



for a greener tomorrow



FACTORY AUTOMATION

COMPACT PLC FAMILY

MELSEC PLC



- 16 million compact PLCs worldwide
- Over 35 years experience
- Positioning/motion control solutions
- Networking solutions
- Analog solutions
- Security

Global impact of Mitsubishi Electric



Through Mitsubishi Electric's vision, "Changes for the Better" are possible for a brighter future.

Changes for the Better

We bring together the best minds to create the best technologies. At Mitsubishi Electric, we understand that technology is the driving force of change in our lives. By bringing greater comfort to daily life, maximising the efficiency of businesses and keeping things running across society, we integrate technology and innovation to bring changes for the better.

Mitsubishi Electric is involved in many areas including the following

Energy and electric systems

A wide range of power and electrical products from generators to large-scale displays.

Electronic devices

A wide portfolio of cutting-edge semiconductor devices for systems and products.

Home appliance

Dependable consumer products like air conditioners and home entertainment systems.

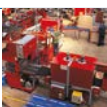
Information and communication systems

Commercial and consumer-centric equipment, products and systems.

Industrial automation systems

Maximising productivity and efficiency with cutting-edge automation technology.

Contents

Global leader	4	
What makes a world leading PLC?	5	
Range overview	6	
iQ-F – the next level of industry	7	
FX3U/FX3UC – a perfect PLC concept	8	
FX3G/FX3GC/FX3GE – customized control	9	
FX3S – new possibilities	10	
Programming and software	11	
Networking	12	
Analog solutions	13	
Drive control solutions	14	
Visualization solutions	15	
Your solution partner	17	

Section 2: Technical Informations

Global leader



The MELSEC iQ-F series is the fourth generation compact programmable controllers of Mitsubishi Electric. It offers outstanding performance, superior drive control and an intuitive programming environment.

16 million FX

The FX Family of PLCs is the PLC of choice across the world, industries and applications. Mitsubishi Electric has always worked closely with its customers to design the PLC that they want for their applications. The manufacturing and use of 16 million FX CPUs is a demonstration that this close working relationship has delivered quality, reliability and the product that customers want.

Over 35 years

The FX Family of PLCs has been an important part of control engineering for over 35 years. Throughout its history, the product has evolved from the original F series into today's current iQ-F series.

The FX Family has proven to be highly reliable and it consistently improves its compatibility with previous PLC generations.

International acceptance

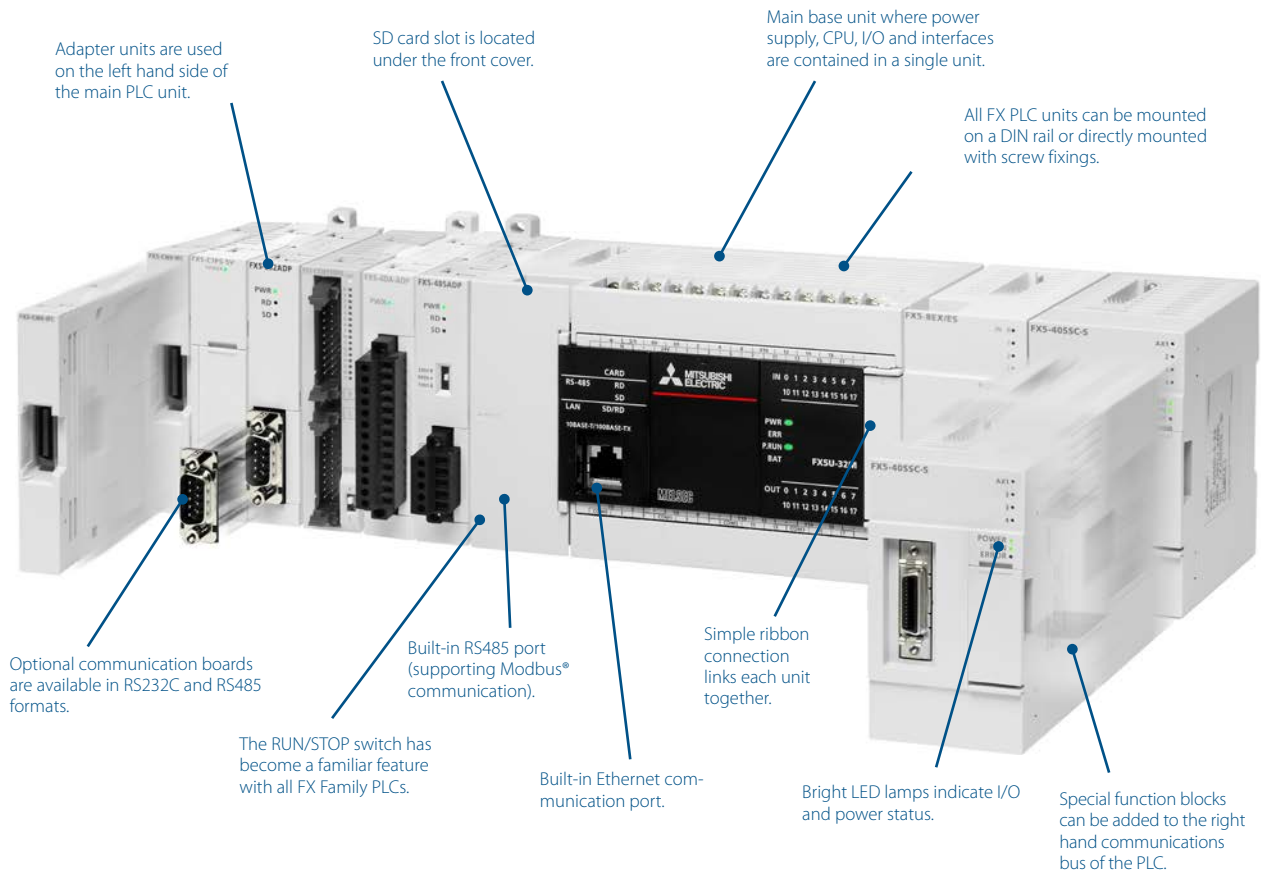
Shipping approvals such as ABS, Lloyds Register, DNV/GL, Bureau Veritas, NK, RINA, KR for example plus CE and E1 compliance for Low Voltage and EMC directives as well as manufacturing to Automotive industry quality levels, make the FX Family PLCs products to trust.



Mitsubishi Electric Corporation Himeji Works is a factor ycertified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems)



What makes a world leading PLC range?



Ease of use

Control systems that require minimal setup and keep program development time short.

Affordable

A high performance to cost ratio makes economical design solutions for a diverse range of applications a reality.

These features combined with Mitsubishi Electric's legacy in quality and reliability ensure that the fourth generation of micro controllers will continue to be at the forefront of the compact PLC market and provide customers with a leading edge.

Flexible

A configurable design that permits open communication, large I/O handling, as well as precise positioning and analog control, creating systems that adapt to customer requirements.

Customer Confidence

With a design philosophy spanning more than a quarter century, a customer base spread across the globe, a host of industrial certifications and almost 16 million CPUs sold, the FX series continues to sustain its position as the compact PLC of choice.

The power to perform



The FX Family of PLCs builds on previous performance and capability, ensuring you have a comprehensive range of control and automation options to choose from.

A solution for every application

Micro PLCs have opened up a world of opportunities in Industrial Automation due to their small size and low cost. Now many applications benefit from enhanced performance, easier manufacturing, maintenance and greater reliability.

The FX Family has been a part of this revolution for over 35 years and has developed a range of products to suit most applications. The FX Family consists of four main ranges which are distinct and independent but compatible.

Depending on your application and control needs, you can choose from the small, economical standalone FX3S series over the powerful FX3G, FX3GC, FX3GE, FX3U and FX3UC series to the ultimate FX5U and FX5UC series.

With the FX Family there really is a solution to most applications.

MODEL	FX3S	FX3G	FX3GC	FX3GE	FX3U	FX3UC	FX5U	FX5UC
Power supply	100–240 V AC	100–240 V AC, 24 V DC	24 V DC	100–240 V AC, 24 V DC	100–240 V AC, 24 V DC	24 V DC	100–240 V AC, 24 V DC	24 V DC
Maximum I/O	30	256*	256*	256*	384**	384**	512***	512***
Digital I/O	Relay/Transistor	Relay/Transistor	Transistor	Relay/Transistor	Relay/Transistor	Transistor	Relay/Transistor	Transistor
Cycle period/ logical instruction	0.21 µs/logical instruction	0.21 µs or 0.42 µs/logical instruction	0.21 µs or 0.42 µs/logical instruction	0.21 µs or 0.42 µs/logical instruction	0.065 µs	0.065 µs	0.034 µs/logical instruction	0.034 µs/logical instruction
PLC program memory	16 k steps	32 k steps	32 k steps	32 k steps	64 k steps	64 k steps	64 k steps	64 k steps

Summary table of FX PLCs

Note *: When networked with CC-Link (Discrete I/O, maximum 128);

Note **: When networked with CC-Link (Discrete I/O, maximum 256);

Note ***: When networked with CC-Link/AnyWireASLINK (Discrete I/O, maximum 256)

iQ-F – the next level of industry



FX5U/FX5UC at a glance

FAST INSTRUCTION TIMES

Basic instructions: 0,034 µs/
instruction (contact instruction)
Applied instructions: 0,034 µs/
instruction (MOV instruction)

LARGE MEMORY

64,000 steps of built-in program
memory.

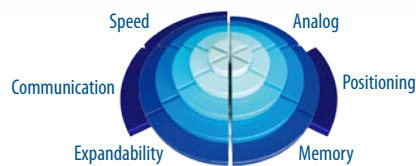
APPLICABLE STANDARDS

All products support EN and UL/cUL
standards. Various shipping approv-
als are supported as well.

LARGE DEVICE MEMORY

Auxiliary relays	32,768 points
Timers	1024 points
Counters	1024 points
Data registers	8000 points
Link registers	32,768 points
File registers	32,768 points

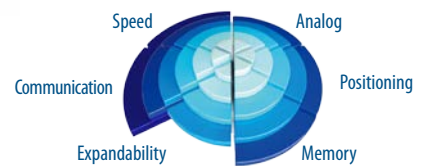
FX5U – Top of the line



The FX5U is the latest and also the most powerful compact PLC in the FX Family. Mitsubishi Electric has given the compact controllers a huge performance boost, focusing on processing power, expansion, built-in functionality and positioning & motion functions.

- High-speed system bus
- Built-in high speed processing and positioning
- Built-in analog inputs and analog output
- Built-in Ethernet port
- Modbus® function
- Enhanced security functions
- Battery-less
- FX5 and FX3 extension modules connectable

FX5UC – Even smaller



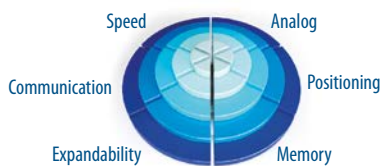
The FX5UC combines the powerful features of the FX5U in an even smaller housing. This ultra-compact PLC with 24 V DC power supply and connector-type transistor I/O is designed for space conscious applications and helps to downsize your system.

- Reduced size and wiring using connector-type I/O
- High-speed system bus
- Built-in high speed processing and positioning
- Built-in Ethernet port
- Modbus® function
- Enhanced security functions
- Battery-less
- FX5 and FX3 extension modules connectable

FX3U/FX3UC – a perfect PLC concept



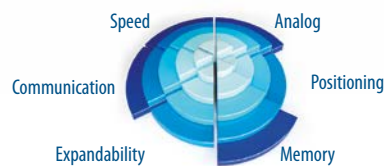
FX3U – High performance



The FX3U is the original dual system-bus, high-speed, fully expandable compact PLC designed to seamlessly control communication, networking, analog, and positioning systems. With a maximum of 384 controllable local and networked I/O via CC-Link, the FX3U uses its power and flexibility to provide a solution for a variety of applications.

- 3rd generation compact PLC
- High efficiency with more speed, performance, memory, and new functions
- Built-in high speed processing and positioning
- The FX3U can control a maximum of 256 connected I/O, and up to 384 points with CC-Link remote I/O.

FX3UC – Slim fit



The FX3UC is an ultra-compact high-speed, fully expandable PLC. Based on 24 V DC power and using connector-type transistor I/O, the FX3UC is designed for space conscious and modular applications. Created inline with the FX3U series, the FX3UC incorporates such attributes as built-in high speed I/O and the dual system-bus architecture, optimizing communication, networking, analog, and positioning control.

- 3rd generation super-compact PLC
- Reduced size and wiring using connector-type I/O
- Built-in high speed processing and positioning
- Even with its ultra-compact size, the FX3UC can be expanded to locally control up to 256 I/O, and up to 384 points with CC-Link remote I/O.

FX3U/FX3UC at a glance

FAST INSTRUCTION TIMES

Basic instructions: 0.065 μ s/
instruction (contact instruction)
Applied instructions: 0.642 μ s/
instruction (MOV instruction)

LARGE MEMORY

64,000 steps of built-in program memory. Flash memory cassettes with loader function are available.

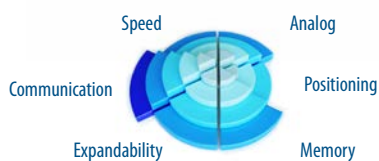
APPLICABLE STANDARDS

All products support EN and UL/cUL standards. Various shipping approvals are supported as well.

LARGE DEVICE MEMORY

Auxiliary relays	7,680 points
Timers	512 points
Counters	235 points
Data registers	8,000 points
Extension registers	32,768 points
Extension file registers	32,768 points
(with optional memory cassette)	

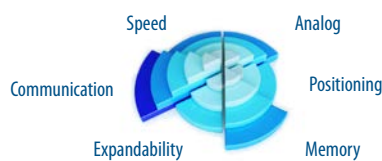
FX3G/FX3GC/FX3GE – customized control



FX3G – Customized control

The FX3G is an introductory compact PLC and is an addition to the FX3 series, designed for simple yet performance-critical applications. Incorporating innovative FX3 series technology the customer is presented with a suite of benefits.

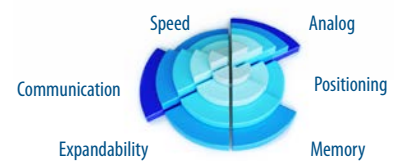
- 3rd generation compact PLC
- Highly flexible
- Dual system-bus architecture
- Control of up to 128 directly connected I/O, or up to 256 I/O with CC-Link remote I/O.



FX3GC – Super compact control

The FX3GC expands the FX3 series line up with a connector type PLC entry model. Having the same processing capability as the highly successful FX3G, this super compact product reduces installation space, wiring time and potential wiring faults.

- 3rd generation super-compact PLC
- Reduced size and wiring using connector-type I/O
- Dual system-bus architecture
- Control of up to 128 directly connected I/O, or up to 256 I/O with CC-Link remote I/O.



FX3GE – All-in-one standard

FX3GE adds built-in analog input/output and Ethernet connectivity on top of FX3G performance.

A great fit for many applications.

- 3rd generation, all-in-one PLC
- Highly flexible
- Dual system-bus architecture
- Control of up to 128 directly connected I/O, or up to 256 I/O with CC-Link remote I/O.

FX3G/FX3GC/FX3GE at a glance

INSTRUCTION TIMES

Basic instructions: 0.21 µs/
instruction (contact instruction)
Applied instructions: 0.42 µs/
instruction (MOV instruction)

LARGE MEMORY

32,000 steps of built-in program memory. EEPROM memory cassettes with loader function (FX3G/FX3GE).

APPLICABLE STANDARDS

All products support EN and UL/cUL standards. Various shipping approvals are supported as well. For FX3GC/FX3GE shipping approvals please consult your local Mitsubishi representative.

LARGE DEVICE MEMORY

Auxiliary relays	7,680 points
Timers	320 points
Counters	235 points
Data registers	8,000 points
Extension registers	24,000 points
Extension file registers	24,000 points

FX3S – new possibilities



FX3S– Basic micro control



The FX3S adds extra expandability to the high cost performance of the venerable entry-level FX1S.

FX3S makes it possible to utilize analog, Ethernet and Modbus® functions even in small-scale systems.

- Basic controller for general applications
- High performance with minimal size

Fit and forget

Typically FX3S applications are small, embedded control functions that are hidden away or unaccessible under normal maintenance activities. This is why the FX3S has been designed to be a robust low maintenance PLC. Features such as the maintenance free, 4000 step EEPROM memory and real time clock management all help to make the FX3S a self managing system, reducing the impact on the maintenance engineer.

Remote control

The FX3S has an additional range of BD expansion boards providing RS232, RS485, RS422 or Ethernet communications options. These can be used to connect and control various third party products such as bar code readers or panel printers.

FX3S at a glance

INSTRUCTION TIMES

Basic instructions: 0.21 μ s/
instruction (contact instruction)
Applied instructions: 0.5 μ s/
instruction (MOV instruction)

MEMORY SPECIFICATIONS

4,000 steps of built-in program
memory.
No battery.
No maintenance.

APPLICABLE STANDARDS

All products support EN and UL/
cUL standards. Please consult with
your local Mitsubishi representative
regarding FX3S shipping approvals.

DEVICE MEMORY SPECIFICATIONS

Auxiliary relays	1,536 points
Timers	138 points
Counters	67 points
Data registers	3,000 points
Extension file registers	2,000 points

Progressive software concepts

The Mitsubishi Electric FX PLC Family has a worldwide reputation for reliability, performance and ease of use. These key values have also been used to form Mitsubishi Electric's integrated software concept, MELSOFT.

Simple programming

The FX Family has a simple programming structure combining Basic and Applied instructions. The Basic instructions are common to all FX Family PLCs. Applied instructions provide the specialist control options such as data comparisons, PID and communications control, all of which are available on FX series. By the graded performance of each PLC series of the FX family, the number of available application instructions increases.

Productivity tools

Programming software for PLCs is constantly evolving. Users are placing more focus on reusable program code and function block concepts. This helps to reduce errors, reduce programming time and to help manage the whole programming process – increasing overall productivity.

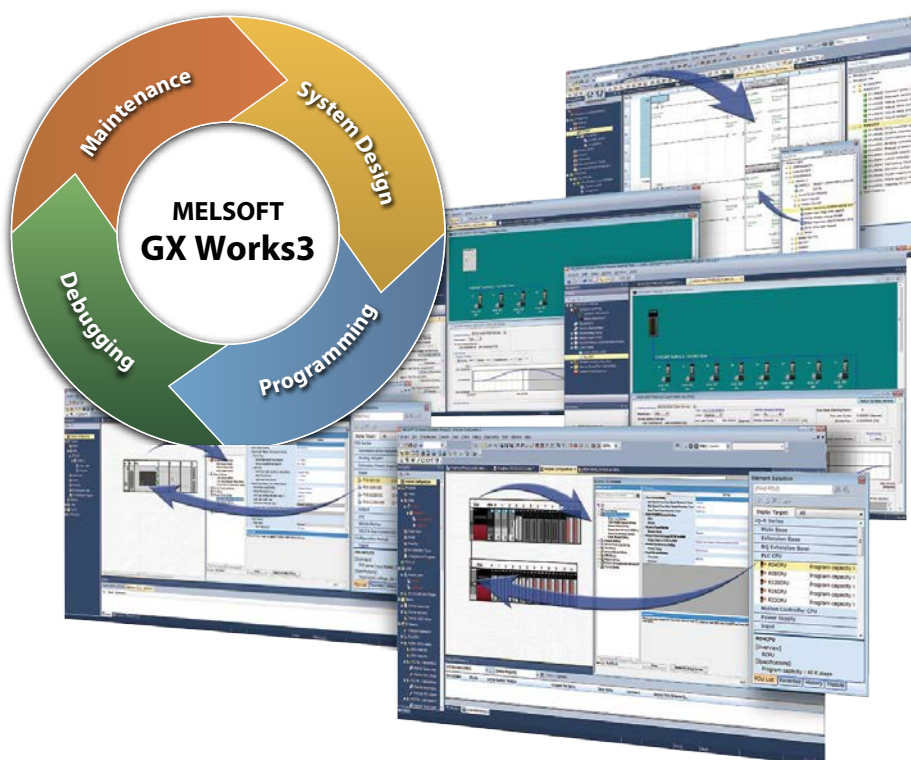
Simple and intuitive

The key to any good software is that it is simple to use. Mitsubishi Electric's GX Works PLC programming packages have achieved this by using intuitive design.

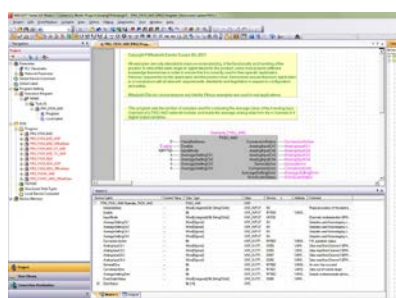
GX Works3 offers also comprehensive help functions and an advanced communications layer, ensuring safe reliable communication to the target PLC.

Choose what you need

Mitsubishi Electric provides with GX Works2 IEC 61131-3 compliant programming, where programs in Instruction List, Ladder, Function Block, Structured Text or SFC formats can be created. Using standard programming languages, like IEC 61131-3, on large programming projects can help users save costs by creating reusable PLC code and Function Blocks.



GX Works2 offers users the chance to program all Mitsubishi Electric MELSEC PLCs from a single package. However, for users who only need support for FX based systems there is GX Works2 FX.



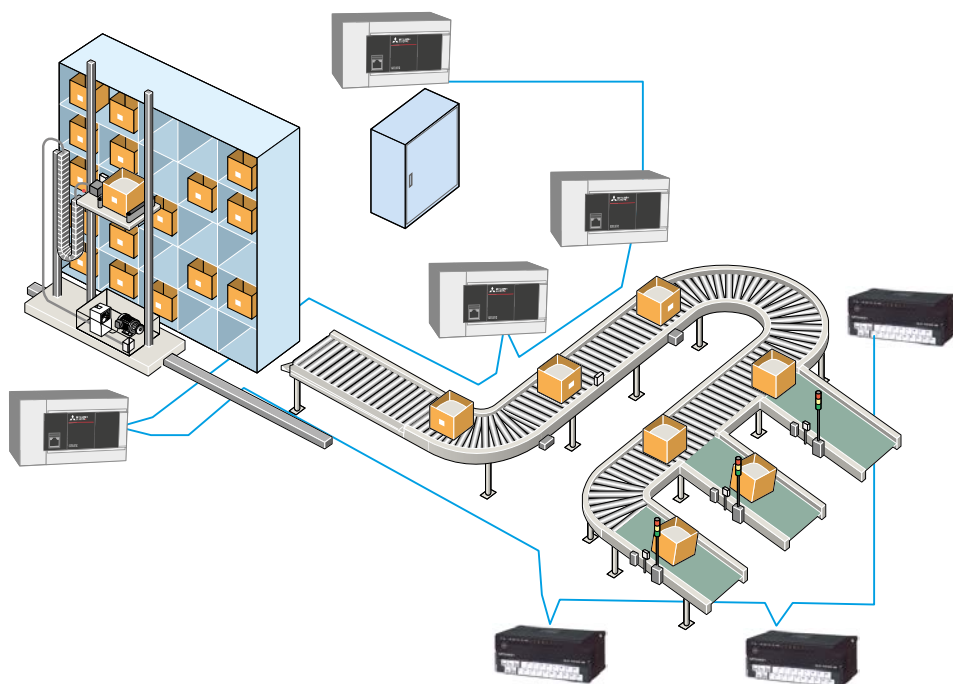
For the iQ-F series, Mitsubishi Electric offers the next level of PLC programming environment, GX Works3.

One step further with iQ Works

With the software suite iQ Works Mitsubishi Electric offers an integrated engineering environment. The intuitive user interface allows you to program and set up an iQ Platform, including system and network configuration, the programming of the MELSEC System Q, the MELSEC L series and the FX series, the establishment of motion controllers and servos, the design of user interfaces for operator panels of the GOT family as well as the programming of robots with the RT ToolBox2.

Networking and communication solutions

Applications are often required to integrate between each other across a factory, to report production or tracking data back for office based processing and in some cases be remotely monitored and maintained when the application is in an inaccessible location. The FX Family of PLCs has evolved to match this demand at all levels.



FX Family PLCs have a wide range of communications options.

Easy communications

Today's FX Family of PLCs share a basic communication concept where additional RS232, RS422 or RS485 communications boards can be added to the main base unit without increasing the required cabinet space. These can then be used for communication to various third party devices like bar code readers, printers and modems.

FX3 Family PLCs have a wider range of communications modules. These include options for connection to open and bespoke networks such as Ethernet, Profibus DP, CC-Link, DeviceNet™, CANopen or Modbus® for example.



Example of remote pumping station.

Networks make sense

Networked solutions to complex applications often make the overall solution easier to achieve and more cost effective. For example a conveyor system integrated with a warehouse pick and place system may extend over many hundreds of meters, and by using a fieldbus, such as CC-Link, wiring, troubleshooting and maintenance can be dramatically reduced.

Remote maintenance

With communications technology it is possible to put PLC control in the most remote locations. Using a PLC connected to a telemetry solution, such as a GSM modem, allows the user to remotely monitor and maintain the system. It can also allow the remote system to send alarm messages, warnings or general status information back to the user's central data processing centre.

The built-in Ethernet port of the FX5U and FX5UC base units allows for the connection to a personal computer or communication to other devices. The FX5U and FX5UC additionally offer an integrated RS485 port that allows to connect up to 16 Mitsubishi inverters or using Modbus® communication up to 32 devices like temperature controllers etc.

Analog solutions

Analog control is one of the most important areas for any automation system. Critically for users the concern is to match the performance demanded by the application to the available solutions in a cost effective way.

Where is analog used?

Analog control is widely used. In simple terms it allows a variable signal to be used to control items such as a motor's speed or to sense inputs such as fluid levels.

Digital to analog (D-A) control

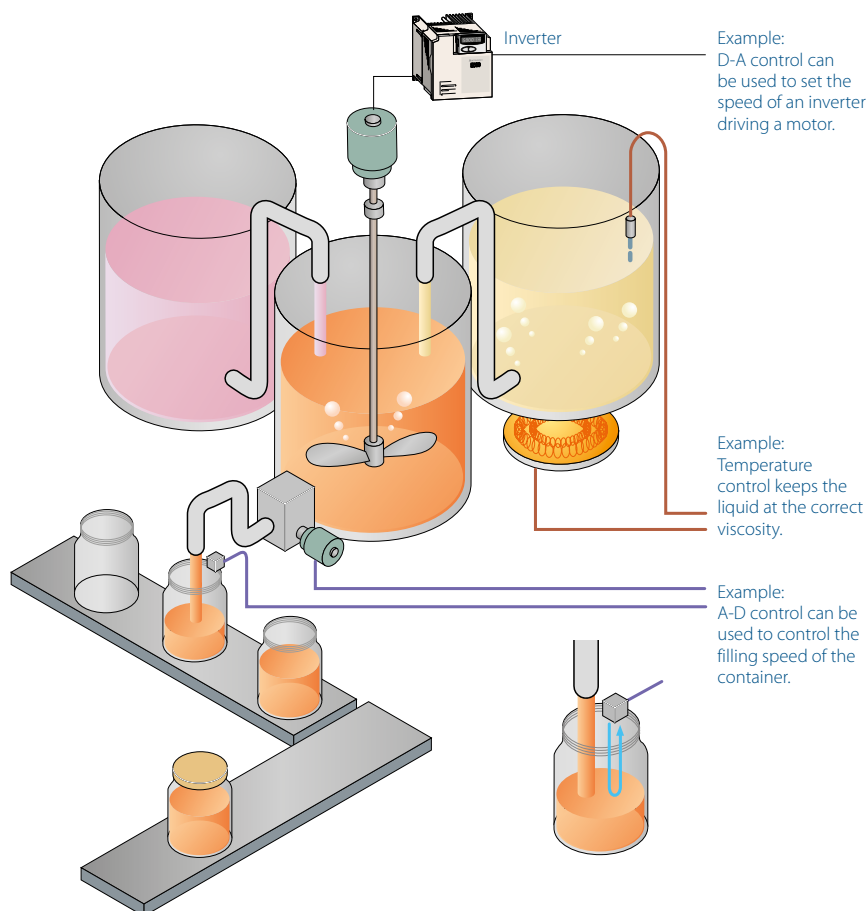
Here a digital PLC value is output as an analog signal. It can be used, for example, to send a speed command to an inverter which in turn causes the motor to increase or decrease speed.

Analog to digital (A-D) control

In this type of control a variable signal is sent to a PLC where it is converted in to a direct digital value. An example of this could be the measurement of the level of a liquid in a storage tank so that the exact amount of stored liquid can be controlled by the PLC.

Temperature control

Temperature control is the third type of analog control. An example of use could be where the temperature of a furnace is measured and compared by the PLC against a set range. Additional heating or cooling can then be applied to maintain a constant temperature.



Analog solutions are an important part of control engineering and can be used to simplify and accurately control actions happening in the production environment.

Example of temperature control.



Solutions to choose from

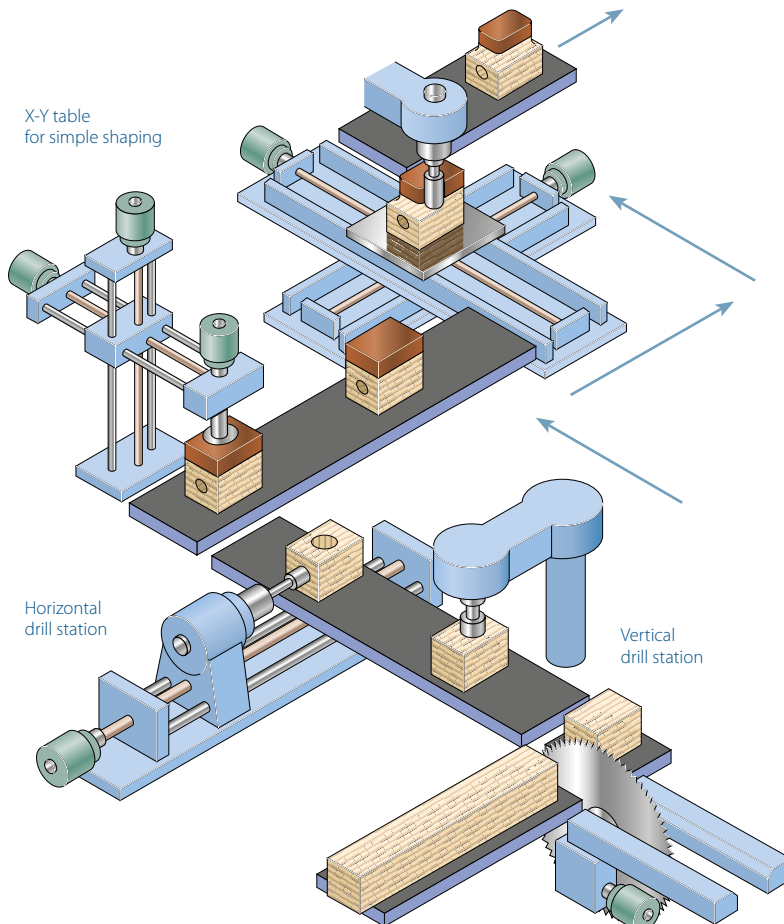
The FX Family offers a wide range of analog solutions from 1 and 2 channel BD boards for FX3G up to 8 channel input blocks like the FX2N-8AD where temperature, voltage and current input can be mixed on the same block. FX analog blocks also come in a range of resolutions from 8 bit up to 16 bit signal processing.

The FX3GE and FX5U base units are equipped with 2 analog input channels and 1 analog output channels.

With this range of choice and flexibility it is sure that there will be a solution here for most applications.

Drive control solutions

Using simple positioning solutions can help increase the accuracy of the work process, reduce waste and rework as well as provide a higher quality of production.



Simple positioning solutions can be effectively managed within a standard FX PLC.

Typical applications

Simple positioning applications typically involve independently controlled operational axis and can sometimes have many requirements. In the example of an X-Y table, a relative position is achieved by driving each axis until its target position is achieved, regardless of what happens with the other axis. There are two main elements to achieve this type of positioning control.

Pulse train outputs

A stream of output pulses can be used as a drive signal to a line driver, stepper motor or servo amplifier, which then causes the connected motor to perform the positioning activity.

The larger the range of output pulse frequencies available means greater speed and/or accuracy is achievable. For example, if a stepper motor with a larger number of steps is used, the travel distance per step can be reduced, resulting in an increased system accuracy.

High speed counter input

When a motor is being driven, its relative position can be controlled by counting the number of output pulses.

However, for a more accurate process, reading the actual position from an encoder feedback directly into a high speed counter is preferred. This helps to overcome issues of backlash and slippage as the actual position is measured and not assumed.

Positioning built in as standard

FX PLCs come with high speed counters (up to 200 kpps) and pulse train outputs (up to 200 kpps) as standard. The high speed counters can be configured in single pulse train inputs. The high speed counters can be configured in a single or two phase input. Pulse train outputs can be configured to provide continuous pulse streams at different frequencies or a set quantity of pulses at a single frequency.

There are also optional modules and adapters that can provide additional high speed counters with performance up to 200 kpps. The same is true for pulse train outputs with 200 kpps and 1 Mpps (1 MHz) output options available.

Example of conveyor belt control.



Visualization solutions

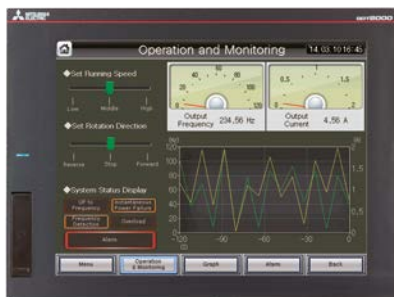
An increasingly important area of any automation solution is the reporting and display of operational information. This data enables operators, maintenance teams and business managers to make informed decisions in the best interests of the business.



In the food industry hygiene is very important.



The FX3U-7DM can be directly mounted within the PLC (FX3U) or mounted on the front cabinet.



The GOT is a typical HMI

The right tool for the right job

For maximum efficiency, each user requires access to information at their work place in a form that highlights the important data for them first. This means a range of different tools are required. As an example, here are three possible scenarios.

The machine operator

Machines often have a lot of manufacturing debris around or are subject to hygienic cleaning as in the food industry. Any display located in this environment would need to have a high Ingress Protection (IP) rating, indicating a high degree of waterproofness.

It may also be a benefit to the operator to have a large and clear display to reduce the chances for error from misreading, due to poor light or small fonts being used. It is also recognized that the use of graphics also reduces the chances for reading errors with complex data.

The maintenance team

The critical information for a maintenance engineer is the error and diagnostic data within the PLC as this is used to diagnose any process problems. However, additional information regarding the operational "hours run" or cycles processed, which could be called soft information as it is calculated on operational parameters, could allow the maintenance engineer to predict possible failure and arrange preventative maintenance.

Access to this data could be through the machine operator's terminal, across a network or through a dedicated display mounted inside or on the control cabinet itself.

The business manager

In a production controllers office it would be better to display information through a network to their existing desktop PC. In this application a piece of software such as an OPC server/client, a Java applet, an Active X control or a SCADA system would allow lots of data from lots of sources to be displayed in a clear and concise way giving the production controller the overview of the business operation that they need.

Data the way you want it

Mitsubishi Electric offers a wide range of visualization solutions from simple data displays such as the FX3U-7DM, advanced Graphic Operator Terminals like the GOT series, and a wide choice of software solutions from the MELSOFT software suite.

This powerful combination of hardware and software means there is a cost effective solution for most applications.

Where have FX PLCs been used?

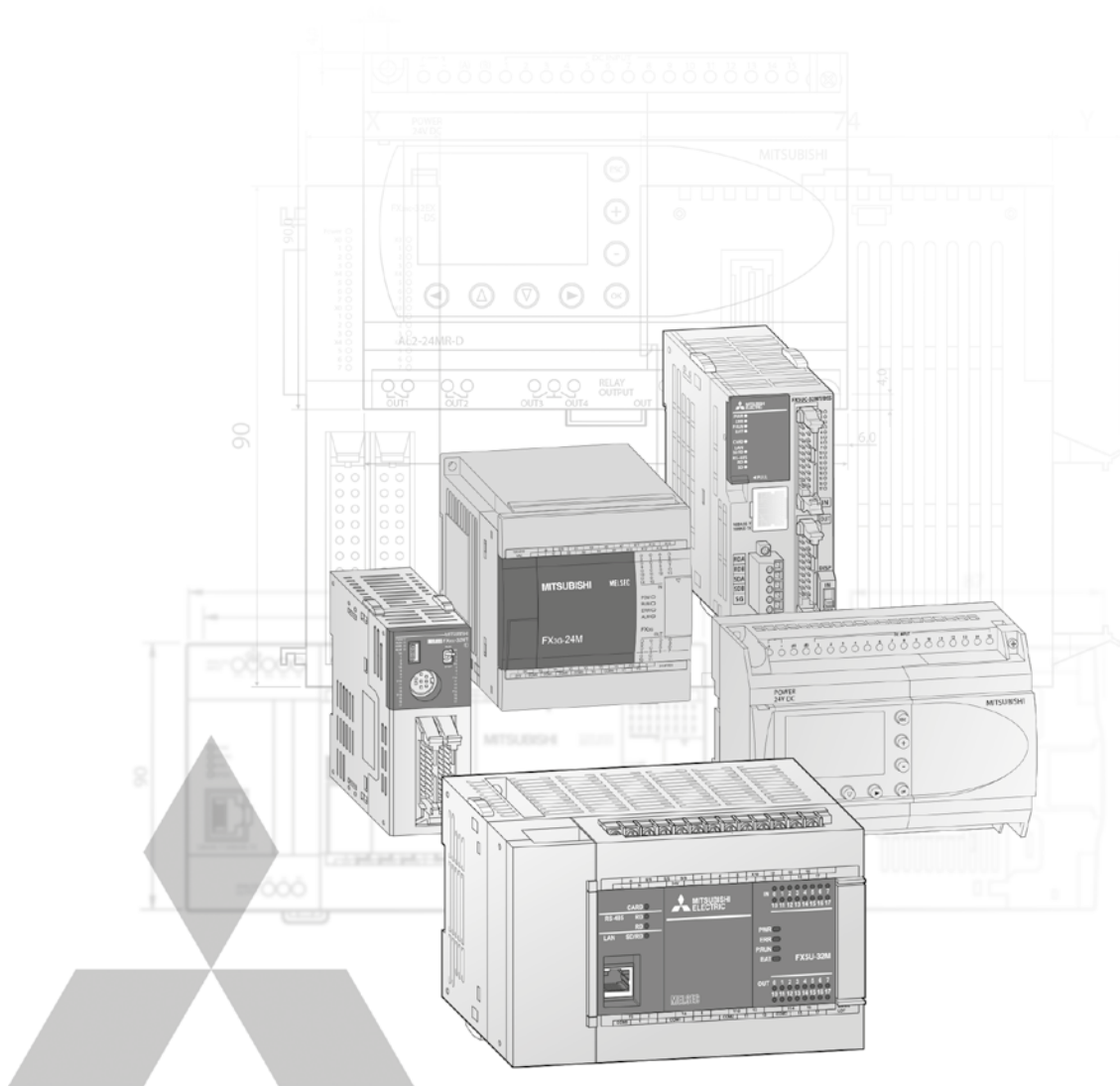


Sanitation management on Eurostar rollingstock.

Customer applications with FX PLCs have been wide spread from critical applications in pharmaceutical industries to sublime applications in the leisure industry. However, the FX PLC Family still remains the PLC of choice for many machine builders as it is flexible, compact and easy to use, which is why it is so often used.

Here are just a few examples of applications that customers have completed in the past:

- Agriculture
 - Plant watering systems
 - Plant handling systems
 - Saw mill (wood)
- Building management
 - Smoke detection monitoring
 - Ventilation and temperature control
 - Lift (elevator) control
 - Automated revolving doors
 - Telephone management
 - Energy management
 - Swimming pool management
- Construction
 - Steel bridge manufacturing
 - Tunnel boring systems
- Food and drink
 - Bread manufacture (mixing/baking)
 - Food processing (washing/sorting/slicing/packaging)
- Leisure
 - Multiplex cinema projection
 - Animated mechatronics (museums/theme parks)
- Medical
 - Respiration machine testing
 - Sterilization
- Pharmaceutical/chemical
 - Dosing control
 - Pollution measurement systems
 - Cryogenic freezing
 - Gas chromatography
 - Packaging
- Plastics
 - Plastic welding systems
 - Energy management systems for injection molding machines
 - Loading/unloading machines
 - Blow molding test machines
 - Injection molding machines
- Printing
- Textiles
- Transportation
 - Sanitation on passenger ships
 - Sanitation on rail rolling stock
 - Fire tender, pump management
 - Waste disposal truck management
- Utilities
 - Waste water treatment
 - Fresh water pumping



Technical Information Section

Further publications within the industrial automation range

Brochures

Modular PLC Family

Product catalogues for programmable logic controllers and accessories for the MELSEC iQ-R series/System Q/L series

HMI Family

Product catalogue for operator terminals, supervision software and accessories

FR Family

Product catalogue for frequency inverters and accessories

MR Family

Product catalogue for servo amplifiers and servo motors as well as motion controller and accessories

Robots Family

Product catalogue for industrial robots and accessories

LVS Family

Product catalogue for low voltage switchgears, magnetic contactors and circuit breakers

Automation Book

Overview on all Mitsubishi Electric automation products, like frequency inverters, servo/motion, robots etc.

More information?

This product catalogue is designed to give an overview of the extensive range FX Family of MELSEC PLCs. If you cannot find the information you require in this catalogue, there are a number of ways you can get further details on configuration and technical issues, pricing and availability.

For technical issues visit the <https://eu3a.mitsubishielectric.com> website. Our website provides a simple and fast way of accessing further technical data and up to the minute details on our products and services. Manuals and catalogues are available in several different languages and can be downloaded for free.

For technical, configuration, pricing and availability issues contact our distributors and partners. Mitsubishi Electric partners and distributors are only too happy to help answer your technical questions or help with configuration building. For a list of Mitsubishi Electric partners please see the back of this catalogue or alternatively take a look at the "contact us" section of our website <https://eu3a.mitsubishielectric.com>.

About this product catalogue

This catalogue is a guide to the range of products available. For detailed configuration rules, system building, installation and configuration the associated product manuals must be read. You must satisfy yourself that any system you design with the products in this catalogue is fit for purpose, meets your requires and conforms to the product configuration rules as defined in the product manuals.

Specifications are subject to change without notice. All trademarks acknowledged.

© Mitsubishi Electric Europe B.V., Factory Automation - European Business Group

The products of Mitsubishi Electric Europe B.V., that are listed and described in this document, are neither subject to approval for export nor subject to the Dual-Use List.

1 Introduction and configuration

♦ Product overview MELSEC iQ-F	4
♦ Product overview MELSEC-F	5
♦ FX series selection guide	6
♦ Components for an FX PLC system	7
♦ FX series configuration	8
♦ Calculation of the power consumption	18
♦ MELSEC iQ-F – FX5 advanced built-in functions	19
♦ MELSEC-F – FX3 built-in functions	25

2 MELSEC FX base units

♦ FX5U series	26
♦ FX5UC series	29
♦ FX3S series	32
♦ FX3G series	35
♦ FX3GE series	37
♦ FX3GC series	39
♦ FX3U series	42
♦ FX3UC series	46

3 MELSEC FX I/O extension

♦ Powered extension units	49
♦ Unpowered extension modules	51

4 MELSEC FX special function modules

♦ Analog modules	55
♦ Temperature control modules	58
♦ Data logger module, high-speed counter modules	59
♦ Positioning modules	60
♦ Simple Motion modules	61
♦ Network modules	62
♦ Communications modules, interface modules	68
♦ Adapter boards, communications adapter	71
♦ Interface adapters	73

5 Accessories

♦ Expansion adapter, conversion modules	74
♦ Conversion adapter, memory cassettes	75
♦ External terminal blocks	76
♦ Cable and connection terminals	77
♦ Power supply units	78
♦ Backup batteries	79
♦ Cables	80
♦ Display modules	81

6 ALPHA controllers

♦ Base units	82
♦ Extension units and accessories	85

7 Dimensions

♦ Base units	87
♦ Extension units	90
♦ Special function modules	92
♦ Accessories	94
♦ ALPHA series	97

8 Software & programming

♦ Programming software	98
♦ Programming unit	101

Approvals	103
Index	106

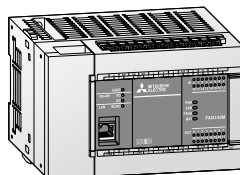
MELSEC iQ-F series

The next generation of FX controllers

Designed on the concepts of outstanding performance, superior drive control and user centric programming, Mitsubishi's MELSEC-F series has been reborn as the MELSEC iQ-F series. From stand alone use to networked system applications, the MELSEC iQ-F series brings your business to the next level of industry.

MELSEC iQ-F

FX5U



		32 I/O		64 I/O		80 I/O	
Power supply		AC	DC	AC	DC	AC	DC
CPU module	①	FX5U-32MR/ES	FX5U-32MR/DS	FX5U-64MR/ES	FX5U-64MR/DS	FX5U-80MR/ES	FX5U-80MR/DS
	②	FX5U-32MT/ES	FX5U-32MT/DS	FX5U-64MT/ES	FX5U-64MT/DS	FX5U-80MT/ES	FX5U-80MT/DS
	③	FX5U-32MT/ESS	FX5U-32MT/DSS	FX5U-64MT/ESS	FX5U-64MT/DSS	FX5U-80MT/ESS	FX5U-80MT/DSS
DC input type		Sink/source		Sink/source		Sink/source	
I/O points		Up to 256 local, up to 512 incl. network I/O's		Up to 256 local, up to 512 incl. network I/O's		Up to 256 local, up to 512 incl. network I/O's	
Program size	K step	64		64		64	
Engineering environment		GX Works3		GX Works3		GX Works3	
Built-in analog I/O		2 input channels (voltage) 1 output channel (voltage)		2 input channels (voltage) 1 output channel (voltage)		2 input channels (voltage) 1 output channel (voltage)	
Built-in Ethernet port		✓		✓		✓	

FX5UC



		32 I/O	64 I/O	96 I/O
Power supply		DC	DC	DC
CPU module	①	FX5UC-32MT/D ①	FX5UC-64MT/D ①	FX5UC-96MT/D ①
	②	FX5UC-32MT/DSS ②	FX5UC-64MT/DSS ②	FX5UC-96MT/DSS ②
DC input type		① Sink ② Sink/source	① Sink ② Sink/source	① Sink ② Sink/source
I/O points		Up to 256 local, up to 512 incl. network I/O's	Up to 256 local, up to 512 incl. network I/O's	Up to 256 local, up to 512 incl. network I/O's
Program size	K step	64	64	64
Engineering environment		GX Works3	GX Works3	GX Works3
Built-in analog I/O		—	—	—
Built-in Ethernet port		✓	✓	✓

Output type:

① Relay output ② Transistor output (sink) ③ Transistor output (source)

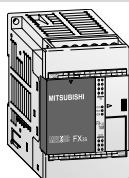
MELSEC-F series

The third generation of micro programmable controller, the FX3 series

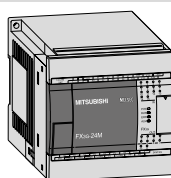
The FX series is renowned for its speed, capacity, performance and extensive features. Integrated with many features including analog inputs/outputs, communication, Ethernet and positioning, the FX3 series realizes high-performance in many different applications.

