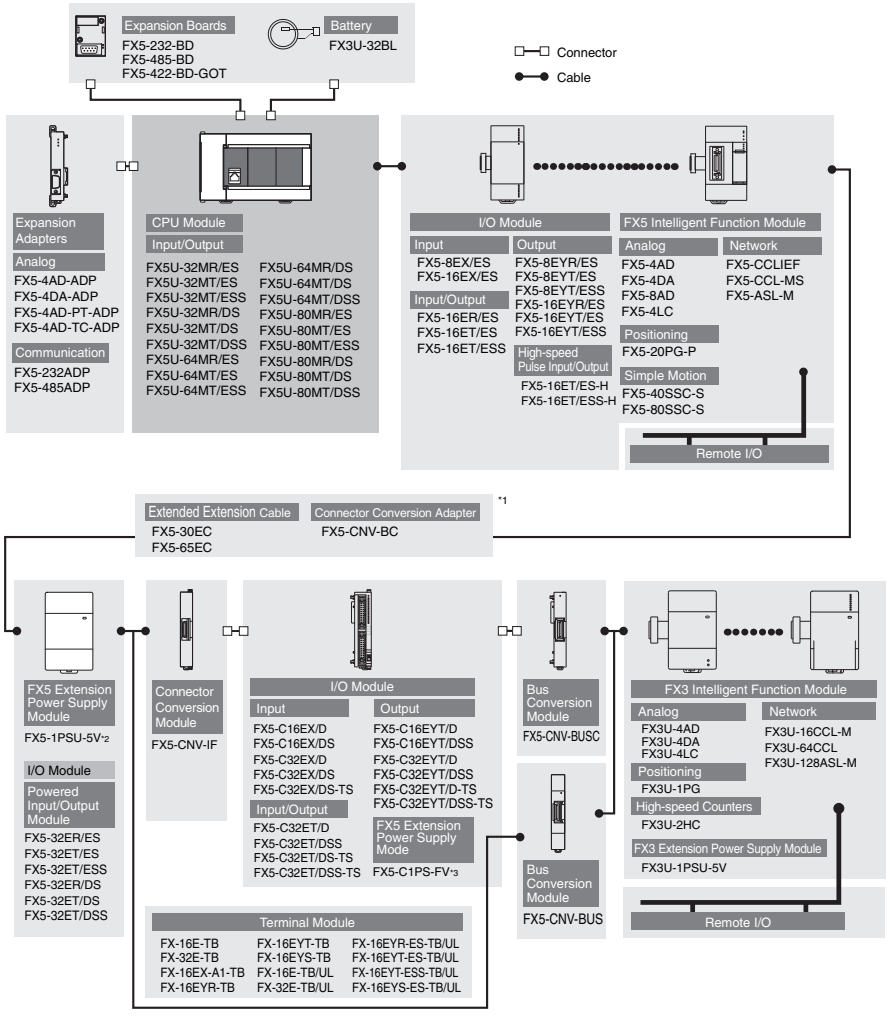
MELSEC iQ-F Series CPU Module

iQ-F Series

The iQ-F Series is a completely new controller with an elegant design that does not waver from the familiar look-and-feel of Mitsubishi Electric's compact controllers. We took the same control capabilities that have been running industry applications reliably for decades, and further refined them for an even better user experience. We also developed powerful new capabilities to elevate the iQ-F Series compact controller to be on par with the iQ-Platform, delivering intuitive programming, maximized performance, and seamless integration with all Mitsubishi Electric and e-f@ctory alliance products. The iQ-F is here to help you build the next generation of industrial solutions in even more efficient ways.

FX5U Configuration



Notes:
1. Use this to connect a module (extension cable type) located distantly or on a second stage. The connector conversion adapter (FX5-CNV-BC) is required when the connection destination is a module of extension cable type (except for FX5-1PSU-5V and extension power supply module). When also using a bus conversion module in the same system, connect the FX5-1PSU-5V or powered input/output module directly after the extended extension cable.
2. Can connect to only the AC power supply type system.
3. Can connect to only the DC power supply type system.

