MITSUBISHI

PROGRAMMABLE LOGIC CONTROLLERS

FX FAMILY

Expanding the Boundaries

The world of micro programmable logic controllers is growing with ever new and more powerful realities.

FXseries Programmable Logic Controllers

Power + Security + Control

ISO 9001

ISO 14001

Mitsubishi Electric Corpration Himeji Works is a factory certified for ISO14001 (standards for environmental management systems)
Registration number: EC97J1234
Registered date: March 24,1998
Date of registration: March 24,1998

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POSITIONING CONTROLLER

GRAPHIC OPERATION TERMINAL

Programmable Logic Controller Lineup

Mitsubishi Electric micro programmable logic controllers are expanding the boundaries of traditional micro programmable logic controller applications.

From the extremely compact FX1S and FX1N Series to the highly advanced FX2N Series, Mitsubishi Electric has a perfectly sized control solution to satisfy a wide variety of needs. The diverse lineup of FX family PLCs can supply reliable performance in a package to fit your system requirements.

(See page 14)

Performance

For High Speed Processing and Good Extendibility

For General Purpose Applications at a Reasonable Cost

For Limited Installation Space Applications at the Best Price

FX1S

The FX1S Series PLC is the card size PLC suitable for control in small environments. The excellent performance, serial communication functions, and compact size allow it to be used in places where conventional compact PLCs could not previously be installed.

High End Processing with Connector Type I/O

FX2NC

The FX2NC Series PLC has achieved spectacular downsizing while retaining the FX2N Series powerful feature set. The connector type I/O reduces wiring costs and maintenance time.

FX2N

The FX2N Series PLC is the most advanced model of the FX Series.
With unmatched speed, advanced functions, analog options and positioning control, the FX2N is the choice for many applications from 16 to 256 I/O.

FX1N

The FX1N Series PLC is a popular choice for control of up to 128 points. Because the FX1N Series PLC has extendibility for I/O, analog control, and communication/link functions, it can be used in a wide range of general sequence control solutions.

Control Scale

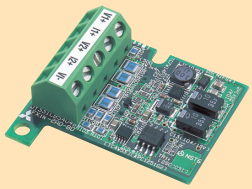
Analog Lineup

The Mitsubishi A/D units convert analog values from diversified sensors or external equipment into digital values for use by the FX Series Controllers.

The Mitsubishi D/A units convert digital values into analog values for output to external equipment. Blocks for inputs of temperature sensors such as thermocouple and Pt100 are also available.

(See page 41)

Analog Input



FX1N-2AD-BD

A/D

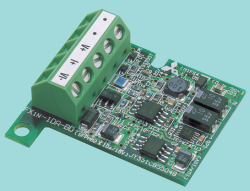
Programmable Logic Controllers

FX1S/FX1N Series

D/A

Analog Output

FX1N-1DA-BD



Analog Input

FX2N-2AD

FX2N-4AD

A/D

FX0N-3A

Programmable Logic Controllers

FX1N Series

Analog Output

FX2N-2DA

Temperature Input

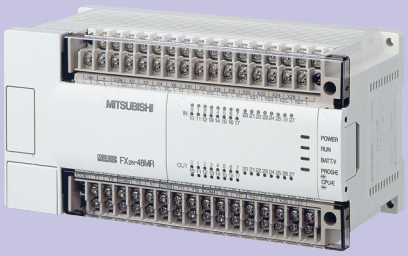
FX2N-8AD

FX2N-4AD-PT

FX2N-4AD-TC

FX2N-2LC

A/D



FX2N Series

FX2NC Series

D/A

FX2N-4DA

IN

OUT

Signal Converter

LF2-SA

LF2-FV

LF2-SL

*A/D: Analog to Digital Conversion. D/A: Digital to Analog Conversion.

Positioning Lineup

FX Series PLCs offer built-in positioning control for up to two axes. For more advanced positioning, a wide range of extension blocks or stand alone positioning controllers are available at reasonable prices.

The Positioning Controller lineup can execute complicated control, multi-axis control, and both linear and circular interpolation.

(See page 50)

Programmable Logic Controller

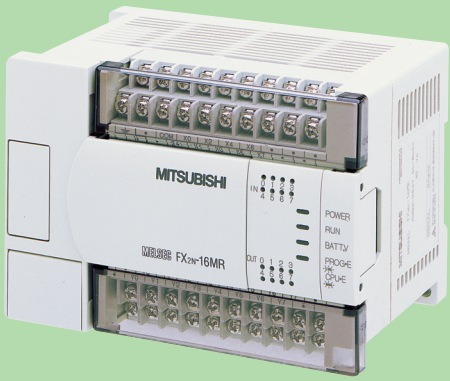
Positioning Control Instructions

FX1S/FX1N Series
Two Axes Max. 100kHz

FX2N/FX2NC Series
Two Axes Max. 20kHz

Programmable Logic Controller

Optional Module Connection



FX2N Series

Pulse Output Module

FX2N-1PG-E
Max. 100kHz

FX2N-10PG
Max. 1MHz

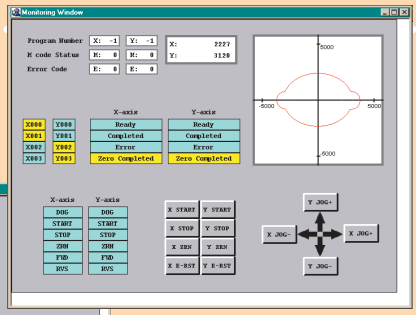
FX2NC Series

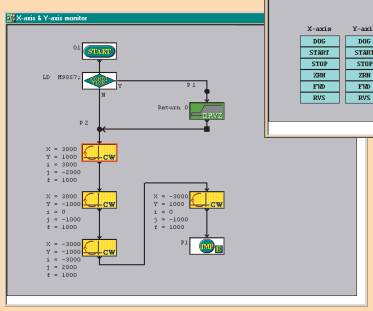
Positioning Controller

FX2N-10GM
Max. 200kHz

FX2N-20GM
Two Axes Max. 200kHz
(Interpolation: Max. 100kHz)

VPS Software





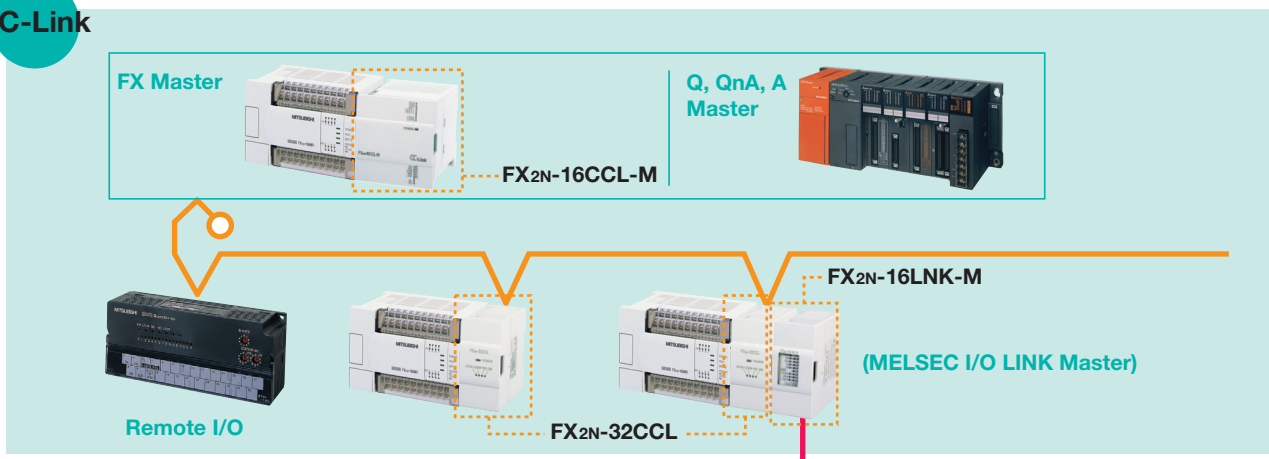
Communication Lineup

**The FX Series connects to open networks for use in the most demanding applications.
In addition, the FX Series provides an easy data link with RS-232C and RS-485 serial communication.**

(See page 54)

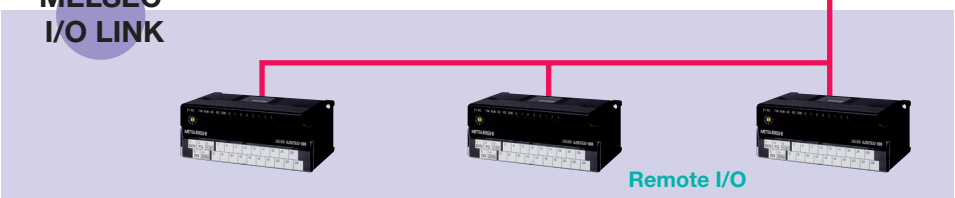
Open Network

CC-Link

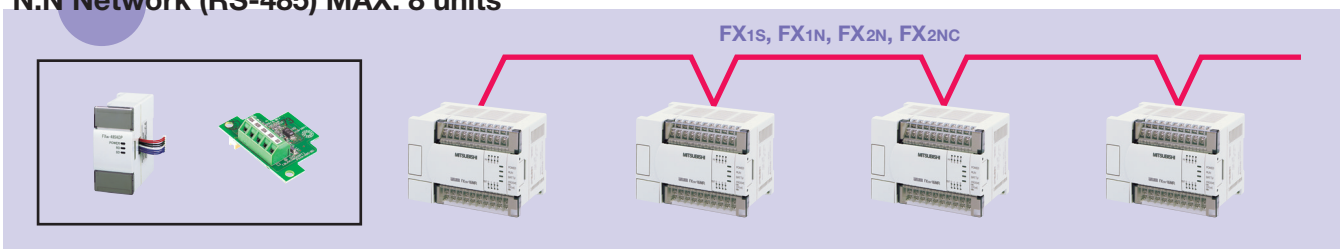


Proprietary Network

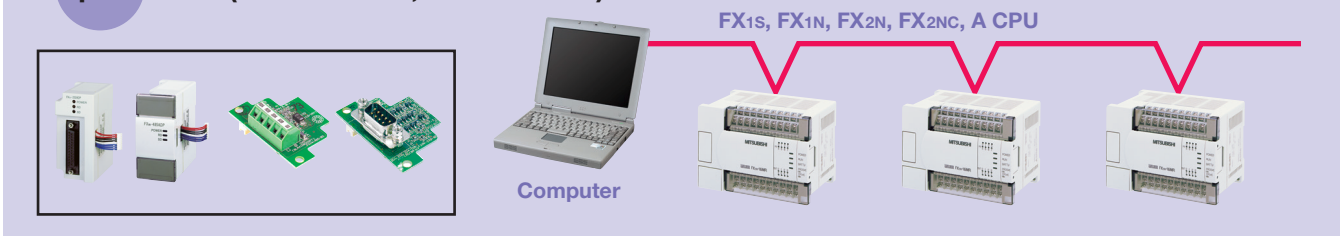
MELSEC I/O LINK



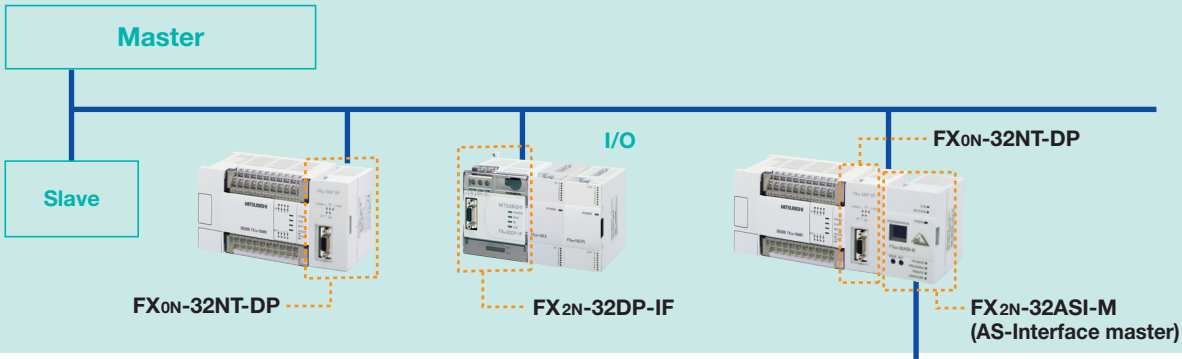
N:N Network (RS-485) MAX. 8 units



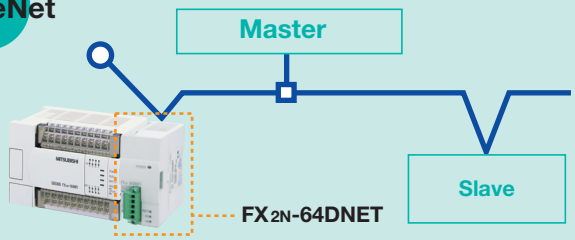
Computer Link (RS-232C/1:1, RS-485/1:16)



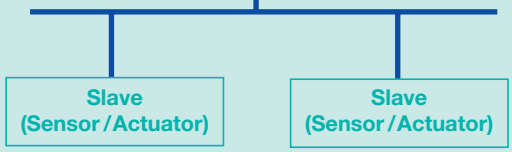
Profibus



DeviceNet



AS-i Network



Parallel Link (RS-485)

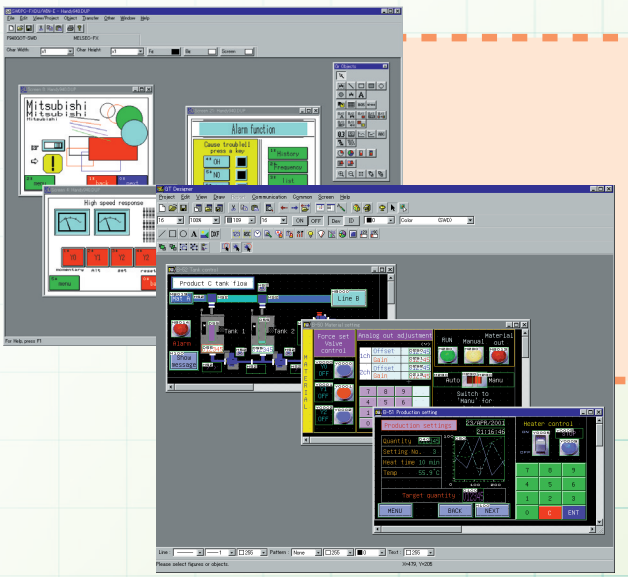
No Protocol Communication (RS-232C, RS-485)

Graphic Operation Terminal Lineup

Display Units have become an integral link between operators and the machines they are controlling. The GOT Series is constantly improving performance and adding new functions to better relations between humans and machines.

(See page 66)

FX-PCS-DU/WIN-E

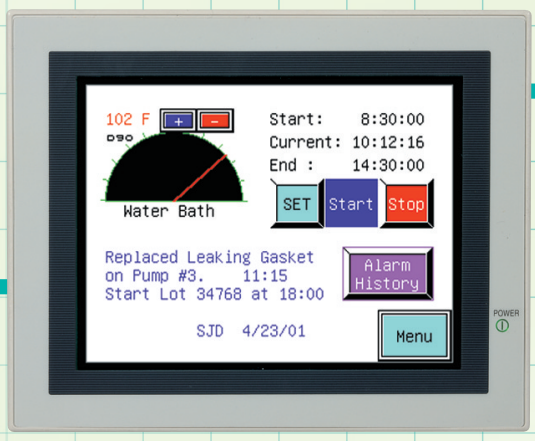


Advanced Screen Creation Software

SW□D5C-GOTR-PACKE

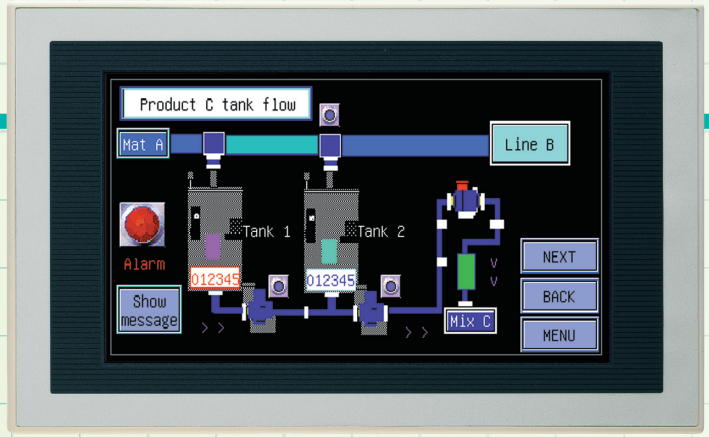
F930GOT (4.4" Display)

The F930GOT has good message display capabilities with excellent numerical value setting and monitoring functions.



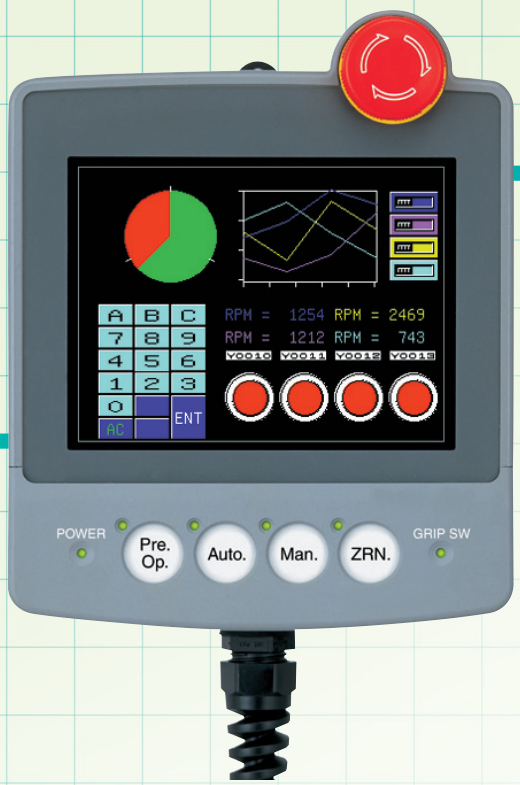
F940GOT (5.7" Display)

The most popular of the standard sizes, the F940GOT is a versatile performer featuring advanced display functions, alarm handling capability, and PLC sequence program editing.



F940WGOT Wide (7" Display)

The wide and clear display offers the opportunity to display additional information onscreen or to enlarge buttons for easy data entry.



F940GOT Handy (5.7" Display)

The Handy GOT boasts all the functionality of the F940GOT in a self contained portable unit. The Handy GOT can be held by hand, installed on a flat surface or hung on a wall.

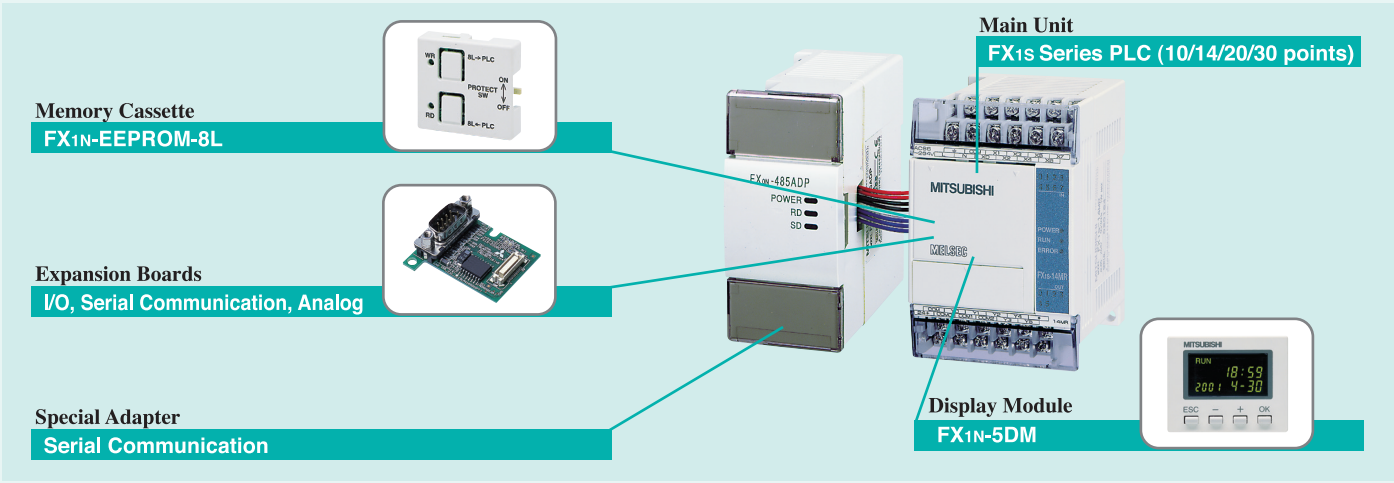
These units are especially useful to monitor and edit timer, counter, and data register values.

FX-10DU-E

FX-10DM-E

FX1S Series

The FX1S Series PLC boasts excellent features in an ultra small package. The FX1S Series PLC is the choice for cost conscious customers looking for powerful control in a limited I/O range. Providing up to 30 I/O and the ability to transfer data via RS serial communication, the FX1S Series PLC can be used in applications where conventional compact PLCs have previously fallen short.

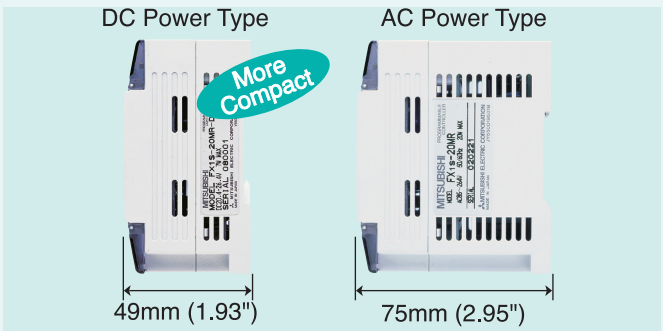


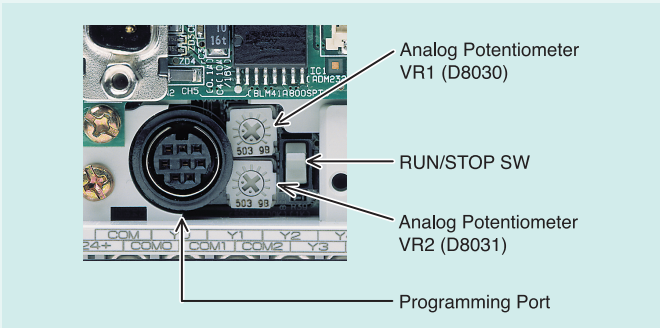
Why Buy the FX1S?

Control Scale
10 to 30 points (main unit: 10/14/20/30 points)
Features
1. Compact with Good Cost Performance
The display module and expansion boards enable easy system upgrades.
2. High Speed Operation
Basic instruction: 0.55 to 0.7 μs/instruction,
Application instruction: 3.7 to several 100 μs/instruction
3. Reliable and Spacious Memory Specifications
EEPROM memory for 2000 steps. Battery free, maintenance free.
4. Diversified Device Ranges
Auxiliary relay: 512 points, Timer: 64 points, Counter: 32 points, Data register: 256 points

Real Time Clock
Use the standard issue Real Time Clock for time dependent applications.
Networking Capabilities
Expansion boards make networking via RS-232C or RS-485 easy.
Analog Input/Output
Expansion boards can supply 2 analog input or 1 analog output channels.
Wide Range Power Supply
The wide tolerance AC power supply accepts normal supply voltages from anywhere in the world (85 to 264V AC).
DC Power Supply units are available (24V DC).

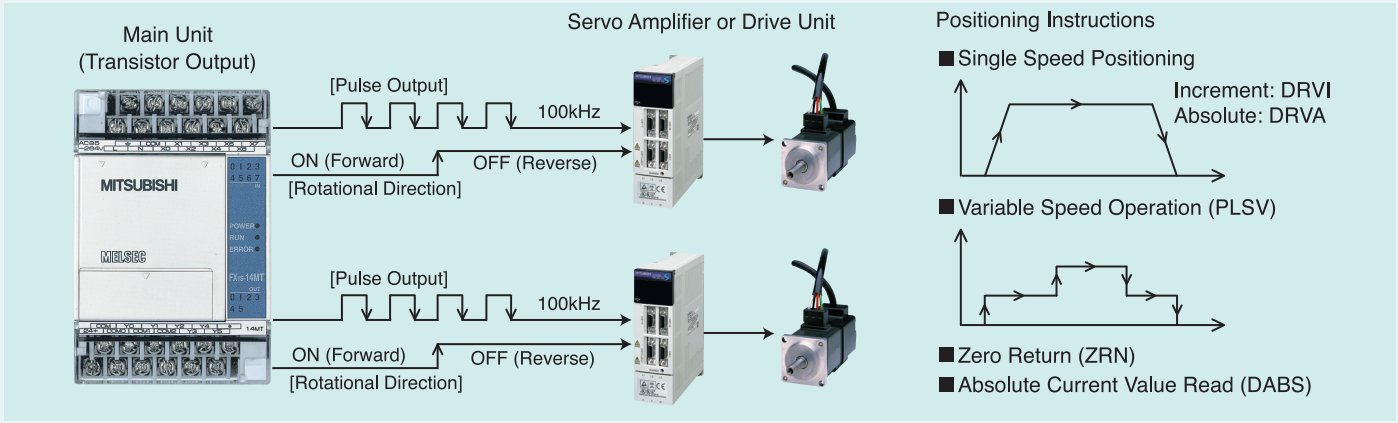
Windows® Based Software
Programs can be developed quickly and easily using GX Developer or FX-PCS/WIN-E Software.
Easy Installation
Use the DIN Rail or the convenient mounting holes for direct panel mounting.
Operator Interfaces
Choose from a complete line of Operator Interfaces that can be connected for data editing and display.
Analog Potentiometers
Easily change timer settings with these front panel potentiometers.





Positioning and Pulse Output Functions

The PLC can output 2 points of 100kHz pulses simultaneously.
The PLC is equipped with 7 positioning instructions including Zero Return, Absolute Current Value Read, Absolute or Incremental Drive, and pulse output controls.



System Upgrade by Expansion Board or Display Module

Expansion boards can be used to add communication functions such as RS-232C, RS-485, or RS-422, to add analog I/O, or to add digital I/O.
The display module can monitor/edit timers, counters and data registers and can be used in conjunction with expansion boards
(see picture below at far right).