MELSEC-F

FX3S



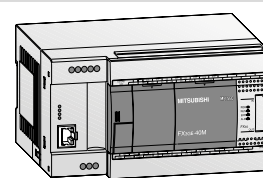
FX3G



FX3GC

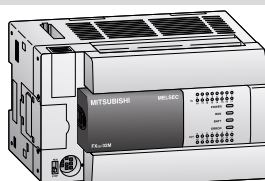


FX3GE

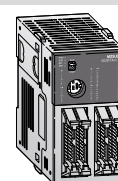


		10–30 I/O		14–60 I/O		32 I/O	24–40 I/O	
Power supply		AC	DC	AC	DC	DC	AC	DC
CPU module	①	FX3S-10MR/ES, FX3S-14MR/ES, FX3S-20MR/ES, FX3S-30MR/ES, FX3S-30MR/ES-2AD	FX3S-10MR/DS, FX3S-14MR/DS, FX3S-20MR/DS, FX3S-30MR/DS	FX3G-14MR/ES, FX3G-24MR/ES, FX3G-40MR/ES, FX3G-60MR/ES	FX3G-14MR/DS, FX3G-24MR/DS, FX3G-40MR/DS, FX3G-60MR/DS	—	FX3GE-24MR/ES, FX3GE-40MR/ES	FX3GE-24MR/DS, FX3GE-40MR/DS,
	②	FX3S-10MT/ES, FX3S-14MT/ES, FX3S-20MT/ES, FX3S-30MT/ES, FX3S-30MT/ES-2AD	FX3S-10MT/DS, FX3S-14MT/DS, FX3S-20MT/DS, FX3S-30MT/DS	FX3G-14MT/ES, FX3G-24MT/ES, FX3G-40MT/ES, FX3G-60MT/ES	FX3G-14MT/DS, FX3G-24MT/DS, FX3G-40MT/DS, FX3G-60MT/DS	FX3GC-32MT/D	FX3GE-24MT/ES, FX3GE-40MT/ES	FX3GE-24MT/DS, FX3GE-40MT/DS,
	③	FX3S-10MT/ESS, FX3S-14MT/ESS, FX3S-20MT/ESS, FX3S-30MT/ESS, FX3S-30MT/ES-2AD	FX3S-10MT/DSS, FX3S-14MT/DSS, FX3S-20MT/DSS, FX3S-30MT/DSS	FX3G-14MT/ESS, FX3G-24MT/ESS, FX3G-40MT/ESS, FX3G-60MT/ESS	FX3G-14MT/DSS, FX3G-24MT/DSS, FX3G-40MT/DSS, FX3G-60MT/DSS	FX3GC-32MT/DSS	FX3GE-24MT/ESS, FX3GE-40MT/ESS	FX3GE-24MT/DSS, FX3GE-40MT/DSS
DC input type		Sink/source		Sink/source		Sink/source	Sink/source	
I/O points		Up to 30 local		Up to 128 local, up to 256 incl. network I/O's		Up to 128 local, up to 256 incl. network I/O's	Up to 128 local, up to 256 incl. network I/O's	
Program size		4		32		32	32	
Engineering environment		GX Works2		GX Works2		GX Works2	GX Works2	
Built-in analog I/O		FX3S-30M: 2 input channels (voltage)		—		—	2 input channels (voltage) 1 output channel (voltage)	
Built-in Ethernet port		—		—		—	✓	

FX3U



FX3UC



		16–128 I/O		16–96 I/O
Power supply		AC	DC	DC
CPU module	①	FX3U-16MR/ES, FX3U-32MR/ES, FX3U-48MR/ES, FX3U-64MR/ES, FX3U-80MR/ES, FX3U-128MR/ES	FX3U-16MR/DS, FX3U-32MR/DS, FX3U-48MR/DS, FX3U-64MR/DS, FX3U-80MR/DS	FX3UC-16MR/D-T ^② , FX3UC-16MR/DS-T
	②	FX3U-16MT/ES, FX3U-32MT/ES, FX3U-48MT/ES, FX3U-64MT/ES, FX3U-80MT/ES, FX3U-128MT/ES	FX3U-16MT/DS, FX3U-32MT/DS, FX3U-48MT/DS, FX3U-64MT/DS, FX3U-80MT/DS	FX3UC-16MT/D ^② , FX3UC-32MT/D ^② , FX3UC-64MT/D ^② , FX3UC-96MT/D ^②
	③	FX3U-16MT/ESS, FX3U-32MT/ESS, FX3U-48MT/ESS, FX3U-64MT/ESS, FX3U-80MT/ESS, FX3U-128MT/ESS	FX3U-16MT/DSS, FX3U-32MT/DSS, FX3U-48MT/DSS, FX3U-64MT/DSS, FX3U-80MT/DSS	FX3UC-16MT/DSS, FX3UC-32MT/DSS, FX3UC-64MT/DSS, FX3UC-96MT/DSS
Input type		DC input sink/source		DC input sink/source (except ^② : DC input sink)
I/O points		Up to 256 local, up to 384 incl. network I/O's		Up to 256 local, up to 384 incl. network I/O's
Program size		64		64
Engineering environment		GX Works2		GX Works2

Output type:

① Relay output ② Transistor output (sink) ③ Transistor output (source)

FX series selection guide

Select system item		Select item specification		Select an applicable FX model					
System item	Item specification*	Terminal-type I/O					Connector-type I/O		
		Non-extendable*	Extendable				Extendable		
		FX3S	FX3G	FX3GE	FX3U	FX5U	FX3GC	FX3UC	FX5UC
Hardware	I/O points	Up to 30 local I/O's	●	○	○	○	○	○	○
		Up to 128 local I/O's		●	○	○	●	○	○
		Up to 256 local I/O's			●	●		●	●
		Up to 256 local and network I/O's		●	○	○	●	○	○
		Up to 384 local and network I/O's			●	○		●	○
		Up to 512 local and network I/O's				●			●
	Power supply	AC power	●	●	●	●			
		DC power		●		●	●	●	●
	Input type	100 V AC			●	● ^③			● ^③
		24 V DC	●	●	●	●	●	●	●
	Output type	Relay	●	●	●	●		●	
		Transistor	●	●	●	●	●	●	●
		Triac			●	● ^③			● ^③
	CPU speed	Standard	●	●	○	○	●	○	○
		Advanced			●	○		●	○
		High-speed				●			●
	Communication ports	USB	●	●			●		
		RS422	●	●	●		●	●	
		RS485				●			●
		Ethernet			●	●			●
	Analog I/O	Input: 2, output: 1							
Options	Analog I/O (current/voltage)	Up to 4 ADP channels	●	●	●	○	●	●	○
		Up to 8 ADP channels		● ^①	○	○	●	○	○
		Up to 16 ADP channels			●	●		●	●
		Up to 64 special function block input channels		●	●	○	●	●	○
		Up to 128 special function block input channels				●			●
	Temperature sensor input	Up to 4 ADP input channels	●	●	●	○	●	●	○
		Up to 8 ADP input channels		● ^①	○	○	●	○	○
		Up to 16 ADP input channels			●	●		●	●
		Up to 64 special function block input channels		●	●	●	●	●	●
		Temperature control		●	●	●	●	●	●
	Network	CC-Link (Master/Slave)		●	●	●	●	●	●
		CANopen®		●	●	●	●	●	
		J1939		●	●	●	●	●	
		Ethernet	●	●	●		●	●	●
		Profibus DP		●	●	●	●	●	
	Communication	Master			●			●	
		Slave		●	●		●	●	
		N : N network/parallel link	●	●	●	●	●	●	●
		Computer link (RS232C/RS485)	●	●	●	●	●	●	●
		1 channel (RS232C/RS485)	●	○	●	○	○	○	○
		Multi-channel (RS232C)		●	●	●	●	●	●
		Multi-channel (RS485)		●	●	●	●	●	●
		RS422				●			
		RS485	●	●	●	●	●	●	
		RS232C	●	●	●	●	●	●	
	Inverter control	USB			●				
		Embedded USB	●	●	●		●		
		Modbus®	●	●	●	●	●	●	●
		Analog	●	●	●	●	●	●	●
		Pulse width modulation	●	●	●	●	●	●	●
Positioning	High-speed counters	RS485 communication	●	●	●	●	●	●	●
		1 to 2 x 100 kHz axis built-in positioning	●		○	○	●	○	○
		Up to 3 x 100 kHz axis built-in positioning		● ^②	● ^②	●		●	●
		Up to 4 x 200 kHz axis with high-speed output adapters			●				●
		Up to 4 x 200 kHz axis built-in positioning				●			●
	Storage	Up to 8 x 1 MHz axis with special function blocks			●		●		
		Up to 16 SSCNETIII axis with special function blocks			●	○		○	
		Up to 64 SSCNETIII axis with special function blocks				●		●	
		Cam switching			●		●		
		Up to 6 high speed counters, max. 60 kHz	●	●	●	○	●	○	○
	Data logging	Up to 8 high speed counters, max. 100 kHz			●	○		●	○
		Up to 8 high speed counters, max. 200 kHz			●	●		●	●
		Additional extension using high-speed counter block			●	●		●	●
		Source data storage			●	●		●	●
		CF card adapter			●			●	
		SD card				●			●

● : Contains required functionality ○ : Higher functionality or more expandability ① 14 and 24 I/O points main units : max. 4 channels ② 14 and 24 I/O points main units : max. 2 axes ③ When a terminal module is used.

* Some items require additional extension modules in order to function where other connection rules and requirements may apply. For more details, refer to the respective product manuals.

What components are required for an FX PLC system?

A basic FX PLC system can consist of a stand-alone base unit, with the functionality and I/O range increased by adding extension I/O and special function modules. The following section provides an overview of options available.

Base units

The FX3S, FX3G, FX3U and FX5U can be AC or DC powered, the FX3GC, FX3UC and the FX5UC are only DC powered, both with a mix of input and output styles. The PLCs can be programmed with the user friendly GX Works2/GX Works2 FX (FX3 PLCs) and GX Works3 (FX5 PLCs) programming software, allowing programs to be transferred between different FX PLCs. All PLC base units include an integrated real time clock.

Base units are available with different I/O configurations from 10 to 128 points but can be expanded to 512 points depending upon the FX range selected.

Extension boards

Except for the FX3GC, FX3UC and FX5UC series, extension adapter boards can be installed directly into the base unit and therefore do not require any additional installation space.

Programming is done directly via special commands and dedicated data register in the PLC.

For a small number of digital I/O (2 to 4) an extension adapter board can be installed directly into the FX3S, FX3G, FX3GE, FX3U or FX5U controller. Interface adapter boards can also provide the FX PLC with additional RS232, RS422, RS485 or USB interfaces.

Special adapters

The special Adapters, also called ADPs, add standard high-speed functions to a FX PLC. Mounted on the left side of a base unit, these units are extremely compact and easy to use.

The programming is similar to the expansion boards via special instructions and dedicated data registers in the PLC.

Available are various serial communication, analog, temperature input, positioning, high-speed counting and data logging ADPs. Compared to the BDs the ADPs offer more flexibility and performance. For the connection of ADP modules, a converter adapter is required for some base units.

Extension I/O modules

Unpowered and powered extension digital I/O modules can be added to the FX3G, FX3GC, FX3GE, FX3U, FX3UC, FX5U and FX5UC PLCs.

A wide range from 8 to 48 I/O points with different inputs and outputs are available. There is no limitation on the number of extension units or blocks, you can design the system to match application requirements, just make sure to check the system power supply and number of available I/O points.

Dedicated I/O blocks for the FX3GC and FX3UC are available as well.

Special function modules

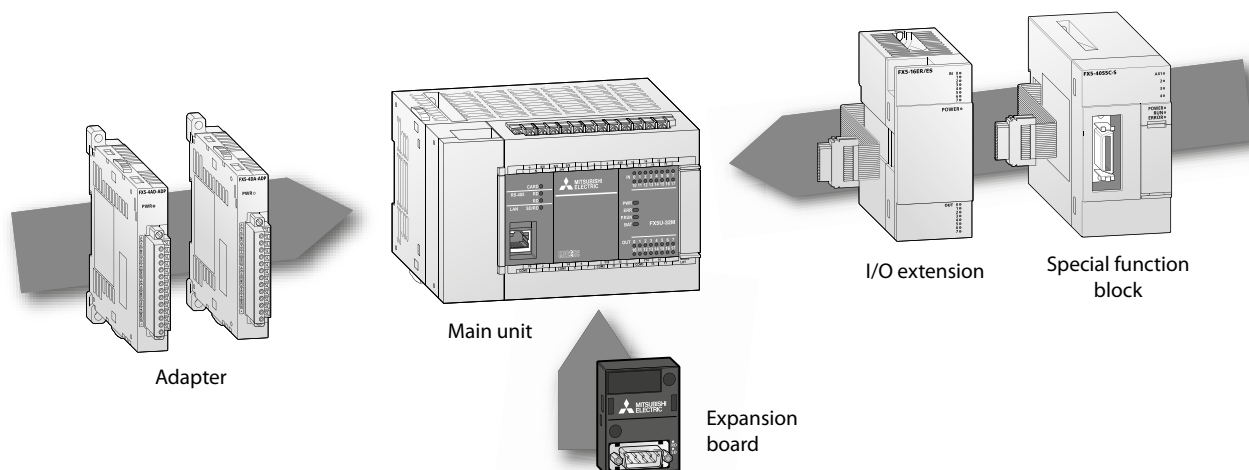
A wide variety of special function modules are available for the FX3G, FX3GC, FX3GE, FX3U, FX3UC, FX5U and FX5UC PLCs. They cover networking functionality, analog control, high speed input, pulse train outputs, data logging function, temperature inputs and Simple Motion modules.

Thanks to the standardized communication via memory integrated into the special function modules, programming is straightforward.

The integrated CPU performs PLC scan time independent operation perfectly fitted for networking or positioning tasks, thus reducing the load on the PLC base unit. Up to 8 different units can be connected to the base unit.

Memory extension and operator terminals

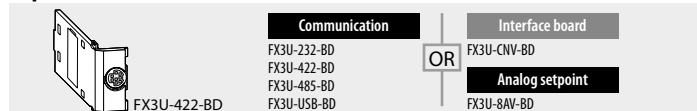
Each FX family base unit (except FX3GC/FX5U/FX5UC) can be equipped with a memory cassette. The programming unit interface enables the connection of programming tools like PC and hand held programming units as well as graphical operator terminals.



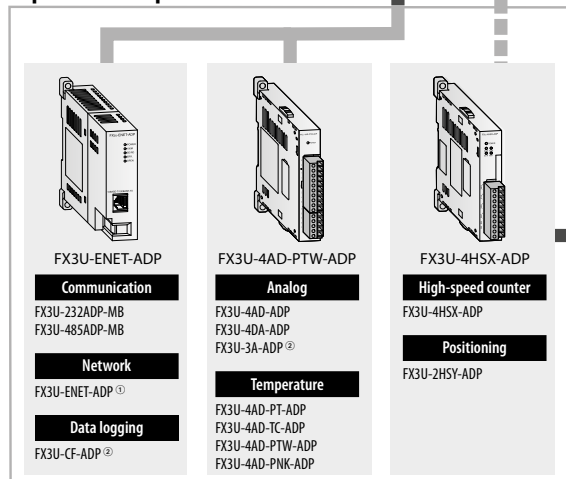
FX series configuration

FX3U

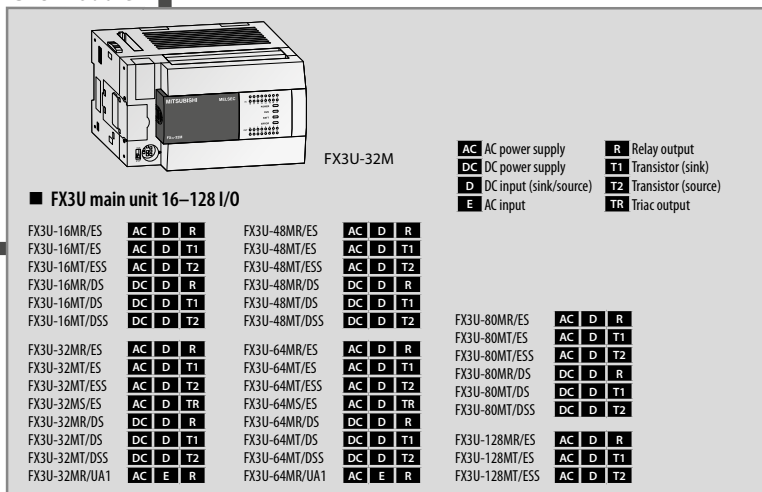
Expansion board



Expansion adapter



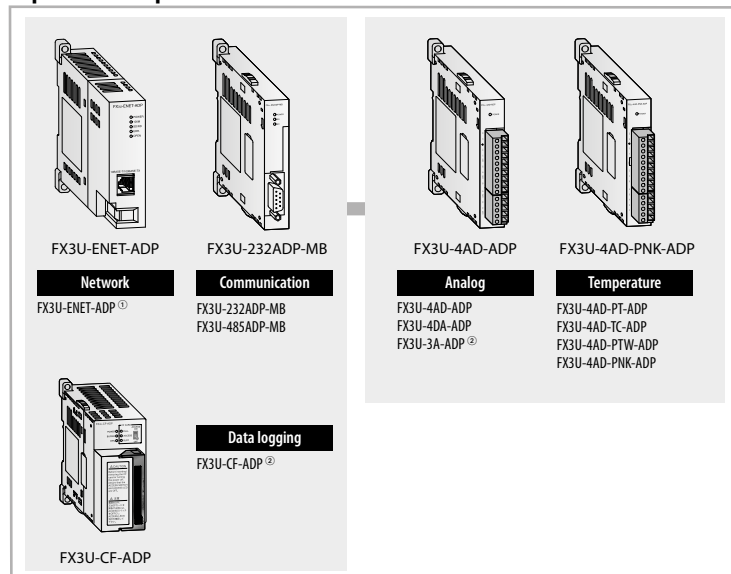
CPU module



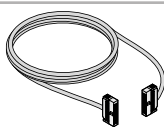
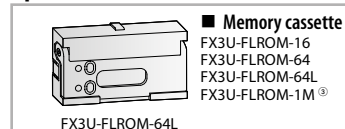
① Firmware version 3.10 or later. ② Firmware version 2.61. ③ Firmware version 3.00 or later.

FX3UC

Expansion adapter



Option

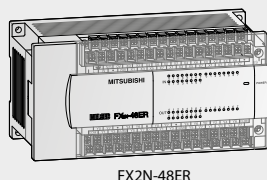


Connecting to terminal block
TB-EX-CAB-1M (1 m)
TB-EX-CAB-3M (3 m)
TB-EX-CAB-5M (5 m)
TB-EY-CAB-1M (1 m)

① Firmware version 3.10 or later. ② The FX3UC supports the FX3U-CF-ADP and FX3U-3A-ADP from firmware version 2.61. ③ Firmware version 3.00 or later.

Extension module

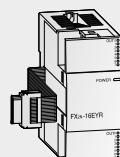
■ I/O extension module



Powered extension unit

Input/output extension unit

FX2N-32ER-ES/UL
FX2N-32ET-ESS/UL
FX2N-48ER-DS
FX2N-48ER-ES/UL
FX2N-48ER-UA1/UL
FX2N-48ET-DSS
FX2N-48ET-ESS/UL



Unpowered extension block

Input extension block

FX2N-8EX-ES/UL
FX2N-8EX-UA1/UL
FX2N-16EX-ES/UL

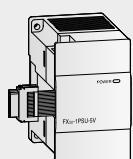
Input/output extension block

FX2N-8ER-ES/UL

Output extension block

FX2N-8EYR-ES/UL
FX2N-8EYT-ESS/UL
FX2N-16EYR-ES/UL
FX2N-16EYT-ESS/UL
FX2N-16EYS

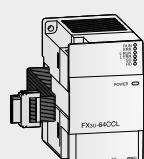
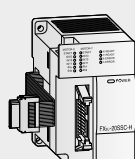
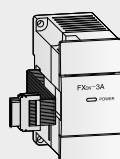
■ Power supply unit



Power supply unit

FX3U-1PSU-5V

■ Special function block



Analog

FX0N-3A
FX2N-2AD
FX3U-4AD
FX2N-2DA
FX3U-4DA
FX2N-5A
FX2N-8AD

Positioning

FX2N-1PG-E
FX3U-1PG
FX2N-10PG
FX3U-20SSC-H
FX2N-1RM-E-SET
FX2N-10GM
FX2N-20GM

Network

FX2N-32CCL
FX3U-16CCL-M^①
FX3U-64CCL
FX3U-ENET
FX3U-32DP
FX3U-64DP-M
FX3U-CAN
FX3U-J1939

Temperature

FX2N-2LC
FX3U-4LC

High-speed counter

FX2N-4AD-TC
FX2N-4AD-PT

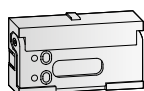
High-speed counter

FX2N-1HC
FX3U-2HC

Communication

FX2N-232IF

Option



■ Memory cassette

FX3U-FLROM-16
FX3U-FLROM-64
FX3U-FLROM-64L
FX3U-FLROM-1M^②



■ Display module

FX3U-7DM

■ Display module holder

FX3U-7DM-HLD



■ Battery

FX3U-32BL

■ Extension cable

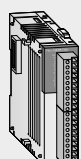
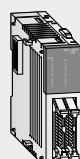
FX0N-30EC (30 cm)
FX0N-65EC (65 cm)

■ PLC bus connector

FX2N-CNV-BC

Extension module

■ I/O extension module



Input extension block

FX2NC-16EX-T-DS
FX2NC-16EX-DS
FX2NC-32EX-DS

Output extension block

FX2NC-16EYR-T-DS
FX2NC-16EYT-DSS
FX2NC-32EYT-DSS



Power supply unit

FX3UC-1PS-5V

Interface converter

FX2NC-CNV-IF



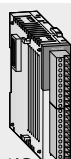
Input extension block

FX2N-8EX-ES/UL
FX2N-8EX-UA1/UL
FX2N-16EX-ES/UL

Output extension block

FX2N-8EYR-ES/UL
FX2N-8EYT-ESS/UL
FX2N-16EYR-ES/UL
FX2N-16EYT-ESS/UL
FX2N-16EYS

■ Special function block

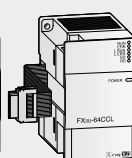
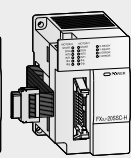
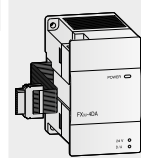


Analog

FX3UC-4AD
FX2NC-4DA

High-speed counter

FX2NC-1HC



Analog

FX0N-3A
FX2N-2AD
FX3U-4AD
FX2N-2DA
FX3U-4DA
FX2N-5A
FX2N-8AD

Positioning

FX2N-1PG-E
FX3U-1PG
FX2N-10PG
FX2N-10GM
FX2N-1RM-E-SET
FX3U-20SSC-H
FX2N-20GM

Network

FX2N-32CCL
FX3U-16CCL-M^①
FX3U-64CCL
FX3U-ENET
FX3U-32DP
FX3U-64DP-M
FX3U-CAN
FX3U-J1939

Temperature

FX2N-2LC
FX3U-4LC

High-speed counter

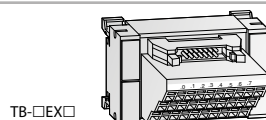
FX2N-4AD-TC
FX2N-4AD-PT

High-speed counter

FX2N-1HC
FX3U-2HC

Communication

FX2N-232IF

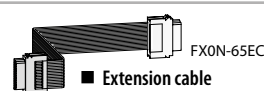


■ Terminal block

TB-8EX-C
TB-16EX-S
TB-16EX-C
TB-8EY-S
TB-20-S
TB-20C

■ Battery

FX3U-32BL



■ Extension cable

FX0N-30EC (30 cm)
FX0N-65EC (65 cm)

■ PLC bus connector

FX2N-CNV-BC

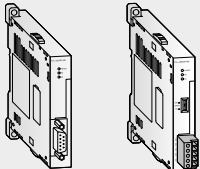
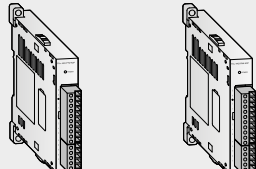
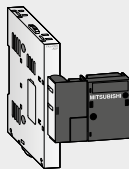
■ Power supply cable

FX2NC-100MPCB (1 m)
FX2NC-100BPCB (1 m)

FX series configuration

FX3G

Expansion adapter

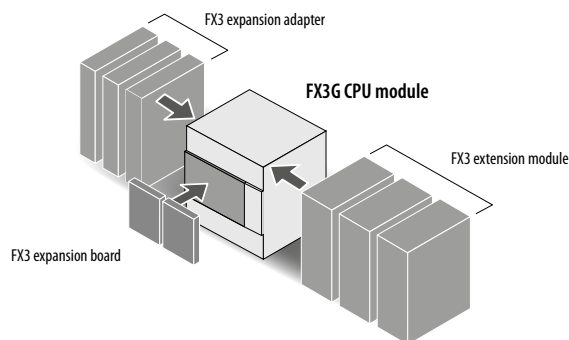
 Communication FX3U-232ADP-MB FX3U-485ADP-MB Network FX3U-ENET-ADP^①	 Analog FX3U-4AD-ADP FX3U-4DA-ADP FX3U-3A-ADP Temperature FX3U-4AD-PT-ADP FX3U-4AD-TC-ADP FX3U-4AD-PTW-ADP FX3U-4AD-PNK-ADP	 Interface adapter FX3G-CNV-ADP
---	--	---

① Firmware version 2.00 or later.

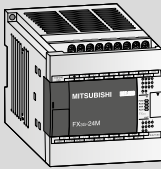
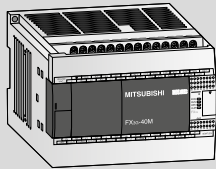
Expansion board

 Communication FX3G-232-BD FX3G-422-BD FX3G-485-BD	Analog setpoint FX3G-8AV-BD	Analog FX3G-2AD-BD FX3G-1DA-BD	Digital FX3G-4EX-BD FX3G-2EYT-BD
---	--	---	---

FX3G-232-BD



CPU module

 FX3G-24M	 FX3G-40M
---	---

■ FX3G main unit 14–60 I/O

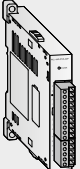
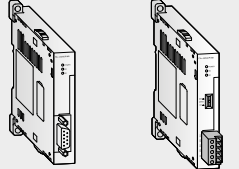
FX3G-14MR/ES	AC	D	R	FX3G-40MR/ES	AC	D	R
FX3G-14MT/ES	AC	D	T1	FX3G-40MT/ES	AC	D	T1
FX3G-14MT/ESS	AC	D	T2	FX3G-40MT/ESS	AC	D	T2
FX3G-14MR/DS	DC	D	R	FX3G-40MR/DS	DC	D	R
FX3G-14MT/DS	DC	D	T1	FX3G-40MT/DS	DC	D	T1
FX3G-14MT/DSS	DC	D	T2	FX3G-40MT/DSS	DC	D	T2

FX3G-24MR/ES	AC	D	R	FX3G-60MR/ES	AC	D	R
FX3G-24MT/ES	AC	D	T1	FX3G-60MT/ES	AC	D	T1
FX3G-24MT/ESS	AC	D	T2	FX3G-60MT/ESS	AC	D	T2
FX3G-24MR/DS	DC	D	R	FX3G-60MR/DS	DC	D	R
FX3G-24MT/DS	DC	D	T1	FX3G-60MT/DS	DC	D	T1
FX3G-24MT/DSS	DC	D	T2	FX3G-60MT/DSS	DC	D	T2

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

FX3GE

Expansion adapter

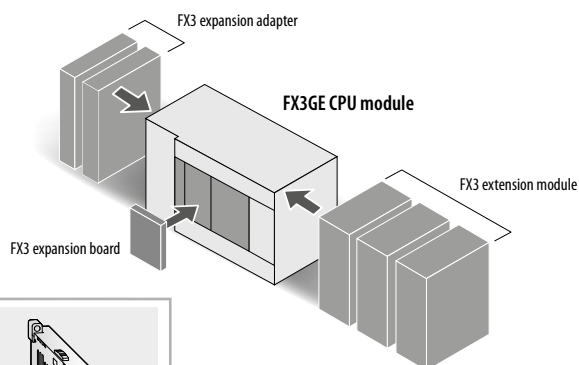
 Analog FX3U-4AD-ADP FX3U-4DA-ADP FX3U-3A-ADP	 Temperature FX3U-4AD-PT-ADP FX3U-4AD-TC-ADP FX3U-4AD-PTW-ADP FX3U-4AD-PNK-ADP	 Communication FX3U-232ADP-MB FX3U-485ADP-MB
---	--	--

Expansion board

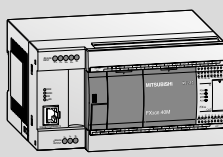
 Communication FX3G-232-BD FX3G-422-BD FX3G-485-BD	Analog setpoint FX3G-8AV-BD	Analog FX3G-2AD-BD FX3G-1DA-BD
--	--	---

FX3G-232-BD

① To program FX3GE, select FX3G as the PLC type.



CPU module

 FX3GE-40M
--

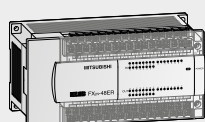
■ FX3GE main unit 24–40 I/O

FX3GE-24MR/ES	AC	D	R	FX3GE-40MR/ES	AC	D	R
FX3GE-24MT/ES	AC	D	T1	FX3GE-40MT/ES	AC	D	T1
FX3GE-24MT/ESS	AC	D	T2	FX3GE-40MT/ESS	AC	D	T2

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

Extension module

■ I/O extension module



FX2N-48ER

Powered extension unit

Input/output extension unit

FX2N-32ER-ES/UL
FX2N-32ET-ESS/UL
FX2N-48ER-ES/UL
FX2N-48ER-DS
FX2N-48ET-DSS
FX2N-48ER-UA1/UL
FX2N-48ET-ESS/UL



FX2N-8EX

Unpowered extension block

Input extension block

FX2N-8EX-ES/UL
FX2N-8EX-UA1/UL
FX2N-16EX-ES/UL

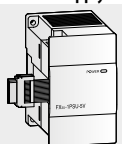
Output extension block

FX2N-8EYR-ES/UL
FX2N-8EYT-ESS/UL
FX2N-16EYR-ES/UL
FX2N-16EYT-ESS/UL
FX2N-16EYS

Input/output extension block

FX2N-8ER-ES/UL

■ Power supply unit

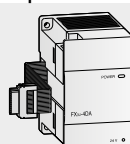


FX3U-1PSU-5V

Power supply unit

FX3U-1PSU-5V

■ Special function block



FX3U-4DA

Analog

FX2N-2AD
FX3U-4AD
FX2N-2DA
FX3U-4DA
FX2N-5A
FX2N-8AD

Temperature

FX2N-2LC
FX3U-4LC
FX2N-4AD-TC
FX2N-4AD-PT

Network

FX2N-32CCL
FX3U-16CCL-M ①
FX3U-64CCL
FX3U-ENET
FX3U-32DP
FX3U-CAN
FX3U-J1939

Option

■ Memory cassette

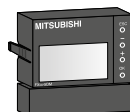
FX3G-EEPROM-32L



FX3G-EEPROM-32L

■ Display module

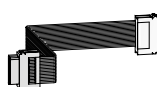
FX3G-5DM



FX3G-5DM

■ Extension cable

FX0N-30EC (30 cm)
FX0N-65EC (65 cm)



FX0N-65EC

■ PLC bus connector

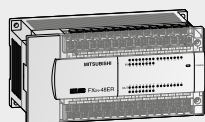
FX2N-CNVC-BC

■ Battery

FX3U-32BL

Extension module

■ I/O extension module

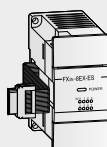


FX2N-48ER

Powered extension unit

Input/output extension unit

FX2N-32ER-ES/UL
FX2N-32ET-ESS/UL
FX2N-48ER-ES/UL
FX2N-48ER-DS
FX2N-48ET-DSS
FX2N-48ER-UA1/UL
FX2N-48ET-ESS/UL



FX2N-8EX

Unpowered extension block

Input extension block

FX2N-8EX-ES/UL
FX2N-8EX-UA1/UL
FX2N-16EX-ES/UL

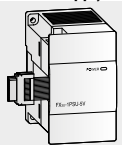
Output extension block

FX2N-8EYR-ES/UL
FX2N-8EYT-ESS/UL
FX2N-16EYR-ES/UL
FX2N-16EYT-ESS/UL
FX2N-16EYS

Input/output extension block

FX2N-8ER-ES/UL

■ Power supply unit

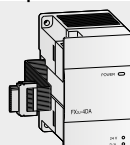


FX3U-1PSU-5V

Power supply unit

FX3U-1PSU-5V

■ Special function block



FX3U-4DA

Analog

FX2N-2AD
FX3U-4AD
FX2N-2DA
FX3U-4DA
FX2N-5A
FX2N-8AD

Temperature

FX2N-2LC
FX3U-4LC
FX2N-4AD-TC
FX2N-4AD-PT

Network

FX2N-32CCL
FX3U-16CCL-M ①
FX3U-64CCL
FX3U-ENET
FX3U-32DP
FX3U-CAN
FX3U-J1939

Option

■ Memory cassette

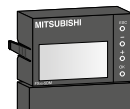
FX3G-EEPROM-32L



FX3G-EEPROM-32L

■ Display module

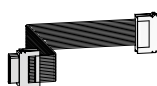
FX3G-5DM



FX3G-5DM

■ Extension cable

FX0N-30EC (30 cm)
FX0N-65EC (65 cm)



FX0N-65EC

■ PLC bus connector

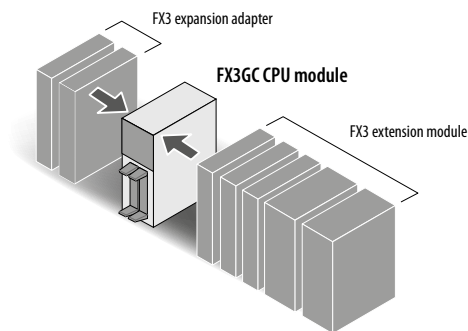
FX2N-CNVC-BC

■ Battery

FX3U-32BL

FX series configuration

FX3GC



Expansion adapter

FX3U-ENET-ADP Network FX3U-ENET-ADP ①	FX3U-232ADP-MB Communication FX3U-232ADP-MB FX3U-485ADP-MB	FX3U-4AD-ADP Analog FX3U-4AD-ADP FX3U-4DA-ADP FX3U-3A-ADP	FX3U-4AD-PNK-ADP Temperature FX3U-4AD-PT-ADP FX3U-4AD-TC-ADP FX3U-4AD-PTW-ADP FX3U-4AD-PNK-ADP
--	---	--	---

CPU module

FX3GC-32M

■ **FX3GC main unit 32 I/O**

FX3GC-32MT/D	DC	D	T1
FX3GC-32MT/DSS	DC	D	T2

DC DC power supply **T1** Transistor output (sink)
D DC input (sink/source) **T2** Transistor output (source)

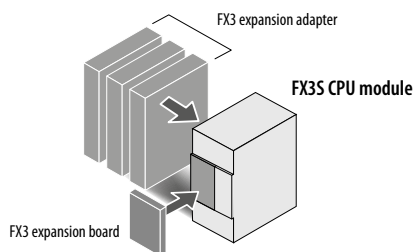
① Firmware version 2.00 or later.

Option

■ **Connecting to terminal block**

TB-EX-CAB-1M (1 m)
 TB-EX-CAB-3M (3 m)
 TB-EX-CAB-5M (5 m)
 TB-EY-CAB-1M (1 m)

FX3S



Expansion adapter

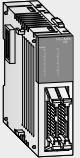
FX3U-ENET-ADP Network FX3U-ENET-ADP	FX3U-232ADP-MB Communication FX3U-232ADP-MB FX3U-485ADP-MB	FX3U-4AD-ADP Analog FX3U-4AD-ADP FX3U-4DA-ADP FX3U-3A-ADP	FX3U-4AD-PNK-ADP Temperature FX3U-4AD-PT-ADP FX3U-4AD-TC-ADP FX3U-4AD-PTW-ADP FX3U-4AD-PNK-ADP	FX3S-CNVP-ADP Interface adapter FX3S-CNVP-ADP
--	---	--	---	--

Expansion board

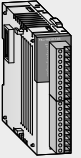
FX3G-232-BD Communication FX3G-232-BD FX3G-422-BD FX3G-485-BD	FX3G-8AV-BD Analog setpoint	FX3G-2AD-BD Analog FX3G-2AD-BD FX3G-1DA-BD	FX3G-4EX-BD Digital FX3G-4EX-BD FX3G-2EYT-BD
--	---	---	---

Extension module

■ I/O extension block



FX2NC-32EX



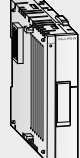
FX2NC-16EYR-T

Input extension block

FX2NC-16EX-T-DS
FX2NC-16EX-DS
FX2NC-32EX-DS

Output extension block

FX2NC-16EYR-T-DS
FX2NC-16EYT-DS
FX2NC-32EYT-DS



FX3UC-1PS-5V

Power supply unit
FX3UC-1PS-5V

OR

Interface converter
FX2NC-CN-IF



FX2N-8EX

Unpowered extension block

Input extension block

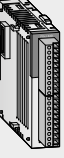
FX2N-8EX-ES/UL
FX2N-8EX-UA1/UL
FX2N-16EX-ES/UL

Output extension block

FX2N-8EYR-ES/UL
FX2N-8EYT-ESS/UL
FX2N-16EYR-ES/UL
FX2N-16EYT-ESS/UL
FX2N-16EYS

Input/output extension block
FX2N-8ER-ES/UL

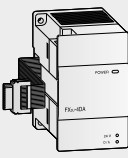
■ Special function block



FX3UC-4AD

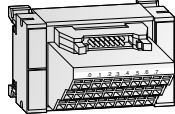
Analog

FX3UC-4AD
FX2NC-4DA



FX3U-4DA

Analog	Temperature	Network
FX2N-2AD FX3U-4AD FX2N-2DA FX3U-4DA FX2N-SA FX2N-8AD	FX2N-2LC FX3U-4LC FX2N-4AD-TC FX2N-4AD-PT	FX2N-32CCL FX3U-16CCL-M ① FX3U-64CCL FX3U-ENET FX3U-32DP FX3U-CAN FX3U-J1939



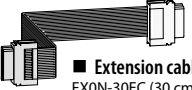
TB-□EX□

■ Terminal block

TB-8EX-C
TB-16EX-S
TB-16EX-C
TB-8EY-S
TB-20-S
TB-20C

■ Battery

FX3U-32BL



FX0N-65EC

■ Extension cable

FX0N-30EC (30 cm)
FX0N-65EC (65 cm)

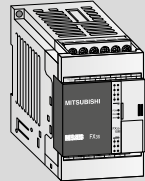
■ PLC bus connector

FX2N-CN-BC

■ Power supply cable

FX2NC-100MPCB (1 m)
FX2NC-100BPCB (1 m)

CPU module



FX3S-10M

■ FX3S main unit 10-30 I/O

FX3S-10MR/ES	AC D R	FX3S-20MR/ES	AC D R	AC AC power supply D DC input (sink/source) R Relay output T1 Transistor output (sink) T2 Transistor output (source)
FX3S-10MT/ES	AC D T1	FX3S-20MT/ES	AC D T1	
FX3S-10MT/ESS	AC D T2	FX3S-20MT/ESS	AC D T2	
FX3S-14MR/ES	AC D R	FX3S-30MR/ES	AC D R	
FX3S-14MT/ES	AC D T1	FX3S-30MT/ES	AC D T1	
FX3S-14MT/ESS	AC D T2	FX3S-30MT/ESS	AC D T2	

Option



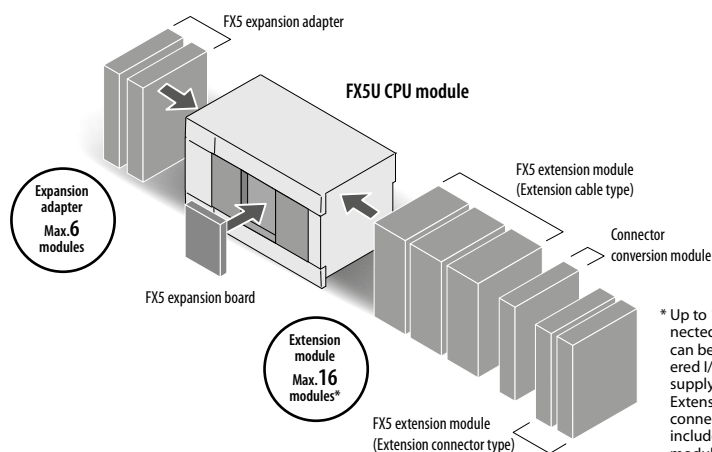
FX3G-EEPROM-32L

■ Memory cassette

FX3G-EEPROM-32L

FX series configuration

FX5U



* Up to 12 modules can be directly connected to CPU module. Up to 16 modules can be connected by connecting a powered I/O module or an extension power supply module. Extension power supply modules and connector conversion modules are not included in the number of connected modules.

Expansion adapter



Max.
2
modules

Communication

FX5-232ADP For RS232C communication
FX5-485ADP For RS485 communication



Max.
4
modules

Analog

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

Expansion boards



Max.
1
module

FX5-422-BD-GOT

Communication

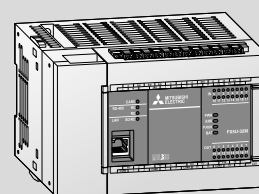
FX5-232ADP For RS232C communication
FX5-485ADP For RS485 communication
FX5-422-BD-GOT For RS422 communication (For GOT connection)

Peripheral device

HMI

GOT2000, GOT1000

CPU module



FX5U-32M

FX5U-32MR/ES	AC	D2	R
FX5U-32MT/ES	AC	D2	T1
FX5U-32MT/ESS	AC	D2	T2
FX5U-32MR/DS	DC	D2	R
FX5U-32MT/DS	DC	D2	T1
FX5U-32MT/DSS	DC	D2	T2

Input: 16 points/Output: 16 points

FX5U-64MR/ES	AC	D2	R
FX5U-64MT/ES	AC	D2	T1
FX5U-64MT/ESS	AC	D2	T2
FX5U-64MR/DS	DC	D2	R
FX5U-64MT/DS	DC	D2	T1
FX5U-64MT/DSS	DC	D2	T2

Input: 32 points/Output: 32 points

FX5U-80MR/ES	AC	D2	R
FX5U-80MT/ES	AC	D2	T1
FX5U-80MT/ESS	AC	D2	T2
FX5U-80MR/DS	DC	D2	R
FX5U-80MT/DS	DC	D2	T1
FX5U-80MT/DSS	DC	D2	T2

Input: 40 points/Output: 40 points

AC	AC power supply	T1	Transistor output (sink)
DC	DC power supply	T2	Transistor output (source)
D2	DC input (sink/source)	R	Relay output

Option

Battery

FX3U-32BL

SD memory card

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

Engineering tool

GX Works3

Power supply cable

■ CPU module power supply cable

FX2NC-100MPCB (1 m)
(attached to CPU module)

■ Power supply cable

FX2NC-100BPCB (1 m)
(attached to FX5UC-□MT/D)

■ Power supply crossover cable

FX2NC-10BPCB1 (0.1 m)
(attached to FX5-□□EX/D, FX5-C32ET/D)

Extended extension cable



FX5-65EC



FX5-CNV-BC

■ Extended extension cable

FX5-30EC ②
FX5-65EC ②

■ Connector conversion adapter

FX5-CNV-BC

Connector connection Cable connection

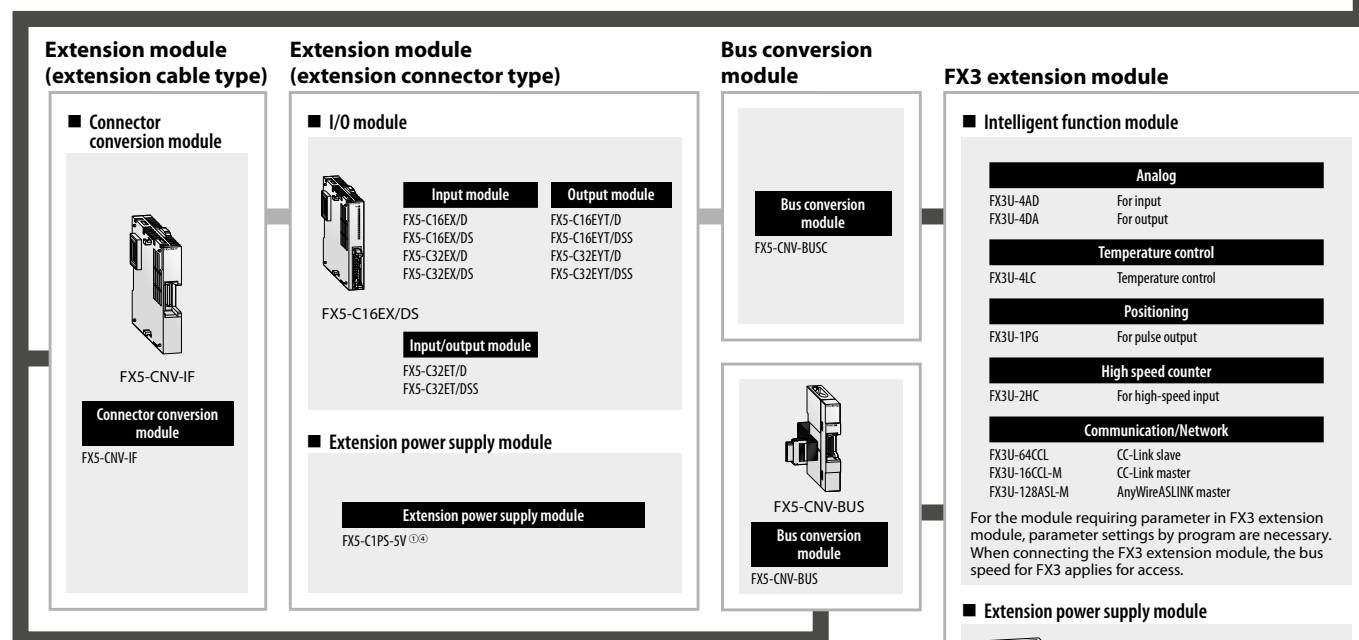
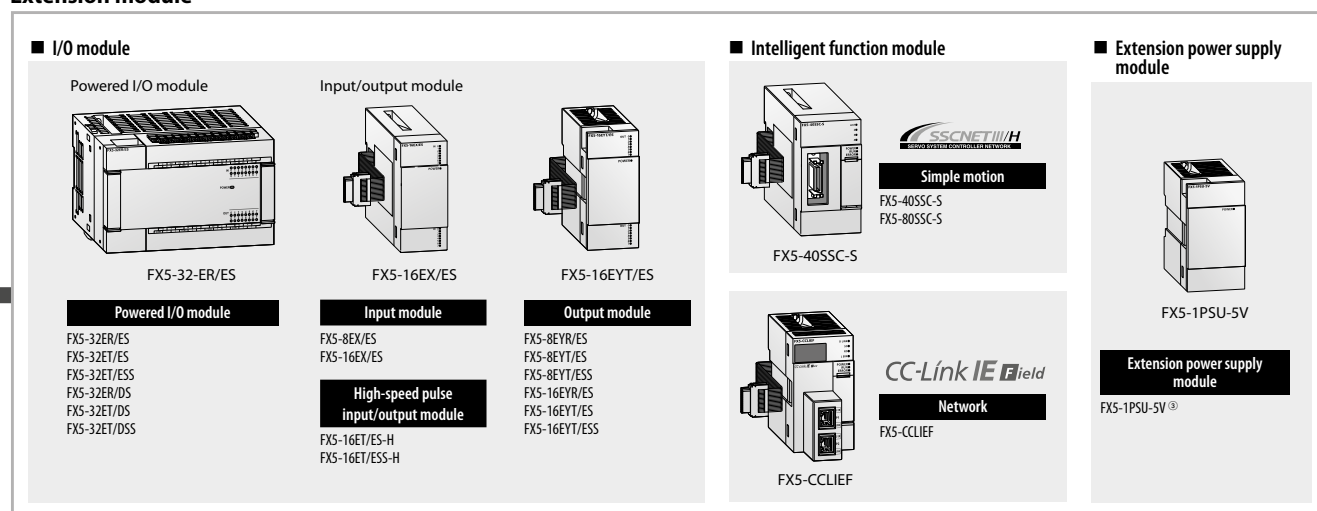
① When adding the extension module, it is necessary to connect it to the front stage of extension module in case of a shortage of internal power supply in CPU module.

② Attach when connecting an extension cable type module to a distant location or when making two-tier connections. The connector conversion adapter (FX5-CNV-BC) is required when connected with an input/output module (extension cable type), high-speed pulse input/output module, or an intelligent function module. When using also the bus conversion module in the same system, connect the FX5 extension power supply module or the powered I/O module right after the extended extension cable.

③ Can be connected only to the AC power type system.

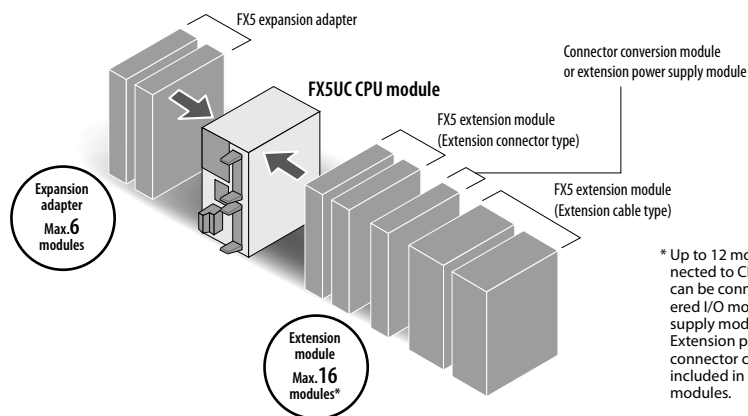
④ Can be connected only to the DC power type system.

Extension module



FX series configuration

FX5UC



* Up to 12 modules can be directly connected to CPU module. Up to 16 modules can be connected by connecting a powered I/O module or an extension power supply module. Extension power supply modules and connector conversion modules are not included in the number of connected modules.