Options

I/O Cables

General-purpose I/O Cable
FX-16E-500CAB-S (5 m, 20-pin)
For Terminal Modules
FX-16E-_CAB (Both end, 20-pin)
_ = 150 (1.5 m), 300 (3 m), 500 (5 m)
For Terminal Modules
FX-16E-_CAB-R (20-pin)
_ = 150 (1.5 m), 300 (3 m), 500 (5 m)

Power Supply Cable

Power Supply Cable
FX2NC-100BPCB (1 m)
Power Crossover Cable
FX2NC-10BPCB1 (0.1 m)

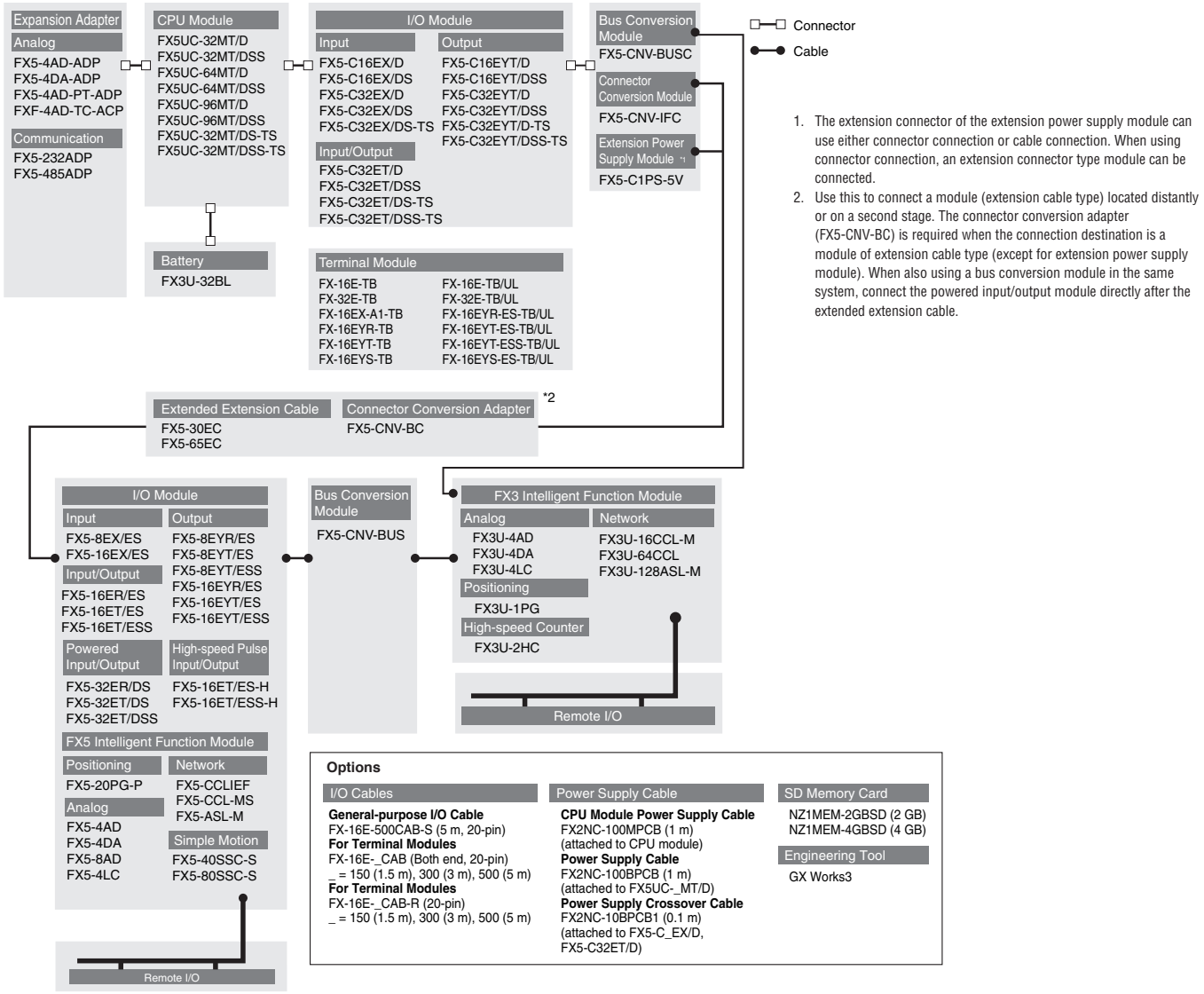
SD Memory Card

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

Engineering Tool

GX Works3

FX5UC Configuration



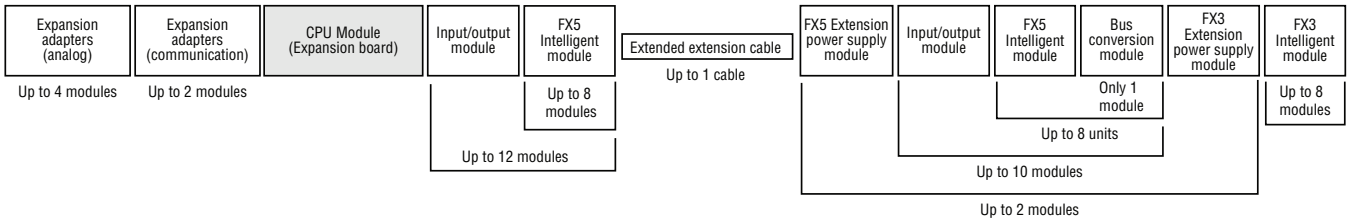
1. The extension connector of the extension power supply module can use either connector connection or