Base Unit

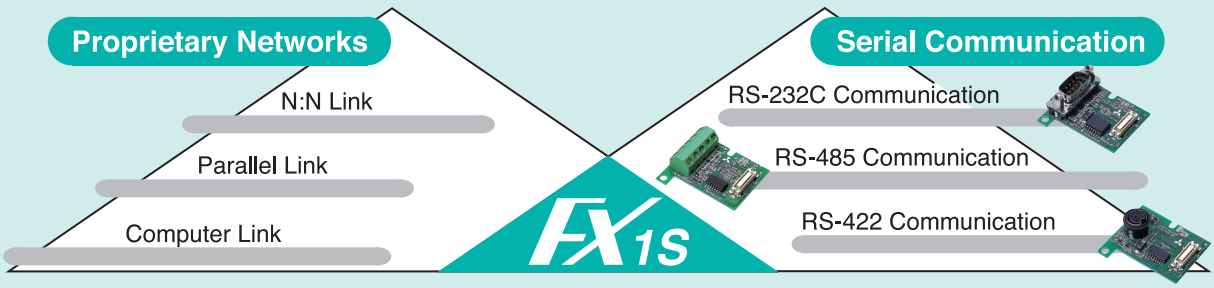
With Display Module

With Expansion Board

With Display Module
and Expansion Board

FX1S Series

Network Communication
Diversified communications and data links can be realized by connecting expansion boards or the special adapters.



Other Functions

Built-in 24V DC Service Power Supply	When using AC power supply type, the service power supply of 24V DC, 400mA can be used for the external equipment such as sensors or other devices.
Real Time Clock	A Real Time Clock is standard on all FX1S Series PLCs. Time setting and comparison instructions are easy to operate.
Hour Meter	The Hour Meter function provides valuable information for process tracking and machine maintenance requirements.
Constant Scan	Define your operation cycle for applications requiring constant scan times.
Input Filter Adjustment	The input filter can be used to smooth irregularities in input signals (X00 to X17 in the main unit).
Device Comment Registration	Device comments can be registered in the program memory.
On-line Program Editing	Change your programs Online without losing time by stopping your operation.
RUN/STOP Switch	Front panel RUN/STOP Switch for easy operation.
Remote Maintenance	Programs and data can be monitored, uploaded, or downloaded to the programming software in remote locations via modem communication.
Password Protection	Protect your programs using an 8-digit password.

AC Power, 24V DC Input Type

Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX1S-10MR-ES/UL	10	6	Sink/Source selectable	4	Relay	60 x 75 x 90 (2.4 x 3.0 x 3.5)
	FX1S-10MT-ESS/UL					Transistor (Source)	
	FX1S-14MR-ES/UL	14	8	Sink/Source selectable	6	Relay	60 x 75 x 90 (2.4 x 3.0 x 3.5)
	FX1S-14MT-ESS/UL					Transistor (Source)	
	FX1S-20MR-ES/UL	20	12	Sink/Source selectable	8	Relay	75 x 75 x 90 (3.0 x 3.0 x 3.5)
	FX1S-20MT-ESS/UL					Transistor (Source)	
	FX1S-30MR-ES/UL	30	16	Sink/Source selectable	14	Relay	100 x 75 x 90 (3.9 x 3.0 x 3.5)
	FX1S-30MT-ESS/UL					Transistor (Source)	

FX1S Series

24V DC Power, 24V DC Input Type

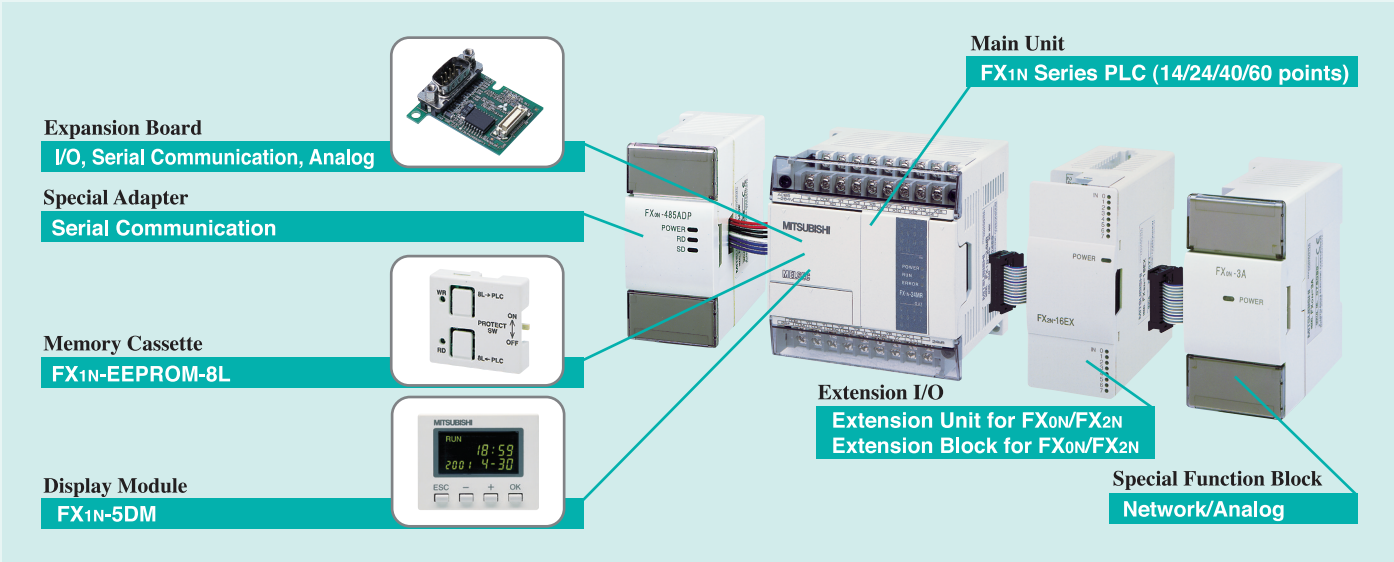
Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX1S-10MR-DS	10	6	Sink/Source selectable	4	Relay	60 x 49 x 90 (2.4 x 1.9 x 3.5)
	FX1S-10MT-DSS					Transistor (Source)	
	FX1S-14MR-DS	14	8	Sink/Source selectable	6	Relay	60 x 49 x 90 (2.4 x 1.9 x 3.5)
	FX1S-14MT-DSS					Transistor (Source)	
	FX1S-20MR-DS	20	12	Sink/Source selectable	8	Relay	75 x 49 x 90 (3.0 x 1.9 x 3.5)
	FX1S-20MT-DSS					Transistor (Source)	
	FX1S-30MR-DS	30	16	Sink/Source selectable	14	Relay	100 x 49 x 90 (3.9 x 1.9 x 3.5)
	FX1S-30MT-DSS					Transistor (Source)	

Performance Specifications of the FX1S Series PLC

Item		Specifications	Remarks	
Operation control method		Cyclic operation by stored program		
I/O control method		Batch processing (takes place after END instruction is executed)	I/O refresh instruction is available.	
Operation processing time		Basic instructions: 0.55 to 0.7μs Applied instructions: 3.7 to several 100μs		
Programming language		Relay Ladder Logic and Instruction List	SFC expression is possible.	
Program capacity		2k steps EEPROM built into the unit	Can use optional memory cassette (FX1N-EEPROM-8L).	
Number of instructions		Basic sequence instructions: 27 Stepladder instructions: 2 Applied instructions: 85	A Maximum 167 applied instructions are available.	
I/O configuration		Max. total I/O set by Main Processing Unit		
Auxiliary relay (M coils)	General	384 points	M0 to M383	
	Latched	128 points	M384 to M511	
	Special	256 points	M8000 to M8255	
State relays (S coils)	General	128 points	S0 to S127	
	Initial	10 points (subset)	S0 to S9	
Timers (T)	100 msec	Range: 0 to 3276.7 sec, 63 points	T0 to T62	
	10 msec	Range: 0 to 327.67 sec, 31 points (subset)	T32 to T62 when special M coil M8028 is driven ON	
	1 msec	Range: 0.001 to 32.767 sec, 1 point	T63	
Counters (C)	General	Range: 1 to 32767 counts, 16 points	C0 to C15 Type: 16-bit, up counter	
	Latched	Range: 1 to 32767 counts, 16 points	C16 to C31 Type: 16-bit, up counter	
High speed counters (HSC)	1 phase	Range: -2,147,483,648 to 2,147,483,647 1 phase: • Max. 60kHz/Hardware High Speed Counters (C235, C236, C246) • Max. 10kHz/Software High Speed Counters (C237 to C245, C247 to C250) 2 phase: • Max. 30kHz/Hardware High Speed Counters (C251) • Max. 5kHz/Software High Speed Counters (C252 to C255)	C235 to C240	All latched Max. Combined signal frequency 60kHz
	1 phase c/w start stop input		C241 to C245	
	1 phase 2 points		C246 to C250	
	A/B phase		C251 to C255	
Data registers (D)	General	128 points	D0 to D127 Type: 16-bit data storage register, pair for 32-bit device	
	Latched	128 points	D128 to D255 Type: 16-bit data storage register, pair for 32-bit device	
	Index	16 points	V0 to V7 and Z0 to Z7 Type: 16-bit data storage register	
	Special	256 points (inclusive of D8030, D8031)	D8000 to D8255 Type: 16-bit data storage register	
	Externally adjusted	Range: 0 to 255 2 potentiometers	D8030 and D8031 data is entered indirectly through the external setting potentiometer.	
Pointers (P)	For use with CALL	64 points	P0 to P63	
	For use with interrupts	6 points	I00* to I50* (rising trigger * = 1, falling trigger * = 0)	
Nest levels		8 points for use with MC and MCR	N0 to N7	
Constants	Decimal K	16-bit: -32768 to 32767 32-bit: -2,147,483,648 to 2,147,483,647		
	Hexadecimal H	16-bit: 0000 to FFFF 32-bit: 00000000 to FFFFFFFF		

FX1N Series

The FX1N Series PLC is a popular type PLC that can be expanded up to 128 I/O points and can add special function blocks or expansion boards. The communication and data link functions make the FX1N Series PLC perfect for applications where size, communication, use of special function blocks, and control power are important.



Why Buy the FX1N?

Control Scale

14 to 128 points (Main unit: 14/24/40/60 points)

Features

1. Compact, High Performance, Low Cost

The display module and expansion boards offer easy system upgrades.

2. High Speed Operation

Basic instruction: 0.55 to 0.7 μs/instruction

Application instruction: 3.7 to several 100 μs/instruction

3. Reliable and Generous Memory Specifications

EEPROM memory for 8000 steps. Battery free, maintenance free.

4. Diversified Device Ranges

Auxiliary relay: 1536 points, Timer: 256 points, Counter: 235 points, Data register: 8000 points

Special Function Modules

Up to two of the wide range of Special Function Modules can be added for individual needs.

Wide Range Power Supply

The wide tolerance AC power supply accepts normal supply voltages from anywhere in the world (100 to 240V AC).
DC Power Supply units are also available (12 to 24V DC).

Increased Process Control

Use the PID instruction on systems requiring precise control.

Networking Capabilities

A complete complement of networking modules makes data communication easy and affordable.

Easy Installation

Use the DIN Rail or the convenient mounting holes for direct panel mounting.

Real Time Clock

Use the standard issue Real Time Clock for time dependent applications.

Windows® Based Software

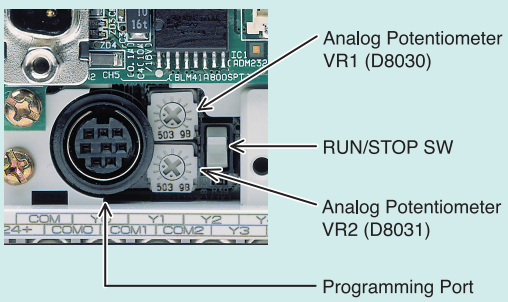
Programs can be developed quickly and easily using GX Developer or FX-PCS/WIN-E Software.

Operator Interfaces

Choose from a complete line of Operator Interfaces that can be connected for data editing and display.

Analog Potentiometers

Easily change timer settings with these front panel potentiometers.



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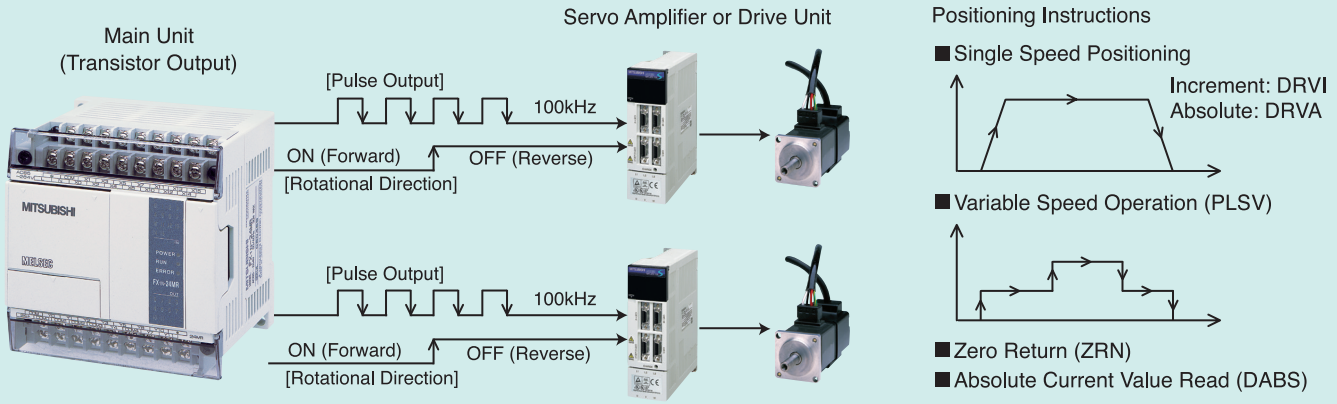

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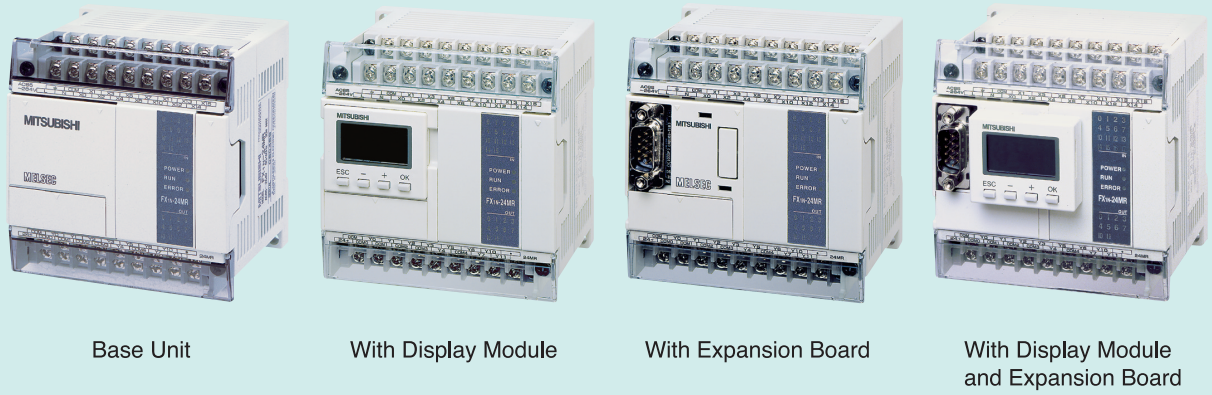
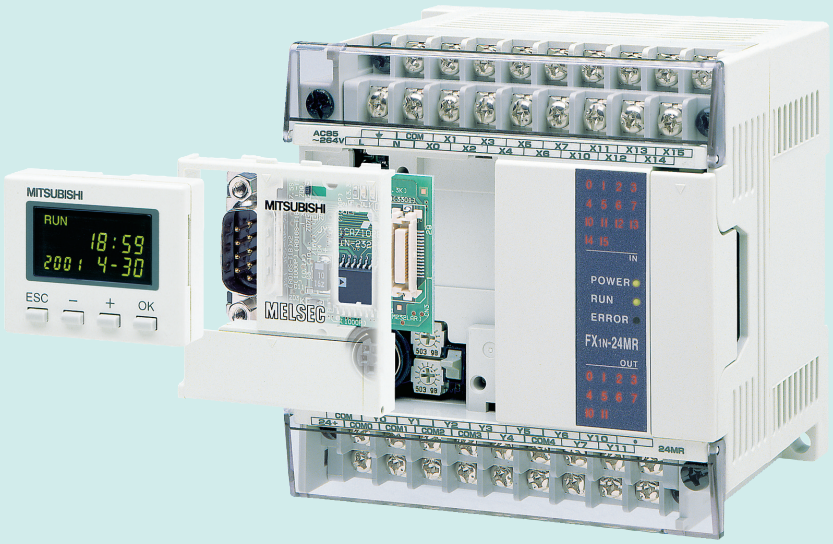
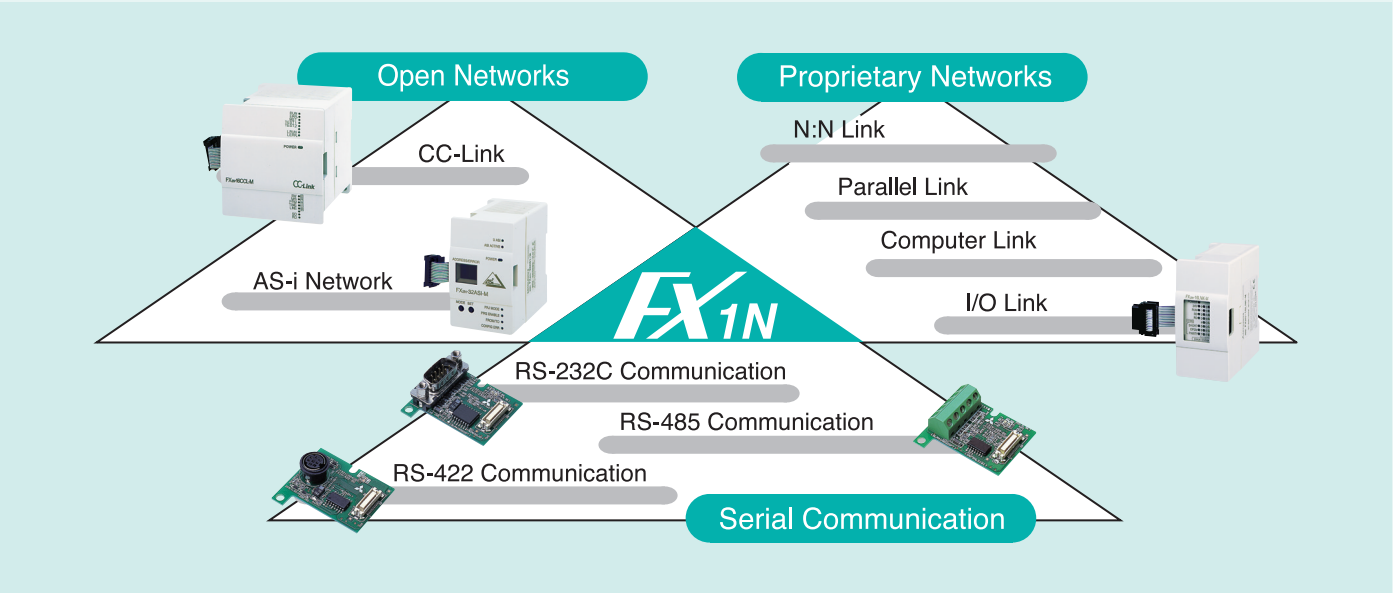


Base Unit | With Display Module | With Expansion Board | With Display Module and Expansion Board



Network Communication

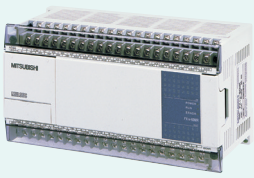
Diversified communications and data links can be realized by connecting expansion boards or special adapters that allow the use of FX2N Series PLC networking modules.



Other Functions

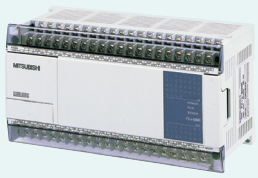
Built-in 24V DC Service Power Supply	When using AC power supply type, the service power supply of 24V DC, 400mA can be used for the external equipment such as sensors or other devices.
Real Time Clock	A Real Time Clock is standard on all FX1N Series PLC. Time setting and comparison instructions are easy to operate.
Hour Meter	The Hour Meter function provides valuable information for process tracking and machine maintenance requirements.
Constant Scan	Define your operation cycle for applications requiring constant scan times.
Input Filter Adjustment	The input filter can be used to smooth irregularities in input signals (X000 to X007 in the main unit).
Device Comment Registration	Device comments can be registered in the program memory.
On-line Program Editing	Change your programs Online to avoid downtime or production delays.
RUN/STOP Switch	Front panel RUN/STOP Switch for easy operation.
Remote Maintenance	Programs and data can be monitored, uploaded, or downloaded to the programming software in remote locations via modem communication.
Password Protection	Protect your programs using an 8-digit password.

AC Power, 24V DC Input Type

Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX1N-14MR-ES/UL	14	8	Sink/Source selectable	6	Relay	90 x 75 x 90 (3.5 x 3.0 x 3.5)
	FX1N-14MT-ESS/UL					Transistor (Source)	
	FX1N-24MR-ES/UL	24	14	Sink/Source selectable	10	Relay	90 x 75 x 90 (3.5 x 3.0 x 3.5)
	FX1N-24MT-ESS/UL					Transistor (Source)	
	FX1N-40MR-ES/UL	40	24	Sink/Source selectable	16	Relay	130 x 75 x 90 (5.2 x 3.0 x 3.5)
	FX1N-40MT-ESS/UL					Transistor (Source)	
	FX1N-60MR-ES/UL	60	36	Sink/Source selectable	24	Relay	175 x 75 x 90 (7.0 x 3.0 x 3.5)
	FX1N-60MT-ESS/UL					Transistor (Source)	

FX1N Series

24V, 12V DC Power, 24V DC Input Type

Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX1N-14MR-DS	14	8	Sink/Source selectable	6	Relay	90 x 75 x 90 (3.5 x 3.0 x 3.5)
	FX1N-14MT-DSS					Transistor (Source)	
	FX1N-24MR-DS	24	14	Sink/Source selectable	10	Relay	90 x 75 x 90 (3.5 x 3.0 x 3.5)
	FX1N-24MT-DSS					Transistor (Source)	
	FX1N-40MR-DS	40	24	Sink/Source selectable	16	Relay	130 x 75 x 90 (5.2 x 3.0 x 3.5)
	FX1N-40MT-DSS					Transistor (Source)	
	FX1N-60MR-DS	60	36	Sink/Source selectable	24	Relay	175 x 75 x 90 (7.0 x 3.0 x 3.5)
	FX1N-60MT-DSS					Transistor (Source)	

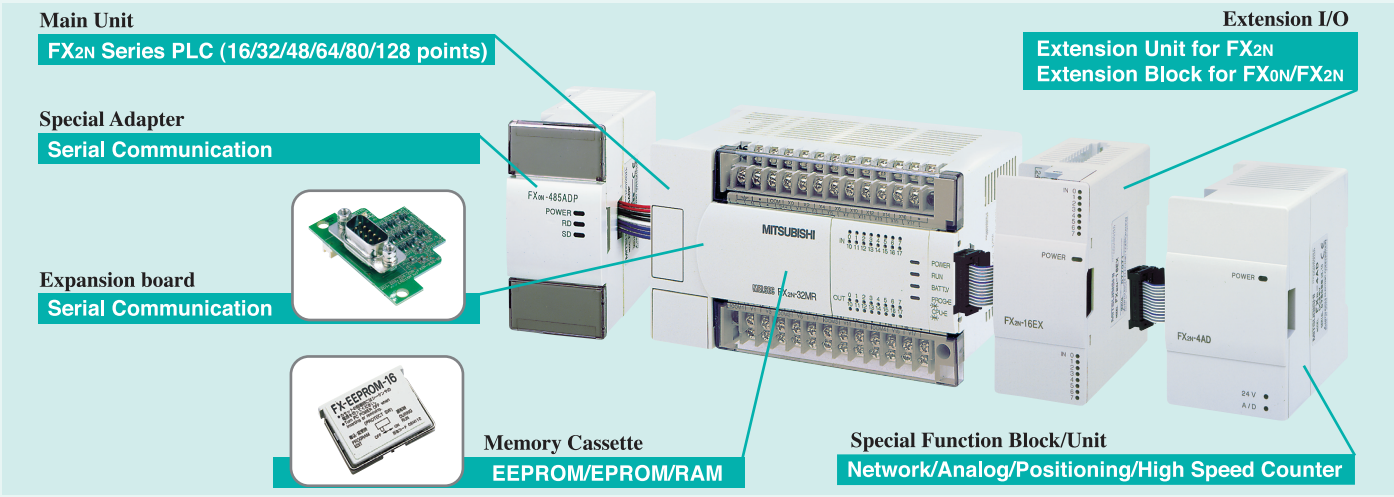
•The FX2N special function blocks and extension I/O units cannot be connected with the DC Power Models.
•The FX0N-40ER-DS and FX0N-40ET-DSS units cannot be connected when using 12V DC Input Power.