Expansion adapter

Max. 2 modules

FX5-232ADP

Communication

FX5-232ADP For RS232C communication
FX5-485ADP For RS485 communication

Max. 4 modules

FX5-4AD-ADP

Analog

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

CPU module

FX5UC-32MT/D
FX5UC-32MT/DSS

Input: 16 points/Output: 16 points

DC DC D1 T1
DC D2 T2

FX5UC-64MT/D
FX5UC-64MT/DSS

Input: 32 points/Output: 32 points

DC DC D1 T1
DC D2 T2

FX5UC-96MT/D
FX5UC-96MT/DSS

Input: 48 points/Output: 48 points

DC DC D1 T1
DC D2 T2

FX5UC-32MT/DSS

DC DC power supply
D1 DC input (sink)
D2 DC input (sink/source)

T1 Transistor output (sink)
T2 Transistor output (source)

Extension module (extension connector type)

■ I/O module

FX5-C16EX/DS

Input module

FX5-C16EX/D
FX5-C16EX/DS
FX5-C32EX/D
FX5-C32EX/DS

Output module

FX5-C16EYT/D
FX5-C16EYT/DS
FX5-C32EYT/D
FX5-C32EYT/DS

I/O module

FX5-C32ET/D
FX5-C32ET/DS

Peripheral device

HMI

GOT2000, GOT1000

Connector connection Cable connection

Option

Battery	I/O cable	Terminal block	Power supply cable	Extended extension cable
FX3U-32BL	■ For Terminal blocks TB-EX-CAB-1M (1 m) TB-EX-CAB-3M (3 m) TB-EX-CAB-5M (5 m) TB-EY-CAB-1M (1 m)	TB-□EX□ TB-8EX-C TB-8EY-S TB-16EX-S TB-20-S TB-16EX-C TB-20C	■ CPU module power supply cable FX2NC-100MPCB (1 m) (attached to CPU module) ■ Power supply cable FX2NC-100BPCB (1 m) (attached to FX5UC-□MT/D)	FX5-65EC ■ Extended extension cable FX5-30EC^① FX5-65EC^② FX5-CNV-BC ■ Connector conversion adapter FX5-CNV-BC
SD memory card NZ1MEM-2GBSD (2 GB) NZ1MEM-4GBSD (4 GB)				
Engineering tool GX Works3				

- When adding the extension module, it is necessary to connect it to the front stage of extension module in case of a shortage of internal power supply in CPU module.
- Next-stage extension connector of an extension power supply module can be used only for either connector connection or cable connection. In case of connector connection, an extension connector type module can be connected.
- Attach when connecting an extension cable type module to a distant location or when making two-tier connections. The connector conversion adapter (FX5-CNV-BC) is required when connected with an input/output module (extension cable type) or an intelligent function module. When using also the bus conversion module in the same system, connect the powered I/O module right after the extended extension cable.

Extension module
(extension connector type)

■ Extension power supply module

Extension power supply module
FX5-C1PS-5V ①②

OR

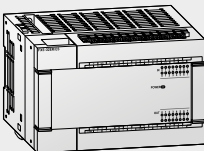
■ Connector conversion module

Connector conversion module
FX5-CNV-IFC

Extension module
(extension cable type)

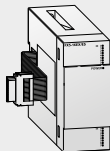
■ I/O module

Powered I/O module

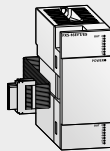


FX5-32-ER/ES

Input/output module



FX5-16EX/ES



FX5-16EYT/ES

Powered I/O module

FX5-32ER/DS
FX5-32ET/DS
FX5-32ET/DSS

Input module

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

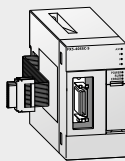
High-speed pulse
input/output module

FX5-16ET/ES-H
FX5-16ET/ESS-H

Output module

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

■ Intelligent function module

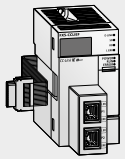


FX5-40SSC-S



Simple motion

FX5-40SSC-S



FX5-CCLIEF

CC-Link IE *field*

Network

FX5-CCLIEF

Bus conversion module



Bus conversion module
FX5-CNV-BUS

FX5-CNV-BUS

Bus conversion module

FX5-CNV-BUSC

FX3 extension module

■ Intelligent function module

Analog

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

Positioning

FX3U-1PG For pulse output

Communication/Network

FX3U-64CCL CC-Link slave
FX3U-16CCL-M CC-Link master
FX3U-128ASL-M AnyWireASLINK master

Temperature control

FX3U-4LC Temperature control

High-speed counter

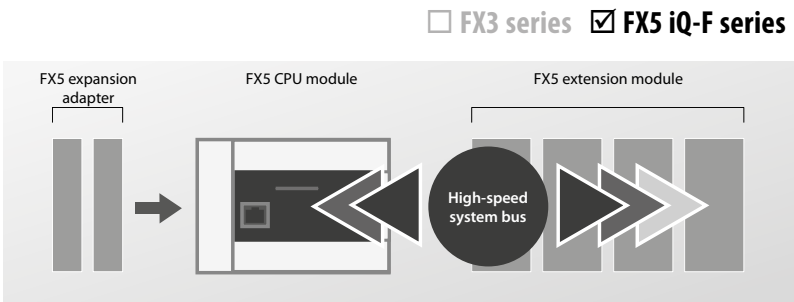
FX3U-2HC For high-speed input

For the module requiring parameter in FX3 extension module, parameter settings by program are necessary. When connecting the FX3 extension module, the bus speed for FX3 applies for access.

MELSEC iQ-F – FX5 advanced built-in functions

High-speed system bus communication

High-speed system bus communication at 1.5 K words/ms (approximately 150 times faster compared with FX3U) together with a high-speed CPU allows MELSEC iQ-F to output maximum performance even when heavy data communication intelligent function modules are used.



Built-in Ethernet port

The built-in Ethernet communication port can handle communication of up to 8 connections on the network and supports multiple connections with personal computers and other devices.



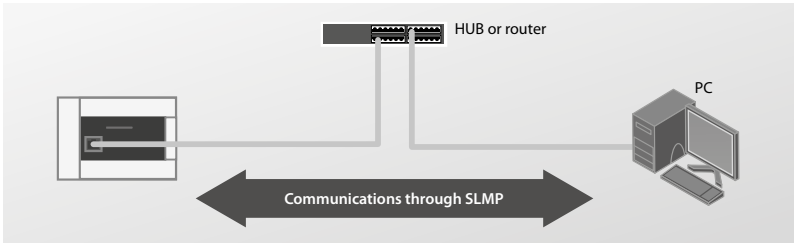
PLC to PLC communication

Directly connect to other PLCs.



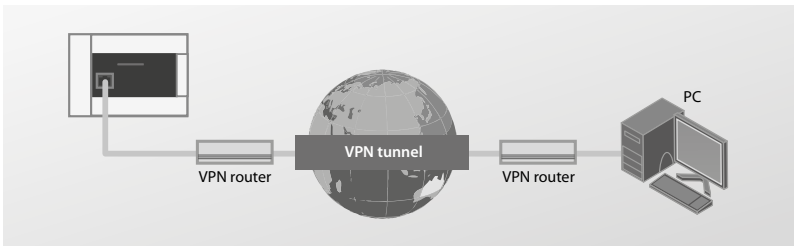
SLMP communication

PCs and other devices can communicate with the CPU module via the open protocol SLMP (SeamLess Message Protocol).



Remote maintenance

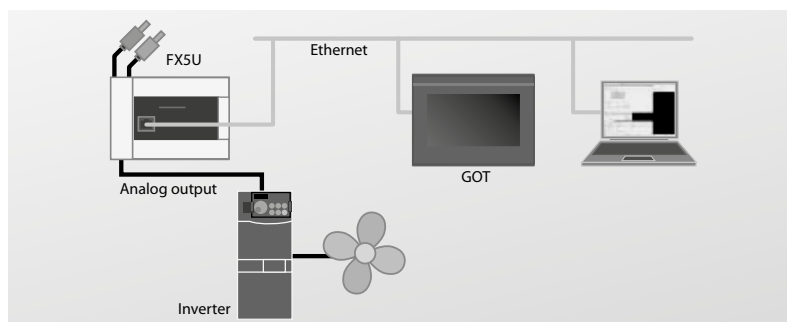
Secure remote connectivity to the PLC is possible via a VPN tunnel.



■ Built-in analog inputs/outputs (with alarm output)

☐ FX3 series ☒ FX5 iQ-F series

The FX5U is equipped with two 12-bit analog inputs and one analog output. Setup is done with parameter settings, no programming required. Value shifting, scaling and alarm output can also be set easily with parameters.

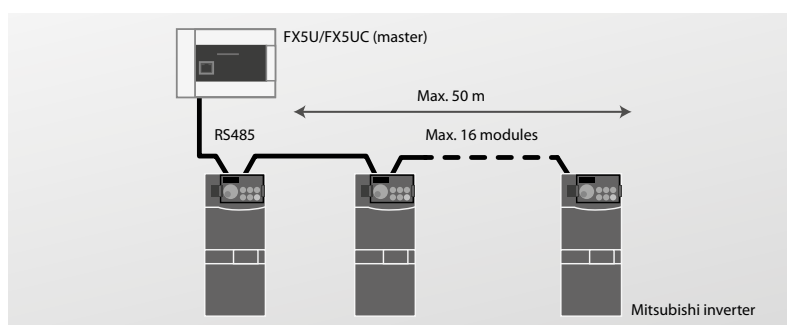


Inverter control using analog output

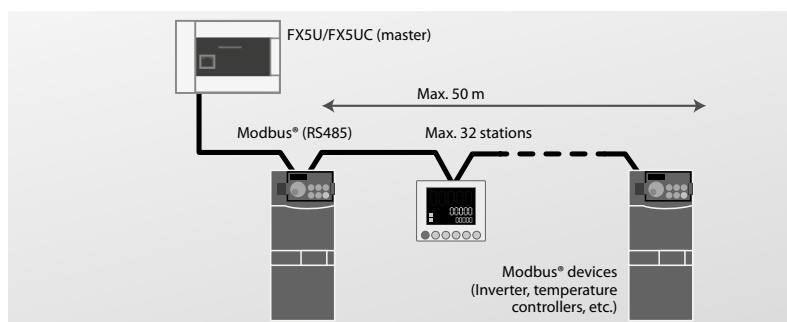
■ Built-in RS485 port (with Modbus® function)

☐ FX3 series ☒ FX5 iQ-F series

With the built-in RS485 port FX5U/FX5UC can connect to serial devices up to 50 m away. Dedicated inverter communication instructions allow to control up to 16 Mitsubishi inverters. Additionally Modbus® is supported and enables the FX5U/FX5UC to connect to up to 32 devices such as PLCs, sensors and temperature controllers.



Inverter communication

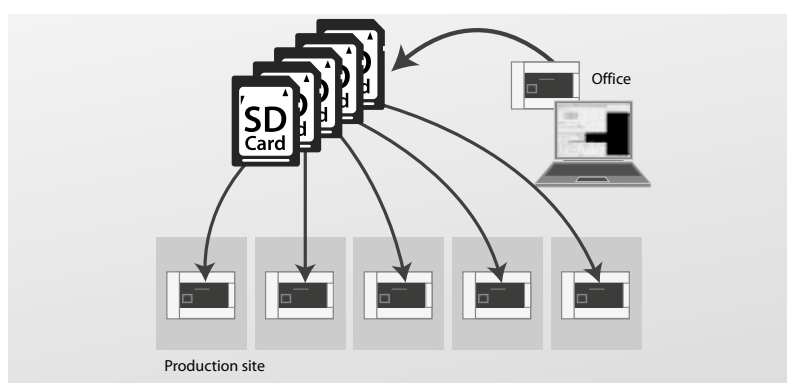


Modbus® communication

■ Built-in SD card slot

☐ FX3 series ☒ FX5 iQ-F series

The built-in SD card slot of FX5 can be used to simplify the startup of mass production equipment and also store logging data.



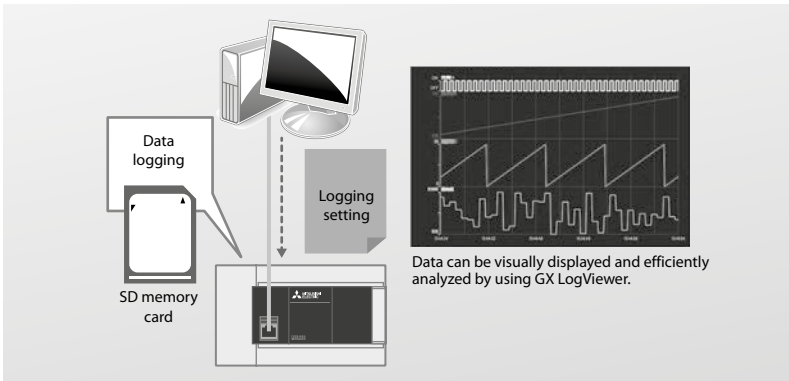
Mass-production of equipment using SD memory card

Data logging

☐ FX3 series ☒ FX5 iQ-F series

To meet the future needs of Industry 4.0, the FX5 offers comprehensive data logging functionality as standard, with all data from energy consumption to product throughput captured, at a specified interval or random timing, on a standard SD card for further analysis.

Continuous logging at a maximum speed of 10-ms cycles is possible. In addition, an internal buffer capacity can be set to store the collected results temporarily.

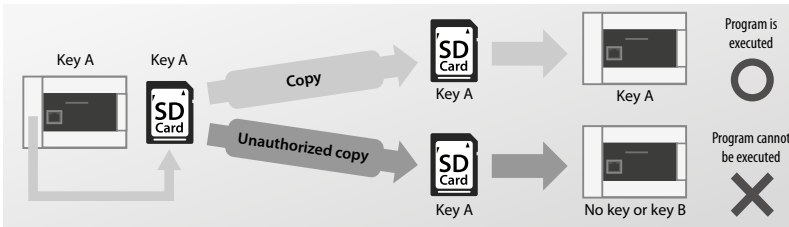


Security functions

☐ FX3 series ☒ FX5 iQ-F series

To protect your intellectual property the FX5 comes with several built-in security functions such as:

- Remote password/security key
- Privilege based program access
- Program on SD card with copy protection password



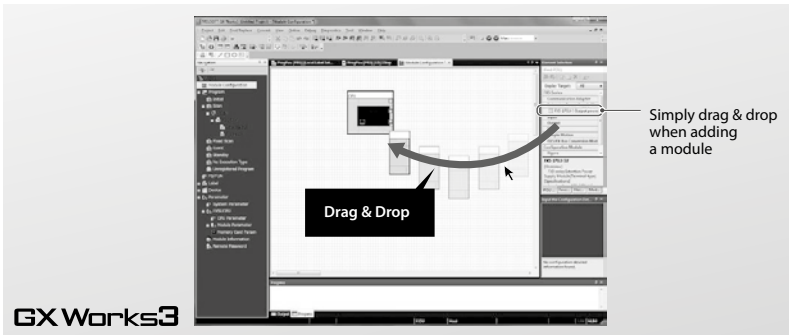
Security key function

Intuitive programming environment

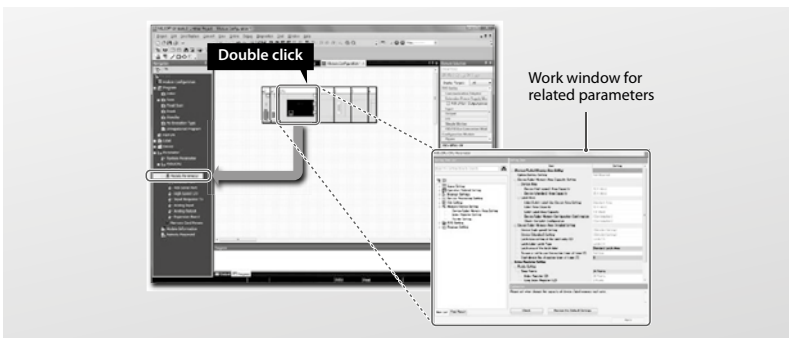
☐ FX3 series ☒ FX5 iQ-F series

GX Works3

- Easy programming by drag and drop
- Reduced development time with module function blocks
- Parameter set-up for a variety of functions



Graphical system design



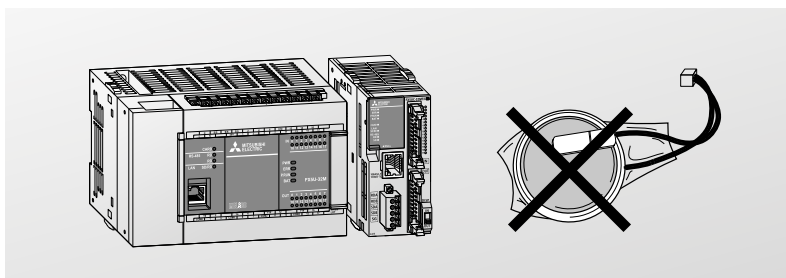
Auto-generation of module parameters

Battery-less and maintenance-free

☐ FX3 series ☒ FX5 iQ-F series

MELSEC iQ-F series holds programs and devices in non-volatile memory such as flash ROM and does not require a battery.

Note: It is possible to increase the capacity of held devices by using an optional battery.



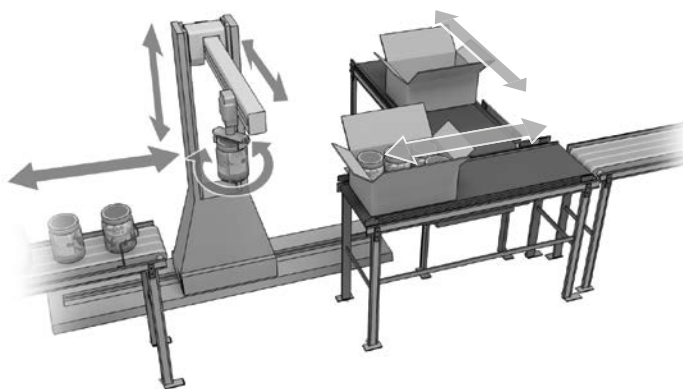
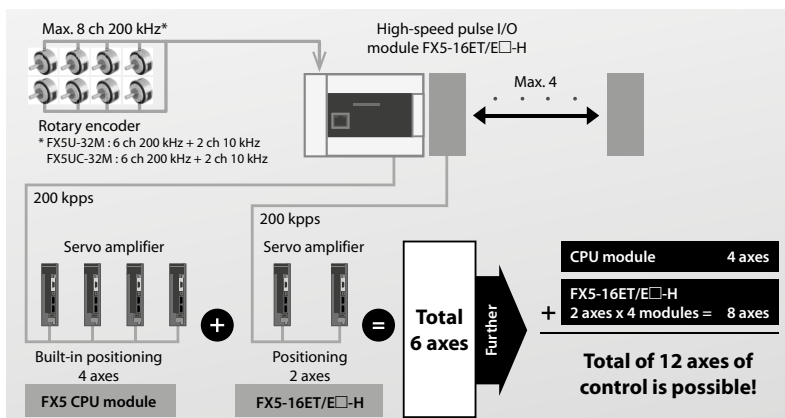
Built-in positioning (200 kpps, 4 axes built in) + Positioning 2 axes (200 kpps, 2 axes)

☐ FX3 series ☒ FX5 iQ-F series

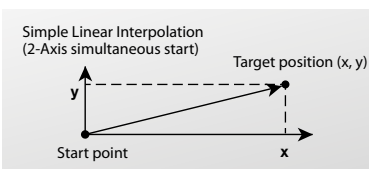
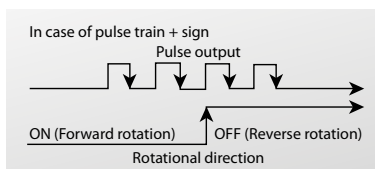
Positioning that support 20 μ s high-speed startup

FX5 features powerful positioning functionality with 8-channel high-speed pulse inputs and 4-axis pulse outputs.

In addition to the existing interrupt stop operation and variable speed operation, new functions have been added and made even easier to use. Furthermore, up to four high-speed pulse I/O modules can be connected for affordable multi-axis control.



Packaging machine example with built-in positioning



Simple motion modules (4-axis/8-axis control modules)

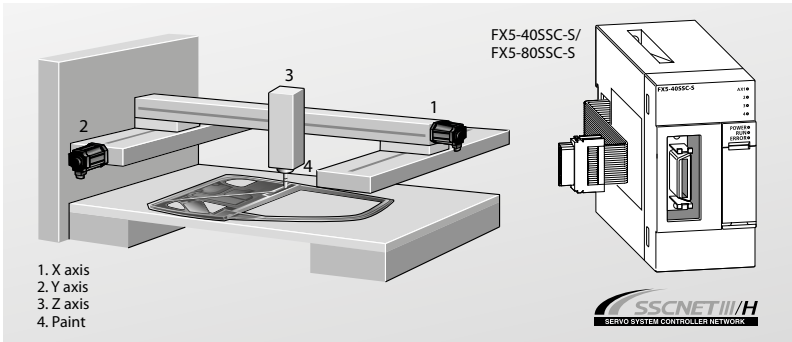
☐ FX3 series ☒ FX5 iQ-F series

Positioning control with SSCNETIII/H

FX5-40SSC-S/FX5-80SSC-S are equipped with 4-axis/8-axis positioning functions compatible with SSCNETIII/H. Positioning control is easily performed with a sequence program starting positioning data of a point table.

To respond to extensive applications, various positioning controls are available: Linear interpolation, 2-axis circular interpolation, fixed-pitch feed, and continuous trajectory controls, etc.

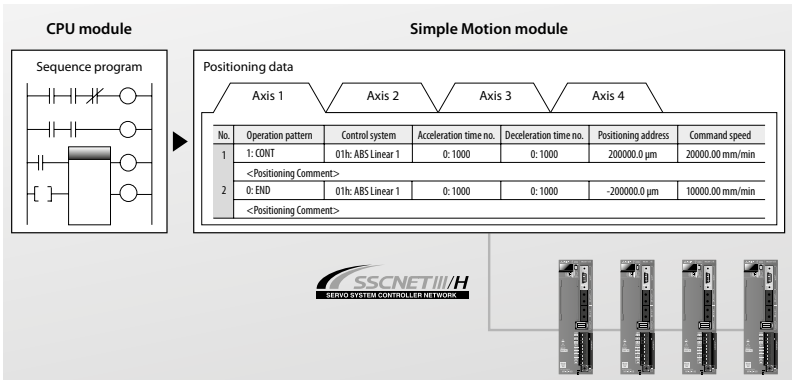
- Linear interpolation
- Circular interpolation
- Continuous trajectory control
- S-curve acceleration/deceleration



Basic positioning control

☐ FX3 series ☒ FX5 iQ-F series

Positioning control is easily performed with a sequence program starting positioning data of a point table. To respond to extensive applications, various positioning controls are available: Linear interpolation, 2-axis circular interpolation, fixed-pitch feed, and continuous trajectory controls, etc.



Advanced motion control

☐ FX3 series ☒ FX5 iQ-F series

Making Simple Motion with compactly packed extra functions

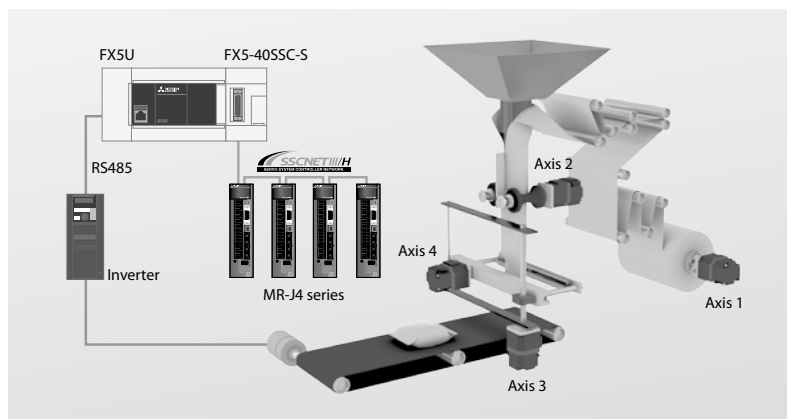
Similar to positioning modules, simple motion modules are capable of a wide range of high-precision control such as positional control, advanced synchronous control, cam control, and speed-torque control with setup being done easily by parameters and programming.

Synchronous control

In addition to synchronous control that replaces physical machine mechanisms such as gears, shaft, transmission and cam with software, functions such as cam control, clutch and cam auto-generation are easily realized. Since synchronous control can be started and stopped for each axis, programs can contain both synchronous control axes and positioning control axes.

Up to four axes can be synchronized to the synchronous encoder axis, enabling use with a variety of systems.

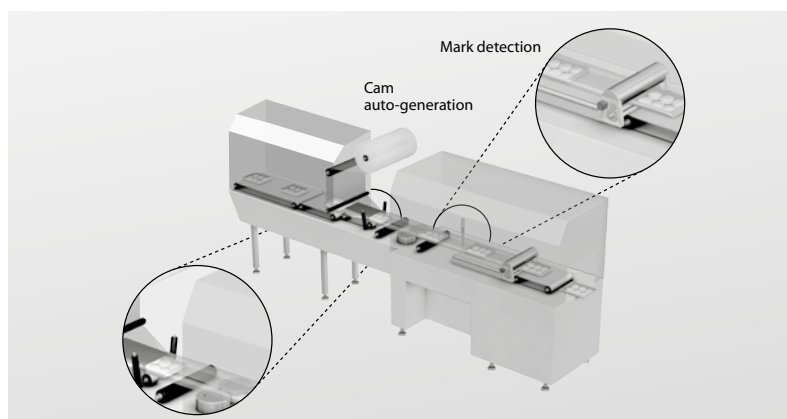
- Use synchronous control and cam control to build a system perfect for your equipment.
- Register up to 64 types of cam patterns to respond to any type of packaging needs.
- Perform continuous operation without stopping the workpiece operation.



Packaging machine with Simple Motion

Mark detection function

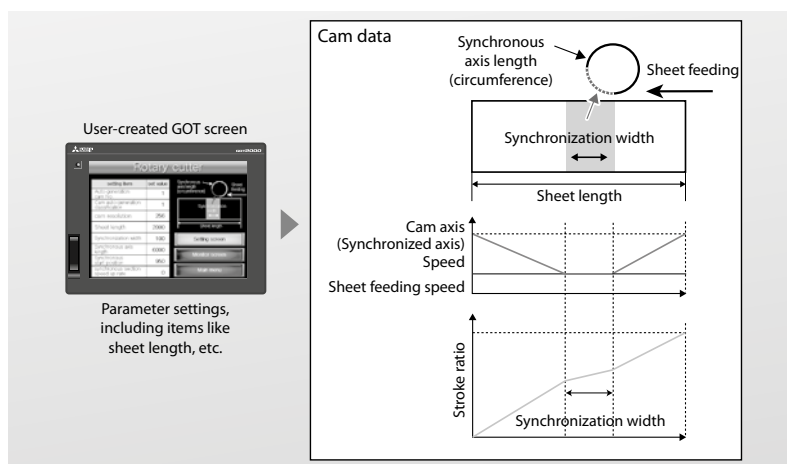
The cutter axis deviation can be compensated by detecting a mark on the workpiece so the workpiece can be cut at a constant position.



Rotary cutter control with mark detection and cam data

Cam data auto-generation

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



MELSEC-F – FX3 built-in functions

FX control solutions

☑ FX3 series ☐ FX5 iQ-F series

Positioning

Built-in high-speed pulse outputs and special instructions enable the FX series main units to control up to 3 independent axes of servo motion from the main unit itself at up to 100 kHz. Connecting two high-speed output special adapters to the FX3U allows for up to 4 axes of control at up to 200 kHz. *

With special function blocks, interpolated and networked servo control solutions are also available.

Analog control

The FX series features easy analog to digital and digital to analog conversion for all models using expansion boards, special adapters or special function blocks.

Information exchange

Information can be sent to a higher level PC that constantly monitors production, raising the reliability and overall efficiency of the system.

High-speed control

With 6 to 8 high speed counters on each model, the FX series is perfectly suited for applications in need of pulse-catch functions, closed-loop feedback processing or high-speed sensor use.

Open Field networks

Among the networks supported by the FX series are CC-Link and Ethernet, Modbus® and Profibus, providing both a wide selection for new solutions and an interface into existing networks.

Data management

A special adapter, the FX3U-CF-ADP, for the FX3U and FX3UC enables data to be automatically written to a CF card at specified intervals or under certain conditions. The data is saved in universal CSV format with user-defined file names and automatic timestamps to enhance efficiency.

Inverter control

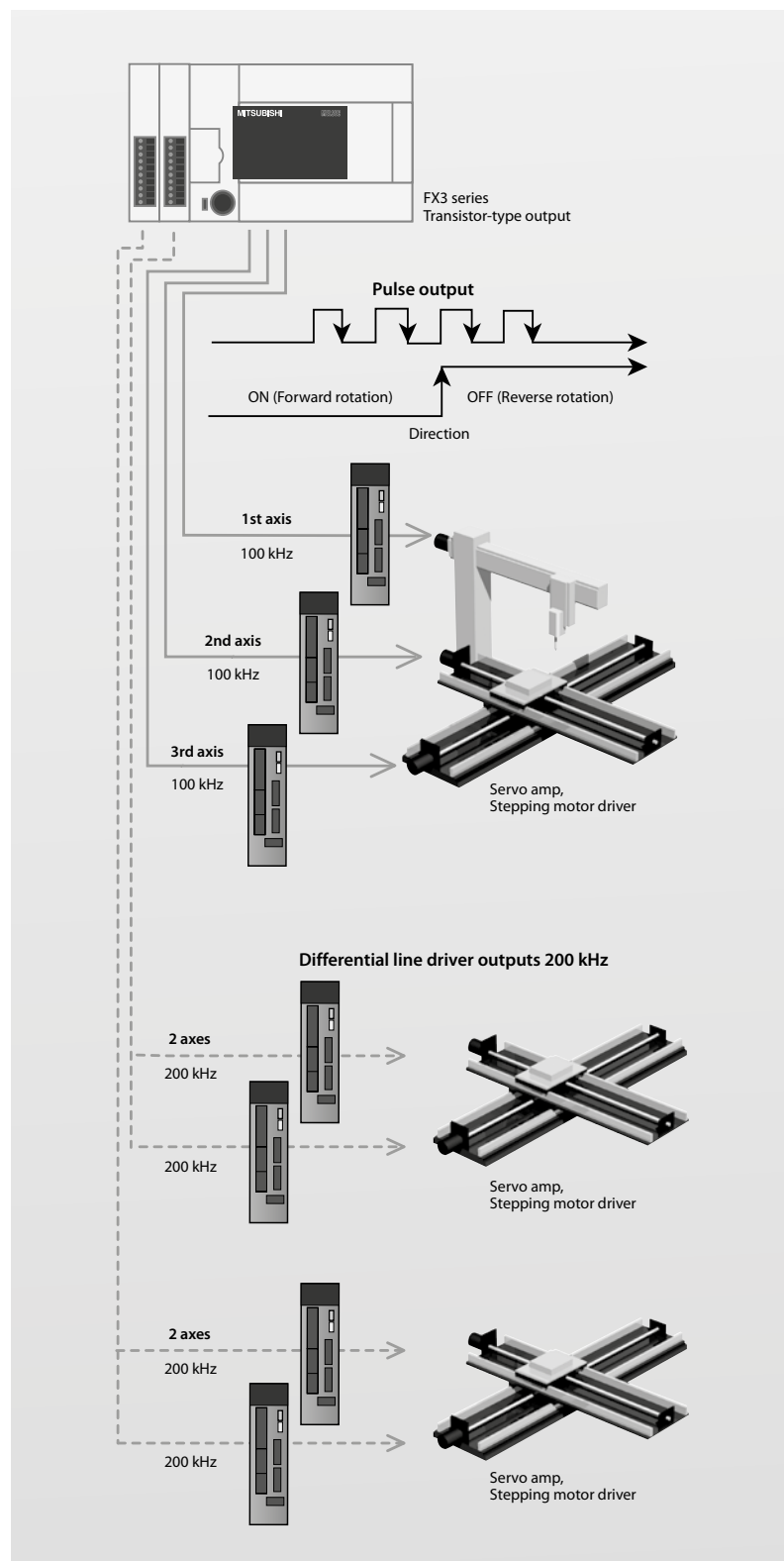
Integrated FREQROL protocol FX3 series PLCs contain the RS485 communication protocol and special instructions that allow control of all Mitsubishi Electric FREQROL inverters. For all other models, analog inverter control can be used.

Serial communication

From PCs, printers, barcode readers, modems and other PLCs, serial communication increases the flexibility of the FX series system to allow reliable data exchange over a variety of connections.

Visualization

HMI options for the FX series range from simple text-based display units to advanced graphical touch-screen displays (GOT – Graphic Operation Terminals).



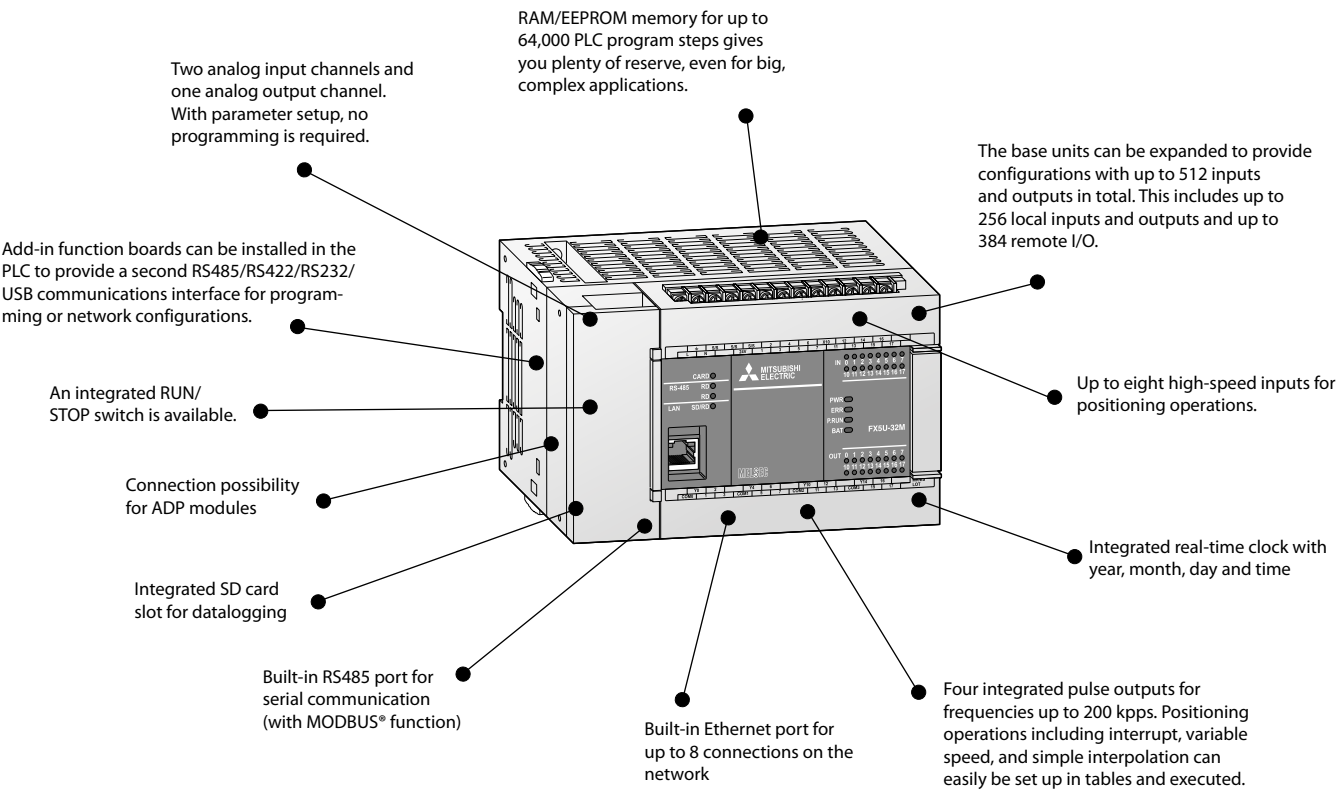
Upgraded built-in positioning instructions for easier use

* When using high-speed output special adapters, the same numbered I/O terminals on the PLC main unit may not be used.

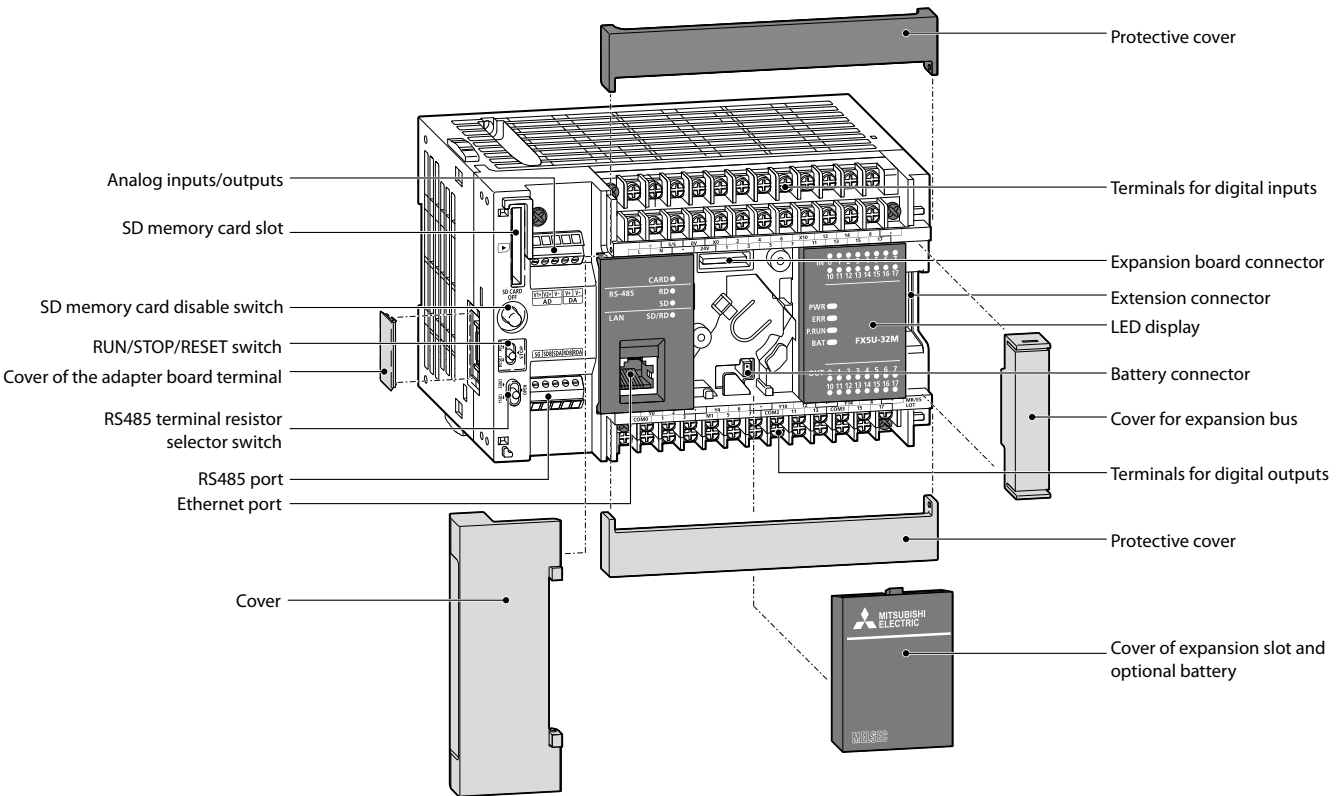
MELSEC iQ-F

The MELSEC FX5U series

2
FX base units

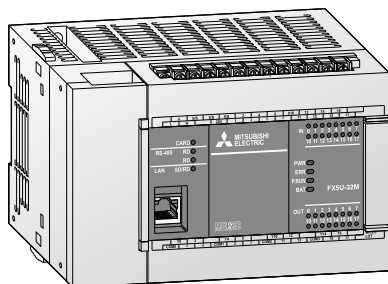


Description of the unit components



Base units

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ **FX5U** ☐ FX5UC



Base units FX5U

The FX5U series CPU modules feature outstanding performance and superior drive control.

- High-speed system bus
- Built-in Ethernet port
- Built-in analog inputs/outputs
- Built-in positioning (200 kpps, 4-axis)
- Built-in RS485 port (with Modbus® function)
- Built-in SD card slot
- Advanced security functions
- Battery-less and maintenance free
- Connection of FX5 and FX3 expansion modules possible
- Connection of connector type FX5 I/O modules possible

Base units with 32–80 I/Os

Specifications	FX5U-32MR/DS	FX5U-32MT/DSS	FX5U-32MR/ES	FX5U-32MT/ESS
Integrated inputs/outputs	32	32	32	32
Power supply	24 V DC	24 V DC	100–240 V AC	100–240 V AC
Integrated inputs	16	16	16	16
Integrated outputs	16	16	16	16
Output type	Relay	Transistor (source type)	Relay	Transistor (source type)
Power consumption	W 30	30	30	30
Weight	kg 0.7	0.7	0.7	0.7
Dimensions (WxHxD)	mm 150x90x83	150x90x83	150x90x83	150x90x83
Order information	Art. no. 297436	297438	280489	280491

Specifications	FX5U-64MR/DS	FX5U-64MT/DSS	FX5U-64MR/ES	FX5U-64MT/ESS
Integrated inputs/outputs	64	64	64	64
Power supply	24 V DC	24 V DC	100–240 V AC	100–240 V AC
Integrated inputs	32	32	32	32
Integrated outputs	32	32	32	32
Output type	Relay	Transistor (source type)	Relay	Transistor (source type)
Power consumption	W 40	40	40	40
Weight	kg 1.0	1.0	1.0	1.0
Dimensions (WxHxD)	mm 220x90x83	220x90x83	220x90x83	220x90x83
Order information	Art. no. 301923	301945	280492	280494

Specifications	FX5U-80MR/DS	FX5U-80MT/DSS	FX5U-80MR/ES	FX5U-80MT/ESS
Integrated inputs/outputs	80	80	80	80
Power supply	24 V DC	24 V DC	100–240 V AC	100–240 V AC
Integrated inputs	40	40	40	40
Integrated outputs	40	40	40	40
Output type	Relay	Transistor (source type)	Relay	Transistor (source type)
Power consumption	W 45	45	45	45
Weight	kg 1.2	1.2	1.2	1.2
Dimensions (WxHxD)	mm 285x90x83	285x90x83	285x90x83	285x90x83
Order information	Art. no. 301946	301948	280495	280497

* Sink type transistor output units on request.

Specifications

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ **FX5U** ☐ FX5UC

Environmental specifications

General specifications	Data
Ambient temperature	-20—+55 °C (storage temperature: -25—+75 °C)
Noise durability	1000 Vpp with noise generator; 1 μs at 30—100 Hz
Dielectric withstand voltage	AC PSU: 1500 V AC, 1 min./DC PSU: 500 V AC, 1 min.
Ambient relative humidity	5—95 % (non-condensing)
Shock resistance	Acc. to IEC61131-2: 147 m/s ² (3 times each in 3 directions for 11 ms)
Vibration resistance	Acc. to IEC61131-2: 9.8 m/s ² (resistance to vibrations from 5—150 Hz for 80 minutes along all 3 axes); 4.9 m/s ² for DIN rail mounting
Insulation resistance	10 MΩ, 500 V DC
Ground	Class D: Grounding resistance 100 Ω or less
Fuse rating	AC powered types: FX5U-32M□: 3.15 A; FX5U-64M□ and FX5U-80M□: 5 A, DC powered types: 3.15 A
Environment	Avoid environments containing corrosive gases, install in a dust-free location.
Certifications	Please refer to pages 103—105

Electrical specifications

Power supply specifications	DC powered modules (FX5U-□M□/DS/DSS)	AC powered modules (FX5U-□MR/ES)
Power supply	24 V DC (+20 %/-15%)	100—240 V AC (+10 %/-15 %), 50/60 Hz
Inrush current at ON	50 A/<0.5 ms (at 24 V DC)	FX5U-32M: 25 A/<5 ms (at 100 V AC); 50 A/<5 ms (at 200 V AC); FX5U-64M, FX5U-80M: 30 A/<5 ms (at 100 V AC); 60 A/<5 ms (at 200 V AC)
Allowable momentary power failure time	5 ms	10 ms
Service power supply (24 V DC)	—	FX5U-32M□/E: 480 mA FX5U-64M□/E: 740 mA FX5U-80M□/E: 770 mA

Programming specifications

System specifications	FX5U
Program data	
I/O points (addresses)	Max. total 512 (with remote I/O)
Program memory	64,000 steps RAM (internal)
Instruction processing time	34 ns/basic instruction
Programming language	Ladder diagram (LD), structured text (ST), function block diagram/ladder diagram (FBD/LD)
Program execution	Cyclical execution, refresh mode processing

The MELSEC FX5UC series

RAM/EEPROM memory for up to 64,000 PLC program steps gives you plenty of reserve, even for big, complex applications.

An integrated RUN/STOP switch is available.

Connection possibility for ADP modules

Built-in RS485 port for serial communication (with Modbus® function)

Built-in Ethernet port for up to 8 connections on the network

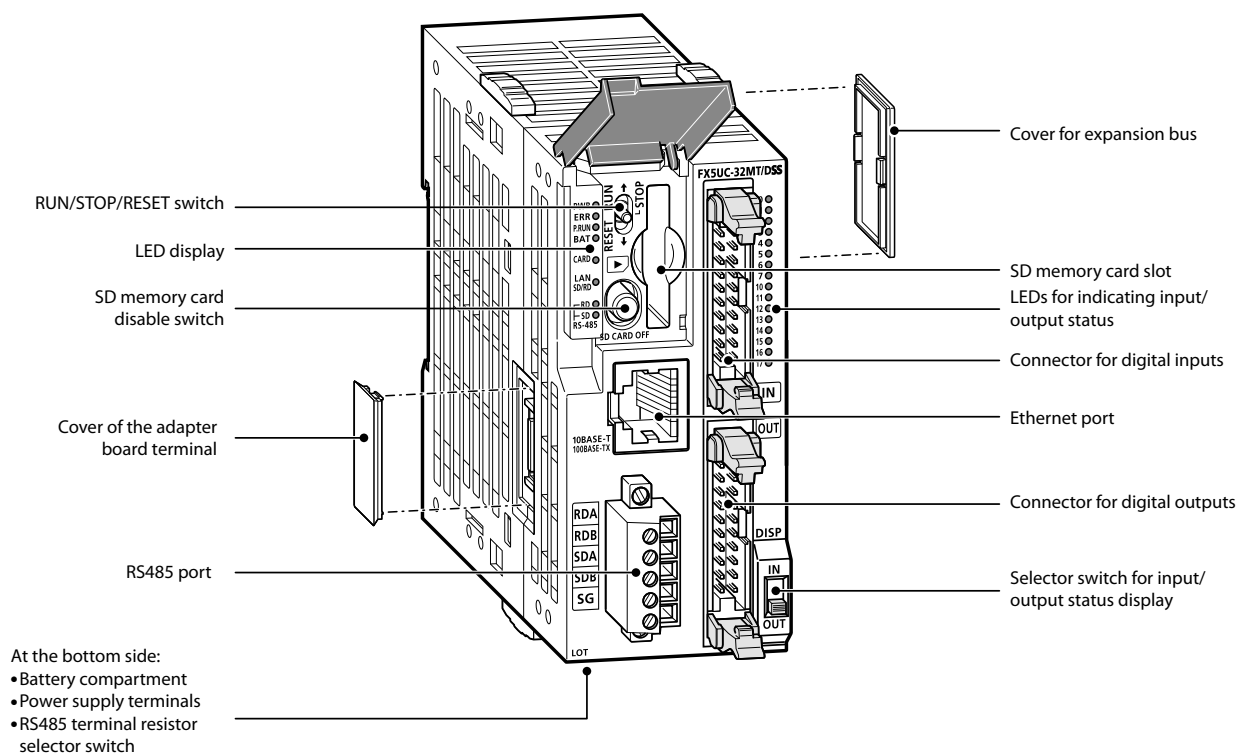
The base units can be expanded to provide configurations with up to 512 inputs and outputs in total. This includes up to 256 local inputs and outputs and up to 384 remote I/O.

Up to eight high-speed inputs for positioning operations.

Integrated real-time clock with year, month, day and time

Four integrated pulse outputs for frequencies up to 200 kpps. Positioning operations including interrupt, variable speed, and simple interpolation can easily be set up in tables and executed.

Description of the unit components



■ Base units

☐ FX3S

☐ FX3G

☐ FX3GC

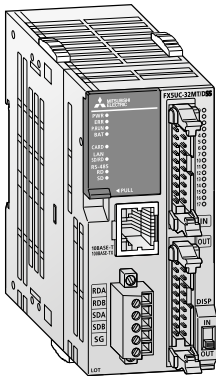
☐ FX3GE

☐ FX3U

☐ FX3UC

☐ FX5U

☒ FX5UC



FX5UC-Grundgeräte

The FX5UC series CPU modules feature outstanding performance and superior drive control.

