

iQ-F Series Programmable Controllers

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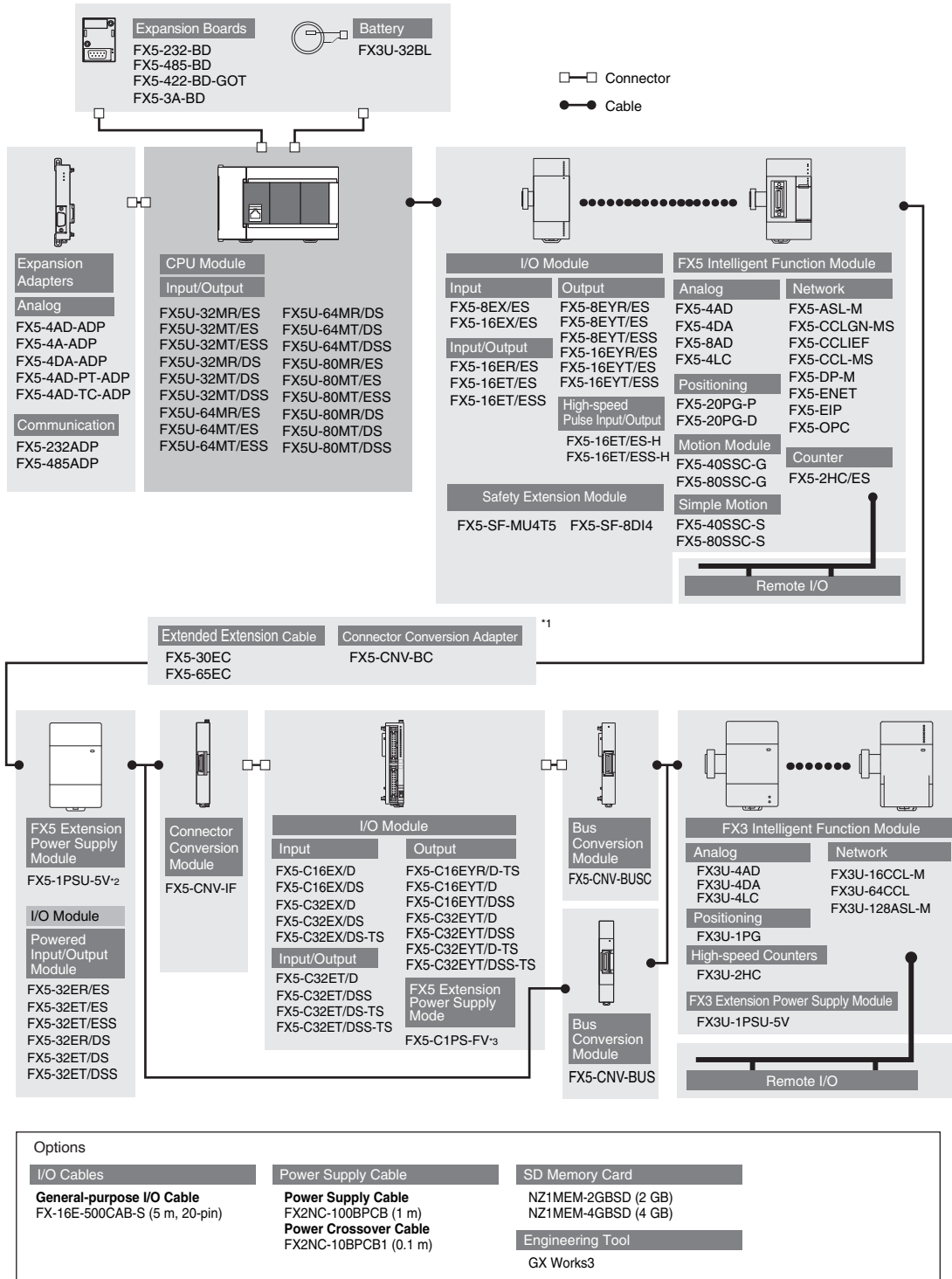
iQ-F Series

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.

