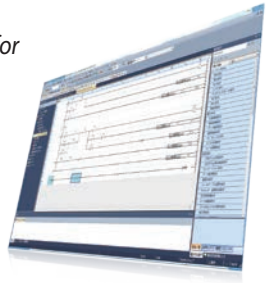

Air-conditioning

## *New micro PLC designed on the concepts of ...*


- *High-speed system bus*
- *Extensive built-in functions*
- *Enhanced security functions*
- *Battery-less*


- *Easy built-in positioning (4-axis 200 Kpps)*
- *Simple interpolation functions*
- *4-axis synchronous control with Simple Motion module (dedicated positioning software not needed)*


- *Easy programming by drag and drop*
- *Reduced development time with module FB*
- *Parameterized setup for a variety of functions*



GX Works3


MELSEC iQ-F series **The next level of industry**

# iQ Platform

## Taking the iQ Platform to the next level.

iQ platform minimizes TCO* by providing innovative solutions for :

Building a stable production system with enhanced productivity

Reducing the time from system development to startup for shorter product cycles

Efficiently managing and servicing the system to reduce down time and maintain productivity

Ensuring product quality by swiftly processing enormous volumes of control data and production data and establishing traceability

* TCO: Total Cost of Ownership

## PLC & HMI

1. MELSEC iQ-F Series greatly enhances the total system performance with the high-speed system bus performance (150× conventional speed *1)
2. Standardize programs with dedicated memory for function blocks and module labels
3. Uniform and powerful security functions

## Network

1. Achieve loss-less retrieval with CC-Link IE Field (future support) 1 Gbps high-speed communication (link refresh performance 40× conventional levels *1)
2. Seamless connectivity with each device using SLMP * (future support)

* SLMP: SeamLess Message Protocol

## Engineering Environment

1. Detect and automatically generate network configuration diagrams from actual machines (future support)
2. Share parameters across multiple engineering software via MELSOFT Navigator (future support)


* 1: Comparison with FX3U

e-F@ctory

iQ Platform

ERP

MES

MELSEC iQ-R

PLC & HMI

GOT2000

Network

Engineering environment

iQ Platform

**ERP** (Enterprise resource planning)

**MES** (Manufacturing execution system)

Transparent connectivity

*Automation Controller*

*Integrated Network*

*Integrated Engineering*

# Advanced Built-in Functions

## CPU Performance

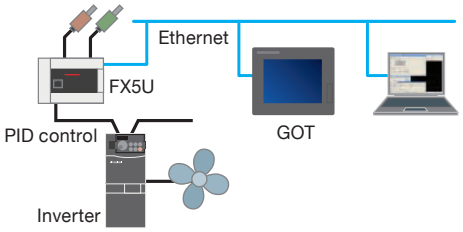
A new sequence execution engine is at the core of MELSEC iQ-F, capable of running structured programs and multiple programs, and supports structured text and function blocks, etc.

| Program capacity | Instruction execution speed (LD, MOV instruction) | PC MIX value | Fixed cycle interrupt Program |
|---|---|---|---|
| 64 k steps | 34 ns | 14.6 instructions/µs | minimum 1 ms |

## Built-in Analog Input/Output (with alarm output) FX5U

FX5U is equipped with 12-bit 2ch analog input and 1ch analog output.
With parameter setup, no programming is required.
Value shifting, scaling and alarm output can also be set easily with parameters.

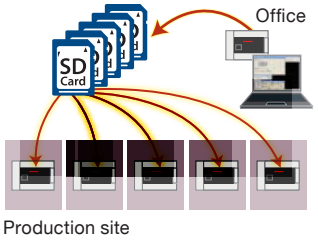
›› *Example of inverter control with analog output*




## Built-in SD Card Slot

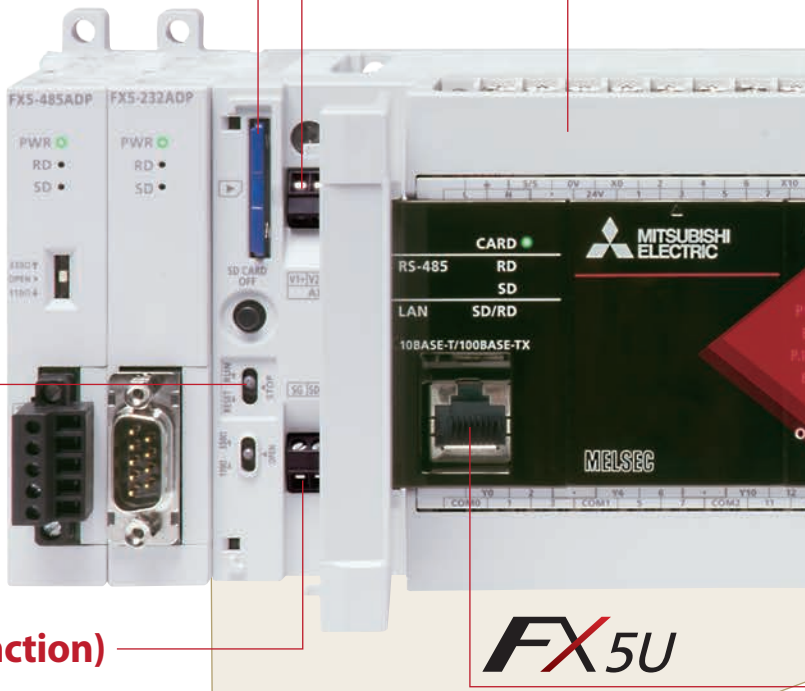
A built-in SD card slot is convenient for updating the program and mass production of equipment.
Data can be logged in SD card (future support), making it easy to analyze the system status and production state, etc.

›› *Example of mass production of equipment using SD card*




## RUN/STOP/RESET Switch

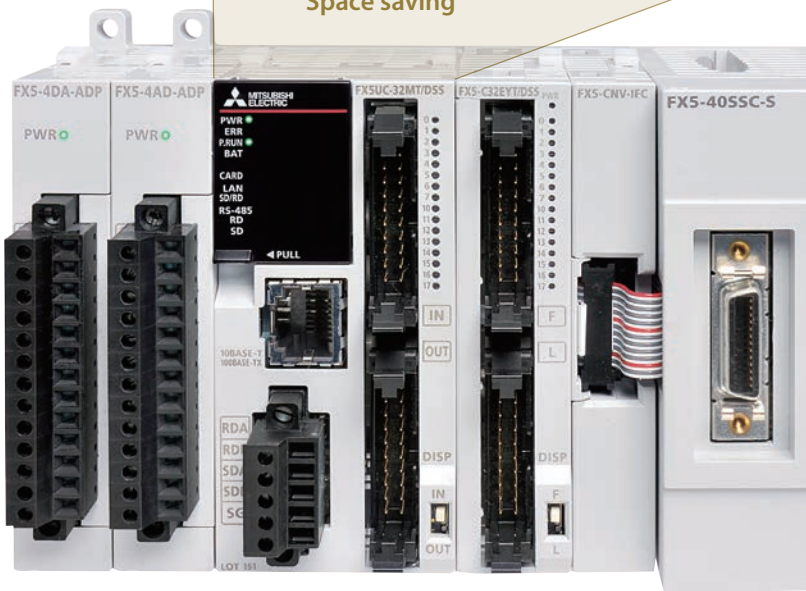
The RUN/STOP switch now includes RESET function.
PLC can be rebooted without turning off the main power for efficient debugging.



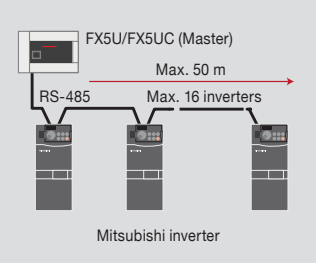

## Built-in RS-485 Port (with MODBUS® function)

Connect to serial devices up to 50 m away with built-in RS-485 port.
Control for up to 16 Mitsubishi inverters is possible with dedicated inverter communication instructions. The MODBUS function supports a connection of up to 32 peripheral units including PLCs, sensors and thermoregulators.

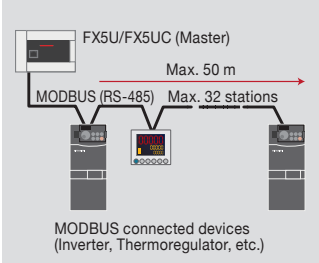
Space saving




›› Inverter Communication



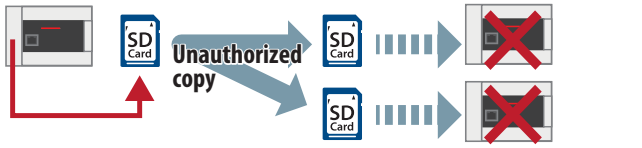

›› MODBUS Communication



## Security

MELSEC iQ-F has advanced security functions (file password, remote password, security key) to prevent data theft and illegal operations by unauthorized persons.

*›› Example of Security key function*

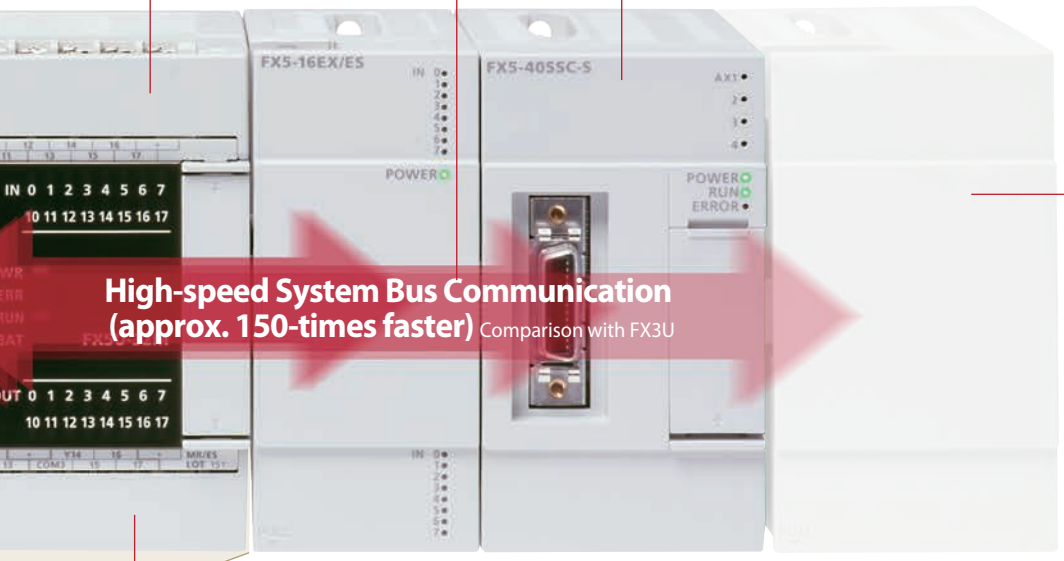



**Program cannot be executed**
(Program and CPU keys do not match)

## High-speed System Bus Communication

MELSEC iQ-F realizes high-speed system bus communication at speeds of 1.5 k words/ms (approx. 150-times faster than FX3U). Achieve maximum performance even when using intelligent function module with large amounts of data.

**SSCNET III/H**




**CC-Link IE Field**

... Future support

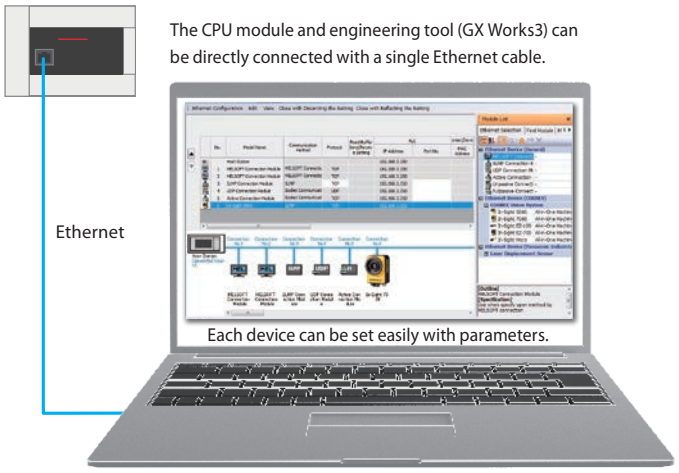
## Battery-less and Maintenance-free

Programs can be saved even without a battery, and clock data can be saved for ten days by supercapacitor.
(May vary by usage state)

*: Clock data and device memory can be saved (latched) during a power outage by using the optional battery.

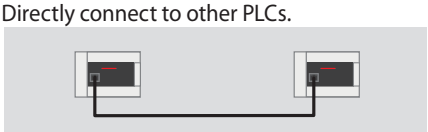
## Built-in Ethernet Port

The Ethernet communication port can handle communication of up to 8 connections on the network, and can support multiple connections with personal computer and other device. This port also supports remote maintenance and other seamless SLMP communication with host devices.


### ›› Socket Communication

Directly connect to other PLCs.



### ›› Remote Maintenance

Program read/write can be made by GX Works3 connected via VPN.


### ›› SLMP Communication

Device data read-out/writing to PLC from external device is possible.

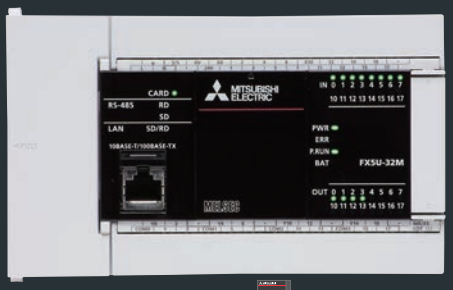

### ›› MODBUS/TCP client

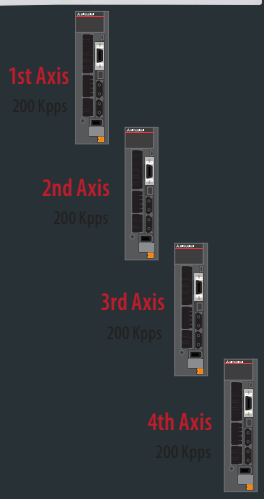
# Advanced positioning function

## (200 Kpps, 4-Axis built-in)

Up to 8 ch 200 kHz*

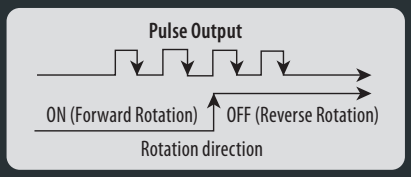
* FX5U-32M : 6 ch 200 kHz+2 ch 10 kHz
FX5UC-32M : 6 ch 200 kHz+2 ch 10 kHz

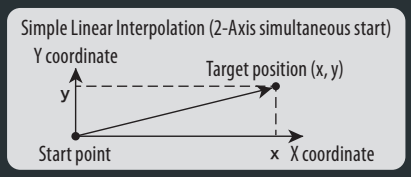



FX5U/FX5UC features powerful positioning functionality with 8 ch high-speed pulse input and 4-axis pulse output.
Positioning operations including interrupt, variable speed, and simple interpolation can easily be set up in tables and executed.

[Example of packing system using built-in positioning]




## <4-Axis control module>

FX5-40SSC-S

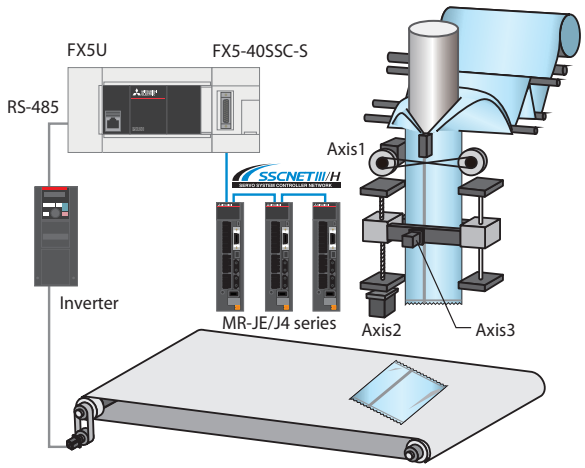
SSCNET III/H
SERVO SYSTEM CONTROLLER NETWORK

[Example of sealing system]

# Advanced Motion Control

## Making Simple Motion with compactly packed extra functions

**By starting with parameter settings and the sequence program, the Simple Motion modules can realize a variety of motion control including positioning control, advanced synchronous control, cam control and speed-torque control.**




[Example of packaging machine using Simple Motion]

- Use synchronous control and cam control to build a system perfect for your equipment.
- Register up to 64 types of cam patterns to respond to any type of packaging needs.
- Perform continuous operation without stopping the workpiece operation.

### Synchronous control

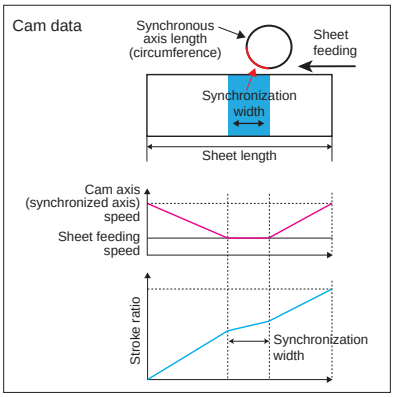
In addition to synchronous control that replaces physical machine mechanisms such as gears, shaft, transmission and cam with software, functions such as cam control, clutch and cam auto-generation are easily realized. Since synchronous control can be started and stopped for each axis, programs can contain both synchronous control axes and positioning control axes.
Up to four axes can be synchronized to the synchronous encoder axis, enabling use with a variety of systems.