- High-speed system bus
- Built-in Ethernet port
- Built-in positioning (200 kpps, 4-axis)
- Built-in RS485 port (with Modbus® function)
- Built-in SD card slot
- Advanced security functions

- Battery-less and maintenance free
- Connection of FX5 and FX3 expansion modules possible
- Connection of connector type FX5 I/O modules possible

Base units with 32–96 I/Os

Specifications	FX5UC-32MT/DSS	FX5UC-64MT/DSS	FX5UC-96MT/DSS
Integrated inputs/outputs	32	64	96
Power supply	24 V DC	24 V DC	24 V DC
Integrated inputs	16	32	48
Integrated outputs	16	32	48
Output type	Transistor (source type)	Transistor (source type)	Transistor (source type)
Power consumption	5 W	8 W	11 W
Weight	kg 0.2	0.3	0.35
Dimensions (WxHxD)	mm 42.1x90x89.1	62.2x90x89.1	82.3x90x89.1
Order information	Art. no. 283530	294579	294581

* Sink type transistor output units on request.

Specifications

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☐ FX5U ☒ FX5UC

Environmental specifications

General specifications	Data
Ambient temperature	-20—+55 °C (storage temperature: -25—+75 °C)
Noise durability	1000 Vpp with noise generator; 1 μs at 30—100 Hz
Dielectric withstand voltage	500 V AC, 1 min.
Ambient relative humidity	5—95 % (non-condensing)
Shock resistance	Acc. to IEC61131-2: 147 m/s ² (3 times each in 3 directions for 11 ms)
Vibration resistance	Acc. to IEC61131-2: 4.9 m/s ² (resistance to vibrations from 8.4—150 Hz for 80 minutes along all 3 axes); 4.9 m/s ² for DIN rail mounting
Insulation resistance	≥10 MΩ, 500 V DC
Grounding	Class D: Grounding resistance 100 Ω or less
Fuse rating	3.15 A
Environment	Avoid environments containing corrosive gases, install in a dust-free location.
Certifications	Please refer to pages 103—105

Electrical specifications

Power supply specifications	DC powered base units
Power supply	24 V DC (+20 %/-15 %)
Inrush current at ON	FX5UC-32MT/□: 35 A/<0.5 ms (at 24 V DC) FX5UC-64MT/□, FX5UC-96MT/□: 40 A/<0.5 ms (at 24 V DC)
Allowable momentary power failure time	5 ms
Service power supply (24 V DC)	—

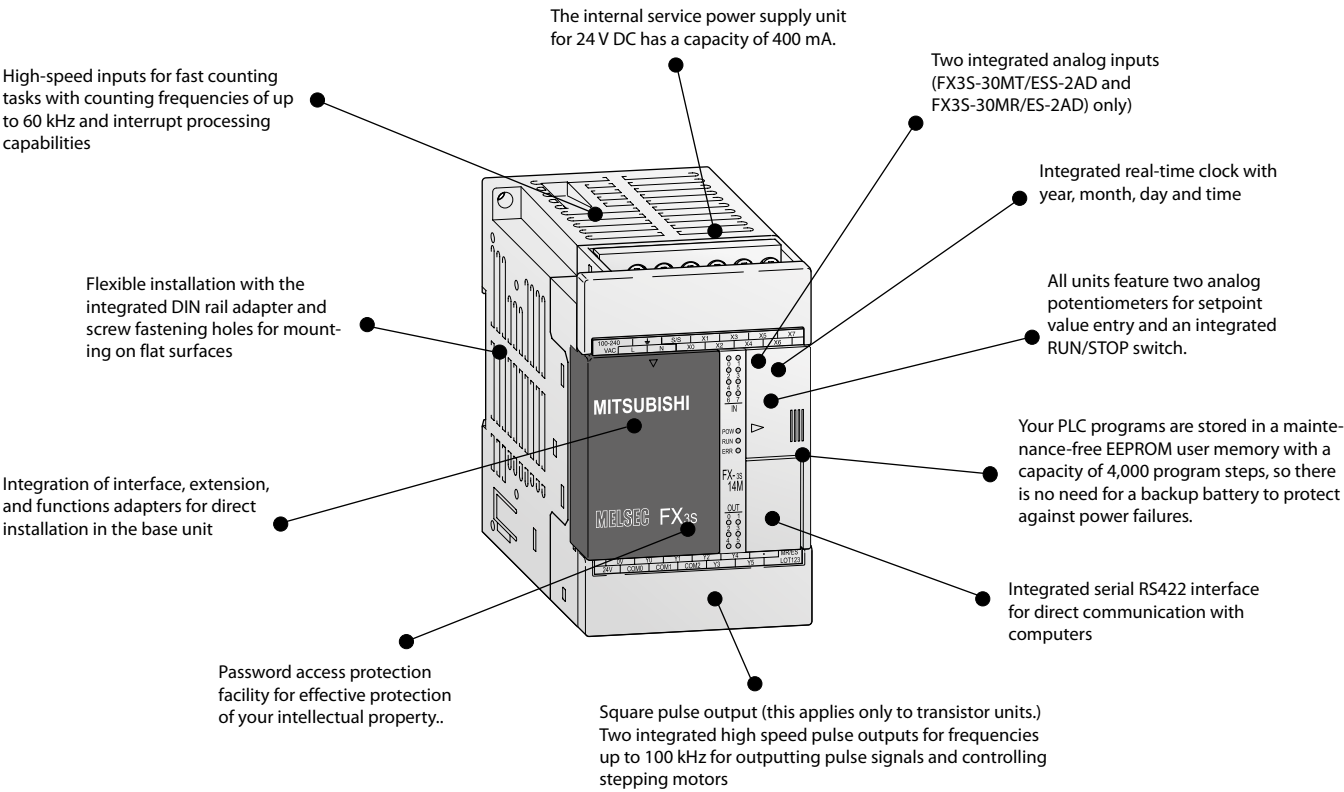
Programming specifications

System specifications	FX5UC
Program data	
I/O points (addresses)	Max. total 512 (with remote I/O)
Program memory	64,000 steps RAM (internal)
Instruction processing time	34 ns/basic instruction
Programming language	Ladder diagram (LD), structured text (ST), function block diagram/ladder diagram (FBD/LD)
Program execution	Cyclical execution, refresh mode processing

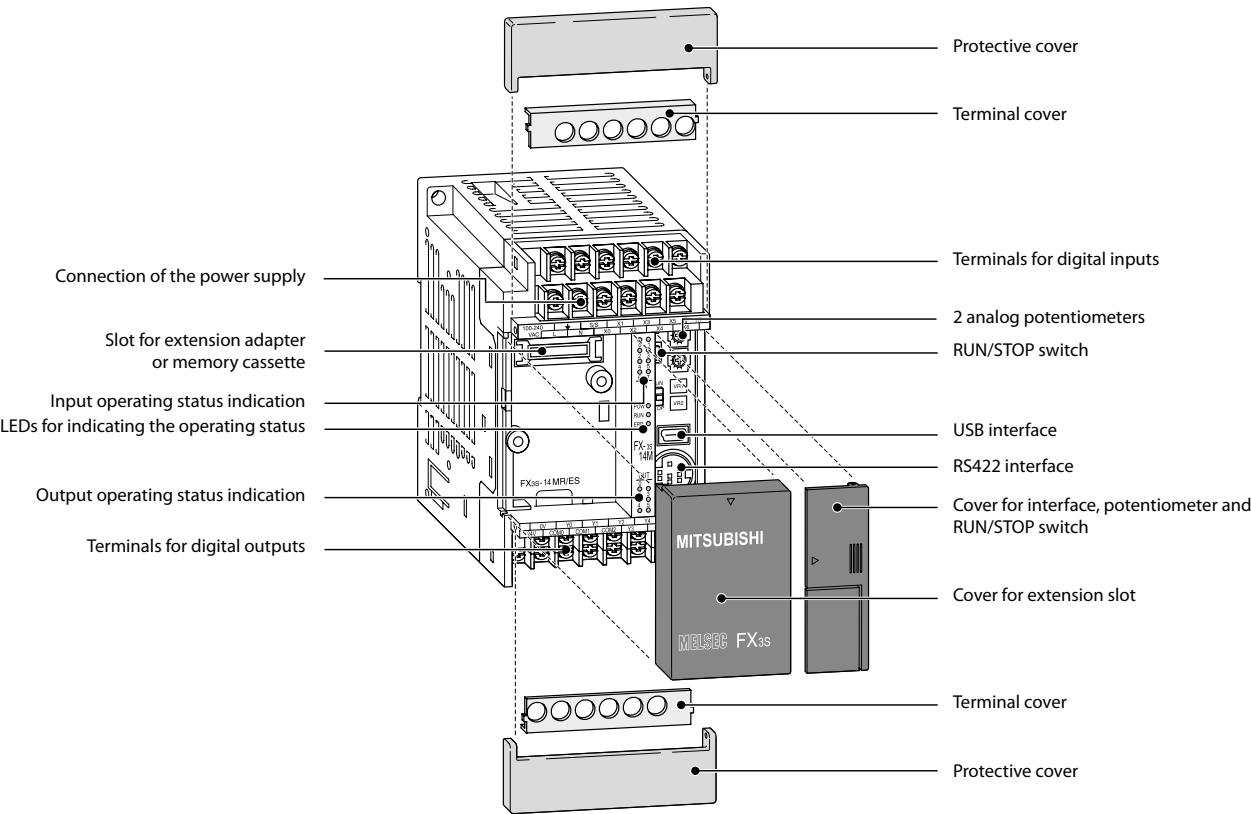
MELSEC-F

The MELSEC FX3S series

2
FX base units

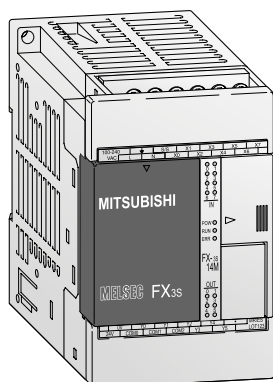


Description of the unit components



Base units

☒ **FX3S** ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC



Base units FX3S

The FX3S series base units are available with 10 to 30 input/output points.

It is possible to choose between relay and transistor output type.

- Integrated power supply (AC or DC powered)
- Maintenance-free EEPROM memory
- Ample memory capacity (4000 steps) and device ranges
- High-speed operations
- Incorporated positioning control
- Integrated real-time clock

- FX3S-30MT/ESS-2AD and FX3S-30MR/ES-2AD with two integrated analog inputs (0–10 V DC)
- System upgrades by exchangeable interface and I/O adapter boards for direct fitting into the base unit
- LEDs for indicating the input and output status
- Standard programming unit interface
- User-friendly programming systems, including IEC 61131-3 (EN 61131-3)-compatible programming software, HMIs and hand-held programming units

Base units with 10–14 I/Os

Specifications	FX3S-10 MR/ES	FX3S-10 MR/DS	FX3S-10 MT/ESS	FX3S-10 MT/DSS	FX3S-14 MR/ES	FX3S-14 MR/DS	FX3S-14 MT/ESS	FX3S-14 MT/DSS
Integrated inputs/outputs	10	10	10	10	14	14	14	14
Power supply	100–240 V AC	24 V DC	100–240 V AC	24 V DC	100–240 V AC	24 V DC	100–240 V AC	24 V DC
Integrated inputs	6	6	6	6	8	8	8	8
Integrated outputs	4	4	4	4	6	6	6	6
Output type	Relay	Relay	Transistor (source)*	Transistor (source)*	Relay	Relay	Transistor (source)*	Transistor (source)*
Power consumption	W	19	6	19	6	19	6,5	19
Weight	kg	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Dimensions (WxHxD)	mm	60x90x75	60x90x49	60x90x75	60x90x49	60x90x75	60x90x49	60x90x75
Order information	Art. no.	267110	271687	267112	271695	267113	271688	267125
								271696

Base units with 20–30 I/Os

Specifications	FX3S-20 MR/ES	FX3S-20 MR/DS	FX3S-20 MT/ESS	FX3S-20 MT/DSS	FX3S-30 MR/ES	FX3S-30 MR/DS	FX3S-30 MR/ES-2AD	FX3S-30 MT/ESS	FX3S-30 MT/ESS-2AD	FX3S-30 MT/DSS
Integrated inputs/outputs	20	20	20	20	30	30	30	30	30	30
Power supply	100–240 V AC	24 V DC	100–240 V AC	24 V DC	100–240 V AC	24 V DC	100–240 V AC	100–240 V AC	100–240 V AC	24 V DC
Integrated inputs	12	12	12	12	16	16	16	16	16	16
Integrated outputs	8	8	8	8	14	14	14	14	14	14
Output type	Relay	Relay	Transistor (source)*	Transistor (source)*	Relay	Relais	Relais	Transistor (source)*	Transistor (source)*	Transistor (source)*
Power consumption	W	20	7	20	7	21	8,5	21	21	8,5
Weight	kg	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.45	0.45
Dimensions (WxHxD)	mm	75x90x75	75x90x49	75x90x75	75x90x49	100x90x75	100x90x49	100x90x75	100x90x75	100x90x49
Order information	Art. no.	267126	271689	267128	271697	267129	271690	271654	267131	271686
										271698

* Sink type transistor output units on request.

Specifications

☒ **FX3S** ☐ **FX3G** ☐ **FX3GC** ☐ **FX3GE** ☐ **FX3U** ☐ **FX3UC** ☐ **FX5U** ☐ **FX5UC**

Environmental specifications

General specifications	Data
Ambient temperature	0–55 °C (storage temperature: -25–+75 °C)
Noise durability	1,000 Vpp with noise generator; 1 µs at 30–100 Hz
Dielectric withstand voltage	1,500 V AC, 1 min
Ambient relative humidity	5–95 % (non-condensing)
Shock resistance	Acc. to IEC 68-2-27: 15 g (147 m/s ²) (3 times each in 3 directions for 11 ms)
Vibration resistance	Acc. to IEC 68-2-6: 1 g (Resistance to vibrations from 57–150 Hz for 80 minutes along all 3 axes); 0.5 g for DIN rail mounting
Insulation resistance	5 MΩ at 500 V DC
Ground	Class D: Grounding resistance 100 Ω or less
Fuse rating	250 V 1.0 A
Environment	Avoid environments containing corrosive gases, install in a dust-free location.
Certifications	Please refer to pages 103–105

Electrical specifications

Power supply specifications	AC powered modules (FX-3S-□M□/E□)
Power supply	100–240 V AC (+10 %/-15 %), 50/60 Hz
Inrush current at ON	30 A/<5 ms (at 100 V AC); 50 A/<5 ms (at 200 V AC)
Allowable momentary power failure time	10 ms
Primary power supply	—
External power supply (24 V DC)	400 mA

Output specifications	Relay module	Transistor module
Switching voltage (max.)	V <240 V AC, <30 V DC	5–30 V DC
Max. output current	- per output A 2 - per group ② A 8	0.5 0.8
Max. switching current	- inductive load 80 VA	12 W
Response time	ms 10	<0.2 (<5 µs for Y0,Y1)
Life of contacts (switching times) ①	3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA	

① Not guaranteed by Mitsubishi Electric

② The limitation applies only per reference terminal for each group with 4 outputs. Please observe the terminal assignments for the group identification

Programming specifications

System specifications	FX3S
Program data	
I/O points (addresses)	Max. 16 inputs, max 14 outputs (not expandable)
Program memory	4000 steps EEPROM (internal), exchangeable EEPROM memory cassette
Cycle period	0.21 µs /logical instruction
Number of instructions	27 sequence instructions, 2 step ladder instructions, 116 applied instructions
Programming language	Step ladder, instruction list, SFC
Program execution	Cyclical execution, refresh mode processing
Program protection	Via password

System specifications	FX3S
Operands	
Internal relays	1,536
Special relays	512
Step ladder	256
Timer	138
Ext. preset value via potentiometer	2
Counter	67
High-speed counter	6 single phase inputs (max. 60 kHz), 3 double phase inputs (max. 30 kHz)
Real-time clock	Year, month, day, hour, minute, second, weekday
Data register	3,000
File register	2,000
Index register	16
Special register	512 (D8000–D8511)
Pointer	2,048
Nestings	8
Interrupt inputs	6
Constants	16 bits: K: -32768–+32767, hex: 0–FFFF 32 bits: K: 2147483648–+2147483647, hex: 0–FFFF FFFF

The MELSEC FX3G series

Integrated high-speed counter inputs for processing fast input signals. For example, you can configure two 60 kHz counters and four 10 kHz counters. Interrupt processing is also handled via the inputs.

RAM/EEPROM memory for up to 32,000 PLC program steps gives you plenty of reserve, even for big, complex applications.

The base units can be expanded to provide configurations with up to 256 inputs and outputs with modular and compact extension units (128 directly and 256 in common by using remote I/Os via a network).

Integrated real-time clock with year, month, day and time

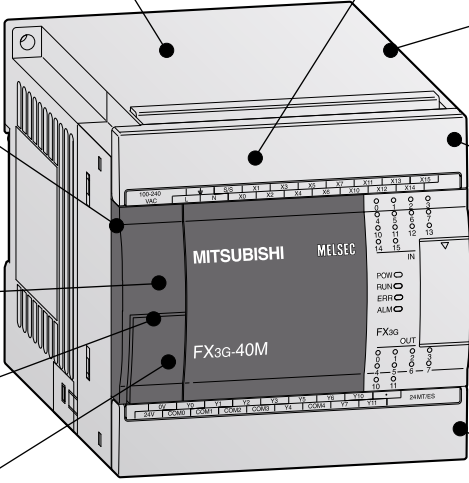
Two integrated pulse outputs for frequencies from 2 to 100,000 Hz for controlling stepping motors and outputting pulse-width modulated signals.

Two integrated serial interfaces for direct communication with computers.

Connection possibility for special function adapter modules

An integrated RUN/STOP switch is available.

Add-in function boards can be installed in the PLC to provide a second RS485/RS422/RS232 communications interface for programming or network configurations. Analog function boards for input and output and a function board with 8 analog potentiometers are also available as add-in.



MITSUBISHI MELSEC
FX3G-40M

Description of the unit components

Memory cassette, display module, and expansion board connector

2 analog potentiometers

RUN/STOP switch

Option battery holder

Programming port: RS422

Programming port: USB

Flip cover for programming port, potentiometer and Run/Stop switch

Cover for the left extension slot

Terminal cover

Terminal protector

Input terminals

Input indicator LEDs

Operation status indicator LEDs

Expansion bus connector cover

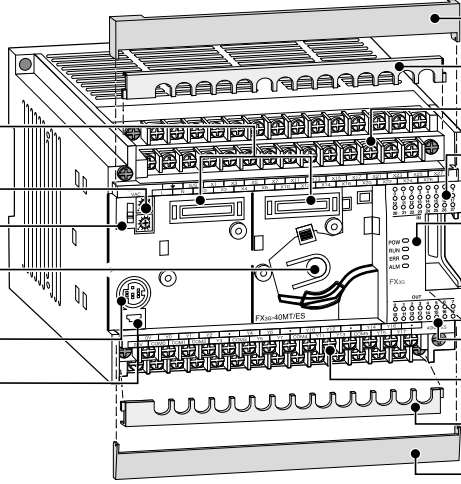
Output indicator LEDs

Output terminals

Terminal protector

Terminal cover

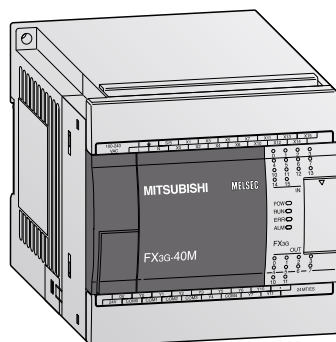
Cover of the right extension slot and the optional battery



MITSUBISHI MELSEC
FX3G-40M

Base units

☐ FX3S ☒ **FX3G** ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC



Base units FX3G

The FX3G series base units are available with 14 to 60 input/output points.

It is possible to choose between relay and transistor output types.

- Integrated USB interface for communication between PLCs and PC
- Integrated serial interface for communication between PCs and HMI
- LEDs for indicating the input and output status
- Detachable terminal blocks for all units
- Slot for memory cassettes
- Integrated real-time clock
- Integrated positioning control
- Exchangeable interface and extension adapters for direct mounting into a base unit
- Expandable with digital I/O modules, special function modules and ADP modules
- User-friendly programming systems, including IEC 61131-3 (EN 61131-3) compatible programming software, HMIs and hand-held programming units

Base units with 14–24 I/Os

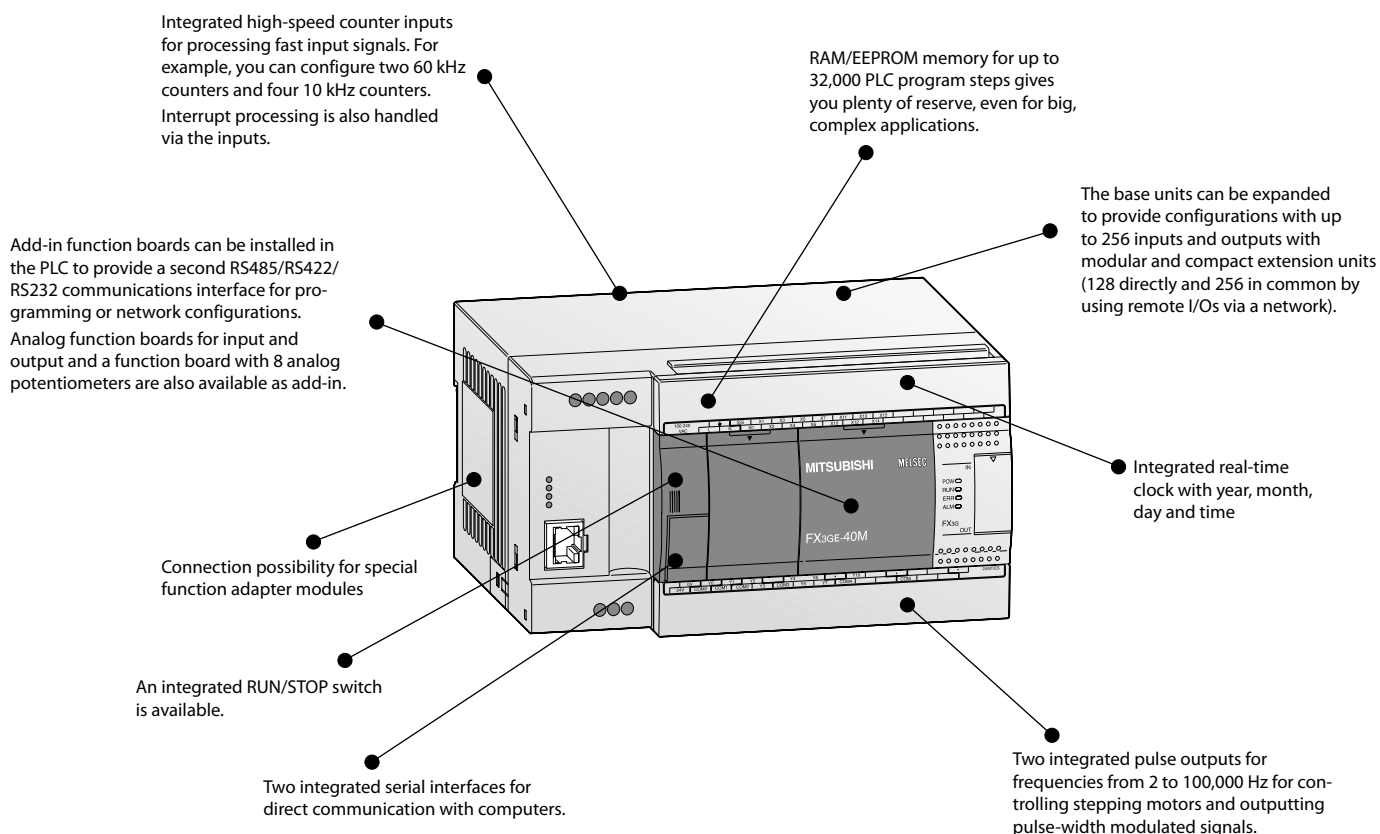
Specifications	FX3G-14 MR/ES	FX3G-14 MT/ESS	FX3G-14 MR/DS	FX3G-14 MT/DSS	FX3G-24 MR/ES	FX3G-24 MT/ESS	FX3G-24 MR/DS	FX3G-24 MT/DSS
Integrated inputs/outputs	14	14	14	14	24	24	24	24
Power supply	100–240 V AC	100–240 V AC	24 V DC	24 V DC	100–240 V AC	100–240 V AC	24 V DC	24 V DC
Integrated inputs	8	8	8	8	14	14	14	14
Integrated outputs	6	6	6	6	10	10	10	10
Output type	Relay	Transistor (source)*	Relay	Transistor (source)*	Relay	Transistor (source)*	Relay	Transistor (source)*
Power consumption	W 31	31	19	19	32	32	21	21
Weight	kg 0.50	0.50	0.50	0.50	0.55	0.55	0.55	0.55
Dimensions (WxHxD)	mm 90x90x86	90x90x86	90x90x86	90x90x86	90x90x86	90x90x86	90x90x86	90x90x86
Order information	Art. no. 231466	231470	231474	231478	231467	231471	231475	231479

Base units with 40–60 I/Os

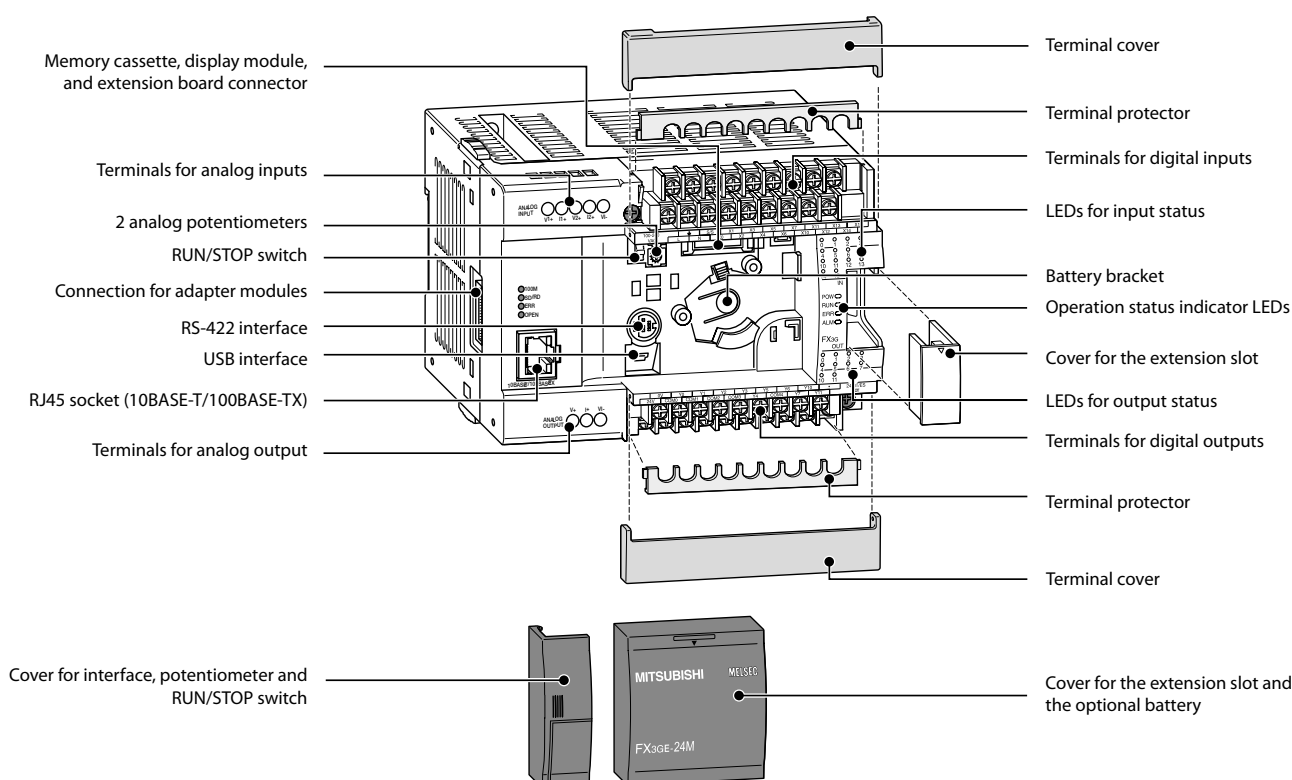
Specifications	FX3G-40 MR/ES	FX3G-40 MT/ESS	FX3G-40 MR/DS	FX3G-40 MT/DSS	FX3G-60 MR/ES	FX3G-60 MT/ESS	FX3G-60 MR/DS	FX3G-60 MT/DSS
Integrated inputs/outputs	40	40	40	40	60	60	60	60
Power supply	100–240 V AC	100–240 V AC	24 V DC	24 V DC	100–240 V AC	100–240 V AC	24 V DC	24 V DC
Integrated inputs	24	24	24	24	36	36	36	36
Integrated outputs	16	16	16	16	24	24	24	24
Output type	Relay	Transistor (source)*	Relay	Transistor (source)*	Relay	Transistor (source)*	Relay	Transistor (source)*
Power consumption	W 37	37	25	25	40	40	29	29
Weight	kg 0.70	0.70	0.70	0.70	0.85	0.85	0.85	0.85
Dimensions (WxHxD)	mm 130x90x86	130x90x86	130x90x86	130x90x86	175x90x86	175x90x86	175x90x86	175x90x86
Order information	Art. no. 231468	231472	231476	231480	231469	231473	231477	231481

* Sink type transistor output units on request.

The MELSEC FX3GE series

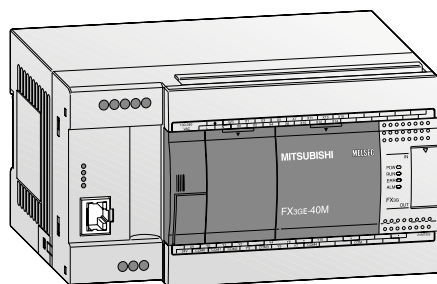


Description of the unit components



Base units

☐ FX3S
 ☐ FX3G
 ☐ FX3GC
 ☒ **FX3GE**
☐ FX3U
 ☐ FX3UC
 ☐ FX5U
 ☐ FX5UC



Base units FX3GE

The FX3GE series base units are available with 24 or 40 input/output points.

All base units are equipped with relay outputs.

- Integrated analog input (2 ch)
- Integrated analog output (1 ch)
- Integrated Ethernet interface
- Integrated USB interface for communication between PLC and PC
- Integrated serial interface for communication between PLC and HMI

- LEDs for indicating the input and output status
- Connection of inputs and outputs via terminals
- Slot for memory cassettes
- Integrated positioning control
- Expandable with special function modules and ADP modules
- User-friendly programming systems, including IEC 61131-3 (EN 61131-3) compatible programming software, HMIs and hand-held programming units

Base units with 24 I/Os

Specifications	FX3GE-24 MR/ES	FX3GE-24 MT/ESS	FX3GE-24 MR/DS	FX3GE-24 MT/DSS
Integrated inputs/outputs	24	24	24	24
Power supply	100–240 V AC	100–240 V AC	24 V DC	24 V DC
Integrated inputs	14	14	14	14
Integrated outputs	10	10	10	10
Output type	Relay	Transistor (source)*	Relay	Transistor (source)*
Power consumption	W 32	32	21	21
Weight	kg 0.6	0.55	0.55	0.55
Dimensions (WxHxD)	mm 130x90x86	90x90x86	90x90x86	90x90x86
Order information	Art. no. 264869	269884	269917	269919

Base units with 40 I/Os

Specifications	FX3GE-40 MR/ES	FX3GE-40 MT/ESS	FX3GE-40 MR/DS	FX3GE-40 MT/DSS
Integrated inputs/outputs	40	40	40	40
Power supply	100–240 V AC	100–240 V AC	24 V DC	24 V DC
Integrated inputs	24	24	24	24
Integrated outputs	16	16	16	16
Output type	Relay	Transistor (source)*	Relay	Transistor (source)*
Power consumption	W 37	37	25	25
Weight	kg 0.8	0.70	0.70	0.70
Dimensions (WxHxD)	mm 175x90x86	130x90x86	130x90x86	130x90x86
Order information	Art. no. 264870	269916	269920	269922

* Sink type transistor output units on request.

The MELSEC FX3GC series

Integrated high-speed counter inputs for processing fast input signals. For example, you can configure two 60 kHz counters and four 10 kHz counters. Interrupt processing is also handled via the inputs.

RAM/EEPROM memory for up to 32,000 PLC program steps gives you plenty of reserve, even for big, complex applications.

The base units can be expanded to provide configurations with up to 256 inputs and outputs with modular and compact extension units (128 directly and 256 in common by using remote I/Os via a network).

An integrated RUN/STOP switch is available.

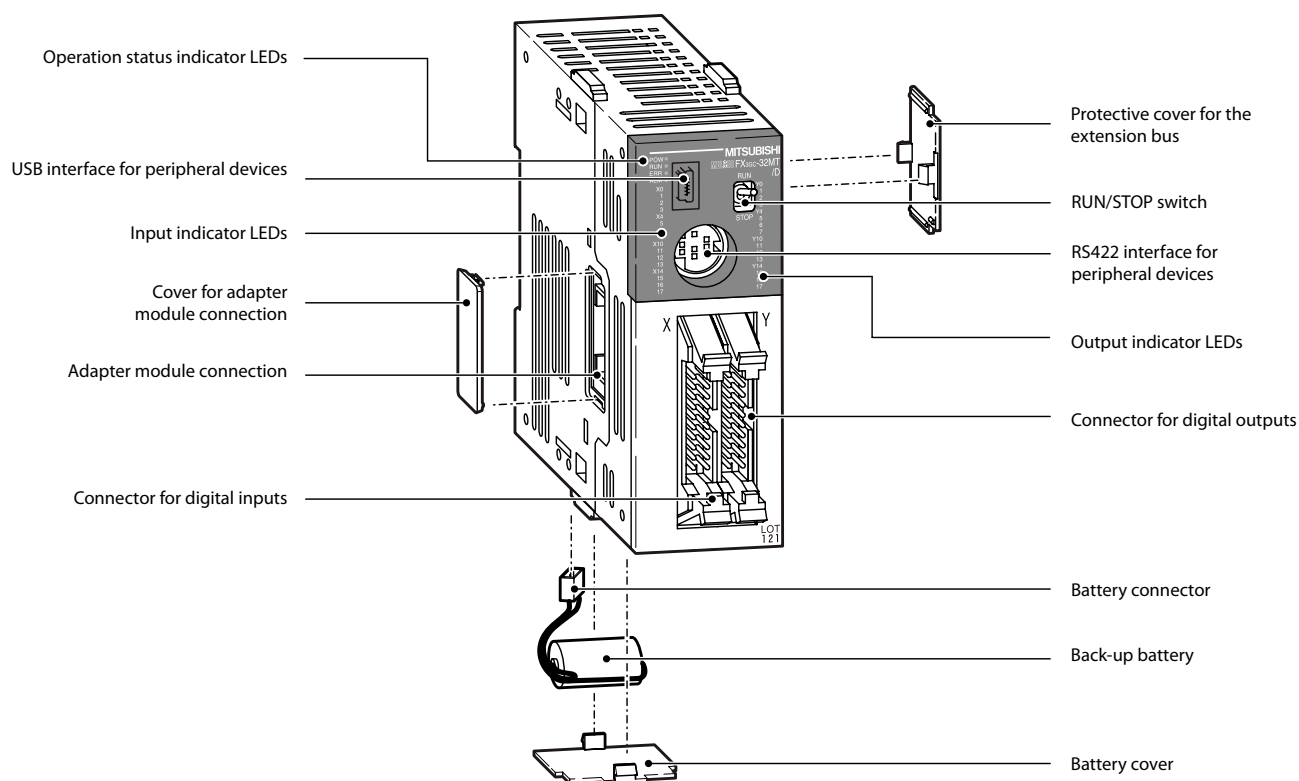
Integrated real-time clock with year, month, day and time

Two integrated serial interfaces for direct communication with computers.

Connection possibility for special function adapter modules

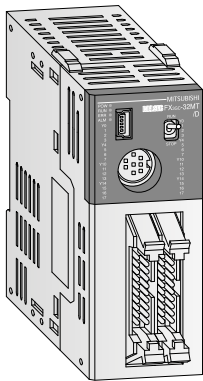
Two integrated pulse outputs for frequencies from 2 to 100,000 Hz for controlling stepping motors and outputting pulse-width modulated signals.

Description of the unit components



■ Base units

☐ FX3S ☐ FX3G ☒ **FX3GC** ☐ FX3GE ☐ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC



Base units FX3GC

The base units FX3GC-32 MT/☐ are available with 32 input/output points.

The base units are equipped with transistor outputs.

- Integrated USB interface for communication between PLC and PC
- Integrated serial interface for communication between PLC and HMI
- LEDs for indicating the input and output status
- Connection of inputs and outputs via connectors.

- Integrated positioning control
- Expandable with digital I/O modules, special function modules and ADP modules
- User-friendly programming systems, including IEC 61131-3 (EN 61131-3) compatible programming software, HMIs and hand-held programming units

Base units with 32 I/Os

Specifications	FX3GC-32 MT/D	FX3GC-32 MT/DSS
Integrated inputs/outputs	32	32
Power supply	24 V DC	24 V DC
Integrated inputs	16	16
Integrated outputs	16	16
Output type	Transistor (sink)	Transistor (source)
Power consumption	W 8	8
Weight	kg 0.2	0.2
Dimensions (WxHxD)	mm 34x90x87	34x90x87
Order information	Art. no. 251545	251546

Specifications

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☐ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC

Environmental specifications

General specifications	FX3G	FX3GE	FX3GC
Ambient temperature	0–55 °C (storage temperature: –25–+75 °C)		
Noise durability	1000 Vpp with noise generator; 1 µs at 30–100 Hz		
Dielectric withstand voltage	1500 V AC, 1 min		500 V AC, 1 min
Ambient relative humidity	5–95 % (non-condensing)		
Shock resistance	Acc. to IEC 68-2-27: 15 g (147 m/s ²) (3 times each in 3 directions for 11 ms)		
Vibration resistance	Acc. to IEC 68-2-6: 1 g (resistance to vibrations from 57–150 Hz for 80 minutes along all 3 axes); 0.5 g for DIN rail mounting		
Insulation resistance	5 MΩ, 500 V DC		
Ground	Class D: Grounding resistance 100 Ω or less		
Fuse rating	For FX3G-14M□ and FX3G-24M□: 250 V 1 A; For FX3G-40M□ and FX3G-60M□: 250 V 3.15 A	FX3GE-24M□: 250 V 1 A; FX3GE-40M□: 250 V 3.15 A	125 V 3.15 A
Environment	Avoid environments containing corrosive gases, install in a dust-free location.		
Certifications	Please refer to pages 103–105		

Electrical specifications

Power supply specifications	FX3G	FX3GE	FX3GC
Power supply	AC 100–240 V (+10 %/–15 %), 50/60 Hz DC 24 V DC (+20 %/–15 %)	—	—
Inrush current at ON	AC 30 A/<5 ms (at 100 V AC); 50 A/<5 ms (at 200 V AC) DC 30 A/<1 ms (at 24 V DC)	—	30 A/<0.5 ms (at 24 V DC)
Allowable momentary power failure time	10 ms	10 ms	5 ms
External power supply (24 V DC)	400 mA	400 mA	—

Output specifications	Relay modules FX3G/FX3GE	Transistor modules FX3G/FX3GE	Transistor modules FX3GC
Switching voltage (max.)	V <240 V AC, <30 V DC	5–30 V DC	5–30 V DC
Max. output current	– per output A 2 – per group A 8 ^②	0.5 0.8 ^②	Y000, Y001: 0.3 Y002–Y017: 0.1 0.8
Max. switching current	– inductive load W 80 VA	12 W	Y000, Y001: 7.2 Y002–Y017: 2.4
Response time	ms 10	<0.2 (<5 µs for Y0, Y1) ^①	<0.2 (<5 µs for Y0, Y1)

① The 40 and 60 I/O points main units supports 5 µs for Y2.

② This limitation applies only per reference terminal for each group, 4 and 8 outputs for relays and 2 and 4 outputs for transistors. Please observe the terminal assignments for the group identification.

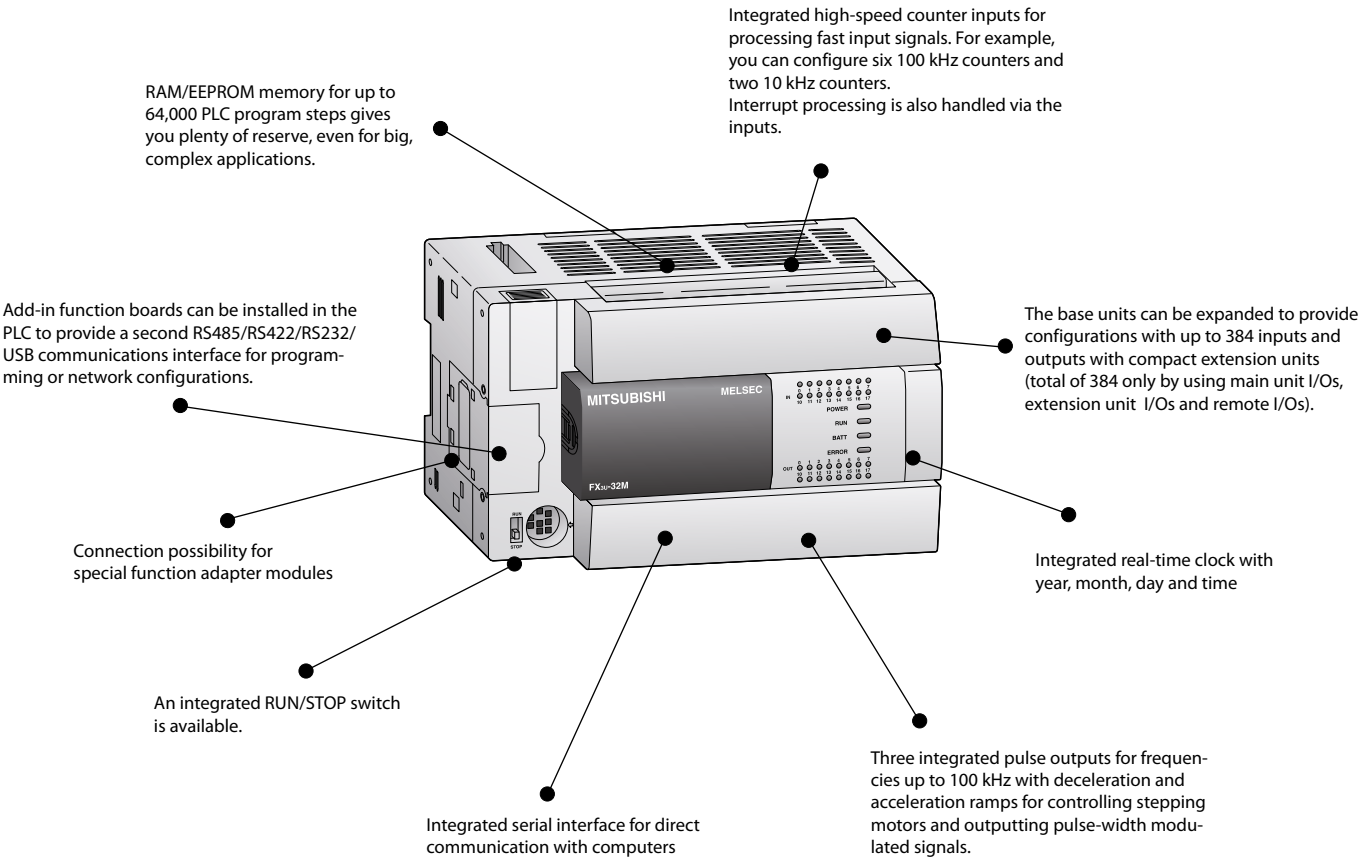
Programming specifications

System specifications	FX3G	FX3GE	FX3GC
Program data			
I/O points (addresses)	256 total (combined local and CC-Link remote I/O)		
Address range	Max. 128 direct addressing and max. 128 remote I/O		
Program memory	32,000 steps EEPROM (internal), exchangeable EEPROM memory cassette		
Cycle period	0.21 µs or 0.42 µs/contact instruction		
Number of instructions	29 sequence instructions, 2 step ladder instructions, 123 applied instructions		29 sequence instructions, 2 step ladder instructions, 122 applied instructions
Programming language	Step ladder, instruction list, SFC		
Program execution	Cyclical execution, refreshmode processing		
Program protection	Via password		

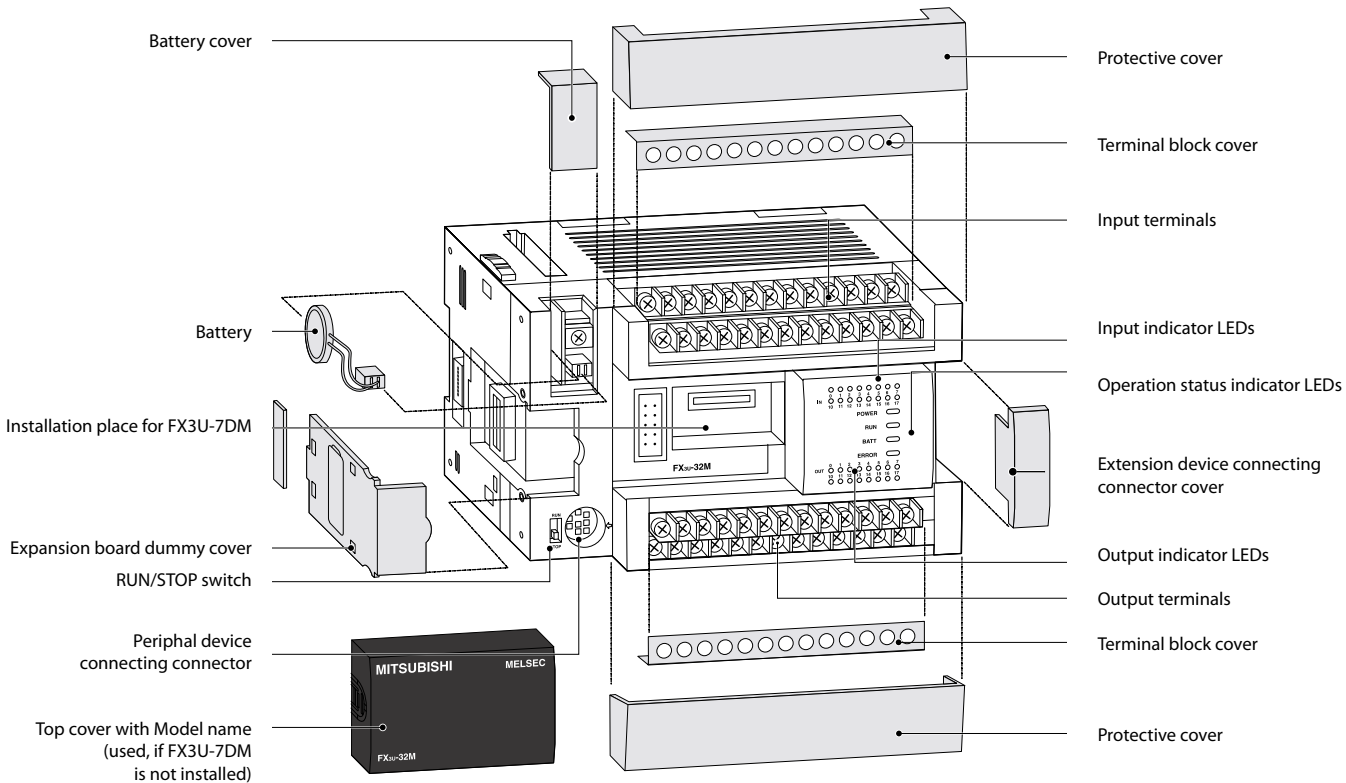
System specifications	FX3G	FX3GE	FX3GC
Operands			
Internal relays	7,680		
Special relays	512		
Step ladder	4,096		
Timer	320		
Ext. preset value via potentiometer	2		
Counter	235		
High-speed counter	6 single phase inputs (max. 60 kHz), 3 double phase inputs (max. 30 kHz)		
Real-time clock	Year, month, day, hour, minute, second, weekday		
Data register	8,000		
File register	24,000 (R0–R23999) internal/optional memory		24,000 (R0–R23999)
Extension file register	24,000 (ER0–ER23999)		
Index register	16		
Special register	512 (D8000–D8511)		
Pointer	2,048		
Nestings	8		
Interrupt inputs	6		
Constants	16 bits: K: –32768–+32767, hex: 0–FFFF 32 bits: K: 2147483648–+2147483647, hex: 0–FFFF FFFF		

The MELSEC FX3U series

2
FX base units

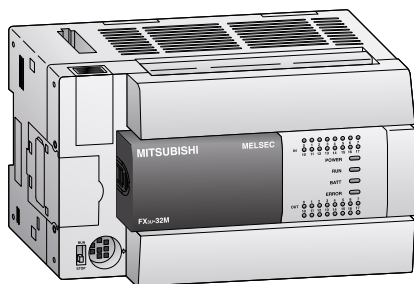


Description of the unit components



Base units

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ **FX3U** ☐ FX3UC ☐ FX5U ☐ FX5UC



Base units FX3U

The FX3U series base units are available with 16, 32, 48, 64, 80 or 128 input/output points expandable to 384 points.