Overview

Model	FX5S	FX5UJ	FX5U	FX5UC
Power Supply	100–240VAC, 24VDC	100–240VAC, 24VDC	100–240VAC, 24VDC	24VDC
Max. Local I/O	60	256	384	384
Device/label Memory	120 KB	120 KB	150 KB	150 KB
Program Memory	48k steps (96 KB)	48k steps (96 KB)	64k steps / 128k steps (128 KB / 256 KB)	64k steps / 128k steps (128 KB / 256 KB)
Built-in Ethernet	Yes	Yes	Yes	Yes
Built-in Webserver	System, Custom	System, Custom	System, Custom	System, Custom
Built-in CC-Link IE Basic	16 stations	16 stations	16 stations	16 stations
Built-in RS-485	-	-	Yes	Yes
Built-in Analog	-	-	2 in, 1 out (0 to 10V)	-
Built-in USB	Yes	Yes	-	-

FX5U Configuration



Notes:

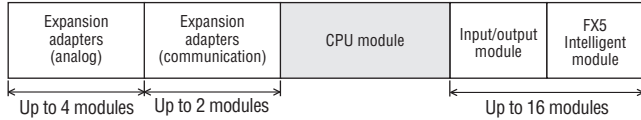
1. Use this to connect a module (extension cable type) located distantly or on a second stage. The connector conversion adapter (FX5-CNV-BC) is required when the connection destination is a module of extension cable type (except for FX5-1PSU-5V and extension power supply module). When also using a bus 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.

Configuration Rules

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

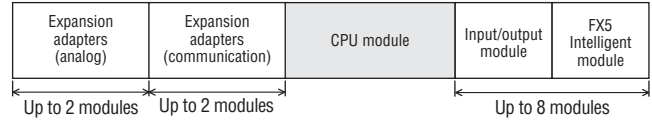
Number of connected extension device:

FX5U/FX5UC



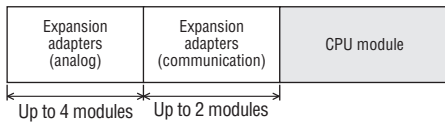
Up to 384 local I/O

FX5UJ



Up to 256 local I/O

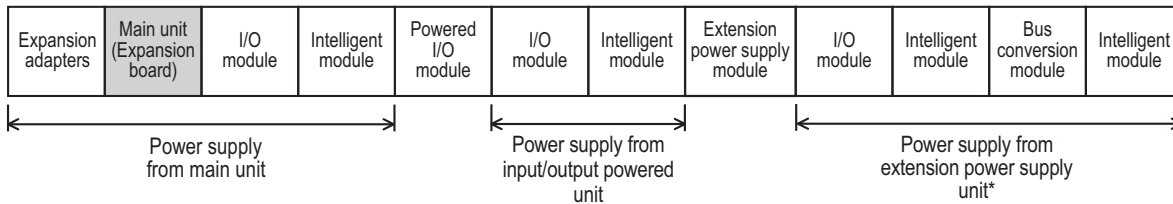
FX5S



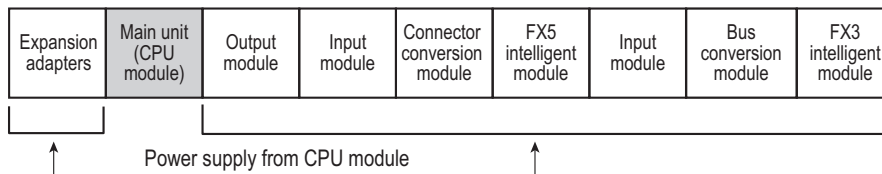
Calculation of current consumption:

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 / FX5UJ / FX5S



FX5UC



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 / FX5UJ / FX5S				
Operating Ambient Temperature	FX5U / FX5UC: -20 to 55°C (-4 to 131°F), non-freezing (*1);FX5UJ / FX5S: 0 to 55°C (32 to 131°F), non-freezing				
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 0°C.