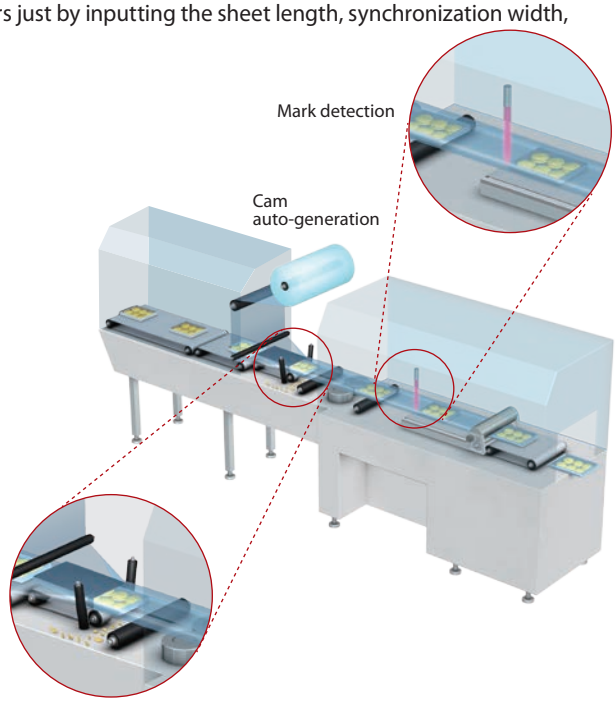
### Cam data auto-generation

Easily program and automatically generate difficult cam data for rotary cutters just by inputting the sheet length, synchronization width, and cam resolution, etc.

User-created GOT screen

Parameter settings, including items like sheet length, etc.




[Example of rotary cutter control with mark detection and cam data]

### Mark detection function

The cutter axis deviation can be compensated by detecting a mark on the workpiece so the workpiece can be cut at a constant position.

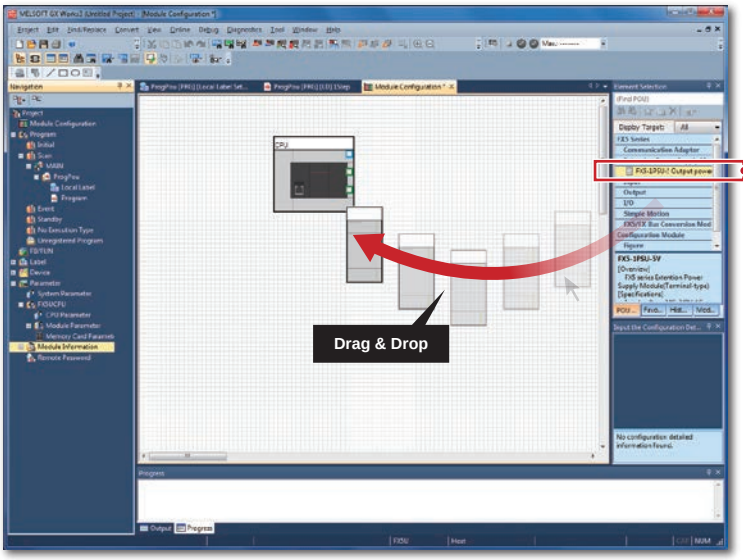
# User-friendly programming software

## GX Works3

**Software that comprehensively supports programming and maintenance streamlines operations.**
**Easily and intuitively program by making "selections" in a graphical environment.**
**Reduce maintenance and engineering costs with diagnosis and troubleshooting function.**

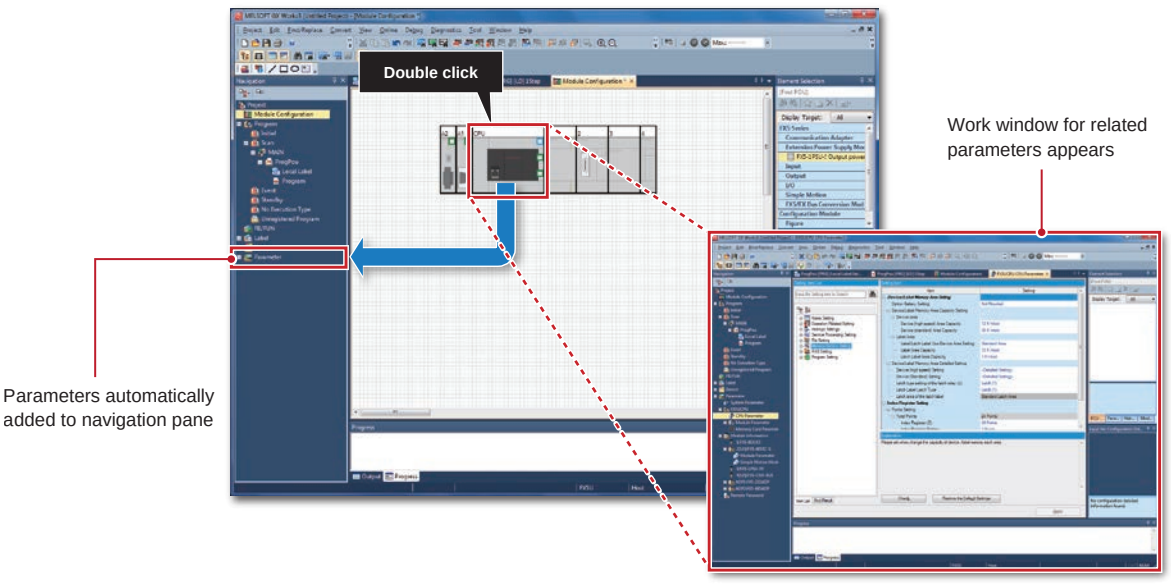
## System design with a convenient parts library

With GX Works3, designing a system is as easy as preparing the module configuration diagram by dragging and dropping selected parts.




## Auto-generation of module parameters

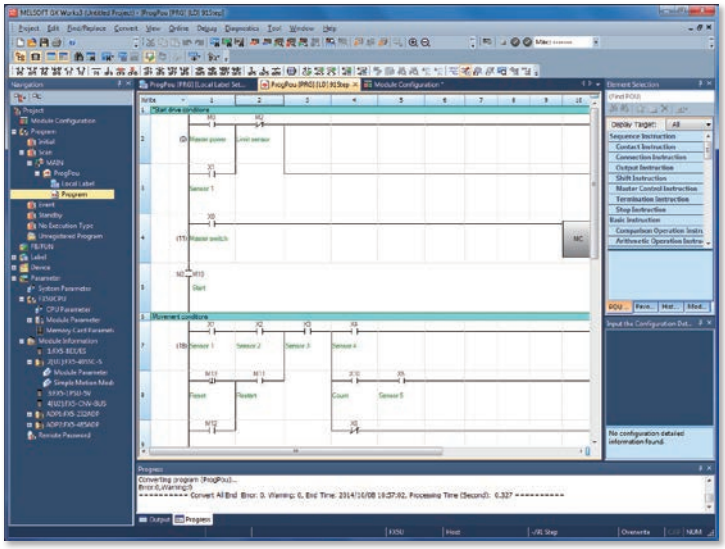
When preparing the module configuration diagram, simply double-click the module to automatically generate the module parameters.
A window with an easy-to-use parameter settings screen opens, enabling module parameters to be modified as needed.



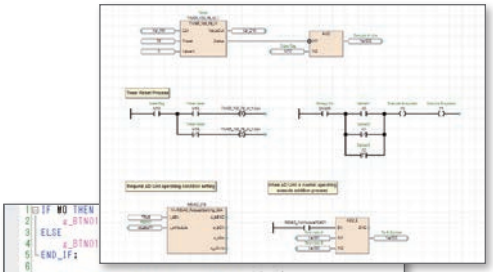
## Main programming languages supported

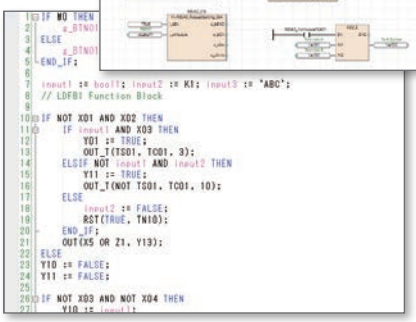
The main IEC languages are supported by GX Works3. Various different programming languages can be used within the same project simultaneously and can be viewed easily via the menu tab.
The labels and devices used in each program can be shared across multiple platforms, with user defined function blocks supported.

Ladder



Function block diagram



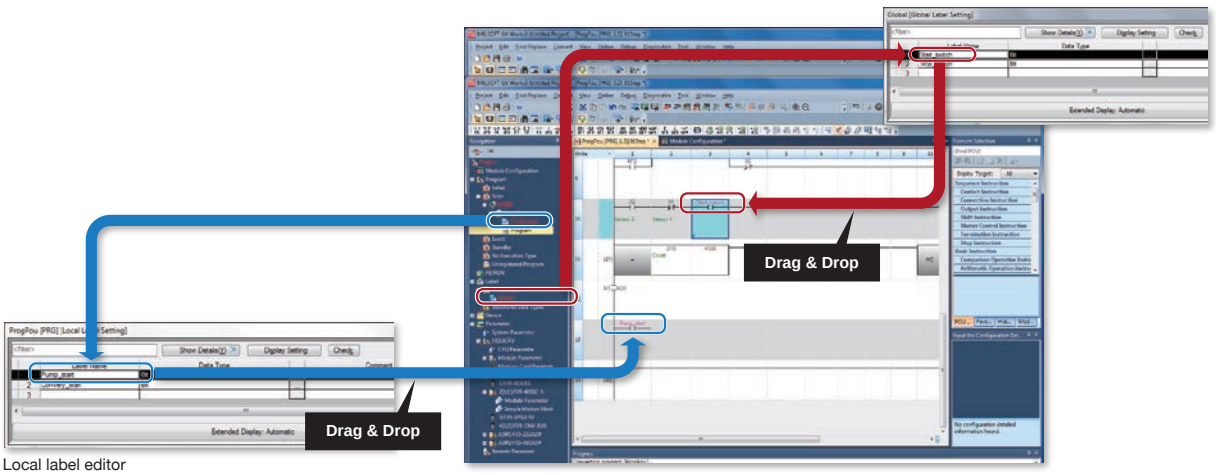



Structured text

## Reduce repetitive program tasks

Global labels, local labels and module labels are supported by GX Works3. Global labels can be shared by multiple programs and with other MELSOFT software. Local labels can be used in registered programs and function blocks. Module labels contain buffer memory information for various intelligent function modules and eliminates the need to reference buffer memory address.

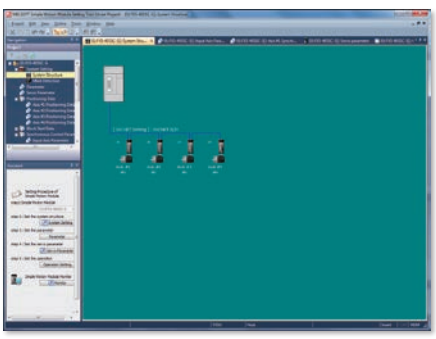
Global label editor



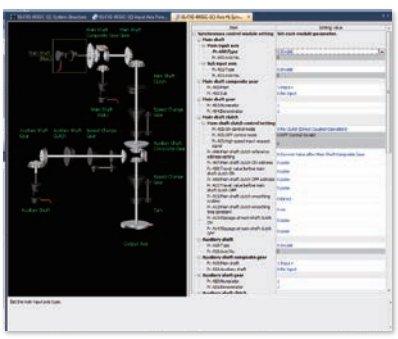

Local label editor

## Integrated motion setup tool

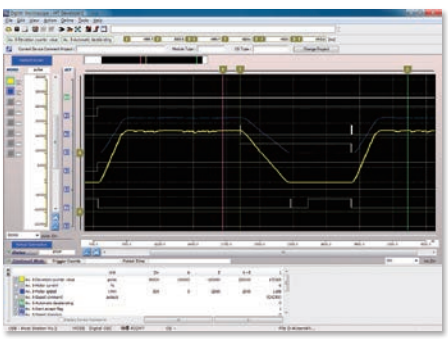
GX Works3 is equipped with a special motion setup tool that makes it easy to change simple motion module settings such as module parameters, positioning data and servo parameters. Also, the servo adjustment is simplified using it.



System configuration



Synchronous control parameter



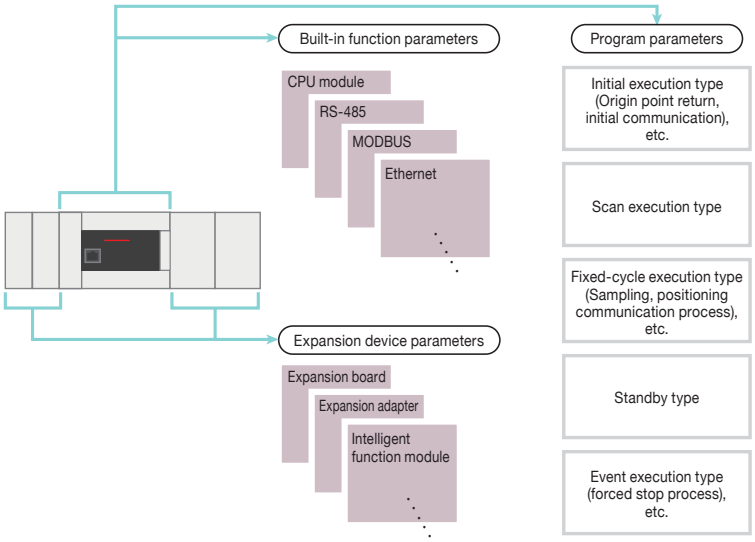
Digital oscilloscope

# Advanced MELSEC iQ-F Series

## Simple and convenient parameter settings

With MELSEQ iQ-F, various device settings that conventionally had to be programmed can be input in table format.
Easily set the built-in functions as well as expansion devices just by inputting values into the parameters.
The program's execution trigger can also be set with the parameters.

**[Functions set with parameters]**
- Settings for CPU parameters, Ethernet port, RS-485 communication port, input response time, expansion board, memory card, security, etc.
- Settings for expansion adapters and intelligent function module

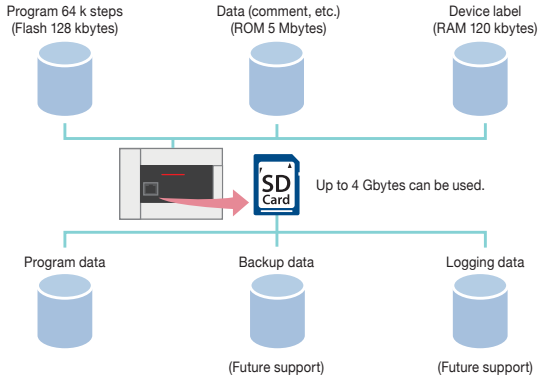



## Memory area for each application

The CPU module has 64 k steps of program memory capacity, but the MELSEC iQ-F has a memory data area for each application, so all 64 k steps can be used as the program area.
Comments and statements can be written freely without affecting the program area.

**[Maximum number of characters]**
Comment: 1024 characters  Statement: 5000 characters

MELSEC iQ-F Series stores the program and devices in non-volatile memory such as Flash ROM, so no battery is required.




## Flexible internal devices

A variety of devices including new latch relays and link relays, and expanded timers and counters are available.
The number of device points can be reassigned and used in the internal memory.

### Providing the convenience of special devices

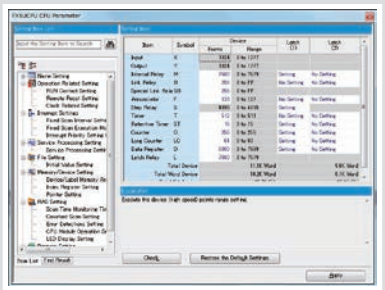
In addition to the conventional special devices, up to 12000 points of convenient system devices compatible with high-end devices can be added.

**New high-end compatible system devices**
• SM/SD 0 to 4099 Compatible with MELSEC iQ-R

**Conventional convenient devices**
• Conventional M8000 devices
→Has changed to SM8000 devices
• Conventional D8000 devices
→Has changed to SD8000 devices
(When migrating an FX3U/FX3UC program created using GX Works2 to FX5, the devices are automatically converted.)

### Freely customize the latch range setting

The latch range can be set for each device, so the latch clear range can be selected during the clearing operation.



### Handy timer and counter settings

The timer and counter properties are determined by data type and how instruction is written, so programs can be created regardless of the device number.

**Timers:**
OUT T0.....100 ms timer
OUTH T0 .....10 ms timer
OUTHS T0 ....1 ms timer OUT ST0
..... Retentive timer

**Counters:**
OUT C0 .....16 bit counter
OUT LC0 ..... 32 bit counter

# Software

## Dramatically more dedicated instructions

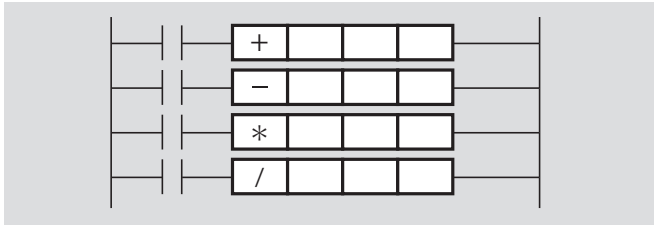
A great number of dedicated instructions have been added since the FX3 Series.

[FX3] 510 types increased to [FX5] 1014 types

The newly added instructions include convenient ones that are interchangeable with the MELSEC iQ-R and dedicated instructions for built-in functions.
(Programs created with GX Works2 can also be read in and converted.)

## Intuitive and easy-to-understand arithmetic operations

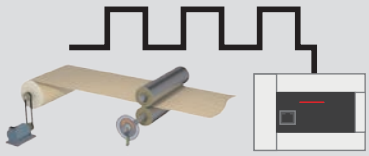
Symbols can be input in the arithmetic operations making it easy and intuitive to describe programs.




## High-performance built-in high-speed counter function

Input and measure three modes by setting the parameters.