Models are available for selection with relay or transistor outputs.

- Integrated serial interface for communication between PCs and HMI
- Integrated positioning control
- Exchangeable interface modules for direct mounting into a base unit

- LEDs for indicating the input and output status
- Slot for memory cassettes
- Integrated real-time clock
- Expandable with digital I/O modules, special function modules and ADP modules
- User-friendly programming systems, including IEC 61131-3 (EN 61131-3) compatible programming software, HMIs and hand-held programming units

Base units with 16 I/Os

Specifications	FX3U-16 MR/DS	FX3U-16 MR/ES	FX3U-16 MT/DSS	FX3U-16 MT/ESS
Integrated inputs/outputs	16	16	16	16
Power supply	24 V DC	100–240 V AC	24 V DC	100–240 V AC
Integrated inputs	8	8	8	8
Integrated outputs	8	8	8	8
Output type	Relay	Relay	Transistor (source)*	Transistor (source)*
Power consumption	25 W	30 VA	25 W	30 VA
Weight	kg 0.6	0.6	0.6	0.6
Dimensions (WxHxD)	mm 130x90x86	130x90x86	130x90x86	130x90x86
Order information	Art. no. 231498	231486	231503	231492

Base units with 32 I/Os

Specifications	FX3U-32 MR/DS	FX3U-32 MR/ES	FX3U-32 MT/DSS	FX3U-32 MT/ESS
Integrated inputs/outputs	32	32	32	32
Power supply	24 V DC	100–240 V AC	24 V DC	100–240 V AC
Integrated inputs	16	16	16	16
Integrated outputs	16	16	16	16
Output type	Relay	Relay	Transistor (source)*	Transistor (source)*
Power consumption	30 W	35 VA	30 W	35 VA
Weight	kg 0.65	0.65	0.65	0.65
Dimensions (WxHxD)	mm 150x90x86	150x90x86	150x90x86	150x90x86
Order information	Art. no. 231499	231487	231504	231493

Note: Further special versions are available on request

* Sink type transistor output units on request.

Base units

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC

Base units with 48 I/Os

Specifications	FX3U-48 MR/DS	FX3U-48 MR/ES	FX3U-48 MT/ESS	FX3U-48 MT/DSS
Integrated inputs/outputs	48	48	48	48
Power supply	24 V DC	100–240 V AC	100–240 V AC	24 V DC
Integrated inputs	24	24	24	24
Integrated outputs	24	24	24	24
Output type	Relay	Relay	Transistor (source)*	Transistor (source)*
Power consumption	35 W	40 VA	40 VA	35 W
Weight	kg 0.85	0.85	0.85	0.85
Dimensions (WxHxD)	mm 182x90x86	182x90x86	182x90x86	182x90x86
Order information	Art. no. 231500	231488	231494	231505

Base units with 64 I/Os

Specifications	FX3U-64 MR/DS	FX3U-64 MR/ES	FX3U-64 MT/ESS	FX3U-64 MT/DSS
Integrated inputs/outputs	64	64	64	64
Power supply	24 V DC	100–240 V AC	100–240 V AC	24 V DC
Integrated inputs	32	32	32	32
Integrated outputs	32	32	32	32
Output type	Relay	Relay	Transistor (source)*	Transistor (source)*
Power consumption	40 W	45 VA	45 VA	40 W
Weight	kg 1.0	1.0	1.0	1.0
Dimensions (WxHxD)	mm 220x90x86	220x90x86	220x90x86	220x90x86
Order information	Art. no. 231501	231489	231495	231506

Base units with 80–128 I/Os

Specifications	FX3U-80 MR/DS	FX3U-80 MR/ES	FX3U-80 MT/DSS	FX3U-80 MT/ESS	FX3U-128 MR/ES	FX3U-128 MT/ESS
Integrated inputs/outputs	80	80	80	80	128	128
Power supply	24 V DC	100–240 V AC	24 V DC	100–240 V AC	100–240 V AC	100–240 V AC
Integrated inputs	40	40	40	40	64	64
Integrated outputs	40	40	40	40	64	64
Output type	Relay	Relay	Transistor (source)*	Transistor (source)*	Relay	Transistor (source)*
Power consumption	45 W	50 VA	45 W	50 VA	65 VA	65 VA
Weight	kg 1.2	1.2	1.2	1.2	1.8	1.8
Dimensions (WxHxD)	mm 285x90x86	285x90x86	285x90x86	285x90x86	350x90x86	350x90x86
Order information	Art. no. 231502	231490	231507	231496	231491	231497

Note: Further special versions are available on request

* Sink type transistor output units on request.

Specifications

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ **FX3U** ☐ FX3UC ☐ FX5U ☐ FX5UC

Environmental specifications

General specifications	Data
Ambient temperature	0–55 °C (storage temperature: -25–+75 °C)
Protection	IP10
Noise durability	1000 Vpp with noise generator; 1 μs at 30–100 Hz
Dielectric withstand voltage	AC PSU: 1500 V AC, 1 min./DC PSU: 500 V AC, 1 min.
Ambient relative humidity	5–95 % (non-condensing)
Shock resistance	Acc. to IEC 68-2-27: 15 g (3 times each in 3 directions for 11 ms)
Vibration resistance	Acc. to IEC 68-2-6: 1 g (resistance to vibrations from 57–150 Hz for 80 minutes along all 3 axes); 0.5 g for DIN rail mounting
Insulation resistance	5 MΩ, 500 V DC
Ground	Class D: Grounding resistance 100 Ω or less
Fuse rating	From FX3U-16M□ to FX3U-32M□: 3.15 A; from FX3U-48M□ to FX3U-128M□: 5 A
Environment	Avoid environments containing corrosive gases, install in a dust-free location.
Certifications	Please refer to pages 103–105

Electrical specifications

Power supply specifications	DC powered modules (FX3U-□M□/DS/DSS)	AC powered modules (FX3U-□MR/ES)	Output specifications	Relay modules	Transistor modules
Power supply	24 V DC (+20 %/-30 %)	100–240 V AC (+10 %/-15 %), 50/60 Hz	Switching voltage (max.)	V <240 V AC, <30 V DC	5–30 V DC
Inrush current at ON	—	30 A/<5 ms (at 100 V AC); 65 A/<5 ms (at 200 V AC)	Max. output current	- per output A 2 - per group* A 8	0.5/0.3 ① 0.8/1.6 ②
Allowable momentary power failure time	5 ms	10 ms	Max. switching current	- inductive load 80 VA	12 W/7.2 W
Primary power supply	24 V DC	—	Response time	ms 10	<0.2 (Y0,Y1<30 μs)
External power supply (24 V DC)	—	FX3U-16/32MR/ES: 400 mA/ FX3U-48–128MR/ES: 600 mA	Life of contacts (switching times) ③	3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA	

① or Y0 and Y1 = 0.3 A; all others 0.5 A ② 0.8 for 4 per group and 1.6 for 8 per group

③ Not guaranteed by Mitsubishi Electric.

* This limitation applies only per reference terminal for each group, 4 and 8 outputs for relays and 2 and 4 outputs for transistors. Please observe the terminal assignments for the group identification.

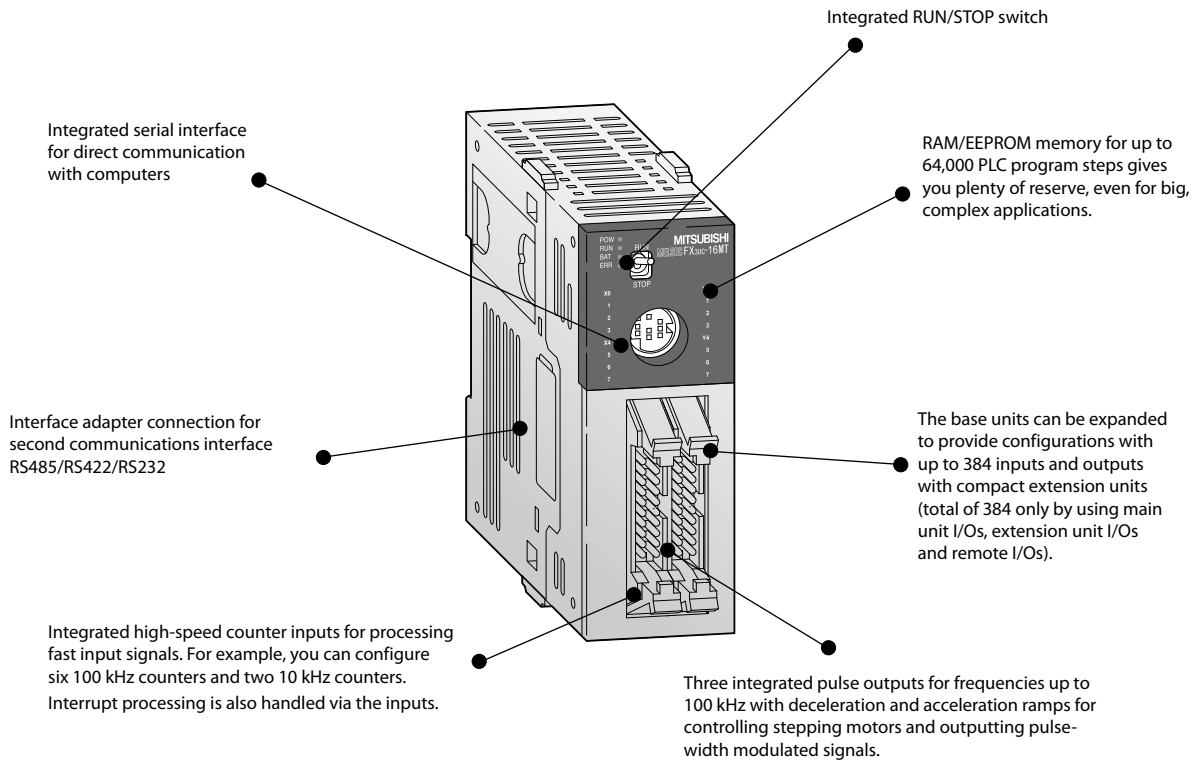
Programming specifications

System specifications	FX3U	System specifications	FX3U
Program data		Operands	
I/O points (addresses)	Max. total 384 (with remote I/O)	Internal relays	7,680
Address range	Max. 256 direct addressing and max. 256 network I/Os	Special relays	512
Program memory	64,000 steps RAM (internal), exchangeable FLROM for easy program exchange	Step ladder	4,096
Cycle period	0.065 μs/basic instruction	Timer	512
Number of instructions	27 sequence instructions, 2 step ladder instructions, 209 applied instructions	Counter	235
Programming language	Step ladder, instruction list, SFC	High-speed counter	16
Program execution	Cyclical execution, refresh mode processing	High-speed counter speed	1 phase, 8 points max: 100 kHz/6 points 10 kHz/2 points 2 phase, 2 points max: 50 kHz/2 points
Program protection	Password protection with 3 protection levels*	Real-time clock	Year, month, day, hour, minute, second, weekday
		Data register	8,000
		Extension file register	32,768
		Index register	16
		Special register	512
		Pointer	4,096
		Nestings	8
		Interrupt inputs	6
		Constants	16 bits: K: -32768–+32767, hex: 0–FFFF 32 bits: K: 2147483648–+2147483647, hex: 0–FFFF FFFF

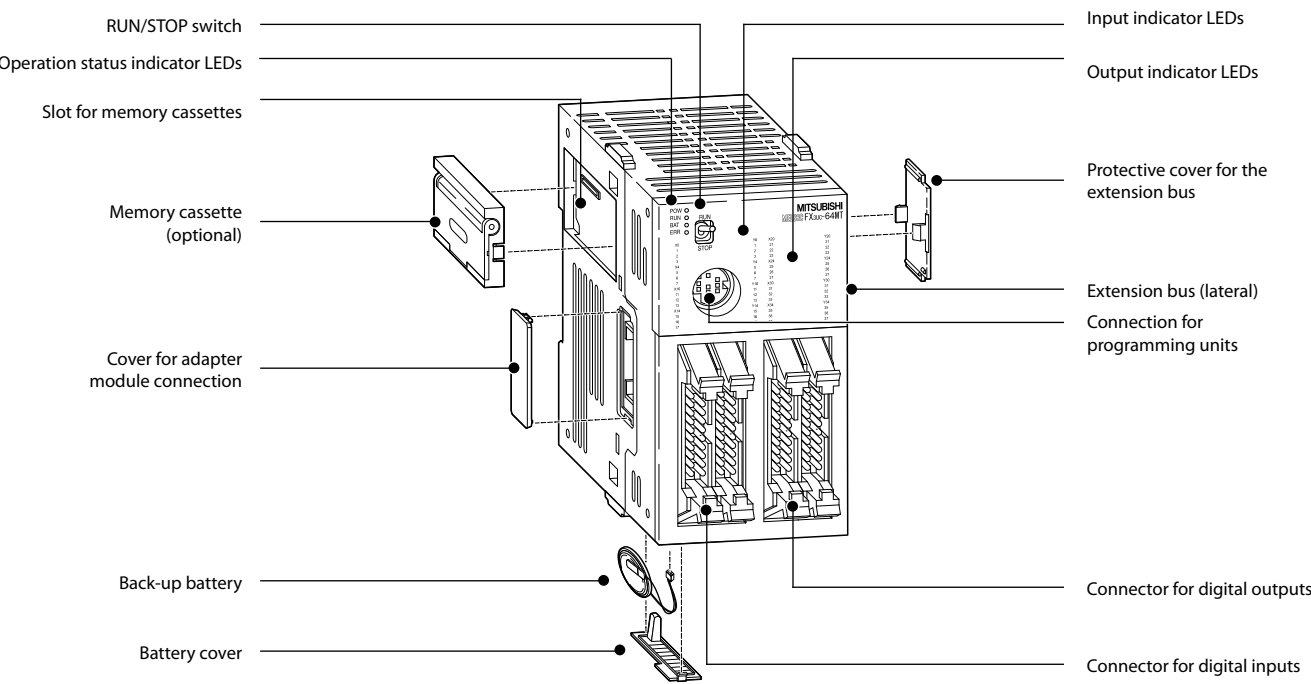
* Protection levels may only be changed with FX-10P/FX-20P/FX-30P.

The MELSEC FX3UC series

2
FX base units

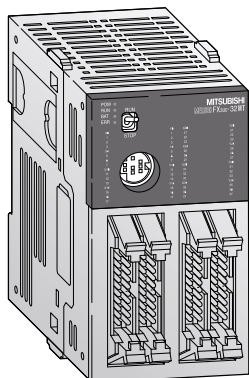


Description of the unit components



Base units

☐ FX3S
 ☐ FX3G
 ☐ FX3GC
 ☐ FX3GE
 ☐ FX3U
 ☒ **FX3UC**
☐ FX5U
 ☐ FX5UC



Base units FX3UC

The base units of the FX3UC series are available in versions with 16, 32, 64 or 96 inputs/outputs (expandable to 384 I/Os).

The units are available with transistor outputs only.

- Integrated serial interface for communication between PCs and HMI
- Same instruction set as FX3U
- Integrated positioning control
- Very compact dimensions

- LEDs for indicating the input and output status
- Slot for memory cassette
- Adapter modules and system cabling sets available for units with ribbon cable connectors
- Expandable with digital I/O modules, special function modules and ADP modules
- User-friendly programming systems, including IEC 61131-3 (EN 61131-3) compatible programming software, HMIs and hand-held programming units

Base units with 16–96 I/Os

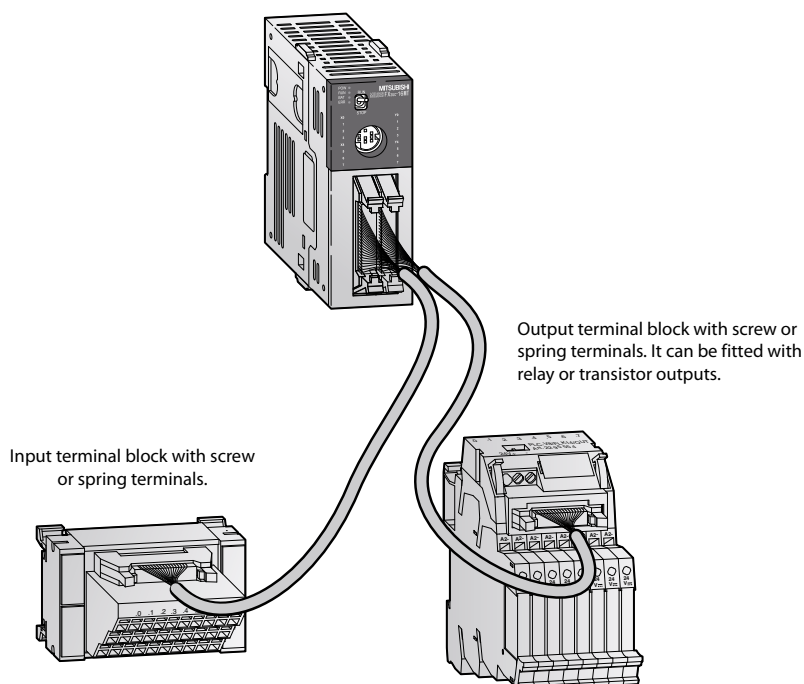
Specifications	FX3UC-16 MT/DSS	FX3UC-32 MT/DSS	FX3UC-64 MT/DSS	FX3UC-96 MT/DSS
Integrated inputs/outputs	16	32	64	96
Power supply	24 V DC (+20 %, -15 %)	24 V DC (+20 %, -15 %)	24 V DC (+20 %, -15 %)	24 V DC (+20 %, -15 %)
Integrated inputs	8	16	32	48
Integrated outputs	8	16	32	48
Output type	Transistor (source)*	Transistor (source)*	Transistor (source)*	Transistor (source)*
Power consumption	W 6	8	11	14
Weight	kg 0.2	0.2	0.3	0.35
Dimensions (WxHxD)	mm 34x90x74	34x90x74	59.7x90x74	85.4x90x74
Order information	Art. no. 231508	231509	231510	231511

* Sink type transistor output units on request.

System cabling

A choice of terminal blocks with screw or spring terminals are available for easy wiring of the FX3UC modules with standard ribbon cable connectors.

For detailed information about the terminal blocks, please refer to chapter accessories.



■ Specifications

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC

Environmental specifications

General specifications	Data
Ambient temperature	0–55 °C (storage temperature: -25–+75 °C)
Protection	IP10
Noise durability	1000 Vpp with noise generator; 1 μs at 30–100 Hz
Dielectric withstand voltage	AC PSU: 1500 V AC, 1 min./DC PSU: 500 V AC, 1 min.
Ambient relative humidity	5–95 % (non-condensing)
Shock resistance	Acc. to IEC 68-2-27: 15 g (3 times each in 3 directions for 11 ms)
Vibration resistance	Acc. to IEC 68-2-6: 1 g (resistance to vibrations from 57–150 Hz for 80 minutes along all 3 axes); 0.5 g for DIN rail mounting
Insulation resistance	500 V DC, 5 MΩ
Ground	Class D: Grounding resistance 100 Ω or less
Environment	Avoid environments containing corrosive gases, install in a dust-free location.
Certifications	Please refer to pages 103–105

Electrical specifications

Power supply specifications	Alle modules
Power supply	24 V DC (+20 %/-30 %)
Inrush current at ON	—
Allowable momentary power failure time	5 ms
Primary power supply	24 V DC
External power supply (24 V DC)	—

Output specifications	Alle modules
Switching voltage (max.)	V 5–30 V DC
Max. output current	- per output A 0.1/0.3 ①
	- per group* A 0.8/1.6
Max. switching current	- inductive load 2.4 W/7.2 W ②
Response time	ms <0.2 (Y0,Y1<30 μs)
Life of contacts (switching times) ③	3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA

① or Y0 and Y1 = 0.3 A; all others 0.1 A ② 7.2 W for Y0 to Y3, all other outputs 2.4 W
③ Not guaranteed by Mitsubishi Electric.
* This limitation applies only per reference terminal for each group, 4 and 8 outputs for relays and 2 and 4 outputs for transistors. Please observe the terminal assignments for the group identification.

Programming specifications

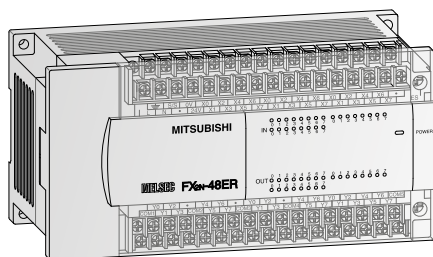
System specifications	FX3UC
Program data	
I/O points (addresses)	Max. total 384 (with remote I/O)
Address range	Max. 256 direct addressing and max. 256 network I/Os
Program memory	64,000 steps RAM (internal), exchangeable FLROM for easy program exchange
Cycle period	0.065 μs/basic instruction
Number of instructions	27 sequence instructions, 2 step ladder instructions, 209 applied instructions
Programming language	Step ladder, instruction list, SFC
Program execution	Cyclical execution, refresh mode processing
Program protection	Password protection with 3 protection levels*

* Protection levels may only be changed with FX-30P.

System specifications	FX3UC
Operands	
Internal relays	7,680
Special relays	512
Step ladder	4,096
Timer	512
Counter	235
High-speed counter	16
High-speed counter speed	1 phase, 8 points max: 100 kHz/6 points 10 kHz/2 points 2 phase, 2 points max: 50 kHz/2 points
Real-time clock	Year, month, day, hour, minute, second, weekday
Data register	8,000
Extension file register	32,768
Index register	16
Special register	512
Pointer	4,096
Nestings	8
Interrupt inputs	6
Constants	16 bits: K: -32768–+32767, hex: 0–FFFF 32 bits: 2K: 147483648–+2147483647, hex: 0–FFFF FFFF

■ Powered extension units

☐ FX3S ☒ FX3G ☐ FX3GC ☒ FX3GE ☒ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC



Extension units FX2N

The FX2N series extension units are available with 32 or 48 input/output points.

It is possible to choose between relay and transistor output type.

- LEDs for indicating the input and output status
- MELSEC FX3G/FX3GE and FX3U series compatible
- Detachable terminal blocks
- Integrated service power supply with 250 mA or 460 mA

Specifications			FX2N-32 ER-ES/UL	FX2N-32 ET-ESS/UL	FX2N-48 ER-DS	FX2N-48 ER-ES/UL	FX2N-48 ET-DSS	FX2N-48 ET-ESS/UL
Electrical data								
Integrated inputs/outputs			32	32	48	48	48	48
Power supply	AC range (+10 %, -15 %)		100–240 V	100–240 V	—	100–240 V	—	100–240 V
	Frequency at AC	Hz	50/60	50/60	—	50/60	—	50/60
	DC range (+20 %, -30 %)		—	—	24 V	—	24 V	—
Max. input apparent power				35 VA	30 W	45 VA	30 W	45 VA
Inrush current at ON	100 V AC		40 A<5 ms	40 A<5 ms	—	40 A<5 ms	40 A<5 ms	40 A<5 ms
	200 V AC		60 A<5 ms	—	—	60 A<5 ms	60 A<5 ms	60 A<5 ms
Allowable momentary power failure time	ms		10	10	5	10	5	10
External service power supply (24 V DC)	mA		250	250	—	460	—	460
Power supply int. bus (5 V DC)	mA		690	690	690	690	690	690
Inputs								
Integrated inputs			16	16	24	24	24	24
Min. current for logical 1	mA		3.5	3.5	3.5	3.5	3.5	3.5
Max. current for logical 0	mA		1.5	1.5	1.5	1.5	1.5	1.5
Response time			For all extension units of the MELSEC FX2N series: 10 ms (at time of shipment)					
Outputs								
Integrated outputs			16	16	24	24	24	24
Output type			Relay	Transistor (source)	Relay	Relay	Transistor (source)	Transistor (source)
Switching voltage (max.)			Generally for relay version: <264 V AC, <30 V DC; for transistor version: 5–30 V DC					
Max. output current	- per output	A	2	0.5	2	2	0.5	0.5
	- per group *	A	8	0.8/1.6 ^②	8	8	0.8/1.6 ^②	0.8/1.6 ^②
Max. switching power	- inductive load	W	80	12	80	80	12	12
Response time	ms		10	<0.2	10	10	<0.2	<0.2
Life of contacts (switching times) ^①			For all extension units of the MELSEC FX2N series: 3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA (for relay output only)					
Mechanical data								
Weight	kg		0.65	0.65	0.85	0.85	0.85	0.85
Dimensions (WxHxD)	mm		150x90x87	150x90x87	182x90x87	182x90x87	182x90x87	182x90x87
Order information	Art. no.		65568	65569	66633	65571	66634	65572

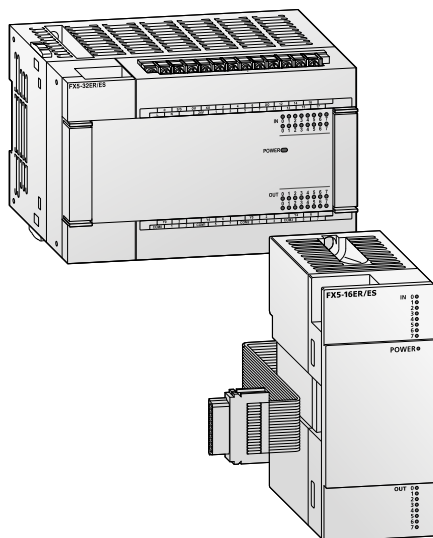
① Not guaranteed by Mitsubishi Electric

② 0.8 for 4 per group and 1.6 for 8 per group

* This limitation applies only per reference terminal for each group. Please observe the terminal assignments for the group identification.

■ Powered extension units

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



Powered input/output modules FX5

The powered input/output modules of the FX5 series are available with AC or DC power supply. They can be used in a system with a FX5U or FX5UC CPU module. Both relay and transistor output types are available.

- LEDs for indicating the input and output status
- MELSEC FX5U and FX5UC series compatible
- Detachable terminal blocks
- AC powered I/O modules with integrated service power supply with 310 mA

Specifications		FX5-16 ER/ES	FX5-16 ET/ES	FX5-16 ET/ESS	FX5-32 ER/DS	FX5-32 ET/DS	FX5-32 ET/DSS	FX5-32 ER/ES	FX5-32 ET/ES	FX5-32 ET/ESS
Electrical data										
Integrated inputs/outputs		16	16	16	32	32	32	32	32	32
Power supply	AC range (+10 %, -15 %)				—	—	—	100–240 V	100–240 V	100–240 V
	Frequency at AC	Hz			—	—	—	50/60	50/60	50/60
	DC range (+20 %, -30 %)				24 V	24 V	24 V	—	—	—
Max. input apparent power	W				25	25	25	25	25	25
Inrush current at ON	24 V DC		—		50 A <0.5 ms	50 A <0.5 ms	50 A <0.5 ms	—	—	—
	100 V AC			—	—	—	30 A <5 ms	30 A <5 ms	30 A <5 ms	
	200 V AC			—	—	—	65 A <5 ms	65 A <5 ms	65 A <5 ms	
Allowable momentary power failure time	ms				5	5	5	10 ^②	10 ^②	10 ^②
External service power supply (24 V DC)	mA				—	—	—	310	310	310
Power supply int. bus (5 V DC)	mA				965	965	965	965	965	965
Inputs										
Integrated inputs		8	8	8	16	16	16	16	16	16
Input type		Sink/source	Sink/source	Sink/source	Sink/source	Sink/source	Sink/source	Sink/source	Sink/source	Sink/source
Input signal voltage		24 V DC +20 %, -15 %	24 V DC +20 %, -15 %	24 V DC +20 %, -15 %	24 V DC +20 %, -15 %	24 V DC +20 %, -15 %	24 V DC +20 %, -15 %	24 V DC +20 %, -15 %	24 V DC +20 %, -15 %	24 V DC +20 %, -15 %
Min. current for logical 1	mA	3	3	3	3	3	3	3	3	3
Max. current for logical 0	mA	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Response time		Hardware filter delay: ON: 50 µs or less; OFF: 150 µs or less Digital filter setting value: 10 ms (initial value), adjustable from 10 µs to 70 ms								
Outputs										
Integrated outputs		8	8	8	16	16	16	16	16	16
Output type		Relay	Transistor (sink)	Transistor (source)	Relay	Transistor (sink)	Transistor (source)	Relay	Transistor (sink)	Transistor (source)
Switching voltage (max.)		≤30 V DC, ≤240 V AC	5–30 V DC	5–30 V DC	≤240 V AC, ≤30 V DC	5–30 V DC	5–30 V DC	≤240 V AC, ≤30 V DC	5–30 V DC	5–30 V DC
Max. output current	- per output	A	2	0.5	2	0.5	0.5	2	0.5	0.5
	- per group *	A	8	0.8/1.6 ^③	8	0.8/1.6 ^③	0.8/1.6 ^③	8	0.8/1.6 ^③	0.8/1.6 ^③
Response time	ms	10	≤0.2	≤0.2	10	≤0.2	≤0.2	10	≤0.2	≤0.2
Life of contacts (switching times) ①		3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA	—	—	3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA	—	—	3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA	—	—
Mechanical data										
Weight	kg	0.25	0.25	0.25	0.65	0.65	0.65	0.65	0.65	0.65
Dimensions (WxHxD)	mm	40x90x83	40x90x83	40x90x83	150x90x83	150x90x83	150x90x83	150x90x83	150x90x83	150x90x83
Order information	Art. no.	304652	304653	304654	297439	297440	297441	280506	280507	280508

① Not guaranteed by Mitsubishi Electric

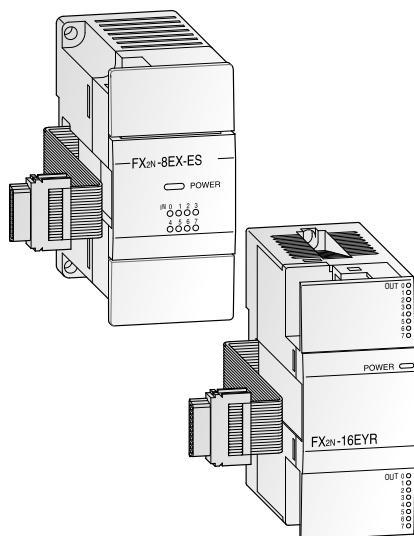
② Adjustable from 10 to 100 ms when the supply voltage is 200 V AC

③ 0.8 A for 4 outputs per group and 1.6 A for 8 outputs per group

* This limitation applies only per reference terminal for each group. Please observe the terminal assignments for the group identification..

■ Unpowered extension modules

□ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC □ FX5U □ FX5UC



Extension blocks FX2N

The FX2N series modular extension blocks are available with 8 or 16 input/output points. It is possible to choose between relay and transistor output type.

- LEDs for indicating the input and output status
- MELSEC FX3G/FX3GC/FX3GE and FX3U series compatible
- Very compact dimensions
- Vertically terminal blocks with a cable guide to the upper or lower side

3

Extension modules

Specifications		FX2N-8 ER-ES/UL	FX2N-8 EX-ES/UL	FX2N-8 EYR-ES/UL	FX2N-8 EYT-ESS/UL	FX2N-16 EX-ES/UL	FX2N-16 EYR-ES/UL	FX2N-16 EYT-ESS/UL	
Electrical data									
Integrated inputs/outputs		8	8	8	8	16	16	16	
Nbr. of occupied I/O points in the PLC		16	8	8	8	16	16	16	
Power supply		All modular extension blocks are supplied by the base unit.							
Inputs									
Integrated inputs		4	8	—	—	16	—	—	
Min. current for logical 1	mA	3.5	3.5	—	—	3.5	—	—	
Max. current for logical 0	mA	1.5	1.5	—	—	1.5	—	—	
Response time		For all extension blocks of the MELSEC FX2N series: 10 ms (at time of shipment)							
Outputs									
Integrated outputs		4	—	8	8	—	16	16	
Output type		Relay	—	Relay	Transistor	—	Relay	Transistor (source)	
Switching voltage (max.)		Generally for relay version: <240 V AC, <30 V DC; for transistor version: 5–30 V DC							
Max. output current	- per output	A	2	—	2	0.5	—	2	0.5
	- per group ①	A	8	—	8	0.8	—	8	1.6
Max. switching power	- inductive load	VA	80	—	80	12	—	80	12
Response time	ms	10	10	10	<0.2	—	10	<0.2	
Life of contacts (switching times) ②		For all extension units of the MELSEC FX2N series: 3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA (for relay output only)							
Mechanical data									
Weight	kg	0.2	0.2	0.2	0.2	0.3	0.3	0.3	
Dimensions (WxHxD)	mm	43x90x87	43x90x87	43x90x87	43x90x87	40x90x87	40x90x87	40x90x87	
Order information									
Art. no.		166285	166284	166286	166287	65776	65580	65581	

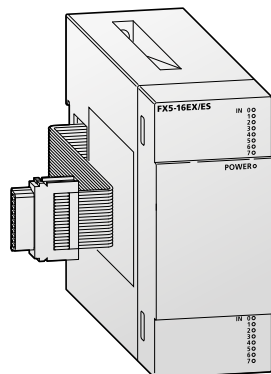
① This limitation applies only per reference terminal for each group. Please observe the terminal assignments for the group identification.

② Not guaranteed by Mitsubishi Electric

Note: To connect these modules to a FX3GC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required.

Unpowered extension modules

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



Input/output modules FX5 (terminal block type)

The FX5 series I/O modules with terminal block can be connected to a FX5U CPU module directly. For the connection to a FX5UC CPU module a connector conversion module FX5-CNV-IFC or an extension power supply module FX5-C1PS-5V is required. Modules are available with 8 or 16 inputs/output points and relay or transistor output type.

The FX5-16ET/ES-H and the FX5-16ET-ESS-H are high-speed pulse input/output modules for frequencies up to 200 kpps.

- LEDs for indicating the input and output status
- MELSEC FX5U and FX5UC series compatible
- Photocoupler isolation for input terminals and transistor outputs, mechanical isolation for relay outputs
- Vertically terminal blocks with a cable guide to the upper or lower side

Specifications			High-speed pulse input/output modules		Input modules		Output modules							
			FX5-16ET/ES-H	FX5-16ET/ESS-H	FX5-8EX/ES	FX5-16EX/ES	FX5-8EYR/ES	FX5-8EYT/ES	FX5-8EYT/ESS	FX5-16EYR/ES	FX5-16EYT/ES	FX5-16EYT/ESS		
Electrical data														
Integrated inputs/outputs			16	16	8	16	8	8	8	16	16	16		
Power supply	5 V DC		Supplied internally		Supplied internally		Supplied internally							
	24 V DC		Supplied from service power supply or external power supply		Supplied from service power supply or external power supply		Supplied internally							
Current consumption	5 V DC	mA	100	100	75	100	75	75	75	100	100	100		
	24 V DC	mA	125 (82 ①)	125 (82 ①)	50	85	75	75	75	125	125	125		
Inputs														
Integrated inputs			8	8	8	16	—							
Input type			Sink/source	Sink/source	Sink/source	Sink/source								
Input signal voltage			24 V DC +20 %, -15 %		24 V DC +20 %, -15 %									
Min. current for logical 1			mA	3.5	3.5	3.0						3.0		
Max. current for logical 0			mA	1.5	1.5	1.5						1.5		
Response time			X0 to X5: ON: ≤2.5 μs; OFF: ≤2.5 μs X6, X7: ON: ≤30 μs; OFF: ≤50 μs		ON: ≤50 μs; OFF: ≤150 μs									
Outputs														
Integrated outputs			8	8	—		8	8	8	16	16	16		
Output type			Transistor (sink)	Transistor (source)			Relay	Transistor (sink)	Transistor (source)	Relay	Transistor (sink)	Transistor (source)		
Switching voltage (max.)			5–30 V DC				5–30 V DC		5–30 V DC		5–30 V DC		5–30 V DC	
Max. output current	- per output	A	0.5	0.5			2	0.5	0.5	2	0.5	0.5		
	- per group *	A	1.6 ②	1.6 ②			8	0.8 ③	0.8 ③	8	1.6 ②	1.6 ②		
Response time			ms				Y0, Y1, Y4, Y5: ≤2.5 μs Y2, Y3, Y6, Y7: ≤0.2 ms		3,000,000 at 20 VA; 1,000,000 at 35 VA; 200,000 at 80 VA		—		—	
Mechanical data														
Weight	kg	0.25	0.25	0.25	0.25	0.2	0.2	0.2	0.25	0.25	0.25			
Dimensions (WxHxD)	mm	40x90x83	40x90x83	40x90x83	40x90x83	40x90x83	40x90x83	40x90x83	40x90x83	40x90x83	40x90x83			
Order information														
Art. no.	297442	297443	280498	280505	280499	280500	280501	280502	280503	280504				

① Current consumption when external power supply is used for the input circuit.

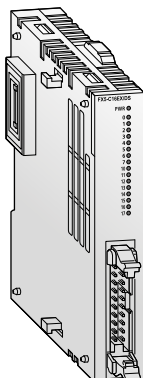
② 1.6 A for 8 outputs per group

③ 0.8 A for 4 outputs per group

* This limitation applies only per reference terminal for each group. Please observe the terminal assignments for the group identification.

Unpowered extension modules

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



Input/output modules FX5 (connector type)

The connector type FX5 series I/O modules can be directly connected to an FX5UC CPU module. For the connection to an FX5U CPU module a connector conversion module FX5-CNV-IF is required. Modules are available with 16 or 32 inputs/output points.

- Very compact dimensions
- LEDs for indicating the input and output status
- MELSEC FX5U and FX5UC series compatible
- Photocoupler isolation for input terminals and transistor outputs
- Terminal modules for the conversion of connector-type I/O terminals into terminal blocks are available

Specifications			Input/output modules		Input modules				Output modules					
			FX5-C32ET/D	FX5-C32ET/DSS	FX5-C16EX/D	FX5-C16EX/DS	FX5-C32EX/D	FX5-C32EX/DS	FX5-C16EYT/D	FX5-C16EYT/DSS	FX5-C32EYT/D	FX5-C32EYT/DSS		
Electrical data														
Integrated inputs/outputs			32	32	16	16	32	32	16	16	32	32		
Power supply			5 V DC	Supplied internally		Supplied internally		Supplied internally		Supplied internally				
			24 V DC	Input connector: Supplied from service power supply or external power supply Output connector: Supplied internally		Supplied from service power supply or external power supply		Supplied internally		Supplied internally				
Current consumption			5 V DC	mA	120	120	100	100	100	100	100	120	120	
			24 V DC	mA	Input connector: 65 Output connector: 100 ①		65	65	130	130	100	100	200	200
Inputs														
Integrated inputs			16	16	16	16	32	32	—					
Input type			Sink	Sink/source	Sink	Sink/source	Sink	Sink/source						
Input signal voltage			24 V DC +20 %, -15 %		24 V DC +20 %, -15 %		24 V DC +20 %, -15 %							
Min. current for logical 1			mA	3.0	3.0	3.0	3.0	3.0						
Max. current for logical 0			mA	1.5	1.5	1.5	1.5	1.5						
Response time			ON: ≤50 µs; OFF: ≤150 µs		ON: ≤50 µs; OFF: ≤150 µs		ON: ≤50 µs; OFF: ≤150 µs							
Outputs														
Integrated outputs			16	16	—				16	16	32	32		
Output type			Transistor (sink)	Transistor (source)					Transistor (sink)	Transistor (source)	Transistor (sink)	Transistor (source)		
Switching voltage (max.)			5–30 V DC						5–30 V DC		5–30 V DC		5–30 V DC	
Max. output current			- per output	A					0.1	0.1	0.1	0.1		
			- per group *	A					0.8 ②	0.8 ②	0.8 ②	0.8 ②		
Response time			ms	≤0.2 ms	≤0.2 ms			≤0.2	≤0.2	≤0.2	≤0.2			
Mechanical data														
Weight			kg	0.15	0.15	0.1	0.1	0.15	0.15	0.1	0.1	0.15	0.15	
Dimensions (WxHxD)			mm	20.1x90x53	20.1x90x53	14.6x90x53	14.6x90x53	20.1x90x53	20.1x90x53	14.6x90x53	14.6x90x53	20.1x90x53	20.1x90x53	
Order information														
Art. no.			283533	283534	294582	294583	283531	283532	294584	294585	283555	283556		

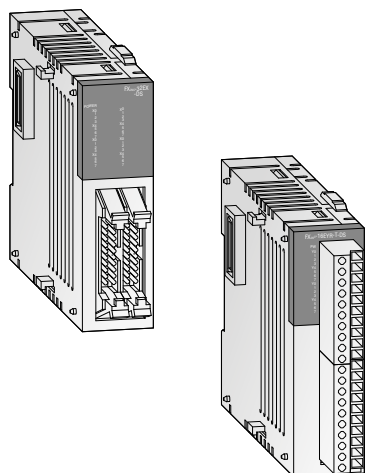
① Current consumption when external power supply is used for the input circuit.

② 0.8 A per COM /+V terminal

* This limitation applies only per reference terminal for each group. Please observe the terminal assignments for the group identification.

Unpowered extension modules

☐ FX3S
 ☐ FX3G
 ☒ FX3GC
 ☐ FX3GE
 ☐ FX3U
 ☒ FX3UC
 ☐ FX5U
 ☐ FX5UC



The modular extension units of the FX2NC series can be used in combination with FX3GC or FX3UC series base units. They are available with 16 or 32 input/output points. For modules with 16 outputs it is possible to choose between relay and transistor output type.

- Very compact dimensions
- LEDs for indicating the input and output status
- Removable terminal blocks for FX2NC-16EYR-T-DS and FX2NC-16EX-T-DS (interchangeable against optional spring terminal blocks)
- Adapter modules and system cabling sets are optionally available for units with ribbon cable connectors (transistor output types)

Specifications		FX2NC-16 EX-T-DS	FX2NC-16 EYR-T-DS	FX2NC-16 EX-DS	FX2NC-16 EYT-DSS	FX2NC-32 EX-DS	FX2NC-32 EYT-DSS
Electrical data							
Integrated inputs/outputs		16	16	16	16	32	32
Power supply		All modular extension blocks are supplied by the base unit.					
Inputs							
Integrated inputs		16	—	16	—	32	—
Input current X0→X7 / X10→∞		7/5	—	7/5	—	7/5	—
Min. current for logical 1 X0→X7/X10→∞	mA	4.5/3.5	—	4.5/3.5	—	4.5/3.5	—
Max. current for logical 0	mA	1.5	—	1.5	—	1.5	—
Isolation		Photocoupler isolation between input terminals and PC power for all base units					
Response time		For all extension units of the MELSEC FX2NC series: 10 ms (at time of shipment), partly adjustable between 0 and 60 ms in 1 ms steps (REF, FNC51 = 0–60 ms)					
Outputs							
Integrated outputs		—	16	—	16	—	32
Output type		—	Relay	—	Transistor	—	Transistor
Switching voltage (max.)	V	Generally for relay version: <240 V AC, <30 V DC; for transistor version: 5–30 V DC					
Max. output current	- per output - per group*	A	—	2	—	0.1/0.3 ①	0.1/0.3①
		A	—	4/8	—	0.8	0.8
Max. switching power	- inductive load - lamp load	VA	—	80	—	2.4/7.2 ②	2.4/7.2②
		W	—	100	—	0.3/0.9 ③	0.3/0.9③
Response time	ms	—	10	—	<0.2	—	<0.2
Life of contacts (switching times)		—	like base unit	—	—	—	—
Mechanical data							
Connection type		Removable screw terminal blocks		Ribbon cable connector	Ribbon cable connector	Ribbon cable connector	Ribbon cable connector
Weight	kg	0.2	0.2	0.15	0.2	0.2	0.2
Dimensions (WxHxD)	mm	20.2x90x89	24.2x90x89	14.6x90x87	14.6x90x87	26.2x90x87	26.2x90x87
Order information							
Art. no.		128152	128153	104503	104504	104505	104506

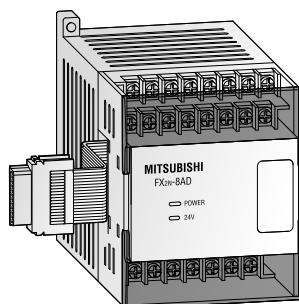
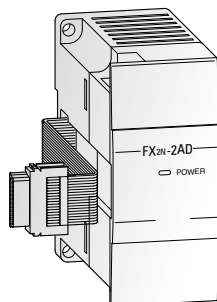
① 0.3 A for Y0 to Y1; 0.1 A all others ② 7.2 W for Y0 to Y3; 2.4 W all others ③ 0.9 W for Y0 to Y3; 0.3 W all others

* This limitation applies only per reference terminal for each group. Please observe the terminal assignments for the group identification.

Note: These modules can be combined with PLC base units of the FX3GC or FX3UC series!

Analog input modules

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC



The analog input modules provide the user with 2 to 8 analog inputs.

The module converts analog process signals into digital values which are further processed by the base unit.

The actual values or mean values over several measurements may be output.

The FX5-8AD supports the logging function for up to 10,000 values per channel and the offset/gain adjustment via the programming software.

Specifications	FX2N-2AD	FX3U-4AD	FX3UC-4AD	FX2N-8AD	FX5-8AD
Applicable for	Base units FX3G/FX3GC/FX3GE/ FX3U/FX3UC	Base units FX3G/FX3GC/FX3GE/ FX3U/FX3UC/ FX5U/FX5UC	Base units FX3G/FX3GC/FX3GE/ FX3U/FX3UC	Base units FX3G/FX3GC/FX3GE/ FX3U/FX3UC/FX5U/ FX5UC	Base units FX5U/ FX5UC
Analog channels	Inputs: 2 Outputs: —	Inputs: 4 Outputs: —	Inputs: 4 Outputs: —	Inputs: 8 Outputs: —	Inputs: 8 Outputs: —
Analog input range	0—+10 V DC/ 0—+5 V DC/ 0/4—+20 mA	-10—+10 V DC/ -20—+20 mA/ 4—+20 mA	-10—+10 V DC/ -20—+20 mA/ 4—+20 mA	-10—+10 V DC/ -20—+20 mA/ 4—+20 mA	-10—+10 V DC/ -20—+20 mA/ Temperature detector (K, J, T, B, R, S, Pt100, Ni100) ②
Resolution	Voltage: 2.5 mV, 1.25 mV/ Current: 4 µA (12 bit)	0.32 mV (16 bit + sign) 1.25 µA (15 bit + sign)	0.32 mV (16 bit + sign) 1.25 µA (15 bit + sign)	0.63 mV (14 bit + sign) 2.5 µA (13 bit + sign)	0.3125 mV (16 bit + sign) 0.625 µA (16 bit + sign)
Fullscale overall accuracy	±1 %	±0.3–1 % ①	±0.3–1 % ①	±0.3–0.5 % ①	±0.3–±0.5 %
Power supply	5 V DC: 20 mA (from base unit) 24 V DC: 50 mA (from base unit)	110 mA (from base unit)	100 mA (from base unit)	50 mA (from base unit)	100 mA (from external) 40 mA (from base unit)
Related I/O points	8	8	8	8	8
Weight	kg 0.3	kg 0.2	kg 0.13	kg 0.4	kg 0.3
Dimensions (WxHxD)	mm 43x90x87	mm 55x90x87	mm 20.2x90x79	mm 75x105x75	mm 50x90x83
Order information	Art. no. 102869	169508	210090	129195	312297

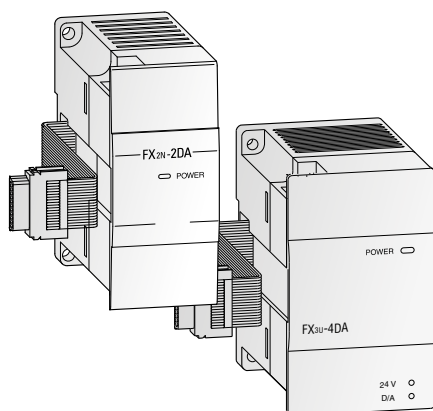
① Dependent on the ambient temperature

② Please refer to manuals for further details of specification of temperature detectors.

Notes: The FX2N-8AD can be configured to accept standard analog inputs as well as selected temperature inputs such as K, T or J type thermocouples. To connect these modules to a FX3UC or FX3GC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required.

Analog output modules

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC



The analog output modules provide the user with 2 to 4 analog outputs. The modules convert digital values from the FX3G/FX3GC/FX3GE/

FX3U/FX3UC controller to the analog signals required by the process. The module can output both current and voltage signals.