cable connection. When using connector connection, an extension connector type module can be connected.
2. Use this to connect a module (extension cable type) located distantly or on a second stage. The connector conversion adapter (FX5-CNV-BC) is required when the connection destination is a module of extension cable type (except for extension power supply module). When also using a bus conversion module in the same system, connect the powered input/output module directly after the extended extension cable.

Configuration Rules

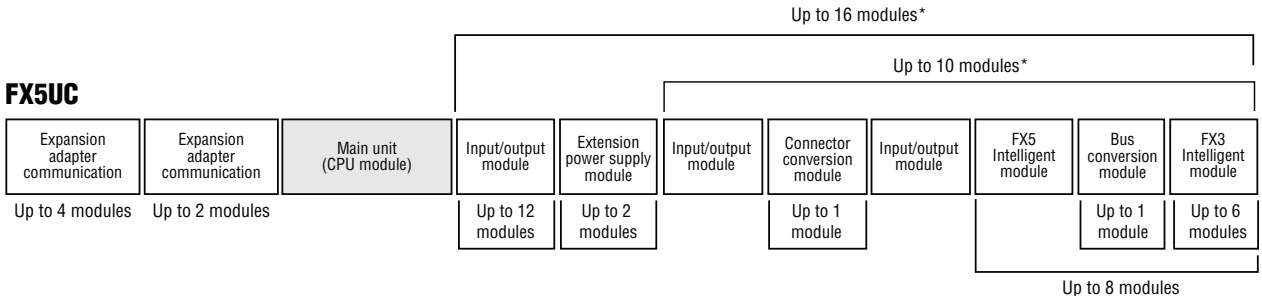
CAUTION: For full configuration details please refer to the respective hardware manuals.