Performance Specifications of the FX1N Series PLC

Item		Specifications	Remarks
Operation control method		Cyclic operation by stored program	
I/O control method		Batch processing (takes place after END instruction is executed)	I/O refresh instruction is available.
Operation processing time		Basic instructions: 0.55 to 0.7μs Applied instructions: 3.7 to several 100μs	
Programming language		Relay Ladder Logic and Instruction List	SFC expression is possible.
Program capacity		8k steps EEPROM built into the unit	Can use optional memory cassette (FX1N-EEPROM-8L).
Number of instructions		Basic sequence instructions: 27 Stepladder instructions: 2 Applied instructions: 89	A maximum 177 applied instructions are available.
I/O configuration		Max. hardware I/O configuration points 128, dependent on user selection (Max. software addressable Inputs 128, Outputs 128)	
Auxiliary relay (M coils)	General	384 points	M0 to M383
	Latched	1152 points	M384 to M1535
	Special	256 points	M8000 to M8255
State relays (S coils)	Latched	1000 points	S0 to S999
	Initial	10 points (subset)	S0 to S9
Timers (T)	100 msec	Range: 0 to 3276.7 sec, 200 points	T0 to T199
	10 msec	Range: 0 to 327.67 sec, 46 points	T200 to T245
	1 msec retentive	Range: 0 to 32.767 sec, 4 point	T246 to T249
	100 msec retentive	Range: 0 to 3276.7 sec, 6 points	T250 to T255
Counters (C)	General	Range: 1 to 32767 counts, 16 points	C0 to C15 Type: 16-bit, up counter
	Latched	184 points (subset)	C16 to C199 Type: 16-bit, up counter
	General	Range: -2,147,483,648 to 2,147,483,647 counts, 20 points	C200 to C219 Type: 32-bit, bi-directional counter
	Latched	Range: -2,147,483,648 to 2,147,483,647 counts, 15 points	C220 to C234 Type: 32-bit, bi-directional counter
High speed counters (HSC)	1 phase	Range: -2,147,483,648 to 2,147,483,647 1 phase: • 60kHz/Hardware High Speed Counters (C235/C236/C246) • 10kHz/Software High Speed Counters (C237 to C245, C247 to C250) 2 phase: • 30kHz/Hardware High Speed Counters (C251) • 5kHz/Software High Speed Counters (C252 to C255)	C235 to C240 All latched Max. Combined signal frequency 60kHz
	1 phase c/w start stop input		C241 to C245
	1 phase 2 points		C246 to C250
	A/B phase		C251 to C255
Data registers (D)	General	128 points	D0 to D127 Type: 16-bit data storage register, pair for 32-bit device
	Latched	7872 points	D128 to D7999 Type: 16-bit data storage register, pair for 32-bit device
	File	7000 points	D1000 to D7999 set by parameter in 14 blocks of 500 program steps. Type: 16-bit data storage register
	Externally adjusted	Range: 0 to 255, 2 points	Data is moved from external setting potentiometers to registers (D8030 and D8031)
	Special	256 points (inclusive of D8030 and D8031)	D8000 to D8255 Type: 16-bit data storage register
	Index	16 points	V0 to V7 and Z0 to Z7 Type: 16-bit data storage register
Pointers (P)	For use with CALL	128 points	P0 to P127
	For use with interrupts	6 points	I00* to I50* (rising trigger * = 1, falling trigger * = 0)
Nest levels		8 points for use with MC and MCR	N0 to N7
Constants	Decimal K	16-bit: -32768 to 32767 32-bit: -2,147,483,648 to 2,147,483,647	
	Hexadecimal H	16-bit: 0000 to FFFF 32-bit: 00000000 to FFFFFFFF	

FX2N Series

The FX2N is the most advanced Series in the FX Family of PLCs. With the greatest range of standard features, lightening fast program execution, a full complement of communication capabilities, world wide power acceptance, and numerous special function modules for individual needs, the FX2N Series PLC provides maximum flexibility and control power for all your factory automation applications.



Why Buy the FX2N?

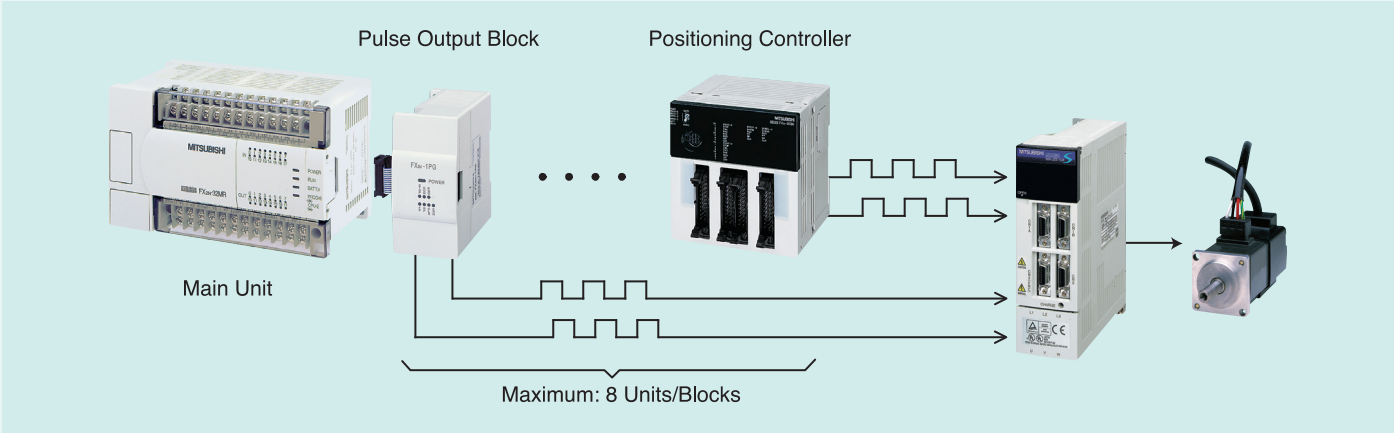
Control Scale
16 to 256 points (Main unit: 16/32/48/64/80/128 points)
Features
1. Flexible Configurations
FX2N series PLC can be extended up to 256 I/O in addition to the ability to add eight special function blocks.
2. High Speed Operation
Basic instruction: 0.08 μs/instruction
Application instruction: 1.52 to several 100 μs/instruction
3. Outstanding Memory Capacity
The FX2N Series PLC contains 8k step of built-in RAM memory that is extendable to 16k steps RAM, EPROM or EEPROM with a memory cassette.
4. Bountiful Device Resources
3072 auxiliary relays, 256 timers, 235 counters, 8000 Data registers

Real Time Clock
Use the standard issue Real Time Clock for time dependent applications.
Increased Process Control
Use the FX2N PID instruction or the easy to use FX2N-2LC Temperature Control Block.
Special Function Modules
A wide range of Special Function Modules can be added for individual needs.
Networking Capabilities
A complete complement of networking modules makes data communication easy and affordable.

Strong Mathematics Instruction Set
Use the 32 bit processing, Floating Point, Square Root and Trigonometric Instructions for situations requiring high function mathematics.
Windows® Based Software
Programs can be developed quickly and easily using GX Developer or FX-PCS/WIN-E Software.
Easy Installation
Use the DIN Rail or the convenient mounting holes for direct panel mounting.
Operator Interfaces
Choose from a complete line of Operator Interfaces that can be connected for data editing and display.

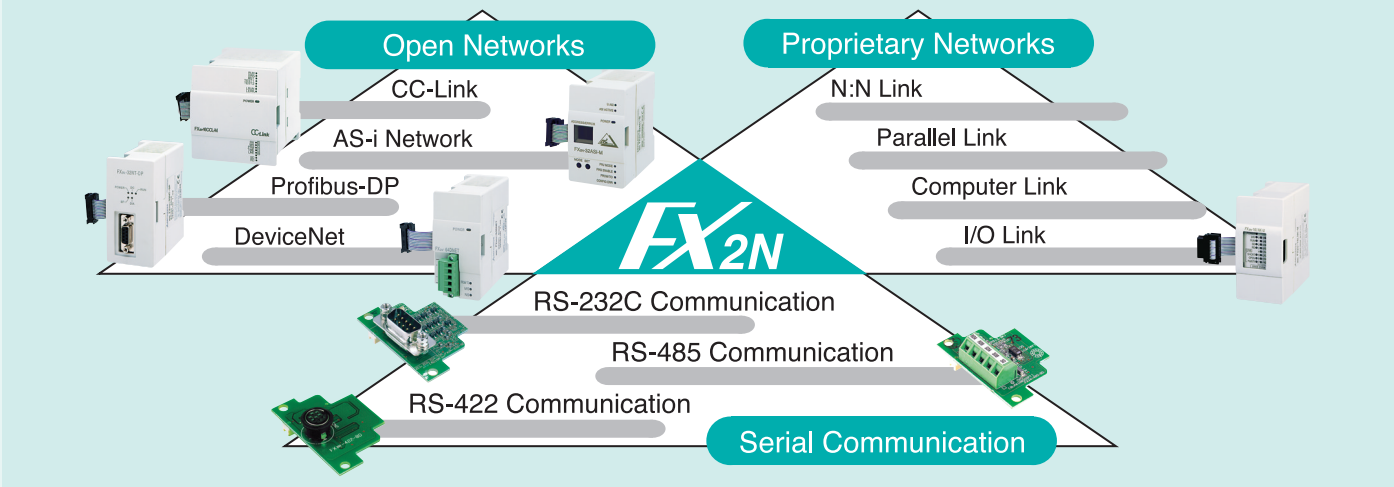
Special Functions for a Host of Applications

A complete range of special function modules was developed to provide for all individual needs - Analog I/O, High Speed Counters, Positioning Control up to 16 axes, Pulse Train Outputs, or Temperature blocks for J, K and T type Thermocouples or Pt Sensors.
Add up to eight special function blocks to each FX2N Series PLC.



Network Communication

Connect to the most popular open networks in the world, CC-Link, Profibus-DP, AS-interface and DeviceNet or solve network needs with I/O level networks such as MELSEC-I/O LINK.
Serial communication options include RS-232C, RS-485, and RS-422.

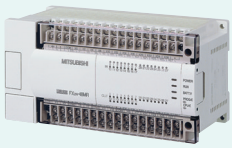
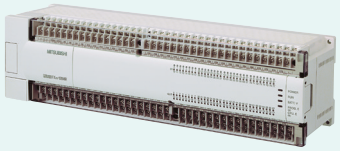


Other Functions

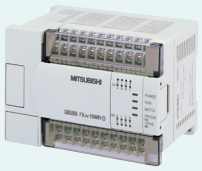
Built-in 24V DC Service Power Supply	When using AC power supply type, the Service Power Supply of 24V DC, 400mA can be used for the external equipment such as sensors or other devices.
Quick-disconnect Terminal Block	The quick connect cables allow easy equipment replacement with minimal downtime.
Real Time Clock	A Real Time Clock is standard on all FX2N Series PLC. Time setting and comparison instructions are easy to operate.
Hour Meter	The Hour Meter function provides valuable information for process tracking and machine maintenance requirements.
Constant Scan	Define your operation cycle for applications requiring constant scan times.
Input Filter Adjustment	The input filter can be used to smooth irregularities in input signals (X000 to X017 in the main unit).
Comment Registration	Device comments can be registered in the program memory.
On-line Program Editing	Change your programs Online to avoid downtime or production delays.
Built-in RUN/STOP Switch	Front panel RUN/STOP Switch for easy operation.
Remote Maintenance Function	Programs and Data can be monitored, uploaded, or downloaded to the programming software in remote locations via modem communication.
Password Protection	Protect your programs using an 8-digit password.

FX2N Series

AC Power, 24V DC Input Type

Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX2N-16MR-ES/UL	16	8	Sink/ Source selectable	8	Relay	130 x 87 x 90 (5.1 x 3.4 x 3.5)
	FX2N-16MT-ESS/UL					Transistor (Source)	
	FX2N-16MT-E/UL			Sink		Transistor (Sink)	
	FX2N-32MR-ES/UL	32	16	Sink/ Source selectable	16	Relay	150 x 87 x 90 (5.9 x 3.4 x 3.5)
	FX2N-32MS-E/UL			Sink		Triac	
	FX2N-32MT-ESS/UL			Sink/ Source selectable		Transistor (Source)	
	FX2N-32MT-E/UL			Sink		Transistor (Sink)	
	FX2N-48MR-ES/UL	48	24	Sink/ Source selectable	24	Relay	182 x 87 x 90 (7.2 x 3.4 x 3.5)
	FX2N-48MS-E/UL			Sink		Triac	
	FX2N-48MT-ESS/UL			Sink/ Source selectable		Transistor (Source)	
	FX2N-48MT-E/UL			Sink		Transistor (Sink)	
	FX2N-64MR-ES/UL	64	32	Sink/Source selectable	32	Relay	220 x 87 x 90 (8.7 x 3.4 x 3.5)
	FX2N-64MT-ESS/UL					Transistor (Source)	
	FX2N-80MR-ES/UL	80	40	Sink/ Source selectable	40	Relay	285 x 87 x 90 (11.2 x 3.4 x 3.5)
	FX2N-80MT-ESS/UL					Transistor (Source)	
	FX2N-128MR-ES/UL	128	64	Sink/ Source selectable	64	Relay	350 x 87 x 90 (13.8 x 3.4 x 3.5)
	FX2N-128MT-ESS/UL					Transistor (Source)	

DC Power, 24V DC Input Type

Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX2N-16MR-DS	16	8	Sink/Source selectable	8	Relay	130 x 87 x 90 (5.1 x 3.4 x 3.5)
	FX2N-16MT-DSS					Transistor (Source)	
	FX2N-32MR-DS	32	16	Sink/Source selectable	16	Relay	150 x 87 x 90 (5.9 x 3.4 x 3.5)
	FX2N-32MT-DSS					Transistor (Source)	
	FX2N-48MR-DS	48	24	Sink/Source selectable	24	Relay	182 x 87 x 90 (7.2 x 3.4 x 3.5)
	FX2N-48MT-DSS					Transistor (Source)	
	FX2N-64MR-DS	64	32	Sink/Source selectable	32	Relay	220 x 87 x 90 (8.7 x 3.4 x 3.5)
	FX2N-64MT-DSS					Transistor (Source)	
	FX2N-80MR-DS	80	40	Sink/Source selectable	40	Relay	285 x 87 x 90 (11.2 x 3.4 x 3.5)
	FX2N-80MT-DSS					Transistor (Source)	

FX2N Series

AC Power, 110V AC Input Type

Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX2N-16MR-UA1/UL	16	8	110V AC	8	Relay	150 x 87 x 90 (5.9 x 3.4 x 3.5)
	FX2N-32MR-UA1/UL	32	16	110V AC	16	Relay	182 x 87 x 90 (7.2 x 3.4 x 3.5)
	FX2N-48MR-UA1/UL	48	24	110V AC	24	Relay	220 x 87 x 90 (8.7 x 3.4 x 3.5)
	FX2N-64MR-UA1/UL	64	32	110V AC	32	Relay	285 x 87 x 90 (11.2 x 3.4 x 3.5)

Performance Specifications of the FX2N Series PLC

Item		Specifications	Remarks
Operation control method		Cyclic operation by stored program	
I/O control method		Batch processing (takes place after END instruction is excuted)	I/O refresh instruction is available.
Operation processing time		Basic instructions: 0.08μs Applied instructions: 1.52 to several 100μs	
Programming language		Relay Ladder Logic and Instruction List	Stepladder can be used to produce an SFC style program.
Program capacity		8k steps RAM-built into the unit: 16k steps max.	RAM/EPROM/EEPROM memory cassettes can be installed.
Number of instructions		Basic sequence instructions: 27 Stepladder instructions: 2 Applied instructions: 128	A maximum of 298 applied instructions are available.
I/O configuration		Max. hardware I/O configuration points 256, dependent on user selection (Max. software addressable Inputs 256, Outputs 256)	
Auxiliary relay (M coils)	General	500 points	M0 to M499
	Latched	2572 points	M500 to M3071
	Special	256 points	From the range M8000 to M8255
State relays (S coils)	General	490 points	S10 to S499
	Latched	400 points	S500 to S899
	Initial	10 points	S0 to S9
	Annunciator	100 points	S900 to S999
Timers (T)	100 msec	Range: 0 to 3276.7 sec, 200 points	T0 to T199
	10 msec	Range: 0 to 327.67 sec, 46 points	T200 to T245
	1 msec retentive	Range: 0 to 32.767 sec, 4 points	T246 to T249
	100 msec retentive	Range: 0 to 3276.7 sec, 6 points	T250 to T255
Counters (C)	General 16-bit	Range: 1 to 32767 counts, 100 points	C0 to C99 Type: 16-bit, up counter
	Latched 16-bit	Range: 1 to 32767 counts, 100 points	C100 to C199 Type: 16-bit, up counter
	General 32-bit	Range: -2,147,483,648 to 2,147,483,647 counts, 35 points	C200 to C219 Type: 32-bit, up/down counter
	Latched 32-bit	Range: -2,147,483,648 to 2,147,483,647 counts, 15 points (subset)	C220 to C234 Type: 16-bit, up/down counter
High speed counters (HSC)	1 phase	Range: -2,147,483,648 to 2,147,483,647 1 phase: • 60kHz/Hardware High Speed Counters (C235/C236/C246) • 10kHz/Software High Speed Counters (C237 to C245, C247 to C250) 2 phase: • 30kHz/Hardware High Speed Counters (C251) • 5kHz/Software High Speed Counters (C252 to C255)	C235 to C240 All latched Max. Combined signal frequency 20kHz
	1 phase c/w start stop input		C241 to C245
	2 phase		C246 to C250
	A/B phase		C251 to C255
Data registers (D)	General	200 points	D0 to D199 Type: 16-bit data storage register, pair for 32-bit device
	Latched	7800 points	D200 to D7999 Type: 16-bit data storage register, pair for 32-bit device
	File registers	7000 points	D1000 to D7999 set by parameter in 14 blocks of 500 program steps. Type: 16-bit data storage register
	Special	256 points	D8000 to D8255 Type: 16-bit data storage register
	Index	16 points	V0 to V7 and Z0 to Z7 Type: 16-bit data storage register
Pointers (P)	For use with CALL	128 points	P0 to P127
	For use with interrupts	6 input points, 3 timers, 6 counters	I00* to I50*, I6** to I8** and I010 to I060 (rising trigger * = 1, falling trigger * = 0, ** = time in msec)
Nest levels		8 points for use with MC and MCR	N0 to N7
Constants	Decimal K	16-bit: -32768 to 32767 32-bit: -2,147,483,648 to 2,147,483,647	
	Hexadecimal H	16-bit: 0000 to FFFF 32-bit: 00000000 to FFFFFFFF	
	Floating Point	32-bit: 0, $\pm 1.175 \times 10^{-38}$, $\pm 3.403 \times 10^{38}$ (Data cannot be entered directly)	

FX2NC Series

The FX2NC Series PLC is the ultimate packaging of superb features into a pocket sized controller.
The high ratio of functionality to size, communication options, special function module capability, and expandable I/O make the FX2NC Series PLC a superlative choice for many applications. Choose from many configurations including connector or terminal block type I/O, AC or DC power, relay or transistor outputs, and many special function modules.

Why Buy the FX2NC?

Control Scale
16 to 256 points (Main unit: 16/32/64/96 points)

Features

1. Compact Size and Capable
The compact size allows installation in places normal too small for normal PLCs.
Use up to four special function modules to expand the FX2NC Series PLC capabilities.

2. Easy Wiring
Connector style terminals easy wiring tasks inside control boxes as do the removable terminal blocks. Machine maintenance and quick changeovers are easy to accomplish.

3. High Speed Operation
Basic instructions: 0.08 μs/instruction
Application instructions: 1.52 to several 100 μs/instruction

4. Outstanding Memory Capacity
The FX2NC Series PLC contains 8k steps of built-in RAM memory that is extendable to 16k steps RAM or EEPROM with a memory cassette.

5. Diversified Device Ranges
Auxiliary relay: 3072 points, Timer: 256 points,
Counter: 235 points, Data register: 8000 points

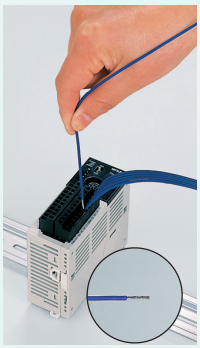
Strong Mathematics Instruction Set
Use the 32 bits processing, Floating Point, Square Root and Trigonometric Instructions for situations requiring high function mathematics.

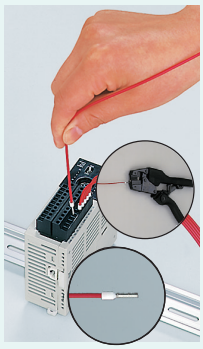
Special Function Modules
A wide range of Special Function Modules can be added for individual needs.

Increased Process Control
Use the FX2N PID instruction or the easy to use FX2N-2LC Temperature Control Block.

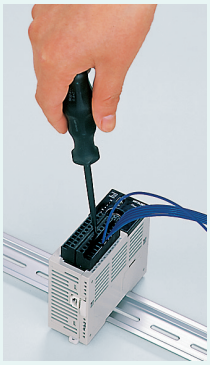
Real Time Clock
Add an optional Real Time Clock for time dependent applications.

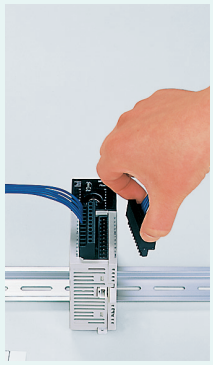
Terminal Block Wiring
Wires can be connected without using a crimping tool or, alternatively, wires can be connected using rod terminals with an isolation sleeve.





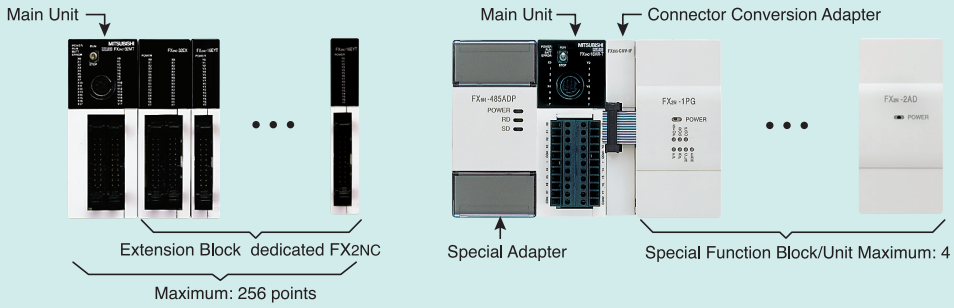
Cables can be wired on the front of the PLC, and screw-tightened. The cables can be easily connected/disconnected from the terminal block.





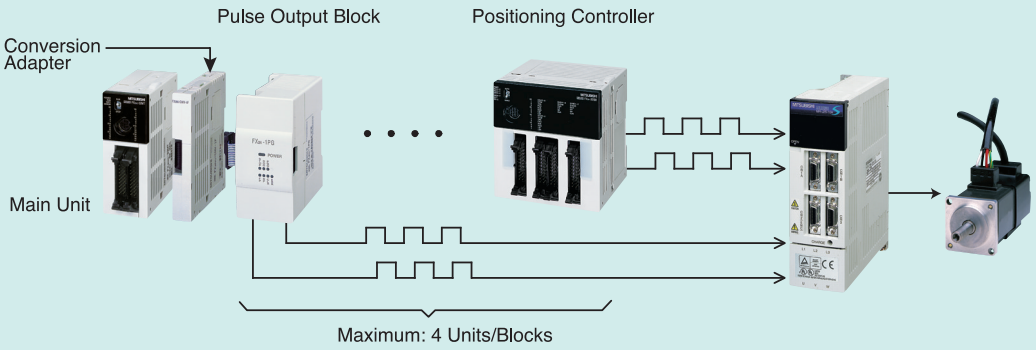
Flexible

Up to 256 I/O can be connected when the compact I/O extension blocks dedicated to the FX2NC Series PLC are added.
In addition, up to four extension FX0N/FX2N Series PLC special function modules can be incorporated into the system by means of a conversion adapter.



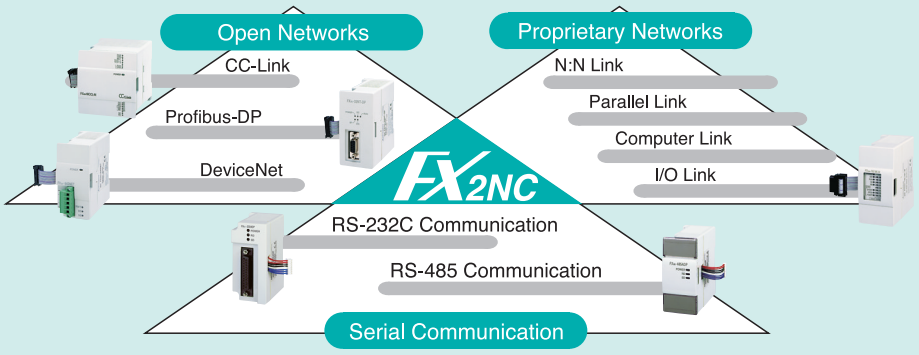
Positioning/Analog Control Using Special Equipment

Up to 4 positioning/analog special function unit/block and extension I/O block can be connected.
The FX2NC Series PLC can control two axes (including interpolation) with built-in capabilities or can control multiple axes by adding extension units.



Network Communication

Diversified communications and data links can be realized by connecting expansion boards or special adapters.



Other Functions

On-line Program Editing	Change your programs Online to avoid downtime or production delays.
Real Time Clock	Optional Real Time Clock can be installed.
Hour Meter	The Hour Meter function provides valuable information for process tracking and machine maintenance requirements.
Constant Scan	Define your operation cycle for applications requiring constant scan times.
Input Filter Adjustment	The input filter can be used to smooth irregularities in input signals (X000 to X017 in the main unit).
Comment Registration	Device comments can be registered in the program memory.
Built-in RUN/STOP Switch	Front panel RUN/STOP switch for easy operation.
Remote Maintenance	Programs and Data can be monitored, uploaded, or downloaded to the programming software in remote locations via modem. communication
Password Protection	Protect your programs using an 8-digit password.