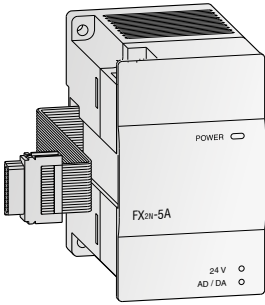
Specifications	FX2N-2DA	FX3U-4DA
Applicable for	Base units FX3G/FX3GC/FX3GE/FX3U/FX3UC	Base units FX3G/FX3GC/FX3GE/FX3U/FX3UC/FX5U/FX5UC
Analog channels	Inputs: — Outputs: 2	Inputs: — Outputs: 4
Analog output range	0—+10 V DC/ 0—+5 V DC/ 4—+20 mA	-10—+10 V DC/ 0—+20 mA/ 4—+20 mA
Resolution	Voltage: 2.5 mV (12 bit) Current: 4 µA (12 bit)	0.32 mV (16 bit + sign) 0.63 µA (15 bit)
Fullscale overall accuracy	±1 %	±0.3–0.5 %*
Power supply	5 V DC: 30 mA (from base unit) 24 V DC: 85 mA (from base unit)	160 mA
Related I/O points	8	8
Weight	kg 0.3	kg 0.2
Dimensions (WxHxD)	mm 43x90x87	mm 55x90x87
Order information	Art. no. 102868	169509

* Dependent on the ambient temperature

Note: To connect these modules to a FX3UC or FX3GC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required.

■ Combined analog I/O module

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



The analog input/output module provides the user with 4 analog inputs and 1 analog output. It serves for conversion of analog process signals into digital values, and vice versa.

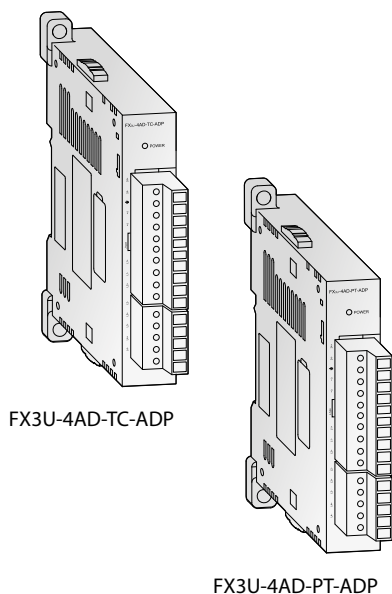
For the analog inputs it can be selected between current or voltage input signal.

Specifications		FX2N-5A
Analog channels	Inputs	4
	Outputs	1
Input (resolution)	Voltage	-10—+10 V (15 bit + sign), -100—+100 mV (11 bit + sign)
	Current	-20—+20 mA (14 bit + sign), 0/4—+20 mA (14 bit)
Output (resolution)	Voltage	-10—+10 V (12 bit)
	Current	0/4—+20 mA (10 bit)
Fullscale overall accuracy		±0.3—1 %*
Power supply	5 V DC	70 mA (from base unit)
	24 V DC	90 mA
Related I/O points		8
Weight		kg 0.3
Dimensions (WxHxD)		mm 55x90x87
Order information		Art. no. 153740

Note: To connect the module to a FX3UC or FX3GC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required.

Analog temperature input adapters

☒ FX3S
 ☒ FX3G
 ☒ FX3GC
 ☒ FX3GE
 ☒ FX3U
 ☒ FX3UC
 ☐ FX5U
 ☐ FX5UC



FX3U-4AD-TC-ADP

FX3U-4AD-PT-ADP

The analog input adapters for thermocouples are used for processing temperatures. They have 4 independent inputs for detecting signals from thermocouples of various types.

The FX3U/FX5U-4AD-PT-ADP, FX3U-4AD-PTW-ADP and FX3U-4AD-PNK-ADP analog input adapters enable the connection of up to four resistance thermometers to the PLC system.

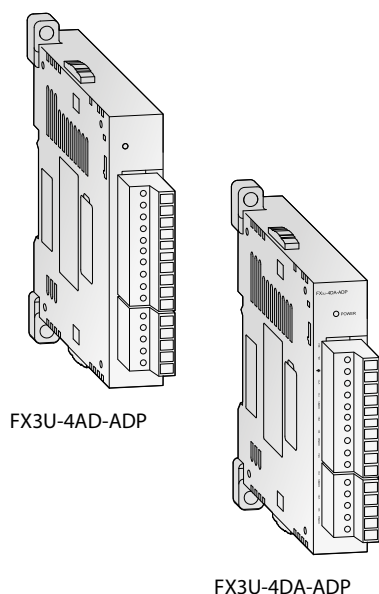
Specifications	FX3U-4AD-TC-ADP	FX3U-4AD-PT-ADP	FX3U-4AD-PTW-ADP	FX3U-4AD-PNK-ADP	FX5-4AD-PT-ADP	FX5-4AD-TC-ADP
Applicable for	Base units FX3S, FX3G, FX3GC, FX3GE, FX3U, FX3UC				Base units FX5U, FX5UC	
Analog inputs	4 (thermocouples, J or K type)	4 (Pt100)	4 (Pt100)	4 (Pt1000 or Ni1000)	4	4
Compensated temperature range °C	-100—+600 (J)/ -100—+1000 (K)	-50—+250	-100—+600	-50—+250 (Pt1000)/ -40—+110 (Ni1000)	-200—+850 (Pt100)/ -60—+250 (Ni100)	-40—+750 (J)/ -200—+1200 (K)/ 0—1600 (R, S)
Digital outputs	-1000—+6000 (J)/ -1000—+10000 (K)	-500—+2500	-1000—+6000	-500—+2500 (Pt1000)/ -400—+1100 (Ni1000)	-2000—+8500 (Pt100)/ -600—+2500 (Ni100)	-400—+7500 (J)/ -2000—+12000 (K)/ 0—16000 (R, S)
Resolution °C	0.3 (J)/0.4 (K)	0.1	0.2—0.3	0.1	0.1	0.1 (K, J, T), 0.1—0.3 (R, S)
Fullscale overall accuracy	±0.5 % (fullscale)	±0.5—1.0 % (fullscale)*			±0.4—2.4 °C (fullscale)*	
Power supply	5 V DC	15 mA (from base unit)	15 mA (from base unit)	15 mA (from base unit)	10 mA	10 mA
	24 V DC	45 mA	50 mA	50 mA	20 mA	20 mA
Related I/O points	0	0	0	0	0	0
Weight	kg	0.1	0.1	0.1	0.1	0.1
Dimensions (WxHxD)	mm	17.6x90(106)x89.5				17.6x90(106)x74(89.1)
Order information		Art. no.	165273	165272	214173	214172
					304298	304299

* Dependent on the ambient temperature

Notes: When connecting the FX3 analog adapters to a FX3G, FX3S or FX3U base unit, a communications adapter is required. A direct connection without adapter is possible if these modules are connected to a FX3GC, FX3GE or FX3UC base unit.

Analog I/O adapters

☒ FX3S
 ☒ FX3G
 ☒ FX3GC
 ☒ FX3GE
 ☒ FX3U
 ☒ FX3UC
 ☐ FX5U
 ☐ FX5UC



FX3U-4AD-ADP

FX3U-4DA-ADP

The analog input adapter FX3U-4AD-ADP is mounted on the left side of the base unit and extends a controller of the FX3 series with 4 analog inputs.

The analog output adapter FX3U-4DA-ADP is mounted on the left side of a FX3 series base unit and provides four analog outputs.

The analog input/output module FX3U-3A-ADP provides the user with two analog inputs and one analog output.

Specifications	FX3U-4AD-ADP	FX3U-4DA-ADP	FX3U-3A-ADP
Analog channels	Inputs	4	2
	Outputs	—	1
Analog range	0—+10 V DC, 4—+20 mA	0—+10 V DC, 4—+20 mA	0—+10 V CC, 4—+20 mA
Resolution	2.5 mV/10 µA (12 bit/11 bit)	2.5 mV/4 µA (12 bit)	2.5 mV/4 µA (12 bit)
Overall accuracy	±0.5 % */±1 %	±0.5 % */±1 %	±0.5—1 %*
Power supply	5 V DC	15 mA (from base unit)	20 mA (from base unit)
	24 V DC	40 mA	90 mA
Related I/O points	0	0	0
Weight	kg	0.1	0.1
Dimensions (WxHxD)	mm	17.6x90(106)x89.5	17.6x90x89.5
Order information		Art. no.	165241
			165271
			221549

* Dependent on the ambient temperature and signal quality

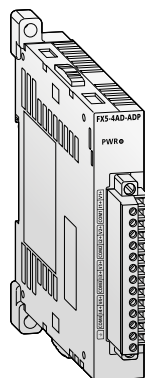
Notes: When connecting the analog adapters to a FX3G, FX3S or FX3U base unit, a communications adapter is required. A direct connection without adapter is possible if these modules are connected to a FX3GC, FX3GE or FX3UC base unit.

Analog I/O adapters

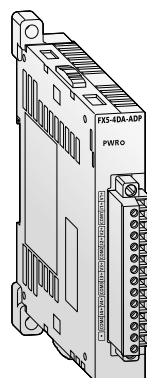
☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC

Up to four analog expansion adapters can be mounted on the left side of a FX5U CPU module or FX5UC CPU module.

A FX5-4AD-ADP provides four analog inputs and a FX5-4DA-ADP provides four analog outputs.



FX5-4AD-ADP



FX5-4DA-ADP

Specifications	FX5-4AD-ADP	FX5-4DA-ADP
Analog channels	4	—
Inputs	—	4
Outputs	—	4
Analog range	-10—+10 V DC, -20—+20 mA	-10—+10 V DC, 0—+20 mA
Resolution	312.5 μ V/1.125 μ A (14 bit)	250 μ V/1 μ A (14 bit)
Overall accuracy	$\pm 0.1\%$ */ $\pm 0.3\%$	$\pm 0.1\%$ */ $\pm 0.2\%$
Power supply	5 V DC	10 mA (from base unit)
	24 V DC	20 mA (from base unit)
Related I/O points	0	0
Weight	kg	0.1
Dimensions (WxHxD)	mm	17.6x90(106)x89.1
Order information	Art. no.	283559
		283560

* Dependent on the ambient temperature and signal quality

Temperature control modules

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC

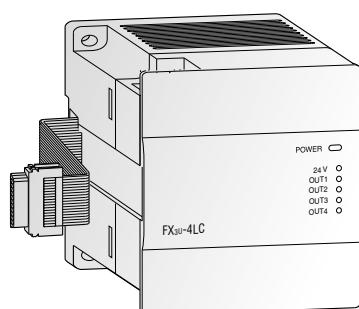
The temperature control module FX3U-4LC is equipped with four temperature input points and four transistor (open collector) output points. It is used to read temperature signals from thermocouples and Pt100 sensors, and performs PID output control.

The proportional band, the integral time and the derivative time can be easily set by auto tuning.

The channels are isolated against each other.

Self-diagnosis functions are provided, and the disconnection of heaters can be detected by current detection (CT).

The temperature control module FX5U-4LC supports parameter transfer/automatic refreshing. The spring clamp terminal enables compact size and enhances vibration resistance.

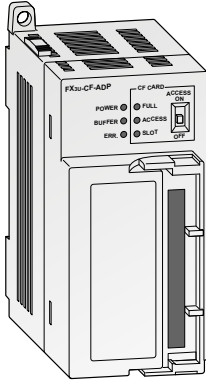


Specifications	FX3U-4LC	FX5U-4LC
Applicable for	Base units FX3G, FX3GC, FX3GE, FX3U, FX3UC, FX5U, FX5UC	Base units FX5U, FX5UC
Analog inputs	4 (Thermocouple and Pt100 sensors)	4 (Thermocouple, Pt100 and Pt1000 sensors)
Compensated temperature range	$^{\circ}\text{C}$ -200—+2300	-200—+2300
Digital outputs	4 NPN transistor open collector output points	4 NPN transistor open collector output points
Resolution	$^{\circ}\text{C}$ 0.1 or 1	0.1 or 1
Fullscale overall accuracy	± 0.3 — 0.7% (fullscale, dependent on the ambient temperature)	
Power supply	5 V DC	160 mA (from base unit)
	24 V DC	50 mA
Related I/O points	8	8
Dimensions (WxHxD)	mm	90x90x86
		60x90x83
Order information	Art. no.	232806
		312298

Note: To connect these modules to a FX3UC or FX3GC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required.

Data logger module

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



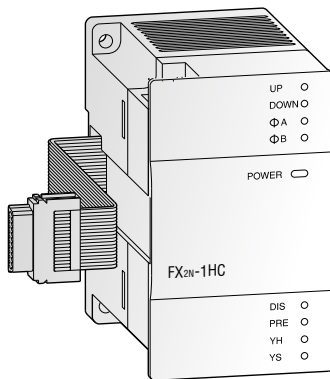
The FX3U-CF-ADP is a general purpose data logging adapter. The difference to other available logging units is that the PLC main unit controls the data logging based on user requirements, e.g. periodical or even based. For tracing a timestamp is automatically added to all data storages, that eases alarm and other time critical logging.

Another usage is the storage of bigger recipe data. A CompactFlash memory card up to 2 GB can be used. Six applied instructions allow all kinds of data writing, manipulation or reading, making this adapter the optimum solution towards customer requirements.

Specifications	FX3U-CF-ADP
Data access method	Controlled by the main unit, no polling from the logging unit possible.
Connectable units	A maximum of one FX3U-CF-ADP can be connected per PLC.
Time stamp function	The real time clock data of the base unit is used.
Recommended storage media	CompactFlash memory card (GT05-MEM-256MC, -512MC, -1GC, -2GC)
Max. file size	512 MB
File format	CSV
Max. numbers of files	63 (Plus one FIFO file.)
FIFO function	One pattern (The file name gets automatically generated.)
Power supply	24 V DC 130 mA
Related I/O points	kg 0
Dimensions (WxHxD)	mm 45x90x89.5
Order information	Art. no. 230104

High-speed counter modules

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC



In addition to the internal high-speed MELSEC FX counters, the high-speed counter modules FX2N-1HC, FX2NC-1HC and FX3U-2HC provide the user with an external counter. It counts 1- or 2-phase pulses up to a frequency of 200 kHz. The counting range covers either 16 or 32 bit.

The two integrated transistor outputs can be switched independently of one another by means of internal comparison functions. Hence, simple positioning tasks can also be realized economically. In addition, the modules can be used as a ring counter.

Specifications	FX2N-1HC	FX2NC-1HC*	FX3U-2HC
Applicable for	Base units FX3U/FX3UC	Base units FX3U/FX3UC	Base units FX3U/FX3UC/FX5U/FX5UC
Counter inputs	2 (1 phase) or 1 (2 phase)	2 (1 phase) or 1 (2 phase)	2 (1 phase) or 1 (2 phase)
Max. counting frequency	kHz 50	50	200/100/50
Signal level	5, 12, 24 V DC/7 mA	5, 12, 24 V DC/7 mA	5, 12, 24 V DC
Input format	bit 16, 32	16, 32	—
Type of counter	Up/down counter, ring counter	Up/down counter, ring counter	Up/down counter, ring counter
Counting range	16 bit 0–65535 32 bit –2147483648–+2147483647	0–65535 –2147483648–+2147483647	0–65535 –2147483648–+2147483647
Output type	2 x transistor (5–24 V DC; 0.5 A)	2 x transistor (5–24 V DC; 0.5 A)	2 x transistor (5–24 V DC; 0.5 A)
Power supply	5 V DC 24 V DC	90 mA (from base unit) —	90 mA (from base unit) 24 mA (from base unit)
Related I/O points	8	8	8
Weight	kg 0.3	0.13	0.08
Dimensions (WxHxD)	mm 55x90x87	20.2x90x89	55x90x87
Order information	Art. no. 65584	217916	232805

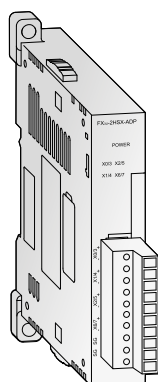
* The FX2NC 1HC can only be connected to a FX3UC base unit.

High-speed counter adapters

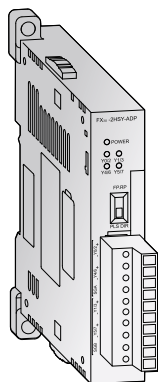
☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC

These adapter modules allow direct processing of positioning application data.

The FX3U-4HSX-ADP provide high speed counter inputs up to 200 kHz while the FX3U-2HSY-ADP delivers 2 channels of pulse train outputs up to 200 kHz.



FX3U-4HSX-ADP



FX3U-2HSY-ADP

Specifications	FX3U-4HSX-ADP	FX3U-2HSY-ADP
Maximum connectivity	2	2
Counter	Inputs Outputs	— 2
Max. counting frequency	Inputs kHz Outputs kHz	— 200
Input format	Differential line receiver (AM26C32 is suitable) Photocoupler isolation on inputs	—
Output format	—	Differential line driver (AM26C31 is suitable) Normal rotation pulse train, reverse pulse train or pulse train + direction signal
Maximum cable length	m	10
Input potential	5 V DC	—
Output load	—	less than 25 mA
Power supply	5 V DC 24 V DC	30 mA (from base unit) 60 mA (from base unit)
Related I/O points	0	0
Weight	kg	0.08
Dimensions (WxHxD)	mm	17.6x90(106)x89.5
Order information	Art. no.	165274

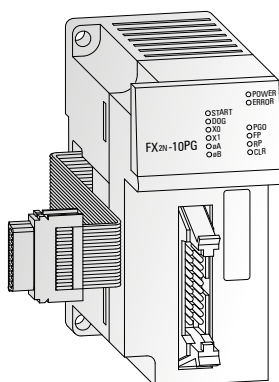
Note: The adapters FX3U-□-ADP can only be used with the FX3U and they require a function extension board.

Single-axis positioning modules

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC

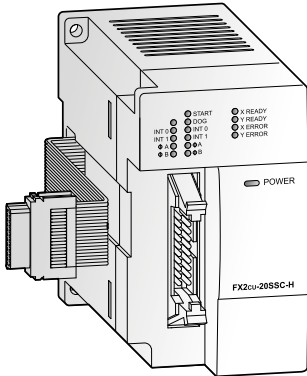
The positioning modules FX3U-1PG, FX2N-10PG and FX5-20PG-P are extremely efficient positioning modules for controlling either step drives or servo drives (by external regulator) with a pulse chain. They are very suitable for achieving accurate positioning in combination with the MELSEC FX series.

The configuration and allocation of the position data are carried out directly via the PLC program. A very wide range of manual and automatic functions are available to the user.



Specifications	FX3U-1PG	FX2N-10PG	FX5-20PG-P
Applicable for	Base units FX3U/FX3UC/ FX5U/FX5UC	Base units FX3U/FX3UC	Base units FX5U/FX5UC
Accessible axes	1	1	2
Output frequency	pulses/s	10–200 000	1–1 000 000
Signal level for digital inputs	24 V DC/40 mA	5 V DC/100 mA; 24 V DC/70 mA	24 V DC/5 mA
Power supply	5 V DC 24 V DC	150 mA (from base unit) —	120 mA (from base unit) —
Related I/O points	8	8	8
Weight	kg	0.3	0.2
Dimensions (WxHxD)	mm	43x90x87	50x90x83
Order information	Art. no.	259298	140113

Positioning module for SSCNETIII



☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC

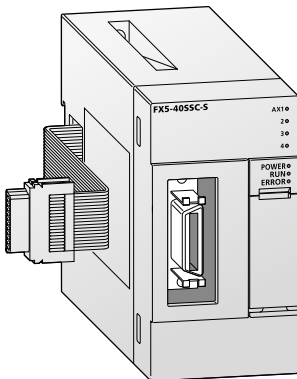
The SSCNET module FX3U-20SSC-H can be used in combination with a FX3U or FX3UC programmable controller to achieve a cost effective solution for high precision, high speed positioning. The plug-and-play fiber optic SSCNET cabling reduces setup time and increases control distance for positioning operations in a wide range of applications.

Servo parameters and positioning information for the FX3U-20SSC-H are easily set up with an FX3U/FX3UC base unit and a personal computer. For parameter setting, monitoring and testing the easy programming software FX Configurator-FP is available.

Specifications	FX3U-20SSC-H
Accessible axes	2 (independent or interpolation)
Output frequency	1 Hz to 50 MHz
Pulse output format	SSCNETIII (servo bus)
Communications speed	50 Mbps
Starting time	ms 1.6 (+1.7 SSCNET cycle time)
Max. to PLC connectable modules	Up to 8 can be connected to the FX3U PLC
Status displays	Power, module status, axis status, error
Power supply	5 V DC 100 mA 24 V DC —
Related I/O points	8
Weight	kg 0.3
Dimensions (WxHxD)	mm 55x90x87
Order information	Art. no. 231512

Notes: The FX3U-20SSC-H can be used in combination with a FX3U or FX3UC base unit only. Please refer to the Mitsubishi Electric MELSERVO catalog for suitable servo motors and amplifiers.

Simple Motion modules



☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC

The FX5-40SSC-S 4-axis and FX5-80SSC-S 8-axis Simple Motion modules complement the built-in positioning function of the FX5U or FX5UC* base unit. Similar to positioning modules, these Simple Motion modules are capable of a wide range of high-precision controls, such as positional control, advanced synchronous control, cam control and speed and torque control with setup of even complex motion control functions being done easily by parameters and programming.

The standard encoder signal interface and high-speed inputs for mark detection, for example, enable the system to be used in classical serial machines such as packaging and bottling lines or palletising systems without fitting additional optional modules. A function for automatically calculating the cam data for a rotary cutter application simply by entering the product length and the synchronization width is also included.

* For the connection to a FX5UC CPU module a connector conversion module FX5-CNV-IFC or an extension power supply module FX5-C1PS-5V is required.

Specifications	FX5-40SSC-S	FX5-80SSC-S
Number of controllable axes	4	8
Interpolation functions	Linear interpolation for up to 4 axes, circular interpolation for 2 axes	
Control system	PTP (Point To Point) control, Trajectory control (both linear and arc), Speed control, Speed-position switching control, Position-speed switching control, Speed-torque control	
Mark detection function	Regular mode, Specified Number of Detections mode, Ring Buffer mode; Mark detection signal: up to 4 points, mark detection setting: 16 settings	
Servo amplifier connection method	SSCNETIII/H	
Servo amplifier	MR-JE-B/MR-J4-B/MR-J4W2-B/MR-J4W3-B servo amplifier range	
Operation cycle	1.77 ms	1.77 ms
Power supply	5 V DC — 24 V DC 250 mA	— 250 mA
Related I/O points	8	8
Weight	kg 0.3	0.3
Dimensions (WxHxD)	mm 50x90x83	50x90x83
Order information	Art. no. 281405	304187

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC

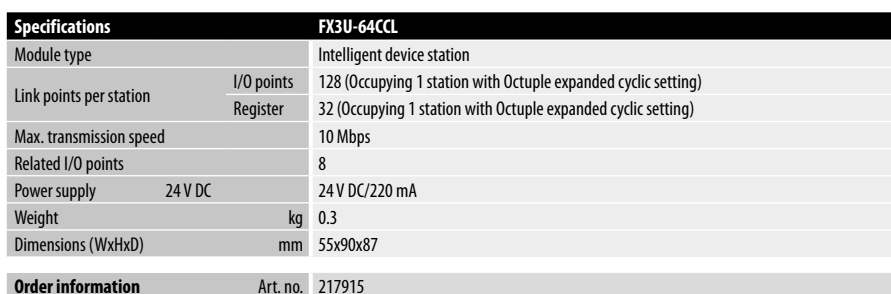
The setting of all modules within the network is handled directly via the master module.

The maximum communications distance is 1200 m without repeater.

- ① To connect these modules to a FX3UC or FX3GC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required.
More informations about CC-Link are available in various other publications from Mitsubishi Electric.
- ② Total of I/O points in base unit and extension units within the CC-Link network ≤ 384 .

Note : Please refer to manual for slave functionality.

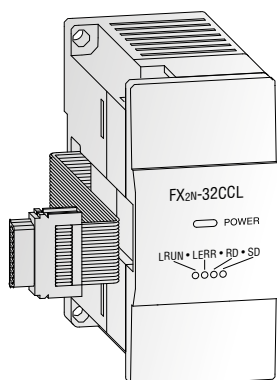
functionality, for example expanded cyclic transmission which facilitates handling of multiple data processes.



62

Network module for CC-Link

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



CC-Link communication module

The communication module FX2N-32CCL enables the user to connect to the CC-Link network with a superior PLC system as master CPU. This gives him access to the network of all MELSEC PLC systems and frequency inverters and to additional products from other suppliers.

Thus the network is expandable via the digital inputs/outputs of the FX modules to a maximum of 256 I/Os.

The buffer memory of the FX2N-32CCL is read and written by FROM/TO instructions.

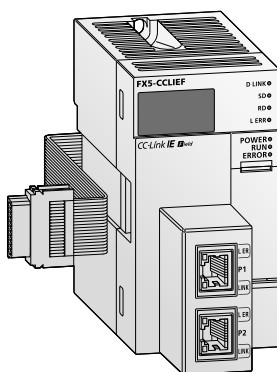
The connection is to the extension bus on the right side of the controller.

Specifications		FX2N-32CCL
Module type		Remote station
Link points per station	I/O points	32
	Register	8
Max. number of I/O points		—
Number of connectable modules		—
Power supply	5 V DC	Max. 130 mA (from base unit)
	24 V DC	50 mA
Related I/O points		8
Weight	kg	0.3
Dimensions (WxHxD)	mm	43x90x87
Order information		Art. no. 102961

Notes: To connect this module to a FX3UC or FX3GC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required. More informations about CC-Link are available in various other publications from Mitsubishi Electric.

Network module for CC-Link IE Field

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



CC-Link IE Field is a high speed (1Gbps), high capacity open field network using Ethernet (1000BASE-T).

FX5-CCLIEF is an intelligent function module to connect a FX5U or FX5UC* CPU module as an intelligent device station to a CC-Link IE Field network.

Data between the FX5 CPU module and the FX5-CCLIEF can be sent/received through the buffer memory using instructions in the program. The data can also automatically exchanged with the auto refresh function and used in a program.

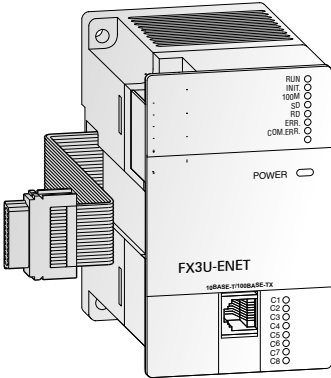
* For the connection to a FX5UC CPU module a connector conversion module FX5-CNV-IFC or an extension power supply module FX5-C1PS-5V is required.

Specifications		FX5-CCLIEF
Station type		Intelligent device station
Communication speed		1 Gbps
Max. number of I/O points	RX	384 points, 48 bytes
	RY	384 points, 48 bytes
	RWr	1024 points, 2048 bytes ^①
	RWw	1024 points, 2048 bytes ^①
Power supply	5 V DC	10 mA
	24 V DC	230 mA (external power supply)
Related I/O points		8
Weight	kg	0.3
Dimensions (WxHxD)	mm	50x90x103
Order information		Art. no. 297444

① 256 points (512 bytes) when the master station is in high-speed mode.

■ Network module for Ethernet

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



Ethernet communications module

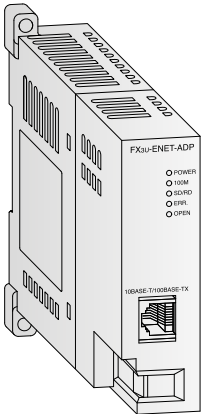
The FX3U-ENET communications module provides the FX3G, FX3GE, FX3U or FX3UC with a direct connection on to an Ethernet network. With the FX3U-ENET installed an FX3G/FX3GE/ FX3U/FX3UC PLC can exchange data quickly and easily with process visualization systems in addition to supporting full program UP/DOWN load as well as comprehensive monitoring support. The module also supports Peer to Peer connection and MC Protocol. It is easily set-up with the FX Configurator-EN software.

Specifications	FX3U-ENET/FX3U-ENET-P502
Protocol	TCP/IP, UDP
Communication mode	Full-duplex/half-duplex
No. of simultaneous open connections	8
Fixed buffer communication	1023 word x 8
Communication with mail server	SMTP, POP3
Interface	IEEE802.3u (100BaseTX), IEEE802.3 (10BaseT)
Connector	RJ45
Max. transfer rate	100 Mbits/s, 10 Mbit/s
Max. segment length	m 100
Cable	CAT5 STP or 3 STP
Power supply	5 V DC 24 V DC
Related I/O points	240 mA (from base unit)
Weight	kg 0.3
Dimensions (WxHxD)	mm 55x90x87
Order information	Art. no. 166086/225142

Note: To connect this module to a FX3UC base unit, an adapter FX2N-CNV-IF or a power supply FX3UC-1PS-5V is required.

■ Network module for Ethernet

☒ FX3S ☒ FX3G ☒ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



Ethernet communications adapter

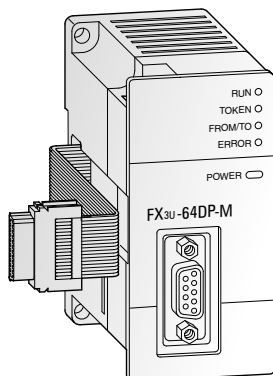
The FX3U-ENET-ADP communications adapter is an Ethernet interface with 10BASE-T specifications for the FX3G, FX3GC, FX3S or FX3U series. The FX3U-ENET-ADP enables upload, download, monitor and test sequence of programs via Ethernet from a personal computer (GX Works2 or MX Components have to be installed).

Specifications	FX3U-ENET-ADP
Protocol	TCP/IP
No. of simultaneous open connections	1
Interface	IEEE802.3u (100BaseTX), IEEE802.3 (10BaseT)
Connector	RJ45 (to Ethernet), 3 screw terminals (to ground)
Max. transfer rate	10 Mbit/s, 100 Mbit/s
Cable	CAT5 STP or 3 STP
Power supply	5 V DC 24 V DC
Related I/O points	30 mA (from base unit)
Weight	kg 0.1
Dimensions (WxHxD)	mm 23x90(106)x81.5
Order information	Art. no. 248844

Notes: This module can be connected directly (without adapter) to a base unit of the FX3GC or FX3UC series. To connect this module to a FX3G, FX3S or FX3U base unit, an adapter is required.

Network module for Profibus DP

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



Profibus DP master modul

The FX3U-64DP-M Profibus DP master module enables you to integrate a MELSEC FX3U or FX3UC PLC system as a class 1 master of a Profibus DP network.

This interface module provides your FX3U/ FX3UC base unit with an intelligent Profibus DP link for the implementation of decentralised control tasks.

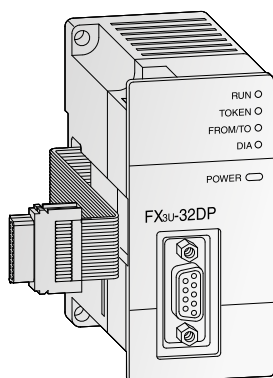
The FX3U Profibus DP master provides comprehensive data and alarm processing to the Profibus DP V1 standard. It is easily set up with the GX Configurator-DP software.

Specifications	FX3U-64DP-M
Module type	Master station
Transmission type	Bus network
Transmission data	32 byte/slave (normal service mode) 244 byte/slave (extended service mode)
Interface	Profibus DP (with 9 pole D-SUB connector)
Max. number of master per configuration	max. 1
Repeaters	3
Max. number of slaves	64
Communications speed	Profibus standard
Communications distance	m Max. 1200 (depends on communication speed)
Communication cable	Profibus cable with 9-pin D-SUB connector
Power supply	5 V DC 24 V DC
	— Max. 155 mA (from base unit)
Related I/O points	8
Weight	kg 0.2
Dimensions (WxHxD)	mm 43x90x87
Order information	Art. no. 166085
Accessories	Profibus connector up to 12 Mbaud: PROFICON-PLUS, art. no. 140008 or PROFICON-PLUS-PG, art. no. 140009

Notes: The FX3U-64DP-M can be used in combination with a FX3U or FX3UC base unit only. To connect this module to a FX3UC base unit, an adapter FX2NC-CNV-IF or a power supply FX3UC-1PS-5V is required.

Network module for Profibus DP

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



Profibus DP slave module

The FX3U-32DP Profibus DP slave module is available for FX3G, FX3GC, FX3GE, FX3U and FX3UC series main units and allows the attached FX main unit to function as a slave station on a Profibus DP-V1 network.

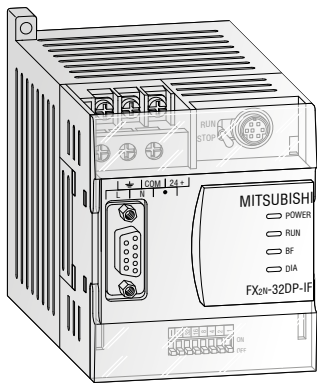
Profibus DP-V1 functionality supports extensive alarm processing and messaging on top of standard cyclic data exchange.

Specifications	FX3U-32DP
Module type	Slave station
Transmission type	Bus network
Transmission data	Max. 144 bytes
Interface	9-pin D-SUB for Profibus DP
Max. number of slave stations per configuration	8
Communication speed	5 V DC 24 V DC
	Max. 12 Mbit/s Max. 1200 (depends on communication speed)
Communication cable	Profibus cable with 9-pin D-SUB connector
Related I/O points	8
Power supply	24 V DC/145 mA (from base unit)
Weight	kg 0.2
Dimensions (WxHxD)	mm 43x90x89
Order information	Art. no. 194214

Note: To connect a FX3U-32DP to a FX3UC/FX3GC base unit, an adapter FX2NC-CNV-IF or a power supply FX3UC-1PS-5V is required.

■ Remote I/O station for Profibus DP

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



The remote I/O station FX2N-32DP-IF-D forms an extremely compact communication unit and provides a connection of I/O modules with up to 256 I/O points and/or up to 8 special function modules as an alternative.

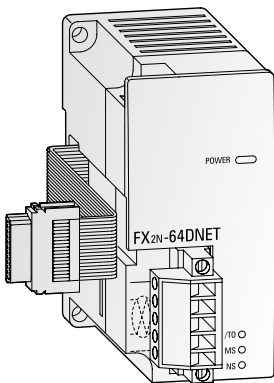
It features an entire electrical isolation of the Profibus DP connector and of the sensor/actuator circuits.

Profibus data such as the baud rate or I/O data can be monitored directly with the programming software or on the hand-held programming units FX-10P/FX-20P/FX-30P. This facilitates an easy error diagnosis directly on the remote I/O station.

Specifications		FX2N-32DP-IF-D
Power supply		24 V DC (+20 %/-30 %)
Power consumption		14 W
Internal current consumption		5 V DC/max. 220 mA (from base unit)
Interface (connectors)		9-pin D-SUB for Profibus DP, 8-pin Mini-DIN for PC or programming unit FX-10P/FX-20P/FX-30P
	1200 m	kbps 9.6/19.2/45.45/93.75
	1000 m	kbps 187.5
	400 m	kbps 500
	200 m	kbps 1500
	100 m	kbps 3000/6000/12000
Communication distance		m Max. 1200 (depends on communication speed)
Communication cable		Profibus cable with 9-pin D-SUB connector
Max. number of controllable I/O points		256
Weight		kg 0.4
Dimensions (WxHxD)		mm 75x98x87
Order information		Art. no. 142763

■ Network module for DeviceNet™

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



DeviceNet™ slave module

The DeviceNet™ slave module FX2N-64DNET can be used to connect FX3G, FX3GC, FX3GE and FX3U programmable controllers to a DeviceNet™ network.

The FX2N-64DNET can communicate to the master by the master/slave communication (using the master/slave I/O connection), and to

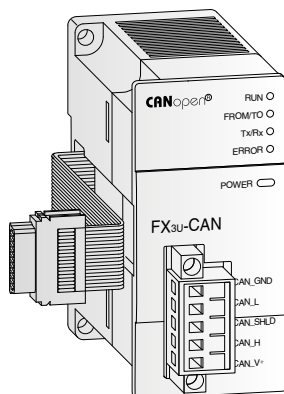
other nodes supporting the UCMM connection by client/server communication (using the UCMM connection).

The communication between the programmable controller and the internal buffer memory of the FX2N-64DNET is handled by FROM/TO instructions.

Specifications		FX2N-64DNET
Module type		Slave (group 2)
Node type		G2 server
Station numbers		0–63 points
Supported communication speeds		kbps 125/250/500
Communication data (open connection)	Master/slave	no. of connections 1 connection (group 2) transfer time-out 2,000 ms (ACK time-out)
	UCMM client/server	no. of connections 63/63 (group 1, 3) data length Max. 64 bytes per connection
		type Polling, cyclic, change of state data length Max. 64 bytes (fragmentation is possible)
Module ID code		K 7090
Status displays		Power, module status, network status
Related I/O points		8
Power supply	5 V DC	120 mA
	24 V DC	50 mA
Weight		kg 0.2
Dimensions (WxHxD)		mm 43x90x87
Order information		Art. no. 131708

Network module for CANopen

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC



CANopen master module FX3U-CAN

The FX3U-CAN communications module makes it possible to connect a FX3G, FX3GC, FX3GE, FX3U/FX3UC/FX5U or FX5UC PLC to an existing CANopen or CAN Layer-2 network.

In addition to real-time capabilities and high-speed data transfer at rates of up to 1 Mbit/s the CANopen module also shines with high transfer reliability and simple network configuration.

Up to 320 process data objects (PDOs) can be sent or received. With the supported PLC device profile CiA 405 it can be connected with any other CANopen device profile like for example Drives device profile CiA 402, I/O module device profile CiA 401 or Encoder device profile CiA 406.

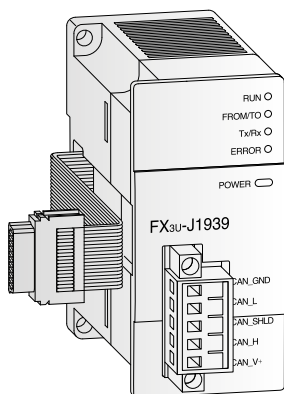
The CANopen® Lift application profile CiA 417 supports direct control of CANopen® lift devices like Call devices, Drive devices or Lift doors.

Specifications	FX3U-CAN
Module type	CANopen master
CANopen communication standard	CiA 301 V4.2, CiA 302 V4.1, CiA 305 V2.2
CANopen Lift application profile mode	CiA 417 V2.1
CANopen PLC device profile mode	CiA 405 V2.0
Max. number of modules that can be connected to the network	30 without repeater; 127 with repeater
Station numbers	1–127
Supported communication speeds	kbps 10, 20, 50, 125, 250, 500, 800, 1000
Status displays	RUN, Error, Power, Network status
Power supply	5 V DC 290 mA 24 V DC —
Related I/O points	8
Weight	kg 0.2
Dimensions (WxHxD)	mm 43x90x88.7
Order information	Art. no. 141179

Note: To connect this module to a FX3UC/FX3GC base unit, an adapter FX2NC-CNV-IF or a power supply FX3UC-1PS-5V is required.

Network module for J1939

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



The FX3U-J1939 communication module allows the connection of FX3G/FX3UC/FX3UC series PLCs to a J1939 network. J1939 is a CAN based protocol used for communication with motors, generators and compressors.

In a J1939 network are no master or slave stations. All nodes may receive each others' messages. Standard messages contain up to 8 bytes of data, extended messages contain up to 250 bytes of data.

Up to 75 standard messages and 4 extension messages can be sent and received.

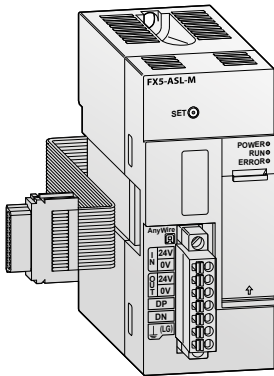
The FX3U-J1939 is compatible with CAN Layer 2 communication. In this mode, a FX3U-J1939 can send and receive up to 42 messages on a CAN network.

Specifications	FX3U-J1939
Communication standard version	J1939
Network node size	J1939: 2–30
Communication method	Cyclic, acyclic or request driven (user configurable)
CAN layer-2 communication	Send and receive
Max. cable length	m 5000
Baud rates	kbit/s 10, 20, 50, 100, 125, 250, 500, 800, 1000
Power supply	24 V DC/110 mA (from base unit)
Weight	kg 0.2
Dimensions (WxHxD)	mm 43x90x95
Order information	Art. no. 254276

Note: To connect this module to a FX3UC base unit, an adapter FX2NC-CNV-IF or a power supply FX3UC-1PS-5V is required.

AnyWireASLINK system master module

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC

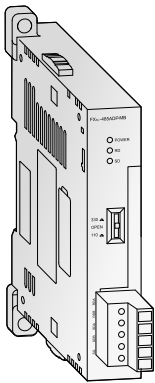


The FX5-ASL-M type AnyWireASLINK system master module is an intelligent function module for building an AnyWireASLINK sensor network.

Specifications	FX5-ASL-M
Module type	AnyWireASLINK system master module
Max.number of I/O points	384
Number of connectable modules	128
Power supply	5 V DC 200 mA 24 V DC 100 mA
Related I/O points	8
Weight	kg 0.2
Dimensions (WxHxD)	mm 40x90x83 (97.3 with connector)
Order information	Art. no. 312300

Modbus® & serial communication special adapter

☒ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



Active data module (RS485)

The addition of an active data interface module permits active communication between the PLC and surrounding devices.

FX3U-485ADP-MB also supports Modbus® RTU and Modbus® ASCII.

With RS485 communication can be configured as either 1:N multidrop, parallel link or peer to peer operation.

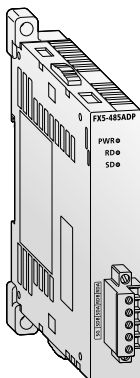
Specifications	FX3U-485ADP-MB
Interface	RS485; Modbus® RS485
Communication speed*	kbps 0.3–19.2
Max. communication distance	m 500
Power supply	5 V DC 20 mA (from base unit) 24 V DC —
Related I/O points	0
Dimensions (WxHxD)	mm 17.6x90(106)x74
Order information	Art. no. 206191

* The communication method and communication speed vary depending upon the communication type.

Notes: This adapter module can be connected directly (without special adapter) to a base unit of the FX3GC, FX3GE or FX3UC series. To connect this adapter module to a FX3G, FX3S or FX3U base unit, an adapter is required.

■ RS485 communication expansion adapter

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



Isolation type communication adapter FX5-485ADP

The expansion adapter FX5-485ADP expands a FX5U or FX5UC base unit by an additional RS485 port. Between the communication line and the base unit photocoupler isolation is used. With the FX5-485ADP the transmission distance can

be increased to 1200 m in contrast to 50 m with the built-in RS485 port or the FX5-485-BD.

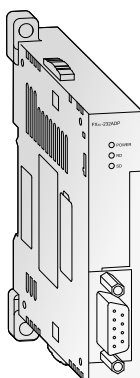
Up to two communication expansion adapters can be mounted on the left side of a FX5U or FX5UC CPU base unit.

Specifications		FX5-485ADP
Transmission standard		Conforming to RS485 and RS422 standards
Communication speed *	bps	300/600/1200/2400/4800/9600/19200/38400/57600/115200
Max. communication distance	m	1200 m
External device connection method		Terminal block
Power supply	5 V DC	20 mA (from base unit)
	24 V DC	30 mA (from base unit)
Related I/O points		0
Weight	kg	0.08
Dimensions (WxHxD)	mm	17.6x106x74
Order information		Art. no. 280514

* The communication method and communication speed vary depending upon the communication type.

■ Interface module

☒ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



Active data interface module FX3U-232ADP-MB

The additional active data interface module permits active communication between the PLC and surrounding RS232C peripherals. All device information can be sent or received via these interfaces.

The module is suitable for the connection of printers, bar code readers, PCs and other PLC systems. The communication is handled by the PLC program using the RS instruction.

The connection is to the communications bus on the left side of the controller. The internal serial RS422 interface is also fully available.

The FX3U-232ADP-MB can also be used for communication via Modbus®.

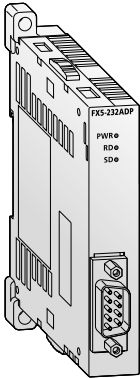
Specifications		FX3U-232ADP-MB
Interface		RS232C with 9 pole D-SUB connector (photocoupler isolation)
Communication speed*	kbps	0.3–115.2
Power supply	5 V DC	30 mA (from base unit)
	24 V DC	—
Related I/O points		0
Weight	kg	0.08
Dimensions (WxHxD)	mm	17.6x90(106)x81.5
Order information		Art. no. 206190

* The communication method and communication speed vary depending upon the communication type.

Notes: This module can be connected directly (without adapter) to a base unit of the FX3GC, FX3GE or FX3UC series. To connect this module to a FX3G, FX3S or FX3U base unit, an adapter is required.

■ RS232C communication expansion adapter

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



Isolation type communication adapter FX5-232ADP

The expansion adapter FX5-232ADP adds a RS232C port to a FX5U or FX5UC base unit for communication between the PLC and peripheral devices. Between the communication line and the base unit photocoupler isolation is used.

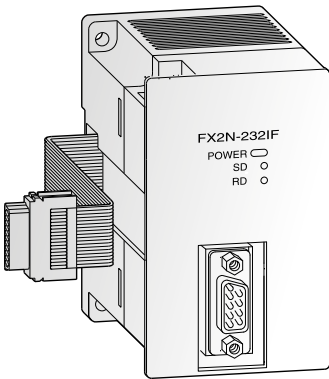
Up to two communication expansion adapters can be mounted on the left side of a FX5U or FX5UC CPU base unit.

Specifications	FX5-232ADP
Transmission standard	Conforming to RS232C standard
Communication speed *	bps 300/600/1200/2400/4800/9600/19200/38400/57600/115200
Max. transmission distance	15 m
External device connection method	9 pole D-SUB connector (male)
Power supply	5 V DC 30 mA (from base unit) 24 V DC 30 mA (from base unit)
Related I/O points	0
Weight	kg 0.08
Dimensions (WxHxD)	mm 17.6x106x74
Order information	Art. no. 280513

* The communication method and communication speed vary depending upon the communication type.

■ Interface module

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



The interface module FX2N-232IF provides an RS232C interface for serial data communications with the MELSEC FX3U and FX3UC.

Communication with PCs, printers, modems, barcode readers etc. is handled by the PLC program.

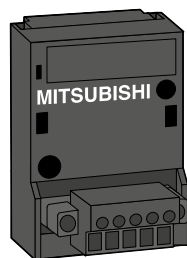
The send and receive data are stored in the FX2N-232IF's own buffer memory.

Specifications	FX2N-232IF
Interface	RS232C with 9 pole D-SUB connector (photocoupler isolation)
Communication speed	kbps 0.3–19.2
Communication distance	m Max. 15
Communication cable	Shielded cable
Communication mode	Full duplex
Protocols	Non protocol mode/start stop synchronisation
Send and receive buffer	512 byte each
Format	7 or 8 bits, parity none/even/odd, stop bits: 1 or 2
Power supply	5 V DC 40 mA (from base unit) 24 V DC 80 mA
Related I/O points	8
Weight	kg 0.3
Dimensions (WxHxD)	mm 55x90x87
Order information	Art. no. 66640

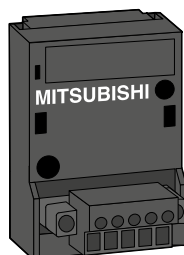
Note: To connect this module to a FX3UC base unit, an adapter FX2NC-CNV-IF or a power supply FX3UC-1PS-5V is required.

Digital extension adapter boards

☒ FX3S
 ☒ FX3G
 ☐ FX3GC
 ☐ FX3GE
 ☐ FX3U
 ☐ FX3UC
 ☐ FX5U
 ☐ FX5UC



FX3G-4EX-BD



FX3G-2EYT-BD

The extension adapters for the FX3G series are available with 4 inputs or 2 outputs.

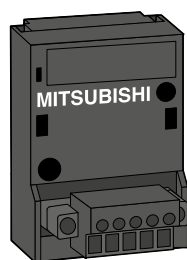
They are installed directly in the controller of the FX3S or FX3G series and therefore do not require any additional installation space.

These adapters are especially advantageous when only few additional I/Os are required and there is not enough room for an adjacent module to be installed.