- Normal mode
- Pulse density measurement mode
- Rotation speed measurement mode

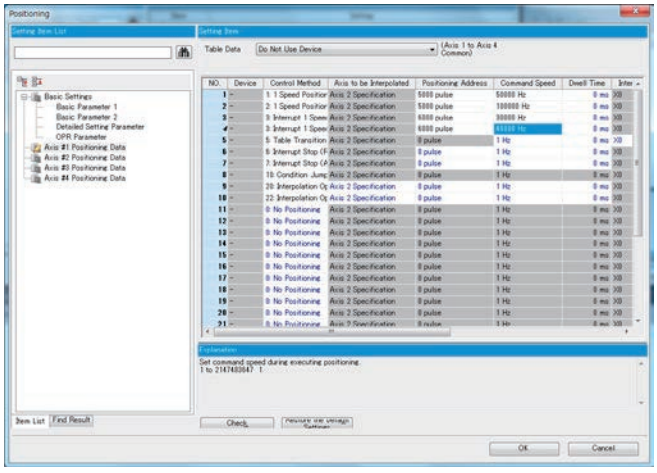


Up to four tables can be set for the high-speed comparison table and up to 128 tables for the multi-point output high-speed comparison table. The HCMOV instruction can be used to read the latest values from the special registers.

## Reinforced built-in positioning function

Positioning is easy using table operations. Simple linear interpolation operation is possible by using the positioning instruction DRVTBL with multiple table operation and the multiple axis simultaneous drive positioning instruction DRVMUL.

Diverse table operation settings for multi-speed and interrupt positioning, etc.

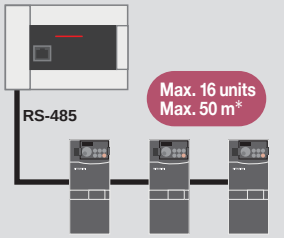


## Inverter communication command function

The built-in Mitsubishi inverter protocol makes it possible to use inverter communication instructions to control a Mitsubishi inverter connected with RS-485 communication.

- IVCK : Operation monitor
- IVDR : Operation control
- IVRD : Parameter read
- IVWR : Parameter write
- IVBWR : Parameter batch write
- IVMC : Multiple command

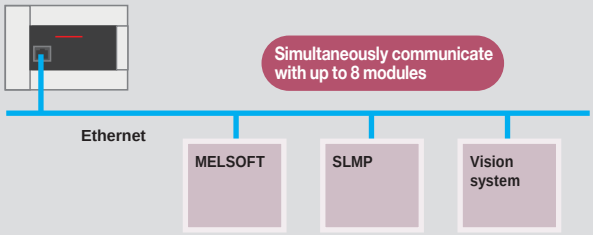
(2 types of settings and 2 types of read)




*: For built-in RS-485 communication

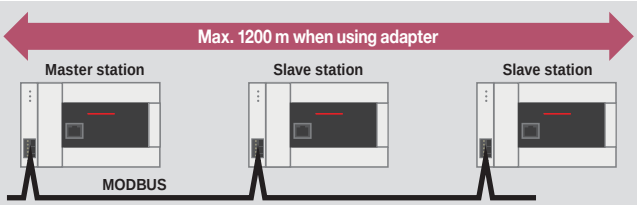
## Built-in Ethernet function

Communication is set with parameters and programs are made with dedicated instructions.
Functions including the diagnosis function from GX Works3, SLMP function, socket communication function and IP address change function and unauthorized access from an external source can be prevented with remote password.



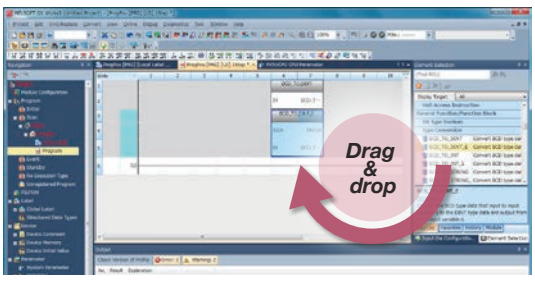

## MODBUS function

The MODBUS function can be used with parameter settings and ADPRW (MODBUS master communication instruction [data read/write.]) Communicate with devices up to 1200 m away using the RS-485 communication adapter.



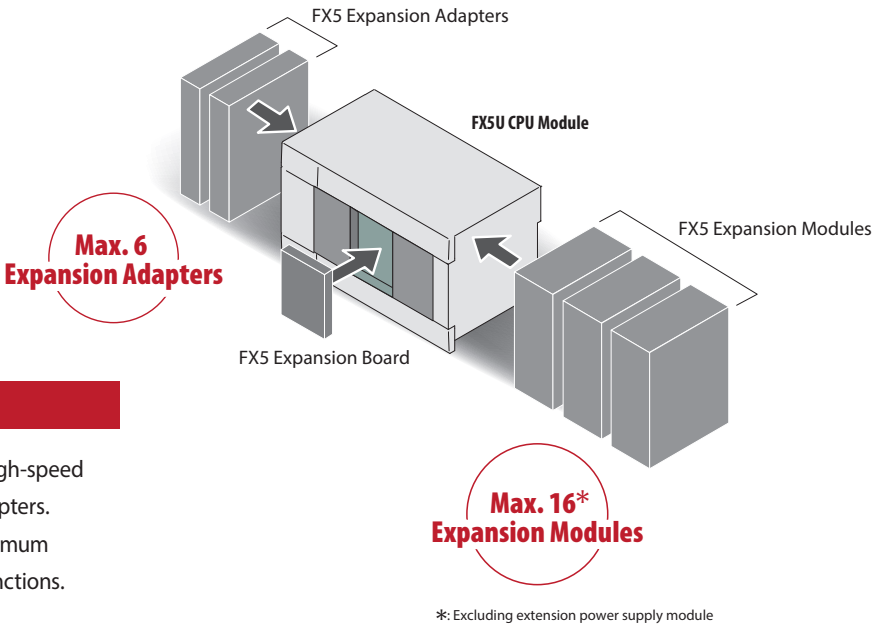

## Standard function/function block function

110 types of basic standard function and function blocks are provided. These can be used as parts by dragging and dropping, so when used together with dedicated instructions, programming time can be greatly reduced.



# System Configuration

FX5U




*: Excluding extension power supply module

Flagship model equipped with advanced built-in functions and diverse expandability

**Simplifying use with renewed expansion modules!**

FX5U is equipped with analog functions, communication and high-speed I/O, and can easily be expanded with expansion boards and adapters. The high-speed system bus communication brings out the maximum performance of expansion devices equipped with intelligent functions.

## FX5 Expansion Adapters

Max. 2 ch

**Communication**

| | |
|---|---|
| FX5-232ADP | For RS-232C communication |
| FX5-485ADP | For RS-485 communication |

Max. 4 ch

**Analog**

| | |
|---|---|
| FX5-4AD-ADP | For input |
| FX5-4DA-ADP | For output |

## FX5 Expansion Boards

Max. 1 ch

**Communication**

| | |
|---|---|
| FX5-232-BD | For RS-232C communication |
| FX5-485-BD | For RS-485 communication |
| FX5-422-BD-GOT | For RS-422 GOT communication |

## FX5U CPU Modules

| | | | |
|---|---|---|---|
| FX5U-32MR/ES | AC | D | R |
| FX5U-32MT/ES | AC | D | T1 |
| FX5U-32MT/ESS | AC | D | T2 |

| | | | |
|---|---|---|---|
| FX5U-64MR/ES | AC | D | R |
| FX5U-64MT/ES | AC | D | T1 |
| FX5U-64MT/ESS | AC | D | T2 |

| | | | |
|---|---|---|---|
| FX5U-80MR/ES | AC | D | R |
| FX5U-80MT/ES | AC | D | T1 |
| FX5U-80MT/ESS | AC | D | T2 |

AC AC power supply
D DC input (sink/source)
R Relay output
T1 Transistor output (sink)
T2 Transistor output (source)

## Option

| Battery | SD card | Programming software |
|---|---|---|
| FX3U-32BL | NZ1MEM-2GBSD (2 GB)<br>NZ1MEM-4GBSD (4 GB) | GX Works3 |

## Generic Specifications

| Item | | Generic Specifications |
|---|---|---|
| Power supply, input/output | Power supply specifications | 100 to 240 V AC 50/60 Hz |
| | Power consumption | 30 W (32M), 40 W (64M), 45 W (80M) |
| | Rush current | FX5U-32M[]: max. 25 A 5 ms or less/100 V AC, max. 50 A 5 ms or less/200 V AC<br>FX5U-64M[]/FX5U-80M[]: max. 30 A 5 ms or less/100 V AC, max. 60 A 5 ms or less/200 V AC |
| | 5 V DC power supply capacity | 900 mA or less (32M), 1100 mA or less (64M, 80M) |
| | 24 V DC power supply capacity | 400 mA or less (32M), 600 mA or less (64M, 80M)<br>When using external power supply for CPU module input: 480 mA or less (32M) , 740 mA or less (64M) , 770 mA or less (80M) |
| | Input specifications | 24 V DC, 5.3 mA (X020 and above: 4 mA) |
| | Output specifications | Relay output type: 2 A/1 point, 8 A/4 points common, 8 A/8 points common 250 V AC (240 V for CE, UL/cUL Standard compliance), 30 V DC or less<br>Transistor output type: 0.5 A/1 point, 0.8 A/4 points, 1.6 A/8 points common 5 to 30 V DC |
| | Input/output expansion | Expansion device for FX5 can be connected |
| Built-in communication port | | Ethernet (100BASE-TX/10BASE-T),<br>RS-485 (MELSOFT connection, MC protocol, non-protocol communication, MODBUS RTU, inverter communication, N:N communication) |
| Built-in memory card slot | | 1 slot for SD memory card |
| Built-in analog input/output | | Input 2 ch, output 1 ch |

## FX5 Expansion Modules

### I/O Modules

#### Powered I/O Modules

**Powered I/O Modules**

FX5-32ER/ES
FX5-32ET/ES
FX5-32ET/ESS

#### Unpowered I/O Modules

**Input**

FX5-8EX/ES
FX5-16EX/ES

**Output**

FX5-8EYR/ES
FX5-8EYT/ES
FX5-8EYT/ESS
FX5-16EYR/ES
FX5-16EYT/ES
FX5-16EYT/ESS

### Intelligent Function Modules

**Simple Motion**

FX5-40SSC-S

**Network**

*CC-Link/IE Field slave*

*... Future support*

### Extension Power Supply Module

**Extension Power Supply Module**

FX5-1PSU-5V

## Bus Conversion Module

**Bus Conversion Module**

FX5-CNV-BUS

## FX3 Expansion Modules

### Extension Power Supply Module

**Extension Power Supply Module**

FX3U-1PSU-5V

### Intelligent Function Modules

**Analog**

| | |
|---|---|
| FX3U-4AD | For input |
| FX3U-4DA | For output |

**Positioning**

| | |
|---|---|
| FX3U-1PG | For high-speed output |

**Network**

| | |
|---|---|
| FX3U-64CCL | CC-Link slave |
| FX3U-16CCL-M | CC-Link master |

**Temperature control**

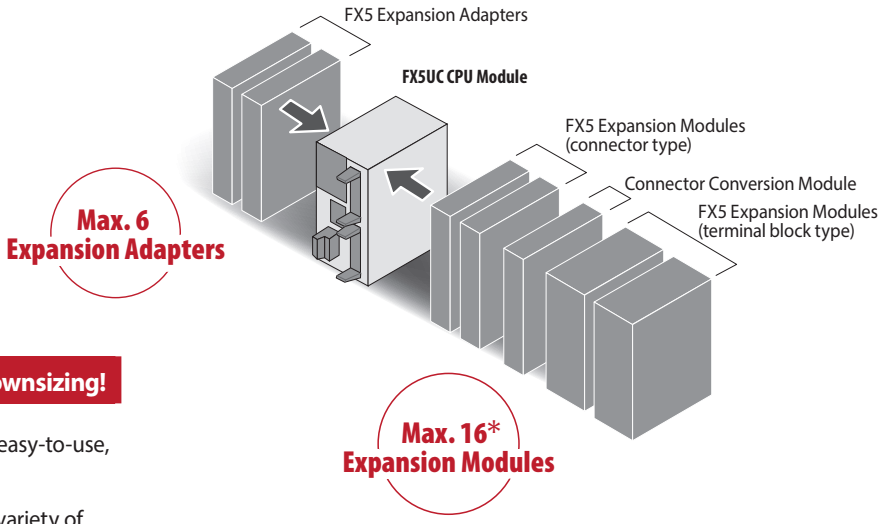
| | |
|---|---|
| FX3U-4LC | Temperature control |

**High Speed counter**

| | |
|---|---|
| FX3U-2HC | For high-speed input |

The parameters for FX3U intelligent function module must be set by PLC program.
When connecting FX3 expansion module, FX3 speed is applied as the bus speed for accessing the FX3 expansion module.

# FX5UC




Compact body packed with diverse functions.

## Compact expansion module contributes to system downsizing!

The expansion module compatible with FX5UC is compact and easy-to-use, and helps to downsize your system.
Easily connect to the FX5 and FX3 expansion modules with the variety of conversion modules available.

*: Due to power limitations, only 12 modules can be directly connected to the CPU module. Up to 16 modules can be connected using the power supply module (future support). Excluding connector conversion module

### FX5 Expansion Adapters

Max. 2 ch

**Communication**

FX5-232ADP For RS-232C communication
FX5-485ADP For RS-485 communication

Max. 4 ch

**Analog**

FX5-4AD-ADP For input
FX5-4DA-ADP For output

### FX5UC CPU Modules

Sink type

FX5UC-32MT/D DC D1 T1

Source type

FX5UC-32MT/DSS DC D2 T2

### FX5 Expansion Modules (connector type)

I/O Modules

Sink type

FX5-C32EX/D For input expansion
FX5-C32EYT/D For output expansion
FX5-C32ET/D For I/O expansion

Source type

FX5-C32EX/DS For input expansion
FX5-C32EYT/DSS For output expansion
FX5-C32ET/DSS For I/O expansion

DC DC power supply
D1 DC input (sink)
D2 DC input (sink/source)
T1 Transistor output (sink)
T2 Transistor output (source)

### Option

**Battery**

FX3U-32BL

**SD card**

NZ1MEM-2GBSD (2 GB)
NZ1MEM-4GBSD (4 GB)

**Programming software**

GX Works3

**Terminal block for sink type I/O**

FX-16E-TB
FX-16EYT-TB
FX-16EYR-TB
FX-16EX-A1-TB
FX-16EYS-TB
FX-32E-TB

**Terminal block for source type I/O**

FX-16E-TB/UL
FX-16EYT-ES-TB/UL
FX-16EYR-ES-TB/UL
FX-16EYT-ESS-TB/UL
FX-16EYS-ES-TB/UL
FX-32E-TB/UL

**I/O cable**

- General-purpose I/O cable
  FX-16E-500CAB-S (5 m, 20-pin)
- For terminal block
  FX-16E-[]CAB (double-end 20-pin)
  []: 150 (1.5 m)/300 (3 m)/500 (5 m)
- For terminal block
  FX-16E-[]CAB-R (20-pin)
  []: 150 (1.5 m)/300 (3 m)/500 (5 m)

## Generic Specifications

| Item | | Generic specifications |
|---|---|---|
| Power supply, Input/output | Power supply specifications | 24 V DC |
| | Power consumption | 8 W (32M) |
| | Rush current | Max. 30 A 0.5 ms or less/24 V DC |
| | 5 V DC power supply capacity | 720 mA or less (32M) |
| | 24 V DC power supply capacity | 500 mA or less (32M) |
| | Input specifications | 24 V DC, 5.3 mA |
| | Output specifications | Transistor output type: Y000 to Y003 0.3 A/1 point, Y004 and higher 0.1 A/1 point, 0.8 A/8 points common 5 to 30 V DC |
| | Input/output expansion | Expansion device for FX5UC and FX5 (connector adapter required) can be connected |
| Built-in communication port | | Ethernet (100BASE-TX/10BASE-T),<br>RS-485 (MELSOFT connection, MC protocol, non-protocol communication, MODBUS RTU, inverter communication, N:N communication) |
| Built-in memory card slot | | 1 slot for SD memory card |

## FX5 Expansion Modules (terminal block type)

### Connector Conversion Module

Connector Conversion Module

FX5-CNV-IFC

### I/O Modules

Input

FX5-8EX/ES
FX5-16EX/ES

Output

FX5-8EYR/ES
FX5-16EYR/ES

### Output Modules

Sink type

Output

FX5-8EYT/ES
FX5-16EYT/ES

Source type

Output

FX5-8EYT/ESS
FX5-16EYT/ESS

### Intelligent Function Modules

Simple Motion

FX5-40SSC-S

Network

*CC-Link/IE Field slave*

*... Future support*

## Bus Conversion Modules

Bus Conversion Module

FX5-CNV-BUS

Bus Conversion Module

FX5-CNV-BUSC

## FX3 Expansion Modules

### Intelligent Function Modules

**Analog**

| | |
|---|---|
| FX3U-4AD | For input |
| FX3U-4DA | For output |

**Positioning**

| | |
|---|---|
| FX3U-1PG | For high-speed output |

**Network**

| | |
|---|---|
| FX3U-64CCL | CC-Link slave |
| FX3U-16CCL-M | CC-Link master |

**Temperature control**

| | |
|---|---|
| FX3U-4LC | Temperature control |

**High Speed counter**

| | |
|---|---|
| FX3U-2HC | For high-speed input |

The parameters for FX3U intelligent function module must be set by PLC program.
When connecting FX3 expansion module, FX3 speed is applied as the bus speed for accessing the FX3 expansion module.