FX2NC Series

DC Power, 24V DC Input Type

Model		Total Number of I/O	Inputs		Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Type	Number	Type	
	FX2NC-16MR-T-DS (Terminal Block)	16	8	Sink/Source selectable	8	Relay	35 x 89 x 90 (1.4 x 3.5 x 3.5)
	FX2NC-16MT-DSS	16	8	Sink/Source selectable	8	Transistor (Source)	35 x 87 x 90 (1.4 x 3.4 x 3.5)
	FX2NC-16MT-D/UL			Sink		Transistor (Sink)	
	FX2NC-32MT-DSS	32	16	Sink/Source selectable	16	Transistor (Source)	35 x 87 x 90 (1.4 x 3.4 x 3.5)
	FX2NC-32MT-D/UL			Sink		Transistor (Sink)	
	FX2NC-64MT-DSS	64	32	Sink/Source selectable	32	Transistor (Source)	60 x 87 x 90 (2.4 x 3.4 x 3.5)
	FX2NC-64MT-D/UL			Sink		Transistor (Sink)	
	FX2NC-96MT-DSS	96	48	Sink/Source selectable	48	Transistor (Source)	86 x 87 x 90 (3.4 x 3.4 x 3.5)
	FX2NC-96MT-D/UL			Sink		Transistor (Sink)	

Performance Specifications of the FX2NC Series PLC

Item		Specifications	Remarks
Operation control method		Cyclic operation by stored program	
I/O control method		Batch processing (takes place after END instruction is executed)	I/O refresh instruction is available.
Operation processing time		Basic instructions: 0.08μs Applied instructions: 1.52 to several 100μs	
Programming language		Relay Ladder Logic and Instruction List	Stepladder can be used to produce an SFC style program.
Program capacity		8k steps RAM-built into the unit: 16k steps max.	RAM, EPROM, EEPROM memory cassettes can be installed.
Number of instructions		Basic sequence instructions: 27 Stepladder instructions: 2 Applied instructions: 128	A maximum of 298 applied instructions are available.
I/O configuration		Max. hardware I/O configuration points 256, dependent on user selection (Max. software addressable Inputs 256, Outputs 256)	
Auxiliary relay (M coils)	General	500 points	M0 to M499
	Latched	2572 points	M500 to M3071
	Special	256 points	M8000 to M8255
State relays (S coils)	General	490 points	S10 to S499
	Latched	400 points	S500 to S899
	Initial	10 points	S0 to S9
	Annunciator	100 points	S900 to S999
Timers (T)	100 msec	Range: 0 to 3276.7 sec, 200 points	T0 to T199
	10 msec	Range: 0 to 327.67 sec, 46 points	T200 to T245
	1 msec retentive	Range: 0 to 32.767 sec, 4 points	T246 to T249
	100 msec retentive	Range: 0 to 3276.7 sec, 6 points	T250 to T255
Counters (C)	General 16-bit	Range: 1 to 32767 counts, 100 points	C0 to C99 Type: 16-bit, up counter
	Latched 16-bit	Range: 1 to 32767 counts, 100 points	C100 to C199 Type: 16-bit, up counter
	General 32-bit	Range: -2,147,483,648 to 2,147,483,647 counts, 35 points	C200 to C219 Type: 32-bit, up/down counter
	Latched 32-bit	Range: -2,147,483,648 to 2,147,483,647 counts, 15 points (subset)	C220 to C234 Type: 16-bit, up/down counter
High speed counters (HSC)	1 phase	Range: -2,147,483,648 to 2,147,483,647 1 phase: • 60kHz/Hardware High Speed Counters (C235/C236/C246) • 10kHz/Software High Speed Counters (C237 to C245, C247 to C250) 2 phase: • 30kHz/Hardware High Speed Counters (C251) • 5kHz/Software High Speed Counters (C252 to C255)	C235 to C240 All latched Max. Combined signal frequency 20kHz
	1 phase c/w start stop input		C241 to C245
	2 phase		C246 to C250
	A/B phase		C251 to C255
Data registers (D)	General	200 points	D0 to D199 Type: 16-bit data storage register, pair for 32-bit device
	Latched	7800 points	D200 to D7999 Type: 16-bit data storage register, pair for 32-bit device
	File registers	7000 points	D1000 to D7999 set by parameter in 14 blocks of 500 program steps. Type: 16-bit data storage register
	Special	256 points	D8000 to D8255 Type: 16-bit data storage register
	Index	16 points	V0 to V7 and Z0 to Z7 Type: 16-bit data storage register
Pointers (P)	For use with CALL	128 points	P0 to P127
	For use with interrupts	6 input points, 3 timers, 6 counters	I00* to I50*, I6** to I8** and I010 to I060 (rising trigger * = 1, falling trigger * = 0, ** = time in msec)
Nest levels		8 points for use with MC and MCR	N0 to N7
Constants	Decimal K	16-bit: -32768 to 32767 32-bit: -2,147,483,648 to 2,147,483,647	
	Hexadecimal H	16-bit: 0000 to FFFF 32-bit: 00000000 to FFFFFFFF	
	Floating Point	32-bit: 0, $\pm 1.175 \times 10^{-38}$, $\pm 3.403 \times 10^{38}$ (Data cannot be entered directly)	

Extension Equipment

Powered Extension Units

AC Power Type

Model		Total Number of I/O	Inputs			Outputs		Applicable PLC				Dimensions mm (inches) (W) x (D) x (H)
			Number	Voltage	Type	Number	Type	FX1S	FX1N	FX2N	FX2NC	
	FX2N-32ER-ES/UL	32	16	24V DC	Sink/Source selectable	16	Relay		✔	✔		150 x 87 x 90 (5.9 x 3.4 x 3.5)
	FX2N-32ET-ESS/UL						Transistor (Source)					
	FX0N-40ER-ES/UL	40	24	24V DC	Sink/Source selectable	16	Relay		✔			150 x 87 x 90 (5.9 x 3.4 x 3.5)
	FX2N-48ER-ES/UL	48	24	24V DC	Sink/Source selectable	24	Relay		✔	✔		182 x 87 x 90 (7.2 x 3.4 x 3.5)
	FX2N-48ET-ESS/UL						Transistor (Source)					
	FX2N-48ER-UA1/UL	48	24	110V AC		24	Relay		✔	✔		220 x 87 x 90 (8.7 x 3.4 x 3.5)

DC Power Type

Model		Total Number of I/O	Inputs			Outputs		Applicable PLC				Dimensions mm (inches) (W) x (D) x (H)
			Number	Voltage	Type	Number	Type	FX1S	FX1N	FX2N	FX2NC	
	FX0N-40ER-DS	40	24	24V DC	Sink/Source selectable	16	Relay		✔ *1			150 x 87 x 90 (5.9 x 3.4 x 3.5)
	FX0N-40ET-DSS						Transistor (Source)					
	FX2N-48ER-DS	48	24	24V DC	Sink/Source selectable	24	Relay			✔		182 x 87 x 90 (7.2 x 3.4 x 3.5)
	FX2N-48ET-DSS						Transistor (Source)					

*1: When FX1N is supplied with 12V DC power, FX0N-40ER-DS and FX0N-40ET-DSS cannot be connected to the FX1N Series PLC.

Input and Output Extension Blocks

Extension Blocks

Model		Total Number of I/O	Inputs			Outputs		Applicable PLC				Dimensions mm (inches) (W) x (D) x (H)
			Number	Voltage	Type	Number	Type	FX1S	FX1N	FX2N	FX2NC	
	FX0N-8ER-ES/UL	8*2	4	24V DC	Sink/Source selectable	4	Relay		✔	✔	✔ *1	43 x 87 x 90 (1.7 x 3.4 x 3.5)
	FX0N-8EX-ES/UL	8	8		Sink/Source selectable	-	-		✔	✔	✔ *1	43 x 87 x 90 (1.7 x 3.4 x 3.5)
	FX0N-8EX-UA1/UL	8	8	110V AC		-	-		✔	✔	✔ *1	43 x 87 x 90 (1.7 x 3.4 x 3.5)
	FX0N-16EX-ES/UL	16	16	24V DC	Sink/Source selectable	-	-		✔	✔	✔ *1	70 x 87 x 90 (2.8 x 3.4 x 3.5)
	FX2N-16EX-ES/UL	16	16		Sink/Source selectable	-	-		✔	✔	✔ *1	40 x 87 x 90 (1.6 x 3.4 x 3.5)

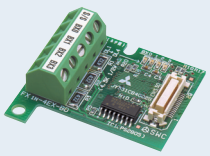
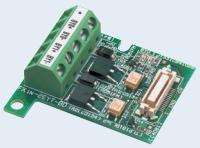
*1: FX2NC-CNV-IF required
*2: Actual I/O: 8 points
Occupied I/O: 16 points

Extension Equipment

Model		Total Number of I/O	Inputs			Outputs		Applicable PLC				Dimensions mm (inches) (W) x (D) x (H)
			Number	Voltage	Type	Number	Type	FX1S	FX1N	FX2N	FX2NC	
	FX0N-8EYR-ES/UL	8	-	-	-	8	Relay		✔	✔	✔ *1	43 x 87 x 90 (1.7 x 3.4 x 3.5)
	FX0N-8EYT-ESS/UL		-	-	-		Transistor (Source)					
	FX0N-16EYR-ES/UL	16	-	-	-	16	Relay		✔	✔	✔ *1	70 x 87 x 90 (2.8 x 3.4 x 3.5)
	FX0N-16EYT-ESS/UL		-	-	-		Transistor (Source)					
	FX2N-16EYR-ES/UL	16	-	-	-	16	Relay		✔	✔	✔ *1	40 x 87 x 90 (1.6 x 3.4 x 3.5)
	FX2N-16EYS		-	-	-		Triac (SSR)					
	FX2N-16EYT-ESS/UL		-	-	-		Transistor (Source)					

*1: FX2NC-CNV-IF required

Extension Board

Model		Total Number of I/O	Inputs			Outputs		Applicable PLC			
			Number	Voltage	Type	Number	Type	FX1S	FX1N	FX2N	FX2NC
	FX1N-4EX-BD	4	4	24V DC	Sink/ Source selectable	-	-	✔	✔		
	FX1N-2EYT-BD	2	-	-	-	2	Transister (Sink/Source selectable)	✔	✔		

Extension Blocks Dedicated to the FX2NC Series

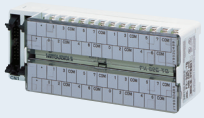
Input and Output Extension Blocks

Model		Total Number of I/O	Inputs			Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Voltage	Type	Number	Type	
	FX2NC-16EX-T-DS	16	16	24V DC	Sink/Source selectable	-	-	20.2 x 89 x 90 (0.8 x 3.5 x 3.5)
	FX2NC-16EX-DS	16	16	24V DC	Sink/Source selectable	-	-	14.6 x 87 x 90 (0.6 x 3.4 x 3.5)
	FX2NC-16EX-D/UL				Sink			
	FX2NC-32EX-DS	32	32	24V DC	Sink/Source selectable	-	-	26.2 x 87 x 90 (1.0 x 3.4 x 3.5)
	FX2NC-32EX-D/UL				Sink			

Model		Total Number of I/O	Inputs			Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Voltage	Type	Number	Type	
	FX2NC-16EYR-T-DS	16	-	-	-	16	Relay	24.2 x 89 x 90 (0.95 x 3.5 x 3.5)
	FX2NC-16EYT-DSS	16	-	-	-	16	Transistor (Source)	14.6 x 87 x 90 (0.6 x 3.4 x 3.5)
	FX2NC-16EYT-D/UL						Transistor (Sink)	
	FX2NC-32EYT-DSS	32	-	-	-	32	Transistor (Source)	26.2 x 87 x 90 (1.0 x 3.4 x 3.5)
	FX2NC-32EYT-D/UL						Transistor (Sink)	

Extension Equipment

Terminal Blocks

Model		Total Number of I/O	Inputs			Outputs		Dimensions mm (inches) (W) x (D) x (H)
			Number	Voltage	Type	Number	Type	
	FX-16E-TB/UL	16	16 points (Direct Input/Output)					150 x 45 x 55 (5.9 x 1.8 x 2.2)
	FX-16E-TB							
	FX-32E-TB/UL	32	32 points or 16/16 points (Direct Input/Output)					150 x 45 x 55 (5.9 x 1.8 x 2.2)
	FX-32E-TB							
	FX-16EX-A1-TB/UL	16	16	110V AC		-	-	150 x 45 x 55 (5.9 x 1.8 x 2.2)
	FX-16EX-A1-TB							
	FX-16EYR-ES-TB/UL	16	-	-	-	16	Relay	150 x 45 x 55 (5.9 x 1.8 x 2.2)
	FX-16EYR-TB							
	FX-16EYS-ES-TB/UL						Triac	
	FX-16EYT-ESS-TB/UL						Transistor (Source)	
	FX-16EYT-ES-TB/UL						Transistor (Sink)	
	FX-16EYT-TB							

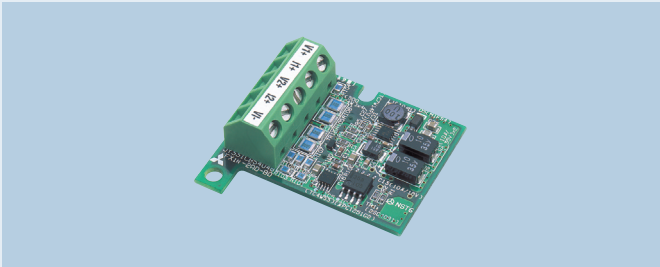
Applicable PLC: FX1N/FX2N/FX2NC

Analog Board

FX1N-2AD-BD Analog Input Board

Features

1) This board attaches to the FX1S and FX1N Series PLC to provide 2 channels of analog input conversion to digital values.
2) Extremely Cost Effective.

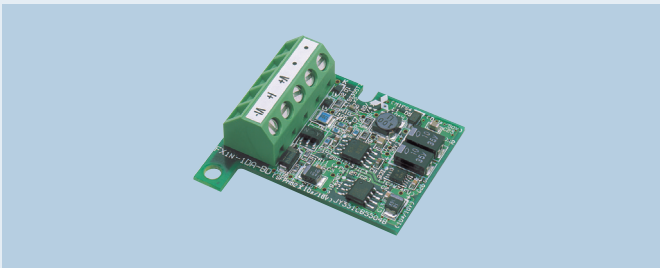


Item	Voltage input	Current input
Analog input range	0 to 10V DC (input resistance 200kΩ)	4 to 20mA (input resistance 250Ω)
Digital output	12-bit binary	
Resolution	2.5mV (10V/4000)	8μA {(20-4)/2000}
Overall accuracy	±1% (full scale 0 to 10V)	±1% (full scale 4 to 20mA)
Conversion speed	1 scan time (The analog to digital conversion is done during the END instruction)	
Isolation	None	
Number of occupied I/O points	0 points	
Applicable PLC	FX1S/FX1N	

FX1N-1DA-BD Analog Output Board

Features

1) This board connects to the FX1S and FX1N Series PLC to provide 1 channel of digital to analog conversion for output to external devices.
2) Extremely Cost Effective.



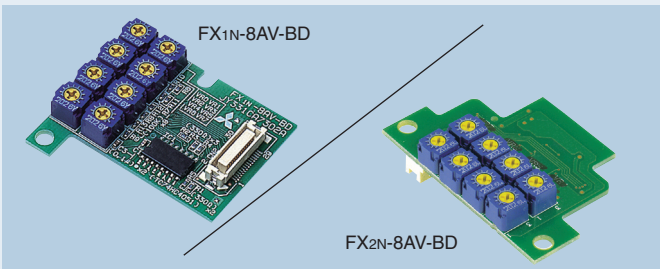
Item	Voltage output	Current output
Analog output range	0 to 10V DC (External load resistance 2kΩ to 1MΩ)	4 to 20mA (External load resistance 500Ω or less)
Digital input	12-bit binary	
Resolution	2.5mV (10V/4000)	4μA {(20-4)mA/4000}
Overall accuracy	±1% (full scale 0 to 10V)	±1% (full scale 4 to 20mA)
Conversion speed	1 scan time (The analog to digital conversion is done during the END instruction)	
Isolation	None	
Number of occupied I/O points	0 points	
Applicable PLC	FX1S/FX1N	

Analog Potentiometer

FX1N-8AV-BD/FX2N-8AV-BD Analog Potentiometer

Features

1) The analog potentiometer FX1N-8AV-BD or FX2N-8AV-BD are function expansion boards which mount to the FX1S/FX1N Series PLC or FX2N Series PLC main unit and can be used as an analog with rotary switch.
2) Allows easy changes to analog values with only a screwdriver.



Item	Specifications
Number of channels	8 points
Function	VRRD: Volume Read VRSC: Volume Scale
Digital output	VRDD: 0 to 255 ±1 VRSC: 0 to 10 ±1
Power supply	5V DC, 20mA
Applicable PLC	FX1N-8AV-BD: FX1S and FX1N Series PLC FX2N-8AV-BD: FX2N Series PLC

Analog Control

FX0N-3A Analog Input and Output Block

Features

1) Equipped with 2 analog input (0 to 5V DC, 0 to 10V DC or 4 to 20mA DC) channels and 1 analog output channel.
2) 8 bits resolution.

Analog Inputs

Item	Voltage input	Current input
Analog input range *1	0-10V DC, 0-5V DC, input resistance 200kΩ.	4-20mA, input resistance 250Ω.
Digital resolution	8-bit binary	
Conversion speed	(TO instruction processing time x 2) + FROM instruction processing time	
A/D conversion time	100μs	

Analog Output

Item	Voltage output	Current output
Analog output range	0-10V DC, 0-5V DC, external load: 1kΩ to 1MΩ	4-20mA, external load: 500Ω or less
Digital resolution	8-bit binary	
Processing time	(TO instruction processing time x 3)	

Common Item

Item	Voltage input/output	Current input/output
Smallest output signal resolution	0-10V input: 40mV (10V/250) 0-5V input: 20mV (5V/250)	4-20mA input: 64μA ((20-4mA)/250)
Overall accuracy	±1% (full scale 0 to 10V)	±1% (full scale 4 to 20mA)
Isolation	Photocoupler isolation between analog and digital circuits. DC/DC converter isolates power from main unit. No isolation between analog channels.	
Power supply	5V DC, 30mA (internal power supply from main unit) 24V DC ±10%, 90mA (internal power supply from main unit)	
Number of occupied I/O points	The blocks occupy either 8 input or output points.	
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)	43 x 87 x 90 mm (1.69" x 3.43" x 3.54")	
Mass (Weight)	0.2kg (0.44 lbs)	

*1: Characteristics not affected by number of channels

FX2N-2AD Analog Input Block

Features

1) Two channels for voltage input (0 to 10V DC, 0 to 5V DC) or current input (4 to 20mA DC).
2) 12 bits resolution.

Item	Voltage input	Current input
Analog input range *1	0 to 10V DC, 0 to 5V DC (input resistance 200kΩ)	4 to 20mA (input resistance 250Ω)
Digital output	12-bit binary	
Resolution	2.5mV (10V/4000), 1.25mV (5V/4000)	4μA {(20-4)/4000}
Overall accuracy	±1% (full scale 0 to 10V)	±1% (full scale 4 to 20mA)
Conversion speed	2.5ms/1 channel (sequence program and synchronization)	
Isolation	Photocoupler isolation between analog and digital circuits. DC/DC converter isolates power from main unit. No isolation between analog channels.	
Power supply	5V DC, 20mA (Internal power supplied from the main unit) 24V DC 10%, 50mA (Internal power supplied from the main unit)	
Number of occupied I/O points	The blocks occupy either 8 input or output points.	
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)	43 x 87 x 90 mm (1.69" x 3.43" x 3.54")	
Mass (Weight)	0.2kg (0.44 lbs)	

*1: Characteristics not affected by number of channels

FX2N-4AD Analog Input Block

Features

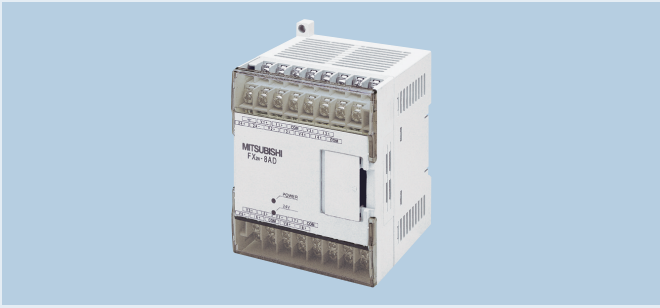
1) Four channels for voltage input (-10 to 10V DC) or current input (-20 to 20mA DC).
2) The voltage or current input can be specified for each channel.
3) 12 bits resolution.

Item	Voltage input	Current input
Analog input range	-10 to 10V DC (input resistance 200kΩ) Absolute maximum peak rating : ±15V DC	-20 to 20mA (input resistance 250Ω) Absolute maximum peak rating : ±32mA
Digital output	Signed 12-bit binary, 11-bit + 1 sign bit	
Resolution	5mV (10V default range 1/2000)	20mA (20mA default range 1/1000)
Overall accuracy	±1% (full scale -10 to 10V)	±1% (full scale -20 to 20mA)
Conversion speed	15ms/channel (Normal speed), 6ms/channel (High speed)	
Isolation	Photocoupler isolation between analog and digital circuits. DC/DC converter isorates of power from main unit. No isolation between analog channels.	
Power supply	5V DC, 30mA (internal power supply from main unit) 24V DC ±10%, 55mA (external power supply)	
Number of occupied I/O points	The blocks occupy either 8 input or output points.	
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17" x 3.43" x 3.54")	
Mass (Weight)	0.3kg (0.66 lbs)	

FX2N-8AD Analog Input and Temperature Sensor Input Block

Features

1) Eight channels for voltage input (-10 to 10V DC), current input (4 to 20mA DC, -20 to 20mA DC), thermocouple (K, J or T type) temperature sensor.
2) For each channel, voltage, current or thermocouple input can be specified independently.
3) 15 bits resolution plus sign bit.



Voltage/Current Input Specifications and Common Item

Item	Voltage input	Current output
Analog input range	-10 to 10 V DC (input resistance: 200kΩ)	-20 to 20 mA DC, 4 to 20 mA DC (input resistance: 250Ω)
Digital output	Signed 15-bit binary, 14-bit + 1 sign bit	
Resolution	• 0.63mV (20V x 1/32000) • 2.5mV (20V x 1/8000)	• 2.50μA (40mA x 1/16000) during input of -20 to 20mA • 5.00μA (40mA x 1/8000) during input of -20 to 20mA • 2.00μA (16mA x 1/8000) during input of 4 to 20mA • 4.00μA (16mA x 1/4000) during input of 4 to 20mA
Overall accuracy	Ambient temperature: 25°C ±5°C ±0.3% (±60mV) against full scale 20V Ambient temperature: 0 to 55°C ±0.5% (±100mV) against full scale 20V	Ambient temperature: 25°C ± 5°C ±0.3% (±120μA) against full scale 40mA 4 to 20mA input is same (±120μA) Ambient temperature: 0 to 55°C ±0.5% (±200μA) against full scale 40mA 4 to 20mA input is same (±200μA)
Conversion speed (Approximate)	When only voltage input and current input are used: 500μs x Number of channels used Channel for thermocouple input: 40ms x Number of channels used	
Isolation	• When only voltage input and current input are used 500μs x Number of used channels • When thermocouple input is used for 1 or more channels Channel for voltage/current input: 1 ms x Number of used channels Channel for thermocouple input: 40 ms x Number of used channels (Number of channels used indicates the total number of all channels used for voltage input, current input or thermocouple input)	
Power supply	5V DC, 50mA (internal power supplied from main unit) 24V DC ±10%, 80mA (external power supply)	
Number of occupied I/O points	The blocks occupy either 8 input or output points.	
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)	75 x 75 x 90 mm (2.95" x 2.95" x 3.54")	
Mass (Weight)	0.3kg (0.66 lbs)	

Thermocouple Input Specifications

Item		K type thermocouple	J type thermocouple	T type thermocouple
Analog input range		-100 to 1200°C -148 to 2192°F	-100 to 600°C -148 to 1112°F	-100 to 350°C -148 to 662°F
Digital output		Signed 15-bit binary, 14-bit + 1 sign bit		
Resolution		0.1°C or 0.18°F		
Overall accuracy	Less than Ver. 1.10	Ambient temperature: 0 to 55°C ±1% Against full scale (-100°C to 1200°C/-148°F to 2192°F) However, 0°C to 1000°C/32°F to 1832°F of K type and 25°C to 600°C/77°F to 600°F of J type are 0.5%.		
	Ver. 1.10 or more	Ambient temperature: 0 to 55°C ±0.5% against a full scale ±6.5°C/±11.7°F with K type ±3.5°C/±6.3°F with J type		Ambient temperature: 0 to 55°C ±0.7% ±3.15°C/±5.67°F over the full scale

FX2N-2DA Analog Output Block

Features

1) Two channels for voltage output (0 to 10V DC, 0 to 5V DC) or current output (4 to 20mA DC).
2) Voltage or current output can be specified for each channel.
3) 12 bits resolution.

Item	Voltage output	Current output
Analog output range	0 to 10V DC and 0 to 5V DC (External load resistance 2kΩ to 1MΩ)	4 to 20mA (External load resistance 400Ω or less)
Digital input	12-bit binary	
Resolution	2.5mV (10V/4000) 1.25mV (5V/4000)	4μA {(20-4)mA/4000}
Overall accuracy	±1% (full scale 0 to 10V)	±1% (full scale 4 to 20mA)
Conversion speed	4ms/1 channel (sequence program and synchronization)	
Isolation	Photocoupler isolation between analog and digital circuits. DC/DC converter isolates of power from main unit. No isolation between analog channels.	
Power supply	5V DC, 30mA (Internal power supplied from main unit) 24V DC ±10%, 85mA (Internal power supplied from main unit)	
Number of occupied I/O points	The blocks occupy either 8 input or output points.	
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)	43 x 87 x 90 mm (1.69" x 3.43" x 3.54")	
Mass (Weight)	0.2kg (0.44 lbs)	

FX2N-4DA Analog Output Block

Features

1) Four channels for voltage output (-10 to 10V DC) or current output (0 to 20mA) .
2) Voltage or current output can be specified for each channel.
3) 11 bits resolution plus sign bit.

Item	Voltage output	Current output
Analog output range	-10 to 10V DC (External load resistance: 2kΩ to 1MΩ)	0 to 20mA (External load resistance: 500Ω)
Digital input	Signed 12-bit binary, 11-bit + 1 sign bit	
Resolution	5mV (10V x 1/2000)	20μA (20mA x 1/1000)
Overall accuracy	±1% (full scale 0 to 10V)	±1% (at full scale of 20mA)
Conversion speed	2.1ms for 4 channels	
Isolation	Photocoupler isolation between analog and digital circuits. DC/DC converter isolates of power from main unit. No isolation between analog channels.	
Power supply	5V DC, 30mA (Internal power supply from main unit) 24V DC ±10%, 200mA (external power supply)	
Number of occupied I/O points	The blocks occupy either 8 input or output points.	
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17" x 3.43" x 3.54")	
Mass (Weight)	0.3kg (0.66 lbs)	

Analog Control

FX2N-4AD-PT Analog Input Block for Pt100 Temperature Sensor

Features

1) Platinum temperature sensor (Pt100, 3-wire type) input.
2) Four input channels.
3) Centigrade (°C) or Fahrenheit (°F) measurement.
4) Resolution: 0.2 to 0.3°C or 0.36 to 0.54°F

Item	Centigrade(°C)	Fahrenheit(°F)
Analog input signal	Platinum temperature Pt100 sensors (100Ω), 3-wire, 4-channel (CH1/CH2/CH3/CH4), 3850 PPM/°C (DIN 43760, JIS C1604-1989)	
Current to sensor	1 mA sensor: 100Ω Pt100	
Compensated range	-100 to 600°C	-148 to 1112°F
Digital output	-1000 to 6000	-1480 to 11120
	12-bit binary, 11-bit + 1 sign bit	
Resolution	0.2 to 0.3°C	0.36 to 0.54°F
Overall accuracy	±1% full scale	
Conversion speed	15 ms x 4 channels	
Isolation	Photocoupler isolation between analog and digital circuits. DC/DC converter isolates power from main unit. No isolation between analog channels.	
Power supply	5V DC, 30mA (Internal power supply from main unit) 24V DC ±10%, 50mA (external power supply)	
Number of occupied I/O points	The blocks occupy either 8 input or output points.	
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17" x 3.43" x 3.54")	
Mass (Weight)	0.3kg (0.66 lbs)	

FX2N-4AD-TC Analog Input Block for Thermocouple Temperature Sensor

Features

1) K or J type thermocouple temperature sensor input.
2) Four input channels.
3) Centigrade (°C) or Fahrenheit (°F) measurement.
4) Resolution: 0.4°C or 0.72°F for K type and 0.3°C or 0.54°F for J type

Item	Centigrade (°C)		Fahrenheit (°F)	
Rated temperature range	Type K : -100 to 1200°C	Type J : -100 to 600°C	Type K : -148 to 2192°F	Type J : -148 to 1112°F
Digital output	12-bit binary, 11-bit + 1 sign bit			
	Type K : -1000 to 12000	Type J : 1000 to 6000	Type K : -1480 to 21920	Type J : -1480 to 11120
Resolution	Type K : 0.4°C	Type J : 0.3°C	Type K : 0.72°F	Type J : 0.54°F
Overall accuracy	± (0.5% full scall 1°C)			
Conversion speed	(240ms ±2%) x 4 channels (unused channels are not converted)			
Isolation	Photocoupler isolation between analog and digital circuits. DC/DC converter isolates power from main unit. No isolation between analog channels.			
Power supply	5V DC, 40mA (Internal power supply from main unit) 24V DC ±10%, 60mA (external power supply)			
Number of occupied I/O points	The blocks occupy either 8 input or output points.			
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)			
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17" x 3.43" x 3.54")			
Mass (Weight)	0.3kg (0.66 lbs)			

FX2N-2LC Temperature Control Block

Features

1) Epuipped with two temperature input points and two transistor (open collector) output points. This is a special block to read temperature signals from thermocouples and platinum thermometers, and to perform PID output control.
2) The proportional band, the integral time and the derivative time can be easily set by auto tuning.
3) Heater disconnect detection provided by the current detection (CT) function.

