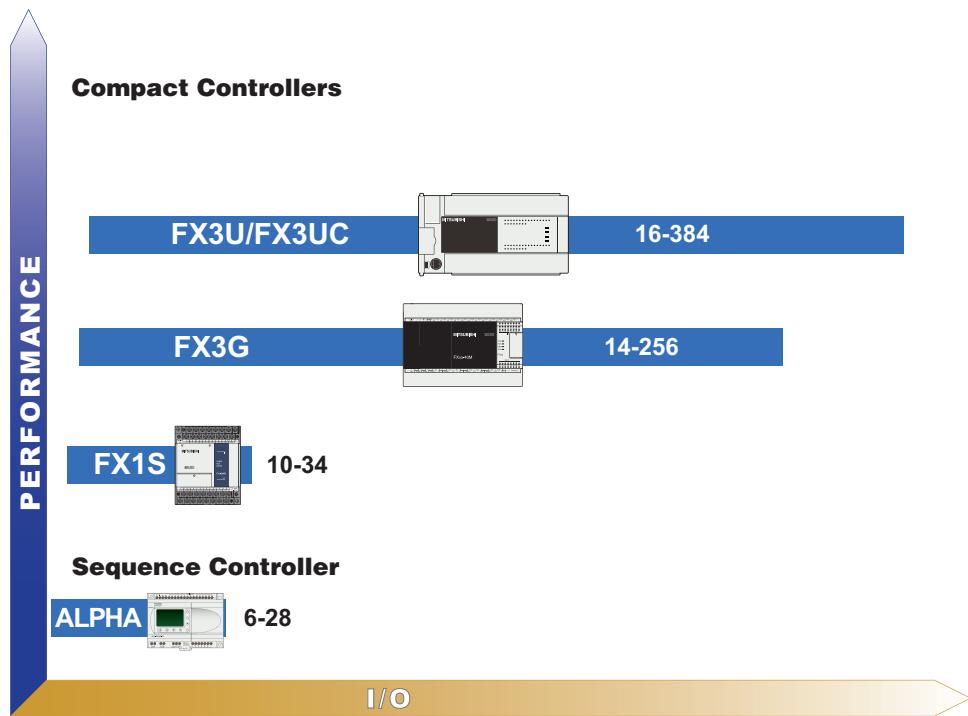


Programmable Logic Controllers

FX Family



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Stock Product: Stock product is product MEAU makes every effort to have on hand for immediate shipment. There may be instances when we are out of stock due to unexpected large requirements. All stock product will be indicated in this book by an "S" in the Stocked Item columns/rows.

Non-Stock Product: Non-stock product is product supplied on an "as-needed" basis. Standard lead times of 12 - 16 weeks apply, product is non-returnable and non-cancelable. Product listed as non-stock may change to stock product subject to increases in sales and usage. All non-stock product will be indicated in this book by a dash "-" in the Stocked Item columns/rows.

The FX Family

The FX family of PLCs is highly flexible, enabling fast and efficient configuration for the application at hand. It is the ideal choice for simple control systems requiring up to 34 I/O (FX1S), or a more complex system with up to 384 I/Os (FX3U).

| Model | FX1S | FX3G | FX3U | FX3UC |
|---|---------------------|---------------------|------------------------------|---------------------|
| Power Supply | 100-240VAC, 24VDC | 100-240VAC, 24VDC | 100-240VAC, 24VDC | 24VDC |
| Maximum I/O | 30 | 256* | 384* | 384* |
| Digital I/O | DC/Relay/Transistor | DC/Relay/Transistor | AC/DC/Relay/Transistor/Triac | DC/Relay/Transistor |
| Cycle Period / Logical Instruction | 0.55 µs | 0.21 µs | 0.065 µs | 0.065 µs |
| Memory | 2k steps | 32k steps | 64k steps | 64k steps |

* With remote I/O.

FX Standards Compliance: All FX products are manufactured under ISO 9000 quality assurance and 14001 environmental management standards. In addition, most FX PLC products are certified by internationally recognized standards agencies. The "Ratings" section of the specifications tables lists the approvals for each product. The approval agencies are as follows:

UL, cUL: Underwriter's Laboratories and corresponding Canadian approvals

ABS: American Bureau of Shipping

CE: Complies to the European EMC and LVD directives

RINA: Registro Italiano Navale

DNV: Det Norske Veritas

BV: Bureau Veritas

LR: Lloyd's Register

NK: Nippon Kaiji Kyokai

GL: Germanischer Lloyd

KC: Korea Certification

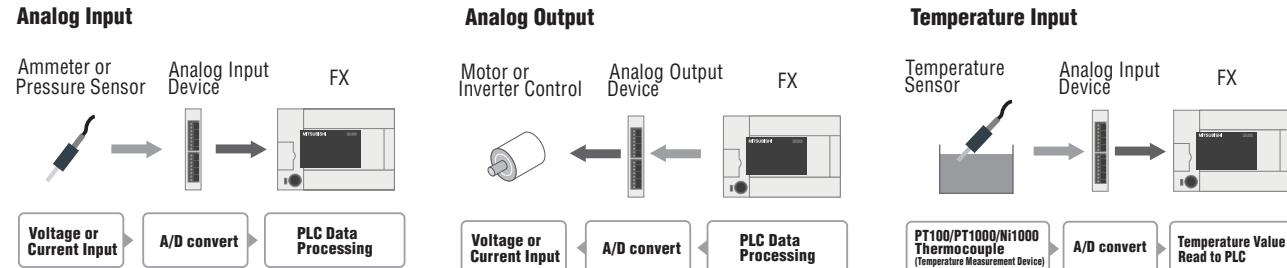


FX Control Solutions

FX PLCs have been designed to be used in a variety of industry areas with a focus on compact applications. With over 11,000,000 PLCs sold world wide, the FX PLCs have been fitted to variety of applications in a range of different industry areas. Examples of a few industries where FX PLCs are used include the timber industry, food industry, textile industry, plastics industry, printing industry, packaging industry and water processing industry.

Analog Control

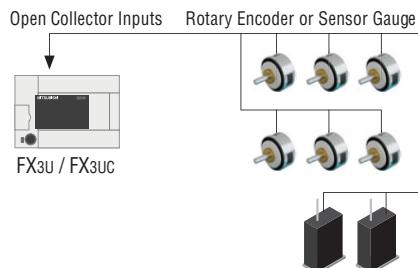
Expanding the FX PLC with analog inputs and outputs is required when the system needs to handle voltage or current inputs/outputs, temperature inputs, or temperature or PID control. The following expansion boards, special adapters, and special function blocks support different ranges and combinations of these features.



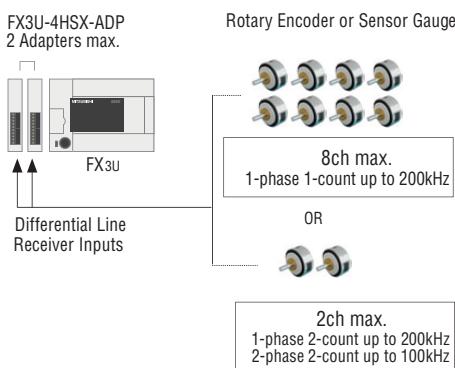
High-Speed Control

All FX Series PLCs are equipped with built-in open collector high-speed counters. These high-speed inputs are connected to external devices such as encoders and ultrasound sensors for system feedback control.

FX Integrated High-Speed Counter

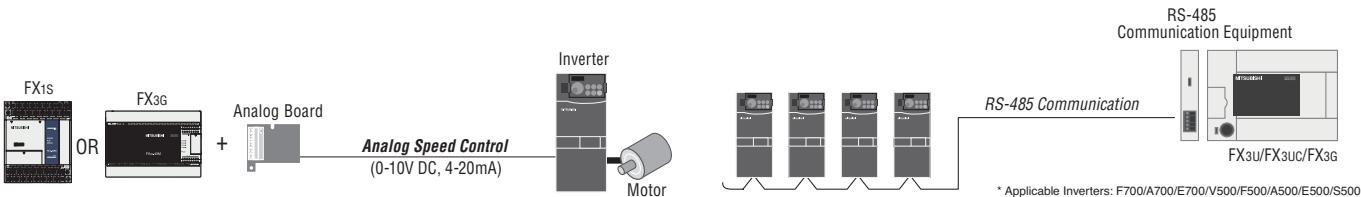


FX with High-Speed Input Adapter



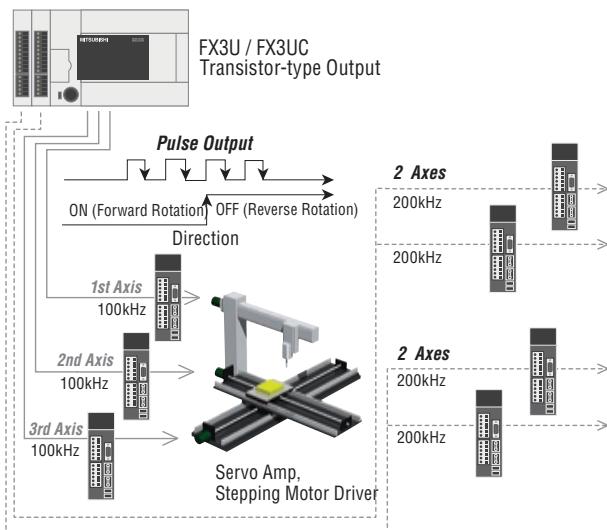
Inverter Control

Parameters and commands between the PLC and Mitsubishi Inverters can be handled through serial communication using FREQROL protocol. Another popular control method for these controllers include Analog Control.



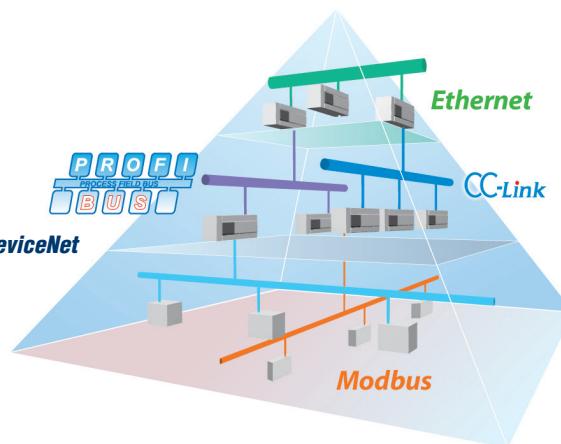
Positioning

The built-in high-speed pulse outputs on all transistor-type FX Series PLCs, are designed to satisfy simple independent-axis positioning applications. For more advanced applications, the SSCNET Special Function Block provides high performance positioning control.



Open Field Networks

Within an application, control devices can be made up from equipment from different manufacturers, however sustaining reliable communication between devices is essential. Supported networks: Ethernet, CC-Link, PROFIBUS, DeviceNet, and Modbus.



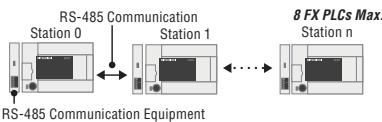
Serial Communication

Multidrop networks, non-protocol communication, and remote maintenance are just some of the many uses.

N:N Network

Communication between FX Series PLCs

Connect up to 8 FX PLCs using N:N Networking to allow data exchange between each station.



Parallel Link

Communication between 2 FX Series PLCs of the same series

Auxiliary Relays (M) and Data Registers (D) are updated automatically between two PLCs of the same series.

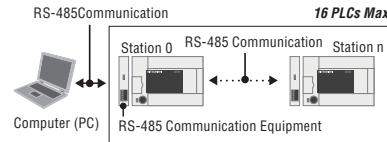


Computer Link (Dedicated Protocol)

Communication with a PC

1:N Computer to PLC Communication

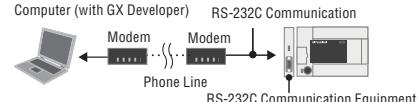
The PC can communicate with a network of up to 16 FX, A, and Q PLCs.



Remote Maintenance

Communication with a PC

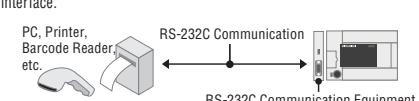
Using a modem connection, a PC can monitor/force devices and perform program upload/download to a PLC from remote locations.



Non-Protocol Communication (RS/RS2 Instructions)

PLC communication with Printers, Barcode Readers, etc.

Serial communication is possible between a PLC and any external equipment with an RS-232C or RS-485 (RS-422) interface.



Note: The RS2 Instruction is only available for FX3U/FX3UC Series PLCs

Main Units Overview



FX3U - Top of the Line

Controllable I/O: 16 - 384 points with CC-Link or AS-i remote I/O
Main Unit I/O: 16/32/48/64/80/128 points

The FX3U is the original dual system-bus, high-speed, fully expandable compact PLC designed to seamlessly control communication, networking, analog, and positioning systems.

- 3rd generation compact PLC
- High efficiency with more speed, more performance, more memory, and new functions
- Built-in high-speed processing and positioning
- Exchangeable communication expansion boards that mount directly into the main unit (USB, RS-232C, RS-422, RS-485)
- Simultaneous memory cassette and display module mounting available
- Integrated real-time clock
- Easy programming with large instruction set and table positioning configuration
- Large programming memory
- Programming with GX Works2 or GX Developer

Product Details

All-in-one CPU, power supply and I/O. Includes many upgraded features from the FX2N, including high expandability using Expansion Boards and Special Adapters to add functionality.

Fast Instruction Times

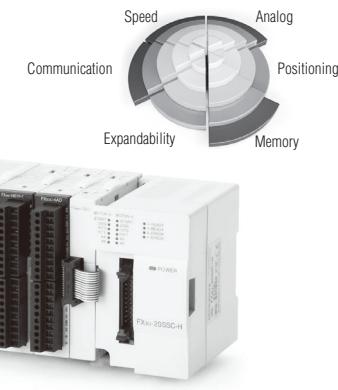
Basic Instructions: 0.065 µs / instruction (Contact Instruction)
 Applied Instructions: 0.642 µs / instruction (MOV Instruction)

Large Memory

64,000 steps of built-in program memory
 Flash Memory Cassettes with loader functionality also available

Large Device Memory

| | |
|---------------------------|--|
| Auxiliary Relays: | 7,680 points |
| Timers: | 512 points |
| Counters: | 235 points |
| Data Registers: | 8,000 points |
| Extension Registers: | 32,768 points |
| Extension File Registers: | 32,768 points (with optional memory cassette) |



FX3UC - Slim Fit

Controllable I/O: 16 - 384 points with CC-Link or AS-i remote I/O
Main Unit I/O: 16/32/64/96 points

The FX3UC is the new ultra-compact high-speed, fully expandable PLC. Based on 24VDC power and using connector-type transistor I/O, the FX3UC is designed for space conscious and modular applications.

- 3rd generation Super-compact PLC
- Reduced size and wiring using connector-type I/O
- Built-in high-speed processing and positioning
- Ultra-compact design featuring connector-type wiring for installation space optimization
- 64k steps of internal program memory
- Integrated real-time clock
- Easy programming with large instruction set and table positioning configuration
- Programming with GX Works2 or GX Developer
- Relay output

Product Details

Ultra-compact size main unit including many upgraded features from the FX2NC, including high expandability using Special Adapters to add functionality.

Fast Instruction Times

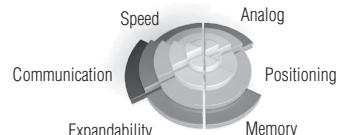
Basic Instructions: 0.065µs / instruction (Contact Instruction)
 Applied Instructions: 0.642µs / instruction (MOV Instruction)

Large Memory

64,000 steps of built-in program memory
 Flash Memory Cassettes with loader functionality also available

Large Device Memory

| | |
|---------------------------|--|
| Auxiliary Relays: | 7,680 points |
| Timers: | 512 points |
| Counters: | 235 points |
| Data Registers: | 8,000 points |
| Extension Registers: | 32,768 points |
| Extension File Registers: | 32,768 points (with optional memory cassette) |

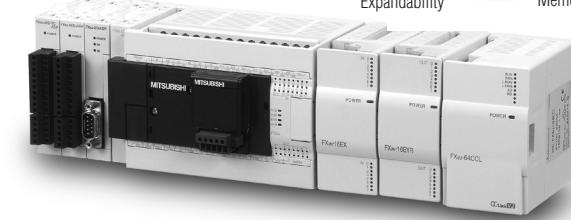


FX3G - Customized Control

Controllable I/O: 14 - 256 points (with CC-Link remote I/O)
Main Unit I/O: 12/24/40/60 points

The FX3G is an introductory compact PLC that is latest addition to the FX3 series. With control of directly connected and networked I/O, connectivity to the FX3 series ADP bus and new expansion boards makes the FX3G ideal for simple yet performance critical applications.