1. Number of connected extension device:

FX5U

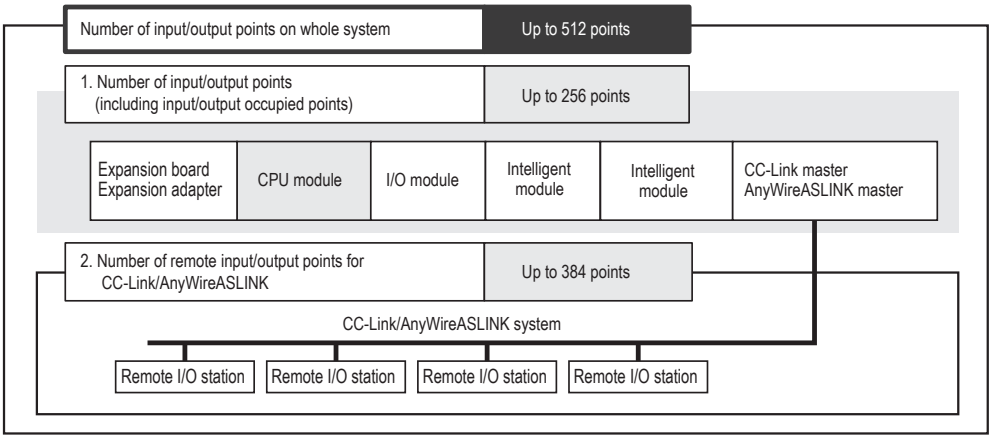


FX5UC

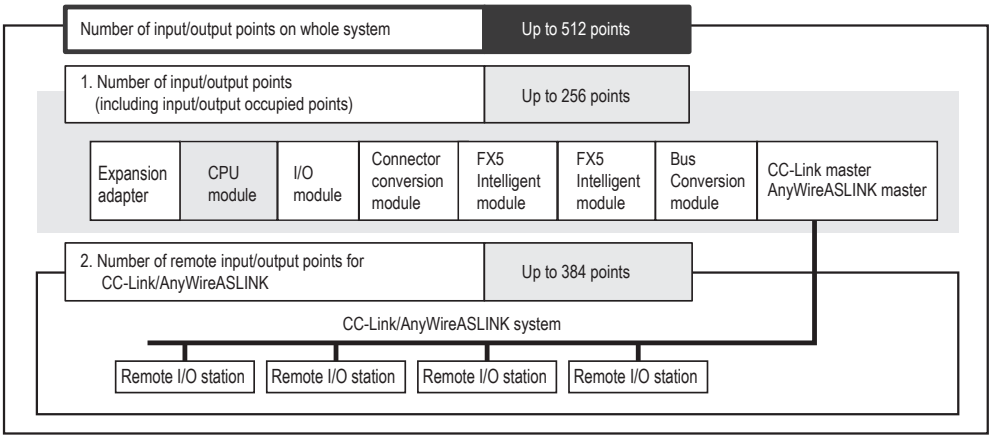


2. Number of input/output points:

FX5U



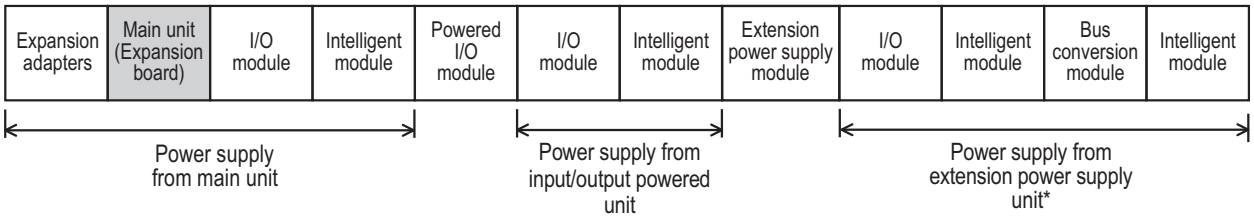
FX5UC



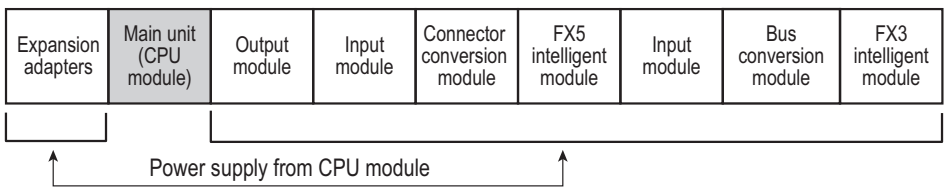
3. Calculation of current consumption:

The power is supplied to each connected device from the built-in power supply of the CPU module, powered input/output modules, or extension power supply modules. The power consumed varies depending on the type of product added.

FX5U



FX5UC



4. Limitations when using FX3 Series extension devices

- Use a bus conversion module to connect FX3 Series extension modules to a FX5 system. The FX3 Series extension modules can only be connected to the right side of the bus conversion module. Please review the manuals for limitations regarding the number of connectible modules.
- Some FX3 intelligent function modules have limitations on the number of connectible modules and the order in which they are connected.