Power Supply, Performance Specifications and Common Items

Item	Specifications
Isolation	Analog input area and PLC are isolated by photocoupler. Power supply and analog input are isolated by DC/DC converter. Channels are isolated from each other.
Power supply	5V DC, 70mA (internal power supplied from main unit) 24V DC -15 to 10%, 55mA (external power supply)
Number of occupied I/O points	The blocks occupy either 8 input or output points.
Control method	Two-position control, PID control (with autotuning function), PI control
Control operation period	500ms
Applicable PLC	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required)
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17" x 3.43" x 3.54")
Mass (Weight)	0.3kg (0.66 lbs)

Input Specifications

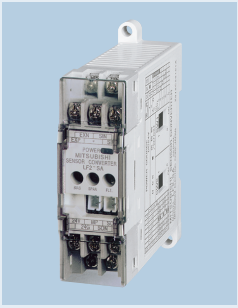
Item			Specifications
Temperature input	Number of input points		2 points
	Input type	Thermocouple	K/J/R/S/E/T/B/N/PLII/WRe5-26/U/L
		Platinum temperature sensor	Pt100/JPt100
	Measurement accuracy		Ambient temperature 23°C ±5°C: ±0.3% of range Ambient temperature 0 to 55°C: ±0.7% of range
	Cold contact temperature compensation error		±2.0°C while input value is -100 to -150°C ±3.0°C while input value is -150 to -200°C otherwise ±1%
	Resolution		0.1°C (0.1°F) or 1°C (1°F) depending upon the input range of the sensors used.
	Sampling period		500ms
	Effect of external resistance		Approx. 0.35mV/Ω
	Input impedance		1MΩ or more
	Sensor current		Approx. 0.3mA
	Allowable input lead wire resistance		10Ω or less
	Operation when input is disconnected		Upscale
	Operation when input is short-circuited		Downscale
CT input	Number of inputs		2 points
	Current detector		CTL-12-S36-8 or CTL-6- P-H (manufactured by U.R.D. Co., Ltd.)
	Heater current measurement value		When CTL-12 is used: 0 to 100A. When CTL-6 is used: 0 to 30A.
	Measurement accuracy		±5% of input value or 2A (excluding precision of current detector)
	Sampling period		1 second

Output Specifications

Item	Specifications
Number of output points	2 points
Output	Open collector transistor output
Rated load voltage	5 to 24V DC: Maximum load voltage 30V DC or less
Maximum load current	100mA: Leak current in OFF status 0.1mA or less
Maximum voltage drop in ON status	2.5V (maximum) or 1.0V (typical) at 100mA
Control output cycle	30 seconds (Variable within range from 1 to 100 seconds)

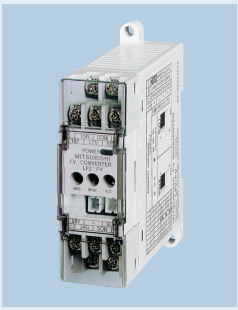
Signal Converter

LF2-SA Sensor Converter



Conversion type	Amplifies the extremely low voltage of a strain gage type sensor (such as a load cell or a DC differential transformer) into the input range of the controller. Provides isolation among input signals.
Control applications	• Tank (fluid) Control • Variable Tension applications • Load control on a conveyor • Injection mold internal pressure
Input signal	0 to 10mV, 0 to 20mV, 0 to 50mV, 0 to 100mV, 0 to 200mV
Output signal	0 to 1V, 0 to 5V, 1 to 5V, 0 to 10V, -1 to 1V, -5 to 5V, -10 to 10V, 4 to 20mA
Power supply	24V DC, 180mA
Dimensions (W) x (D) x (H)	25 x 75 x 87 mm (0.98" x 2.95" x 3.43")
Mass (Weight)	0.15kg (0.33 lbs)

LF2-FV FV Converter



Conversion type	Converts pulse signals given by the rotary encoder or the pulse generator into analog signals. Provides isolation among input signals.
Control applications	• Belt conveyor line speed • Easy synchronous control of many motors • Rotation speed of motors or gears
Input pulse	• Differential motion line driver pulse • Open collector Pulse • 15V DC voltage pulse
Input signal frequency	100Hz/200Hz/400Hz/800Hz/1kHz/2kHz/4kHz/8kHz/10kHz/20kHz/40kHz/80kHz
Output signal	0 to 1V, 0 to 5V, 1 to 5V, 0 to 10V, -1 to 1V, -5 to 5V, -10 to 10V, 4 to 20mA
Power supply	24V DC, 160mA
Dimensions (W) x (D) x (H)	25 x 75 x 87 mm (0.98" x 2.95" x 3.43")
Mass (Weight)	0.15kg (0.33 lbs)

LF2-SL DC Signal Converter

Conversion type	Executes conversion between voltage and current. Provides for isolation among input signals.
Control applications	• Analog signal level conversion • Analog signal line noise reducion
Input signal	0 to 1V, 0 to 5V, 1 to 5V, 0 to 10V, -1 to 1V, -5 to 5V, -10 to 10V, 4 to 20mA
Output signal	0 to 1V, 0 to 5V, 1 to 5V, 0 to 10V, -1 to 1V, -5 to 5V, -10 to 10V, 4 to 20mA
Power supply	24V DC, 140mA
Dimensions (W) x (D) x (H)	25 x 75 x 87 mm (0.98" x 2.95" x 3.43")
Mass (Weight)	0.15kg (0.33 lbs)

LF2-05PSU Power Supply for Converter

Item	This is the power supply unit for the converter.
Power supply	100 to 240V AC (10%, -15%), 50/60Hz, Power consumption: 35VA
Output voltage	24V DC, 0.5A Max.
Dimensions (W) x (D) x (H)	25 x 75 x 87 mm (0.98" x 2.95" x 3.43")
Mass (Weight)	0.15kg (0.33 lbs)

High Speed Counter

FX2N-1HC High Speed Counter Block

Features

1) Counts pulses up to 50kHz 1 phase or 2 phase (A/B phase).
2) Equipped with hardware comparator output function.
3) For 2 phases (A/B phase) counting: x1, x2 and x4 multiplication modes can be set.
4) Counting can be enabled and reset by the PLC or external inputs.
5) A line driver output type encoder (5V DC) can be connected.

Item	Specifications
Signal level	5V, 12V and 24V available depending on connection terminal. Output line driver is connected to 5V terminal.
Frequency	1-phase 1-input: 50kHz or less 1-phase 2-input: 50kHz or less (x2) 2-phase 2-input: 50kHz or less (x1), 25kHz or less (x2), 12.5kHz or less (x4)
Counter range	32-bit binary counter: -2,147,483,648 to 2,147,483,647 16-bit binary counter: 0 to 65,535
Count mode	Automatic UP/DOWN counting (1-phase 2-input or 2-phase 2-input). When on 1-phase 1-input mode, UP/DOWN is determined by a PLC command or an input terminal.
Comparison type	YH: Direct output processed by hardware comparator. YS: Software comparator processed output with maximum delay time of 300μs.
Output type	Transistor (NPN open collector) output 2 points, 5 to 24V DC, 0.5A
Additional functions	Mode and comparison result can be set by parameters from PLC. Present value, comparison result and error status can be monitored.
Number of occupied I/O points	The blocks occupy either 8 input or output points.
Power supply	5V DC, 90mA (Internal power supply from main unit or powered extension unit)
Applicable PLC	FX2N/FX2NC (FX2NC-CNV-IF required)
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17” x 3.43” x 3.54”)
Mass (Weight)	0.3kg (0.66 lbs)

Positioning Control

FX2N-1PG-E Pulse Output Block

Features

1) Equipped with seven operation modes for easy positioning control.
2) Multiple axes can be controlled by connecting multiple blocks.
3) Can output pulse chains of 100kHz maximum.
4) Positioning control is executed by program.

Item		Specifications
Number of control axes		1 axis/block (A single PLC can control 8 independent axes maximum)
Operation speed		Operations are enabled at pulse speed of 10Hz to 100kHz. The command unit can be selected from Hz, cm/min, 10deg/min, and inch/min.
Setting position data range		0 to ±999999 Absolute position specification or relative travel specification can be selected. Command unit can be selected from pulse, μm, mdeg and 10^{-4} inch. Multiplication of 10^0 , 10^1 ,10^2 or 10^3 can be set for position data.
Pulse output format		Forward (FP) and reverse (RP) pulse or pulse (PLS) with direction (DIR) can be selected. Open collector and transistor output 5 to 24V DC, 20mA or less
Number of I/O points occupied		The blocks occupy either 8 input or output points.
Power supply	For input signals	24V DC ±10%, Current consumption: 40mA or less Supplied from external power supply or 24+ output of PLC.
	For internal control	5V DC, 55mA supplied from PLC via extension cable.
	For pulse output	5 to 24V DC current consumption: 35mA or less
Applicable PLC		FX2N/FX2NC (FX2NC-CNV-IF required)
Dimensions (W) x (D) x (H)		43 x 87 x 90 mm (1.69" x 3.43" x 3.54")
Mass (Weight)		0.2kg (0.44 lbs)

FX2N-10PG Pulse Output Block

Features

1) High speed pulse output of 1MHz enables unmatched speed and accuracy.
2) Start up time as fast as 1ms.
3) Optimal speed control during positioning is realized.
4) S-shaped acceleration/deceleration control is available.
5) Maximum 30kHz input from external pulse generator can be received.
6) Table operation for easy programming of multi-positioning is included.

Item		Specifications
Number of control axes		1 axis/block (A single PLC can control 8 independent axes maximum)
Operation speed		Operations are enabled at pulse speed of 1Hz to 1MHz. The command unit can be selected among Hz, cm/min, 10deg/min and inch/min.
Setting position data range		-2,147,483,648 to 2,147,483,647 pulse Absolute or incremental positioning can be selected. The command unit can be selected from pulse, μm, mdeg and 10^{-4} inch. Muliplication of 10^0 , 10^1 ,10^2 or 10^3 can be set for position data.
Pulse output format		FP, RP (Supply power: 5-24V DC, 25mA or less) CLR: 5 to 24V DC, 20mA or less. Power from servo amplifier or external power supply.
Number of I/O points occupied		The blocks occupy either 8 input or output points
Power supply	Input signal	START, DOG, X0, X1: 24V DC ±10%, 32mA or less. START, DOG, X0, X1 can connect service power supply of programmable controller main unit (24+ terminal)
	Internal control	5V DC, 120mA from PLC main unit.
	Output signal	Power from VIN servo amplifier or external power supply
Applicable PLC		FX2N/FX2NC (FX2NC-CNV-IF required)
Dimensions (W) x (D) x (H)		43 x 87 x 90 mm (1.69" x 3.43" x 3.54")
Mass (Weight)		0.2kg (0.44 lbs)

FX2N-10GM Positioning Controller

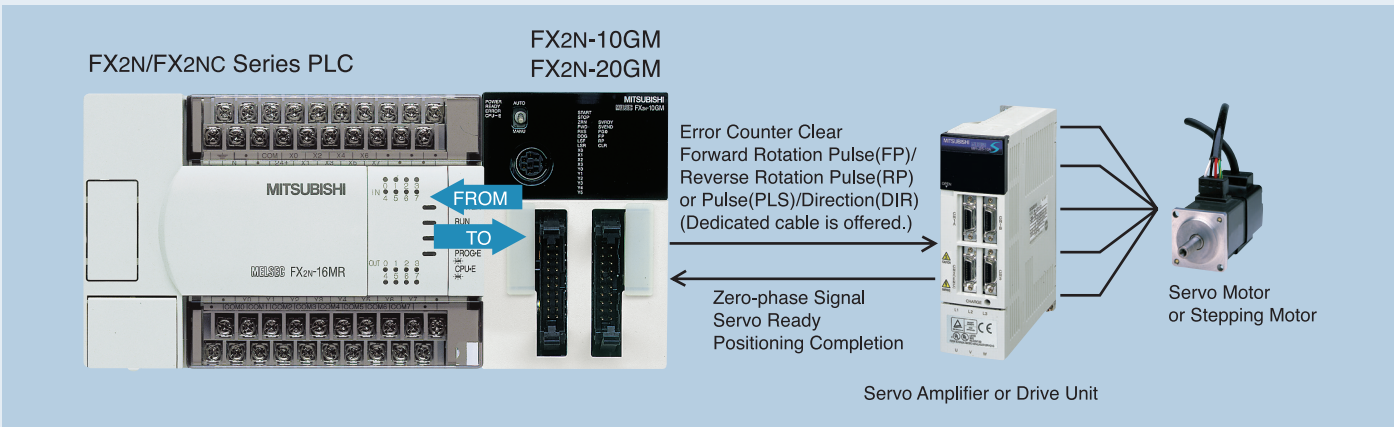
Features

1) Performs complicated multiple speed operations and interrupt positioning.
2) Can operate independently of a PLC.
3) Multiple axes can be controlled by connecting multiple blocks.
   Up to 8 blocks can be connected to a FX2N Series PLC.
   Up to 4 blocks can be connected to a FX2NC Series PLC.
4) Output pulse chains of 200kHz maximum.
5) Equipped with absolute position detection and the ability to connect to manual pulse generator.
6) Windows based software with flow chart programming allows visual program development.

FX2N-20GM Positioning Controller

Features

1) Can execute simultaneous 2-axes control including linear and circular interpolation.
2) Can operate independently of a PLC.
3) Multiple axes can be controlled by connecting multiple blocks.
   Up to 8 blocks can be connected to a FX2N Series PLC.
   Up to 4 blocks can be connected to a FX2NC Series PLC.
4) Output pulse chains of 200kHz maximum (100kHz maximum during interpolation).
5) Equipped with absolute position detection and the ability to connect to manual pulse generator.
6) Windows based software with flow chart programming allows visual program development.



See next page for Positioning Controller specifications.

Positioning Control

FX2N-10/20GM Positioning Controller Specifications

Item		FX2N-10GM	FX2N-20GM
Number of control axes		1 axis	2 axes (independent or simultaneous control)
Interpolation		Not available	Available
Drive method		Independent or as PLC special Function Module (I/O extention is not possible when used independently)	Independent or as PLC special Function Module (I/O extention is possible)
Program memory		Built-in EEPROM: 3.8k steps	Built-in RAM: 7.8k steps Optional memory board FX2NC-EEPROM-16: 7.8k (Memory board with RTC function cannot be used)
Positioning unit		Command units: mm, deg, inch, pls, (incremental/absolute) Max. command value ±999999 (32-bit when indirectly specified)	
Accumulation address		-2,147,483,648 to 2,147,483,647 pulses	
Operation speed		200kHz max, 153000cm/min (200kHz or less). Automatic trapezoidal pattern acceleration/deceleration (The interpolation drive is 100kHz or less).	
Zero return		Manual operation or automatic operation. DOG type machine zero return (The DOG search function is provided). An automatic electric zero return is possible by the electric starting point setting.	
Absolute position detection		The absolute position detection is possible with MR-J2 and the MR-H type servo motor with the ABS detection function.	
Control inputs		Operation system: FWD (manual forward), RVS (manual reverse), ZRN (machine zero return), START (automatic start), STOP, Manual pulse generator (2kHz max.), Single-step operation input (Depends upon the parameter setting). Mechanical system: DOG (near-point signal), LSF (forward rotation limit), LSR (reverse rotation limit), Interrupt: 4 points Servo system: SVRDY(servo ready), SVEND (servo end), PG0 (zero point signal)	
Control outputs		Servo system: FP (forward pulse), RP (reverse pulse), CLR (counter clear).	
		General purpose: Y0 to Y5	General purpose: Y0 to Y7 Y10 to Y67 can be output by using extension block. Max. I/O point: 48 points
Control method	Program method	The program is written in the positioning control unit.	
	Table method	When the PLC is used together, the positioning control is done by the FROM/TO instruction.	-
Program No.		Ox00 to Ox99 (Positioning program), O100 (sub task program)	O00 to O99 (two axes simultaneously), Ox00 to Ox99 and Oy00 to Oy99 (two independent axes), O100 (subtask program)
Instruction	Positioning	Code No. system - 13 types.	Code No. system - 19 types.
	Sequence	LD/LDI/AND/ANI/OR/ORI/ANB/ORB/SET/RST and NOP.	
	Application	FNC number system - 29 types.	FNC number system - 30 types.
Parameter		System setting - 9 types. Positioning - 27 types. I/O Control - 18 types.	System setting - 12 types. Positioning - 27 types. I/O Control - 19 types.
		Settings in the program can be changed by using a special data register (the system settings are excluded).	
M Cods		m00: Program stop (WAIT), m02: (End of positioning program), m01 and m03 to m99 can be arbitrarily used. m100 (WAIT), and m102 (END), are used on a subtask.	
Device		Inputs: X0 to X3, X375 to X377 Outputs: Y0 to Y5 Supplementary relay: M0 to M511 (general purpose), M9000 to M9175 (special) Pointer: P0 to P127 Data register: D0 to D1999 (general purpose) (16-bit), D4000 to D6999 (file register and latched relays), D9000 to D9599 (special) Index: V0 to V7 (16-bit), Z0 to Z7 (32-bit)	Inputs: X0 to X67, X372 to X377 Outputs: Y0 to Y67 Supplementary relay: M0 to M99 (general purpose), M100 to M511 (general purpose and battery backup area), M9000 to M9175 (special) Pointer: P0 to P255 Data register: D0 to D99 (general purpose), D100 to D3999 (general purpose and battery backup area) (16-bit), D4000 to D6999 (file register and battery backup area), D9000 to D9599 (special) Index: V0 to V7 (16-bit), Z0 to Z7 (32-bit)
Number of I/O points occupied		The blocks occupy either 8 input or output points (when connecting to PLC)	
Communication with PLC		FROM/TO instruction	
Power supply		24V DC -15%, 10%, 5W	24V DC -15%, 10%, 10W
Applicable PLC		FX2N/FX2NC (FX2NC-CNV-IF required)	
Dimensions (W) x (D) x (H)		60 x 87 x 90 mm (2.36” x 3.43” x 3.54”)	86 x 87 x 90 mm (3.39” x 3.43” x 3.54”)
Mass (Weight)		0.3kg (0.66 lbs)	0.4kg (0.88 lbs)

FX2N-1RM-E-SET Programmable Cam Switch

Features

1) Detects the rotation angle to realize accurate rotation position control. (Control is performed by the mechanical cam switch using a dedicated resolver)
2) The operation angle setting and monitor display are easily entered using the add-on type setting unit.
3) The rotation angle is detected with high accuracy (415 r/min (rpm)/0.5° or 830 r/min (rpm)/1.0°).
4) Battery free EEPROM is built-in and can store up to 8 programs.
5) The cable of the brushless resolver assembled into the machine can be extended up to 100m (328').
6) Can be connected to the CC-Link system using CC-Link interface FX2N-32CCL.

Product Component

FX2N-1RM: Programmable cam switch module
(with setting panel)
FX2-720RSV: Brushless resolver
FX2N-RS-5CAB: Resolver cable (5m / 16')
PLC extension cable for PLC (55mm / 2.17")

Power Supply Specifications

Rated voltage	24V DC 10%, -15%
Power consumption	3W (when operating individually), 5W (at 32 points output ON)
In-rush current	300mA (when operating individually), 400mA (at 32 points output ON)

Resolver Specifications

Excitation method	2-phase excitation, 1-phase output (5kHz)
Mechanical allowable rotation speed	3000 r/min (rpm)
Cable distance	100m (328') maximum
Protection structure	IP52 (JEM1030)
Ambient temperature	-10 to 85°C

Performance Specifications

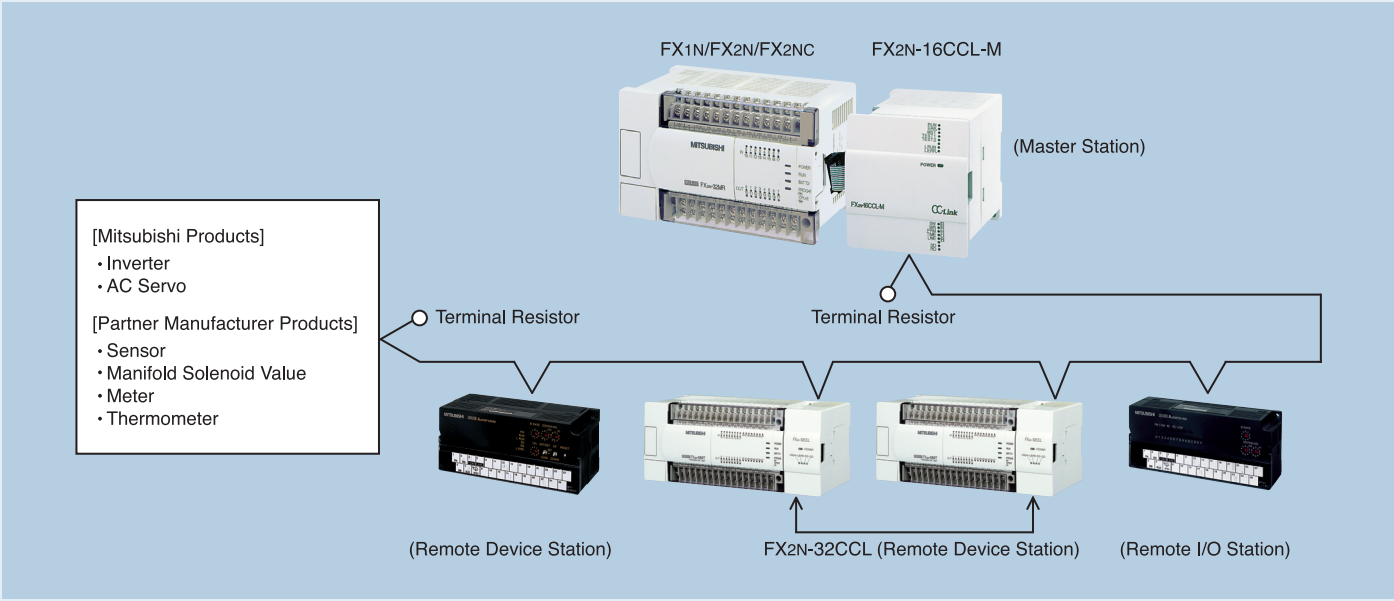
Program memory	Built-in EEPROM memory (no battery)
Number of cam output points	48 internal output points. Data is read by programmable controller. In addition, 48 points can be connected when transistor output extension blocks or triac output extension blocks are connected. (When extension blocks are connected, up to 32 points can be turned ON at a time.)
Detector	Brushless resolver (F2-720RSV for F2-32RM)
Control resolution	720 divisions/rotation (0.5 degree) or 360 divisions/rotation (1 degree)
Response speed	0.5 degree at 415 r/min (rpm) or 1.0 degree at 830 r/min (rpm)
Number of program banks	8 banks (specified by PLC) or 4 banks (specified by external input)
Setting unit	Dedicated data setting unit (integrated add-on type) Peripheral equipment of PLC (user program is required)
Number of times of ON/OFF	8 times/cam output
Input	2 bank input points (code input of 0 to 3), 24V DC, 7mA, response time 3ms, photocoupler isolation
Number of I/O points occupied	The blocks occupy either 8 input or output points when connecting to PLC.
Communication with PLC	FROM/TO instruction
Applicable PLC	FX2N (maximum 3), FX2NC (FX2NC-CNV-IF required, maximum 1)
Dimensions (W) x (D) x (H)	55 x 97 x 111 mm (2.17" x 3.82" x 4.37")
Mass (Weight)	0.5kg (1.1 lbs)

A Communications Revolution

FX2N-16CCL-M CC-Link System Master Block

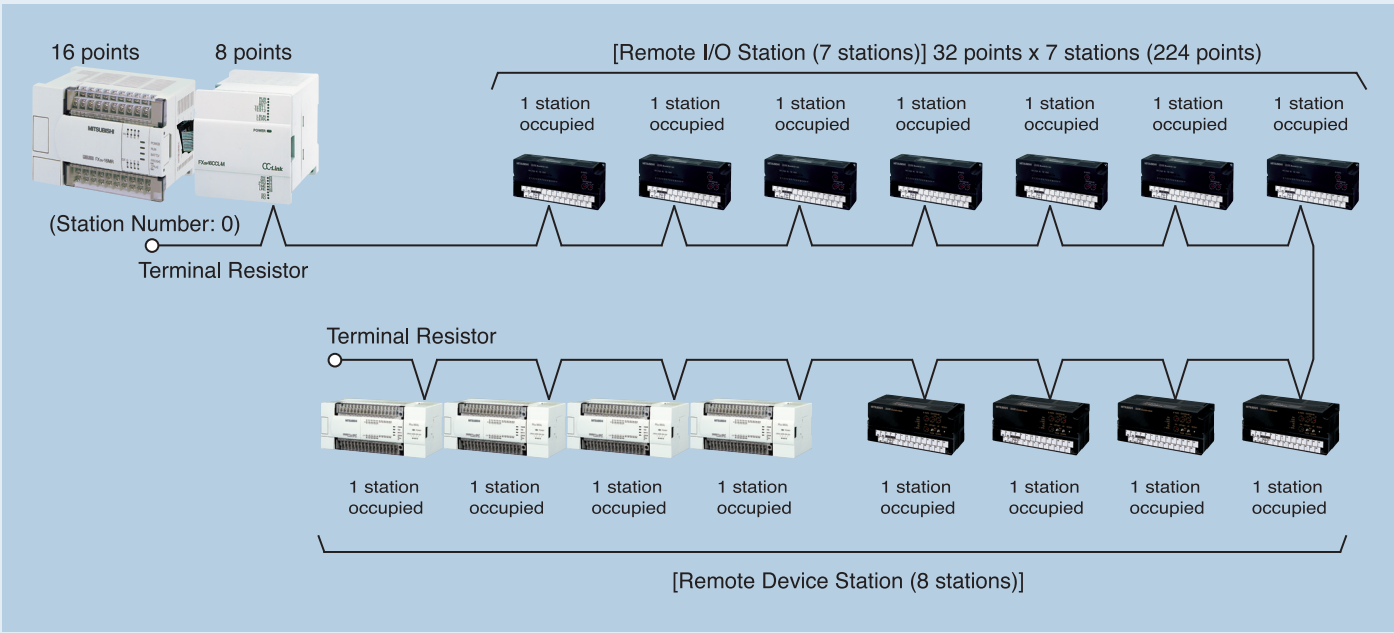
Features

1) Allows FX Series PLC to act as the master station in the CC-Link.
2) Up to 7 remote I/O stations and up to 8 remote device stations can be connected to the master station.
3) The FX Series PLC can be connected as a remote device station in the CC-Link by using the CC-Link Interface FX2N-32CCL.