- 3rd Generation Compact PLC
- Highly flexible
- Dual bus architecture- 32k steps of internal program memory
- Integrated real-time clock
- Easy programming with large instruction set and table positioning configuration
- Built-in USB port for the programming communication function to enable high-speed communication at 12Mbps
- Two built-in variable analog potentiometers available for adjusting the timer set time
- Programming with GX Works2 or GX Developer



Product Details

All in one CPU, power supply and I/O. Includes many upgraded features from the FX1N. Especially usage of the FX3 series ADP bus system and new expansion boards (BD).

Instruction Times

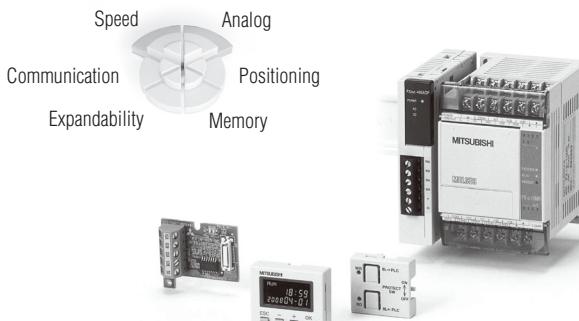
Basic Instructions: 0.21µs / instruction (Contact Instruction)

Large Memory

32,000 steps of built-in program memory. EEPROM memory cassette with loader function is available.

Large Device Memory

| | |
|---------------------------|---------------|
| Auxiliary Relays: | 7,680 points |
| Timers: | 320 points |
| Counters: | 235 points |
| Data Registers: | 8,000 points |
| Extension Registers: | 24,000 points |
| Extension File Registers: | 24,000 points |



FX1S - Keeping it Simple

Controllable I/O: 10 - 30 points
Main Unit I/O: 10/14/20/30 points

The FX1S is the fit-and-forget PLC solution for space and cost conscious applications requiring up to 30 I/O. This minimum-expandability, battery-less maintenance free controller is perfect for handling straightforward processes and can be hidden away in locations without regular maintenance activities.

- Basic controller for general applications
- High performance with minimal size
- Integrated power supply (AC or DC powered)
- Maintenance-free EEPROM memory
- Ample memory capacity (2000 steps) and device ranges
- High-speed operations
- Built-in positioning control
- Integrated real-time clock
- Increased functionality using Expansion Boards and Special Adapters
- Programming with GX Works2 or GX Developer

Product Details

All-in-one CPU, power supply and I/O. Expansion options includes a display unit and expansion boards for communication, analog control, or extra I/O.

Fast Instruction Times

Basic Instructions: 0.7µs / instruction (Contact Instruction)
Applied Instructions: 3.7µs / instruction (MOV Instruction)

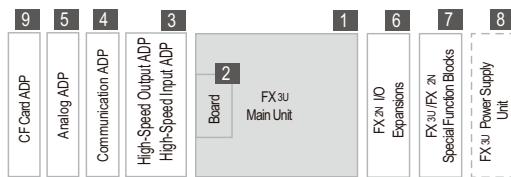
Large Memory

2,000 steps of built-in program memory
No battery. No maintenance.

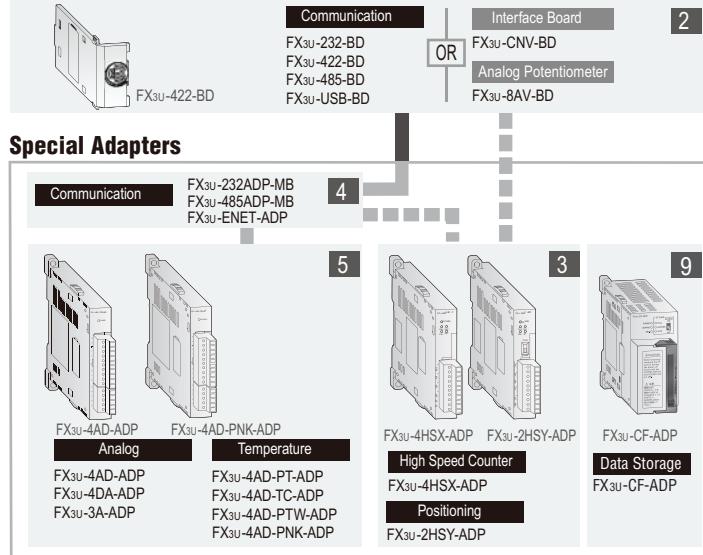
Large Device Memory

| | |
|-------------------|------------|
| Auxiliary Relays: | 512 points |
| Timers: | 64 points |
| Counters: | 32 points |
| Data Registers: | 256 points |