# Selecting the FX5U Model

## ■Product configuration

- Control scale: 32 to 256 points (CPU module: 32/64/80 points)
- Control points up to 512 input/output points, including remote input/output*

*: CC-Link


| Type | Details | Connection details, model selection |
|---|---|---|
| 1 CPU module | PLC with built-in CPU, power supply, input/output and program memory. | Various expansion devices can be connected. |
| 2 4 I/O module | Product for expanding I/O. Some products are powered. | Input/output can be expanded to up to 256 points. (Expansion module: Max. 16 modules (excluding extension power supply module)). The total with CC-Link remote input/output is max. 512 points. |
| 3 FX5 extension power supply module | Module for expanding power supply if CPU module s internal power supply is insufficient. Extension cable is enclosed. | Power can be supplied to I/O module, intelligent function module, and bus conversion module. Up to 2 modules can be connected. |
| 5 FX5 intelligent function module | Module with functions other than input/output. | Up to 16 expansion modules including the I/O module can be connected (excluding the extension power supply module). |
| 6 Bus conversion module | Conversion module for connecting FX3 Series expansion module. | FX3 Series expansion module can be connected only to the right side of the bus conversion module. |
| 7 FX5 expansion board | Board connected to front of CPU module to expand functions. | Up to 1 module can be connected to the front of the CPU module. (Expansion adapter can also be used.) |
| 8 FX5 expansion adapter | Adapter connected to left side of CPU module to expand functions. | Up to 6 modules can be connected to the left side of the CPU module. |
| 9 FX3 extension power supply module | Module for expanding power supply if CPU module s internal power supply is insufficient. | The bus conversion module is required for use. Up to 2 modules can be connected. |
| 10 FX3 intelligent function module | Module with functions other than input/output. | The bus conversion module is required for use. When using the FX3 extension power supply module, up to 8 modules* can be used. When not using the FX3 extension power supply unit, up to 6 modules* can be used. |

*: Excluding some models

### 1 CPU module

| Type | Function | Number of occupied input/ output points | Power supply capacity | | I/O type | No. of input points | No. of output points |
|---|---|---|---|---|---|---|---|
| | | | 5 V DC power supply | 24 V DC service power supply | | | |
| FX5U-32MR/ES | CPU module (service power built-in) | 32 points | 900 mA | 400 mA (480 mA*) | DC input (sink/source)/relay output | 16 points | 16 points |
| FX5U-32MT/ES | | | | | DC input (sink/source)/transistor (sink) | | |
| FX5U-32MT/ESS | | | | | DC input (sink/source)/transistor (source) | | |
| FX5U-64MR/ES | | 64 points | 1100 mA | 600 mA (740 mA*) | DC input (sink/source)/relay output | 32 points | 32 points |
| FX5U-64MT/ES | | | | | DC input (sink/source)/transistor (sink) | | |
| FX5U-64MT/ESS | | | | | DC input (sink/source)/transistor (source) | | |
| FX5U-80MR/ES | | 80 points | 1100 mA | 600 mA (770 mA*) | DC input (sink/source)/relay output | 40 points | 40 points |
| FX5U-80MT/ES | | | | | DC input (sink/source)/transistor (sink) | | |
| FX5U-80MT/ESS | | | | | DC input (sink/source)/transistor (source) | | |

*: Power supply capacity when using external power supply for input circuit.

### 2 I/O module

| Type | Function | Number of occupied input/ output points | Power supply capacity | | I/O type | No. of input points | No. of output points |
|---|---|---|---|---|---|---|---|
| | | | 5 V DC power supply | 24 V DC service power supply | | | |
| FX5-32ER/ES | Input/output module (service power built-in) | 32 points | 965 mA | 250 mA (310 mA*) | DC input(sink/source)/relay output | 16 points | 16 points |
| FX5-32ET/ES | | | | | DC input (sink/source)/transistor (sink) | | |
| FX5-32ET/ESS | | | | | DC input (sink/source)/transistor (source) | | |

*: Power supply capacity when using external power supply for input circuit.

### 3 FX5 extension power supply module

| Type | Function | Number of occupied input/ output points | Power supply capacity | |
|---|---|---|---|---|
| | | | 5 V DC power supply | 24 V DC power supply |
| FX5-1PSU-5V | Extension power supply | — | 1200 mA* | 300 mA* |

*: Refer to the manual if the ambient temperature exceeds 40°C.

## 4 I/O module

| Type | I/O format | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-8EX/ES | DC input (sink/source) | 8 points | 75 mA | 50 mA | — |
| FX5-16EX/ES | DC input (sink/source) | 16 points | 100 mA | 85 mA | |
| FX5-8EYR/ES | Relay output | 8 points | 75 mA | 75 mA | |
| FX5-8EYT/ES | Transistor output (sink) | | | | |
| FX5-8EYT/ESS | Transistor output (source) | | | | |
| FX5-16EYR/ES | Relay output | 16 points | 100 mA | 125 mA | |
| FX5-16EYT/ES | Transistor output (sink) | | | | |
| FX5-16EYT/ESS | Transistor output (source) | | | | |

## 5 FX5 intelligent function module

| Type | Function | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-40SSC-S | Simple Motion 4-axis control (SSCNET III/H compatible) | 8 points | — | — | 250 mA |

## 6 Bus conversion module

| Type | Function | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-CNV-BUS | Bus conversion FX5→FX3 | 8 points | 150 mA | — | — |

## 7 FX5 Expansion board

| Type | Function | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-232-BD | RS-232C communication | — | 20 mA | — | — |
| FX5-485-BD | RS-485 communication | | | | |
| FX5-422-BD-GOT | RS-422 communication (for GOT connection) | | 20 mA* | | |

*: The current consumption will increase when the 5 V type GOT is connected.

## 8 FX5 Expansion adapter

| Type | Function | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-232ADP | RS-232C communication | — | 30 mA | 30 mA | — |
| FX5-485ADP | RS-485 communication | | 20 mA | | |
| FX5-4AD-ADP | 4 ch voltage input/current input | | 10 mA | 20 mA | |
| FX5-4DA-ADP | 4 ch voltage output/current output | | | — | 160 mA |

## 9 FX3 extension power supply module

| Type | Function | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX3U-1PSU-5V | Extension power supply | — | 1000 mA* | 300 mA* | — |

*: Refer to the manual if the ambient temperature exceeds 40°C.

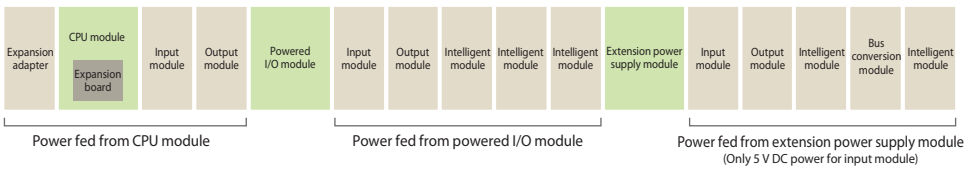
## 10 FX3 intelligent function module

| Type | Function | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX3U-4AD | 4 ch voltage input/current input | 8 points | 110 mA | — | 90 mA |
| FX3U-4DA | 4 ch voltage output/current output | | 120 mA | | 160 mA |
| FX3U-4LC | 4-loop temperature control (thermocouple, PT and mini voltage) | | 160 mA | | 50 mA |
| FX3U-16CCL-M | CC-Link Master (Ver. 2.00 and Ver. 1.10 compatible) | * | — | | 240 mA |
| FX3U-64CCL | CC-Link intelligent device station | 8 points | | | 220 mA |
| FX3U-1PG | Pulse output for independent 1-axis control | | 150 mA | | 40 mA |
| FX3U-2HC | 2 ch high-speed counter | | 245 mA | | — |

*: Varies according to settings.

### Calculation of current consumed by expansion modules

The power required for the expansion adapter, expansion board and expansion module is supplied from the CPU module or extension power supply module. Use the following calculations to confirm whether the required power can be supplied. (All calculations must be satisfied.)




**■Power fed from CPU module**
**[5 V DC power supply]**

5 V DC power supply capacity (CPU module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≧ 0 mA

**[24 V DC power supply]**

24 V DC service power supply capacity (CPU module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≧ 0 mA*

**■Power fed from powered I/O module**
**[5 V DC power supply]**

5 V DC power supply capacity (powered I/O module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≧ 0 mA

**[24 V DC power supply]**

24 V DC service power supply capacity (powered I/O module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≧ 0 mA*

**■Power fed from extension power supply module**
**[5 V DC power supply]** (Separate calculations are required when using the FX3 Series extension power supply module)

5 V DC power supply capacity (Extension power supply module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≧ 0 mA

**[24 V DC power supply]**

24 V DC service power supply capacity (Extension power supply module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≧ 0 mA*

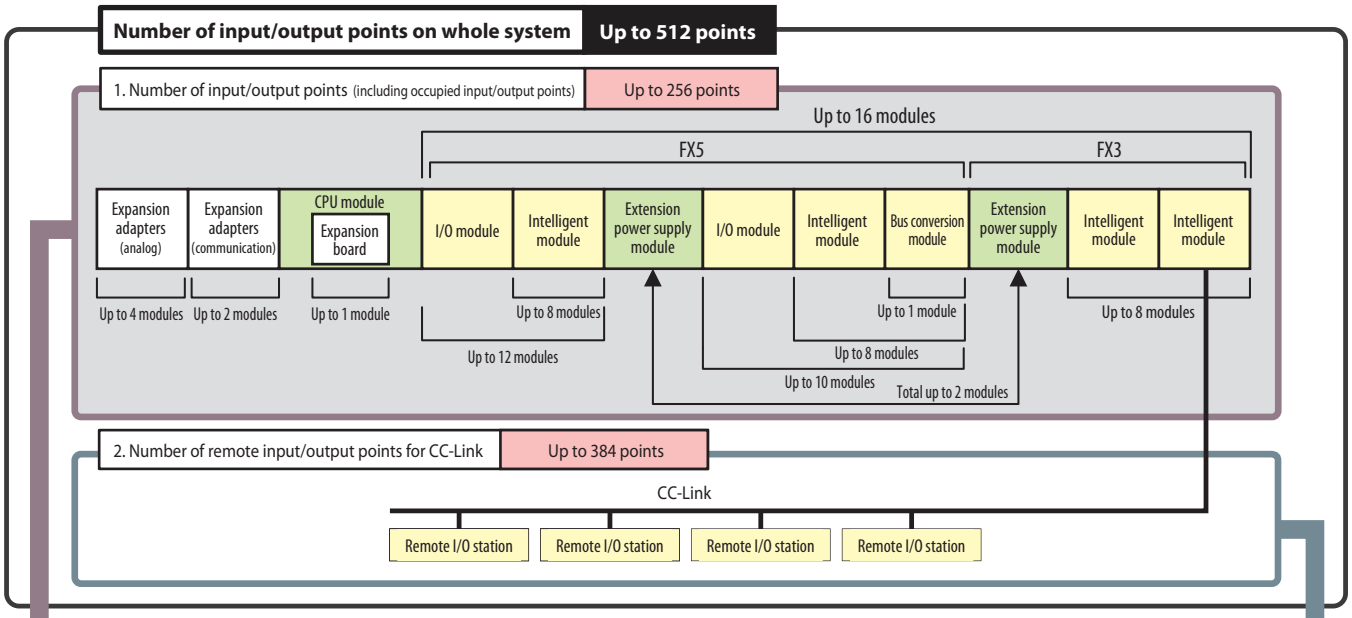
**<Caution> If the calculation results are negative, the power capacity is exceeded so review the system configuration.**

*: The 24 V DC service power calculation results value (when positive) indicate the 24 V DC service power supply's remaining capacity, and can be used as an external load power.

The number of connected modules may be limited for some products. Refer to page 20 for details.

## Rules of System Configuration

The FX5U CPU module can control a total of 512 points including the CPU module and expansion device input/output points and remote input/output points.




### ■ Number of I/O points

The maximum number of input/output points that can be configured with the FX5U is shown below.

**Maximum number of input/output points**

**256 points** ≧

**Number of occupied input/output points**

CPU module: **(A) points** + I/O module: **Total (B) points** + Intelligent module: **(C) modules** × **8 points**

Expansion adapter, expansion board and extension power supply module do not occupy any input/output.

**(A): Number of CPU module input/output points (B): Total number of I/O module input/output points (C): Total number of intelligent modules**

**Total 512 points or less**

### ■ Number of input/output points when using network master module

The maximum number of input/output points when using the network master module is shown below.

**Maximum number of input/output points**

**384 points** ≧

**Number of occupied remote input/output points**

CC-Link: **(D) station** × **32 points**

CC-Link is the total of the number of remote I/O stations x 32 points.
(Calculated as 32 points regardless of the number of remote I/O points.)

**(D): Number of CC-Link remote I/O stations**

### Limitation on number of modules when expanding

The number of connectable modules is limited for the following products. Refer to the manual for details.

| Type | Model/type | Setting method/precautions |
|---|---|---|
| Intelligent function module for FX3 Series | FX3U-4AD | ■ When using FX3U extension power supply module: Up to 8 modules can be connected per system<br>■ When not using FX3U extension power supply module: Up to 6 modules can be connected per system. |
| | FX3U-4DA | |
| | FX3U-1PG | |
| | FX3U-4LC | |
| | FX3U-16CCL-M | Up to 1 module can be connected for the entire system. |
| | FX3U-64CCL | |
| | FX3U-2HC | Up to 2 modules can be connected for the entire system.<br>When not using the FX3U-1PSU-5V, connect immediately after the bus conversion module. |

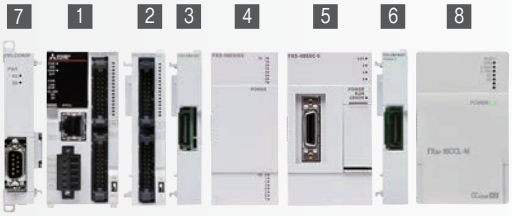
Refer to the manual for details on each device.

# Selecting the FX5UC Model

## ■Product configuration


- Control scale: 32 to 256 points (CPU module: 32 points)
- Control points up to 512 input/output points, including remote input/output*

*: CC-Link




| Type | Details | Connection details, model selection |
|---|---|---|
| 1 CPU module | PLC with built-in CPU, power supply, input/output and program memory. | Various expansion devices can be connected. |
| 2 I/O module (connector type) | Connector type product for expanding the input/output. | The input/output can be expanded to up to 256 points.<br>(Expansion module: Max. 12 modules (excluding connector conversion module)).<br>The total with CC-Link remote input/output is max. 512 points. |
| 3 Connector conversion module | Converts the connector for connecting the FX5 Series expansion devices. | Expansion devices for the FX5 Series can be connected. |
| 4 I/O module (terminal block type) | Product for expanding the input/output. | The input/output can be expanded to up to 256 points.<br>(Expansion module: Max. 12 modules (excluding connector conversion module)).<br>The total with CC-Link remote input/output is max. 512 points. |
| 5 FX5 intelligent function module | Module with functions other than input/output. | Up to 12 expansion modules including the I/O module can be connected (excluding the connector conversion module). |
| 6 Bus conversion module | Conversion module for connecting FX3 Series expansion module. | The FX3 Series expansion module can be connected only to the right side of the bus conversion module. |
| 7 FX5 expansion adapter | Adapter connected to left side of CPU module to expand functions. | Up to 6 modules can be connected to the left side of the CPU module. |
| 8 FX3 intelligent function module | Module with functions other than input/output. | A bus conversion module is required for use.<br>Up to 6 bus conversion modules* can be connected on the right side. |

*: Excluding some models

### 1 CPU module

| Type | Function | Number of occupied input/output points | Power supply capacity | | I/O type | No. of input points | No. of output points |
|---|---|---|---|---|---|---|---|
| | | | 5 V DC power supply | 24 V DC service power supply | | | |
| FX5UC-32MT/D | CPU module | 32 points | 720 mA | 500 mA | DC input (sink)/transistor (sink) | 16 points | 16 points |
| FX5UC-32MT/DSS | | | | | DC input (sink/source)/transistor (source) | | |

### 2 I/O module(connector type)

| Type | I/O format | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-C32EX/D | DC input (sink) | 32 points | 120 mA | — | — |
| FX5-C32EX/DS | DC input (sink/source) | | | | |
| FX5-C32EYT/D | Transistor output (sink) | | | 200 mA | |
| FX5-C32EYT/DSS | Transistor output (source) | | | | |
| FX5-C32ET/D | DC input (sink)/Transistor output (sink) | | | 100 mA | |
| FX5-C32ET/DSS | DC input (sink/source)/Transistor output (source) | | | | |

### 3 Connector conversion module

| Type | Function | Number of occupied input/output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-CNV-IFC | Connector conversion | — | — | — | — |

## 4 I/O module (terminal block type)

| Type | Function | Number of occupied input/ output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-8EX/ES | DC input (sink/source) | 8 points | 75 mA | 50 mA* | — |
| FX5-16EX/ES | DC input (sink/source) | 16 points | 100 mA | 85 mA* | |
| FX5-8EYR/ES | Relay output | 8 points | 75 mA | 75 mA | |
| FX5-8EYT/ES | Transistor output (sink) | | | | |
| FX5-8EYT/ESS | Transistor output (source) | | | | |
| FX5-16EYR/ES | Relay output | 16 points | 100 mA | 125 mA | |
| FX5-16EYT/ES | Transistor output (sink) | | | | |
| FX5-16EYT/ESS | Transistor output (source) | | | | |

∗ : Since external power supply is used for input circuit in FX5UC CPU module systems, power supply from CPU module is not included.