The Example of Maximum System Configuration Using FX Series PLC

When connecting FX2N/FX2NC Series PLC main unit equipped with 16 I/O points and FX2N-16CCL-M.



Each Remote I/O station and Remote device station occupy I/O points of the PLC.

Item	Specifications
Applicable function	Master station function (The local station and standby master station functions are not provided.)
CC-Link version	Ver. 1.10
Supported baud rate	Selectable (by rotary switch) among 156kbps, 625kbps, 2.5Mbps, 5Mbps and 10Mbps
Station number	0 (set by rotary switch)
Maximum total cable length (maximum transmission distance)	1200m (3937') maximum, varies depending on the transmission speed.
Maximum number of connected modules	• Remote I/O stations: 7 maximum (Each station occupies 32 I/O points of the PLC.) • Remote device stations: 8 maximum (Remote Devices occupying more than one station must be counted as the total number of occupied stations). a: Number of remote device stations occupying 1 station b: Number of remote device stations occupying 2 stations c: Number of remote device stations occupying 3 stations d: Number of remote device stations occupying 4 stations • Number of remote I/O stations + Number of remote device stations ≤ 15 The maximum allowable I/O per PLC includes the remote device and remote I/O stations
Number of link points per station	Remote I/O station: Remote I/O = 32/32 (RX/RY) points Remote device station: Remote I/O = 32/32 (RX/RY) points Remote register = 4 (RWw) points (master station --> remote device station) Remote register = 4 (RWr) points (remote device station --> master station)
Connection cable	Dedicated CC-Link cable/Dedicated high-performance CC-Link cable
RAS function	• Automatic return function • Slave station cutoff function • Error detection by link special relay/register
Applicable PLC	FX_{1N}/FX_{2N}(Ver. 2.20 or later)/FX_{2NC} (Ver. 2.20 or later), Cannot use with FX_{2N}-32ASI-M AS-interface master block.
Number of occupied I/O points	8 I/O points of FX Series PLC (8 points in total. The ratio between inputs and outputs is arbitrary.)
Communication with PLC	By FROM/TO instructions via the buffer memory
Power supply-External	Supplied from 24V DC (150mA) external terminal block.
Power supply-Internal	5V DC is supplied internally.
Dimensions (W) x (D) x (H)	85 x 87 x 90 mm (3.34" x 3.43" x 3.54")
Mass (Weight)	0.4kg (0.88 lbs)

A Communications Revolution

FX2N-32CCL CC-Link Interface Block

Features

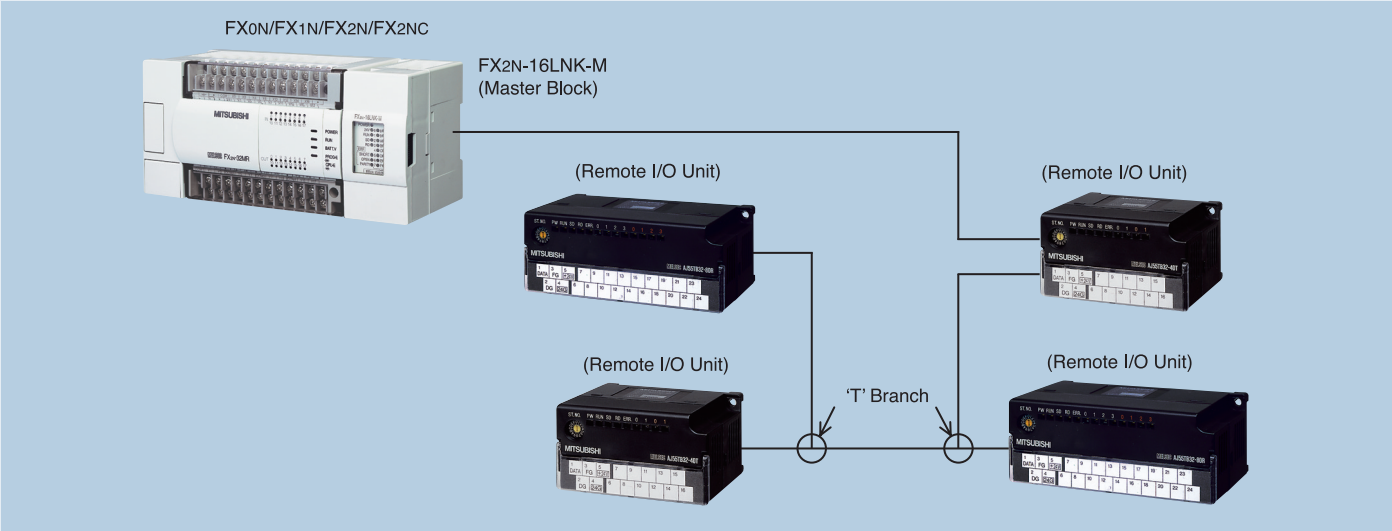
1) Allows an FX Series PLC to be connected as a remote device station in the CC-Link.
2) By using this block and the CC-Link system master block FX2N-16CCL-M, a CC-Link system can be completed with FX Series PLCs.

Item	Specifications
Isolation	Network bus and internal power supply are isolated by photocoupler.
CC-Link version	Ver. 1.00
Station type	Remote device station
Station No.	1 to 64 (set by rotary switch)
Number of stations	1 to 4 (set by rotary switch)
Supported baud rate	156kbps/625kbps/2.5Mbps/5Mbps/10Mbps (set by rotary switch)
Maximum Cable Extension Length (Maximum Transmission Distance)	1200m (3937') maximum, value depending on the transmission speed
Number of remote device points	The number of remote I/O points in one station is 32 input points and 32 output points. However, the upper 16 points are occupied by the CC-Link system as the system area.
Number of remote register points	The number of remote register points in one station is 4 points of RW write area and 4 points of RW read area.
Number of occupied I/O points	The blocks occupy either 8 input or output points
Communication with PLC	Communication is performed from the FX PLC via the buffer memory using FROM/TO instructions.
Control power supply	5V DC, 130mA (supplied from PLC)
Drive power supply	24V DC ±10%, 50mA (supplied from external terminals)
Applicable controllers	FX1N/FX2N/FX2NC (FX2NC-CNV-IF required) Series PLC
Dimensions (W) x (D) x (H)	43 x 87 x 90 mm (1.69" x 3.43" x 3.54")
Mass (Weight)	0.2kg (0.44 lbs)

FX2N-16LNK-M MELSEC-I/O LINK
Remote I/O Link System Master Block

Features

1) Supports up to 128 points maximum.
2) The master block and remote I/O units can be connected with a twisted pair or cabtyre cable.
3) The allowable total extension distance in the entire system is 200m (656') maximum. The cable can branch because no terminal resister is required.
4) Even if one remote I/O unit has failed, the system does not crash.
5) General devices, X (inputs) and Y (outputs), are assigned to each remote I/O unit. These devices are driven by the programs in the same way as general purpose I/Os.
6) Remote I/O units are shared by the A Series PLC.



Item		Specifications
Maximum number of controlled I/O points		128 points (16 remote units with 4 points each) per master block
I/O refresh time		Approx. 5.4ms (without regard to number of I/O points)
Baud rate		38400bps
Synchronization method		Frame synchronization and bit synchronization used together
Communication specifications	Error control method	Adjacent phase inversion check and parity check used together (retry by timeout)
	Transmission path type	Bus (multi-drop) type ('T' branches are available. Terminal resistors are not required.)
	Transmission distance	Maximum total extension distance: 200m (656')
	Maximum number of connected units	16 stations per master block
Number of occupied I/O points		Selectable among 16, 32, 48, 64, 96 and 128
Supply voltage from outside		21.6 to 27.6V DC (for communication path)
24V DC current		90mA (TYP 24V DC)
5V DC current (internal)		200mA
Applicable PLC		FX1N/FX2N/FX2NC (FX2NC-CNV-IF required) Series PLC
Dimensions (W) x (D) x (H)		43 x 87 x 90 mm (1.69" x 3.43" x 3.54")
Mass (Weight)		0.3kg (0.66 lbs)

A Communications Revolution

FX2N-32ASI-M AS-interface Master Block

Features

1) Wiring is performed with a single cable.
2) 'T' branching is possible because a terminal resistor is not required.
3) The allowable total extension distance is 100m (328') maximum. When two repeaters are connected, it becomes 300m (984') maximum.
4) Automatic addressing allows for easy slave station replacement.

Item	Specifications
Complies with	EN50081-2, EN50082-2, AS-interface certification (EN50295)
System configration	Max. 31 slave units
I/O Refresh Time	Max. 5ms (Connecting maximum I/O points)
Baud rate	167kbps
Communication Method	APM (Alternating Pulse Modulation) method
Communication Path Format	Bus network type (Free topology)
Total Extension Distance	Max.100m (328'). Up to 2 repeaters can be used on the system. The total extension distance may be extended by 100m (328') for each repeater.
Number of Occupied I/O Points	The block occupies either 8 input or output points.
Display (7 Segment)	2 column (slave address/error code)
Applicable PLC	FX1N/FX2N (total system I/O points, FX2N: 256 or less, FX1N: 128 or less) Each PLC can connect only one ASi Master module. Cannot use with FX2N-16CCL-M CC-Link Master Block.
Power supply-External	30.5V DC, 70mA
Power supply-Internal	5V DC, 150mA
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17" x 3.43" x 3.54")
Mass (Weight)	0.2kg (0.44 lbs)

FX2N-64DNET DeviceNet Interface Block

Features

1) The FX2N-64DNET DeviceNet Interface Block can be used to connect an FX2N PLC to a DeviceNet network.
2) The FX2N-64DNET is a slave (Group 2) on DeviceNet.
3) The FX2N-64DNET passed the conformance test with A-14 for DeviceNet. (The FX2N-64DNET conforms to the DeviceNet specifications Volume 1 release 2.0 and Volume 2 release 2.0)
4) Master/Slave communication, Client/Server communication (using the UCMM connection) is possible.

Items	Specifications
Node type	G2 server
Station numbers	0 to 63
Transmission cable	Shielded twisted-pair cable conformed with DeviceNet specifications
MAC ID	0 to 63
Supported baud rates	125/250/500 kbps
Applicable PLC	FX2N/FX2NC
Power supply-External	50mA at 24V DC
Power supply-Internal	120mA at 5V DC
Number of occupied I/O points	The blocks occupy either 8 input or output points.
Dimensions (W) x (D) x (H)	43 x 87 x 90 mm (1.69" x 3.43" x 3.54")
Mass (Weight)	0.2kg (0.44 lbs)

FX0N-32NT-DP Profibus Interface Block

Features

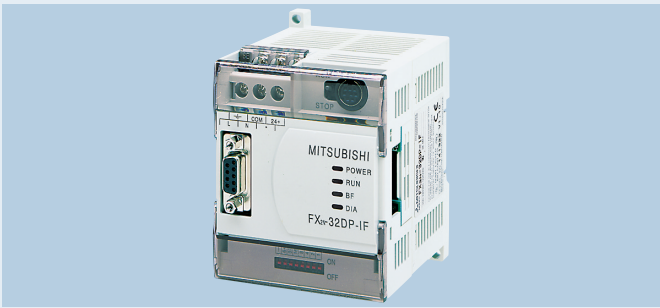
1) The FX0N-32NT-DP module can be used to connect an FX2N Series PLC to an existing Profibus-DP Network as an intelligent slave.
2) Up to 20 words of data may be sent to/received from a master.
3) Speeds of up to 12M baud are supported.
4) Uses standard TO/FROM commands to communicate with the FX Series PLC.

Item	Specifications	
Transmission data	20 words can be sent and received during one bus cycle (default value 16 words). The number of transmitted words can be changed between 1 and 20 words.	
Supported baud rates (bps) and bus length	9.6/19.2/45.45/93.75 kbps	1200m (3937')
	187.5kbps	1000m (3280')
	500kbps	400m (1312')
	1.5Mbps	200m (656')
	3/6/12 Mbps	100m (328')
Applicable PLC	FX1N/FX2N/FX2NC series (When using FX2NC, need to use FX2NC-CNV-IF)	
Power supply-External	24V DC, 20mA	
Power supply-Internal	5V DC, 17mA	
Dimensions (W) x (D) x (H)	43 x 86 x 90 mm (1.72" x 3.38" x 3.54")	
Mass (Weight)	0.3kg (0.66 lbs)	

FX2N-32DP-IF Profibus Interface Block

Features

1) The FX2N-32DP-IF module can be used to connect FX2N digital I/O and special function block directly to an existing Profibus-DP network.
2) Digital and Analogue from a Profibus-DP master can be sent to/received from any of the supported I/O blocks and special function blocks.
3) Up to 256 I/O points or 8 special function blocks can be connected to this unit, limited only by the power supply and the data capability of the master.
4) Speeds of up to 12M baud are supported.



Item	Specifications	
Maximum number of controllable I/O points	Maximum 256 points	
Transmission data (Maximum exchanged data length)	200 bytes of data can be sent and received during one bus cycle.	
Supported baud rates (bps) and bus length	9.6/19.2/45.45/93.75 kbps	1200m (3937')
	187.5kbps	1000m (3280')
	500kbps	400m (1312')
	1.5Mbps	200m (656')
	3/6/12 Mbps	100m (328')
Power supply-External	24V AC, 50/60Hz	
Service source	24V, 400mA available	
Dimensions (W) x (D) x (H)	75 x 87 x 90 mm (2.95" x 3.43" x 3.54")	
Mass (Weight)	0.4kg (0.88 lbs)	

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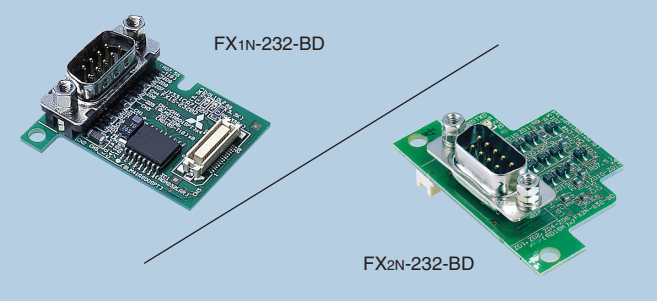
FX1N-232-BD/FX2N-232-BD RS-232C Communication Boards

Features

1) Can communicate with diversified RS-232C equipment such as personal computer, bar code reader, or printer (no protocol communication).
2) Can use a dedicated protocol (Computer Link) to communicate with RS-232C equipment.
3) Can connect an external programming tool or graphic operation terminal (GOT).



Item	FX1N-232-BD	FX2N-232-BD
Transmission standard	In conformance to RS-232C	
Maximum transmission distance	15m (49')	
Connection method	9-pin D-sub (pin, #4-40UNC / inch screw thread type)	
LED indicators	RXD, TXD	
Communication method	Half duplex	Full duplex (half duplex for FX2N before Ver. 2.00)
Baud rate	300/600/1200/2400/4800/9600/19200 bps	
Communication procedure	No protocol dedicated protocol, protocol for programming tool	
Isolation	No isolation	
Power supply-Internal	5V DC, 20mA is supplied as the power from the PLC	
Applicable PLC	FX1S/FX1N	FX2N
Dimensions (W) x (D) x (H)	43 x 68 x 90 mm (1.69" x 2.68" x 3.54")	
Mass (Weight)	0.2kg (0.44 lbs)	

FX0N-232ADP RS-232C Communication Adapter

Features

1) Isolation type adapter for RS-232C communication.
2) Can communicate with diversified RS-232C equipment such as personal computer, bar code reader, or printer (no protocol communication).
3) Can use a dedicated protocol (Computer Link) to communicate with RS-232C equipment.
4) Can connect an external programming tool or graphic operation terminal (GOT).

Item	Specifications
Transmission standard	In conformance to RS-232C
Maximum transmission distance	15m (49')
Connection method	25-pin D-Sub (pin, #4-40UNC / inch screw thread type)
LED indicators	SD, RD, POWER
Communication method	Full-duplex: FX2N (Ver. 2.00 or later), FX2NC Half-duplex: FX1S/FX1N/FX2N (before Ver. 2.00)
Baud rate	300/600/1200/2400/4800/9600/19200 bps
Communication procedure	No protocol, dedicated protocol, protocol for programming tool
Isolation	Photocoupler isolation
Power supply-Internal	5V DC, 200mA is supplied from the PLC
Applicable PLC	FX1S/FX1N/FX2N/FX2NC Series PLC (PLCs other than the FX2NC require a function expansion board for special adapter connection)
Dimensions (W) x (D) x (H)	43 x 68 x 90 mm (1.69" x 2.68" x 3.54")
Mass (Weight)	0.2kg (0.44 lbs)

FX2N-232IF RS-232C Communication Interface Block

Features

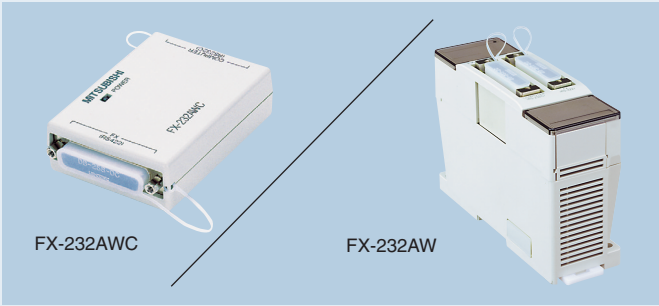
1) Can be used as a special function block.
2) Can be used together with the expansion boards for communication.
3) This block performs an automatic conversion between hexadecimal and ASCII code while transmitting or receiving messages.
4) Two or more headers and terminators can be specified for messages.
5) Data larger than the receive buffer length can be continuously received.

Item	Specifications
Transmission standard	In conformance to RS-232C
Maximum transmission distance	15m (49')
Connection method	9-pin D-Sub type (pin, #4-40UNC / inch screw thread type)
LED indicators	SD, RD, POWER
Communication method	Full duplex
Transmission speed (baud rate)	300/600/1200/2400/4800/9600/19200 bps
Communication procedure	No protocol
Isolation	Photocoupler isolation
Number of Occupied I/O Points	The blocks occupy either 8 input or output points
Communication with PLC	FROM/TO instruction
Power supply-External	24V DC ±10%, 80mA
Power supply-Internal	5V DC, 40mA
Applicable PLC	FX2N/FX2NC (FX2NC-CNV-IF required) Series PLC
Dimensions (W) x (D) x (H)	55 x 87 x 90 mm (2.17" x 3.43" x 3.54")
Mass (Weight)	0.3kg (0.66 lbs)

FX-232AWC/FX-232AW Serial Interface

Features

1) Converts RS-232C to RS-422 so that computers or other peripheral equipment can be connected to the FX Series PLC programming port.
2) Provides photocoupler on communication lines to protect against over voltage and EMC noise.



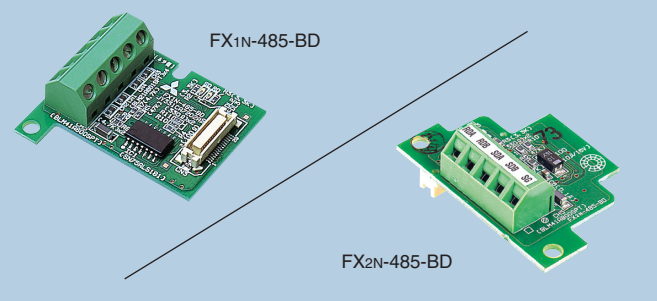
Item	Specifications	
	FX-232AWC	FX-232AW
Transmission standard	Converts between RS-232C and RS-422	
Isolation	Photocoupler isolation	
Power supply-Internal	Taken from PLC	
Mounting method	Office based - no mounting requirements	35mm DIN Rail (DIN 46277) or direct mounting
Applicable PLC	FX1S/FX1N/FX2N/FX2NC	
Dimensions (W) x (D) x (H)	25 x 80 x 60 mm (0.98" x 3.15" x 2.36")	45 x 140 x 95 mm (1.77" x 5.51" x 3.74")
Mass (Weight)	0.1kg (0.22 lbs)	0.3kg (0.66 lbs)

A Communications Revolution

FX1N-485-BD/FX2N-485-BD RS-485 Communication Boards

Features

1) Data transfer function using the no protocol.
   The 485BD transfers the data using the RS instruction between a bar code reader, computer, or printer.
2) Data transfer function using a dedicated protocol.
   The 485BD transfers the data when a computer directly specifies devices of the PLC.
3) Parallel Link
   The 485BD transfers automatically 50 auxiliary relays and 10 data registers when two FX1S Series PLC, or FX1N Series PLC's are connected on a one-to-one basis.
4) N:N Network
   The 485BD transfers automatically up to 64 auxiliary relays and 8 data registers when up to FX1S/FX1N/FX2N/FX2NC Series PLCs are connected.



Item	FX1N-485-BD	FX2N-485-BD
Transmission standard	In conformance to RS-485 and RS-422	
Maximum transmission distance	50m (164')	
LED indicators	SD, RD	
Communication method	Half duplex	Full duplex (half duplex bi-directional for FX2N earlier than Ver. 2.00)
Baud rate	300/600/1200/2400/4800/9600/19200 bps Parallel link: 19200 bps N:N Network: 38400 bps	
Communication procedure	No protocol, dedicated protocol, Parallel link, N:N Network	
Isolation	No isolation	
Power supply-Internal	5V DC, 60mA is supplied as the power from the PLC.	
Applicable PLC	FX1S/FX1N	FX2N

FX0N-485ADP RS-485 Communication Adapter

Features

1) This is an isolation type adapter for RS-485 communication.
2) Data transfer function using no protocol communication. The 485BD transfers the data using the RS instruction between a bar code reader, computer, or printer.
3) Data transfer function using a dedicated protocol.
   The 485BD transfers the data when a computer directly specifies devices of the PLC.
4) Parallel link
   The 485BD transfers automatically 50 auxiliary relays and 10 data registers when two FX1S Series PLC, or FX1N Series PLC's are connected on a one-to-one basis.
5) N:N network
   The 485BD automatically transfers up to 64 auxiliary relays and 8 data registers. Up to FX1S/FX1N/FX2N/FX2NC Series PLCs can be connected.

Item	Specifications
Transmission standard	In conformance to RS-485 and RS-422
Maximum transmission distance	500m (1640')
LED indicators	SD, RD, POWER
Communication method	Half duplex
Transmission speed (baud rate)	300/600/1200/2400/4800/9600/19200 bps, Parallel link: 19200 bps N:N Network 38400 bps
Communication procedure	No protocol, dedicated protocol, Parallel link, N:N Network
Isolation	Photocoupler isolation
Power supply-External	24V DC ±10%, 50mA
Power supply-Internal	5V DC, 60mA is supplied from the PLC
Applicable PLC	FX1S/FX1N/FX2N/FX2NC Series PLC (PLC's other than the FX2NC require a function expansion board for special adapter connection)
Dimensions (W) x (D) x (H)	43 x 87 x 90 mm (1.69" x 3.43" x 3.54")
Mass (Weight)	0.2kg (0.44 lbs)

FX-485PC-IF RS-232C/RS-485 Conversion Interface

Features

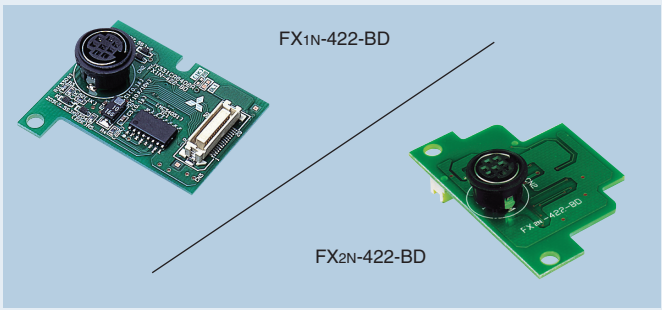
Converts RS-485 signals from the PLC to RS-232C signals.

Item		Specifications
Transmission standard		In conformance to RS-485, RS-422 and RS-232C
Communication method		Full duplex communication
Baud rate		300/600/1200/2400/4800/9600/19200 bps
Circuit configuration (computer: PLC)		1:1 or 1:N (N = 1 to 16)
Transmission distance	RS-485, RS-422	Max. 500m (1640')
	RS-232C	Max. 15m (49')
Isolation		Photocoupler isolation and transformer isolation between RS-485/RS-422 and RS-232C
Power supply		5V DC ±5%, Max. 260mA
Dimensions (W) x (D) x (H)		100 x 30 x 80 mm (3.94" x 1.18" x 3.15")
Mass (Weight)		0.3kg (0.66 lbs)

FX1N-422-BD/FX2N-422-BD RS-422 Communication Boards

Features

Provides an extra RS-422 communication port for an FX Series PLC to be used as a connection port for a programming tool (such as the GOT Series, programming tool FX-10P/FX-20P or personal computer).



Item	FX1N-422-BD	FX2N-422-BD
Transmission standard	In conformance to RS-422	
Maximum transmission distance	50m (164')	
External equipment connection method	8-pin MINI-DIN socket	
Communication method	Half duplex	
Communication procedure	Protocol for programming tool	
Isolation	No isolation	
Power supply-Internal	5V DC, 60mA	
Applicable PLC	FX1S/FX1N	FX2N

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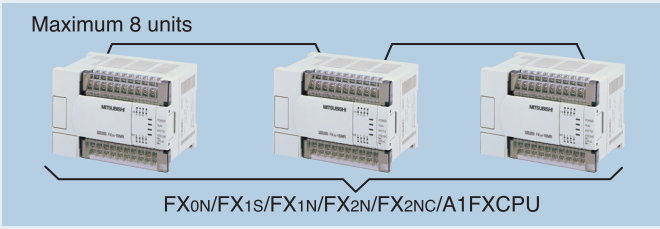
N:N Network

Features

1) Up to 8 FX Series PLC units can be networked together.
2) Among connected stations, bit devices (0 to 64 points) and word devices (4 to 8 points) are automatically linked.
3) Each station can monitor the digital status of the shared data of the other stations.