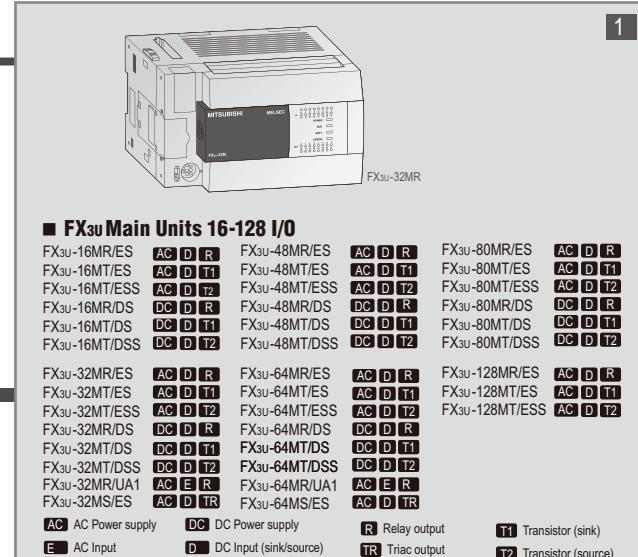
Main Unit Configuration



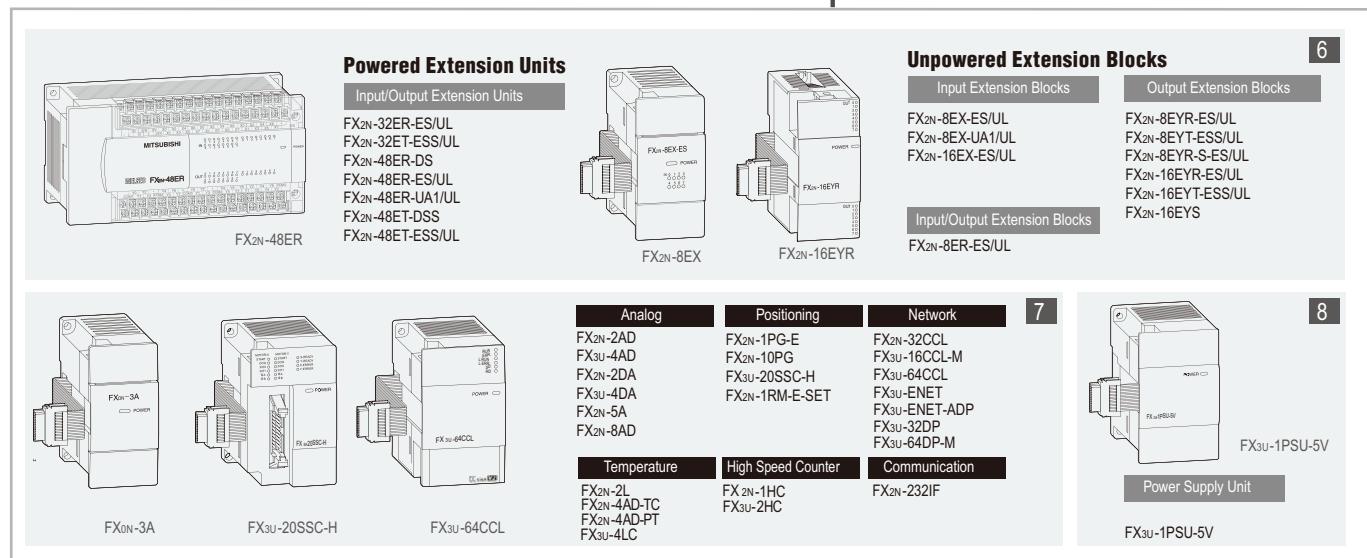
Expansion Boards



FX3U Main Units



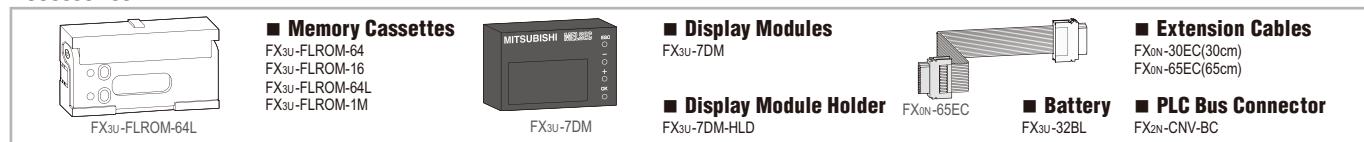
Special Function Modules

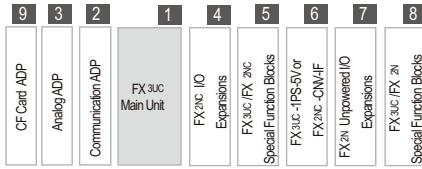


Optional Equipment and Software

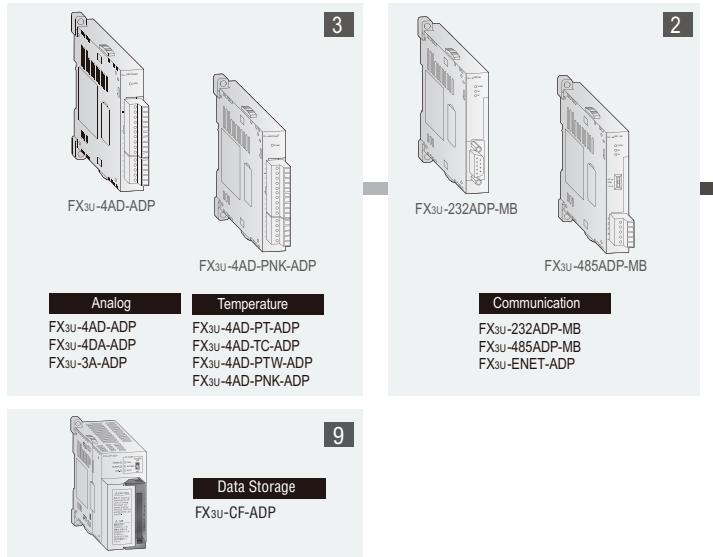


Accessories

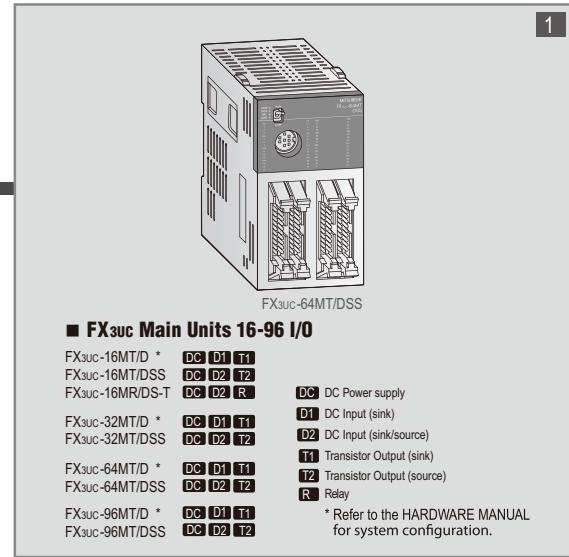




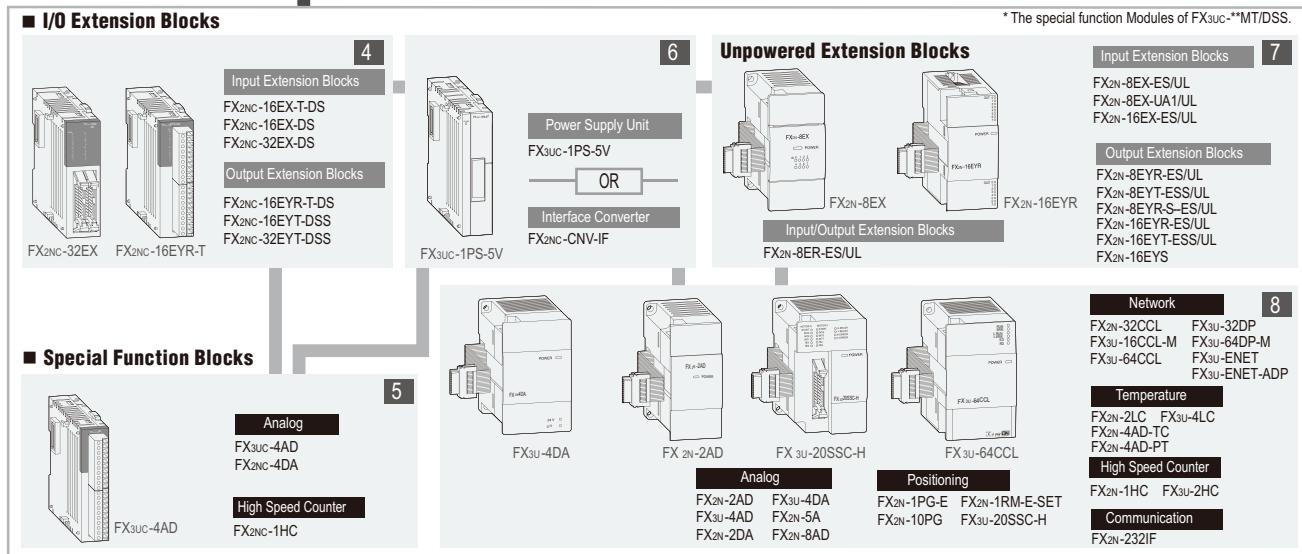
Special Adapters



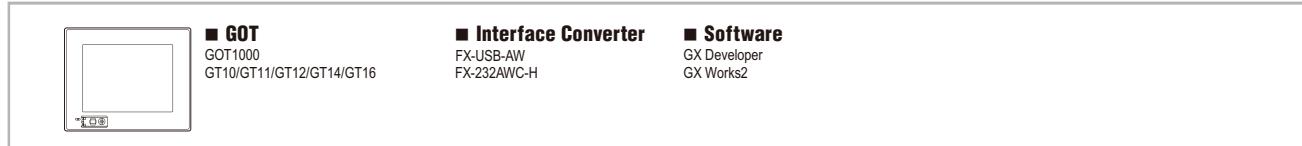
FX3uc Main Units



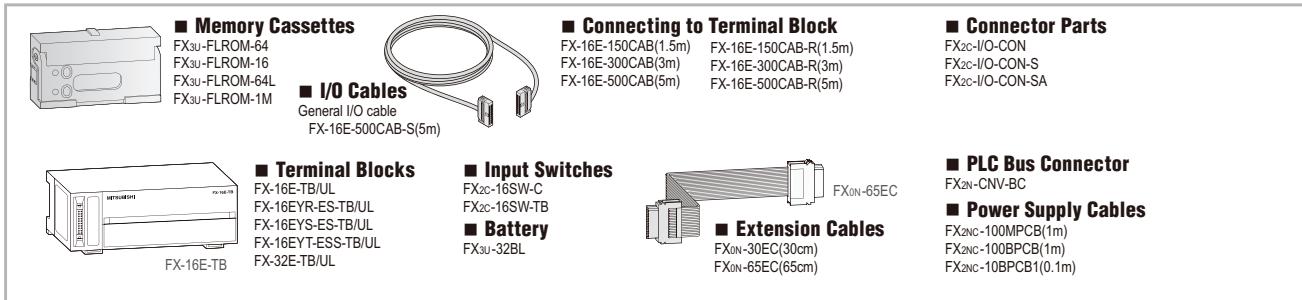
Special Function Modules*



Optional Equipment and Software



Accessories

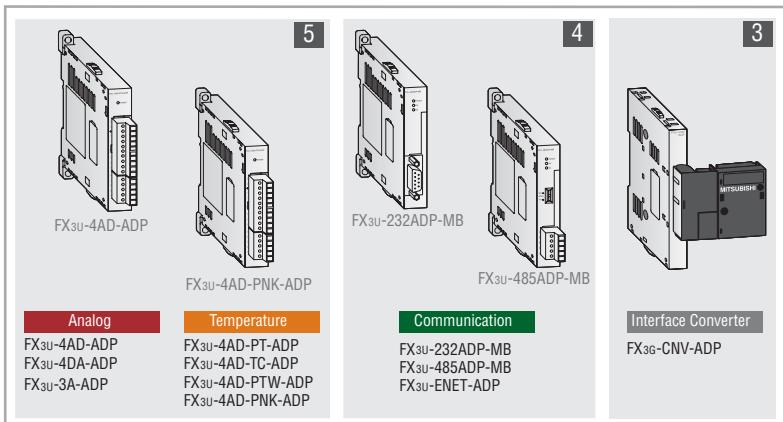


FX3G

Expansion Boards

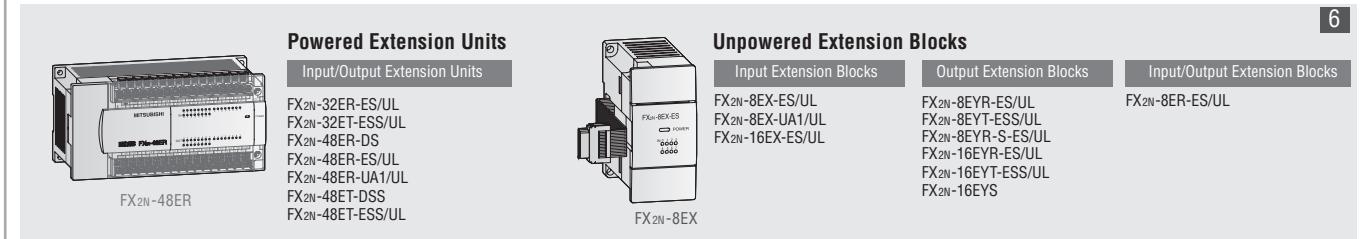


Special Adapters

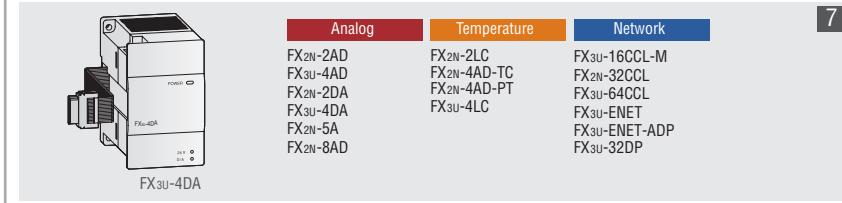


Special Function Modules

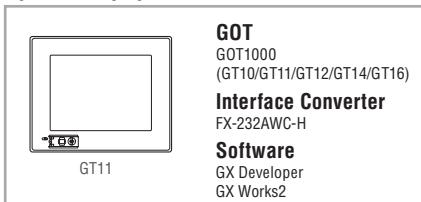
I/O Extension Blocks



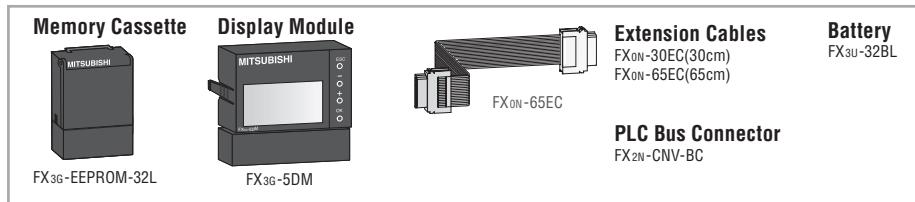
Special Function Blocks

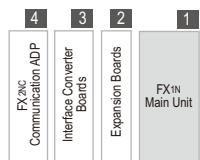


Optional Equipment and Software

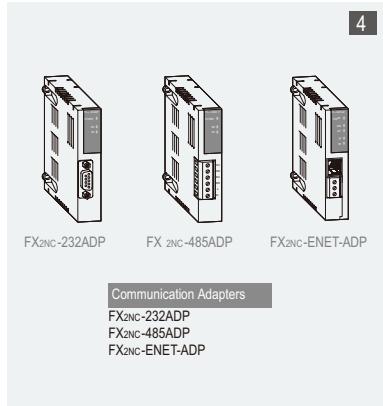


Accessories

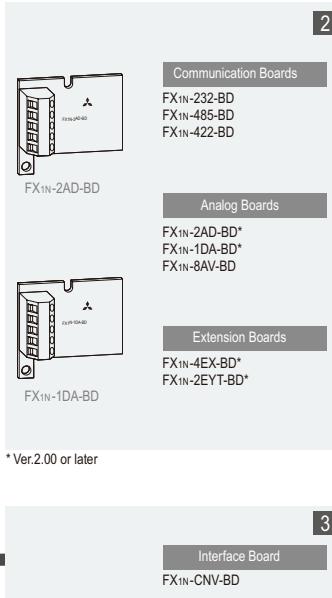




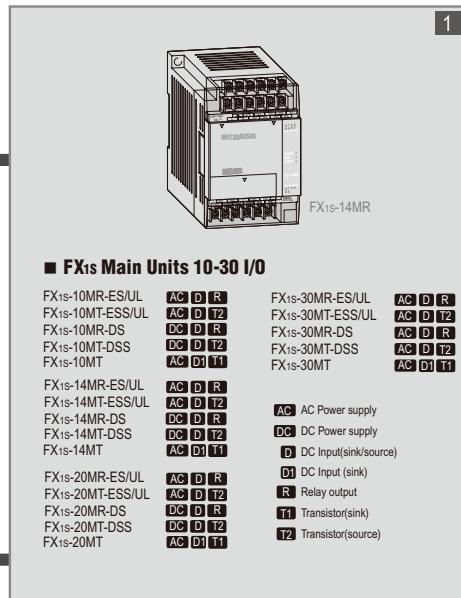
Special Adapters



Expansion Boards



FX1s Main Units



Optional Equipment and Software



Display Modules

FX1N-5DM
FX-10DM-E

Memory Cassette

FX1N-EEPROM-8L

Configuration Rules

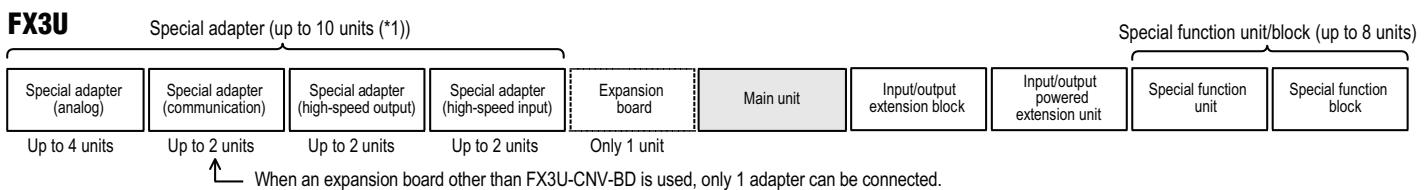
CAUTION: For full configuration details please refer to the respective hardware manuals.

1. Number of input/output points

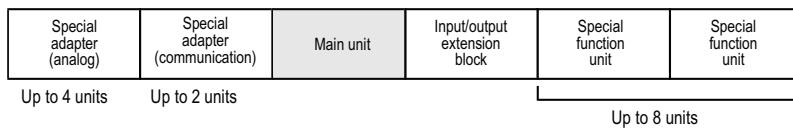
FX3U/FX3UC: The total number of combined input/output points and remote I/O points on CC-Link or AS-i system must be 384 points or less on the whole system, where the number of local I/O points and remote I/O points cannot exceed 256 points.

FX3G: The total number of combined input/output points and remote I/O points on CC-Link must be 256 points or less on the whole system, where the maximum number of local I/O points and remote I/O points cannot exceed 128 points.

2. Number of connected special extension devices

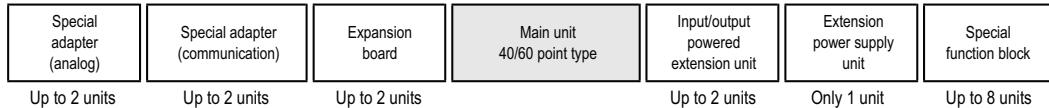


FX3UC

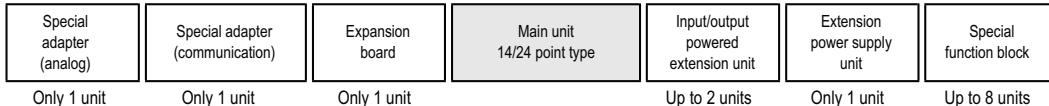


FX3G

FX3G Main Units (40/60 Point Type)

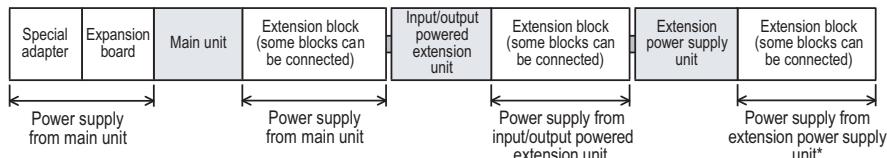


FX3G Main Units (14/24 Point Type)



3. Calculation of current consumption

FX3U / FX3UC / FX3G: The power is supplied to each connected device from the built-in power supply of the main unit, the input / output powered extension unit or the extension power supply unit. There are three types of built-in power supplies; 24VDC service power, 5VDC power and internal 24VDC power. The power consumed varies depending on the type of product added.



Note: FX1S controllers can generally be considered as standalone controllers so no explicit configuration requirements exist. However, for configuration of boards, memory cassettes and displays, etc. please refer to the FX1S hardware manual.

Programming and Device Specifications

| Model Number | FX1S | FX3G | FX3U/FX3UC |
|---|--|---|--|
| Programming | | | |
| I/O Points | 30(+4 optional) | 256 total (combined local and CC-Link remote I/O) | 384 total (combined local and CC-Link remote I/O) |
| Address Range | Max. 30 direct addressing | Max. 128 direct addressing and Max. 128 remote I/O | Max. 256 direct addressing and Max. 256 remote I/O |
| Program Memory | 2,000 steps EEPROM | 32,000 steps EEPROM (internal), exchangeable EEPROM memory cassette | 64,000 steps RAM (internal), exchangeable FLROM memory cassette |
| Instruction Time | 0.55 µs or 0.7 µs / contact instruction | 0.21 µs or 0.42 µs / contact instruction | 0.065 µs / contact instruction |
| Number of Instructions | 27 sequence instructions, 2 step ladder instructions, 85 applied instructions | 29 sequence instructions, 2 step ladder instructions, 123 applied instructions | 29 sequence instructions, 2 step ladder instructions, 210 applied instructions |
| Programming Language | Step ladder, instruction list, SFC Step ladder, structured text, simple ladder, function block | | |
| Program Execution | Cyclical execution, refresh mode processing | | |
| Program Protection | 8 character keyword with 3 protection levels each (*1) | 2 different keywords, maximum password length 16 characters | 8 or 16-character keyword protection with 3 protection levels each (*1) |
| Devices | | | |
| Auxiliary Relays | 512 total, with 384 general (M0 - M383) and 128 latched (M384 - M511) | 7,680 total, with 384 general (M0 - M384), 1152 EEPROM latched (M384 - M1535), and 6,144 general/optional latched (M1536 - M7679) | 7,680 total, with 500 general (M0 - M499), 524 optional latched (M500 - M1023), and 6,656 latched (M1024 - M7679) |
| Special Auxiliary Relays | 256 (M8000 - M8255) | 512 (M8000 - M8511) | |
| State Relays | 128 all latched (S0 - S127) | 4,096 total, with 1,000 EEPROM latched (S0 - S999) and 3,096 general/optional latched (S1000 - S4095) | 4,096 total, with 1,000 optional latched (S0 - S999) and 3,096 latched (S1000 - S4095) |
| Timers | 64 total, with 31 points partially switchable between 100ms and 10ms (T32 - T62) | 320 total, with 206 100ms (T0 - T199 and T250 - T255), 46 10ms (T200 - T245), and 68 1ms (T246 - T249 and T256 - T319) | 512 total, with 206 100ms (T0 - T191, T192 - T199 and T250 - T255), 46 10ms (T200 - T245), and 260 1ms (T246 - T249 and T256 - T511) |
| External Setpoint Entry Via Potentiometer | 2 | | 0 |
| Counters | 32 total (16-bit only), with 16 general (C0-C15) and 16 latched (C16-C31) | 235 total (16-bit and 32-bit), with 36 general (C0 - C16 and C200 - C219) and 199 EEPROM latched (C16 - C199 and C220 - C234) | 235 total (16-bit and 32-bit), with 120 general (C0 - C99 and C200 - C219) and 115 latched (C100 - C199 and C220 - C234) |
| High-Speed Counters | 1 phase, 6 points max: 60 kHz / 2 points, 10 kHz / 4 points ; 2 phase, 2 points max: 30 kHz / 1 point, 5 kHz / 1 point | 21 total, with 16 1-phase (C235 - C250) and 5 2-phase (C251 - C255) | |
| High-Speed Counter Speed | - | 1 phase, 6 points max: 60 kHz/ 4 points, 10 kHz / 2 points 2 phase, 3 points max: 30 kHz / 2 points, 5kHz/1 point | 1 phase, 8 points max: 100 kHz/ 6 points; 10 kHz / 2 points 2 phase, 2 points max: 50 kHz / 2 points |
| Real-Time Clock | - | Year, month, day, hour, minute, second, day of the week | |
| Data Registers | 256 total, with 128 general (D0 - D127) and 128 latched (D128 - D255) | 8,000 total, with 128 general (D0 - D127), 972 EEPROM latched (D128 - D1099), and 6,900 general/optional latched (D1100 - D7999) | 8,000 total, with 200 general (D0 - D199), 312 optional latched (D200 - D511), and 7,488 latched (D512 - D7999) |
| Extension Registers | - | 24,000(R0-R23999) | 32,768(R0-R32767) |
| Extension File Registers | - | 24,000(ER0~R23999) internal/optional memory | 32,768(ER0-R32767) optional memory |
| Index Registers | 16 | | |
| Special Data Registers | 256 (D8000 - D8255) | 512 (D8000 - D8511) | |
| Pointers | 64 | 2,048 | 4,096 |
| Nestings | 8 | | |
| Interrupt Inputs | 6 | | |
| Constants | 16-bit: K: -32,768 to +32,767; H: 0 to FFFF; 32-bit: K: -2,147,483,648 to +2,147,483,647; H: 0 to FFFF FFFF | | |

Note:

1. 8-character keyword protection level depends on the keyword registered; 16-character keyword protection level is set within GX-Developer

Environmental Specifications

| Model Number | FX1S | FX3G | FX3U | FX3UC |
|------------------------------|--|--|--|------------|
| Ambient Temperature | 0 - 55 °C (storage temperature: -20 t +70 °C) | 0 - 55°C (storage temperature: -25 to +75°C) | | |
| Noise Durability | 1000 Vpp with noise generator; 1 µs at 30 - 100 Hz | | | |
| Dielectric Withstand Voltage | AC PSU: 1500VAC, 1 min. / DC PSU: 500VAC, 1 min. | | 500VAC, 1 min. | |
| Ambient Relative Humidity | 35 - 85% (non-condensing) | 5 - 95% (non-condensing) | | |
| Shock Resistance | Complies to IEC 68-2-27: 147 m/s ² (3 times each in 3 directions for 11 ms) | | | |
| Vibration Resistance | Complies to IEC 68-2-6: 9.8m/s ² (resistance to vibrations from 57 - 150 Hz for 80 minutes along all 3 axes); 4.9m/s ² for DIN rail mounting | | | |
| Insulation Resistance | 500VDC, 5 MΩ | | | |
| Ground | Class D: Grounding resistance 100Ω or less | | | |
| Fuse | AC models: 250 V 1.0A; DC models: 250V 0.8A | For FX3G-14M_ and FX3G-24M_AC: 250V 1A; DC: 250V 3.15A For FX3G-40M_ and FX3G-60M_: 250V 3.15A | From FX3U-16M_ to FX3U-32M_ 250V 3.15A; From FX3U-48M_ to FX3U-128M_: 250V 5A | 125V 3.15A |
| Environment | Avoid environments containing corrosive gases, install in a dust-free location. | | | |