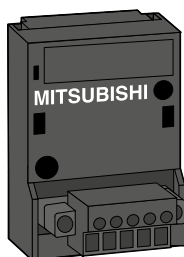
Specifications	FX3G-4EX-BD	FX3G-2EYT-BD
Integrated inputs/outputs	4	4
Power supply	From base unit	
Integrated inputs	4	—
Integrated outputs	—	2
Input level	Voltage	24 V DC (+20 %/-15 %)
	Current	5 mA (24 V DC)
Output type	—	Transistor
Max. switching voltage	V	5–30 V DC
Weight	kg	0.02
Dimensions (WxHxD)	mm	35x51.2x29.2
Order information	Art. no.	271701

Analog adapter boards

☒ FX3S
 ☒ FX3G
 ☐ FX3GC
 ☒ FX3GE
 ☐ FX3U
 ☐ FX3UC
 ☐ FX5U
 ☐ FX5UC



FX3G-2AD-BD



FX3G-1DA-BD

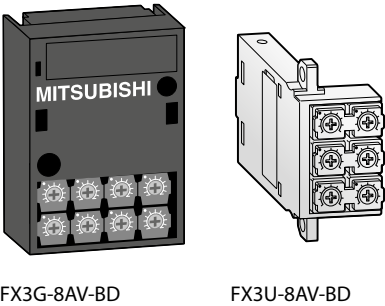
The analog input adapter board FX3G-2AD-BD provides the user with 2 analog inputs. The board converts analog process signals into digital values which are further processed by the MELSEC FX3S/FX3G/FX3GE controller.

The analog adapter FX3G-1DA-BD provides the user with 1 analog output. This module converts digital values from the FX3S/FX3G/FX3GE controller to the analog signals required by the process.

Specifications	FX3G-2AD-BD	FX3G-1DA-BD
Power supply	From base unit	From base unit
Analog channels	Inputs	—
	Outputs	1
Analog input range	0—+10 V DC/4—+20 mA	0—+10 V DC/4—+20 mA
Input resistance	Voltage input	kΩ
	Current input	Ω
External load	Voltage output	kΩ
	Current output	Ω
Resolution	2.5 mV (12 bit)/8 μA (11 bit)	2.5 mV (12 bit)/8 μA (11 bit)
Fullscale overall accuracy	±1 %	±1 %
Conversion speed	Analog → digital	180 μs (1 program cycle)
	Digital → analog	—
Related I/O points	0	0
Weight	kg	0.02
Dimensions (WxHxD)	mm	35x51.2x29.2
Order information	Art. no.	221265

■ Analog setpoint adapter board

☒ FX3S ☒ FX3G ☐ FX3GC ☒ FX3GE ☒ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC



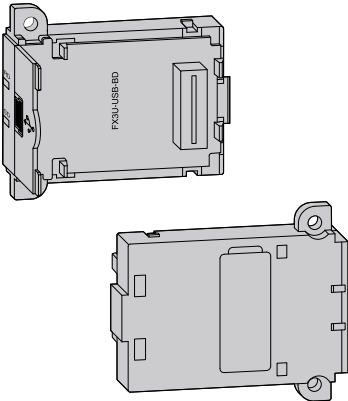
The FX3G-8AV-BD and FX3U-8AV-BD analog setpoint adapter enables the user to set 8 analog setpoint values. The analog values of the potentiometers are read into the controller and used as default setpoint values for timers, counters and data registers by the user's PLC programs.

Setpoint value polling and the definition of the potentiometer scales are performed in the PLC program using the dedicated instructions VRRD/VRSC (FNC85/86).
The analog setpoint adapter is installed in the expansion slot of the CPU. No additional power supply is required for operation.

Specifications	FX3G-8AV-BD	FX3U-8AV-BD
Applicable for	Base units FX3S/FX3G/FX3GE	Base units FX3U
Power supply	From base unit	From base unit
Adjusting range	8 Bit	8 Bit
Related I/O points	0	0
Potentiometer evaluation	Via application instruction from the PLC CPU (FNC 85/86)	
Weight	kg 0.02	0.02
Dimensions (WxHxD)	mm 35x51.2x12	19.6x46.1x53.5
Order information	Art. no. 221267	237307

■ Communications adapter board

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC

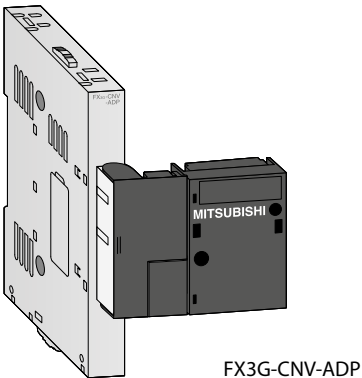


This adapter board allows direct USB 2.0 connection to the front of the FX3U PLC for program maintenance.

Specifications	FX3U-USB-BD
Applicable for	Base units FX3U
Power supply	5 V DC (from base unit)
Weight	kg 0.02
Dimensions (WxHxD)	mm 19.6x46.1x53.5
Order information	Art. no. 165284

■ Expansion adapters

☒ FX3S ☒ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC



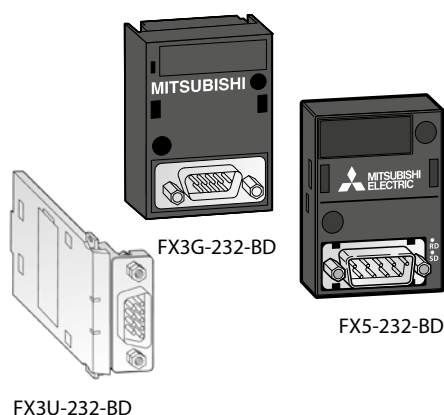
The below listed expansion adapters enable the connection of the adapter modules FX□□-□□□ADP on the left hand side of the FX3S, FX3G and FX3U base units.

Specifications	FX3G-CNV-ADP	FX3S-CNV-ADP	FX3U-CNV-BD
Applicable for	Base units FX3G	Base units FX3S	Base units FX3U
Weight	kg 0.1	0.1	0.01
Dimensions (WxHxD)	mm 90x14.6x86	90x14.6x74	19.6x46.1x53.5
Order information	Art. no. 221268	267132	165285

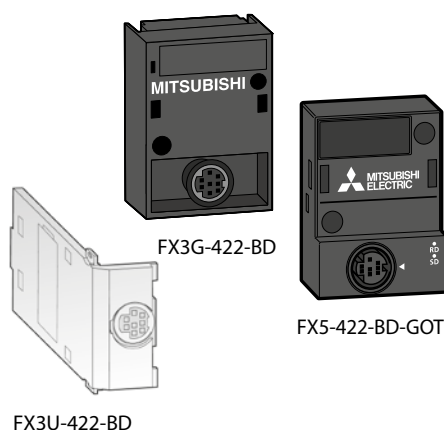
Interface adapters

☒ **FX3S**
☒ **FX3G**
☐ **FX3GC**
☒ **FX3GE**
☒ **FX3U**
☐ **FX3UC**
☒ **FX5U**
☐ **FX5UC**

The FX□□-232-BD interface adapters provide an RS232C interface for serial data communications with the MELSEC FX3S, FX3G, FX3GE, FX3U or FX5U.



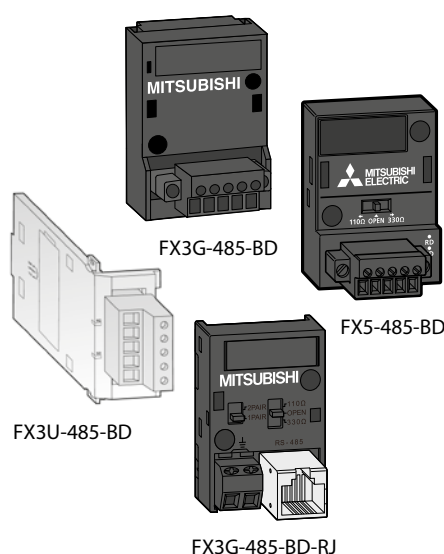
Specifications	FX3G-232-BD	FX3U-232-BD	FX5-232-BD
Applicable for	Base units FX3S/FX3G/FX3GE	Base units FX3U	Base units FX5U
Interface	RS232C with 9 pole D-SUB connector	RS232C with 9 pole D-SUB connector	RS232C with 9 pole D-SUB connector
Power supply	5 V DC/20 mA (from base unit)	5 V DC/20 mA (from base unit)	5 V DC/20 mA (from base unit)
Related I/O points	—	—	—
Weight	kg 0.02	0.02	0.02
Dimensions (WxHxD)	mm 35x51.2x17.2	19.3x46.1x62.7	38x51.4x18.2
Order information	Art. no. 221254	165281	280511



The interface adapter FX□□-422-BD expand a MELSEC FX3S, FX3G, FX3GE or FX3U PLC to a second RS422 interface for connection of additional devices such as programming devices or HMIs.

The interface adapter FX5-422-BD-GOT is used for the connection of a HMI to a FX5U CPU module.

Specifications	FX3G-422-BD	FX3U-422-BD	FX5-422-BD-GOT
Applicable for	Base units FX3S/FX3G/FX3GE	Base units FX3U	Base units FX5U
Interface	RS422 with 8 pole mini DIN connector	RS422 with 8 pole mini DIN connector	RS422 with 8 pole mini DIN connector
Power supply	5 V DC/20 mA (from base unit)	5 V DC/20 mA (from base unit)	5 V DC/20 mA (from base unit)
Related I/O points	—	—	—
Weight	kg 0.02	0.02	0.02
Dimensions (WxHxD)	mm 35x51.2x14.9	19.6x46.1x53.5	38x51.4x15.4
Order information	Art. no. 221252	165282	280515



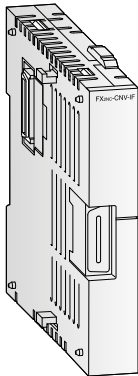
The interface adapters FX□□-485-BD provide the controller with an additional RS485 interface. The adapter, which is simply inserted into the base unit's expansion slot, enables the

configuration of RS485 1:n multidrop, parallel link or peer-to-peer networks with FX3S, FX3G, FX3GE, FX3U or FX5U systems.

Specifications	FX3G-485-BD	FX3G-485-BD-RJ	FX3U-485-BD	FX5-485-BD
Applicable for	Base units FX3S/FX3G/FX3GE		Base units FX3U	Base units FX5U
Interface	RS485	RS485	RS485	RS485
Power supply	5 V DC/20 mA (from base unit)	5 V DC/20 mA (from base unit)	5 V DC/40 mA (from base unit)	5 VDC/20 mA (from base unit)
Related I/O points	—	—	—	—
Weight	kg 0.02	0.02	0.02	0.02
Dimensions (WxHxD)	mm 35x51.2x29.2	35x51.2x22	19.6x46.1x69	38x51.4x30.5
Order information	Art. no. 221253	271699	165283	280512

Expansion adapter

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC

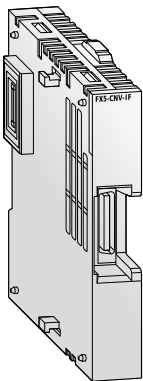


The FX2NC-CNV-IF expansion adapter connects FX3UC main units with the standard FX0N/FX2N/FX3U right side expansion bus.

Specifications		FX2NC-CNV-IF
Bus connection		FX3UC bus to FX0N/FX2N/FX3U bus
Weight	kg	0.5
Dimensions (WxHxD)	mm	14.6x90x74
Order information		Art. no. 104508

Connector conversion modules

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



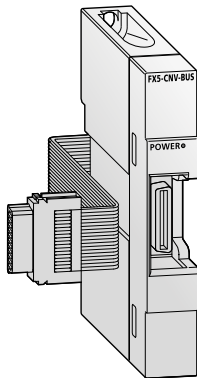
The FX5-CNV-IF is used to connect extension connector type modules of the MELSEC FX5UC series to FX5U CPU module systems.

The FX5-CNV-IFC is used to connect I/O modules (extension cable type) or intelligent modules of the MELSEC FX5U series to FX5UC CPU module systems.

Specifications		FX5-CNV-IF	FX5-CNV-IFC
Conversion type		FX5 (Extension cable type) -> FX5 (Extension connector type)	FX5 (Extension connector type) -> FX5 (Extension cable type)
Compatible CPU module		FX5U	FX5UC
No. of connectable modules		Max. 1	Max. 1
Power supply	5 V DC	—	—
	24 V DC	—	—
Related I/O points		0	0
Weight	kg	0.06	0.06
Dimensions (WxHxD)	mm	14.6x90x74	14.6x90x74
Order information		Art. no. 297455	283557

Bus conversion modules

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



The FX5-CNV-BUS is a conversion module for connecting modules of the FX3 series to an extension cable type FX5 module.

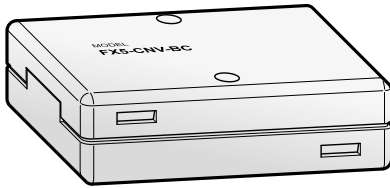
The FX5-CNV-BUSC is a conversion module for connecting modules of the FX3 series to an extension connector type FX5 module.

Specifications		FX5-CNV-BUS	FX5-CNV-BUSC
Conversion type		FX5 (Extension cable type) -> FX3	FX5 (Extension connector type) -> FX3
Compatible CPU module		FX5U, FX5UC ^①	FX5U ^② , FX5UC
No. of connectable modules		Max. 1	Max. 1
Power supply	5 V DC	150 mA (from base unit)	150 mA (from base unit)
	24 V DC	—	—
Related I/O points		8	8
Weight	kg	0.1	0.1
Dimensions (WxHxD)	mm	16x90x83	14.6x90x74
Order information		Art. no. 280510	283558

① FX5-CNV-IFC or FX5-C1PS-5V is necessary to connect to FX5UC.
② FX5-CNV-IF is necessary to connect to FX5U.

■ Connector conversion adapter

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC



FX5-CNV-BC

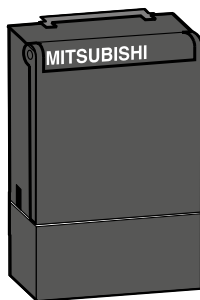
The FX5-CNV-BC is an adapter to convert the connector of an extended extension cable (FX5-30EC or FX5-65EC) used between modules of extension cable type.

The FX5-CNV-BC is connected and used between the extended extension cable and the module of extension cable type.

Specifications	FX5-CNV-BC
Conversion type	Extended extension cable -> FX5 module (Extension cable type)
Compatible CPU module	FX5U/FX5UC
Weight	kg 0.04
Dimensions (WxHxD)	mm 60.5x40x16.4
Order information	Art. no. 297456

■ Memory media

☒ FX3S ☒ FX3G ☐ FX3GC ☒ FX3GE ☐ FX3U ☐ FX3UC ☐ FX5U ☐ FX5UC



FX3G-EEPROM-32L

All FX3S, FX3G, FX3GC and FX3GE base units are equipped with a slot for the optional, robust memory cassette. By connection of this memory cassette, the internal memory of the controller is switched off and only the program specified in the respective memory cassette is run.

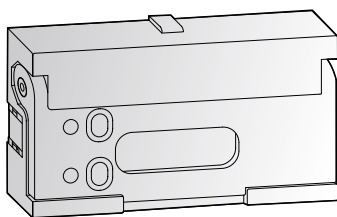
The memory cassette can upload/download programs to and from the FX PLC internal memory with the help of 2 buttons.

The memory cassette FX3G EEPROM 32L can also be mounted on an already installed BD interface or expansion adapter.

Specifications	FX3G-EEPROM-32L
Memory type	EEPROM
Size	32,000 steps (4,000 steps for FX3S)
Protect switch	Provided
Data transfer buttons	Provided
Order information	Art. no. 221269

■ Memory media

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC



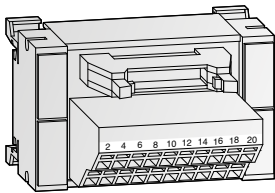
The memory cassette can be installed at the main unit, and when installed, the memory cassette's internal program is used in place of the internal RAM memory.

The FX3U-FLROM-64L features additional data transfer buttons.

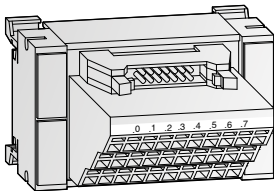
Specifications	FX3U-FLROM-16	FX3U-FLROM-64	FX3U-FLROM-64L
Applicable for	Base units FX3U/FX3UC	Base units FX3U/FX3UC	Base units FX3U/FX3UC
Size	16,000 steps	64,000 steps	64,000 steps
Memory type	Flash memory	Flash memory	Flash memory
Protect switch	Provided	Provided	Provided
Data transfer buttons	—	—	Provided
Dimensions (WxHxD)	mm 37x20x6.1	37x20x6.1	37x20x6.1
Order information	Art. no. 165278	165279	165280

Terminal blocks

☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☒ FX5UC



TB-20C



TB-□EX□

These terminal blocks are adapter modules that simplify the wiring of the inputs and outputs of the FX3UC main units with ribbon cable connectors. This practical, time-saving wiring system also improves the performance of the outputs. Special terminal blocks are also available for the FX3U/FX3UC positioning modules with ribbon cable connectors.

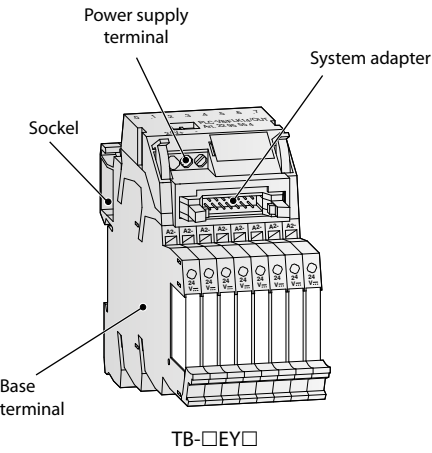
Input blocks, output blocks and combined I/O blocks are available, with a choice of different terminal types.

The TB-□EX□ input blocks are fitted with rows of bridged connectors for 24 V/0 V terminals, which make wiring quick and easy.

The TB-8EY-S output block consists of 8 standard terminals and a system adapter. The standard terminals can be populated with relay or transistor elements, which makes it possible to configure the system for much higher output currents.

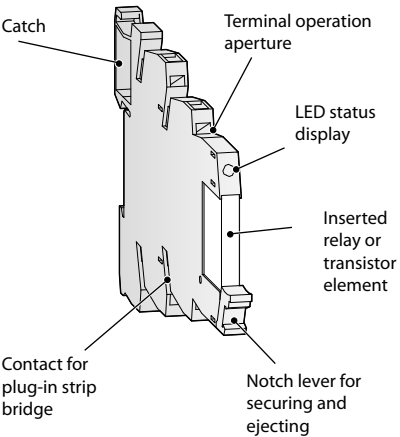
Preconfigured system cabling is available for all the terminal blocks (see next page).

Specifications	TB-8EX-C	TB-16EX-S	TB-16EX-C
Type	Input block	Input block	Input block
Integrated inputs	8	16	16
Design	Initiator module with potential terminals		
Connection type	Spring terminals	Screw terminals	Spring terminals
Dimensions (WxHxD)	mm 75x45x63	116x45x54	116x45x63
Order information	Art. no. 149145	149021	149022
Accessories	Connection cable (see following page)		



Specifications	TB-8EY-S	TB-20-S	TB-20C
Type	Output block	Input/output block	Input/output block
Channels	8	8/16	8/16
Design	Socket for relay or transistor elements	20 pin terminal module	
Connection type	Screw terminals	Screw terminals	Spring terminals
Dimensions (WxHxD)	mm 49.6x100x94	75x45x52	75x45x52
Order information	Art. no. 149044	149148	149023
Accessories	Pluggable function elements (see below), Connection cable (see following page)	Connection cable (see following page)	

Base device structure

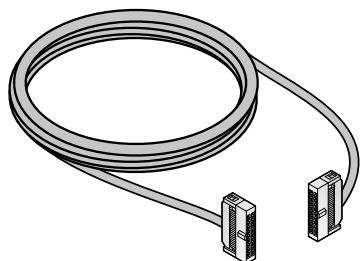


The transistor and relay elements are plugged directly into the standard terminals in the TB-8EY-S or TB-8EY-C modules. All the elements feature a status LED, protection against reverse polarity connection and a freewheeling diode.

Neighbouring terminals with identical voltages can be connected with plug-in strip bridge connectors, which can be cut to length as required.

Specifications	TB-8RELAY-6A	TB-8TRANSISTOR-2A
Output type	Relay with 1 switch-over contact	Transistor (with optocoupler)
Number of elements	8	8
Rated input voltage	24 V DC	24 V DC
Switching voltage (min./max.)	12 V AC/DC; 250 V AC/DC	3 V DC; 33 V DC
Limit permanent current	6 A	3 A (at 20 °C), 2 A (at 60 °C)
Max. breaking capacity	140 W (24 V DC), 1500 VA (250 V AC)	—
Ambient temperature	-20—+60 °C	-20—+60 °C
Order information	Art. no. 149034 (set with 8 elements)	149035 (set with 8 elements)
Accessories	Insulated infinite pin bridge for potential isolation, TB-PIB-RD, color red, art.-no.: 149146; Insulated infinite pin bridge for potential isolation, TB-PIB-BL, color blue art.-no.: 149147; Isolation plate TB-SP for lateral base terminal connection, art.-no.: 149158	

Terminal connection cable



☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☒ FX5UC

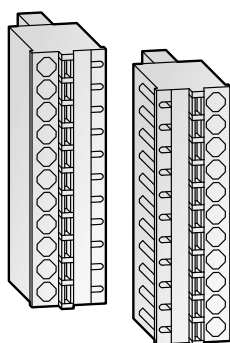
These preconfigured cables enable quick, error-free wiring of the terminal blocks of the positioning modules for the FX3U and FX3UC series fitted with ribbon cable connectors.

The cables are available in a choice of lengths between 1 and 5 m. Other lengths are also possible by special order.

Specifications	TB-EX-CAB-1M	TB-EX-CAB-3M	TB-EX-CAB-5M
Application	For TB-□EX□ and TB-20-□ (1:1 cable)		
Length	m 1	3	5
Order information	Art. no. 149038	149039	149040

Specifications	TB-EY-CAB-1M
Application	For 2 x terminal block TB-8EY-S or TB-8EY-C (Y cable)
Length	m 1
Order information	Art. no. 149041

Connection terminals



☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC

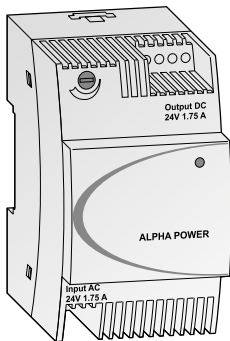
The base unit FX2NC-16MR-T-DS and the extension units FX2NC-16EX-T-DS and FX2NC-16EYR-T-DS are fitted with screw terminals as standard equipment.

These plug-in terminals can easily be replaced with spring terminals if required.

Two replacement terminal units are required for each module with 16 I/Os.

Specifications	TB-CON-5-C	TB-CON10-C
Number of terminal points	5	10
Connection type	Spring terminals	Spring terminals
Dimensions (WxHxD)	mm 12.5x20x21	12.5x20x21
Order information	Art. no. 221539	149036

24 V power supply unit



☒ ALPHA
 ☒ FX3S
 ☒ FX3G
 ☒ FX3GC
 ☒ FX3GE
 ☒ FX3U
 ☒ FX3UC
 ☐ FX5U
 ☐ FX5UC

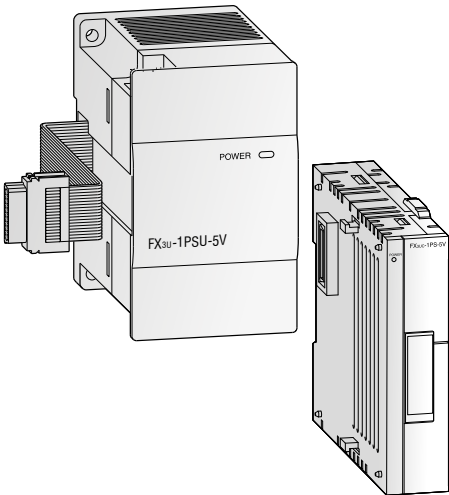
The ALPHA-POWER units are a convenient power supply for 24 V units and other external devices. They come with mounting system for wall or DIN rail mounting and their dimensions are matched to those of the ALPHA family.

Up to 5 power supply units can be installed together for redundant mode operation or connected in parallel for more power. The units have an integrated thermal overload protection circuit and a POWER LED. The output voltage is adjustable.

Specifications	ALPHA POWER 24-0.75	ALPHA POWER 24-1.75	ALPHA POWER 24-2.5
Application	Power supply for 24 V DC Alpha base units		
General specifications	Conforms to FX family and ALPHA base units		
Nominal input voltage	100–240 V (45–65 Hz)		
Output voltage	24 V DC (+/-1 %)		
Nominal output current	0.75 A (at T=55 °C)	1.75 A (at T=55 °C)	2.5 A (at T=55 °C)
Max. output current	1.4 A	3.75 A	4.4 A
Ambient temperature	-25–+55 °C (operation), -40–+85 °C (storage)		
Ambient humidity	Max. 95 % (no condensation)		
Weight	kg 0.1	0.2	0.3
Dimensions (WxHxD)	mm 36x90x61	54x90x61	72x90x61
Order information	Art. no. 209029	209030	209031

5 V power supply unit

☐ FX3S
 ☒ FX3G
 ☒ FX3GC
 ☒ FX3GE
 ☒ FX3U
 ☒ FX3UC
 ☐ FX5U
 ☐ FX5UC



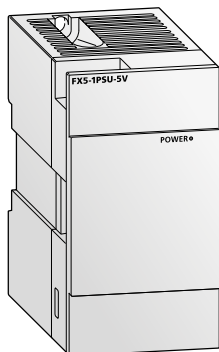
The power supply modules FX3U-1PSU-5V and FX3UC-1PS-5V are used to reinforce the built-in 5 V DC and 24 V DC power supply of a FX3G/ FX3GC/FX3GE/FX3U/FX3UC main unit. They do not occupy any I/O points and deliver up to 1 A more current for the 5 V system bus (for special function modules).

Up to two FX3U-1PSU-5V or FX3UC-1PS-5V modules can be used. Both modules have an integrated overload protection available.

Specifications	FX3U-1PSU-5V	FX3UC-1PS-5V
Application	Power supply for the FX3G/FX3GE/FX3U/FX5U system bus	Power supply for the FX3GC/FX3UC system bus
General specifications	Conforms to FX family base units	
Nominal input voltage	100–240 V (50/60 Hz)	24 V DC (+20 %/- 15 %)
Output voltage	5 V DC/24 V DC	5 V DC
Max. output current	5 V DC: 1 A at 40 °C; 0.8 A at 55 °C 24 V DC: 0.3 A at 40 °C; 0.2 A at 55 °C	1 A —
Ambient temperature	-25–+55 °C (operation), -40–+85 °C (storage)	
Ambient humidity	Max. 95 % (no condensation)	
Weight	kg 0.3	0.15
Dimensions (WxHxD)	mm 55x90x87	24x90x74
Order information	Art. no. 169507	210091

Notes:
The FX3U-1PSU-5V can't be used with a 24 V base unit!
When connecting an input extension module (incl. FX2N-8ER-ES/UL, FX2N-8ER) to the FX3U-1PSU-5V, supply the power for it from the 24 V DC service power supply of the connected main unit or powered extension unit on the upstream side.

Extension power supply modules



☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC

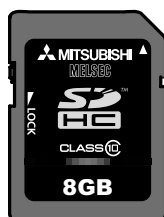
The power supply module FX5-1PSU-5V is used when the FX5U (AC power supply type) CPU module's internal power supply is insufficient. Up to two FX5-1PSU-5V units can be used for one system.

The power supply module FX5-C1PS-5V is required when the built-in power supply is

insufficient in the FX5U (DC power type) and FX5UC CPU modules. When connecting a module of extension cable type to a FX5UC CPU module, the FX5-C1PS-5V also acts as a connector conversion module. Up to two FX5-C1PS-5V units can be used for one system.

Specifications	FX5-1PSU-5V	FX5-C1PS-5V
Application	Power supply for FX5U (AC power supply type)	Power supply for FX5U (DC power supply type) and FX5UC
Rated power supply voltage	100–240 V AC (50/60 Hz)	24 V DC
Power consumption	Max. 20 W	Max. 30 W
Output voltage	5 V DC/24 V DC	5 V DC/24 V DC
Max. output current	5 V DC 1.2 A at 40 °C; 0.8 A at 55 °C 24 V DC 0.3 A at 40 °C; 0.2 A at 55 °C	1.2 A at 40 °C; 0.8 A at 55 °C 0.625 A at 40 °C; 0.4 A at 55 °C
No. of connectable modules	Max. 2	Max. 2
Related I/O points	0	0
Weight	kg 0.3	0.1
Dimensions (WxHxD)	mm 50x90x83	20.1x90x74
Order information	Art. no. 280509	294586

SD memory card

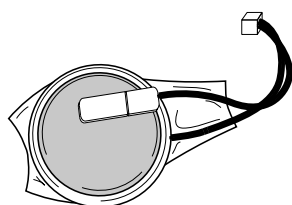


☐ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC ☒ FX5U ☒ FX5UC

The built-in SD memory card slot can be used for data logging and convenient program update.

Specifications	SDHC CARD 8GB
Memory type	SDHC
Memory capacity	8 GB
Order information	Art. no. 306787

Backup batteries



FX3U-32BL

☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC

Batteries

The battery buffers the internal RAM of the MELSEC PLC in the event of a voltage failure.

The battery FX3U-32BL can be used for all base units of the MELSEC FX3G/FX3GC/FX3GE/FX3U/FX3UC/FX5U/FX5UC series.

Specifications	FX2NC-32BL	FX3U-32BL
Applicable for	FX2N-20GM module	Base units FX3G/FX3GC/FX3GE/FX3U/FX3UC/FX5U/FX5UC
Order information	Art. no. 128725	165286

Cables

☒ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC

FX series connection cables

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

Connection cable for peripherals

Specifications	F2-232CAB-1	FX-422CAB0	FX-422CAB
Applicable for	PC to FX-232AWC-H		
Peripheral type	RS232C	RS422	RS422
Length	m 3.0	1.5	0.3
Order information	Art. no. 76163	76094	25949

Connection cable for programming unit

Specifications	FX-20P-CADP
Application	FX-20P-CAB to FX□ PLC
Length	m 0.3
Order information	Art. no. 31870

Connection cable for extension bus

Specifications	FX0N-65EC	FX2N-CNV-BC
Application	PLC bus cable for two-stage-configuration with extension units FX□□-□□ES	Adapter for the connection of the FX0N-65EC to special function modules FX3U/FX2N
Length	m 0.65	
Order information	Art. no. 45348	70880

Extended extension cables

Specifications	FX5-30EC	FX5-65EC
Application	Connect ion of an extension module located distantly or on a second stage. Depending on the module to be connected with, a connection conversion adapter FX5-CNV-BC is required.	
Length	m 0.3	0.65
Order information	Art. no. 297457	297458

Interface converter

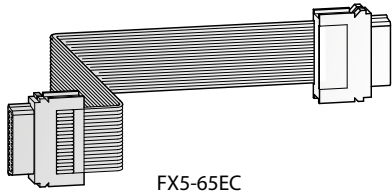
Specifications	FX-USB-AW	FX-232AWC-H
Application	USB to RS422 converter	RS422 to RS232C converter
Dimensions (WxHxD)	mm 62x21x15	80x60x25
Order information	Art. no. 165288	159642

Programming cables

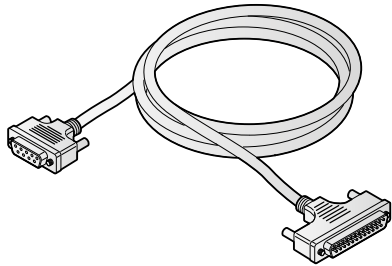
☐ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC

The USB to RS422 converter FX-USB-AW is used for the connection between the PLC and a serial interface of a personal computer. The converter is divided into 2 parts and thus universally applicable for all FX-series PLCs.

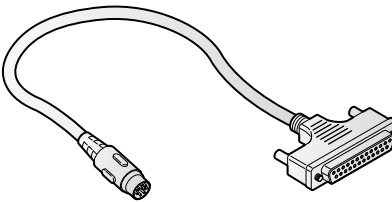
FX-USB-AW		
Connection on PC side	USB	
Order information	Art. no.	165288



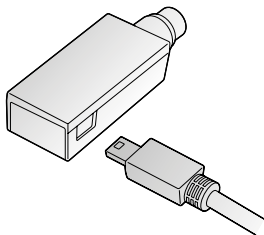
FX5-65EC



F2-232CAB-1



FX-20P-CADP



FX-USB-AW

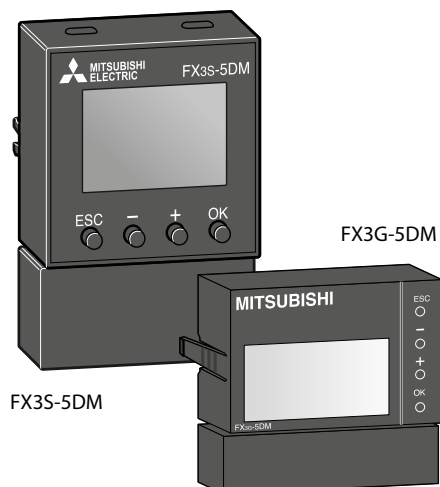
Display modules

☒ **FX3S**
☒ **FX3G**
☐ **FX3GC**
☒ **FX3GE**
☒ **FX3U**
☒ **FX3UC**
☐ **FX5U**
☐ **FX5UC**

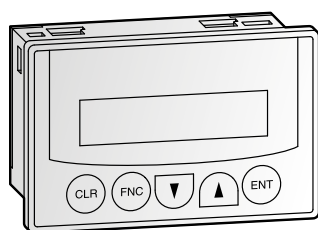
Display modules FX3G-5DM/FX3S-5DM

The display modules FX3G-5DM and FX3S-5DM are inserted directly with space-saving into the controller and enable monitoring and editing of the data stored in the PLC.

A display module e.g. can be used instead of digital switches and external 7-segment displays in very confined areas.



Specifications	FX3S-5DM	FX3G-5DM
Applicable for	Base units FX3S	Base units FX3G/FX3GE
Display	LCD (with backlight)	LCD (with backlight)
Power supply	5 V DC $\pm 5\%$ (from base unit)	5 V DC $\pm 5\%$ (from base unit)
Current consumption	mA	n/a
Dimensions (WxHxD)	mm	35x51.2x12
Order information	Art. no.	282202
		221270



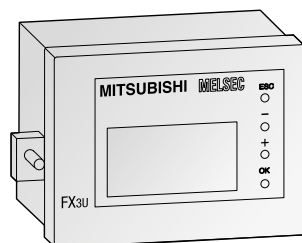
Control and display panel FX-10DM-E

The control and display panel FX-10DM-E provides a key-oriented user-interface and enables you to monitor and edit process data in the PLC.

The display is arranged in 2 rows of 16 characters each. Functions can be invoked and values can be edited using the panel keys.

The connection with the PLC is possible via the cable FX-20P CAB0.

Specifications	FX-10DM-E
Applicable for	All base units FX3U
Display	LCD (with backlight)
Resolution	2x16 signs (80x16 pixles)
Power supply	5 V DC $\pm 5\%$ (from base unit)
Current consumption	mA
	220
Weight	kg
	0.02
Dimensions (WxHxD)	mm
	96x62x32
Order information	Art. no.
	132600



Panel FX3U-7DM with built-in holder FX3U-7DM-HLD

Control and display panel FX3U-7DM and holder FX3U-7DM-HLD

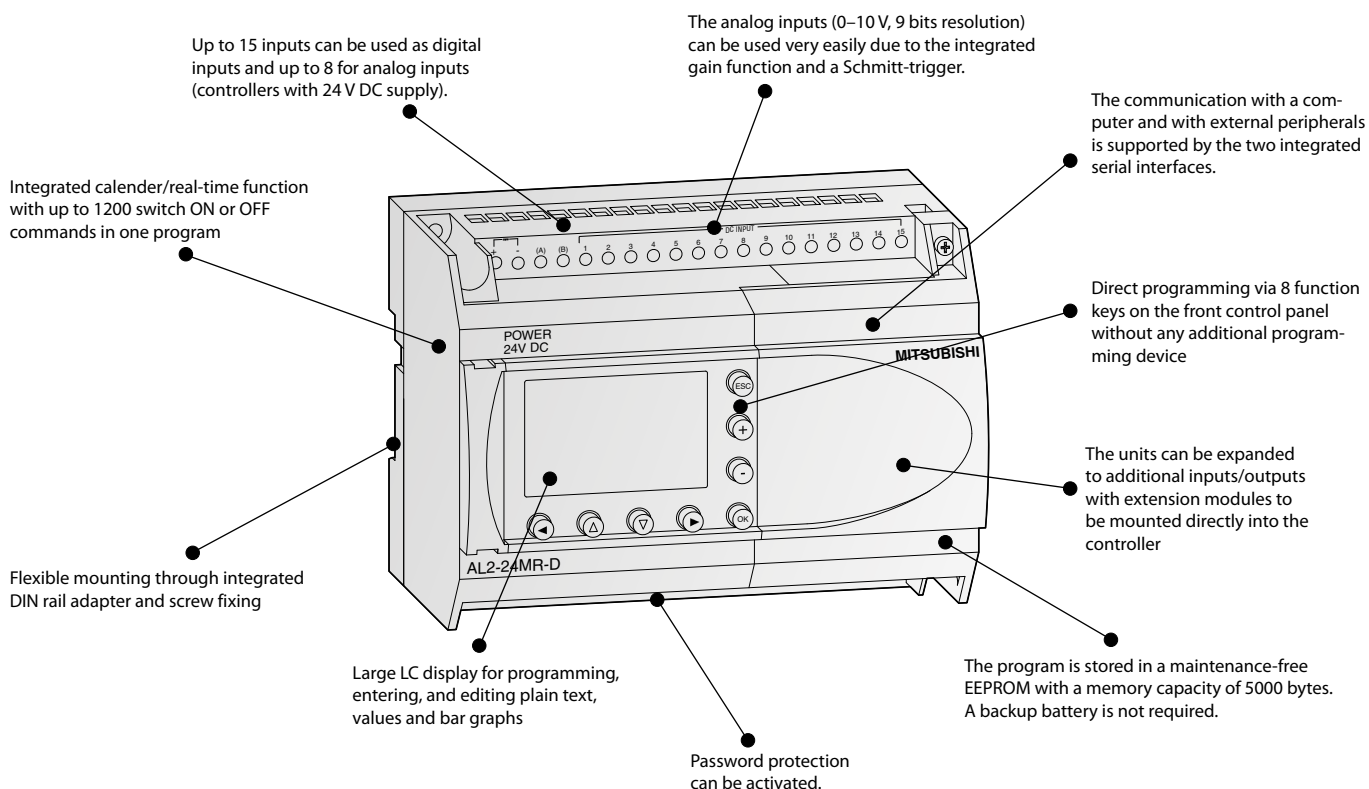
The FX3U-7DM display module can be incorporated in the main unit, or can be installed in

the enclosure using the FX3U-7DM-HLD display module holder.

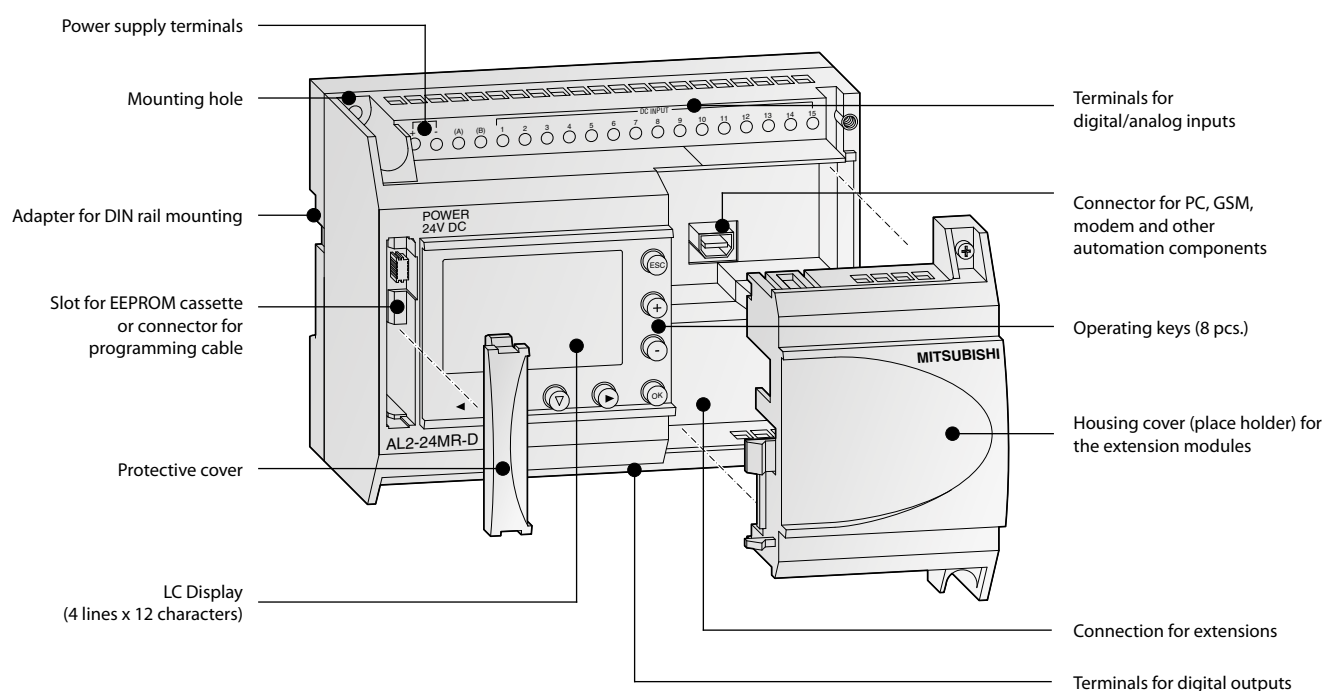
Specifications	FX3U-7DM	FX3U-7DM-HLD
Applicable for	Base units FX3U	Base units FX3U
Display	16 letters x 4 lines	—
Resolution	—	—
Power supply	5 V DC (from base unit)	—
Current consumption	mA	—
	20	—
Extension cable	—	Included
Weight	kg	0.01
	0.02	
Dimensions (WxHxD)	mm	66.3x41.8x13
Order information	Art. no.	165287
	165268	

Please refer to the HMI family catalogue for further operator terminals

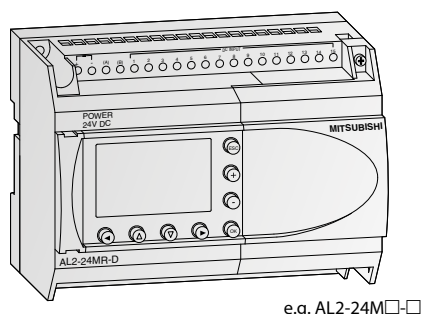
■ The ALPHA 2 series



Description of the unit components



Specifications ALPHA 2



e.g. AL2-24MR-D

ALPHA 2 base units

The ALPHA 2 controllers offer simple reliable control for a range of automation applications including lighting, air conditioning, security systems, and temperature and water control.

- Transistor and relay output options
- Analog input/output
- High speed counters up to 1 kHz
- GSM function for communication with mobile phones
- Language support for 8 different languages
- Display unit for messages and function block data

Base units with 10–24 I/Os

Specifications		AL2-10MR-A	AL2-10MR-D	AL2-14MR-A	AL2-14MR-D	AL2-24MR-A	AL2-24MR-D
Electrical specifications							
Integrated inputs/outputs		10	10	14	14	24	24
Power supply		100–240 V AC	24 V DC	100–240 V AC	24 V DC	100–240 V AC	24 V DC
Digital inputs		6	6	8	8	15	15
Analog inputs		—	6	—	8	—	8
Channels		—	6	—	8	—	8
Integrated outputs		4	4	6	6	9	9
Max. power consumption	W	4.9	4.0	5.5	7.5	7.0	9.0
Typ. power consumption	All I/Os ON/OFF	3.5/1.85 240 V AC 3.0/1.55 120 V AC	2.5/0.75	4.5/2.0 240 V AC 3.5/1.5 120 V AC	4.0/1.0	5.5/2.5 240 V AC 4.5/2.0 120 V AC	5.0/1.0
Weight	kg	0.2	0.2	0.3	0.3	0.35	0.3
Dimensions (WxHxD)	mm	71.2x90x55	71.2x90x55	124.6x90x52	124.6x90x52	124.6x90x52	124.6x90x52
Order information		Art. no.	215070	215071	215072	215073	215074
Accessories		Power supplies with DIN-rail or wall mounting possibility for powering the 24 V DC modules (refer to the power supply chapter in this catalogue);					

Environmental specifications

General specifications		Alpha 2 series
Ambient temperature		Display: -10–55 °C, Hardware: -25–55 °C (storage temperature: -30–+70 °C)
Protection rating		IP20
Noise immunity		1000 Vpp with noise generator; 1 µs at 30–100 Hz, tested by noise simulator
Dielectric withstand voltage		3750 V AC, > 1 min. according to EN 60730
Allowable relative humidity		35–85 % (no condensation)
Shock resistance		Acc. to IEC 68-2-27: 147 m/s ² acceleration, 11 ms 3x3 directions
Vibration resistance	Direct mounting	Acc. to IEC-2-6: 19.6 m/s ² acceleration, 80 min. in each direction
	DIN rail mounting	Acc. to IEC-2-6: 9.8 m/s ² acceleration, 80 min. in each direction
Insulation resistance		500 V DC, 7 MΩ acc. to EN60730-1
Ambient conditions		No corrosive gases, no dust
Certifications		Please refer to pages 103–105

Electrical specifications

Power supply specifications	DC powered modules (AL2-□MR-D)	AC powered modules (AL2-□MR-A)
Power supply	24 V DC	100–240 V AC (50/60 Hz)
Inrush current at ON	≤7.0 A (at 24 V DC)	≤6.5 A (at 240 V AC)
Allowable momentary power failure time	5 ms	10 ms

Digital Inputs

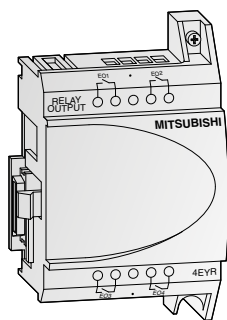
Input voltage		24 V DC (+20 %/-15 %)	100–240 V AC (+10 %/-15 %), 50/60 Hz
Input current		The input current changes depending on Source or Sink.	
		For Sink: (AL2-10/14/24MR-D) = 5.5 mA, 24 V DC	101–108 0.13 mA/120 V AC* 0.25 mA/240 V AC*
		For Source: (AL2-10/14MR-D) = 6.0 mA, 24 V DC (AL2-24MR-D) = 5.5 mA, 24 V DC	109–115 0.15 mA/120 V AC* 0.29 mA/240 V AC*
Response time	OFF→ON	ms	10–20
	ON→OFF	ms	10–20

Analog inputs

Digital input range		0–500	—
Resolution		9 bit, (10 V/500)	—
Conversion speed		ms	8
Voltage		0–10 V DC	—
Impedance		kΩ	142 ±5 %
Accuracy			±5 % (0.5 V DC)

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

Output specifications	All modules
Type	Relay
Switching voltage (max.)	V 250 V AC, 30 V DC
Rated current	10M, 14M: 8 A/point
	24M (001-004): 8 A/point 24M (005-009): 2 A/point
Max. switching load	- inductive load 14M, 24M: 249 VA, 250 V AC/373 VA, 250 V AC 24M: 93 VA, 125 V AC/93 VA, 250 V AC
Minimum load	10 mA, 5 V DC
Response time	ms ≤10



Digital extension modules

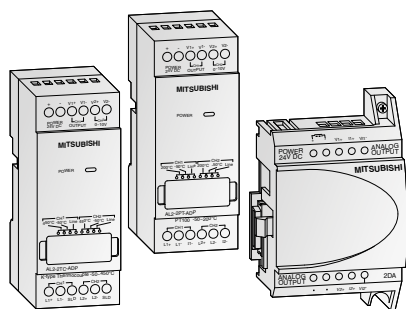
There are 4 different extension modules available for the ALPHA 2, which allow the controller to be extended through additional inputs or outputs. The modules are inserted directly into the ALPHA 2 and therefore do not take up any additional space.

The AL2-4EX has the additional feature that 2 inputs may be used as high-speed counters with a counting frequency of 1 kHz.

All modules feature photocoupler insulation for all I/Os.

Digital extension modules specifications		AL2-4EX-A2	AL2-4EX	AL2-4EYR	AL2-4EYT
Inputs					
Integrated inputs		4	4	—	—
Input voltage		220–240 V AC	24 V DC (+20 %, -15 %)	—	—
Input current		7.5 mA at 240 V AC (50 Hz), 9.0 mA at 240 V AC (60 Hz)	5.4 mA ±1 mA at 24 V DC	—	—
Outputs					
Integrated outputs		—	—	4	4
Output type		—	—	Relay	Transistor
Switched voltage (max.)	V	—	—	250 V AC, 30 V DC	5–24 V DC
Rated current	A	—	—	2 A per output	1 A per output
Electrical specifications					
Power supply	AC range (+10 %, -15 %)	220–240 V AC	24 V DC	100–240 V AC	24 V DC
Mechanical specifications					
Weight	kg	0.05	0.05	0.05	0.05
Dimensions (WxHxD)	mm	53.1x90x24.5	53.1x90x24.5	53.1x90x24.5	53.1x90x24.5
Order information	Art. no.	142522	142521	142523	142524

Note: I1 and I2 of the AL2-4EX can be used as high-speed counter inputs. In each case the response time for the high-speed counter inputs will be 0.5 ms or less. The AL2-4EX-A2, AL2-4EX, AL2-4EYR and AL2-4EYT modules can not be used with the AL2-10MR series.