## 5 FX5 intelligent function module

| Type | Function | Number of occupied input/ output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-40SSC-S | Simple Motion 4-axis control (SSCNET III/H compatible) | 8 points | — | — | 250 mA |

## 6 Bus conversion module

| Type | Function | Number of occupied input/ output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-CNV-BUSC | Bus conversion (connector)FX5→FX3 | 8 points | 150 mA | — | — |
| FX5-CNV-BUS | Bus conversion FX5→FX3 | | | | |

## 7 FX5 Expansion adapter

| Type | Function | Number of occupied input/ output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX5-232ADP | RS-232C communication | — | 30 mA | 30 mA | — |
| FX5-485ADP | RS-485 communication | | 20 mA | | |
| FX5-4AD-ADP | 4 ch voltage input/current input | | 10 mA | 20 mA | |
| FX5-4DA-ADP | 4 ch voltage output/current output | | | — | 160 mA |

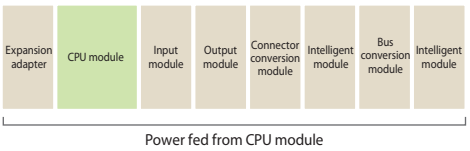
## 8 FX3 intelligent function module

| Type | Function | Number of occupied input/ output points | Current consumption | | |
|---|---|---|---|---|---|
| | | | 5 V DC internal current consumption | 24 V DC internal current consumption | 24 V DC external electric supply |
| FX3U-4AD | 4 ch voltage input/current input | 8 points | 110 mA | — | 90 mA |
| FX3U-4DA | 4 ch voltage output/current output | | 120 mA | | 160 mA |
| FX3U-4LC | 4-loop temperature control (thermocouple, PT and mini voltage) | | 160 mA | | 50 mA |
| FX3U-16CCL-M | CC-Link Master (Ver. 2.00 and Ver. 1.10 compatible) | ∗ | — | | 240 mA |
| FX3U-64CCL | CC-Link intelligent device station | 8 points | | | 220 mA |
| FX3U-1PG | Pulse output for independent 1-axis control | | 150 mA | | 40 mA |
| FX3U-2HC | 2 ch high-speed counter | | 245 mA | | — |

∗ : Varies according to settings.

### Calculation of current consumed by expansion modules

The power required for the expansion adapter and expansion module is supplied from the CPU module. Use the following calculations to confirm whether the required power can be supplied.
(All calculations must be satisfied.)




**■Power fed from CPU module**
**[5 V DC power supply]**

5 V DC power supply capacity (CPU module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≥ 0 mA

**[24 V DC power supply]**

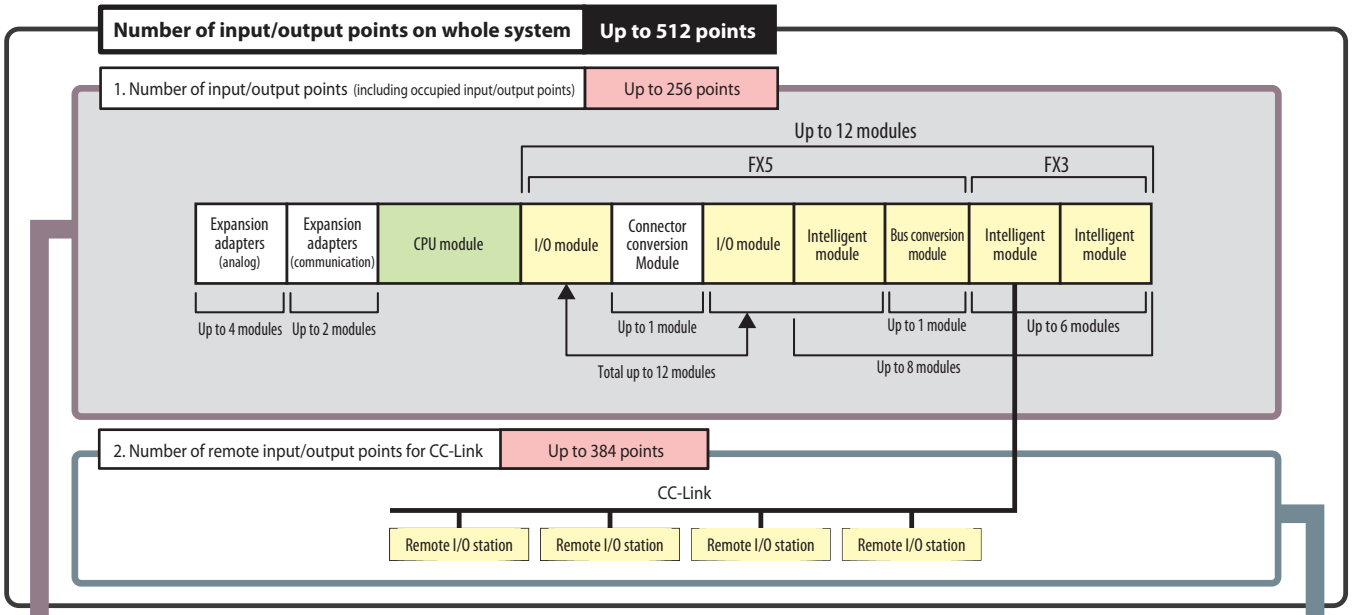
24 V DC service power supply capacity (CPU module) − Total current consumption ( total of connected expansion devices ) = Calculation results ≥ 0 mA

**<Caution> If the calculation results are negative, the power capacity is exceeded so review the system configuration.**

The number of connected modules may be limited for some products. Refer to page 20 for details.

## Rules of System Configuration

The FX5UC CPU module can control a total of 512 points including the CPU module and expansion device input/output points and remote input/output points.




### ■ Number of I/O points

The maximum number of input/output points that can be configured with the FX5UC is shown below.

**Maximum number of input/output points**

256 points

≧

**Number of occupied input/output points**

CPU module: (A) points + I/O module: Total (B) points + Intelligent module: (C) modules × 8 points

The expansion adapter and connector conversion module are not included in the number of occupied points.

(A): Number of CPU module input/output points (B): Total number of I/O module input/output points (C): Total number of intelligent modules

Total 512 points or less

### ■ Number of input/output points when using network master module

The maximum number of input/output points when using the network master module is shown below.

**Maximum number of input/output points**

384 points

≧

**Number of occupied remote input/output points**

CC-Link: (D) station × 32 points

CC-Link is the total of the number of remote I/O stations x 32 points.
(Calculated as 32 points regardless of the number of remote I/O points.)

(D): Number of CC-Link remote I/O stations

### Limitation on number of modules when expanding

The number of connectable modules is limited for the following products. Refer to the manual for details.

| Type | Model/type | Setting method/precautions |
|---|---|---|
| Intelligent function module for FX3 Series | FX3U-4AD | Up to 6 modules can be connected for the entire system. |
| | FX3U-4DA | |
| | FX3U-1PG | |
| | FX3U-4LC | |
| | FX3U-16CCL-M | Up to 1 module can be connected for the entire system. |
| | FX3U-64CCL | |
| | FX3U-2HC | Up to 2 modules can be connected for the entire system.<br>Connect immediately after the bus conversion module. |

Refer to the manual for details on each device.

# Product specifications

## CPU module specification

### ☐ Generic Specifications

| Item | Specifications | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | FX5U | | | | | FX5UC | | | |
| Operating ambient temperature*1 | 0 to 55°C (32 to 131°F)*2 | | | | | | | | |
| Storage ambient temperature | -25 to 75°C (-13 to 167°F) | | | | | | | | |
| Operating ambient humidity | 5 to 95%RH, non-condensation | | | | | | | | |
| Storage ambient humidity | 5 to 95%RH, non-condensation | | | | | | | | |
| Vibration resistance*3*4 | | Frequency | Acceleration | Half amplitude | Sweep count | Frequency | Acceleration | Half amplitude | Sweep count |
| | Installed on DIN rail | 5 to 8.4 Hz | — | 1.75 mm | 10 times each in X, Y, Z directions (80 min in each direction) | 5 to 8.4 Hz | — | 1.75 mm | 10 times each in X, Y, Z directions (80 min in each direction) |
| | | 8.4 to 150 Hz | 4.9 m/s$^2$ | — | | 8.4 to 150 Hz | 4.9 m/s$^2$ | — | |
| | Direct installing | 5 to 8.4 Hz | — | 3.5 mm | | — | | | |
| | | 8.4 to 150 Hz | 9.8 m/s$^2$ | — | | | | | |
| Shock resistance*3 | 147 m/s$^2$, Action time: 11 ms, 3 times by half-sine pulse in each direction X, Y, and Z | | | | | | | | |
| Grounding | Class D grounding (grounding resistance: 100 Ω or less) <Common grounding with a heavy electrical system is not allowed.>*5 | | | | | | | | |
| Working atmosphere | Free from corrosive or flammable gas and excessive conductive dust | | | | | | | | |
| Operating altitude*6 | 0 to 2000 m | | | | | | | | |
| Installation location | Inside a control panel | | | | | | | | |
| Overvoltage category*7 | II or less | | | | | | | | |
| Pollution degree*8 | 2 or less | | | | | | | | |
| Equipment class | Class 2 | | | | | | | | |

∗1 : The simultaneous ON ratio of available PLC inputs or outputs changes with respect to the ambient temperature, refer to manuals of each product.
∗2 : For details on Intelligent function modules, refer to manuals of each product.
∗3 : The criterion is shown in IEC61131-2.
∗4 : When the system has equipment which specification values are lower than above mentioned vibration resistance specification values, the vibration resistance specification of the whole system is corresponding to the lower specification.
∗5 : For grounding, refer to manuals of each product.
∗6 : The PLC cannot be used at a pressure higher than the atmospheric pressure to avoid damage.
∗7 : This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.
∗8 : This index indicates the degree to which conductive material is generated in the environment in which the equipment is used. Pollution level 2 is when only non-conductive pollution occurs. Temporary conductivity caused by condensation must be expected occasionally.

### ☐ Power Supply Specifications

| Item | | Specifications | | | |
|---|---|---|---|---|---|
| | | FX5U-32M[] | FX5U-64M[] | FX5U-80M[] | FX5UC-32MT/[] |
| Rated voltage | | 100 to 240 V AC | | | 24 V DC |
| Allowable supply voltage range | | 85 to 264 V AC | | | 20.4 to 28.8 V DC |
| Frequency rating | | 50/60 Hz | | | — |
| Allowable instantaneous power failure time | | Operation can be continued upon occurrence of instantaneous power failure for 10 ms or less. | | | Operation can be continued upon occurrence of instantaneous power failure for 5 ms or less. |
| Power fuse | | 250 V, 3.15 A Time-lag fuse | 250 V, 5 A Time-lag fuse | | 125 V, 3.15 A Time-lag fuse |
| Rush current | | 25 A max. 5 ms or less/100 V AC<br>50 A max. 5 ms or less/200 V AC | 30 A max. 5 ms or less/100 V AC<br>60 A max. 5 ms or less/200 V AC | | 30 A max. 0.5 ms or less/24 V DC |
| Power consumption*1 | | 30 W | 40 W | 45 W | 8 W |
| 5 V DC power supply capacity*3 | | 900 mA | 1100 mA | 1100 mA | 720 mA |
| 24 V DC power supply capacity*2*3 | Supply capacity when service power supply is used for input circuit of the CPU module | 400 mA | 600 mA | 600 mA | 500 mA |
| | Supply capacity when external power supply is used for input circuit of the CPU module | 480 mA | 740 mA | 770 mA | |

∗1 : This item shows value when all 24 V DC service power supplies are used in the maximum configuration connectable to the CPU module. (The current of the input circuit is included.)
∗2 : When I/O modules are connected, they consume current from the 24 V DC service power. For details on the service power supply, refer to manuals of each product.
∗3 : Internal power supply in case of FX3UC-32MT/[]

### ☐ Performance Specifications

| Item | | Specifications |
|---|---|---|
| | | FX5U/FX5UC |
| Control system | | Stored-program repetitive operation |
| Input/output control system | | Refresh system (Direct access input/output allowed by specification of direct access input/output [DX, DY]) |
| Programming specifications | Programming language | Ladder diagram (LD), structured text (ST), function block diagram/ladder diagram (FBD/LD) |
| | Programming extension function | Function block (FB), structured ladder, label programming (local/global) |
| | Constant scan | 0.2 to 2000 ms (can be set in 0.1 ms increments) |
| | Fixed cycle interrupt | 1 to 60000 ms (can be set in 1 ms increments) |
| | Timer performance specifications | 100 ms, 10 ms, 1 ms |
| | No. of program executions | 32 |
| | No. of FB files | 16 (Up to 15 for user) |
| Operation specifications | Execution type | Standby type, initial execution type, scan execution type, event execution type |
| | Interrupt type | Internal timer interrupt, input interruption, high-speed comparison match interrupt |
| Command processing time | LD X0 | 34 ns |
| | MOV D0 D1 | 34 ns |
| Memory capacity | Program capacity | 64 k steps (128 kbytes, flash memory) |
| | SD memory card | Memory card capacity (SD/SDHC memory card: Max. 4 GB) |
| | Device/label memory | 120 kbytes |
| | Data memory/standard ROM | 5 Mbytes |
| Flash memory (Flash ROM) write count | | Max. 20000 times |
| File storage capacity | Device/label memory | 1 |
| | Data memory<br>P: No. of program files/FB: No. of FB files | P: 32, FB: 16 |
| | SD memory card | 2 GB: 511*1 |
| | | 4 GB: 65534*1 |
| Clock function | Display data | Year, month, day, hour, minute, second, day of week (leap year automatic detection) |
| | Precision | -2.96 to +3.74 (TYP.+1.42) s/d (Ambient temperature: 0°C (32°F))<br>-3.18 to +3.74 (TYP.+1.50) s/d (Ambient temperature: 25°C (77°F))<br>-13.20 to +2.12 (TYP.-3.54) s/d (Ambient temperature: 55°C (131°F)) |
| No. of input/output points | (1) No. of input/output points | 256 points or less |
| | (2) No. of remote I/O points | 384 points or less |
| | Total No. of points of (1) and (2) | 512 points or less |
| Power failure retention*2 | Retention method | Large-capacity capacitor |
| | Retention time | 10 days (Ambient temperature: 25°C (77°F)) |
| | Data retained | Clock data |

∗1 : The value listed above indicates the number of files stored in the root folder.
∗2 : Clock data is retained using the power accumulated in a large-capacity capacitor incorporated into the PLC. When voltage of the large-capacity capacitor drops, clock data is no longer accurately retained. The retention period of a fully charged capacitor (electricity is conducted across the PLC for at least 30 minutes) is 10 days (ambient temperature: 25°C (77°F)). How long the capacitor can hold the data depends on the operating ambient temperature. When the operating ambient temperature is high, the holding period is short.

Refer to the manual for details on each device.

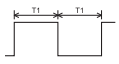
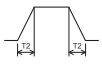
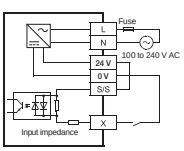
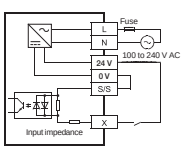
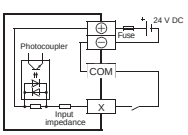
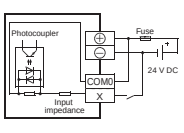
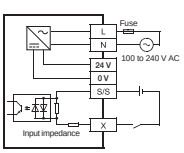
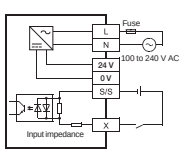
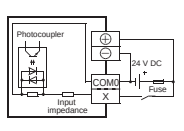
## ☐Number of device points

| Item | | | Base | Max. number of points |
|---|---|---|---|---|
| No. of user device points | Input relay (X) | | 8 | 1024 points (The total number of X and Y assigned to input/output points is up to 256 points.) |
| | Output relay (Y) | | 8 | 1024 points |
| | Internal relay (M) | | 10 | 32768 points (can be changed with parameter)*1 |
| | Latch relay (L) | | 10 | 32768 points (can be changed with parameter)*1 |
| | Link relay (B) | | 16 | 32768 points (can be changed with parameter)*1 |
| | Annunciator (F) | | 10 | 32768 points (can be changed with parameter)*1 |
| | Link special relay (SB) | | 16 | 32768 points (can be changed with parameter)*1 |
| | Step relay (S) | | 10 | 4096 points (fixed) |
| | Timer system | Timer (T) | 10 | 1024 points (can be changed with parameter)*1 |
| | Accumulation timer system | Accumulation timer (ST) | 10 | 1024 points (can be changed with parameter)*1 |
| | Counter system | Counter (C) | 10 | 1024 points (can be changed with parameter)*1 |
| | | Long counter (LC) | 10 | 1024 points (can be changed with parameter)*1 |
| | Data register (D) | | 10 | 8000 points (can be changed with parameter)*1 |
| | Link register (W) | | 16 | 32768 points (can be changed with parameter)*1 |
| | Link special register (SW) | | 16 | 32768 points (can be changed with parameter)*1 |
| No. of system device points | Special relay (SM) | | 10 | 10000 points (fixed) |
| | Special register (SD) | | 10 | 12000 points (fixed) |
| Module access device | Intelligent function module device | | 10 | 65536 points (designated by U[]\G[]) |
| No. of index register points | Index register (Z)*2 | | 10 | 24 points |
| | Long index register (LZ)*2 | | 10 | 12 points |
| No. of file register points | File register (R) | | 10 | 32768 points (can be changed with parameter)*1 |
| No. of nesting points | Nesting (N) | | 10 | 15 points (fixed) |
| No. of pointer points | Pointer (P) | | 10 | 4096 points |
| | Interrupt pointer (I) | | 10 | 178 points (fixed) |
| Others | Decimal constant (K) | Signed | | 16 bits: -32768 to +32767, 32 bits: -2147483648 to +2147483647 |
| | | Unsigned | | 16 bits: 0 to 65535, 32 bits: 0 to 4294967295 |
| | Hexadecimal constant (H) | | | 16 bits: 0 to FFFF, 32 bits: 0 to FFFFFFFF |
| | Real constant (E) | Single precision | | E-3.40282347+38 to E-1.17549435-38, 0, E1.17549435-38 to E3.40282347+38 |
| | Character string | | | Shift-JIS code max. 255 single-byte characters (256 including NULL) |

*1: Can be changed with parameters within the capacity range of the CPU built-in memory.
*2: Total of the index register (Z) and long index register (LZ) is maximum 24 words.