Electrical Specifications

| Power Supply Specifications | FX1S AC Powered Models (FX1S-M-ES/UL) | FX1S DC Powered Models (FX1S-M-DS/DSS) | FX3G AC Powered Models (FX3G-M-/ES/ESS) | FX3G DC Powered Models (FX3G-M-/DS/DSS) | FX3U AC Powered Models (FX3U-M_ES/ESS) | FX3U DC Powered Models (FX3U-M-/DS/DSS) | FX3UC |
|--|--|--|--|---|--|---|---|
| Power Supply | 100-240VAC (+10% / -15%), 50/60 Hz (±10%) | 24VDC (+10% / -15%) | 100-240VAC (+10% / -15%), 50/60 Hz | 24VDC (+20% / -15%) | 100-240VAC (+10% / -15%), 50/60 Hz | 24VDC (+20% / -30%) | 24VDC (+20% / -15%) Ripple Voltage (p-p) 5% or less |
| Inrush Current at ON | 15A / 5 ms (at 100VAC); 25A / 5 ms (at 200VAC) | 10A / 0.1 ms (at 24VDC) | 30A / <5 ms (at 100VAC); 50A / <5 ms (at 200VAC) | 30A / <1 ms (at 24VAC) | 30A / <5 ms (at 100VAC); 65A / <5 ms (at 200VAC) | 35A / <0.5 ms (at 24VDC); | 30A / <0.5ms (at 24VDC) |
| Allowable Momentary Power Failure Time | 10 ms | 5 ms | 10 ms | 5ms | 10 ms | 5 ms | 5 ms |
| External Service Power Supply (24VDC) | 400 mA | - | 400 mA | - | FX3U-16/32MR/ES: 400 mA / FX3U-48/64/80/128MR/ES: 600 mA | - | - |

| Output Specifications | | FX1S Relay Models | FX1S Transistor Models | FX3G Relay Models | FX3G Transistor Models | FX3U Relay Models | FX3U Transistor Models | FX3U Triac Models | FX3UC Relay Models | FX3UC Transistor Models |
|---|--------------------|---|------------------------|--|-------------------------------|--|--------------------------|--------------------------------|---|--|
| Switching Voltage (Max.) (V) | | <250VAC, <30VDC | 5 - 30VDC | <240VAC, <30VDC | 5 - 30VDC | <240VAC, <30VDC | 5 - 30VDC | 85 - 242VAC | <240VAC, <30VDC | 5 - 30VDC |
| Max. Output Current | Per Output (A) | 2 | 0.5 | 2 | 0.5 | 2 | 0.5 | 0.3 | 2 | 0.3A (Y0 - Y3), and 0.1A (Y4 or higher) |
| | Per Group (A) (*1) | 8 | 0.8 | 8 | 0.8 | 8 | 0.8 | 0.8 | 8 | 0.8 |
| Max. Switching Current (Inductive Load) | | 80 VA | 12 W | 80 VA | 12 W | 80 VA | 12 W | 15VA / 100VAC 30VA / 240VAC | 80VA | 12W (7.2W per point for Y0 - Y3 and 2.4W per point for Y4 or higher) |
| Response Time (ms) | | 10 | 0.2 | 10 | < 0.2 (< 5µs for Y0, Y1) (*4) | 10 | < 0.2 (< 5µs for Y0, Y2) | 1 ms | 10 | < 0.2 (< 5µs for Y0, Y2) |
| Life of Contacts (Switching Times) | | 3,000,000 at 20VA; 1,000,000 at 35VA; 200,000 at 80VA | - | 3,000,000 at 20VA; 1,000,000 at 35VA; 200,000 at 80VA (*2) | - | 3,000,000 at 20VA; 1,000,000 at 35VA; 200,000 at 80VA (*2) | - | - | 3,000,000 at 20VA; 1,000,000 at 35VA; 200,000 at 80kA | - (*3) |

Notes:

- This limitation applies to the maximum output current for each reference terminal (Common), each serving 1 to 4 relay or transistor outputs. Please observe the reference terminal assignments for group identification.
- Not guaranteed by Mitsubishi Electric.
- Refer to the specifications of the Terminal Block being used.
- The 40 and 60 I/O points main units supports 0.5~µs for Y2.

Main Unit Options

FX3U

FX3U Main Units with 16 I/O

| Model Number | FX3U-16MR/DS | FX3U-16MR/ES | FX3U-16MT/DSS | FX3U-16MT/DS | FX3U-16MT/ESS | FX3U-16MT/ES |
|---------------------------|---------------------|---------------|---------------------|-------------------|---------------------|-------------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 16 | 16 | 16 | 16 | 16 | 16 |
| Power Supply | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 8 | 8 | 8 | 8 | 8 | 8 |
| Integrated Outputs | 8 | 8 | 8 | 8 | 8 | 8 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) |
| Power Consumption W | 25 | 30 | 25 | 25 | 30 | 30 |
| Weight (kg) | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| Dimensions (W x H x D) mm | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 |

FX3U Main Units with 32 I/O

| Model Number | FX3U-32MR/DS | FX3U-32MR/ES | FX3U-32MT/DSS | FX3U-32MT/DS | FX3U-32MT/ESS | FX3U-32MT/ES | FX3U-32MR/UA1 | FX3U-32MS/ES |
|---------------------------|---------------------|---------------|---------------------|-------------------|---------------------|-------------------|---------------|---------------|
| Stocked Item | S | S | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | | | |
| Integrated Inputs/Outputs | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Power Supply | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Integrated Outputs | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) | Relay | Triac |
| Power Consumption W | 30 | 35 | 30 | 30 | 35 | 35 | 35 | 35 |
| Weight (kg) | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 |
| Dimensions (W x H x D) mm | 150 x 90 x 86 | 150 x 90 x 86 | 150 x 90 x 86 | 150 x 90 x 86 | 150 x 90 x 86 | 150 x 90 x 86 | 182 x 90 x 86 | 150 x 90 x 86 |

FX3U Main Units with 48 I/O

| Model Number | FX3U-48MR/DS | FX3U-48MR/ES | FX3U-48MT/DSS | FX3U-48MT/DS | FX3U-48MT/ESS | FX3U-48MT/ES |
|---------------------------|---------------------|---------------|---------------------|-------------------|---------------------|-------------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 48 | 48 | 48 | 48 | 48 | 48 |
| Power Supply | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 24 | 24 | 24 | 24 | 24 | 24 |
| Integrated Outputs | 24 | 24 | 24 | 24 | 24 | 24 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) |
| Power Consumption W | 35 | 40 | 35 | 35 | 40 | 40 |
| Weight (kg) | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Dimensions (W x H x D) mm | 182 x 90 x 86 | 182 x 90 x 86 | 182 x 90 x 86 | 182 x 90 x 86 | 182 x 90 x 86 | 182 x 90 x 86 |

FX3U Main Units with 64 I/O

| Model Number | FX3U-64MR/DS | FX3U-64MR/ES | FX3U-64MT/DSS | FX3U-64MT/DS | FX3U-64MT/ESS | FX3U-64MT/ES | FX3U-64MR/UA1 | FX3U-64MS/ES |
|---------------------------|---------------------|---------------|---------------------|-------------------|---------------------|-------------------|---------------|---------------|
| Stocked Item | S | S | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | | | |
| Integrated Inputs/Outputs | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| Power Supply | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Integrated Outputs | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) | Relay | Triac |
| Power Consumption W | 40 | 45 | 40 | 40 | 45 | 45 | 45 | 45 |
| Weight (kg) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Dimensions (W x H x D) mm | 220 x 90 x 86 | 220 x 90 x 86 | 220 x 90 x 86 | 220 x 90 x 86 | 220 x 90 x 86 | 220 x 90 x 86 | 285 x 90 x 86 | 220 x 90 x 86 |

FX3U Main Units with 80 I/O

| Model Number | FX3U-80MR/DS | FX3U-80MR/ES | FX3U-80MT/DSS | FX3U-80MT/DS | FX3U-80MT/ESS | FX3U-80MT/ES |
|---------------------------|---------------------|---------------|---------------------|-------------------|---------------------|-------------------|
| Stocked Item | - | S | - | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 80 | 80 | 80 | 80 | 80 | 80 |
| Power Supply | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 40 | 40 | 40 | 40 | 40 | 40 |
| Integrated Outputs | 40 | 40 | 40 | 40 | 40 | 40 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) |
| Power Consumption W | 45 | 50 | 45 | 45 | 50 | 50 |
| 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 86 | 285 x 90 x 86 | 285 x 90 x 86 | 285 x 90 x 86 | 285 x 90 x 86 | 285 x 90 x 86 |

FX3U Main Units with 128 I/O

| Model Number | FX3U-128MR/ES | FX3U-128MT/ESS | FX3U-128MT/ES |
|---------------------------|---------------------|---------------------|-------------------|
| Stocked Item | S | - | - |
| Rating | UL • cUL • CE (EMC) | | |
| Integrated Inputs/Outputs | 128 | 128 | 128 |
| Power Supply | 100-240VAC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 64 | 64 | 64 |
| Integrated Outputs | 64 | 64 | 64 |
| Output Type | Relay | Transistor (Source) | Transistor (Sink) |
| Power Consumption W | 65 | 65 | 65 |
| Weight (kg) | 1.8 | 1.8 | 1.8 |
| Dimensions (W x H x D) mm | 350 x 90 x 86 | 350 x 90 x 86 | 350 x 90 x 86 |

FX3UC**FX3UC Main Units with 16 - 96 I/O**

| Model Number | FX3UC-16MT/D | FX3UC-16MT/DSS | FX3UC-16MR/DS-T | FX3UC-32MT/D | FX3UC-32MT/DSS | FX3UC-64MT/D | FX3UC-64MT/DSS | FX3UC-96MT/D | FX3UC-96MT/DSS |
|---------------------------|---------------------|---------------------|-----------------|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|
| Stocked Item | - | S | S | - | S | S | - | - | S |
| Rating | UL • cUL • CE (EMC) | | | | | | | UL • cUL | UL • cUL • CE (EMC) |
| Integrated Inputs/Outputs | 16 | 16 | 16 | 32 | 32 | 64 | 64 | 96 | 96 |
| Integrated Inputs | 8 | 8 | 8 | 16 | 16 | 32 | 32 | 48 | 48 |
| Input Type | Sink | Sink / Source | Sink / Source | Sink | Sink / Source | Sink | Sink / Source | Sink | Sink / Source |
| Integrated Outputs | 8 | 8 | 8 | 16 | 16 | 32 | 32 | 48 | 48 |
| Output Type | Transistor (Sink) | Transistor (Source) | Relay | Transistor (Sink) | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) | Transistor (Source) |
| Power Consumption W | 6 | 6 | 6 | 8 | 8 | 11 | 11 | 14 | 14 |
| Weight (kg) | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.35 | 0.35 |
| Dimensions (W x H x D) mm | 34 x 90 x 74 | 34 x 90 x 74 | 34 x 90 x 74 | 34 x 90 x 74 | 34 x 90 x 74 | 59.7 x 90 x 74 | 59.7 x 90 x 74 | 85.4 x 90 x 74 | 85.4 x 90 x 74 |

FX3G

FX3G Main Units with 14 I/O

| Model Number | FX3G-14MR/DS | FX3G-14MR/ES | FX3G-14MT/DSS | FX3G-14MT/DS | FX3G-14MT/ESS | FX3G-14MT/ES |
|---------------------------|---------------------|--------------|---------------------|-------------------|---------------------|-------------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 14 | 14 | 14 | 14 | 14 | 14 |
| Power Supply (V) | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 8 | 8 | 8 | 8 | 8 | 8 |
| Integrated Outputs | 6 | 6 | 6 | 6 | 6 | 6 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) |
| Power Consumption (W) | 19 | 31 | 19 | 19 | 31 | 31 |
| Weight (kg) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Dimensions (W x H x D) mm | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 |

FX3G Main Units with 24 I/O

| Model Number | FX3G-24MR/DS | FX3G-24MR/ES | FX3G-24MT/DSS | FX3G-24MT/DS | FX3G-24MT/ESS | FX3G-24MT/ES |
|---------------------------|---------------------|--------------|---------------------|-------------------|---------------------|-------------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 24 | 24 | 24 | 24 | 24 | 24 |
| Power Supply (V) | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 14 | 14 | 14 | 14 | 14 | 14 |
| Integrated Outputs | 10 | 10 | 10 | 10 | 10 | 10 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) |
| Power Consumption (W) | 21 | 32 | 21 | 21 | 32 | 32 |
| Weight (kg) | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 |
| Dimensions (W x H x D) mm | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 | 90 x 90 x 86 |

FX3G Main Units with 40 I/O

| Model Number | FX3G-40MR/DS | FX3G-40MR/ES | FX3G-40MT/DSS | FX3G-40MT/DS | FX3G-40MT/ESS | FX3G-40MT/ES |
|---------------------------|---------------------|---------------|---------------------|-------------------|---------------------|-------------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 40 | 40 | 40 | 40 | 40 | 40 |
| Power Supply (V) | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 24 | 24 | 24 | 24 | 24 | 24 |
| Integrated Outputs | 16 | 16 | 16 | 16 | 16 | 16 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) |
| Power Consumption (W) | 25 | 37 | 25 | 25 | 37 | 37 |
| Weight (kg) | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| Dimensions (W x H x D) mm | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 | 130 x 90 x 86 |

FX3G Main Units with 60 I/O

| Model Number | FX3G-60MR/DS | FX3G-60MR/ES | FX3G-60MT/DSS | FX3G-60MT/DS | FX3G-60MT/ESS | FX3G-60MT/ES |
|---------------------------|---------------------|---------------|---------------------|-------------------|---------------------|-------------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 60 | 60 | 60 | 60 | 60 | 60 |
| Power Supply (V) | 24VDC | 100-240VAC | 24VDC | 24VDC | 100-240VAC | 100-240VAC |
| Integrated Inputs | 36 | 36 | 36 | 36 | 36 | 36 |
| Integrated Outputs | 24 | 24 | 24 | 24 | 24 | 24 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Sink) | Transistor (Source) | Transistor (Sink) |
| Power Consumption (W) | 29 | 40 | 29 | 29 | 40 | 40 |
| Weight (kg) | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Dimensions (W x H x D) mm | 175 x 90 x 86 | 175 x 90 x 86 | 175 x 90 x 86 | 175 x 90 x 86 | 175 x 90 x 86 | 175 x 90 x 86 |

FX1S**FX1S Main Units with 10 - 14 I/O**

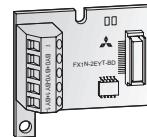
| Model Number | FX1S-10MR-DS | FX1S-10MR-ES/UL | FX1S-10MT-DSS | FX1S-10MT-ESS/UL | FX1S-10MT | FX1S-14MR-DS | FX1S-14MR-ES/UL | FX1S-14MT-DSS | FX1S-14MT-ESS/UL | FX1S-14MT |
|---------------------------|---------------------|-----------------|---------------------|---------------------|-------------------|---------------------|-----------------|---------------------|---------------------|-------------------|
| Stocked Item | - | S | S | S | - | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | UL • cUL | UL • cUL • CE (EMC) | | | | UL • cUL |
| Integrated Inputs/Outputs | 10 | 10 | 10 | 10 | 10 | 14 | 14 | 14 | 14 | 14 |
| Power Supply | 24VDC | 100 - 240VAC | 24VDC | 100 - 240VAC | 100 - 240VAC | 24VDC | 100 - 240VAC | 24VDC | 100 - 240VAC | 100 - 240VAC |
| Integrated Inputs | 6 | 6 | 6 | 6 | 6 | 8 | 8 | 8 | 8 | 8 |
| Integrated Outputs | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 6 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Source) | Transistor (Sink) | Relay | Relay | Transistor (Source) | Transistor (Source) | Transistor (Sink) |
| Power Consumption (W) | 6 | 19 | 6 | 19 | 19 | 6.5 | 19 | 6.5 | 19 | 19 |
| Weight (kg) | 0.22 | 0.3 | 0.22 | 0.3 | 0.3 | 0.22 | 0.3 | 0.22 | 0.3 | 0.3 |
| Dimen. (W x H x D) mm | 60 x 90 x 49 | 60 x 90 x 75 | 60 x 90 x 49 | 60 x 90 x 75 | 60 x 90 x 75 | 60 x 90 x 49 | 60 x 90 x 75 | 60 x 90 x 49 | 60 x 90 x 75 | 60 x 90 x 75 |

FX1S Main Units with 20 - 30 I/O

| Model Number | FX1S-20MR-DS | FX1S-20MR-ES/UL | FX1S-20MT-DSS | FX1S-20MT-ESS/UL | FX1S-20MT | FX1S-30MR-DS | FX1S-30MR-ES/UL | FX1S-30MT/DSS | FX1S-30MT-ESS/UL | FX1S-30MT |
|---------------------------|---------------------|-----------------|---------------------|---------------------|-------------------|---------------------|-----------------|---------------------|---------------------|-------------------|
| Stocked Item | S | S | S | S | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | UL • cUL | UL • cUL • CE (EMC) | | | | UL • cUL |
| Integrated Inputs/Outputs | 20 | 20 | 20 | 20 | 20 | 30 | 30 | 30 | 30 | 30 |
| Power Supply | 24VDC | 100 - 240VAC | 24VDC | 100 - 240VAC | 100 - 240VAC | 24VDC | 100 - 240VAC | 24VDC | 100 - 240VAC | 100 - 240VAC |
| Integrated Inputs | 12 | 12 | 12 | 12 | 12 | 16 | 16 | 16 | 16 | 16 |
| Integrated Outputs | 8 | 8 | 8 | 8 | 8 | 14 | 14 | 14 | 14 | 14 |
| Output Type | Relay | Relay | Transistor (Source) | Transistor (Source) | Transistor (Sink) | Relay | Relay | Transistor (Source) | Transistor (Source) | Transistor (Sink) |
| Power Consumption (W) | 7 | 20 | 7 | 20 | 20 | 8 | 21 | 8 | 21 | 21 |
| Weight (kg) | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 | 0.35 | 0.45 | 0.35 | 0.45 | 0.45 |
| Dimen. (W x H x D) mm | 75 x 90 x 49 | 75 x 90 x 75 | 75 x 90 x 49 | 75 x 90 x 75 | 75 x 90 x 75 | 100 x 90 x 49 | 100 x 90 x 75 | 100 x 90 x 49 | 100 x 90 x 75 | 100 x 90 x 75 |