Environmental Specifications

Model Number	FX5U / FX5UC				
Operating Ambient Temperature	-20 to 55°C (-4 to 131°F), non-freezing (*1)				
Storage Ambient Temperature	-25 to 75°C (-13 to 167°F)				
Ambient Humidity	5 to 95%RH, non-condensation				
Ambient Relative Humidity	5 to 95% RH (non-condensing)				
Vibration Resistance	–	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 direction (80 min in each direction)
		8.4 to 150 Hz	4.9 m/s²	-	
	Direct installing	5 to 8.4 Hz	-	3.5 mm	
		8.4 to 150 Hz	9.8 m/s²	-	
Shock Resistance	147 m/s², Action time: 11 ms, 3 times by half-sine pulse in each direction X, Y, and Z				
Noise Durability	By noise simulator at noise voltage of 1000 Vp-p, noise width of 1 µs and period of 30 to 100 Hz				
Grounding	Class D grounding (grounding resistance: 100 Ω or less) Common grounding with a heavy electrical system is not allowed.				
Working Atmosphere	Free from corrosive or flammable gas and excessive conductive dust				
Operating Altitude	0 to 2000 m				
Installation Location	Inside a control panel				
Overvoltage Category	II or less				
Pollution Degree	2 or less				
Equipment Class	Class 2				

Note 1: The operating ambient temperature is 0 to 55°C (32 to 131°F) for products manufactured before June 2016. Please check manual for precautions when ambient operating temperature is lower than 0C.

AC Power Supply Specifications

Model Number		FX5U-32M	FX5U-64M	FX5U-80M
Rated Voltage		100 to 240 VAC		
Allowable Supply Voltage Range		85 to 264 VAC		
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		
Power Fuse		250 V, 3.15 A time-lag fuse	250 V, 5 A time-lag fuse	
Rush Current		25 A max. 5 ms or less/100 VAC; 50 A max. 5 ms or less/200 VAC	30 A max. 5 ms or less/100 VAC 60 A max. 5 ms or less/200 VAC	
Power Consumption (*1)		30 W	40 W	45 W
5 VDC Power Supply Capacity		900 mA	1100 mA	1100 mA
24 VDC Service Power Supply Capacity (*2)	When Service Power Supply is Used for Input Circuits	400 mA	600 mA	600 mA
	When External Power Supply is Used for Input Circuits	480 mA	740 mA	770 mA

Notes:
1. This value is for when all 24 VDC service power supplies are used in the maximum configuration in which they can be connected to the CPU module. The input current is included.
2. When I/O modules are connected, they consume current from the 24 VDC service power.

DC Power Supply Specifications

Item	FX5U-32M	FX5U-64M	FX5U-80M	FX5UC-32MT	FX5UC-64MT	FX5UC-96MT
Rated Voltage	24 VDC					
Allowable Supply Voltage Range	16.8 to 28.8 VDC			20.4 to 28.8 VDC		
Allowable Instantaneous Power Failure Time	Operation can be continued upon occurrence of instantaneous power failure for 5 ms or less.					
Power Fuse	250V, 3.15 A time-lag fuse	250V, 5A time-lag fuse		125 V, 3.15 A time-lag fuse		
Rush Current	50A max. 0.5 ms or less / 24 VDC	65A max. 2.0 ms or less/24 VDC		30 A max. 0.5 ms or less/24 VDC	40 A max. 0.5 ms or less/24 VDC	
Power Consumption (*1)	30W	40W	45W	5W / 24VDC [30W / 24VDC +20%, -15%]	8W / 24VDC [33W / 24VDC +20%, -15%]	11W / 24VDC [36W / 24VDC +20%, -15%]
24 VDC Built-in Power Supply Capacity	480 mA (360 mA) (*2)	740 mA (530 mA) (*2)	770 mA (560 mA) (*2)	720 mA		
5 VDC Built-in Power Supply Capacity	900 mA (775 mA) (*2)	1100 mA (975 mA) (*2)		500 mA		

Notes:
1. Maximum consumption value when using the maximum configuration connectable to the CPU module.
2. The value in ( ) is capacity of power supply when the supply voltage is 16.8 to 19.2 VDC.