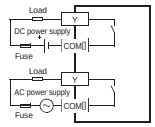
## ☐Input Specifications

### 24 V DC Input (sink/source)

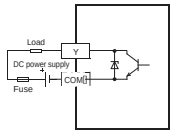
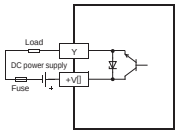
| Item | | Specifications | | | | |
|---|---|---|---|---|---|---|
| | | FX5U-32M[] | FX5U-64M[] | FX5U-80M[] | FX5UC-32MT/D | FX5UC-32MT/DSS |
| No. of input points | | 16 points | 32 points | 40 points | 16 points | |
| Connection type | | Removable terminal block (M3 screws) | | | Connector | |
| Input type | | Sink/source | | | Sink | Sink/source |
| Input signal voltage | | 24 V DC +20 %, -15% | | | | |
| Input signal current | X000 to X017 | 5.3 mA/24 V DC | | | 5.3 mA/24 V DC | |
| | X020 and subsequent | 4.0 mA/24 V DC | | | | |
| Input impedance | X000 to X017 | 4.3 kΩ | | | 4.3 kΩ | |
| | X020 and subsequent | 5.6 kΩ | | | | |
| ON input sensitivity current | X000 to X017 | 3.5 mA or more | | | 3.5 mA or more | |
| | X020 and subsequent | 3.0 mA or more | | | | |
| OFF input sensitivity current | | 1.5 mA or less | | | | |
| Input response frequency | X000 to X005 | 200 kHz | 200 kHz | | 200 kHz | |
| | X006 to X007 | 10 kHz | | | 10 kHz | |
| | X010 to X017 | | 10 kHz | | | |
| Pulse waveform | Waveform |  T1 (pulse width) |  T2 (rise/fall time) | | | |
| | X000 to X005 | T1: 2.5 µs or more, T2: 1.25 µs or less | T1: 2.5 µs or more, T2: 1.25 µs or less | | T1: 2.5 µs or more, T2: 1.25 µs or less | |
| | X006 to X007 | T1: 50 µs or more, T2: 25 µs or less | | | T1: 50 µs or more, T2: 25 µs or less | |
| | X010 to X017 | | T1: 50 µs or more, T2: 25 µs or less | | | |
| Input response time (H/W filter delay) | X000 to X005 | ON: 2.5 µs or less, OFF: 2.5 µs or less | ON: 2.5 µs or less, OFF: 2.5 µs or less | | ON: 2.5 µs or less, OFF: 2.5 µs or less | |
| | X006 to X007 | ON: 30 µs or less, OFF: 50 µs or less | | | ON: 30 µs or less, OFF: 50 µs or less | |
| | X010 to X017 | | ON: 30 µs or less, OFF: 150 µs or less | | | |
| Input response time (Digital filter setting value) | | None, 10 µs, 50 µs, 0.1 ms, 0.2 ms, 0.4 ms, 0.6 ms, 1 ms, 5 ms, 10 ms (initial values), 20 ms, 70 ms<br>When using this product in an environment with much noise, set the digital filter. | | | | |
| Input signal format | | No-voltage contact input<br>Sink: NPN open collector transistor<br>Source: PNP open collector transistor | | | No-voltage contact input<br>NPN open collector transistor | No-voltage contact input<br>Sink: NPN open collector transistor<br>Source: PNP open collector transistor |
| Input circuit insulation | | Photo-coupler insulation | | | | |
| Indication of input operation | | LED is lit when input is on | | | LED is lit when input is on (DISP switch: IN) | |
| Input circuit configuration | | When using service power supply<br>Sink input wiring<br>  <br>Source input wiring<br>  | | | Sink input wiring<br>  | Sink input wiring<br>  |
| | | When using external power supply<br>Sink input wiring<br>  <br>Source input wiring<br>  | | | | Source input wiring<br>  |

## □Output Specifications

### Relay output

| Item | | Specifications | | |
|---|---|---|---|---|
| | | FX5U-32MR/[] | FX5U-64MR/[] | FX5U-80MR/[] |
| No. of output points | | 16 points | 32 points | 40 points |
| Connection type | | Removable terminal block (M3 screws) | | |
| Output type | | Relay | | |
| External power supply | | 30 V DC or less<br>240 V AC or less ("250 V AC or less" if not a CE, UL, cUL compliant item) | | |
| Max. load | | 2 A/point<br>The total load current per common terminal should be the following value.<br>4 output points/common terminal: 8 A or less<br>8 output points/common terminal: 8 A or less | | |
| Min. load | | 5 V DC, 2 mA (reference values) | | |
| Open circuit leakage current | | | | |
| Response time | OFF→ON | Approx. 10 ms | | |
| | ON→OFF | Approx. 10 ms | | |
| Insulation of circuit | | Mechanical insulation | | |
| Indication of output operation | | LED is lit when output is on | | |
| Output circuit configuration | |  <br>A number is entered in the [] of [COM[]]. | | |

### Transistor output

| Item | | Specifications | | | | |
|---|---|---|---|---|---|---|
| | | FX5U-32MT/[] | FX5U-64MT/[] | FX5U-80MT/[] | FX5UC-32MT/D | FX5UC-32MT/DSS |
| No. of output points | | 16 points | 32 points | 40 points | 16 points | |
| Connection type | | Removable terminal block (M3 screws) | | | Connector | |
| Output type | | Transistor/sink output (FX5U-[]MT/ES)<br>Transistor/source output (FX5U-[]MT/ESS) | | | Transistor/sink output | Transistor/source output |
| External power supply | | 5 to 30 V DC | | | | |
| Max. load | | 0.5 A/point<br>The total load current per common terminal should be the following value.<br>4 output points/common terminal: 0.8 A or less<br>8 output points/common terminal: 1.6 A or less | | | Y000 to Y003: 0.3 A/point<br>Y004 and subsequent: 0.1 A/point<br>The total load current per common terminal should be the following value.<br>8 output points/common terminal: 0.8 A or less* | |
| Open circuit leakage current | | 0.1 mA or less/30 V DC | | | | |
| Voltage drop when ON | Y000 to Y003 | 1.0 V or less | | | | |
| | Y004 and subsequent | 1.5 V or less | | | | |
| Response time | Y000 to Y003 | 2.5 µs or less/10 mA or more (5 to 24 V DC) | | | | |
| | Y004 and subsequent | 0.2 ms or less/200 mA or more (24 V DC) | | | 0.2 ms or less/100 mA (24 V DC) | |
| Insulation of circuit | | Photo-coupler insulation | | | | |
| Indication of output operation | | LED is lit when output is on | | | | |
| Output circuit configuration | | Sink output wiring<br>  <br>Source output wiring<br>  <br>A number is entered in the [] of [COM []].<br>A number is entered in the [] of [+V []]. | | | | |

5UC

*: When 2 common terminals are connected outside the CPU module, resistance load is 1.6 A or less.

## □Built-in Analog input

| Item | | Specifications |
|---|---|---|
| | | FX5U |
| Analog input points | | 2 points (2 channels) |
| Analog input | Voltage | 0 to 10 V DC (input resistance 115.7 kΩ) |
| Digital output | | Unsigned 12-bit binary |
| I/O characteristics, Maximum resolution | Digital output value | 0 to 4000 |
| | Maximum resolution | 2.5 mV |
| Accuracy (Accuracy in respect to maximum digital output value) | Ambient temperature 25 ±5°C (77±41°F) | Within ±0.5% (±20 digit*) |
| | Ambient temperature 0 to 55°C (32±131°F) | Within ±0.1% (±40 digit*) |
| Conversion speed | | 30 µs/channels (data refreshed every operation cycle) |
| Absolute maximum input | | -0.5 V, +15 V |
| Isolation | | No isolation between analog input circuit and PLC circuit.<br>No isolation between input terminals (channels). |
| Occupied points | | 0 points (does not pertain to the max. No. of input/output points of the PLC.) |
| Terminal block used | | European-type terminal block |

*: "Digit" refers to digital values.

## □Built-in Analog output

| Item | | Specifications |
|---|---|---|
| | | FX5U |
| Analog output points | | 1 points (1 channels) |
| Digital input | | Unsigned 12-bit binary |
| Analog output | Voltage | 0 to 10 V DC (external load resistance 2 k to 1 MΩ) |
| I/O characteristics, Maximum resolution | Digital input value | 0 to 4000 |
| | Maximum resolution | 2.5 mV |
| Accuracy (Accuracy in respect to maximum analog output value) | Ambient temperature 25 ±5°C (77±41°F) | Within ±0.5% (±20 digit*) |
| | Ambient temperature 0 to 55°C (32±131°F) | Within ±0.1% (±40 digit*) |
| Conversion speed | | 30 µs (data refreshed every operation cycle) |
| Isolation | | No isolation between analog output circuit and PLC circuit. |
| Occupied points | | 0 points (does not pertain to the max. No. of input/output points of the PLC.) |
| Terminal block used | | European-type terminal block |

*: "Digit" refers to digital values.

### ☐ Built-in RS-485 communication

| Item | Specifications |
|---|---|
| | FX5U/FX5UC |
| Transmission standards | Conforms to RS-485/RS-422 specifications |
| Data transmission speed | Max. 115.2 kbps |
| Communication method | Full-duplex (FDX) / Half-duplex (HDX) |
| Maximum total extension distance | 50 m (164' 0") |
| Protocol type | MELSOFT connection |
| | MELSEC Communication protocol (3C/4C frames) |
| | Non-protocol communication |
| | MODBUS RTU |
| | Inverter communication |
| | N:N network |
| | Predefined protocol support |
| Insulation method | Not insulated |
| Terminal resistors | Built-in (OPEN/110 Ω/330 Ω) |
| Terminal block used | European-type terminal block |

### ☐ Built-in Ethernet communication

| Item | | Specifications |
|---|---|---|
| | | FX5U/FX5UC |
| Data transmission speed | | 100/10 Mbps |
| Communication mode | | Full-duplex (FDX) / Half-duplex (HDX) |
| Interface | | RJ45 connector |
| Transmission method | | Base band |
| Maximum segment length (The distance between hub and node) | | 100 m (328' 1") |
| Cascade connection | 100BASE-TX | Cascade connection max. 2 stages*1 |
| | 10BASE-T | Cascade connection max. 4 stages*1 |
| Protocol type | | MELSOFT connection |
| | | SLMP (3E frame) |
| | | Socket communication |
| | | Predefined protocol support |
| Number of simultaneously open connections allowed | | Total of 8 for socket communication, MELSOFT connection, SLMP, and Predefined protocol support (Up to 8 external devices can access one CPU module at the same time.) |
| Insulation method | | Pulse transformer insulation |
| Cable used*2 | For 100BASE-TX connection | Ethernet standard-compatible cable, category 5 or higher (STP cable) |
| | For 10BASE-T connection | Ethernet standard-compatible cable, category 3 or higher (STP cable) |

∗1: Number of stages that can be connected when a repeater hub is used. When a switching hub is used, check the specifications of the switching hub used.
∗2: A straight cable can be used. If a personal computer or GOT and CPU module are directly connected a cross cable can be used.

### ☐ Built-in positioning function

| Item | Specifications |
|---|---|
| | FX5U/FX5UC |
| Number of control axes | Independent 4 axes* (Simple linear interpolation by 2-axis simultaneous start) |
| Maximum frequency | 2147483647 (200 Kpps in pulses) |
| Positioning program | Sequence program, Table operation |
| Supported CPU units | Transistor output type |
| Pulse output | 1 instruction (PLSY) |
| Positioning | 8 instructions (DSZR, DVIT, TBL, PLSV, DRVI, DRVA, DRVTBL, DRVMUL) pulse output |

∗: The number of control axes is 2 when the pulse output mode is CW/CCW mode.

### ☐ Built-in high speed counter function

| Item | Specifications | |
|---|---|---|
| | FX5U/FX5UC | |
| | Input specifications | Maximum frequency |
| Types of high-speed counters | 1 phase, 1 input counter (S/W) | 200 KHz |
| | 1 phase, 1 input counter (H/W) | 200 KHz |
| | 1 phase, 2 input counter | 200 KHz |
| | 2 phase, 2 input counter [1 edge count] | 200 KHz |
| | 2 phase, 2 input counter [2 edge count] | 100 KHz |
| | 2 phase, 2 input counter [4 edge count] | 50 KHz |
| Input allocation | Parameter setup* | |
| High-speed counter instruction | [High-speed processing instruction]<br>Setting 32-bit data comparison<br>Reset 32-bit data comparison<br>Comparison of 32-bit data band<br>Start/stop of the 16-bit data high-speed I/O function<br>Start/stop of the 32-bit data high-speed I/O function<br>[High-speed current value transfer instruction]<br>High-speed current value transfer of 16-bit data<br>High-speed current value transfer of 32-bit data | |

∗: Refer to manuals of each product.

Refer to the manual for details on each device.

# Expansion Device Specifications

## ☐I/O Modules

### Powered input/output modules

| Model | Total No. of points | No. of input/output points & Input/output type | | | | Connection type |
|---|---|---|---|---|---|---|
| | | Input | | Output | | |
| FX5-32ER/ES | 32 points | 16 points | 24 V DC (Sink/source) | 16 points | Relay | Terminal block |
| FX5-32ET/ES | | | | | Transistor (sink) | |
| FX5-32ET/ESS | | | | | Transistor (source) | |

### Input modules

| Model | Total No. of points | No. of input/output points & Input/output type | | | | Connection type |
|---|---|---|---|---|---|---|
| | | Input | | Output | | |
| FX5-8EX/ES | 8 points | 8 points | 24 V DC (Sink/source) | | | Terminal block |
| FX5-16EX/ES | 16 points | 16 points | | | | |
| FX5-C32EX/D | 32 points | 32 points | 24 V DC (sink) | | | Connector |
| FX5-C32EX/DS | | | 24 V DC (Sink/source) | | | |

### Output modules

| Model | Total No. of points | No. of input/output points & Input/output type | | | | Connection type |
|---|---|---|---|---|---|---|
| | | Input | | Output | | |
| FX5-8EYR/ES | 8 points | | | 8 points | Relay | Terminal block |
| FX5-8EYT/ES | | | | | Transistor (sink) | |
| FX5-8EYT/ESS | | | | | Transistor (source) | |
| FX5-16EYR/ES | 16 points | | | 16 points | Relay | |
| FX5-16EYT/ES | | | | | Transistor (sink) | |
| FX5-16EYT/ESS | | | | | Transistor (source) | |
| FX5-C32EYT/D | 32 points | | | 32 points | Transistor (sink) | Connector |
| FX5-C32EYT/DSS | | | | | Transistor (source) | |

### Input/output modules

| Model | Total No. of points | No. of input/output points & Input/output type | | | | Connection type |
|---|---|---|---|---|---|---|
| | | Input | | Output | | |
| FX5-C32ET/D | 32 points | 16 points | 24 V DC (sink) | 16 points | Transistor (sink) | Connector |
| FX5-C32ET/DSS | | | 24 V DC (source) | | Transistor (source) | |

## ☐Expansion adapters

### FX5-232ADP

| Item | Specifications |
|---|---|
| Transmission standard/ Maximum transmission distance/ Insulation | Conforming to RS-232C/15 m (49' 2")/Photo-coupler isolation (Between communication line and CPU module) |
| Connection method | 9-pin D-sub, male |
| Communication method | Half-duplex/Full-duplex |
| Baud rate | 300/600/1200/2400/4800/9600/19200/38400/57600/115200 (bps) |
| Number of occupied I/O points | 0 point (no points occupied) |
| Applicable CPU module | FX5U, FX5UC PLC |
| Control power (supplied from CPU module) | 5 V DC, 30 mA / 24 V DC, 30 mA |

### FX5-485ADP

| Item | Specifications |
|---|---|
| Transmission standard/ Maximum transmission distance/ Insulation | Conforming to RS-485, RS-422/1200 m (3937' 0")/Photo-coupler isolation (Between communication line and CPU module) |
| Connection method | European terminal block |
| Communication method | Half-duplex/Full-duplex |
| Baud rate | 300/600/1200/2400/4800/9600/19200/38400/57600/115200 (bps) |
| Terminal resistor | Built-in (OPEN/110 Ω/330 Ω) |
| Number of occupied I/O points | 0 point (no points occupied) |
| Applicable CPU module | FX5U, FX5UC PLC |
| Control power (supplied from CPU module) | 5 V DC, 20 mA / 24 V DC, 30 mA |

### FX5-4AD-ADP

| Item | Specifications | | | |
|---|---|---|---|---|
| Number of analog input points | 4 points (4 channels) | | | |
| 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 | 14-bit binary value | | | |
| Input characteristics, resolution* | Analog input range | | Digital output value | Resolution |
| | Voltage | 0 to 10 V | 0 to 16000 | 625 μV |
| | | 0 to 5 V | 0 to 16000 | 312.5 μV |
| | | 1 to 5 V | 0 to 12800 | 312.5 μV |
| | | -10 to +10V | -8000 to +8000 | 1250 μV |
| | Current | 0 to 20 mA | 0 to 16000 | 1.25 μA |
| | | 4 to 20 mA | 0 to 12800 | 1.25 μA |
| | | -20 to +20 mA | -8000 to +8000 | 2.5 μA |
| Accuracy (accuracy for the full scale digital output value) | Ambient temperature 25±5°C: within ±0.1% (±16 digit)<br>Ambient temperature 0 to 55°C: within ±1.0% (±32 digit) | | | |
| Absolute maximum input | Voltage: ±15 V, Current: ±30 mA | | | |
| Isolation method | Between input terminal and PLC: Photocoupler<br>Between input channels: Non-isolation | | | |
| Number of occupied I/O points | 0 point (no points occupied) | | | |
| Applicable CPU module | FX5U,FX5UC PLC | | | |

∗: For the input conversion characteristic, refer to manuals of each product.