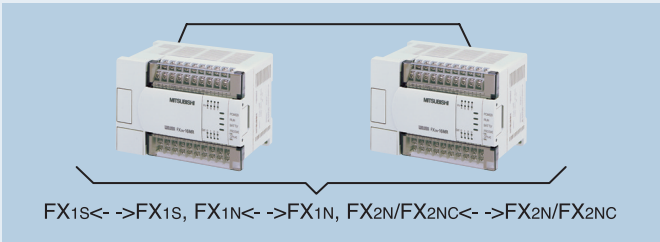


Item		Specifications
Transmission standard		In conformance to RS-485
Total extension distance		When using FX0N-485ADP for every networking unit: 500m (1640') When using function extension board (FX1N-485-BD or FX2N-485-BD): 50m (164') In combination: 50m (164')
Communication method		Half duplex
Baud rate		38400 bps
Number of stations connected		Max 8 stations
Refresh range	Pattern 0	Bit device: 0 point, Word device: 4 points (FX1S/FX1N/FX2N/FX2NC) If an FX1S is used in the system, only pattern 0 can be used.
	Pattern 1	Bit device: 32 points, Word device: 4 points (FX1N/FX2N/FX2NC)
	Pattern 2	Bit device: 64 points, Word device: 8 points (FX1N/FX2N/FX2NC)
Communication time (ms) (Number of station/ communication time)	Pattern 0	Depends on the number of stations connected. 2 (18), 3 (26), 4 (33), 5 (41), 6 (49), 7 (57), 8 (65)
	Pattern 1	Depends on the number of stations connected. 2 (22), 3 (32), 4 (42), 5 (52), 6 (62), 7 (72), 8 (82)
	Pattern 2	Depends on the number of stations connected. 2 (34), 3 (50), 4 (66), 5 (83), 6 (99), 7 (115), 8 (131)
Connection equipment	FX1S PLC	FX1N-485-BD or FX1N-CNV-BD and special adapter FX0N-485ADP
	FX1N PLC	
	FX2N PLC (Ver. 2.00 or later)	FX2N-485-BD or FX2N-CNV-BD and special adapter FX0N-485ADP
	FX2NC PLC	FX0N-485ADP
Applicable PLC		FX1S/FX0N (Ver. 2.00 or later)/FX1N/FX2N (Ver. 2.00 or later)/FX2NC

Parallel Link

Features

1) Among the connected stations, bit devices (50 to 100 points) and word devices (10 points) are automatically linked so that by using devices assigned to its own station, the digital status and data register values in the other station can be seen.
2) Data link is easily realized when two FX Series PLC main units are connected. A program which specifies the master station and the slave station must be used.

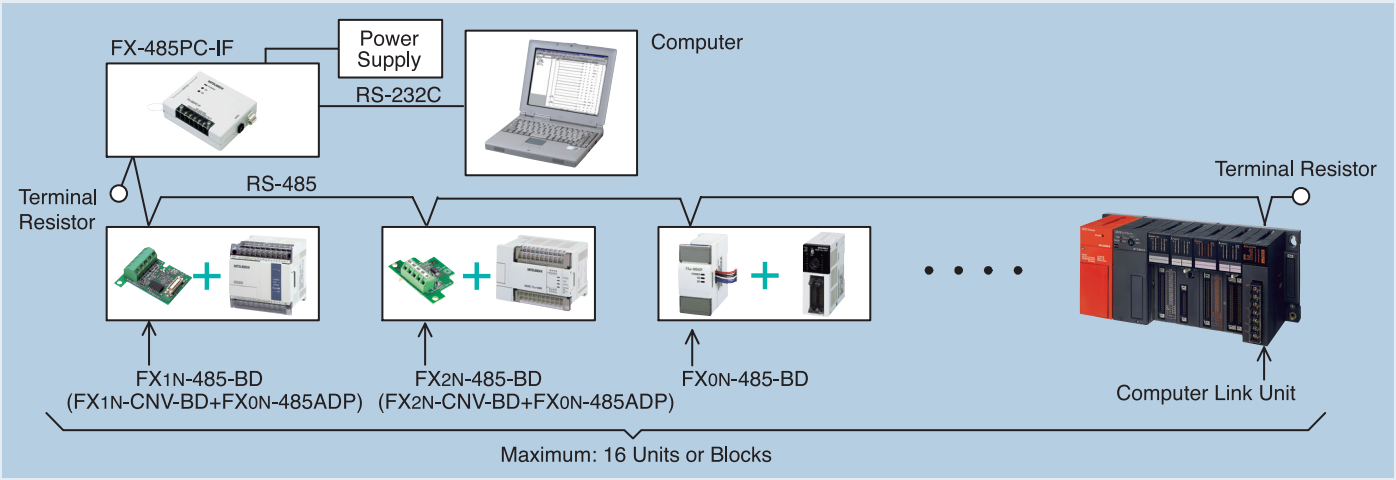


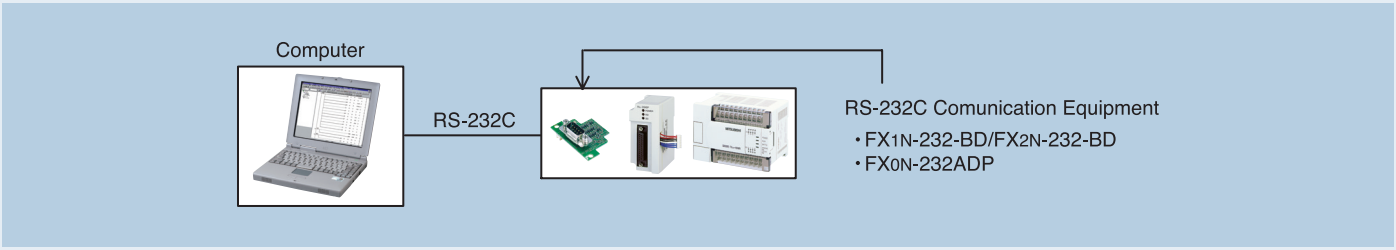
Item		Specifications
Transmission standard		In conformance to RS-485 and RS-422.
Maximum transmission distance		When using FX0N-485ADPs for every networking unit: 500m (1640') When using function extension boards (FX1N-485-BD or FX2N-485-BD): 50m (164') When the above exist together in the system: 50m (164')
Communication method		Half duplex
Transmission speed (baud rate)		19200bps
Number of stations connected		1:1
Refresh range	FX1S Series PLC	[master to slave] Bit device: 50 points, Word device: 10 points*1 [slave to master] Bit device: 50 points, Word device: 10 points*1
	FX1N/FX2N/FX2NC Series PLC	[master to slave] Bit device: 100 points, Word device: 10 points*1 [slave to master] Bit device: 100 points, Word device: 10 points*1
Communication time (ms)		Normal mode: 70ms for reciprocation + operation cycle of master station + operation cycle of slave station High speed mode: 20ms for reciprocation + operation cycle of master station + operation cycle of slave station
Equipment combinations		FX1S and FX1S Series PLC FX1N and FX1N Series PLC FX2N (Ver. 1.04 or later) or FX2NC and FX2N (Ver. 1.04 or later) or FX2NC Series PLC
Connection equipment	FX1S Series PLC	FX1N-485-BD or FX1N-CNV-BD and FX0N-485ADP
	FX1N Series PLC	
	FX2N Series PLC	FX2N-485-BD or FX2N-CNV-BD and FX0N-485ADP
	FX2NC Series PLC	FX0N-485ADP special adapter

*1: In high speed mode, Word device is 2 points.

Computer Link

1) When using RS-485 communication equipment, up to 16 FX/A Series PLC units can be connected and data can be transferred among them in accordance with commands given by the computer.
2) When using RS-232C communication equipment, data can be transferred between the computer and the PLC on a 1:1 basis.
3) Dedicated protocols (formats 1 and 4) can be used to link with A Series PLC.





Item		Specifications
Transmission standard		In conformance to RS-485 (RS-422) or RS-232C
Total extension distance	RS-485 (RS-422)	When using FX0N-485ADP for every networking unit: 500m (1640') When using an FX1N-485-BD or FX2N-485-BD in the system: 50m (1640')
	RS-232C	15m (49')
Communication method		Half duplex, up/down
Transmission speed (baud rate)		300/600/1200/2400/4800/9600/19200 bps
Number of stations connected		RS-485 (RS-422): max. 16 stations RS-232C: one station
Protocol format		Format 1 and 4 of MELSEC-A computer link protocol (dedicated protocol).
Connection equipment RS-485 (RS-422)	FX1S PLC	FX1N-485-BD or FX1N-CNV-BD and FX0N-485ADP
	FX1N PLC	
	FX2N PLC	FX2N-485-BD or FX2N-CNV-BD and FX0N-485ADP
	FX2NC PLC	FX0N-485ADP
Connection equipment RS-232C	FX1S PLC	FX1N-232-BD or FX1N-CNV-BD and FX0N-232ADP
	FX1N PLC	
	FX2N PLC	FX2N-232-BD or FX2N-CNV-BD and FX0N-232ADP
	FX2NC PLC	FX0N-232ADP
Applicable PLC		FX1S/FX0N (Ver. 1.20 or later)/FX1N/FX,FX2,FX2C (Ver. 3.30 or later)/FX2N/FX2NC/A Series PLC Computer Link Unit

Graphic Operation Terminals

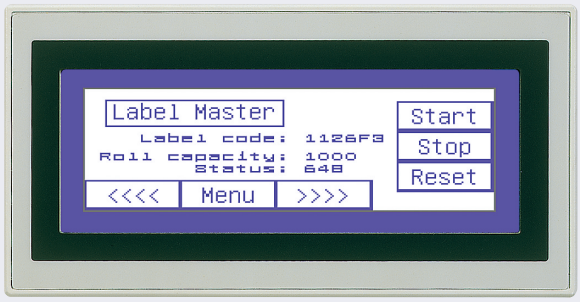
Features of the GOT-900 Series

1. The response of touch keys is excellent. When connected with the FX2N Series PLC, high-speed response times of 0.16 seconds can be obtained.
2. Password security is available on 15 different levels. Screen data can be limited by the operator's security level.
3. Transparent Communication Functionality is available. Connect to a PC and a PLC for transparent program downloads, the GOT screen can be operated during this procedure.

F930GOT Graphic Operation Terminal

Features

1) The high quality blue liquid crystal display gives excellent visual performance.
2) The best size for simple data editing or as a message box.
3) IP 65F Protection.
4) Backlight replacement is possible.

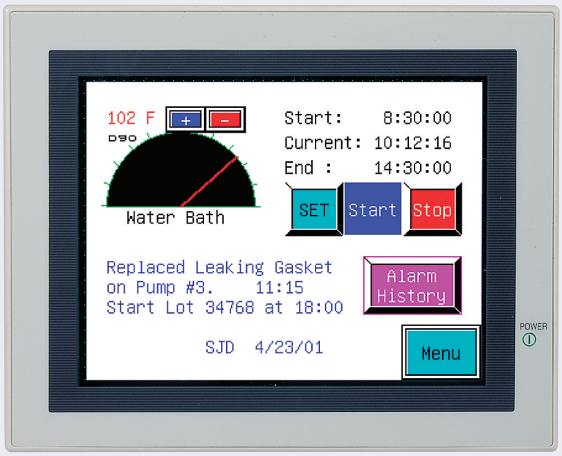


Item		Specifications
Display device		STN monochrome liquid crystal
Resolution		240 x 80 (dot), 30 characters x 5 lines
Dot pitch		0.47mm (0.019") Horizontal x 0.47mm (0.019") Vertical.
Effective display size		4" diagonal: 117mm (4.61") x 42mm (1.65")
Number of colors		2 colors (White and Blue)
Life of liquid crystal display		Approximately 50000 hours (Operating temperature: 25°C / 77°F) Guaranteed for 1 year.
Backlight		Cold cathode tube
Life of backlight		50000 hours or more (Operating temperature: 25°C / 77°F) Guaranteed for 1 year.
Touch keys		Maximum 50 touch keys/screen, 15 x 4 matrix
Interface	RS-422	Conforming to RS-422
	RS-232C	Conforming to RS-232C
Number of screens		User screen: 500 screens or less System screen: Allocated screens No.1001-1030
User memory		Flash memory 256 kbyte (built-in)
Power supply voltage		24V DC, 10% -15%
Power supply ripple		200mV or less
Current consumption		Ratings: 200mA at 24V DC (100mA at 24V DC when backlight is turned OFF)
Dimensions (W) x (D) x (H)		146 x 49 x 75 mm (5.75" x 1.93" x 2.95")
Mass (Weight)		0.3kg (0.66 lbs)

F940GOT Graphic Operation Terminal

Features

1) A 5.7” Super wide Angle, STN 8 colors LCD Touch Screen is available.
2) Convenient size for an all purpose HMI.
3) IP 65F Protection.
4) 4000 hours of service before backlight must be replaced.



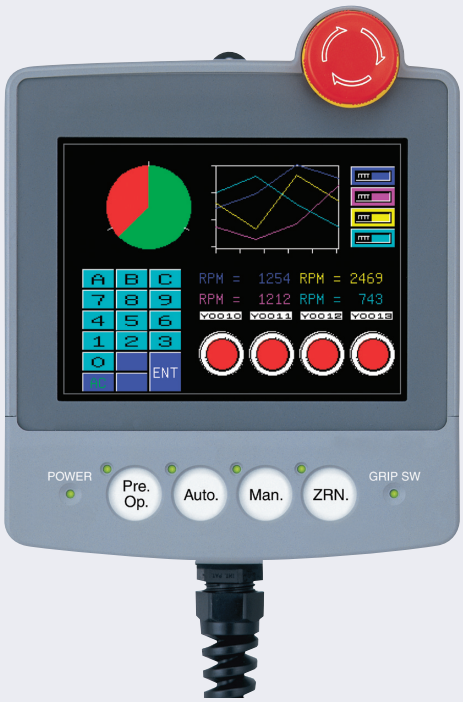
Item		Specifications	
		F940GOT-SWD-E F943GOT-SWD-E	F940GOT-LWD-E F943GOT-LWD-E
Display device		STN color liquid crystal	
Resolution		320 x 240 (dot), 40 characters x15 lines	
Dot pitch		0.36 mm (0.014”) Horizontal x 0.36 mm (0.014”) Vertical	
Effective display size		5.7” diagonal: 115mm (4.53”) x 86mm (3.39”)	
Number of colors		8 colors	White and Black
Life of liquid crystal		Approximately 50000 hours (Operating temerature: 25°C / 77°F) Guaranteed term is 1 year.	
Backlight		Cold cathode tube	
Life of backlight		40000 hours or more (Operating temperature: 25°C / 77°F) Guaranteed term is 1 year.	
Touch keys		Maximum 50 touch keys / screen, 20 x 12 matrix	
Interface	RS-422	Conforming to RS-422	
	RS-232C	Conforming to RS-232C	
Number of screens		User screen: 500 screens or less System screen: Allocated screens No. 1001-1030.	
User memory		Flash memory 512 kbyte (built-in)	
Power supply voltage		24V DC, 10% -15%	
Power supply ripple		200mV or less	
Current consumption		Ratings: 410mA at 24V DC	Ratings: 390mA at 24V DC
		180mA at 24V DC when backlight is turned OFF	
Dimensions (W) x (D) x (H)		172 x 57 x 140 mm (6.77” x 2.24” x 5.51”)	
Mass (Weight)		1kg (2.2 lbs)	

Graphic Operation Terminals

F940 Handy GOT Graphic Operation Terminal

Features

1) ON/OFF Grip Switch, Rear Cable Strap, and light weight make extended one hand operation possible.
2) This self contained unit can mount outside of a control panel, use the rear hook to mount on a wall, or detach the cable to move the Handy from machine to machine.
3) The portability and program download/editing capabilities make the Handy Unit perfect for machine startup.

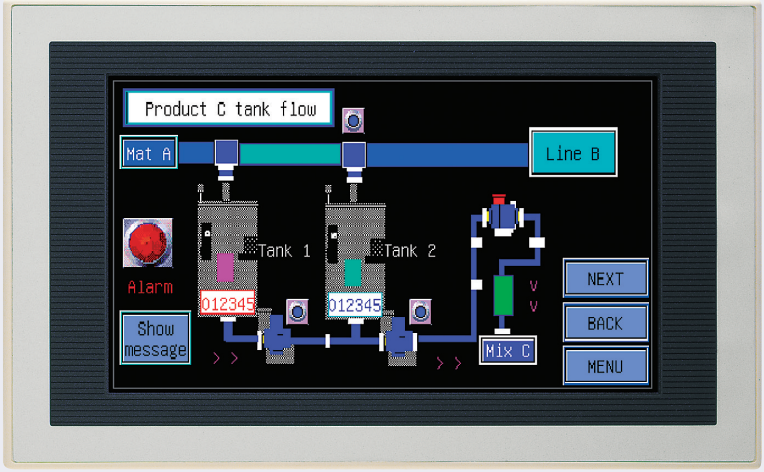


Item		Specifications	
		F940GOT-SBD-H-E F943GOT-SBD-H-E	F940GOT-LBD-H-E F943GOT-LBD-H-E
Display device		STN color liquid crystal	
Resolution		Approximately 50000 hours (Operating temperature: 25°C / 77°F) Guaranteed for 1 year.	
Dot pitch		0.36 mm (0.014") Horizontal x 0.36 mm (0.014") Vertical	
Effective display size		5.7" diagonal: 115 mm (4.53") x 86 mm (3.39")	
Number of colors		8 colors	White and Black
Life of liquid crystal		Approximately 50000 hours (Operating temperature: 25°C / 77°F) Guaranteed term is 1 year.	
Backlight		Cold cathode tube	
Life of backlight		40000 hours or more (Operating temperature: 25°C / 77°F) Guaranteed term is 1 year.	
Touch keys		Maximum 50 touch keys/screen, 20 x 12 matrix	
Interface	With PLC	RS-422: F940GOT-SBD-H-E F940GOT-LBD-H-E RS-232C: F943GOT-SBD-H-E F943GOT-LBD-H-E	
	With personal computer	RS-232C	
Number of screens		500 user screens 30 system screens	
User memory		Flash memory 512 kbyte (built-in)	
Power supply voltage		24V DC, +10% -15%	
Power supply ripple		200mV or less	
Current consumption		Ratings: 300mA at 24V DC, 200mA at 24V DC when backlight is turned OFF	
Dimensions (W) x (D) x (H)		156 x 50.5 x 191 mm (6.14" x 1.99" x 7.52")	
Mass (Weight)		0.79kg (1.74 lbs)	

F940WGOT-TWD-E Graphic Operation Terminal

Features

1) A 7” wide type TFT color liquid crystal is available.
2) The unit can be mounted vertically or horizontally. In addition, the split screen layout increases display flexibility.
3) IP 65F Protection
4) The F940WGOT has an RS-422 port and 2 RS-232C ports to increase communication options.



Item		Specifications
Display device		TFT color liquid crystal
Resolution		480 x 234 (dot), 60 characters x 14 lines
Dot pitch		0.324 mm (0.013”) Horizontal x 0.375 mm (0.015”) Vertical. [Actual character size ratio 1:1.16]
Effective display size		7” diagonal: 155.5 mm (6.12”) x 87.8 mm (3.46”)
Number of colors		256 colors
Life of liquid crystal		50000 hours or more (Operating temperature: 25°C / 77°F) Guaranteed for 1 year.
Backlight		Cold cathode tube
Life of backlight		50000 hours or more (Operating temperature: 25°C / 77°F) Guaranteed for 1 year.
Touch keys		Maximum 50 touch keys/screen, 30 x 12 matrix
Interface	COM1	RS-422
	COM2	RS-232C
	COM3	RS-232C
Number of screens		500 user screens 30 system screens
User memory		Flash memory 1Mbyte (built-in)
Power supply voltage		24V DC, +10% -15%
Power supply ripple		200mV or less
Current consumption		Ratings: 650mA at 24V DC (750mA at 24V DC or less when power supply is first turned ON, 400mA at 24V DC when backlight is turned OFF)
Dimensions (W) x (D) x (H)		215 x 70.6 x 133 mm (8.46” x 2.78” x 5.24”)
Mass (Weight)		0.79kg (1.74 lbs)

Display Modules

FX1N-5DM Display Module

Features

1) Can be directly installed on the FX1S/FX1N Series PLC. No wiring required!
2) Equipped with an LED and backlight that is maintenance free.
3) Front panel key operation for data transfer to the PLC.
4) Can be used in conjunction with an expansion board.

Function		Specifications
Clock	Display	Displays current time of PLC Real Time Clock.
	Setting	Set time (year, month, day, hour and minute).
Device monitor	Bit device monitor	Displays ON/OFF status of X, Y, M and S.
	Word device (16-bit) monitor	Displays current and set values of T and C and current value of D.
	Word device (32-bit) monitor	Displays current and set values of 32-bit C and current value of D.
Buffer memory monitor		Displays buffer memory of special units and special blocks offered in the FX1N Series.
Error display		Displays error code and error occurrence step No. when a PLC error has occurred.
Forced set/reset		Forces ON and OFF bit devices Y, M and S.
T/C reset		Clears current value of T and C (current value: 0, contact: OFF).
Data change	Current value change	Change current value of T, C and D.
	Set value change	Change set value of T and C.
Protect setting		Choose between full use of all operator functions, monitor only function, or RTC only display.
Specified device monitor		Allows to specify device type and device No. to be displayed in 5DM.
Error display enable/disable		Enables or disables error display function (operator function).
Automatic backlight OFF		Set automatic backlight OFF time (initial value: 10 min).
Operation key status recognition		Recognizes ON/OFF status of four operation keys.

FX-10DM-E Display Module

Features

1) Installed on the panel and can be connect to the PLC with a single cable.
2) This module can be connected to every FX Series main unit.
3) When using the registration monitor function, up to 8 frequently used devices can be registered and displayed easily.
4) Display comments and messages.

Function		Specifications
Data change	Current value change	Changes current value of T, C, D.
	Set value change	Changes set value of T and C.
	Reset	Resets current value of T, C, D to 0.
Device monitor	Word device (16-bit)	Displays current and set values of T and C and current value of D.
	Word device (32-bit)	Displays current and set values of 32-bit C and current value of D.
Register monitor		Registers 8 lines of devices/messages to be displayed.
Message display		Displays ASCII code stored in data register in the PLC. The PLC controls which message to display. • Normal-width 16 characters per line • Alphabet, numbers, symbols
Comment		Reads comments from PLC and displays word device from device monitor and register monitor in comment form. •16-bit 8 characters or 32-bit 4 characters per line • Alphabet, numbers, symbols
Buzzer sound		Equipped with ON/OFF setting
Dustproof and waterproof		Operation panel is dust and water proof at IP65 level.
Optional connection cable for application PLC		FX-20P-CAB0 or FX-20P-CAB0/EN is for FX Series PLC with 8-Pin MINI DIN programming port.

FX-10DU-E Small Message Display Unit

Features

1) 25 user definable screens: 1 screen of 16 lines, 24 screens of 4 lines.
2) Text strings up to 7 characters and indicator blocks that can be toggled on the status of a bit device can be entered.
3) Additional 2 character password for the FX-10DU-E independent of the PLC A/B/C password.
4) Option to flash the backlight ON and OFF by command.
5) Built-in diagnostic checking function for the status of the PLC.

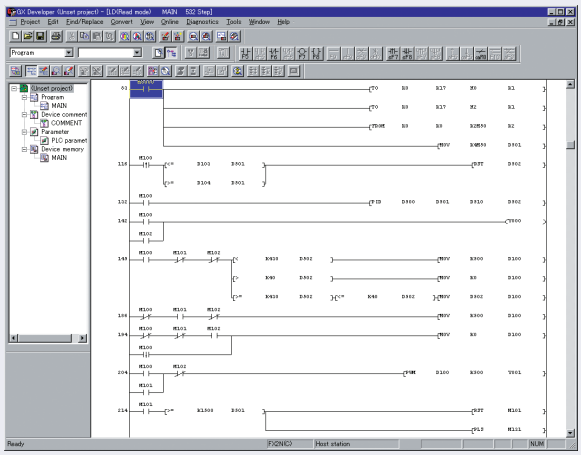
Items		Specifications
Required cables and applicable PLC (Cables not included with FX-10DU-E)		FX-20P-CAB + FX-20P-CADP or FX-20P-CAB0 is for FX Series PLC with 8-Pin MINI DIN programming port.
Programming method		Front keypad
Keypad		25 keys
Screen specification	Type	Backlight LCD (with additional mode operation)
	Resolution	16 characters x 2 lines
Power requirements	Voltage	5V DC (±0.5%) Supplied from the controller
	Current	220mA
IP rating		54
Dimensions (W) x (D) x (H)		92 x 115 x 26 mm (3.62” x 4.53” x 1.02”)
Mass (Weight)		0.2kg (0.44 lbs)

Software

GX Developer (GPPW)

Features

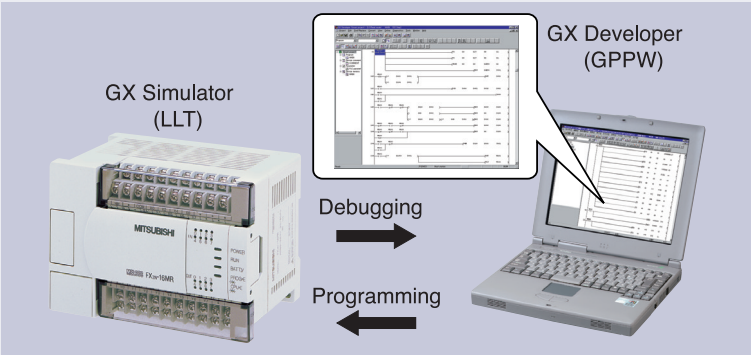
1) GX Developer is used to create the software package that spans the range of Mitsubishi Electric PLC equipment. Use this software to create programs for the FX/A/QnA/Q Series PLCs.
2) GX Developer uses Windows® operations to increase work efficiency, for debugging operations, and for maintenance operations.
3) Program in ladder, instruction list, or SFC (Sequential Function Chart)
4) Program compatibility exists with prior programming softwares including DOS based programs.
5) Remote maintenance including monitoring and program/parameter upload and download is possible via modem communications.



GX Simulator (LLT)

Features

1) The LLT can simulate programs of the FX/A/QnA/Q Series in a personal computer.
2) The LLT executes monitoring and debugging to the virtual PLC (GX Simulator) in the personal computer.
3) Debugging can be executed before download to the actual machine making the LLT a valuable time saving and training device.