FX Input / Output Expansion Options**Extension Boards**

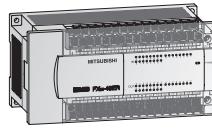
The FX1N Series extension boards are available for the FX1S main units and add 4 inputs or 2 outputs to the system



| Model Number | | FX1N-4EX-BD | FX1N-2EYT-BD |
|---------------------------|---------|---|-----------------------|
| Stocked Item | | S | S |
| Rating | | UL • cUL • CE (EMC) | |
| Applicable PLCs | | FX1S | FX1S |
| Integrated Inputs | | 4 | 2 |
| Power Supply | | 5VDC (from main unit); 24VDC / 25 mA (S/S terminal) | 5VDC (from main unit) |
| Integrated Outputs | | 4 | - |
| Input Level | Voltage | 24VDC (+20% / -15%) | - |
| | Current | 5 mA (24VDC) | - |
| Integrated Outputs | | - | 2 |
| Output Type | | - | Transistor |
| Max. Switching Voltage | | - | 5 - 30VDC |
| Weight | | 0.02 | 0.02 |
| Dimensions (W x H x D) mm | | 43 x 38.5 x 22 | 43 x 38.5 x 22 |

Powered Extension Units

The FX2N Series extension units are available with up to 48 integrated I/O with selectable relay or transistor output models.



| Model Number | | FX2N-32ER-ES/UL | FX2N-32ET-ESS/UL | FX2N-48ER-DS | FX2N-48ER-ES/UL | FX2N-48ER-UA1/UL |
|--|-----------------------|---|---------------------|---------------|---------------------|------------------|
| Stocked Item | | S | S | - | S | S |
| Rating | | UL • cUL • CE (EMC) | | CE | UL • cUL • CE (EMC) | |
| Applicable PLCs | | FX3U / FX3G | | | | |
| Integrated Inputs / Outputs | | 32 | 32 | 48 | 48 | 48 |
| Power Supply | AC Range (+10%, -15%) | 100-240VAC | 100-240VAC | 24VDC | 100-240VAC | 100-240VAC |
| External Service Power Supply (24VDC) mA | | 250 | 250 | - | 460 | - |
| Power Supply Int. Bus (5VDC) mA | | 690 | 690 | 690 | 690 | 690 |
| Integrated Inputs | | 16 (24VDC) | 16 (24VDC) | 16 (24VDC) | 16 (24VDC) | 24 (120VDC) |
| Integrated Outputs | | 16 | 16 | 24 | 24 | 24 |
| Output Type | | Relay | Transistor (Source) | Relay | Relay | Relay |
| ON Voltage (Max.) | | Relay version: < 264VAC, < 30VDC; Transistor version: 5 - 30VDC | | | | |
| Max. Output Current | Per Output (A) | 2 | 0.5 | 2 | 2 | 2 |
| | Per 4 Outputs (A) | 8 | 0.8 | 8 | 8 | 8 |
| Weight (kg) | | 0.65 | 0.65 | 0.85 | 0.85 | 1.0 |
| Dimensions (W x H x D) mm | | 150 x 90 x 87 | 150 x 90 x 87 | 182 x 90 x 87 | 182 x 90 x 87 | 220 x 90 x 87 |

| Model Number | | FX2N-48ET | FX2N-48ET-DSS | FX2N-48ET-ESS/UL |
|--|-------------------|---|---------------------|---------------------|
| Stocked Item | | - | - | - |
| Rating | | - | CE | UL • cUL • CE (EMC) |
| Applicable PLCs | | FX3U / FX3G | | |
| Integrated Inputs / Outputs | | 48 | 48 | 48 |
| Power Supply | | 100-240VAC | 24VDC | 100-240VAC |
| External Service Power Supply (24VDC) mA | | 460 | - | 460 |
| Power Supply Int. Bus (5VDC) mA | | 690 | 690 | 690 |
| Integrated Inputs | | 24 (24VDC) | 24 (24VDC) | 24 (24VDC) |
| Output Type | | Transistor (Sink) | Transistor (Source) | Transistor (Source) |
| ON Voltage (Max.) | | Relay version: < 264VAC, < 30VDC; Transistor version: 5 - 30VDC | | |
| Max. Output Current | Per Output (A) | 0.5 | 0.5 | 0.5 |
| | Per 4 Outputs (A) | 0.8 | 0.8 | 0.8 |
| Weight (kg) | | 0.85 | 0.85 | 0.85 |
| Dimensions (W x H x D) mm | | 182 x 90 x 87 | 182 x 90 x 87 | 182 x 90 x 87 |



Unpowered Extension Units

The FX2N Series 8 - 16 integrated I/O extension blocks are selectable with relay, transistor or triac outputs.

| Model Number | | FX2N-8ER-ES/UL | FX2N-8EX-ES/UL | FX2N-8EX-UA1/UL | FX2N-8EYR-ES/UL | FX2N-8EYT | FX2N-8EYT-ESS/UL | FX2N-8EY-S-ES/UL |
|-------------------------------|-------------------|---|----------------|-----------------|---------------------|-------------------|---------------------|--------------------|
| Stocked Item | | S | S | S | S | S | S | S |
| Rating | | UL • cUL • CE (EMC) | | UL • cUL | UL • cUL • CE (EMC) | | - | UL • cUL |
| Applicable PLCs | | FX3U / FX3UC / FX3G | | | | | | |
| Integrated Inputs / Outputs | | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Power Supply | | All modular extension units are powered by the base unit | | | | | | |
| Integrated Inputs | | 4 (24VDC) | 8 (24VDC) | 8 (100-120VAC) | - | - | - | - |
| Integrated Outputs | | 4 | - | - | 8 | 8 | 8 | 8 |
| Output Type | | Relay | - | - | Relay | Transistor (Sink) | Transistor (Source) | Relay |
| ON Voltage (Max.) | | Relay version: < 240VAC, < 30VDC; Transistor version: 5 - 30VDC | | | | | | |
| Max. Output Current | Per Output (A) | 2 | - | - | 2 | 0.5 | 0.5 | 2.0 |
| | Per 4 Outputs (A) | 8 | - | - | 8 | 0.8 | 0.8 | Isolated (commons) |
| 5VDC Current Consumption (mA) | | 25 | 25 | 25 | 30 | 30 | 30 | 30 |
| Weight (kg) | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 |
| Dimensions (W x H x D) mm | | 43 x 90 x 87 | 43 x 90 x 87 | 43 x 90 x 87 | 43 x 90 x 87 | 43 x 90 x 87 | 43 x 90 x 87 | 40 x 90 x 87 |

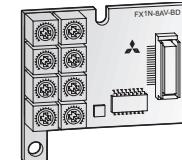
| Model Number | FX2N-16EX-ES/UL | FX2N-16EYR-ES/UL | FX2N-16EYS | FX2N-16EYT | FX2N-16EYT-ESS/UL |
|-------------------------------|---|------------------|--------------|-------------------|---------------------|
| Stocked Item | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | UL • cUL | - | UL • cUL |
| Applicable PLCs | FX3U / FX3UC / FX3G | | | | |
| Integrated Inputs / Outputs | 16 | 16 | 16 | 16 | 16 |
| Power Supply | All modular extension units are powered by the base unit | | | | |
| Integrated Inputs | 16 (24VDC) | - | - | - | - |
| Integrated Outputs | - | 16 | 16 | 16 | 16 |
| Output Type | - | Relay | Triac (SSR) | Transistor (Sink) | Transistor (Source) |
| ON Voltage (Max.) | Relay version: < 240VAC, < 30VDC; Transistor version: 5 - 30VDC; Triac version: 85 - 242VAC | | | | |
| Max. Output Current | Per Output (A) | - | 2 | 0.3 | 0.5 |
| | Per 4 Outputs (A) | - | 8 | 0.8 | 1.6 |
| 5VDC Current Consumption (mA) | 45 | 40 | 160 | 180 | 180 |
| Weight (kg) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Dimensions (W x H x D) mm | 40 x 90 x 87 | 40 x 90 x 87 | 40 x 90 x 87 | 40 x 90 x 87 | 40 x 90 x 87 |

FX2NC Unpowered Extension Units

The FX2NC Series extension blocks are available with 16 or 32 integrated I/O with selectable relay or transistor 16-output models.

| Model Number | FX2NC-16EX-DS | FX2NC-16EX-T-DS | FX2NC-16EYR-T-DS | FX2NC-16EYT-D/UL | FX2NC-16EYT-DSS | FX2NC-32EX-DS | FX2NC-32EYT-D/UL |
|-------------------------------|---|-----------------|------------------|-------------------|---------------------|----------------|-------------------|
| Stocked Item | S | S | S | S | S | - | - |
| Rating | UL • cUL • CE (EMC) | | | UL • cUL | UL • cUL • CE (EMC) | UL • cUL • CE | UL • cUL |
| Applicable PLCs | FX3UC | | | | | | |
| Integrated Inputs / Outputs | 16 | 16 | 16 | 16 | 16 | 32 | 32 |
| Power Supply | All modular extension units are powered by the base unit | | | | | | |
| Integrated Inputs | 16 | 16 | - | - | - | 32 (24VDC) | - |
| Integrated Outputs | - | - | 16 | 16 | 16 | - | 32 |
| Output Type | - | - | Relay | Transistor (Sink) | Transistor (Source) | - | Transistor (Sink) |
| ON Voltage (Max.) | Relay version: < 240VAC, < 30VDC; Transistor version: 5 - 30VDC | | | | | | |
| Max. Output Current | Per Output (A) | - | - | 2 | 0.1 | - | 0.1 |
| | Per 4 Outputs (A) | - | - | 4 | 0.8 | 0.8 | 0.8 |
| 5VDC Current Consumption (mA) | 30 | 30 | 50 | 30 | 50 | 60 | 100 |
| Weight (kg) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.2 | 0.2 |
| Dimensions (W x H x D) mm | 14.6 x 90 x 87 | 20.2 x 90 x 89 | 24.2 x 90 x 89 | 14.6 x 90 x 87 | 14.6 x 90 x 87 | 26.2 x 90 x 87 | 26.2 x 90 x 87 |

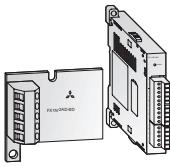
FX Analog Options



Analog Setpoint

The analog setpoint boards provide 8 analog setpoint potentiometers to the FX system. Setpoints can be polled by the PLC and used as default values for timers, counters and data registers.

| Model Number | FX1N-8AV-BD | FX3G-8AV-BD | FX3U-8AV-BD |
|---------------------------|---------------------|--------------|--------------------|
| Stocked Item | S | S | S |
| Rating | CE (EMC) | | |
| Applicable PLCs | FX1S | FX3G | FX3U |
| Power Supply | 5VDC from main unit | | |
| Analog Channels (Inputs) | 8-bit | 8-bit | 8-bit |
| Related I/O Points | 0 | 0 | 0 |
| Weight | 0.02 | 0.02 | 0.02 |
| Dimensions (W x H x D) mm | 43 x 38.5 x 22 | 35 x 51 x 12 | 19.7 x 46.1 x 53.5 |



Analog Input

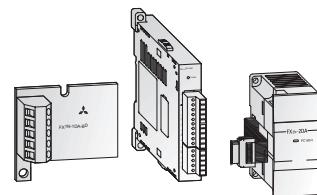
Analog input modules can provide up to 8 analog inputs that are used to convert analog voltage or current signals into digital values which can be used by the FX PLC.

| Model Number | FX1N-2AD-BD | FX3G-2AD-BD | FX3U-4AD-ADP | FX3U-4AD | FX3UC-4AD |
|--------------------------------|------------------------|------------------------|---|--|--|
| Stocked Item | S | S | S | S | - |
| Rating | CE (EMC) | | UL • cUL • CE (EMC) | | |
| Applicable PLCs | FX1S | FX3G | FX3U / FX3UC / FX3G | FX3U / FX3UC / FX3G | FX3UC |
| Power Supply | 5VDC (from main unit) | 5VDC (from main unit) | 5VDC / 15 mA (from main unit) 24VDC / 40 mA | 5VDC / 110 mA (from main unit) 24VDC / 90 mA | 5VDC / 100 mA (from main unit) 24VDC / 80 mA |
| Analog Channels (Input) | 2 | 2 | 4 | 4 | 4 |
| Analog Range | 0 to 10VDC / 4 - 20 mA | 0 to 10VDC / 4 - 20 mA | 0 to 10VDC / 4 - 20 mA | -10 to 10VDC / -20 to +20mA / 4 to 20 mA DC | -10 to 10VDC / -20 to +20mA / 4 to 20 mA DC |
| Resolution | Voltage | 2.5 mV (12 bit) | 2.5 mV | 2.5 mV (12 bit) | 0.32 mV (15 bit + sign) |
| | Current | 8 µA (11 bit) | 8 µA (11 bit) | 10 µA (11 bit) | 1.25 µA (14 bit + sign) |
| Overall Accuracy for Fullscale | ±1% | ±1% | ±0.5% to 1% (*1) | ±0.3 to 1% fullscale (*1) | ±0.3 to 1% fullscale (*1) |
| Related I/O Points | 0 | 0 | 0 | 8 | 8 |
| Weight (kg) | 0.02 | 0.02 | 0.1 | 0.2 | 0.13 |
| Dimensions (W x H x D) mm | 43 x 38.5 x 22 | 35 x 51 x 29.2 | 17.6 x 90 x 89.5 | 55 x 90 x 87 | 20.2 x 90 x 89 |

| Model Number | FX2N-2AD | FX2N-4AD | FX2NC-4AD | FX2N-8AD (*2) |
|--------------------------------|---|---|--|---|
| Stocked Item | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | |
| Applicable PLCs | FX3U / FX3UC / FX3G | | FX3UC | FX3U / FX3UC |
| Power Supply | 5VDC / 20 mA (from main unit) 24VDC / 50 mA (from main unit) | 5VDC / 30 mA (from main unit) 24VDC / 55 mA | 5VDC / 50 mA (from main unit) 24VDC / 130 mA | 5VDC / 50 mA (from main unit) 24VDC / 80 mA |
| Analog Channels (Input) | 2 | 4 | 4 | 8 |
| Analog Range | 0 to 10VDC / 0 to 5VDC / 4 to 20mA DC | -10 to 10VDC / -20 to 20mA DC / 4 to 20mA DC | -10 to 10VDC / -20 to 20mA DC / 4 to 20mA DC | -10 to 10VDC / -20 to 20mA DC / 4 to 20mA DC |
| Resolution | Voltage | 2.5 mV (12 bit) | 5 mV (11 bit + sign) | 0.32 mV (15 bit + sign) |
| | Current | 4 µA (12 bit) | 20 µA (10 bit + sign) | 1.25 µA (14 bit + sign) |
| Overall Accuracy for Fullscale | Voltage | | ±0.3% - 0.5% (*1) | ±0.3 - 0.5% (*1) |
| | Current | ±1% | ±0.5 - 1.0% (*1) | |
| Related I/O Points | 8 | 8 | 8 | 8 |
| Weight (kg) | 0.2 | 0.3 | 0.13 | 0.4 |
| Dimensions (W x H x D) mm | 43 x 90 x 87 | 55 x 90 x 87 | 20.2 x 90 x 89 | 75 x 90 x 75 |

Notes:

1. Dependent on the ambient temperature.
2. The FX2N-8AD can be configured to accept standard analog inputs as well as selected temperature inputs such as K, T or J type thermocouples.