### FX5-4DA-ADP

| Item | Specifications | | | |
|---|---|---|---|---|
| Number of analog output points | 4 points (4 channels) | | | |
| Analog output voltage | -10 to +10 V DC (external load resistance value 1 k to 1 MΩ) | | | |
| Analog output current | 0 to 20 mA DC (external load resistance value 0 to 500 Ω) | | | |
| Digital input | 14-bit binary value | | | |
| Output characteristics, resolution* | Analog output range | | Digital value | Resolution |
| | Voltage | 0 to 10 V | 0 to 16000 | 625 μV |
| | | 0 to 5 V | 0 to 16000 | 312.5 μV |
| | | 1 to 5 V | 0 to 16000 | 250 μV |
| | | -10 to +10V | -8000 to +8000 | 1250 μV |
| | Current | 0 to 20 mA | 0 to 16000 | 1.25 μA |
| | | 4 to 20 mA | 0 to 16000 | 1 μA |
| Accuracy (accuracy for the full scale of the analog output value) | Ambient temperature 25±5°C: ±0.1% (Voltage ±20 mV, Current ±40 μA)<br>Ambient temperature 0 to 55°C: ±0.2% (Voltage ±30 mV, Current ±60 μA) | | | |
| Isolation method | Between output terminal and PLC: Photocoupler<br>Between output channels: Non-isolation | | | |
| Number of occupied I/O points | 0 point (no points occupied) | | | |
| Applicable CPU module | FX5U, FX5UC PLC | | | |

∗: For the output conversion characteristic, refer to manuals of each product.

## ☐Expansion boards

| Item | Specifications | | |
|---|---|---|---|
| | FX5-232-BD | FX5-485-BD | FX5-422-BD-GOT |
| Transmission standard | Conforming to RS-232C | Conforming to RS-485, RS-422 | Conforming to RS-422 |
| Maximum transmission distance | 15 m (49' 2") | 50 m (164' 0") | According to the specification of the GOT |
| Connection method | 9-pin D-sub, male | European terminal block | 8-pin MINI-DIN, female |
| Insulation | Not insulated (Between communication line and CPU module) | | |
| Communication method | Half-duplex/Full-duplex | Half-duplex/Full-duplex* | Half-duplex |
| Baud rate | 300/600/1200/2400/ 4800/9600/19200/ 38400/57600/115200 (bps)* | 300/600/1200/2400/ 4800/9600/19200/ 38400/57600/115200 (bps)* | 9600/19200/38400/ 57600/115200 (bps) |
| Terminal resistor | | Built-in (OPEN/110 Ω/330 Ω) | |

∗: The communication method and baud rate vary depending on the type of communication.

## ☐Extension power supply module

### FX5-1PSU-5V

| Item | | Specifications |
|---|---|---|
| Rated Supply voltage | | 100 to 240 V AC |
| All owable supply voltage range | | 85 to 264 V AC |
| Rated frequency | | 50/60 Hz |
| Accuracy (accuracy for the full scale digital output value | | Operation can be continued upon occurrence of instantaneous power failure for 10 ms or less. |
| Power fuse | | 250 V 3.15 A Time-lag Fuse |
| In-rush current | | 25 A Max. 5 ms or less/ 100 V AC<br>50 A Max. 5 ms or less/ 200 V AC |
| Power consumption | | 20 W Max. |
| Output current* | 24 V DC | 0.3 A (Maximum output current depends on the ambient temperature.) |
| | 5 V DC | 1.2 A (Maximum output current depends on the ambient temperature.) |

∗: For the current conversion characteristic, refer to manuals of each product.

## ☐Bus conversion modules

### FX5-CNV-BUS (FX5 (terminal block) → FX3 (terminal block) extension)

| Item | Specifications |
|---|---|
| Number of occupied I/O points | 8 point |
| Applicable CPU module | FX5U, FX5UC PLC |
| Control power (supplied from CPU module) | 5 V DC, 150 mA |

### FX5-CNV-BUSC (FX5 (connector) → FX3 (terminal block) extension)

| Item | Specifications |
|---|---|
| Number of occupied I/O points | 8 point |
| Applicable CPU module | FX5UC PLC |
| Control power (supplied from CPU module) | 5 V DC, 150 mA |

## ☐Connector conversion module

### FX5-CNV-IFC (FX5 (connector) → FX5 (terminal block) extension)

| Item | Specifications |
|---|---|
| Number of occupied I/O points | 0 point (does not occupy any I/O points) |
| Applicable CPU module | FX5U, FX5UC PLC |
| Control power (supplied from CPU module) | 0 mA (no power consumed) |

# Simple Motion module specification

## FX5-40SSC-S

### ☐ Control specification

| Item | | Specifications |
|---|---|---|
| Number of control axes | | Up to 4 axes |
| Operation cycle | | 1.777 ms |
| Interpolation function | | Linear interpolation (Up to 4 axes),<br>Circular interpolation (2 axes) |
| Control modes | | PTP (Point To Point) control, Trajectory control (both linear and arc), Speed control, Speed-position switching control, Position-speed switching control, Speed-torque control |
| Acceleration/deceleration process | | Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration |
| Compensation function | | Backlash compensation, Electronic gear, Near pass function |
| Synchronous control | Input axis | Servo input axis, Synchronous encoder axis |
| | Output axis | Cam axis (Up to 4 axes) |
| Cam control | Number of registration | Up to 64 (depending on memory capacity, cam resolution and number of coordinates) |
| | Cam data type | Stroke ratio data type, Coordinate data type |
| | Cam auto-generation | Cam auto-generation for rotary cutter |
| Control unit | | mm, inch, degree, pulse |
| Number of positioning data | | 600 data (positioning data No. 1 to 600)/axis (Can be set with MELSOFT GX Works3 or a sequence program.) |
| Backup | | Parameters, positioning data, and block start data can be saved on flash ROM (battery-less backup) |
| Home position return | Home position return method | Proximity dog method, Count method 1, Count method 2, Data set method, Scale home position signal detection method |
| | Fast home position return control | Provided |
| | Sub functions | Home position return retry, Home position shift |
| Positioning control | Linear control | 1-axis linear control, 2-axis linear interpolation control, 3-axis linear interpolation control, 4-axis linear interpolation control*1 (Composite speed, Reference axis speed) |
| | Fixed-pitch feed control | 1-axis fixed-pitch feed, 2-axis fixed-pitch feed, 3-axis fixed-pitch feed, 4-axis fixed-pitch feed*1 |
| | 2-axis circular interpolation | Sub point designation, center point designation |
| | Speed control | 1-axis speed control, 2-axis speed control*1, 3-axis speed control*1, 4-axis speed control*1 |
| | Speed-position switching control | INC mode, ABS mode |
| | Position-speed switching control | INC mode |
| | Current value change | Positioning data, Start No. for a current value changing |
| | NOP instruction | Provided |
| | JUMP instruction | Unconditional JUMP, Conditional JUMP |
| | LOOP, LEND | Provided |
| | High-level positioning control | Block start, Condition start, Wait start, Simultaneous start, Repeated start |
| Manual control | JOG operation | Provided |
| | Inching operation | Provided |
| | Manual pulse generator | Possible to connect 1 module (Incremental), Unit magnification (1 to 10000 times) |
| Expansion control | Speed-torque control | Speed control without positioning loops, Torque control, Tightening & press-fit control |
| Absolute position system | | Made compatible by setting a battery to servo amplifier |
| Synchronous encoder interface | | Up to 4 channels (Total of the internal interface, via PLC CPU interface, and servo amplifier interface) |
| | Internal interface | 1 channel (Incremental) |
| Functions that limit control | Speed limit function | Speed limit value, JOG speed limit value |
| | Torque limit function | Torque limit value_same setting, torque limit value_individual setting |
| | Forced stop | Valid/Invalid setting |
| | Software stroke limit function | Movable range check with current feed value, movable range check with machine feed value |
| | Hardware stroke limit function | Provided |
| Functions that change control details | Speed change function | Provided |
| | Override function | 1 to 300 [%] |
| | Acceleration/deceleration time change function | Provided |
| | Torque change function | Provided |
| | Target position change function | Target position address and speed are changeable |
| Other functions | M-code output function | Provided |
| | Step function | Deceleration unit step, Data No. unit step |
| | Skip function | Via PLC CPU, Via external command signal |
| | Teaching function | Provided |
| Parameter initialization function | | Provided |
| External input signal setting function | | Via internal interface, CPU, servo amplifier |
| Amplifier-less operation function | | Provided |
| Mark detection function | | Regular mode, Specified Number of Detections mode, Ring Buffer mode |
| | Mark detection signal | Up to 4 points |
| | Mark detection setting | 16 settings |
| Optional data monitor function | | 4 points/axis |
| Driver communication function | | Provided |
| SSCNET connect/disconnect function | | Provided |
| Digital oscilloscope function*2 | Bit data | 16 ch |
| | Word data | 16 ch |

∗1: Only reference axis speed can be specified as the interpolation speed designation method.
∗2: 8 ch word data and 8 ch bit data can be displayed in real time.

### ☐ Module specification

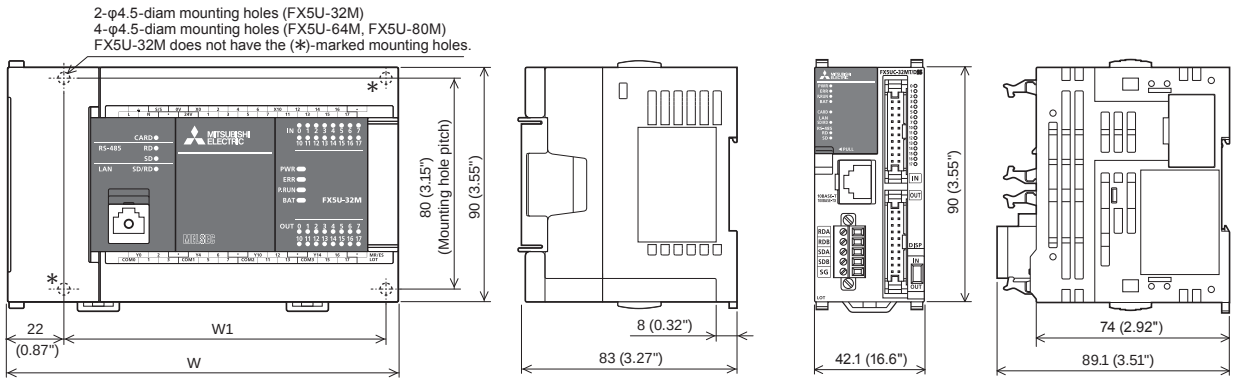
| Item | | | Specifications |
|---|---|---|---|
| Servo amplifier connection method | | | SSCNET III/H |
| Maximum overall cable distance [m(ft.)] | | | 400 (1312.32) |
| Maximum distance between stations [m(ft.)] | | | 100 (328.08) |
| Peripheral I/F | | | Via CPU module (Ethernet) |
| Manual pulse generator operation function | | | Possible to connect 1 module |
| Synchronous encoder operation function | | | Possible to connect 4 modules (Total of the internal interface, via PLC CPU interface, and servo amplifier interface) |
| Input signals (DI) | Number of input points | | 4 points |
| | Input method | | Positive common/Negative common shared (Photocoupler isolation) |
| | Rated input voltage/current | | 24 V DC/ Approx. 5 mA |
| | Operating voltage range | | 19.2 to 26.4 V DC (24 V DC +10%/-20%, ripple ratio 5% or less) |
| | ON voltage/current | | 17.5 V DC or more/ 3.5 mA or more |
| | OFF voltage/current | | 7 V DC or less/ 1.0 mA or less |
| | Input resistance | | Approx. 6.8 kΩ |
| | Response time | | 1 ms or less (OFF→ON, ON→OFF) |
| | Recommended wire size | | AWG24 ~ 30 (0.2 ~ 0.05 $mm^2$)<br>∗ AWG24 (0.2 $mm^2$) recommended |
| Forced stop input signal (EMI) | Number of input points | | 1 point |
| | Input method | | Positive common/Negative common shared (Photocoupler isolation) |
| | Rated input voltage/current | | 24 V DC/ Approx. 5 mA |
| | Operating voltage range | | 19.2 to 26.4 V DC (24 V DC +10%/-20%, ripple ratio 5% or less) |
| | ON voltage/current | | 17.5 V DC or more/ 3.5 mA or more |
| | OFF voltage/current | | 7 V DC or less/ 1.0 mA or less |
| | Input resistance | | Approx. 6.8 kΩ |
| | Response time | | 4 ms or less (OFF→ON, ON→OFF) |
| | Recommended wire size | | AWG24 ~ 30 (0.2 ~ 0.05 $mm^2$)<br>∗ AWG24 (0.2 $mm^2$) recommended |
| Signal input form | | | Phase A/Phase B (magnification by 4/magnification by 2/magnification by 1), PULSE/SIGN |
| Manual pulse generator/ Incremental synchronous encoder signal | Differential output type (26LS31 or equivalent) | Input pulse frequency | Up to 1 Mpulse/s (After magnification by 4, up to 4 Mpulse/s) |
| | | Pulse width | 1 µs or more |
| | | Leading edge/ trailing edge time | 0.25 µs or less |
| | | Phase difference | 0.25 µs or more |
| | | Rated input voltage | 5.5 V DC or less |
| | | High voltage | 2.0 to 5.25 V DC |
| | | Low voltage | 0 to 0.8 V DC |
| | | Differential voltage | ±0.2 V |
| | | Cable length | Up to 30 m (98.43 ft.) |
| | Voltage output Open-collector type (5 V DC) | Input pulse frequency | Up to 200 kpulse/s (After magnification by 4, up to 800 kpulse/s) |
| | | Pulse width | 5 µs or more |
| | | Leading edge/ trailing edge time | 1.2 µs or less |
| | | Phase difference | 1.2 µs or more |
| | | Rated input voltage | 5.5 V DC or less |
| | | High voltage | 3.0 to 5.25 V DC |
| | | Low voltage | 0 to 1.0 V DC |
| | | Cable length | Up to 10m (32.81 ft.) |
| Number of occupied I/O points | | | 8 points |
| 24 V DC internal current consumption | | | 0.25 A |

Refer to the manual for details on each device.

# External Dimensions

Unit: mm (inches)

## CPU Modules

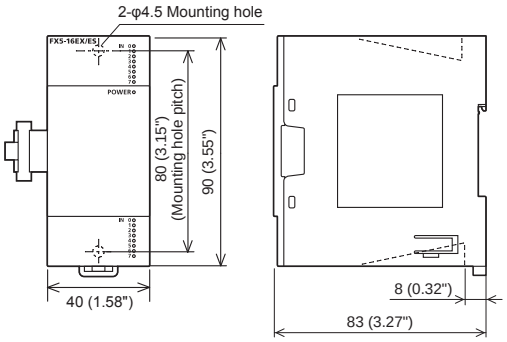



| Model name | W: mm (inches) | W1: mm (inches) Mounting hole pitches | MASS (Weight): kg (lbs) |
|---|---|---|---|
| FX5U-32M[] | 150 (5.91 ) | 123 (4.85 ) | Approx. 0.65 (1.43") |
| FX5U-64M[] | 220 (8.67 ) | 193 (7.60 ) | Approx. 1.0 (2.20") |
| FX5U-80M[] | 285 (11.23 ) | 258 (10.16 ) | Approx. 1.2 (2.64") |

| Model name | MASS (Weight): kg (lbs) |
|---|---|
| FX5UC-32M[] | Approx. 0.2 (0.44") |

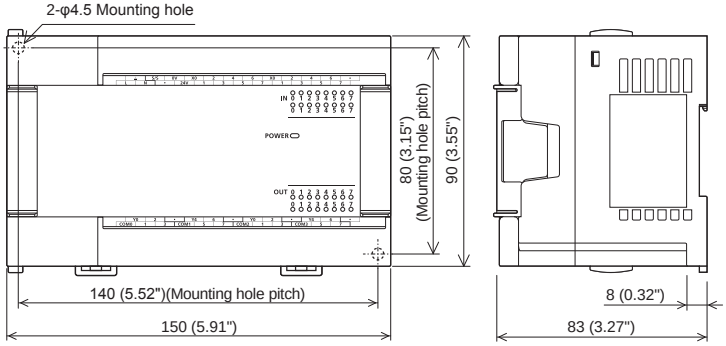
## I/O Modules

### FX5 input module/output module (terminal block type)



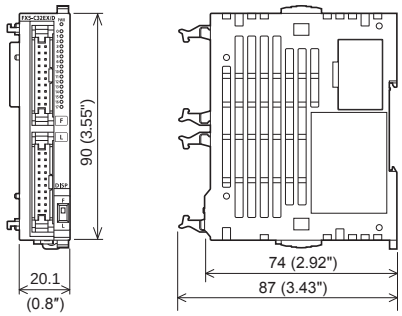

| Model name | MASS (Weight): kg (lbs) |
|---|---|
| FX5-8EX/ES, FX5-8EYR/ES, FX5-8EYT/ES, FX5-8EYT/ESS | Approx. 0.2 (0.44") |
| FX5-16EX/ES, FX5-16EYR/ES, FX5-16EYT/ES, FX5-16EYT/ESS | Approx. 0.25 (0.551") |

### FX5 Powered I/O Modules



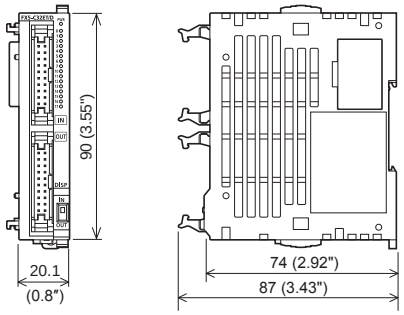

| Model name | MASS (Weight): kg (lbs) |
|---|---|
| FX5-32ER/ES, FX5-32ET/ES, FX5-32ET/ESS | Approx. 0.65 (1.43") |

### FX5 input module/output module (connector type)




| Model name | MASS (Weight): kg (lbs) |
|---|---|
| FX5-C32EX/D, FX5-C32EX/DS | Approx. 0.15 (0.33") |
| FX5-C32EYT/D, FX5-C32EYT/DSS | |