AC Power Supply Specifications

Model Number		FX5S	FX5UJ	FX5U
Rated Voltage		100 to 240 VAC		
Voltage Fluctuation Range		-15%, +10%		
Frequency Rating		50/60 Hz		
Allowable Instantaneous Power Failure Time (*1)		Operation can be continued upon occurrence of instantaneous power failure for 10ms or less.	Operation can be continued upon occurrence of instantaneous power failure for 10ms or less. When the supply voltage is 200VAC or higher, the time can be changed between 10 to 100ms by editing the user program.	
Power Fuse		250V, 3.15A time-lag fuse		FX5U-32M□: 250V 3.15A time-lag fuse FX5U-64M□, FX5U-80M□: 250V 5A time-lag fuse
Rush Current		30A max. 5ms or less/100VAC 50A max. 5ms or less/200VAC	FX5UJ-24M□: 25A max. 5ms or less/100VAC 50A max. 5ms or less/200VAC FX5UJ-40M□, FX5UJ-60M□: 30A max. 5ms or less/100VAC 50A max. 5ms or less/200VAC	FX5U-32M□: 25A max. 5ms or less/100VAC 50A max. 5ms or less/200VAC FX5U-64M□, FX5U-80M□: 30A max. 5ms or less/100VAC 60A max. 5ms or less/200VAC
Power Consumption (*2)		FX5S-30M□: 28W FX5S-40M□: 30W FX5S-60M□: 33W FX5S-80M□: 36W (*3)	FX5UJ-24M□: 30W FX5UJ-40M□: 32W FX5UJ-60M□: 35W	FX5U-32M□: 30W FX5U-64M□: 40W FX5U-80M□: 45W
24VDC Service Power Supply (*4, *5)	When 24VDC Service Power Supply is Used for the Input Circuit of the CPU Module	400mA (*6)	400mA	FX5U-32M□: 400mA [300mA (*7)] FX5U-64M□, FX5U-80M□: 600mA [300mA (*7)]
	When External Power Supply is Used for the Input Circuit of the CPU Module		FX5UJ-24M□: 460mA FX5UJ-40M□: 500mA FX5UJ-60M□: 550mA	FX5U-32M□: 480mA [380mA (*7)] FX5U-64M□: 740mA [440mA (*7)] FX5U-80M□: 770mA [470mA (*7)]
5VDC Built-in Power Supply		—		FX5U-32M□: 900mA FX5U-64M□, FX5U-80M□: 1100mA

Notes:

- The FX5 safety extension module is not subject to the allowable momentary power failure time.
- This value is the value when all 24VDC service power supplies are used in the maximum configuration connectable to the CPU module. (The current of the input circuit is included.)
- Area-specific model
- When I/O modules are connected, they consume current from the 24VDC service power supply.
- The FX5 safety extension module cannot use the 24VDC service power supply.
- Use as a power supply for input devices. (Cannot be used as an external power supply for expansion adapters.)
- The value in [] is capacity of 24 V DC service power supply in the case where operating ambient temperature is lower than 0°C.

DC Power Supply Specifications

Item	FX5S	FX5UJ	FX5U	FX5UC
Rated Voltage	24 VDC	24 VDC		
Voltage Fluctuation Range	-30%, +20%	-30%, +20%		+20%, -15%
Allowable Instantaneous Power Failure Time (*1)	Operation can be continued upon occurrence of instantaneous power failure for 5ms or less.			
Power Fuse	250V 5A time-lag fuse	250V 5A time-lag fuse	FX5U-32M□: 250V 3.15A time-lag fuse FX5U-64M□, FX5U-80M□: 250V 5A time-lag fuse	125V, 3.15A time-lag fuse
Rush Current	40A max. 7.1ms or less/24VDC	33A max. 6.8ms or less/24VDC	FX5U-32M□: 50A max. 0.5ms or less/24VDC; FX5U-64M□, FX5U-80M□: 65A max. 2.0ms or less/24VDC	FX5UC-32M□: 35A max. 0.5ms or less/24VDC; FX5UC-64M□, FX5UC-96M□: 40A max. 0.5ms or less/24VDC
Power Consumption (*1)	FX5S-30M□: 15W FX5S-40M□: 15W FX5S-60M□: 16W	FX5UJ-24M□: 34W (*2) FX5UJ-40M□: 35W (*2) FX5UJ-60M□: 36W (*2)	FX5U-32M□: 30W (*2) FX5U-64M□: 40W (*2) FX5U-80M□: 45W (*2)	FX5UC-32M□: 5W/24VDC [30W/24VDC +20%, -15%] (*2); FX5UC-64M□: 8W/24VDC [33W/24VDC +20%, -15%] (*2) FX5UC-96M□: 11W/24VDC [36W/24VDC +20%, -15%] (*2)
24 VDC Built-in Power Supply Capacity	-	FX5UJ-24M□: 460mA FX5UJ-40M□: 500mA FX5UJ-60M□: 550mA	FX5U-32M□: 480mA (360mA) (*3) FX5U-64M□: 740mA (530mA) (*3) FX5U-80M□: 770mA (560mA) (*3)	500mA
5 VDC Built-in Power Supply Capacity	-	-	FX5U-32M□: 900mA (775mA) (*3) FX5U-64M□, FX5U-80M□: 1100mA (975mA) (*3)	720mA

Notes:

- The FX5 safety extension module is not subject to the allowable momentary power failure time.
- Maximum consumption value when using the maximum configuration connectable to the CPU module.
- The value in () is the capacity of the power supply when the supply voltage is 16.8 to 19.2VDC.

CPU Modules

FX5U

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 240 VAC			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					
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	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	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.