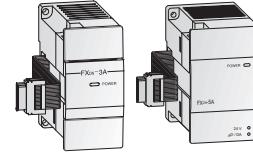


Analog Output

Analog output modules provide up to 4 analog outputs that are used to convert digital values in the PLC to voltage or current signals.

| Model Number | FX1N-1DA-BD | FX3G-1DA-BD | FX3U-4DA-ADP | FX3U-4DA | FX2N-2DA | FX2N-4DA | FX2NC-4DA |
|--------------------------------|------------------------------|------------------------------|--|---|---|--|--|
| Stocked Item | S | S | S | S | S | S | S |
| Rating | CE (EMC) | | UL • cUL • CE (EMC) | | | | |
| Applicable PLCs | FX1S | FX3G | FX3U / FX3UC / FX3G | | FX3U / FX3UC / FX3G | | FX3UC |
| Power Supply | 5VDC (from main unit) | 5VDC (from main unit) | 5VDC / 15 mA (from main unit) 24VDC / 150 mA | 5VDC / 120 mA (from main unit) 24VDC / 160 mA | 5VDC / 30 mA (from main unit) 24VDC / 85 mA | 5VDC / 30 mA (from main unit) 24VDC / 200 mA | 5VDC / 30 mA (from main unit) 24VDC / 130 mA |
| Analog Channels (Output) | 1 | 1 | 4 | 4 | 2 | 4 | 4 |
| Analog Output Range | 0 to 10VDC / 4 to 20mA DC | 0 to 10VDC / 4 to 20mA DC | 0 to 10VDC / 4 to 20mA DC | -10 to 10VDC / 0 to 20mA / 4 to 20mA DC | 0 to 10VDC / 0 to 5VDC / 4 to 20mA DC | 0 to 10VDC / 0 to 20mA DC / 4 to 20mA DC | -10 to 10VDC / 0 to 20mA DC / 4 to 20mA DC |
| Resolution | Voltage | 2.5 mV (12 bit) | 2.5 mV (12 bit) | 2.5 mV (12 bit) | 0.32 mV (15 bit + sign) | 2.5 mV (14 bit) | 5 mV (11 bit + sign) |
| | Current | 8 µA (11 bit) | 8 µA (11 bit) | 4 µA (12 bit) | 0.63 µA (15 bit) | 4 µA (12 bit) | 20 µA (10 bit + sign) |
| Overall Accuracy for Fullscale | ±1% | ±1% | ±5% - 1% (*1) | ±0.3% - 0.5% (*1) | ±1% (*1) | ±1% (*1) | ±0.5% - 1% (*1) |
| Related I/O Points | 0 | 0 | 0 | 8 | 8 | 8 | 8 |
| Weight (kg) | 0.02 | 0.02 | 0.1 | 0.2 | 0.2 | 0.3 | 0.13 |
| Dimensions (W x H x D) mm | 43 x 38.5 x 22 | 35 x 51 x 29.2 | 17.6 x 90 x 89.5 | 55 x 90 x 87 | 43 x 90 x 87 | 55 x 90 x 87 | 24.2 x 90 x 89 |

Note: Dependent on the ambient temperature.



Combination Analog Input / Output Modules

Combination analog input / output modules are used for both digital to analog and analog to digital conversion.

| Model Number | FXON-3A* | FX2N-5A* | FX3U-3A-ADP |
|----------------------------------|---|--|---|
| Stocked Item | S | S | S |
| Rating | CE (EMC) | UL • cUL • CE (EMC) | UL • cUL |
| Applicable PLCs | FX3U / FX3UC | FX3U / FX3UC / FX3G | FX3U / FX3UC / FX3G |
| Power Supply | 5VDC / 30 mA (from main unit) 24VDC / 90 mA (from main unit) | 5VDC / 70 mA (from main unit) 24VDC / 90 mA | 5VDC / 20 mA (from main unit) 24VDC / 90 mA |
| Analog Channels | Input | 2 | 2 |
| | Output | 1 | 1 |
| Analog Input Range (Resolution) | Voltage | 0 to 10VDC (8 bit); 0 to 5VDC (8 bit) | -10 to 10 V (15 bit + sign) -100 to 100 mV (11 bit + sign) |
| | Current | 4 to 20 mA DC (8 bit) | -20 to 20 mVDC (14 bit + sign) 4 to 20 mA DC (14 bit) |
| Analog Output Range (Resolution) | Voltage | 0 to 10VDC (8 bit); 0 to 5VDC (8 bit) | -10 to 10VDC (12 bit) |
| | Current | 4 to 20 mA DC (8 bit) | 0/4 to 20 mA DC (10 bit) |
| Overall Accuracy for Fullscale | ±1% | ±0.3 - 1% | ±0.5 - 1% |
| Related I/O Points | 8 | 8 | 0 |
| Weight (kg) | 0.2 | 0.3 | 0.1 |
| Dimensions (W x H x D) (mm) | 43 x 90 x 87 | 55 x 90 x 87 | 17.6 x 90 x 89.5 |

Note: When attaching the FXON-3A or FX2N-5A analog modules to an FX3UC main unit, the FX2NC-CNV-IF interface adapter or the FX3UC-1PS-5V power supply unit is required.



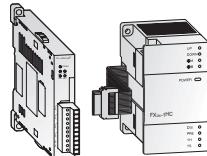
Temperature Input Options

The analog temperature input modules are used for J and K type thermocouple and Pt100 temperature sensor input and temperature control. 2 open collector transistor outputs are available with the FX2N-2LC, 4 with the FX3U-4LC.

| Model Number | FX3U-4AD-PTW-ADP | FX3U-4AD-PT-ADP | FX3U-4AD-PNK-ADP | FX3U-4AD-TC-ADP | FX2N-4AD-TC | FX2N-4AD-PT | FX2N-2LC | FX3U-4LC |
|------------------------------------|---|---|--|---|---|---|---|--|
| Stocked Item | - | S | - | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | | | |
| Applicable PLCs | FX3U / FX3UC / FX3G | | | | | FX3U / FX3UC | FX3U / FX3UC / FX3G | |
| Power Supply | 5VDC / 15 mA (from main unit) 24VDC / 50 mA | 5VDC / 15 mA (from main unit) 24VDC / 50 mA | 5VDC / 15 mA (from main unit) 24VDC / 50 mA | 5VDC / 15 mA (from main unit) 24VDC / 45 mA | 5VDC / 40 mA (from main unit) 24VDC / 60 mA | 5VDC / 30 mA (from main unit) 24VDC / 50 mA | 5VDC / 70 mA (from main unit) 24VDC / 55 mA | 5VDC / 160 mA (from main unit) 24VDC / 50 mA |
| Analog Inputs | 4 (Pt100 sensors) | 4 (Pt100 sensors) | 4 (Pt1000 or Ni1000) | 4 (J or K type) | 4 (J or K type) | 4 (Pt100 sensors) | 2 points (Thermocouple and Pt100 sensor) | 4 points (Thermocouple and Pt100 sensor) |
| Compensated Temperature Range (°C) | -100 to +600 | -50 to +250 | -50 to +250 (Pt1000) -40 to +110 (Ni1000) | -100 to +600 (J type) -100 to +1000 (K type) | -100 to +600 (J type) -100 to +1200 (K type) | -100 to +600 | -200 to +1300 | -200 to +1300 |
| Digital Outputs | -1000 to +6000 | -500 to +2500 | -500 to +2500 (Pt1000) -400 to +1100 (Ni1000) | -1000 to +6000 (J type) -1000 to +10000 (K type) | -1000 to +6000 (J type) -1000 to +12000 (K type) | -1000 to +6000 | 2 transistor output points | 4 transistor output points |
| Resolution (°C) | 0.2 to 0.3 | 0.1 | 0.1 | 0.3 (J type) 0.4 (K type) | 0.3 (J type) 0.4 (K type) | 0.2 - 0.3 | 0.1 or 1 | 0.1 or 1 |
| Overall Accuracy for Fullscale | ±0.5% - 1%* | ±0.5% - 1%* | ±0.5% - 1%* | ±0.5% - 1%* | ±0.5% - 1%* | ±1.0% | ±0.3% - 0.7% (±1 digit)* | ±0.3% - 0.7% (±1 digit)* |
| Related I/O Points | 0 | 0 | 0 | 0 | 8 | 8 | 8 | 8 |
| Weight | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.4 |
| Dimensions (W x H x D) mm | 17.6 x 90 x 89.5 | 17.6 x 90 x 89.5 | 17.6 x 90 x 89.5 | 17.6 x 90 x 89.5 | 55 x 90 x 87 | 55 x 90 x 87 | 55 x 90 x 87 | 90 x 90 x 80 |

Note: Dependent on the ambient temperature.

FX High-Speed I/O and Positioning Expansion



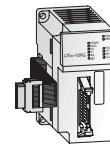
High-Speed Counters and Pulse Train Output

These high-speed modules provide additional counting and pulse output features to the PLC.

| Model Number | FX2N-1HC | FX2NC-1HC | FX3U-2HC | FX3U-4HSX-ADP | FX3U-2HSY-ADP |
|---|---|---|---------------------------------------|---|--|
| Stocked Item | S | - | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | |
| Applicable PLCs | FX3U / FX3UC | FX3UC | FX3U / FX3UC | FX3U | FX3U |
| Signal Level | 5, 12, 24VDC / 7 mA | | | | |
| Power Supply | 5VDC 24VDC | 90 mA (from main unit) - | 245 mA (from main unit) - | 30 mA (from main unit) 30 mA (from main unit) | - 60 mA (from main unit) |
| Maximum Connectivity | - | - | - | 2 | 2 |
| Counter | Inputs | 1 phase (1 input or 2 input); 2 phase (1 edge, 2 edge or 4 edge count) | - | 4 | - |
| | Outputs | - | - | - | 2 |
| Max Counter Frequency | Input | 50 kHz | 200 kHz | 1 phase: 200kHz; 2 phase: 100kHz | - |
| | Output | - | - | - | 200 kHz |
| Input Format | Differential line receiver and open collector | | | Differential line receiver (equivalent to AM26C32) photocoupler isolation on inputs | - |
| Type of Counter | Up / down counter, ring counter | | | - | - |
| Output Format | - | | | Differential line driver (equivalent to AM26C32) pulse/direction or forward/reverse rotation) | - |
| Counting Range (Up/Down & Ring Counter) | 16 Bit 32 Bit | 0 to 65,535 -2147483648 to +2147483647 | - | - | - |
| Output Type | 2 x transistor (5 to 24VDC / 0.5A) | | 4 x transistor (5 to 24VDC / 0.5A) | - | less than 25 mA |
| Related I/O Points | 8 | | | 4 (4 input) | 4 (2 output points occupied per high-speed output) |
| Dimensions (W x H x D) mm | 55 x 90 x 87 | 20.2 x 90 x 89 | 55 x 90 x 87 | 17.6 x 90 x 89.5 | 17.6 x 90 x 89.5 |

1-Axis Positioning

The FX2N-1PG-E and FX2N-10PG positioning modules are extremely efficient single-axis positioning modules for controlling either step drives or servo drives (by external regulator) with a pulse train.



| Model Number | FX2N-1PG-E | FX2N-10PG |
|---------------------------|-------------------------------|----------------------------------|
| Stocked Item | S | S |
| Rating | UL • cUL • CE (EMC) | |
| Applicable PLCs | FX3U / FX3UC | |
| Signal Level | 24VDC / 40 mA | 5VDC / 100 mA; 24VDC / 70 mA |
| Power Supply | 5VDC / 55 mA (from main unit) | 5VDC / 120 mA (from main unit) |
| Accessible Axes | 1 | 1 |
| Output Frequency | Max. 100 kHz | Max. 1 MHz |
| Related I/O Points | 8 | 8 |
| Weight (kg) | 0.3 | 0.2 |
| Dimensions W x H x D (mm) | 43 x 90 x 87 | 43 x 90 x 87 |
| Function | Servo / stepper pulse control | Advanced servo / stepper control |

2-Axis Positioning

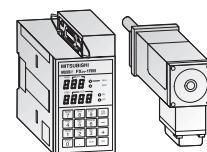
High-performance 2-axis positioning module featuring simultaneous and interpolated 2-axis positioning control. With its dedicated setup, monitor and testing software, FX Configurator-FP, all aspects of the servo system can be controlled.



| Model Number | FX3U-20SSC-H |
|-------------------------------------|---|
| Stocked Item | S |
| Rating | UL • cUL • CE (EMC) |
| Applicable PLCs | FX3U / FX3UC |
| Number of Controllable Axes | 2 axes |
| Related I/O | 8 |
| Connectable Servo Amplifier | MELSERVO MR-J3-B/MR-J3W-B/MR-J3-BS maximum 2 amplifiers can be connected; Standard cord length: Station-to-station maximum 20m, Long distance cord length: Station-to-station maximum 50m |
| Servo Bus | SSCNET III |
| Scan Cycle | 1.77 ms |
| Positioning | Method Increment / Absolute |
| | User Units PLS, μ m, 10^4 inch, mdeg |
| | Unit Magnification 1, 10, 100, and 1,000-fold |
| | Positioning Range -2,147,483,648 to -2,147,483,648 PLS |
| | Speed Units Hz, cm/min, 10deg/min, inch/min |
| Acceleration / Deceleration Process | Trapezoidal acceleration/deceleration, S-pattern acceleration/deceleration: 1 to 500 ms. |
| | Only trapezoidal acceleration/deceleration is available for interpolation |
| Starting Time | 1.6 ms or less |
| Interpolation Function | 2-axis linear interpolation, 2-axis circular interpolation |
| Power Supply | 24VDC + 20% -15% Ripple (p-p) within 5% |
| Power Consumption | 5W |
| Weight (kg) | 0.3 |
| Dimensions (W x H x D) mm | 55 x 90 x 87 |

Cam Switch

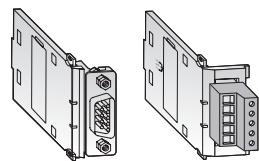
The FX2N-1RM-E-SET is often called an electronic cam module. It can be used to replace a mechanical camming system with a virtual electronic cam sequence using a resolver module.



| Model Number | FX2N-1RM-E-SET |
|-----------------------------|---|
| Stocked Item | S |
| Rating | CE (EMC) |
| Applicable PLCs | FX3U / FX3UC |
| Number of Controllable Axes | 1 using resolver F2-720RSV |
| Maximum Connectivity | 3 |
| Number of Cam Output I/O | 48 outputs (32 may be ON at one time) |
| Control Resolution | 1 revolution of 720 divisions (0.5 degrees) or 360 divisions (1 degree) |
| Response | 415 rpm with 0.5 degrees or 830 rpm with 1 degree |
| ON/OFF Frequency | 8 times per CAM profile |
| Resolver | 3000 rpm |
| Maximum Cable Length | up to 100 m |
| Power Supply | 24VDC (-15% to +10%); 300 mA (400 mA when 32 outputs are ON) |
| Related I/O Points | 8 (*1) |
| Weight (kg) | 0.5 |
| Dimensions (W x H x D) mm | 55 x 111 x 97 |

Note 1: The number of related I/O points will always be 8, regardless of how many units are attached.