### FX5 I/O module (connector type)

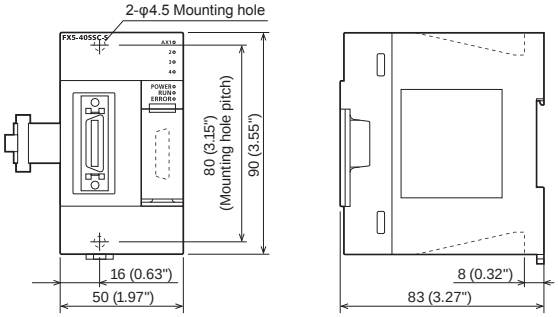



| Model name | MASS (Weight): kg (lbs) |
|---|---|
| FX5-C32ET/D, FX5-C32ET/DSS | Approx. 0.15 (0.33") |

## Intelligent Function Module

### FX5-40SSC-S

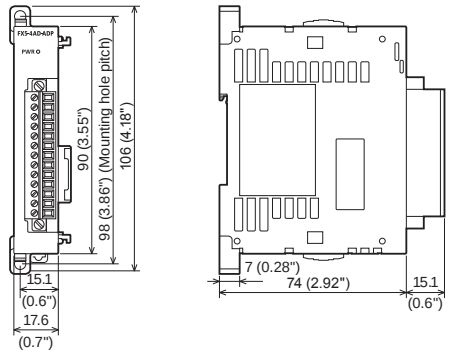
MASS (Weight): Approx. 0.3 kg (0.66 lbs)



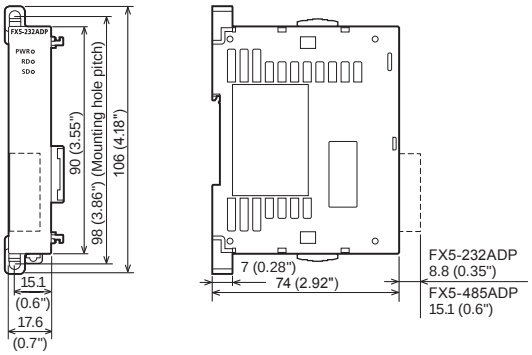
Unit: mm (inches)

## Expansion adapters

**FX5-4AD-ADP / FX5-4DA-ADP** MASS (Weight): Approx. 0.1 kg (0.22 lbs)




**FX5-232ADP / FX5-485ADP** MASS (Weight): Approx. 0.08 kg (0.18 lbs)

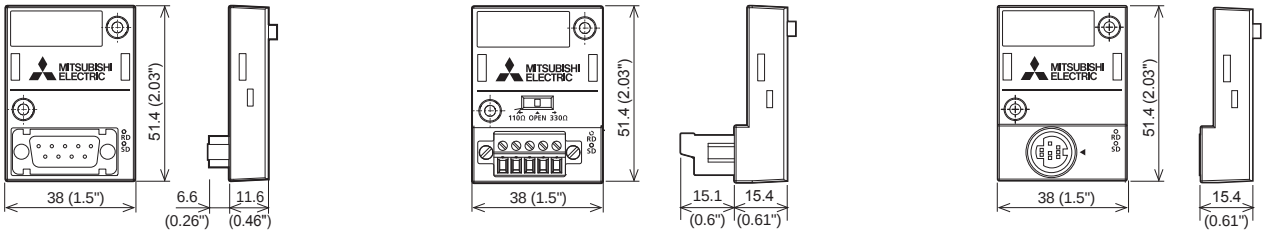



## Expansion boards

**FX5-232-BD** MASS (Weight): Approx. 0.02 kg (0.05 lbs)

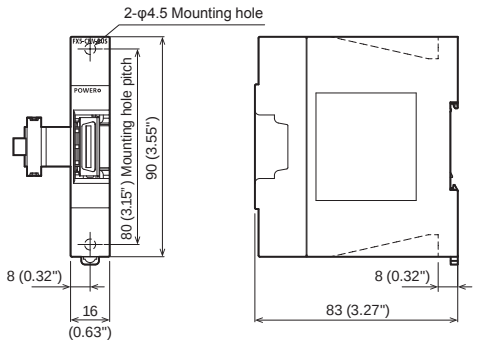
**FX5-485-BD** MASS (Weight): Approx. 0.02 kg (0.05 lbs)

**FX5-422-BD-GOT** MASS (Weight): Approx. 0.02 kg (0.05 lbs)

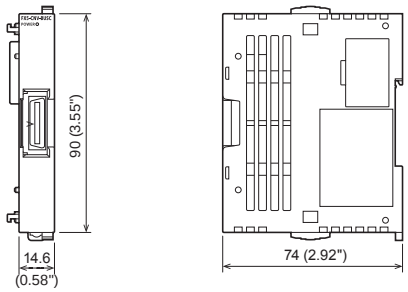



## Bus conversion modules

**FX5-CNV-BUS** MASS (Weight): Approx. 0.1 kg (0.22 lbs)

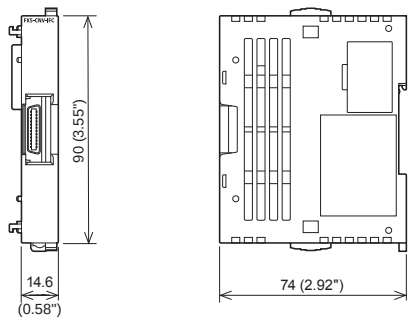



**FX5-CNV-BUSC** MASS (Weight): Approx. 0.1 kg (0.22 lbs)



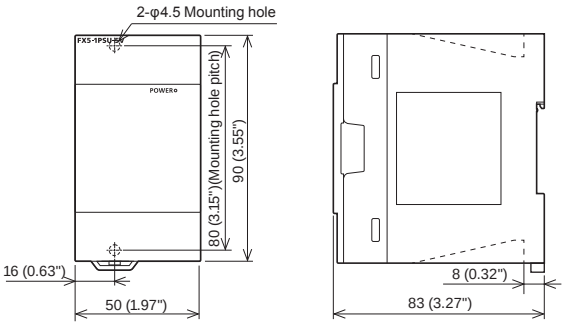

## Connector conversion module

**FX5-CNV-IFC** MASS (Weight): Approx. 0.06 kg (0.14 lbs)




## Extension power supply module

**FX5-1PSU-5V** MASS (Weight): Approx. 0.3 kg (0.66 lbs)



# Standards

## List of Compatible Products

| Model Name | CE | | UL cUL | KC | Ship approvals | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EMC | LVD | | | ABS | DNV | LR | GL | BV | RINA | NK | KR |
| **◆ FX5U CPU modules** | | | | | | | | | | | | |
| FX5U-32MR/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-32MT/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-32MT/ESS | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-64MR/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-64MT/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-64MT/ESS | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-80MR/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-80MT/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5U-80MT/ESS | ○ | ○ | ○ | ○ | | | | | | | | |
| **◆ FX5UC CPU modules** | | | | | | | | | | | | |
| FX5UC-32MT/D | ○ | □ | ○ | ○ | | | | | | | | |
| FX5UC-32MT/DSS | ○ | □ | ○ | ○ | | | | | | | | |
| **◆ FX5 I/O modules (terminal block type)** | | | | | | | | | | | | |
| FX5-8EX/ES | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-16EX/ES | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-8EYR/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5-8EYT/ES | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-8EYT/ESS | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-16EYR/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5-16EYT/ES | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-16EYT/ESS | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-32ER/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5-32ET/ES | ○ | ○ | ○ | ○ | | | | | | | | |
| FX5-32ET/ESS | ○ | ○ | ○ | ○ | | | | | | | | |
| **◆ FX5 I/O modules (connector type)** | | | | | | | | | | | | |
| FX5-C32EX/D | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-C32EX/DS | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-C32EYT/D | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-C32EYT/DSS | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-C32ET/D | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-C32ET/DSS | ○ | □ | ○ | ○ | | | | | | | | |

| Model Name | CE | | UL cUL | KC | Ship approvals | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EMC | LVD | | | ABS | DNV | LR | GL | BV | RINA | NK | KR |
| **◆ FX5 Intelligent function module** | | | | | | | | | | | | |
| FX5-40SSC-S | ○ | □ | ○ | ○ | | | | | | | | |
| **◆ FX5 Extension power supply module** | | | | | | | | | | | | |
| FX5-1PSU-5V | ○ | ○ | ○ | ○ | | | | | | | | |
| **◆ FX5 Bus conversion modules** | | | | | | | | | | | | |
| FX5-CNV-BUS | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-CNV-BUSC | ○ | □ | ○ | ○ | | | | | | | | |
| **◆ FX5 Connector conversion module** | | | | | | | | | | | | |
| FX5-CNV-IFC | ○ | □ | ○ | ○ | | | | | | | | |
| **◆ FX5 Expansion adapters** | | | | | | | | | | | | |
| FX5-4AD-ADP | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-4DA-ADP | ○ | □ | * | ○ | | | | | | | | |
| FX5-232ADP | ○ | □ | ○ | ○ | | | | | | | | |
| FX5-485ADP | ○ | □ | ○ | ○ | | | | | | | | |
| **◆ FX5U Expansion boards** | | | | | | | | | | | | |
| FX5-232-BD | ○ | □ | | ○ | | | | | | | | |
| FX5-485-BD | ○ | □ | | ○ | | | | | | | | |
| FX5-422-BD-GOT | ○ | □ | | ○ | | | | | | | | |
| **◆ FX3 Intelligent function modules** | | | | | | | | | | | | |
| FX3U-4AD | ○ | □ | ○ | ○ | | | | | | | | |
| FX3U-4DA | ○ | □ | ○ | ○ | | | | | | | | |
| FX3U-4LC | ○ | □ | ○ | ○ | | | | | | | | |
| FX3U-1PG | ○ | □ | ○ | ○ | | | | | | | | |
| FX3U-2HC | ○ | □ | ○ | ○ | | | | | | | | |
| FX3U-16CCL-M | ○ | □ | ○ | ○ | | | | | | | | |
| FX3U-64CCL | ○ | □ | ○ | ○ | | | | | | | | |
| **◆ FX3 Extension power supply module** | | | | | | | | | | | | |
| FX3U-1PSU-5V | ○ | ○ | ○ | ○ | | | | | | | | |

○: Compliant with standards or self-declaration □: No need to comply *: Support planned

## ■EN Standards: Compliance with EC Directives/CE marking

EC Directives were issued by the European Council of Ministers to unify standards in the EU Community, and to ensure smooth distribution of products for which safety is ensured. Approximately 20 types of EC Directives for product safety have been issued. Attachment of a CE mark (CE marking) is mandatory on specific products before they may be distributed in the EU. The EMC Directive (Electromagnetic Compatibility Directive) and LVD Directive (Low Voltage Directive) apply to the programmable controller, which is labeled as an electrical part of a machine product under the EC Directives .

### 1) EMC Directive

The EMC Directive is a directive that requires products to have "Capacity to prevent output of obstructive noise that adversely affects external devices: Emission damage" and "Capacity to not malfunction due to obstructive noise from external source: Immunity".

### 2) LVD Directive (Low Voltage Directive)

The LVD Directive is enforced to distribute safe products that will not harm or damage people, objects or assets, etc. With the programmable controller, this means a product that does not pose a risk of electric shock, fire or injury, etc.

## ■UL/cUL Standards

UL is the United State's main private safety testing and certification agency for ensuring public safety.
UL sets the safety standards for a variety of fields. Strict reviews and testing are performed following the standards set forth by UL. Only products which pass these tests are allowed to carry the UL Mark.
As opposed to the EN Standards, the UL Standards do not have a legally binding effect. However, they are broadly used as the U.S. safety standards, and are an essential condition for selling products into the U.S..

UL is recognized as a certifying and testing agency by the Canadian Standards Association (CSA). Products evaluated and certified by UL in accordance with Canadian standards are permitted to carry the cUL Mark.

# Products list

## CPU & I/O modules

| Model | Specification | | | | |
|---|---|---|---|---|---|
| | Power Supply | Input | | Output | |
| CPU modules | | | | | |
| FX5U-32MR/ES | 100 to 240 V AC 50/60 Hz | 16 points | 24 V DC Sink/source | 16 points | Relay |
| FX5U-32MT/ES | | | | | Transistor/sink |
| FX5U-32MT/ESS | | | | | Transistor/source |
| FX5U-64MR/ES | | 32 points | | 32 points | Relay |
| FX5U-64MT/ES | | | | | Transistor/sink |
| FX5U-64MT/ESS | | | | | Transistor/source |
| FX5U-80MR/ES | | 40 points | | 40 points | Relay |
| FX5U-80MT/ES | | | | | Transistor/sink |
| FX5U-80MT/ESS | | | | | Transistor/source |
| FX5UC-32MT/D | 24 V DC | 16 points | 24 V DC Sink | 16 points | Transistor/sink |
| FX5UC-32MT/DSS | | | 24 V DC Sink/source | | Transistor/source |
| I/O modules | | | | | |
| FX5-8EX/ES | Power supply from CPU module | 8 points | 24 V DC Sink/source | | |
| FX5-16EX/ES | | 16 points | | | |
| FX5-8EYR/ES | | | | 8 points | Relay |
| FX5-8EYT/ES | | | | | Transistor/sink |
| FX5-8EYT/ESS | | | | | Transistor/source |
| FX5-16EYR/ES | | | | 16 points | Relay |
| FX5-16EYT/ES | | | | | Transistor/sink |
| FX5-16EYT/ESS | | | | | Transistor/source |
| FX5-32ER/ES | 100 to 240 V AC 50/60 Hz | 16 points | 24 V DC Sink/source | 16 points | Relay |
| FX5-32ET/ES | | | | | Transistor/sink |
| FX5-32ET/ESS | | | | | Transistor/source |
| FX5-C32EX/D | Power supply from CPU module | 32 points | 24 V DC Sink | | |
| FX5-C32EX/DS | | | 24 V DC Sink/source | | |
| FX5-C32EYT/D | | | | 32 points | Transistor/sink |
| FX5-C32EYT/DSS | | | | | Transistor/source |
| FX5-C32ET/D | | 16 points | 24 V DC Sink | 16 points | Transistor/sink |
| FX5-C32ET/DSS | | | 24 V DC Sink/source | | Transistor/source |

## Expansion Boards & Adapters

| Model | Specification |
|---|---|
| FX5-232-BD | For RS-232C communication |
| FX5-485-BD | For RS-485 communication |
| FX5-422-BD-GOT | For GOT RS-422 communication |
| FX5-232ADP | For RS-232C communication |
| FX5-485ADP | For RS-485 communication |
| FX5-4AD-ADP | 4 ch analog input adapter |
| FX5-4DA-ADP | 4 ch analog output adapter |

## Intelligent function modules

| Model | Specification |
|---|---|
| FX5-40SSC-S | Simple Motion 4-Axis module |
| FX3U-4AD | 4 ch analog input |
| FX3U-4DA | 4 ch analog output |
| FX3U-4LC | 4 ch temperature control |
| FX3U-1PG | Positioning pulse output 200 kHz |
| FX3U-2HC | 2 ch 200 kHz high-speed counter |
| FX3U-16CCL-M | Master for CC-Link (compatible with Ver. 2.00) |
| FX3U-64CCL | Interface for CC-Link (compatible with Ver. 2.00) |

## Power supply modules & Bus/Connector conversion modules

| Model | Specification |
|---|---|
| FX5-1PSU-5V | Extension power supply module |
| FX5-CNV-BUS | Bus conversion FX5(terminal block)→FX3 (terminal block) |
| FX5-CNV-BUSC | Bus conversion FX5(connector)→FX3 (terminal block) |
| FX5-CNV-IFC | Connector conversion FX5(connector)→FX5 (terminal block) |
| FX3U-1PSU-5V | FX3U Extension power supply module |

## Software

| Type | Model | Specification |
|---|---|---|
| MELSOFT iQ Works (DVD-ROM) | SW2DND-IQWK-E | FA engineering software*1 |
| MELSOFT GX Works3 (DVD-ROM) | SW1DND-GXW3-E | PLC engineering software (includes GX Works2, GX Developer) |

*1: Refer to the manual of the software for supported models.

## User's manuals for the applicable modules

| Manual name <manual number> | Description |
|---|---|
| MELSEC iQ-F FX5 User's Manual (Startup) <JY997D58201> | Describes the performance specifications, procedures before operation, and troubleshooting of the CPU module. |
| MELSEC iQ-F FX5UC User's Manual (Hardware) <JY997D61401> | Describes the details on the hardware of the FX5UC CPU module, including input/output specifications, wiring, installation and maintenance. |
| MELSEC iQ-F FX5U User's Manual (Hardware) <JY997D55301> | Describes the details on hardware of the FX5U series CPU module, including input/output specifications, wiring, installation, and maintenance. |
| MELSEC iQ-F FX5 User's Manual (Application) <JY997D55401> | Describes basic knowledge required for program design, functions of the CPU module, devices/labels, and parameters. |
| MELSEC iQ-F FX5 Programming Manual (Program Design) <JY997D55701> | Describes specifications of ladder, ST, and other programs and of labels. |
| MELSEC iQ-F FX5 Programming Manual (Instructions, Standard Functions/Function Blocks) <JY997D55801> | Describes specifications of instructions and functions that can be used in programs. |
| MELSEC iQ-F FX5 User's Manual (Serial Communication) <JY997D55901> | Describes inverter communication, and non-protocol communication. |
| MELSEC iQ-F FX5 User's Manual (SLMP) <JY997D56001> | Describes SLMP communication. |
| MELSEC iQ-F FX5 User's Manual (MELSEC Communication Protocol) <JY997D60801> | Describes MC protocol. |
| MELSEC iQ-F FX5 User's Manual (MODBUS Communication) <JY997D56101> | Describes MODBUS serial communication. |
| MELSEC iQ-F FX5 User's Manual (Ethernet Communication) <JY997D56201> | Describes the functions of the built-in Ethernet port communication function. |
| MELSEC iQ-F FX5 User's Manual (Positioning Control) <JY997D56301> | Describes the built-in positioning function. |
| MELSEC iQ-F FX5 User's Manual (Analog Control) <JY997D60501> | Describes the analog function. |

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