CPU Modules

FX5U Main Units with 32 I/O

Model Number	FX5U-32MR/ES	FX5U-32MT/ES	FX5U-32MT/ESS	FX5U-32MR/DS	FX5U-32MT/DS	FX5U-32MT/DSS
Stocked Item	S	S	S	S	S	S
Certification	UL • cUL • CE					
Power Supply	100 to 240VAC			24 VDC		
Built-In Digital Inputs/Output Points	32	32	32	32	32	32
Built-In Digital Input Points	16	16	16	16	16	16
Built-In Digital Output Points	16	16	16	16	16	16
Digital Input Type	24 VDC (Sink/Source)	24 VDC (Sink/Source)	24 VDC (Sink/Source)	24 VDC (Sink/Source)	24 VDC (Sink/Source)	24 VDC (Sink/Source)
Digital Output Type	Relay	Transistor (Sink)	Transistor (Source)	Relay	Transistor (Sink)	Transistor (Source)
Built-In Analog Inputs	2					
Built-In Analog Outputs	1					
Analog Input Type	0 to 10 VDC (input resistance 115.7 kΩ)					
Analog Output Type	0 to 10 VDC (external resistance 2kΩ to 1MΩ)					
Built-In Communication	RS-485/RS-422 & Ethernet (100/10 Mbps) Full/Half Duplex					
Connection Type	Terminal block					
5 VDC Power Supply	900 mA (775 mA)	900 mA (775 mA)	900 mA (775 mA)	900 mA (775 mA)	900 mA (775 mA)	900 mA (775 mA)
24 VDC Power Supply (*1)	400 mA (480 mA	400 mA (480 mA	400 mA (480 mA	480 mA; (360 mA)	480 mA; (360 mA)	480 mA; (360 mA)
Weight (kg)	0.65	0.65	0.65	0.65	0.65	0.65
Dimensions (W x H x D) mm	150 x 90 x 83	150 x 90 x 83	150 x 90 x 83	150 x 90 x 83	150 x 90 x 83	150 x 90 x 83

Note 1: Power supply capacity when the power supply voltage is 16.8 to 19.2 VDC.

FX5U Main Units with 64 I/O

Model Number	FX5U-64MR/ES	FX5U-64MT/ES	FX5U-64MT/ESS	FX5U-64MR/DS	FX5U-64MT/DS	FX5U-64MT/DSS
Stocked Item	S	S	S	S	S	S
Certification	UL • cUL • CE					
Built-In Digital Inputs/Outputs	64	64	64	64	64	64
Built-In Digital Inputs	32	32	32	32	32	32
Built-In Digital Outputs	32	32	32	32	32	32
Digital Input Type	24 VDC (Sink/Source)					
Digital Output Type	Relay	Transistor (Sink)	Transistor (Source)	Relay	Transistor (Sink)	Transistor (Source)
Built-In Analog Inputs	2					
Built-In Analog Outputs	1					
Analog Input Type	0 to 10 VDC (input resistance 115.7 kΩ)					
Analog Output Type	0 to 10 VDC (external resistance 2kΩ to 1MΩ)					
Built-In Communication	RS-485/RS-422 & Ethernet (100/10 Mbps) Full/Half Duplex					
Connection Type	Terminal block			Removable terminal block (M3 screws)		
5 VDC Power Supply	1100 mA			1100 mA (975 mA) (*2)		
24 VDC Service Power Supply	600 mA; (740 mA) (*1)			740 mA (530 mA) (*2)		
Weight (kg)	1.0					
Dimensions (W x H x D) mm	220 x 90 x 83	220 x 90 x 83	220 x 90 x 83	220 x 90 x 83	220 x 90 x 83	220 x 90 x 83

Notes:
1. Power supply capacity when external power supply is used for input circuit
2. The value in ( ) is capacity of power supply when the supply voltage is 16.8 to 19.2 VDC.