FX Communications and Networking Expansion



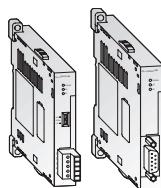
Serial Communication

These communication expansion boards allow their respective FX main units to communicate with external devices and other FX main units over a variety of serial networks.

| Model Number | FX2N-232IF | FX1N-232-BD | FX1N-422-BD | FX1N-485-BD | FX3G-232-BD | FX3U-USB-BD | FX3G-422-BD | FX3G-485-BD |
|-----------------------------|--|------------------------------------|---------------------------------------|-------------------------------|------------------------------------|---|-----------------------|-----------------------|
| Stocked Item | S | S | S | S | S | S | S | S |
| Rating | CE (EMC) | | | | | | | |
| Applicable PLCs | FX3U / FX3UC | FX1S | FX1S | FX1S | FX3G | FX3U | FX3G | FX3G |
| Interface | RS-232 with 9-pole D-SUB connector | RS-232 with 9-pole D-SUB connector | RS-422 with 8-pole mini DIN connector | RS-485 | RS-232 with 9-pole D-SUB connector | USB (Mini B) | RS-422 | RS-485 |
| Power Supply | 5VDC / 40 mA (from main unit), 24VDC / 80 mA | 5VDC / 60 mA (from main unit) | 5VDC / 60 mA (from main unit) | 5VDC / 60 mA (from main unit) | 5VDC (from main unit) | 5VDC / 15mA (from main unit), 30mA (from PC USB connectors) | 5VDC (from main unit) | 5VDC (from main unit) |
| Related I/O Points | 8 | - | - | - | - | - | - | - |
| Weight (kg) | 0.3 | 0.02 | 0.01 | 0.02 | 0.2 | 0.02 | 0.2 | 0.2 |
| Dimensions (W x H x D) (mm) | 55 x 90 x 87 | 43 x 38.5 x 22 | 43 x 38.5 x 20 | 43 x 38.5 x 22 | 35 x 51 x 17.2 | 19.6 x 46.1 x 53.5 | 35 x 51 x 14.9 | 35 x 51 x 29.2 |

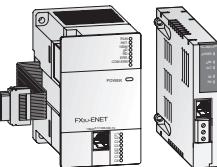
Modbus and Serial Communication Adapters

These communication special adapters support a wide range of serial communication standards including Modbus.



| Model Number | FX3U-485ADP-MB | FX3U-232ADP-MB |
|---------------------------|-------------------------------|-------------------------------|
| Stocked Item | S | S |
| Rating | UL • cUL • CE (EMC) | |
| Applicable PLCs | FX3U / FX3UC / FX3G | FX3U / FX3UC / FX3G |
| Power Supply | 5VDC / 20 mA (from main unit) | 5VDC / 30 mA (from main unit) |
| Interface | RS-485 | RS-232C |
| Communication Speed | Max. 115.2 kbps | Max. 115.2 kbps |
| Communication Distance | 500m | 15m |
| Related I/O Points | 0 | 0 |
| Weight (kg) | 0.08 | 0.08 |
| Dimensions W x H x D (mm) | 17.6 x 90 x 89.5 | 17.6 x 90 x 89.5 |

Networking Modules



Ethernet

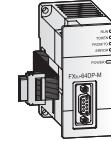
The FX3U-ENET communication module enables 8 ports of simultaneous Ethernet communication with features such as peer-to-peer, email send/receive options, and program upload/download. (The FX2NC-ENET-ADP communication special adapter is an Ethernet interface supporting 10BASE-T communication.)

| Model Number | FX3U-ENET | FX3U-ENET-ADP | FX2NC-ENET-ADP |
|--------------------------------|------------------------------|------------------------------|------------------------------|
| Stocked Item | S | S | S |
| Rating | UL • cUL • CE (EMC) | | |
| Applicable PLCs | FX3U / FX3UC / FX3G | FX3U / FX3UC / FX3G | FX1S |
| Max. Data Transmission | 1023 words x 8 | 1023 words x 4 | 16 words |
| Power Supply | 24VDC / 240 mA | Supplied from PLC | Supplied from PLC |
| Communication Cable | Ethernet with RJ45 connector | Ethernet with RJ45 connector | Ethernet with RJ45 connector |
| Communication Protocol | MC Protocol, TCP / IP / UDP | MC Protocol, TCP / IP / UDP | - |
| Related I/O Points | 8 | 0 | 8 |
| Communication With Mail Server | SMTP / POP3 | - | - |
| Maximum Transfer Rate | 100 Mbps / 10 Mbps | 100 Mbps / 10 Mbps | - |
| Maximum Segment Length | 100 m | 100 m | - |
| Weight (kg) | 0.3 | 0.1 | 0.1 |
| Dimensions W x H x D (mm) | 55 x 90 x 87 | 17.6 x 90 x 89.5 | 19 x 90 x 78 |

Profibus

PROFIBUS-DP allows for the implementation of decentralized control with comprehensive data and alarm processing capabilities. Easy setup is available by using the GX Configurator-DP software package.

| Model Number | FX3U-64DP-M | FX3U-32DP |
|----------------------------|---|-------------------------|
| Stocked Item | S | S |
| Rating | UL • cUL • CE (EMC) | |
| Applicable PLCs | FX3U / FX3UC | FX3U / FX3UC / FX3G |
| Master/Slave | Master | Slave |
| Power Supply | Internal 24VDC / Max. 155 mA | Internal 24VDC / 145 mA |
| Version | V 1.0 connector | V 1.0 connector |
| Communication Speed | Max. 12 Mbps | Max. 12 Mbps |
| Maximum Distance* | 1,200 m | 1,200 m |
| Maximum Number of Slaves | 64 / Master | - |
| Communication Distance (m) | Max. 1200m (depends on communication speed) | |
| Communication Cable | Profibus cable with Profibus-DP connector | |
| Related I/O Points | 8 | 8 |
| Dimensions W x H x D (mm) | 43 x 90 x 89 | 43 x 90 x 89 |

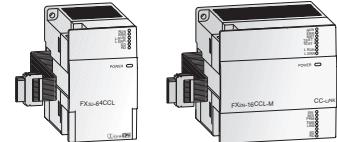


* Depends on communication speed.

CC-Link

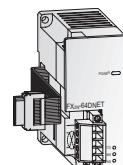
CC-Link provides a deterministic network with communication speeds up to 10Mbps

| Model Number | FX2N-32CCL | FX3U-64CCL | FX3U-16CCL-M |
|---------------------------|--|------------------------------------|---------------------|
| Stocked Item | S | S | S |
| Rating | CE (EMC) | UL • cUL • CE (EMC) | UL • cUL • CE (EMC) |
| Master/Slave | Slave | Intelligent device station (slave) | Master (V2, V1) |
| Applicable PLCs | FX3U / FX3UC. Cannot use with FX2N-32ASI-M AS-i interface master block | FX3U/FX3UC/FX3G | FX3U/FX3UC/FX3G |
| Power Supply | 5VDC / 130 mA (from main unit) 24VDC / 50 mA | 24VDC / 220 mA | 24VDC / N/A |
| Version | V 1.00 | V 2.00 / V 1.10 | V 2.00 / V 1.10 |
| I/O Points | 8 | 8 | 8 |
| Weight | 0.3 | 0.3 | 0.4 |
| Dimensions W x H x D (mm) | 43 x 90 x 87 | 55 x 90 x 87 | 55 x 90 x 87 |

**DeviceNet**

Allows the FX system to be a Group 2 slave station on a DeviceNet network.

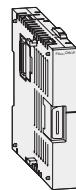
| Model Number | FX2N-64DNET |
|---------------------------|--|
| Stocked Item | S |
| Rating | UL • cUL • CE (EMC) |
| Applicable PLCs | FX3U / FX3UC |
| Master/Slave | Slave |
| Power Supply | 5VDC / Max. 12 mA (from main unit) 24VDC / 50 mA |
| I/O Points | 8 |
| Weight | 0.2 |
| Dimensions W x H x D (mm) | 43 x 90 x 87 |



FX Interfaces and Power Supplies

Interface Boards and Modules

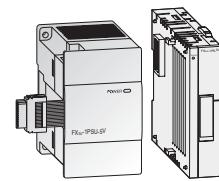
The FX Series interface boards enable connection of special adapters to the left side of the associated FX main unit. The FX2NC-CNV-IF interface adapter allows FX3UC main units to connect with the standard FXON / FX2N / FX3U right side expansion bus.



| Model Number | FX3U-CF-ADP | FX3G-CNV-ADP | FX3U-CNV-BD | FX1N-CNV-BD | FX2NC-CNV-IF |
|---------------------------|-------------------------|--|--|--------------------------|---|
| Stocked Item | S | S | S | S | S |
| Rating | CE (EMC) | | | | |
| Applicable PLCs | FX3U / FX3UC | FX3G | FX3U | FX1S | FX3UC |
| Description | CF Card special adapter | Analog and communication special adaptor | Analog and communication special adaptor | Function expansion board | Interface adapter to connect with standard FXON / FX2N / FX3U |
| Weight (kg) | 0.3 | 0.1 | 0.01 | 0.01 | 0.3 |
| Dimensions W x H x D (mm) | 45 x 90 x 74 | 14.6 x 90 x 74 | 19.6 x 46.1 x 53.5 | 43 x 38 x 14 | 90 x 14.6 x 74 |

Power Supply Modules

The FX Series power supply units are used to add power onto the 5V and 24V expansion buses when the built-in service power supplies are not sufficient.



| Model Number | FX3U-1PSU-5V | | FX3UC-1PS-5V |
|--------------------------------------|--|------|-------------------------|
| Stocked Item | S | | - |
| Rating | UL • cUL • CE (EMC) | | |
| Applicable PLCs | FX3U / FX3G | | FX3UC |
| Input Voltage | 100 - 240VAC | | 24VDC +20% - 15% |
| Input Frequency | 50 / 60 Hz | | - |
| Inrush Current | 30A max. 5 ms or less / 100VAC 65A max. 5 ms or less / 200VAC | | 30A max. 0.5 ms / 24VDC |
| Power Consumption | 20 VA max. | | 25 W max. |
| Output Current (Internal for Supply) | 24VDC | 0.3A | - |
| | 5VDC | 1A | 1A |
| Holding Time | 10 ms / 100VAC | | 5 ms |
| Weight (kg) | 0.3 | | 0.15 |
| Dimensions W x H x D (mm) | 55 x 90 x 87 | | 24.2 x 90 x 74 |

Power Supply Unit

The FX2N-20PSU 24VDC power supply unit is meant to provide a 24VDC power supply for DC powered FX main units, FX special function modules, sensors connected to the FX main units, etc.

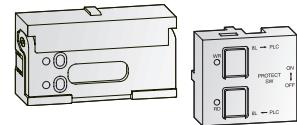


| Model Number | FX2N-20PSU | |
|--|--|--|
| Stocked Item | S | |
| Rating | UL • cUL • CE (EMC) | |
| Applicable PLCs | FX1S / FX3U / FX3UC / FX3G | |
| Ambient Temperature | 0 - 55°C (-20 - 70°C storage temperature) | |
| Ambient Relative Humidity (Non-Condensing) | 35 - 85% (35 - 90% storage humidity) | |
| Input Voltage | 100 - 240VAC | |
| Input Frequency | 50/60 Hz | |
| Fuse Rating | 3.15A (built-in) | |
| Rush Current | 60A / 200VAC max. | |
| Output Power | 24 DC ±10% / 2A maximum; 0.2A minimum | |
| Ripple Noise | 500 mVp-p or less | |
| Holding Time | 10 ms / 100VAC | |
| Protection Against Overcurrent | Actuated when current becomes 110 - 160% or more, automatic recovery when voltage drop occurs | |
| Protection Against Overvoltage | Actuated when current becomes 110-140% or more, output shutdown, no automatic recovery (diode clamp) | |
| Weight (kg) | 0.3 | |
| Dimensions W x H x D (mm) | 60 x 98 x 75 | |

Accessories

Memory Cassettes

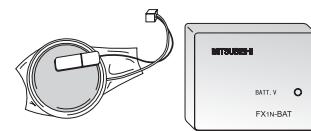
The Loader functionality allows the memory cassette to upload and download programs from and to the internal memory of the FX main units. When the memory cassette is attached to the FX main unit without uploading or downloading, the program on the memory cassette is executed. With the FX3U-FLROM-1M, 1.3MB of additional capacity is provided for symbolic information.



| Model Number | FX3U-FLROM-16 | FX3U-FLROM-64 | FX3U-FLROM-64L | FX3U-FLROM-1M | FX1N-EPPROM-8L | FX3G-EPPROM-32L |
|---------------------------|---------------|---------------|----------------|---------------------------|----------------|-----------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | CE (EMC) | | | | | |
| Applicable PLCs | FX3U / FX3UC | | | | FX1S | FX3G |
| Size | 16k steps | 64k steps | 64k steps | 64k steps +1.3MB Symbolic | 2k / 8k steps | 32k steps |
| Memory Type | Flash | Flash | Flash | Flash | EEPROM | EEPROM |
| Protect Switch | Provided | Provided | Provided | Provided | Provided | Provided |
| Data Transfer Buttons | Not Provided | Not Provided | Provided | Not Provided | Provided | Provided |
| Dimensions W x H x D (mm) | 37 x 20 x 6.1 | 37 x 20 x 6.1 | 37 x 20 x 6.1 | 37 x 20 x 6.1 | 33 x 30 x 9 | 35 X 21 X 9.6 |

Backup Batteries

Backup batteries provide enough power to store relevant data within the FX main units and modules when they are not powered.



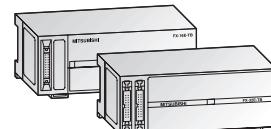
| Model Number | FX3U-32BL | FX1N-BAT |
|-----------------|---------------------|----------|
| Stocked Item | S | S |
| Applicable PLCs | FX3U / FX3UC / FX3G | FX1S |

Interface Converter

Interface converter is necessary to bridge two different communication types.



| Model Number | FX-USB-AW | FX-232AWC-H |
|---------------------------|-------------------------|-----------------------------|
| Stocked Item | S | - |
| Rating | CE (EMC) | |
| Applicable PLCs | FX1S/FX3U/FX3UC/FX3G | FX1S/FX3U/FX3UC/FX3G |
| Applications | USB to RS-422 converter | RS-422 to RS-232C converter |
| Dimensions (W x H x D) mm | 14 x 20 x 63 | 25 x 80 x 60 |



Terminal Blocks

Remote terminal blocks allow I/O modules to be placed at the point of control. The blocks are connected with FX3UC main units using connector-type I/O cabling.

| Model Number | FX-16E-TB | FX-16E-TB/UL | FX-16EX-A1-TB | FX-16EX-A1-TB/UL | FX-16EYR-ES-TB/UL |
|-------------------------------|----------------|--------------|---------------|------------------|-------------------|
| Stocked Item | - | S | - | - | S |
| Rating | - | UL • cUL | - | - | UL • cUL |
| Applicable PLCs | FX3UC | | | | |
| Max. Number of Inputs/Outputs | 16 | 16 | 16 | 16 | 16 output |
| Integrated Inputs (Sink) | 16 (24VDC) | 16 (24VDC) | 16 (120VAC) | 16 (120VAC) | - |
| Integrated Outputs | - | - | - | - | 16 |
| Output Type | - | - | - | - | Relay |
| Switching Voltage (Max.) | - | - | - | - | 240VAC / 30VDC |
| Max. Output Current | Per Output (A) | - | - | - | 2 |
| Current Per 4 Outputs (A) | - | - | - | - | 8 |
| Dimensions (W x H x D) mm | 150 x 55 x 45 | | | | |

| Model Number | FX-16EYS-ES-TB/UL | FX16EYT-TB | FX-16EYT-ES-TB/UL | FX-16EYT-ESS-TB/UL | FX-32E-TB/UL | FX-TB40MIN |
|-------------------------------|-------------------|-----------------|-------------------|--------------------|--------------|--------------|
| Stocked Item | - | - | - | - | - | S |
| Rating | UL • cUL | - | UL • cUL | | | - |
| Applicable PLCs | FX3UC | | | | | FX3U-2HC |
| Max. Number of Inputs/Outputs | 16 output | 16 | 16 output | 16 output | 32 | 40 |
| Integrated Inputs (Sink) | - | - | - | - | 32 (24VDC) | - |
| Integrated Outputs | 16 | 16 | 16 | 16 | - | - |
| Output Type | Triac (SSR) | Transistor Sink | Transistor Source | Transistor Sink | - | - |
| Switching Voltage (Max.) | 242VAC | 30VDC | 30VDC | 30VDC | - | - |
| Max. Output Current | Per Output (A) | 0.3 | 0.5 | 0.5 | - | - |
| Current Per 4 Outputs (A) | Per 4 Outputs (A) | 0.8 | 0.8 | 0.8 | - | - |
| Dimensions (W x H x D) mm | 150 x 55 x 45 | | | | | 80 x 87 x 76 |

Hand-Held Programmer

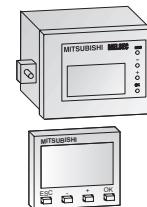
A small, industrial programming and maintenance tool for the FX Series. This unit can perform program uploads/downloads and store up to 15 programs in its internal memory. Keywords can be registered, deleted or canceled in applicable PLCs. Program monitoring and data device adjustment functionality is also available. To stay up to date the latest firmware can be downloaded on a PC then installed via the USB port. PLC programs on the PC can also be transferred via USB, eliminating the need for peripheral devices.



| | |
|-----------------------------|-----------------------------------|
| Model Number | FX-30P |
| Stocked Item | S |
| Rating | UL • cUL • CE |
| Applicable PLCs | FX1S / FX3G / FX2N / FX3U / FX3UC |
| Power Supply | 5VDC / 155mA |
| Display / Characters | LED / 21 x 8 characters |

Display Modules

Display modules are attached to the front face of the main unit and enable monitoring and adjustment of PLC data services.



| Model Number | FX3G-5DM | FX3U-7DM | FX3U-7DM-HLD | FX1N-5DM | FX-10DM-E |
|--------------------------------------|-------------------------|-------------------------|---------------------|----------------------|------------------------------------|
| Stocked Item | S | S | S | S | S |
| Rating | CE (EMC) | CE (EMC) | - | CE (EMC) | CE (EMC) |
| Applicable PLCs | FX3G | FX3U | FX3U | FX1S | FX1S / FX3U / FX3UC |
| Display | LCD (with backlight) | LCD (with backlight) | - | LCD (with backlight) | LCD (with backlight) |
| Resolution | 16 characters x 4 lines | 16 characters x 4 lines | - | - | 2 x 16 characters (80 x 16 pixels) |
| Power Supply (From Main Unit) | - | 5VDC / 20 mA | - | 5VDC ±5% / 110 mA | 5VDC ±5% / 220 mA |
| Extension Cable | - | - | Included | - | - |
| Weight | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 |
| Dimensions W x H x D (mm) | 49.4 X 39.4 X12 | 48 x 35 x 11.5 | 66.3 x 41.8 x 13 | 40 x 32 x 17 | 96 x 62 x 32 |