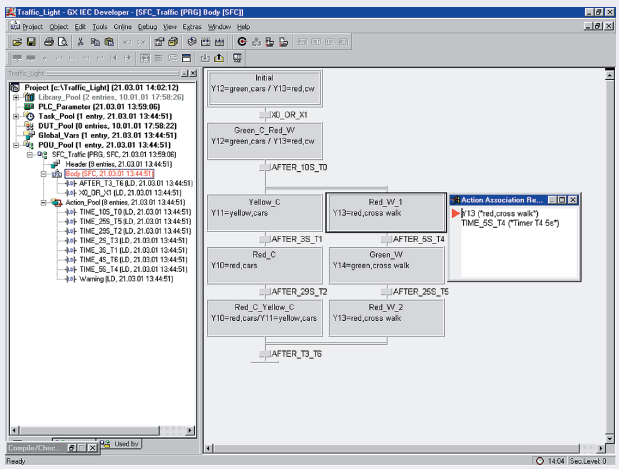


Item	Operating environment
OS	Windows®95, Windows®98, Windows NT®Workstation 4.0
CPU	Pentium 133MHz or better (Pentium 300MHz or better recommended for Q-series programming.)
Memory	32MB or more (64MB or more recommended for Q-series programming.)
Hard disk/CD-ROM	For installing: 80MB or more, For operation: 80MB or more/CD-ROM drive needed to install system
Display	Resolution of 800 x 600 dots or better
Interface	RS-232C
PLC series	FX/A/Q Series PLC (Not A1/A2/A3/A3H/A3M/A52G/A73/A0J2)
PLC connections	Optional communication cable and interface are required.

GX IEC Developer (MELSEC MEDOC plus)

Features

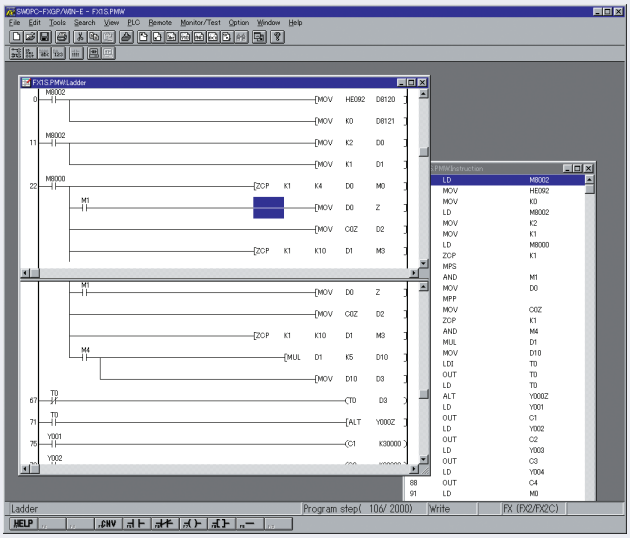
1) GX IEC Developer is the standard of the future for IEC programming of the full range of MELSEC FX, A, and Q Series PLCs.
2) GX IEC Developer can be run under Windows® operating systems.
3) GX IEC Developer supports structured text (ST), sequential function chart (SFC), ladder diagram (LD), function block diagram (FBD) and instruction list (IL) programming.



FX-PCS/WIN-E Programming Software Package

Features

1) FX-PCS/WIN-E software was specially developed to create programs for the FX Series PLCs.
2) FX-PCS/WIN-E uses Windows® operations to increase work efficiency, for debugging operations, and for maintenance operations.
3) Program in ladder, instruction list, or SFC (Sequential Function Chart).
4) Program compatibility exists with prior programming software including DOS based programs.
5) Remote maintenance including monitoring and program/parameter upload and download is possible via modem communications.



Item	Operating environment
OS	Windows® 3.1 (386 enhanced mode), Windows® 95, Windows® 98, Windows® Me
CPU	80486SX or better
Required memory	8MB or more (16MB or more is recommended.)
Hard disk	6MB or more
Display	Resolution of 800 x 600 dots or better
Interface	RS-232C (COM1 to COM4)
PLC series	FX Series PLC
PLC connections	Optional communication cable and interface are required.

MELSOFT MX Series Data Link Software (Integrated Version)

Features

1) This middleware can considerably improve the development efficiency in a large system project.
2) Data settings in the local PLC sites can be accessed from non-programming software like Excel.
3) The system can be constructed without using complicated protocols like Ethernet communication or serial communication.
4) The local sites can be monitored by setting screen parameters. A sample set of figures is provided that can be used as a baseline.

MELSOFT MX Series	Model
MX Component (ActiveX library for communication)	SW D5C-ACT
MX Links (DLL library for communication)	SW D5F-CSKP
MX Chart (OLE library for Excel communication)	SW D5F-OLEX
MX Monitor (monitoring tool)	SW D5F-XMOP
MX Works (combination of MX Links and MX Chart)	SW D5F-CSOLEX
MX Works (combination of MX Links and MX Monitor)	SW D5F-CSXMOP

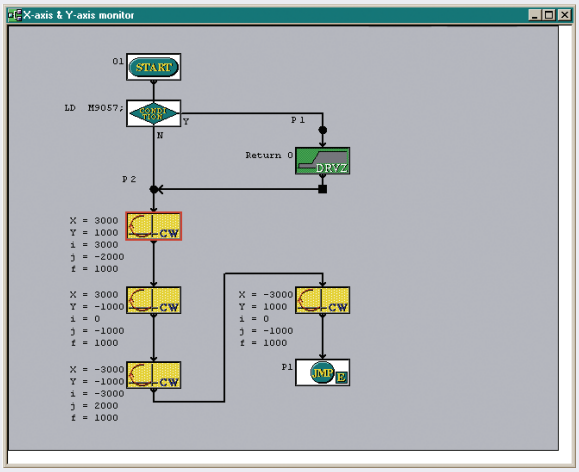
MELSOFT

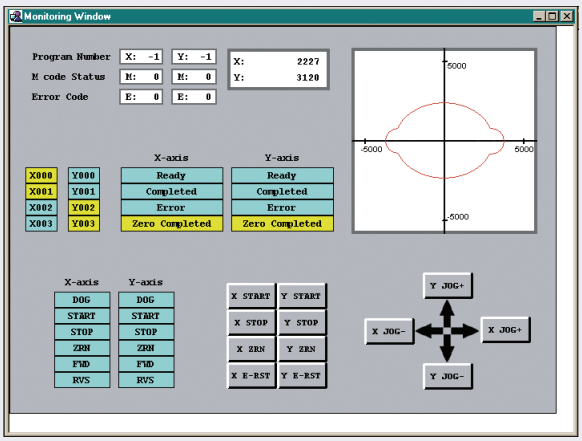
Software

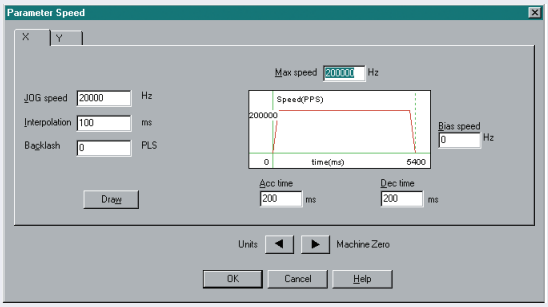
FX-PCS-VPS/WIN-E Positioning Programming Software

Features

1) Create programs in Flow Charts, Traditional Code, or by using Function Blocks.
2) Use the Flow Chart Programming for visual clarity in programming. Up to 500 separate flow charts screens can be created.
3) Display data values, locus and operation processes on the monitor screen. The user can arrange the screen for fast and easy comprehension.
4) Access and set all module parameters from a window on the programming screen.





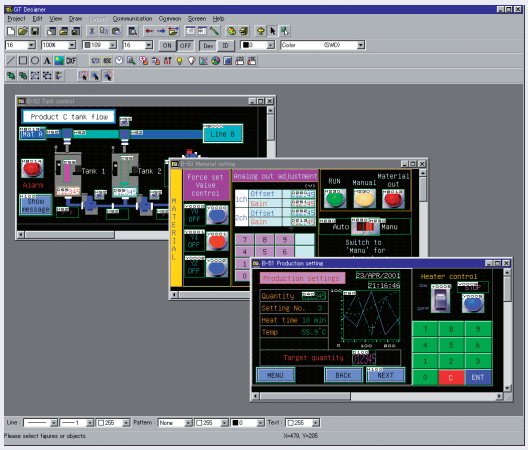


Item	Operating environment
Product construction	3.5-inch floppy disks (1.44MB)
OS	Windows® 95, Windows®98, Windows®Me, Windows NT® Workstation 4.0
CPU	Pentium 133MHz or better
Required memory	32MB or more
Hard disk capacity	Free space of 10MB or more is required
Interface	RS-232C Serial Interface (COM1 to COM4)
Positioning module	FX2N-10GM/FX2N-20GM/FX-10GM/FX-20GM

GT Designer Screen Creation Software

Features

1) Design and save parts as a template for future use.
2) Save commonly used parts.
3) Each individual user can choose which icons to display to increase efficiency. New screens can be designed for different projects or stages of work.
4) The screen data created for FX-PCS/DU-WIN-E can be converted and used with A900GOT.

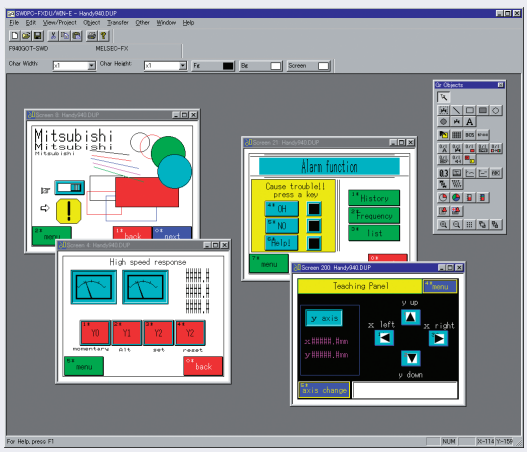


Item		Operating environment
OS		Windows® 95, Windows®98, Windows NT® Workstation 4.0
CPU		Pentium 133MHz or better
Required memory		64MB or more
Hard disk capacity	Standard installation	Free space of 130MB or more (For installing: 80MB or more, For operation: 50MB or more)
	Compact installation	Free space of 95MB or more (For installing: 45MB or more, For operation: 50MB or more)
Display		Resolution of 800 x 600 dots or better
Disk drive		CD-ROM drive is required

FX-PCS/DU-WIN-E Screen Creation Software

Features

1) User friendly programming.
2) Multi-window and Cut and Paste.
3) Able to create screens for all models of DU Series.
4) Equipped with drawing mode for wide variety of controllers.
5) Figure library in bit-map form.
6) Up/down compatibility with DOS version drawing data.



Item	Operating environment
OS	Windows® 95 English version, Windows® 98 *1 English version Windows NT®4.0 *1 (Workstation) English version (Service Pack 3 or later), Windows® 2000 *2 English version
Computer main body	Windows® 95: CPU i486SX or better Windows® 98: CPU i486DX (66MHz) or better Windows NT® 4.0: CPU i486(25MHz) or better Windows ®2000: CPU i486(133MHz) or better
Required memory	Windows® 95: 8MB or more (12MB or more is recommended.) Windows® 98: 16MB or more (32MB or more is recommended.) Windows NT®4.0: 16MB or more Windows® 2000: 32MB or more (64MB or more is recommended.)
Hard disk capacity	Free space of 3MB or more
Floppy disk unit	3.5-inch (2HD) floppy disk drive x 1 unit
Display	Video display adaptor with resolution of VGA or better.
Interface	RS-232C serial interface (COM1 to COM4)
	Printer interface
Printer	Printer in accordance with the OS above The drawing data in the FX-50DU-TKS-E and the F940GOT-SWD-E is compatible with a color printer

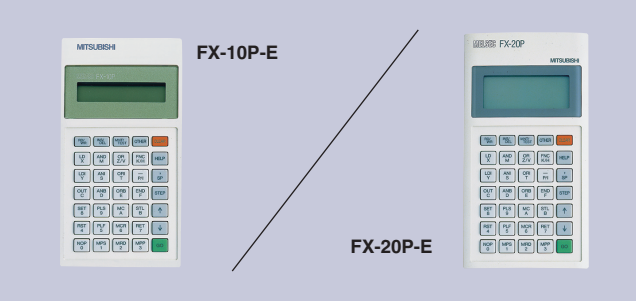
*1: Supported in DU/WIN-E V2.2 or later. *2: Supported in DU/WIN-E V2.5 or later.

Programming Tools

FX-10P-E/FX-20P-E Handy Programming Panel (HPP)

Features

1) Program in instruction list.
2) Monitor Data for Timers, Counters, and Memory Registers.
3) Perform Failure Diagnosis, Test Functions, or Maintenance and Debugging.
4) The liquid crystal screen is easy to read.
5) The panel is small and light making it easy to carry.

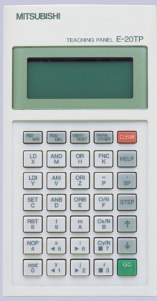


Item	Specifications	
	FX-10P-E	FX-20P-E-SET0
Programming function	Read, Write, Insert, Delete, Monitor, Test and Check Devices or Programs in list form and more	
Display capacity	16 characters x 2 lines	16 characters x 4 lines (backlighted)
Program editing method	PLC memory is edited directly.	PLC memory is edited directly or FX-20P built-in memory is edited off-line.
Program memory function	None	Can maintain for 3 days if connected to PLC for one hour or more.
Write to EEPROM	Possible to write to EEPROM memory installed in PLC.	Possible to write to EEPROM memory installed in PLC.
Write to ROM writer	Not possible	Possible to write to optional ROM writer (FX-20P-RWM) if installed.
Programming without PLC	Not possible	Programmable without PLC when optional power unit FX-20P-ADP is installed. (FX-20P-CAB is required.)
Applicable PLC	All the FX Series	All the FX Series F_1 and F_2 when FX-20P-FKIT is installed.
PLC cable	Option [FX-20P-CAB0 (1.5m / 4' 11")]	FX-20P-CAB0 (1.5m / 4' 11") is included

E-20TP-E-SET0 Teaching Panel

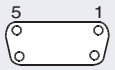
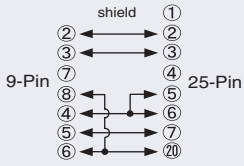
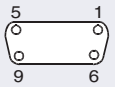
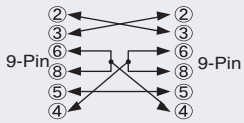
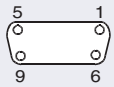
Features

1) This panel can create programs and Read/Write programs and parameters to the positioning units. The panels can also be used to monitor and test functions in the positioning units.
2) Product construction
   E-20TP-E-SET0: Teaching Panel
   E-20TP-CAB0: FX_{2N}-10GM/FX_{2N}-20GM communication cable [3.0m / 9' 10"]

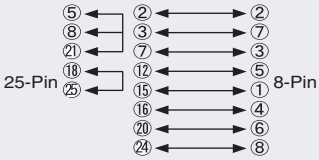
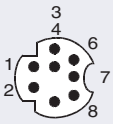
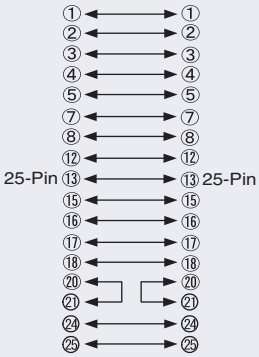


Cable

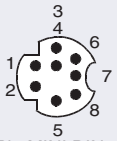
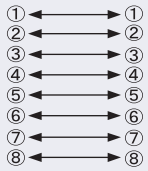
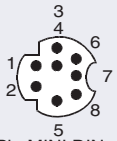
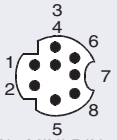
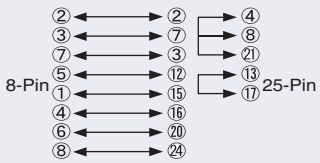
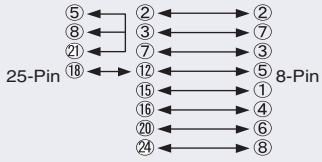
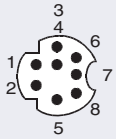
RS-232C Cable

	F_2-232CAB-1 [3.0m / 9' 10"] Connects PC to the FX-232AW/FX-232AWC or the FX_{0N}-232ADP	 9-Pin D-Sub, female	 shield 9-Pin 25-Pin	 25-Pin D-Sub, male
	FX-232CAB-1 [3.0m / 9' 10"] Connects PC to the FX_{1N}-232-BD/FX_{2N}-232-BD or the GOT	 9-Pin D-Sub, female	 9-Pin 9-Pin	 9-Pin D-Sub, female

RS-422 Cable

	FX-422CAB0 [1.5m / 4' 11"] Connects FX-232AW/FX-232AWC to FX_{0S}/FX_{1S}/FX_{0N}/FX_{1N}/FX_{2N}/FX_{2NC}	 25-Pin D-Sub, male	 25-Pin 8-Pin	 8-Pin MINI DIN, male
	FX-422CAB [300mm / 11.81"] FX-422CAB-150 [1.5m / 4' 11"] Connects FX-232AW/FX-232AWC to FX/FX_1/FX_2/FX_{2C}/A/QnA	 25-Pin D-Sub, male	 25-Pin 25-Pin	 25-Pin D-Sub, male

FX-10P/FX-20P Cable

	FX-20P-CAB0 [1.5m / 4' 11"] Connects to FX_{0S}/FX_{1S}/FX_{0N}, FX_{1N}/FX_{2N}/FX_{2NC}	 8-Pin MINI DIN, male		 8-Pin MINI DIN, male
	FX-20P-CAB [1.5m / 4' 11"] Connects to FX/FX_1/FX_2/FX_{2C}	 8-Pin MINI DIN, male	 8-Pin 25-Pin	 25-Pin D-Sub, male
	FX-20P-CADP [300mm / 11.81"] Connects to FX_{0S}/FX_{1S}/FX_{0N}/FX_{1N}/FX_{2N}/FX_{2NC} as used together with FX-20P-CAB.	 25-Pin D-Sub, female	 25-Pin 8-Pin	 8-Pin MINI DIN, male

Accessories

Input and Output Cable (FX2NC)

	FX-16E-500CAB-S [5m / 16’] General-purpose I/O cable with a 20-Pin connector on one end and untied wires on the other.
	FX-16E-150CAB [1.5m / 4’ 11”] FX-16E-300CAB [3m / 9’ 10”] FX-16E-500CAB [5m / 16’] I/O cable for FX TERMINAL BLOCK with a 20-Pin connector on both ends of a flat cable.
	FX-16E-150CAB-R [1.5m / 4’ 11”] FX-16E-300CAB-R [3m / 9’ 10”] FX-16E-500CAB-R [5m / 16’] I/O cable for FX TERMINAL BLOCK with a v connector on both ends of a round multicore cable.
	FX-A32E-150CAB [1.5m / 4’ 11”] FX-A32E-300CAB [3m / 9’ 10”] FX-A32E-500CAB [5m / 16’] I/O cable for connector/terminal block conversion unit A6TBXY36

Positioning Cable (FX2N-10GM/FX2N-20GM)

	E-GMH200CAB MR-H Series servo amplifier connection cable [2m / 6’ 7”] This cable can directly connect the FX2N-10GM/FX2N-20GM and the servo amplifier. A 20-Pin connector is provided so that FX-16E-TB/FX-32E-TB FX TERMINAL BLOCK can be connected to the I/O operation signal area.
	E-GMJ-200CAB MR-J Series servo amplifier connection cable [2m / 6’ 7”] This cable can directly connect the FX2N-10GM/FX2N-20GM and the servo amplifier. A 20-Pin connector is provided so that FX-16E-TB/FX-32E-TB FX TERMINAL BLOCK can be connected to the I/O operation signal area.
	E-GMJ2-200CAB1A MR-J2/MR-J2-Super Series servo amplifier connection cable [2m / 6’ 7”] This cable can directly connect the FX2N-10GM/FX2N-20GM and the servo amplifier.
	E-GMC-200CAB MR-C Series servo amplifier connection cable [2m / 6’ 7”] This cable can directly connect the FX2N-10GM/FX2N-20GM and the servo amplifier. An additional 20-Pin connectors is provided to connect the FX-16E-TB/FX-32E-TB FX TERMINAL BLOCK can also be connected.
	E-GM-200CAB General-purpose connection cable [2m / 6’ 7”] A connector is provided on each side. A commercial drive unit can be connected by way of the FX-16E-TB/FX-32E-TB FX TERMINAL BLOCK.

Power Supply Cable (FX2NC/FX2N-10GM/FX2N-20GM)

	FX2NC-100MPCB [1m / 3' 3"] This cable supplies 24V DC power to the FX2NC Series main unit, FX2N-10GM or FX2N-20GM. This cable is offered as an accessory of the main unit.
	FX2NC-100BPCB [1m / 3' 3"] This cable supplies 24V DC input power to the FX2NC Series input extension block. This cable is offered as an accessory of the main unit.
	FX2NC-10BPCB1 [100mm / 3.94"] Input power crossover cable for input extension block This cable offers crossover wiring of 24V DC input power supply to two or more input extension blocks for the FX2NC Series. This cable is offered as an accessory of the input extension block.

Extension Cable

	FX0N-30EC [300mm / 11.81"] FX0N-65EC [650mm / 25.59"] Provides extra length when connecting I/O extension modules. Only one cable can be used per system. This cable must be used with the connector conversion adapter FX2N-CNV-BC. (In extension equipment, a standard (short) cable is built into the module)

Other Cable

FX2N-GM-65EC	Extension cable for PLC and FX2N-10GM/FX2N-20GM [650mm / 25.59"] Only one cable can be used per system. This cable is offered as an accessory of the FX2N-10GM/FX2N-20GM. (A standard (short) cable is built into the equipment)
FX2N-GM-5EC	Standard cable for PLC and FX2N-10GM/FX2N-20GM This cable is offered as an accessory of the FX2N-10GM/FX2N-20GM.
F2-RS-5CAB	Resolver extension cable for FX2N-1RM-E-SET [5m / 16' 5"] By connecting two or more cables, the resolver can be extended up to 100m (328').

Adapter

FX2N-CNV-BC	Conversion adapter This adapter connects the extension block of FX0N/FX2N to the FX0N-30EC/FX0N-65EC.
FX2N-CNV-IF	Conversion adapter This adapter connects the extension equipment for the FX Series PLC to the FX2N Series PLC.
FX2NC-CNV-IF	Conversion adapter This conversion adapter is required to connect the extension equipment for the FX0N/FX2N Series PLC to the FX2NC Series PLC.
FX1N-CNV-BD	Function extension board for special adapter connection This board provides the necessary conversion to connect the FX0N-***ADP.
FX2N-CNV-BD	Function extension board for special adapter connection This board provides the necessary conversion to connect an FX0N-***ADP.

FX-20P-E Option

FX-20P-RWM	This attachment allows the FX-20P-E to transfer either its internal memory or the program in the connected controller to an FX EPROM memory cassette. This process can be reversed so that the FX-20P-E reads the contents of an FX memory cassette.
FX-20P-ADP-KIT	This unit alows the FX-20P-E to be powered and operated even though the FX-20P-E is not connected to a PLC through OFF line programming using the internal memory facilities of the FX-20P-E. Once the program is completed, the FX-20P-E can be fitted with the FX-20P-RWM to burn an EPROM or the program in the FX-20P-E can be directly down loaded to the PLC.
FX-20P-E-FKIT	This set contains an exchange system cartridge for the FX-20P-E and a special interface module. The set allows the FX-20P-E to program traditional Mitsubishi F/F1/F2 Series units while using all the benefits of the FX-20P-E.
FX-20P-MFXD-E	By changing the system memory cassette, the functions of FX-20P can be upgraded to support new PLC features.

Accessories

Memory and Battery

Memory Cassette (FX1S/FX1N)

	FX1N-EEPROM-8L	Memory cassette with program transfer function This EEPROM memory of 8000 steps can upload and download programs to an FX1S/FX1N Series PLC and makes battery backup unnecessary. The FX1S Series PLC can use programs up to 2000 steps. This memory cassette is equipped with a Write Protect Switch to safeguard programs and can be used to transfer programs to multiple PLCs.

Memory Cassette (FX2N)

	FX-RAM-8	RAM memory cassette The RAM memory in this cassette can be used to expand the existing FX2N RAM memory to 16000 steps. Battery backup for power failure is supplied by the FX2N Series PLC.
	FX-EEPROM-4 FX-EEPROM-8 FX-EEPROM-16	EEPROM memory cassette This memory cassette can be written to by the PLC and does not require battery backup. This memory cassette is equipped with a Write Protect Switch to safeguard programs. (1) FX-EEPROM-4 (up to 4000 steps) (2) FX-EEPROM-8 (up to 8000 steps) (3) FX-EEPROM-16 (up to 16000 steps)
	FX-EPROM-8	EPROM memory cassette This memory cassette can be written to by a commercial ROM writer or the ROM writer FX-20P-RWM. An ultraviolet eraser is required to delete programs. This memory does not require battery backup. (Up to 16000 steps)

Memory Board (FX2NC)

	FX2NC-EEPROM-16	EEPROM memory board This 16000 steps memory cassette can upload and download programs to the FX2NC Series PLC. This memory cassette is equipped with a Write Protect Switch to safeguard programs.
	FX2NC-EEPROM-4C FX2NC-EEPROM16C	Memory board with Real Time Clock function This memory cassette is equipped with a Write Protect Switch to safeguard programs. Years: 1980 to 2079 (with compensation for leap year), 2 digits/4 digits selectable, lunar equation: ±45s (at 25°C) FX2NC-EEPROM-4C : Up to 4000 steps FX2NC-EEPROM16C : Up to 16000 steps
	FX2NC-RTC	Real Time Clock Extension Board A Real Time Clock is added to the FX2NC Series PLC with this optional board. Battery backup is provided from the PLC and the PLC memory is used. Years: 1980 to 2079 (with compensation for leap year), 2 digit/4 digit selectable, lunar equation: ±45s (at 25°C)

Battery (FX2N/FX2NC)

	F2-40BL	Battery for memory backup This battery backs up the FX2NC/RAM memory and the optional RAM memory cassettes. This battery is required also to back up the retentive relays, data registers, timers, counters, and the RTC data. Life of battery: Approximately 5 years or approximately 3 years when the RAM cassette is used (guaranteed life: 1 year).
	FX2NC-32BL	Battery for memory backup This battery backs up the FX2N/RAM memory and the optional RAM memory cassettes. This battery is required also to back up the retentive relays, data registers, timers, counters, and the RTC data. This battery is provided with the PLC. Life of battery: Approximately 3 years (guaranteed life: 1 year)

⚠ Safety Warning

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

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