FX5U Main Units with 80 I/O

Model Number	FX5U-80MR/ES	FX5U-80MT/ES	FX5U-80MT/ESS	FX5U-80MR/DS	FX5U-80MT/DS	FX5U-80MT/DSS
Stocked Item	S	S	S	S	-	S
Certification	UL • cUL • CE					
Built-In Digital Inputs/Outputs	80	80	80	80	80	80
Built-In Digital Inputs	40	40	40	40	40	40
Built-In Digital Outputs	40	40	40	40	40	40
Digital Input Type	24VDC (Sink/Source)					
Digital Output Type	Relay	Transistor (Sink)	Transistor (Source)	Relay	Transistor (Sink)	Transistor (Source)
Built-In Analog Inputs	2					
Built-In Analog Outputs	1					
Analog Input Type	0 to 10 VDC (input resistance 115.7 kΩ)					
Analog Output Type	0 to 10 VDC (external resistance 2kΩ to 1MΩ)					
Built-In Communication	RS-485/RS-422 & Ethernet (100/10 Mbps) Full/Half Duplex					
Connection Type	Terminal block			Removable terminal block (M3 screws)		
5 VDC Power Supply	1100 mA			1100 mA (975 mA) (*2)		
24 VDC Service Power Supply	600 mA; (770 mA) (*1)			770 mA (560 mA) (*2)		
Weight (kg)	1.2	1.2	1.2	1.2	1.2	1.2
Dimensions (W x H x D) mm	285 x 90 x 83	285 x 90 x 83	285 x 90 x 83	285 x 90 x 83	285 x 90 x 83	285 x 90 x 83

Notes:
1. Power supply capacity when external power supply is used for input circuit
2. The value in ( ) is capacity of power supply when the supply voltage is 16.8 to 19.2 VDC.

FX5UC Main Units with 32 I/O

Model Number	FX5UC-32MT/D	FX5UC-32MT/DSS	FX5UC-32MT/DS-TS	FX5UC-32MT/DSS-TS
Stocked Item	S	S	S	S
Certification	UL • cUL • CE			
Built-In Digital Inputs/Outputs	32	32	32	32
Built-In Digital Inputs	16	16	16	16
Built-In Digital Outputs	16	16	16	16
Digital Input Type	24 VDC (Sink)	24 VDC (Sink/Source)	24 VDC (Sink/Source)	24 VDC (Sink/Source)
Digital Output Type	Transistor (Sink)	Transistor (Source)	Transistor (Sink)	Transistor (Source)
Built-In Communication	RS-485/RS-422 & Ethernet (100/10 Mbps) Full/Half Duplex			
Connection Type	Connector		Spring clamp	
5 VDC Power Supply	720 mA	720 mA	720 mA	720 mA
24 VDC Service Power Supply	500 mA	500 mA	500 mA	500 mA
Weight (kg)	0.2	0.2	0.2	0.2
Dimensions (W x H x D) mm	42.1 x 90 x 89.1	42.1 x 90 x 89.1	48.1 x 90 x93.7	48.1 x 90 x93.7

FX5UC Main Units with 64 I/O

Model Number	FX5UC-64MT/D	FX5UC-64MT/DSS
Stocked Item	S	S
Certification	UL • cUL • CE	
Built-In Digital Inputs/Outputs	64	64
Built-In Digital Inputs	32	32
Built-In Digital Outputs	32	32
Digital Input Type	24 VDC (Sink)	24 VDC (Sink/Source)
Digital Output Type	Transistor (Sink)	Transistor (Source)
Built-In Communication	RS-485/RS-422 & Ethernet (100/10 Mbps) Full/Half Duplex	
Connection Type	Connector	
5 VDC Power Supply	720 mA	720 mA
24 VDC Service Power Supply	500 mA	500 mA
Weight (kg)	0.3	0.3
Dimensions (W x H x D) mm	62.2 x 90 x 89.1	62.2 x 90 x 89.1

FX5UC Main Units with 96 I/O

Model Number	FX5UC-96MT/D	FX5UC-96MT/DSS
Stocked Item	S	S
Certification	UL • cUL • CE	
Built-In Digital Inputs/Outputs	96	96
Built-In Digital Inputs	48	48
Built-In Digital Outputs	48	48
Digital Input Type	24 VDC (Sink)	24 VDC (Sink/Source)
Digital Output Type	Transistor (Sink)	Transistor (Source)
Built-In Communication	RS-485/RS-422 & Ethernet (100/10 Mbps) Full/Half Duplex	
Connection Type	Connector	
5 VDC Power Supply	720 mA	720 mA
24 VDC Service Power Supply	500 mA	500 mA
Weight (kg)	0.35	0.35
Dimensions (W x H x D) mm	82.3 x 90 x 89.1	82.3 x 90 x 89.1