Connection Cables

The cables listed in the following tables are used for FX Series PLC programming, positioning applications block connections and interface conversion.

| | | | | |
|---------------------|----------------------|-----------------------------|-----------------------------|----------------------------|
| Model Number | F2-RS-5CAB | FX-232CAB-1 | SC09 | GT09-C30USB-5P |
| Stocked Item | - | S | S | S |
| Application | FX2N-1RM to resolver | PC (RS-232) to GOT (RS-232) | PC (RS-232) to PLC (RS-422) | PC (USB) to PLC (Mini USB) |
| Length (m) | 5.0 | 3.0 | 3.0 | 3.0 |



Connection Cables for FX3UC Remote Terminal Blocks

| Model Number | FX-16E-150CAB | FX-16E-300CAB | FX-16E-500CAB | FX-16E-150CAB-R | FX-16E-300CAB-R | FX-16E-500CAB-R | FX-40E-300CAB-R |
|---------------------|-----------------------------------|----------------------|----------------------|------------------------|------------------------|------------------------|--|
| Stocked Item | S | - | - | S | S | - | S |
| Application | FX3UC to remote FX terminal block | | | | | | Connection cable to FX-TB40MIN terminal block used with FX3U-4HC |
| Length (m) | 1.5 | 3.0 | 5.0 | 1.5 | 3.0 | 5.0 | 3.0 |

Connection Cables for Extension Bus

| Model Number | FXON-30EC | FXON-65EC | FX2N-GM-65EC | FX2N-GM-5EC |
|---------------------|------------------|------------------|---------------------|--------------------|
| Stocked Item | S | S | - | - |
| Application | PLC bus cable | PLC bus cable | GM bus cable | GM bus cable |
| Length (m) | 0.3 | 0.65 | 0.65 | 0.05 |

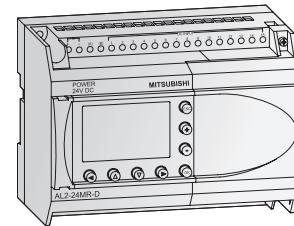


Connection Cables for FX3UC Main Units

| Model Number | FX2NC-100MPCB | FX2NC-100BPCB | FX2NC-10BPCB1 |
|---------------------|----------------------------------|---------------------------------------|--|
| Stocked Item | S | - | - |
| Application | 24VDC power cable for main units | 24VDC power cable for extension units | Power crossover cable for input extension blocks |
| Length (m) | 1 | 1 | 0.01 |

Sequence Controllers - Alpha2 Series

Controllable I/O: 14 - 28 points
Main Unit I/O: 14/24 points



The Alpha Class

The Alpha2 is a controller designed to address simple control applications at the lower end of the industrial and commercial control markets. With simple analog processing integrated, a straightforward programming style and a built-in display, the Alpha2 is a highly affordable control solution.

- Integrated analog processing
- Simple programming style
- Relay and Transistor output options
- Analog input and output options
- High-speed counters up to 1 kHz
- Language support for 7 different languages
- Display area for messages and function block data
- Built-in LCD screen for programming panel or operator interface functions
- Programming with Alpha VLS

Product Details

All-in-one CPU, power supply, display and I/O. Expansion options include expansion boards for communication, high-speed counting or extra I/O.

Programming

Graphical "function block" style programming with drag and drop icons creates an intuitive environment for the user. The programming software also includes a simulation mode to allow off-line program testing without any hardware connected.

Full Featured calendar and clock

The Alpha family has a calendar and clock with automatic summer and winter time switching.

Expansion

Four expansion boards are currently available 4 digital 24V DC inputs with two integrated counters, 4 digital 240V AC/DC inputs, 4 relay outputs and 4 transistor outputs.

Applications

The Alpha2 can be fitted to a range of lower end of the industrial and commercial control markets. Typical applications are listed below.

- Lighting control
- Heating ventilation and air conditioning (HVAC)
- Lighting
- Pump controllers
- Building automation
- Alarms and security systems

Alpha Main Units

| Model Number | AL2-10MR-A | AL2-10MR-D | AL2-14MR-A | AL2-14MR-D | AL2-24MR-A | AL2-24MR-D |
|----------------------------|-----------------------------|--|-----------------|--------------------------------------|-----------------|--------------------------------------|
| Stocked Item | S | S | S | S | S | S |
| Rating | UL • cUL • CE (EMC) | | | | | |
| Integrated Inputs/Outputs | 10 | 10 | 14 | 14 | 24 | 24 |
| Digital Inputs | 6 | 6 | 8 | 8 | 15 | 15 |
| Analog Inputs | - | 6 | - | 8 | - | 8 |
| Channels | - | 6 | - | 8 | - | 8 |
| Integrated Outputs | 4 | 4 | 6 | 6 | 9 | 9 |
| Max. Power Consumption (W) | 4.9 | 4.0 | 5.5 | 7.5 | 7.0 | 9.0 |
| Typical Power Consumption | AII I/O (W) ON / OFF (W) | 3.5 / 1.85 240VAC 3.0 / 1.55 120VAC | 2.5/0.75 | 4.5 / 2.0 240VAC 3.5 / 1.5 120VAC | 4.0 / 1.0 | 5.5 / 2.5 240VAC 4.5 / 2.0 120VAC |
| Weight (kg) | 0.2 | 0.2 | 0.3 | 0.3 | 0.35 | 0.3 |
| Dimensions (W x D x H) mm | 71.2 x 90 x 52 | 71.2 x 90 x 52 | 124.6 x 90 x 52 | 124.6 x 90 x 52 | 124.6 x 90 x 52 | 124.6 x 90 x 52 |

Environmental Specifications

| | |
|------------------------------|--|
| General Specifications | Alpha2 |
| Ambient Temperature | Display: -10 to 55 °C, Hardware: -25 to 55 °C (storage temperature: -30 to +70 °C) |
| Protection Rating | IP20 |
| Noise Immunity | 1000 Vpp with noise generator; 1µs at 30 - 100 Hz, tested by noise simulator |
| Dielectric Withstand Voltage | 3750VAC, >1 min. according to EN60730 |
| Allowable Relative Humidity | 35 - 85% (no condensation) |
| Shock Resistance | Complies to IEC 68-2-27: 147 m/s ² acceleration, 11 ms 3 x 3 directions |
| Vibration Resistance | Direct Mounting: Complies to IEC-2-6: 19.6 m/s ² acceleration, 80 min. in each direction |
| | DIN Rail Mounting: Complies to IEC-2-6: 9.8 m/s ² acceleration, 80 min. in each direction |
| Insulation Resistance | 500VDC, 7 MΩ Complies to EN60730-1 |
| Ambient Conditions | No corrosive gasses, no dust |

Electrical Specifications

| Power Supply Specifications | | DC Powered Models (AL2-MR-D) | AC Powered Models (AL2-MR-A) |
|--|--|---|---------------------------------------|
| Power Supply | | 24VDC (+20% / -15%) | 100-240VAC (+10% / -15%), 50/60 Hz |
| Inrush Current at ON | | 7.0A (at 24VDC) | 6.5A (at 240VAC) |
| Allowable Momentary Power Failure Time | | 5 ms | 10 ms |
| Digital Inputs | | | |
| Input Voltage | | 24VDC (+20% / -15%) | 100-240VAC (+10% / -15%), 50/60 Hz |
| Input Current | Sink: 5.5mA, 24VDC AL2-10MR-D (I01 - I06) AL2-14MR-D/AL2-24MR-D (I01 - I08/ I09 - I15) | I01-I08 0.13mA / 120VAC (*1) 0.25mA / 240VAC (*1) | |
| | Source: 6.0mA, 24VDC AL2-10MR-D (I01 - I06) AL2-14MR-D/AL2-24MR-D (I01 - I08) | I09 - I15 0.15mA / 120VAC (*1) 0.29mA / 240VAC (*1) | |
| | Source: 5.5mA, 24VDC AL2-14MR-D/AL2-24MR-D (I09 - I15) | | |
| Response Time | OFF - ON | 10 - 20 ms | 35-85 ms, 120VAC 25-55 ms, 240VAC |
| | ON - OFF | 10 - 20 ms | 35-85 ms, 120VAC 50-130 ms, 240VAC |
| Analog Inputs | 6 (10MR-D); 8 (14 & 24MR-D) | - | |
| Analog Input Range | 0-500 | - | |
| Resolution | 9 bit, (10 V/500) | - | |
| Conversion Speed | 8 | - | |
| Input Voltage | 0-10VDC | - | |
| Input Impedance | 142 ±5% | - | |
| Accuracy | ±5% (0.5VDC) | - | |

Note:

1. Current leakage from sensors connected to the inputs might provide enough current to turn the controller ON. Do not use 2-wire sensors.

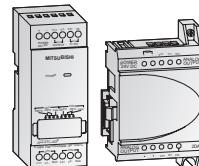
| | |
|--------------------------------------|---|
| Output Specifications | Alpha2 |
| Type | Relay |
| Switching Voltage (Max.) | 250VAC, 30VDC |
| Rated Current | 10M, 14M: 8A/com 24M (001-004): 8A/com 24M (005-009): 2A/point |
| Max. Switching Load - Inductive Load | 14M, 24M: 249 VA/250VAC, 373 VA/250VAC 24M: 93 VA/125VAC, 93 VA/250VAC |
| Minimum Load | 10mA, 5 V DC |
| Response Time | <10 ms |

Programming Specifications

| System Specifications | Alpha2 |
|----------------------------------|---|
| Programming Method | Function block |
| Program Capacity | 200 function blocks or 5000 bytes |
| Program Processing | Cyclic processing of the stored program |
| Number of Available Instructions | 38 different function blocks |
| Program Storage | Integrated EEPROM and optional additional EEPROM cassette |
| Data Storage | At voltage loss the current status of values, running time meters, and real-time data are stored for up to 20 days (at temperatures of 0 to 25 °C) using capacitors |
| Processing Time | 1 ms + 20µs /logic instruction (complex commands 500/µs instruction) |
| Real-Time Clock | Seconds, minutes, hours, day of week, month, year (4-digit); accuracy: 5 s / day; automatic daylight savings time adjustment |
| Program Protection | 3 levels using program and keys |

Alpha Expansion Options

Expansion/adapter modules significantly increase the range of applications for the Alpha2.
(Expansion modules are inserted directly into the Alpha2 and therefore do not take up any further space. The AL-2TC-ADP and AL2-2PT-ADP adapters are connected externally to the AL2.)

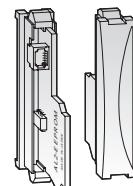


| Model Number | Descriptions | Stocked Item | Rating |
|--------------|--|--------------|---------------|
| AL2-4EX* | 4 digital inputs (24VDC) with 2 selectable high-speed counter (1kHz) | S | UL • cUL • CE |
| AL2-4EX-A2* | 4 digital inputs (240VAC) | S | |
| AL2-4EYR* | 4 relay outputs (2A) | - | |
| AL2-4EYT* | 4 transistor outputs (1A) | - | |
| AL2-2TC-ADP | 2 Channel TC Input Adapter Module | S | |
| AL2-2PT-ADP | 2 Channel PT Input Adapter Module | S | |
| AL2-2DA* | 2 Channel Digital to Analog Expansion Module | S | |

*AL2 Expansion Cassettes cannot be used with AL2-10M** controllers due to size constraints.

Alpha Memory Cassette

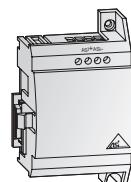
The memory cassette allows the memory cassette to upload and download programs from and to the internal memory of the Alpha2. When the memory cassette is attached to the Alpha2 without uploading or downloading, the program on the memory cassette is executed.



| Model Number | AL2-EEPROM2 |
|-------------------------|---------------------|
| Stocked Item | S |
| Rating | - |
| Memory Type | EEPROM |
| Memory Size | 5000 bytes |
| Number of Program Steps | 200 function blocks |
| Non-Volatile Storage | Yes |
| Write Protection | Yes |

Alpha AS-i Interface

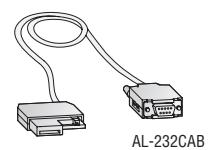
The AL2-ASI-BD in combination with an Alpha2 controller facilitates the data communications via an AS interface system. The AL2-ASI-BD is attached to an Alpha2 series module and forms a slave unit.



| Model Number | AL2-ASI-BD |
|------------------------------|-------------------------------------|
| Stocked Item | S |
| Rating | UL • cUL • CE (EMC) |
| Module Type | Slave Module |
| Number of I/O Points | 4 inputs; 4 outputs |
| External Power Supply | 30.5VDC (AS-Interface power supply) |
| External Current Consumption | Max. 40 mA |
| Communication Protocol | AS-i standard |
| Weight | 0.5 |
| Dimensions | 53.1 x 90 x 24.5 |

Alpha2 Interface Cables

The AL-232CAB is an RS-232C interface cable. It connects the Alpha2 controller to a personal computer running the programming software for the Alpha2 controller. The AL2-GSM-CAB is an RS-232C interface cable that enables the Alpha2 to connect to a GSM modem or other equipment including personal computer, graphic operator terminal, or other serial devices.



| Model Number | AL-232CAB | AL2-GSM-CAB |
|--------------|------------------------------|---|
| Stocked Item | S | S |
| Rating | - | - |
| Connector | 9-pin D-SUB female connector | 9-pin D-SUB male connector |
| Application | Alpha2 to PC | GSM modem or other serial communication |
| Length (m) | 2.5 | 1.5 |



Note: The above cables cannot be used with the AL2-10MR-series.

Software

GX Works2

GX Works2, as part of iQ Works, is the next generation configuration and programming software for FX, L and iQ Platform / Q Series controllers. Following the goal of maximum efficiency, GX Works2 allows developers to mix and match between five different programming languages, each conforming to a different programming style. Developers can select their preferred language which is best suited for the application. This environment conforms to IEC1131-3 standards, also allowing parts of projects to be saved in Libraries for use within future applications.

| Type | Model Number | Description | Stock Status | Notes |
|----------|---------------------------|----------------------------------|--------------|---|
| Software | GX-WORKS2-C1 | Single User License of GX Works2 | S | These are the part numbers to use if a customer wants to purchase the GX Works2 programming software only, without the full iQ Works suite. |
| | GX-WORKS2-C5 | 5 User License of GX Works2 | S | |
| | GX-WORKS2-C10 | 10 User License of GX Works2 | - | |
| | GX-WORKS2-C25 | 25 User License of GX Works2 | - | |
| | GX-WORKS2-C50 | 50 User License of GX Works2 | - | |
| | GX-WORKS2-C100 | 100 User License of GX Works2 | - | |
| SMA | GX-WORKS2-C1-SMA | SMA for GX-Works2-C1 | - | These are the part number to order an SMA for the GX Works2 part numbers. Updates will be provided electronically. |
| | GX-WORKS2-C5-SMA | SMA for GX-Works2-C5 | - | |
| | GX-WORKS2-C10-SMA | SMA for GX-Works2-C10 | - | |
| | GX-WORKS2-C25-SMA | SMA for GX-Works2-C25 | - | |
| | GX-WORKS2-C50-SMA | SMA for GX-Works2-C50 | - | |
| | GX-WORKS2-C100-SMA | SMA for GX-Works2-C100 | - | |

USB and Serial Connection Options

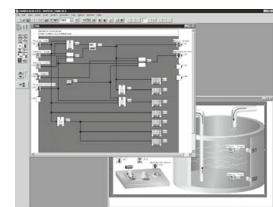
Use the FX-USB-AW (USB option) and/or the GT09-C30USB-5P(USB), SC09 (RS-422), GT01-C30R2-9S (RS-232) cables for programming controllers.

FX PLC Configuration Software

| Model Number | Description | Model | Applicable For |
|------------------------|---------------------------------|--------------------|---|
| SW1D5C-FXENET-E | FX3U-ENET configuration tool | FX-Configurator-EN | Windows® 95/98/ME/NT/2000/XP/Vista/Windows® 7 (32bit and 64bit) |
| SW-FXSSC-0-E | FX3U-20SSC-H configuration tool | FX-Configurator-FP | |
| SW7D5C-PROFID-E | FX3U-64DP-M configuration tool | FX-Configurator-DP | |

Alpha Programming Software

AL-PCS/WIN is the standard programming and documentation software for all Alpha Series controllers and provides an easy to use graphical programming environment. Program elements are placed on the function block diagram with visible wires to connect them and the I/O terminals. Monitoring functions with optional pictures of the user's application in the background are also available.



| Model Number | AL-PCS/WIN |
|-----------------------|---|
| Series | Alpha Series |
| Language | 7 languages (English/German/French/Italian/Spanish/Swedish/Russian) |
| Applicable For | Windows® 95/98/ME/NT/2000/XP |