Analog extension modules

The analog extension modules significantly increase the range of applications for the ALPHA 2. With these modules it is possible to output voltage or current signals or to measure temperatures.

Three different analog extension modules are available:

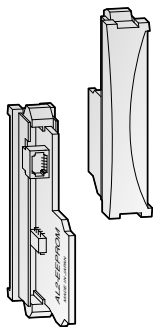
The AL2-2DA offers two additional analog outputs for the ALPHA 2 and converts a digital input value into a voltage or a current. This module is inserted directly into the ALPHA 2.

The AL2-2PT-ADP connects an external PT100 sensor to convert temperature readings into analog signals (0–10 V).

The AL2-2TC-ADP connects thermocouple sensors (K type) to convert temperature readings into analog signals (0–10 V).

Analog extension modules specifications		AL2-2DA	AL2-2PT-ADP	AL2-2TC-ADP
Analog inputs				
Integrated inputs		—	2	2
Connectable temperature sensors		—	Pt100 sensor Temp. coefficient 3.850 ppm/°C (IEC 751)	Thermocouple (K type), isolated type (IEC 584-1 1977, IEC 584-2 1982)
Compensated range		—	-50—+200 °C	-50—+450 °C
Analog outputs				
Integrated outputs		2	—	—
Analog output range	Voltage	0–10 V DC (5 kΩ–1 MΩ)	—	—
	Current	4–20 mA (max. 500 Ω)	—	—
Electrical specifications				
Number of channels		2	2	2
Power supply		24 V DC (-15—+10 %), 70 mA	24 V DC (-15—+20 %), 1 W	24 V DC (-15—+20 %), 1 W
Mechanical specifications				
Weight	kg	0.05	0.07	0.07
Dimensions (WxHxD)	mm	53.1x90x24.5	35.5x90x32.5	35.5x90x32.5
Order information	Art. no.	151235	151238	151239

Note: the AL2-2DA module can not be used with the AL2-10MR series



Memory cassette AL2-EEPROM-2 memory media

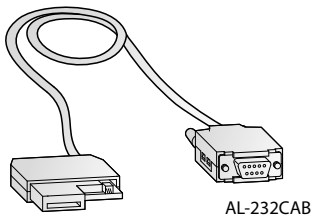
With the AL2-EEPROM-2 memory cassettes, a new program can be transferred to the ALPHA 2 controller's internal system memory from the cassette, or the program of the internal system memory can be saved to the cassette.

If the memory cassette is used, a certain program can be run temporarily by simply plugging the external memory module onto the ALPHA 2.

After removing the memory cassette, the former program in the internal memory becomes active again.

The memory cassette AL2-EEPROM-2 is not a memory expansion device, but a medium for data exchange.

Specifications	AL2-EEPROM-2	
Memory type	EEPROM	
Application	ALPHA 2	
Memory capacity	5,000 bytes	
Function blocks	Max. 200	
Dimensions (WxHxD)	mm	10x45x25
Order information	Art. no.	142526



AL-232CAB

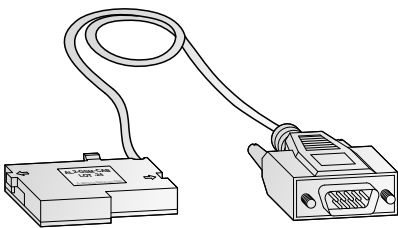
Interface cable AL-232CAB

The AL-232CAB is an RS232C interface cable. It connects the ALPHA 2 controller to a personal computer running the programming software for the ALPHA 2 controller.

The cable ensures a galvanic isolation between the ALPHA 2 controller and the personal computer. The cable AL-232CAB can not be used for any other connection.

GSM cable AL2-GSM-CAB

The GSM AL2-GSM-CAB is an RS232C interface cable and it is used to connect the ALPHA 2 controller to a normal or GSM modem, a personal computer or other serial devices. It can transfer SMS data to a GSM modem for onward transmission to mobile telephones or e-mail addresses. It also permits remote monitoring and remote maintenance.



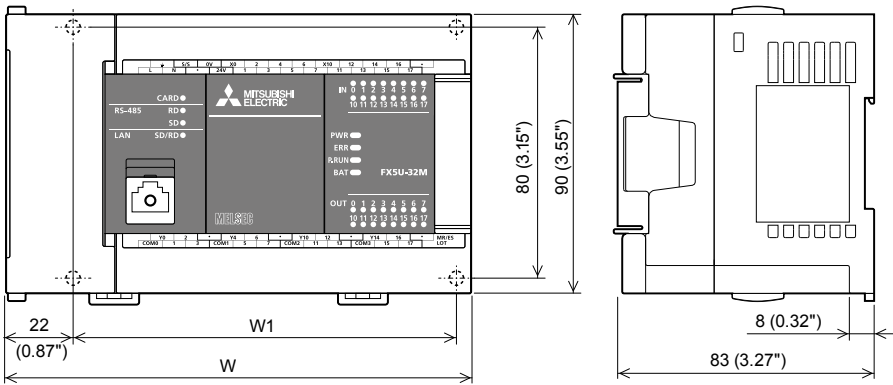
AL2-GSM-CAB

Specifications	AL-232CAB	AL2-GSM-CAB
Connector	9-pin D-SUB female connector	9-pin D-SUB male connector
Application	ALPHA 2 <-> PC	ALPHA 2 <-> PC, modem
Length	m 2.5	1.5
Order information	Art. no.	87674 142528

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

Base units FX5U

☐ MELSEC-F series ☒ MELSEC iQ-F series

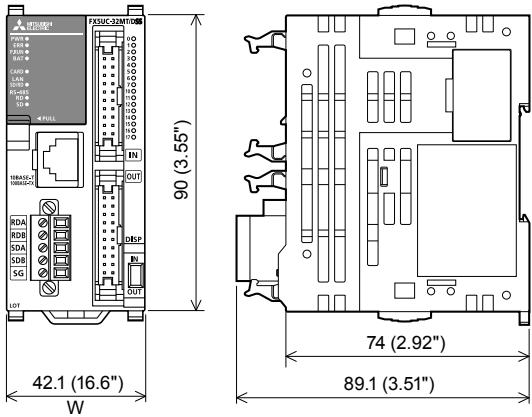


Base units	W	W1
FX5U-32M	150	123
FX5U-64M	220	193
FX5U-80M	285	258

All dimensions in mm

Base units FX5UC

☐ MELSEC-F series ☒ MELSEC iQ-F series

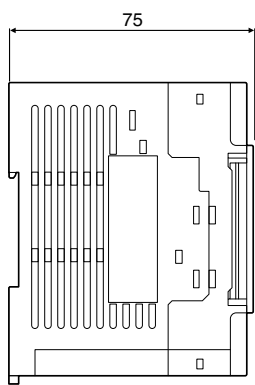
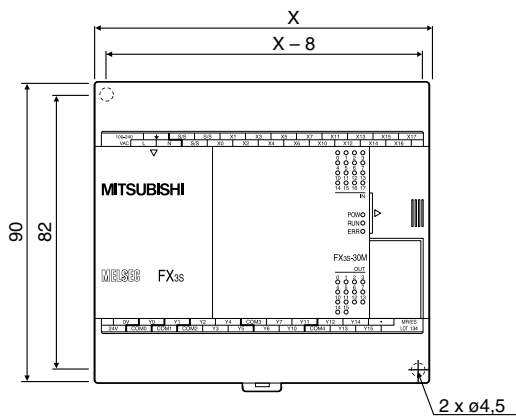


Base units	W
FX5UC-32M	42.1
FX5UC-64M	62.2
FX5UC-96M	82.3

All dimensions in mm

Base units FX3S

☒ MELSEC-F series ☐ MELSEC iQ-F series

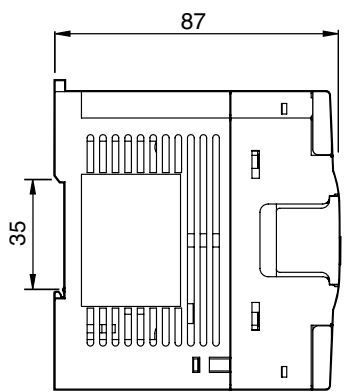
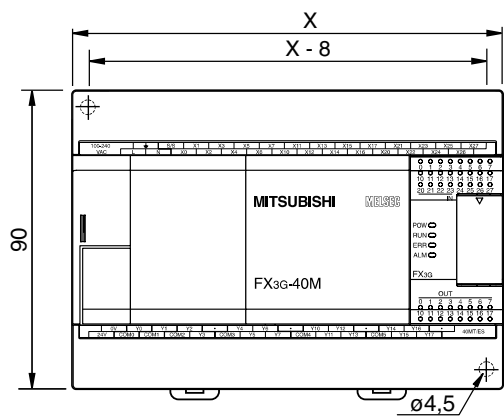


Base units	X
FX3S-10MR-ES	60
FX3S-10MT-ESS	60
FX3S-14MR-ES	60
FX3S-14MT-ESS	60
FX3S-20MR-ES	75
FX3S-20MT-ESS	75
FX3S-30MR-ES	100
FX3S-30MT-ESS	100

All dimensions in mm

Base units FX3G

☒ MELSEC-F series ☐ MELSEC iQ-F series

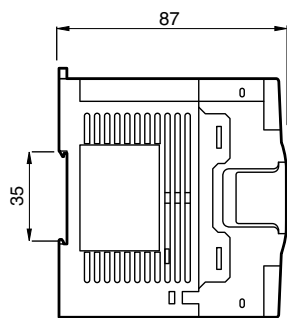
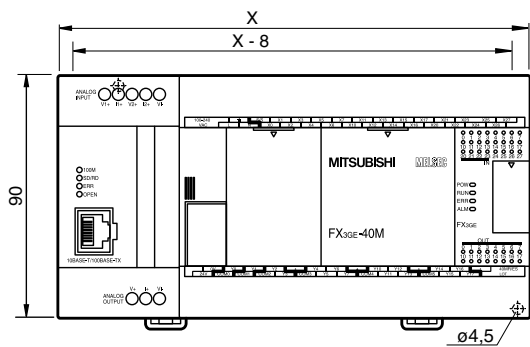


Base units	X
FX3G-14	90
FX3G-24	90
FX3G-40	130
FX3G-60	175

All dimensions in mm

Base units FX3GE

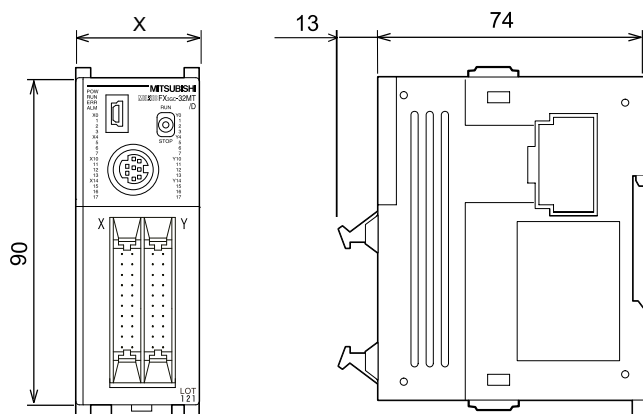
☒ MELSEC-F series ☐ MELSEC iQ-F series



Base units	X
FX3GE-24	130
FX3GE-40	175

All dimensions in mm

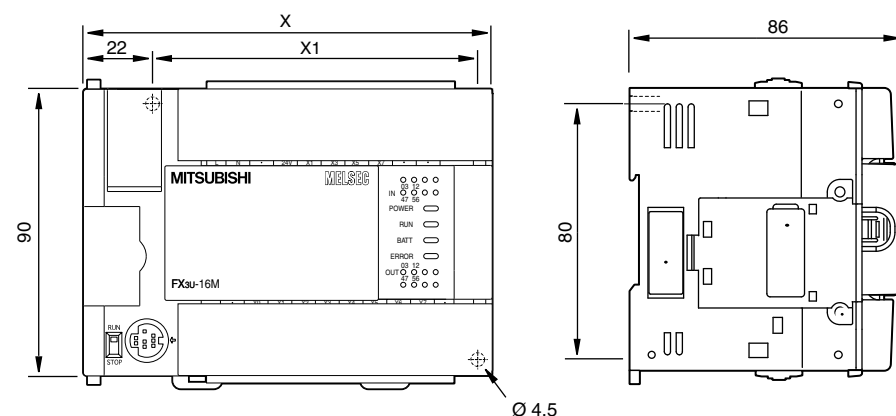
Base units FX3GC

☒ MELSEC-F series ☐ MELSEC iQ-F series


Base units	X
FX3GC-32MT/DSS	35

All dimensions in mm

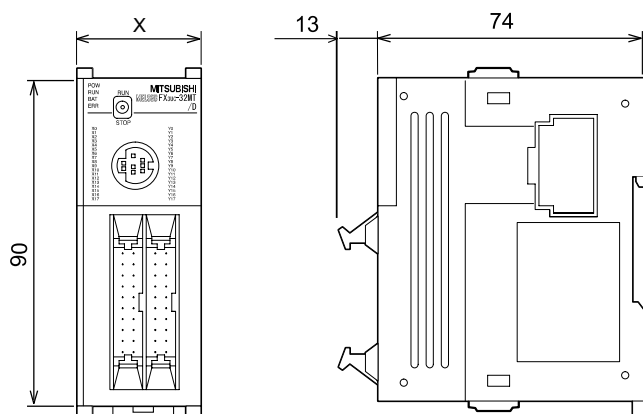
Base units FX3U

☒ MELSEC-F series ☐ MELSEC iQ-F series


Base units	X	X1
FX3U-16M□□□	130	103
FX3U-32M□□□	150	123
FX3U-48M□□□	182	155
FX3U-64M□□□	220	193
FX3U-80M□□□	285	258
FX3U-128M□□□	350	323

All dimensions in mm

Base units FX3UC

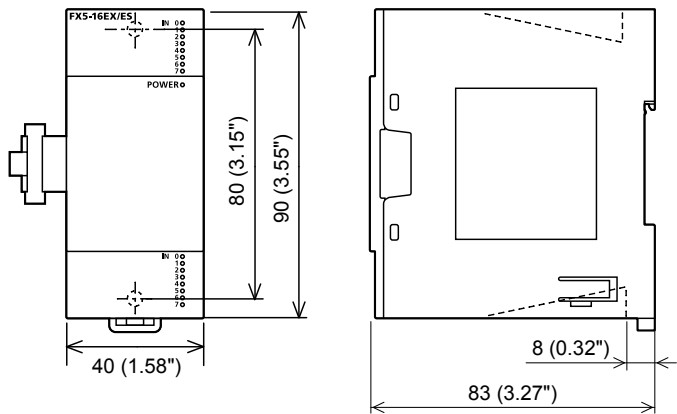
☒ MELSEC-F series ☐ MELSEC iQ-F series


Base units	X
FX3UC-16MT/DSS	34
FX3UC-32MT/DSS	34
FX3UC-64MT/DSS	59.7
FX3UC-96MT/DSS	85.4

All dimensions in mm

Input/output modules FX5 (terminal block type)

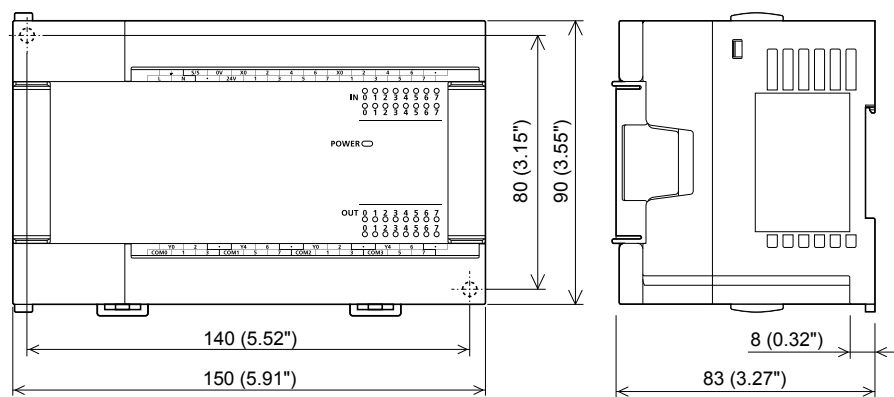
☐ MELSEC-F series ☒ MELSEC iQ-F series



All dimensions in mm

Powered input/output modules FX5

☐ MELSEC-F series ☒ MELSEC iQ-F series



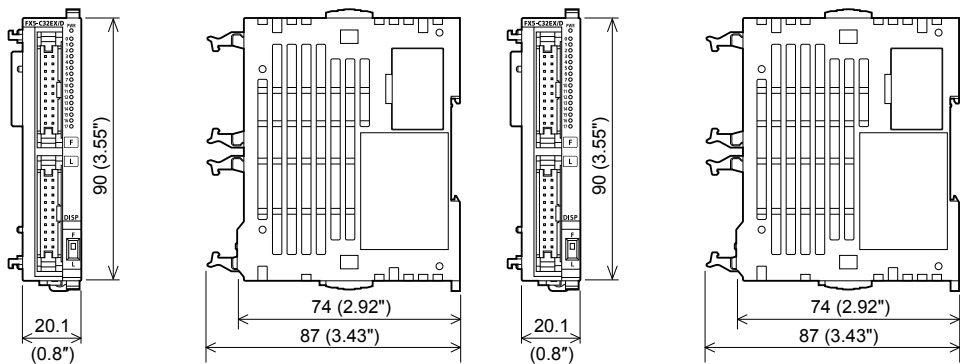
All dimensions in mm

Input/output modules FX5 (connector type)

☐ MELSEC-F series ☒ MELSEC iQ-F series

FX5-C16EX/D, FX5-C16EX/DS, FX5-C16EYT/D, FX5-C16EYT/DSS
FX5-C32EX/D, FX5-C32EX/DS, FX5-C32EYT/D, FX5-C32EYT/DSS

FX5-C16EX/D, FX5-C16EX/DS, FX5-C16EYT/D, FX5-C16EYT/DSS

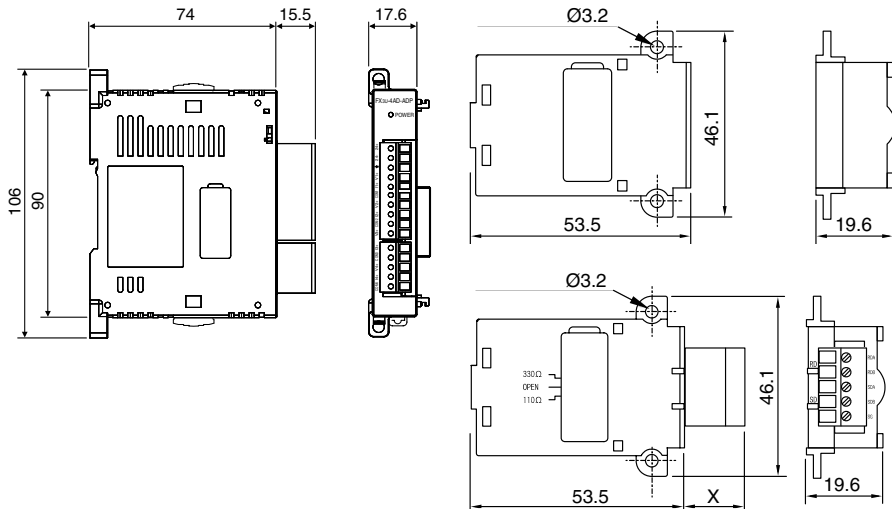


Type	W
FX5-C16EX/D, FX5-C16EX/DS, FX5-C16EYT/D, FX5-C16EYT/DSS	14.6
FX5-C32EX/D, FX5-C32EX/DS, FX5-C32EYT/D, FX5-C32EYT/DSS	20.1
FX5-C16EX/D, FX5-C16EX/DS, FX5-C16EYT/D, FX5-C16EYT/DSS	20.1

All dimensions in mm

Adapter modules and extension adapters FX3U

☒ MELSEC-F series ☐ MELSEC iQ-F series

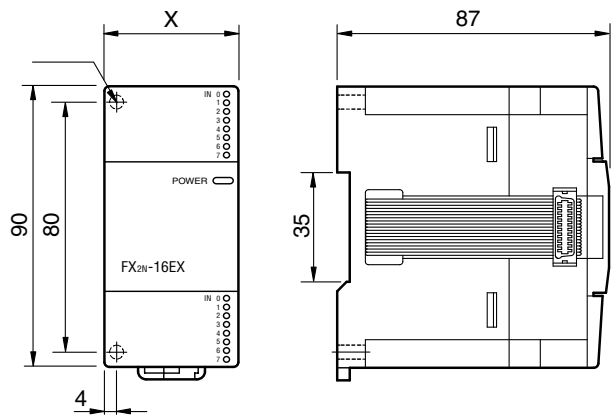


Type	X
FX3U-CNV	—
FX3U-USB	—
FX3U-485	15.5
FX3U-422	—
FX3U-232	9.2

All dimensions in mm

Compact extension units and modular extension blocks FX2N

☒ MELSEC-F series ☐ MELSEC iQ-F series



Compact extension units

Type	X
FX2N-32E□□□	150
FX2N-48E□□□	182
FX2N-48ER-UA1/UL	220

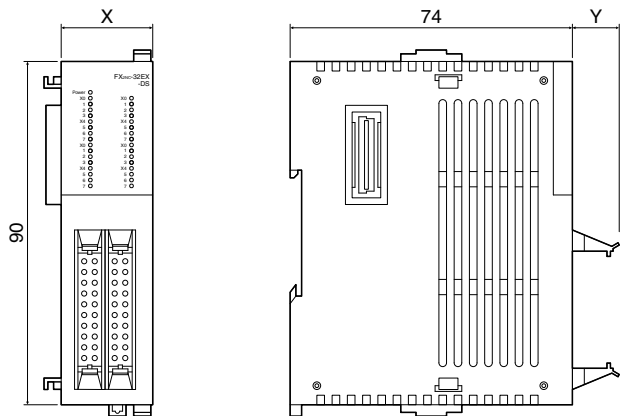
Modular extension blocks

Type	X
FX2N-8E□□□	43
FX2N-16E□□□	40

All dimensions in mm

Modular extension blocks FX2NC

☒ MELSEC-F series ☐ MELSEC iQ-F series



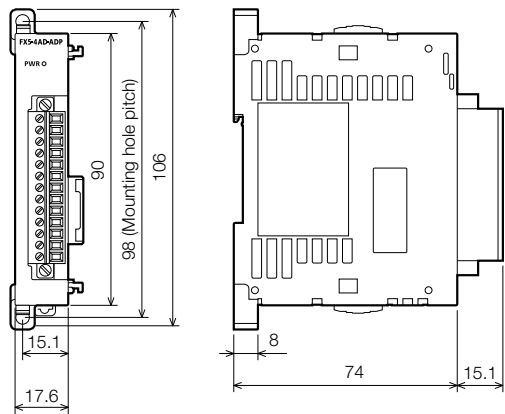
Type	X	Y
FX2NC-16EX-DS	14.6	13
FX2NC-16EYT-DSS	14.6	13
FX2NC-16EX-T-DS	20.2	15
FX2NC-16EYR-T-DSS	24.2	15
FX2NC-32EX-DS	26.2	13
FX2NC-32EYT-DSS	26.2	13

All dimensions in mm

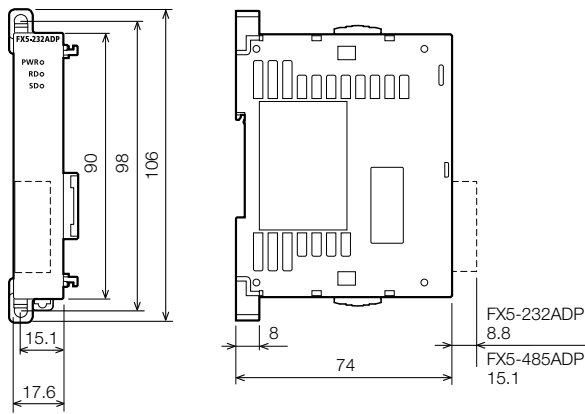
Expansion adapters FX5

☐ MELSEC-F series ☒ MELSEC iQ-F series

FX5-4AD-ADP/FX5-4DA-ADP



FX5-232ADP/FX5-485ADP

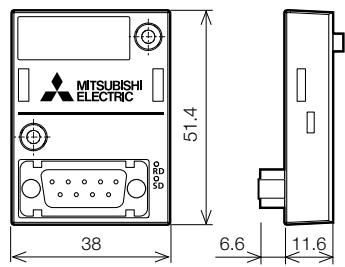


All dimensions in mm

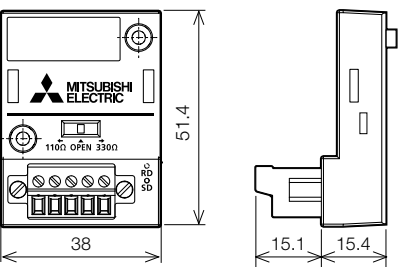
Expansion boards FX5

☐ MELSEC-F series ☒ MELSEC iQ-F series

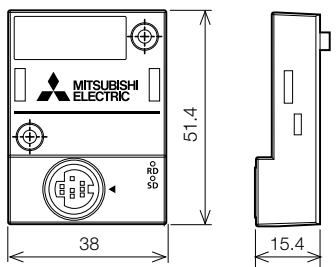
FX5-232-BD



FX5-485-BD



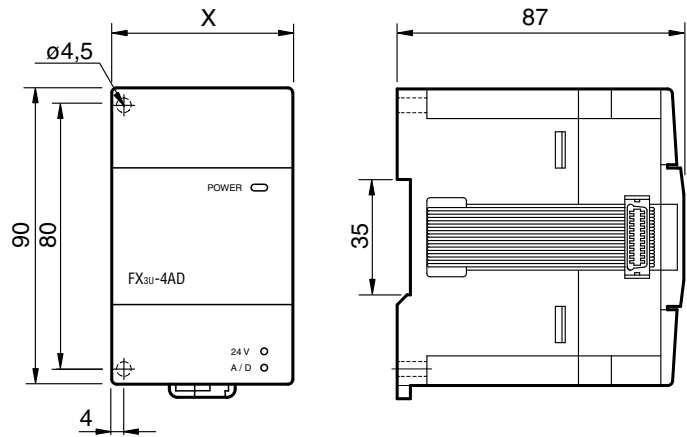
FX5-422-BD-GOT



All dimensions in mm

Special function modules FX3U/FX3UC

☒ MELSEC-F series ☐ MELSEC iQ-F series



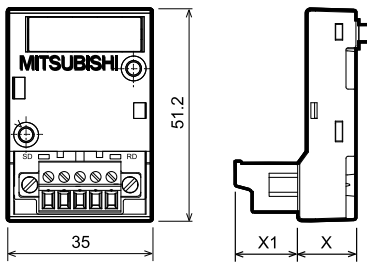
Type	X
FX3U-2HC	55
FX3U-3A-ADP	17.6
FX3U-4DA	55
FX3U-4AD	55
FX3U-4LC	90
FX3U-CF-ADP	45
FX3U-ENET	55
FX3U-CAN	43
FX3U-20SSC-H	55
FX3U-64CCL-M	55
FX3U-64DP-M	43
FX3U-1PSU-5V	55
FX3UC-4AD	20.2
FX3UC-1PS-5V	24.2
FX3U-1PG	43
FX3U-J1939	43

All dimensions in mm

Adapters FX3G

☒ MELSEC-F series ☐ MELSEC iQ-F series

FX3G-485-BD



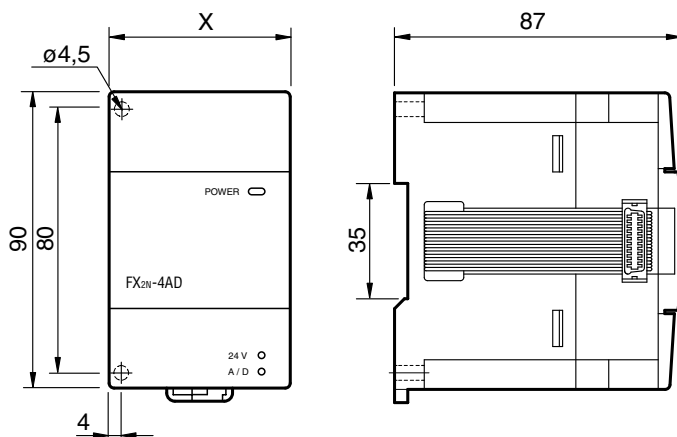
FX3G extension adapters

Type	X	X1
FX3G-1DA-BD	14.1	15.1
FX3G-232-BD	12	5.2
FX3G-2AD-BD	14.1	15.1
FX3G-422-BD	12	2.9
FX3G-485-BD	14.1	15.1
FX3G-8AV-BD	12	—

All dimensions in mm

Special function modules FX0N/FX2N

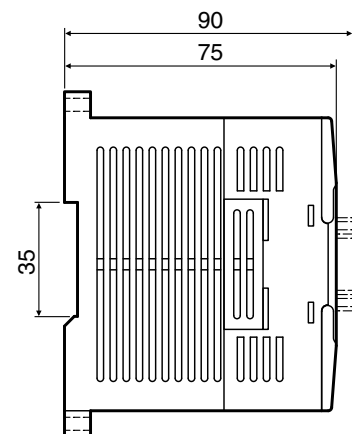
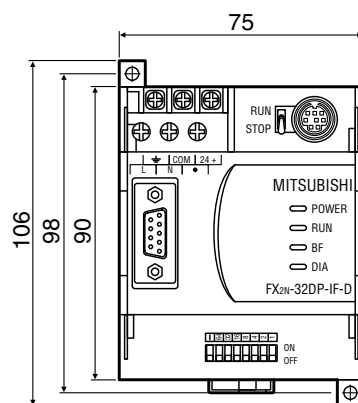
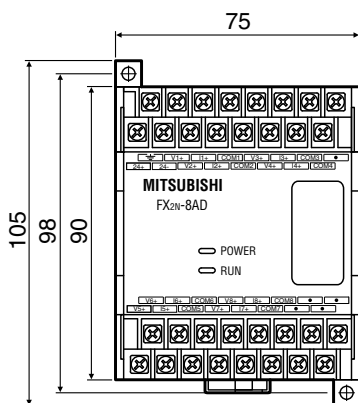
☒ MELSEC-F series ☐ MELSEC iQ-F series



Type	X
FX0N-3A	43
FX2N-2DA	43
FX2N-2AD	43
FX2N-4AD-TC	55
FX2N-4AD-PT	55
FX2N-1HC	55
FX2N-10PG	43
FX2N-5A	55
FX2N-232-IF	55
FX2N-64DNET	43

FX2N-8AD

FX2N-32DP-IF-D

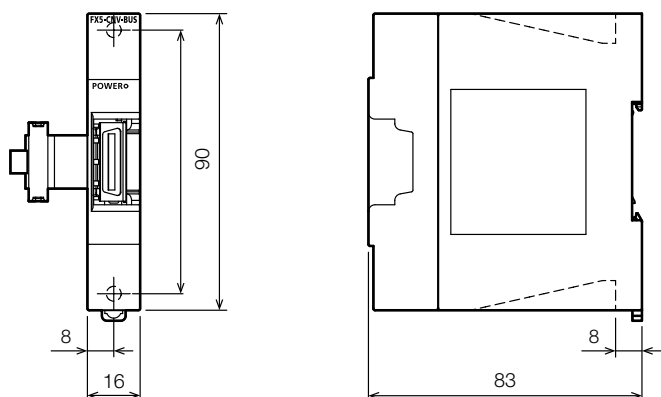


All dimensions in mm

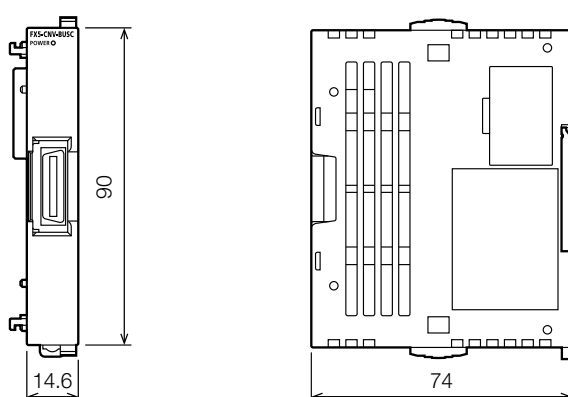
Bus conversion modules FX5

☐ MELSEC-F series ☒ MELSEC iQ-F series

FX5-CNV-BUS



FX5-CNV-BUSC

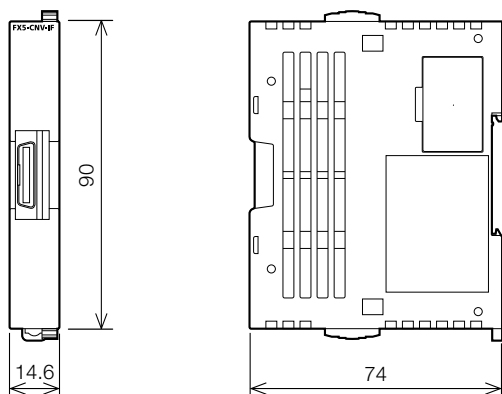


All dimensions in mm

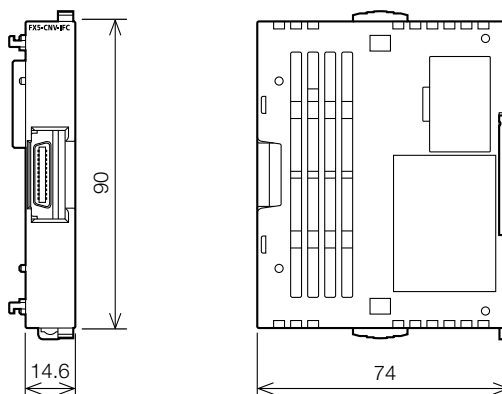
Connector conversion modules FX5

☐ MELSEC-F series ☒ MELSEC iQ-F series

FX5-CNV-IF



FX5-CNV-IFC

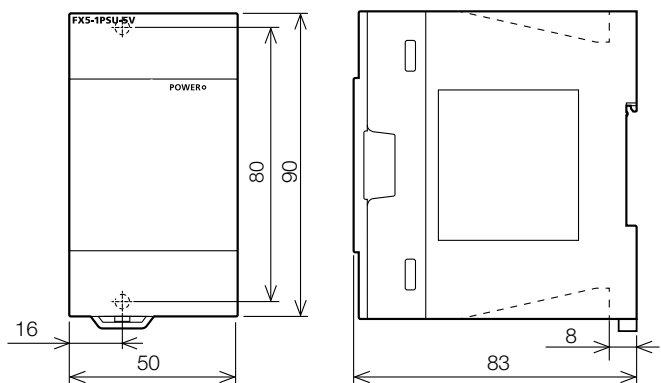


All dimensions in mm

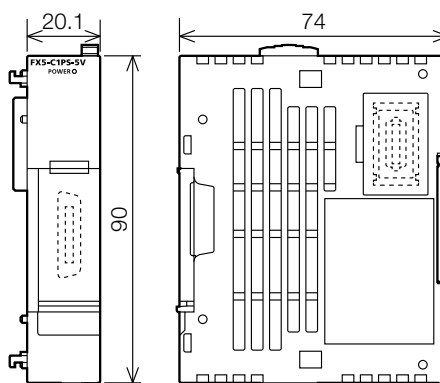
Extension power supply modules FX5

☐ MELSEC-F series ☒ MELSEC iQ-F series

FX5-1PSU-5V



FX5-C1PS-5V

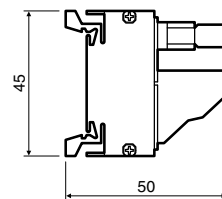
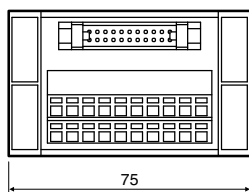


All dimensions in mm

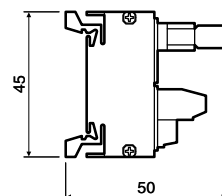
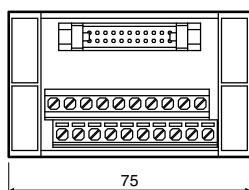
Terminal blocks

☒ MELSEC-F series ☐ MELSEC iQ-F series

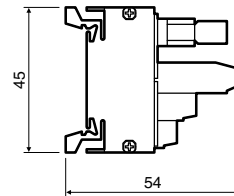
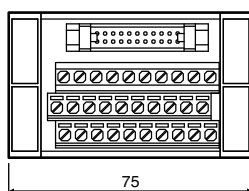
TB-20-S



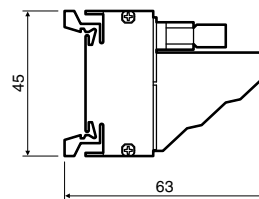
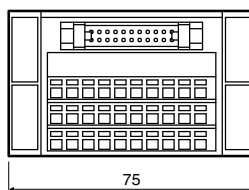
TB-20-C



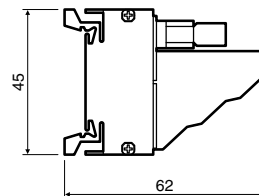
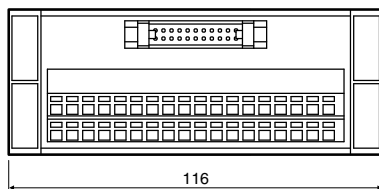
TB-8EX-S



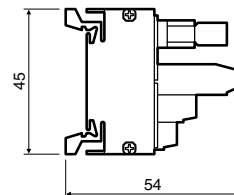
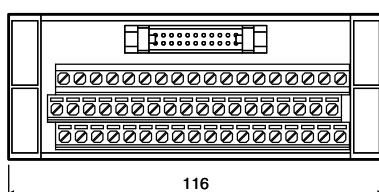
TB-8EX-C



TB-16EX-S



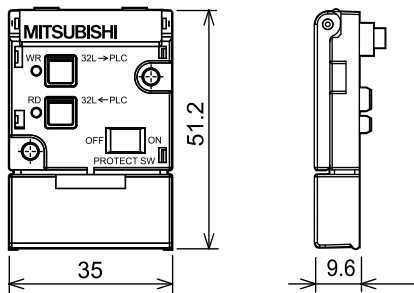
TB-16EX-C



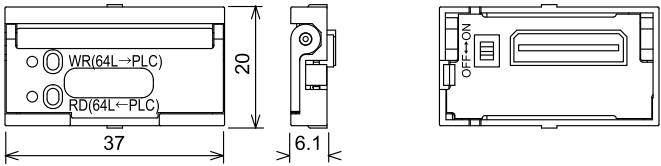
Memory cassettes

☒ MELSEC-F series ☐ MELSEC iQ-F series

FX3G-EEPROM-32L



FX3U-FLROM-16/64/64L

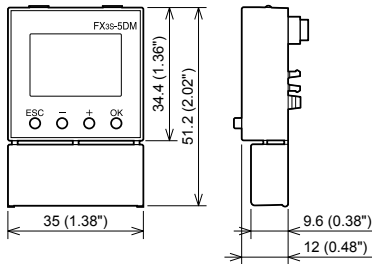


All dimensions in mm

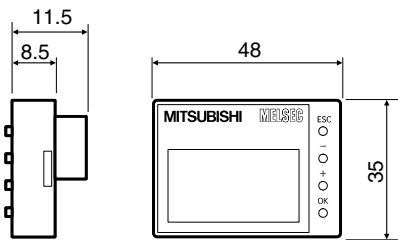
Display panels

☒ MELSEC-F series ☐ MELSEC iQ-F series

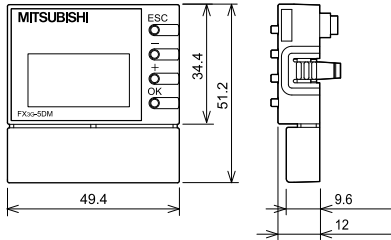
FX3S-5DM



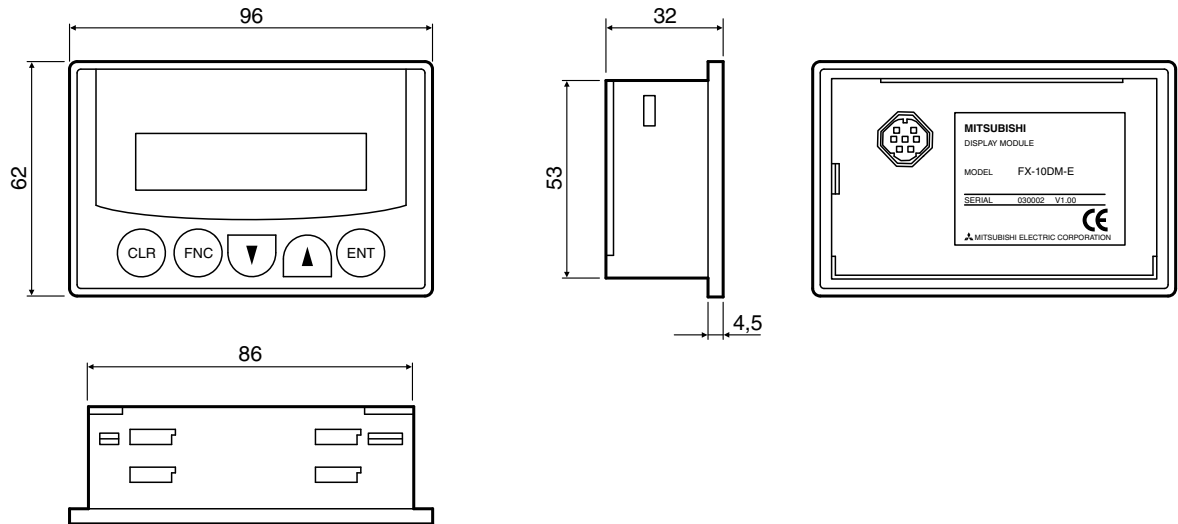
FX3U-7DM



FX3G-5DM



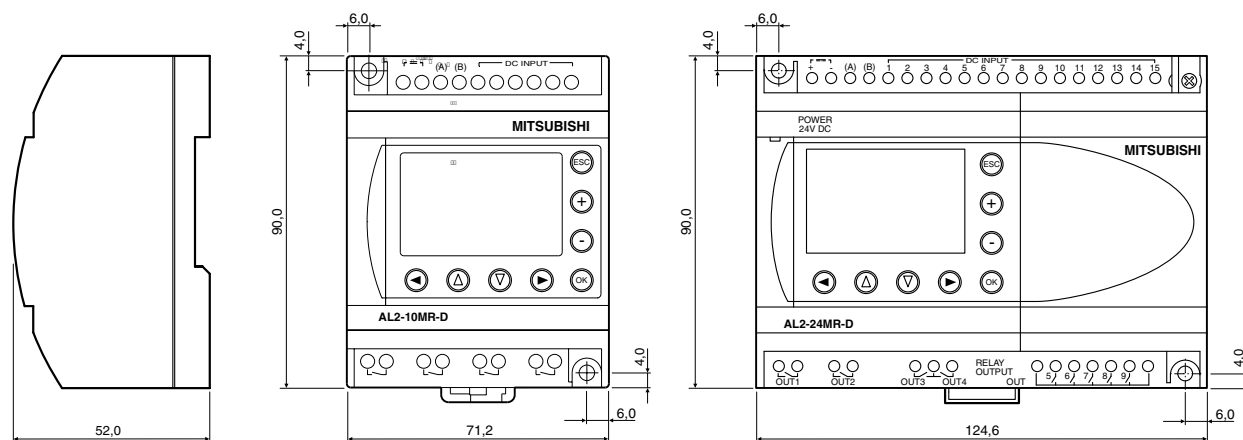
FX-10DM-E



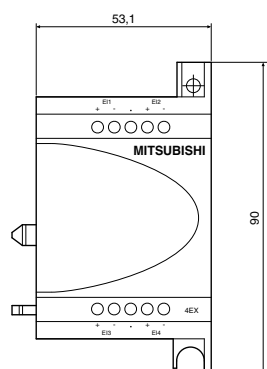
All dimensions in mm

ALPHA series

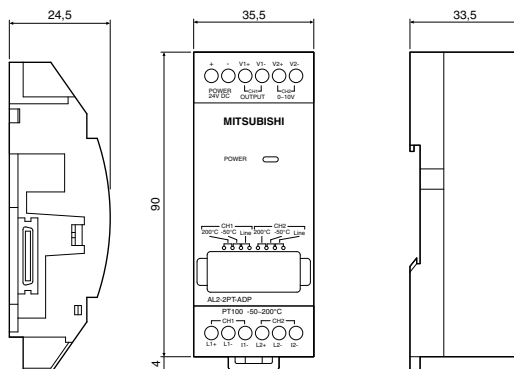
AL2-14M□-□, AL2-24M□-□



AL2-4EY□, AL2-2DA

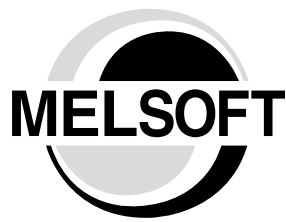


AL2-2PT-ADP, AL2-2TC-ADP



All dimensions in mm

MELSOFT – programming and documentation software for standard personal computers



With the MELSOFT software family Mitsubishi Electric offers efficient software packages helping to reduce programming and setup times to a high degree. The MELSOFT software family provides instant access, direct communications, compatibility, and open exchange of variables.

The MELSOFT family comprises:

Programming packages AL-PCS/WIN and GX Works2/GX Works2 FX

Various development software for operator terminals (please refer to the technical catalogue HMI)

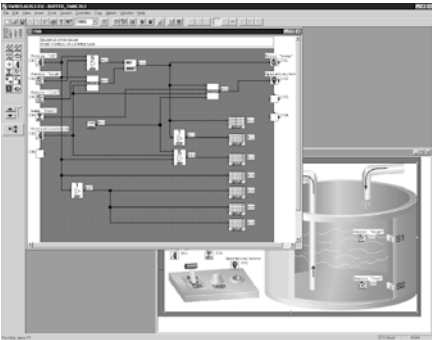
Software for a dynamic data exchange like MX Change

AL-PCS/WIN is recommended as a cost-effective beginners package for the ALPHA series. This package offers a quick and easy introduction to programming.

GX Works2 is the right decision for a universal programming package. In addition to the FX family, the MELSEC L series and the MELSEC System Q can be programmed.

For detailed information please order our separate MELSOFT brochure.

■ ALPHA programming software



AL-PCS/WIN programming software

All controllers of the ALPHA series can be programmed with the MS Windows® software AL-PCS/WIN. Programming the ALPHA with this software is very easy and is done by placing the different program elements on a graphical programming environment. The connections (wiring) between the inputs, function blocks, and outputs are drawn graphically by mouse

click to build the logic. By this, programs with up to 200 function blocks can be created, where each single function in a program can be used as many times as desired.

A complete documentation of the program can be created directly from AL-PCS/WIN.

Software (AL-PCS/WIN)	
Series	Alpha series
Language	7 languages (English/German/French/Italian/Spanish/Swedish/Russian)
Einsetzbar bei	Windows 95/98/ME/NT/2000/XP/Vista/7
Order information	Free download from the webpage

Note: The AL-PCS/WIN software can be downloaded free of charge

PLC programming software

GX Works2/GX Works2 FX



☒ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☐ FX5U ☐ FX5UC

GX Works2 supports all PLC of the MELSEC System Q, L and FX3 series and offers numerous functions to facilitate programming work and support the user. GX Works2 FX has the same functionality as GX Works2 but just for FX3 PLC's.

The following programming languages are available:

- ST (Structured Text)
- SFC (Sequential Function Chart)
- LD (Ladder Diagram)
- FBD (Function Block Diagram)
- IL (Instruction List) – planned capability

Main features

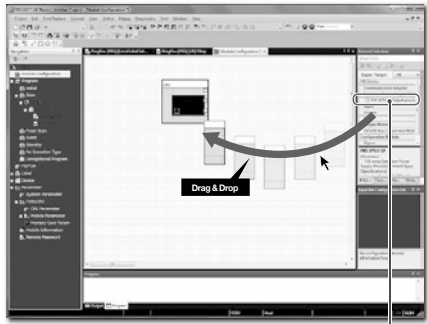
- Integrated parameterization of special function modules (analog, temperature, positioning, counter, network)

- Use of program and function block libraries save time for programming and minimizes errors.
- Integrated simulation allows offline testing of the software and the configuration.
- Comprehensive diagnostics and debugging functions support the user in troubleshooting and fault clearance.
- Revision verification and restoration makes it possible to restore old program versions or to compare with programs from the PLC.
- GX Works2 is compatible with GX Developer and GX IEC Developer projects (as far as the editors are supported)

Software	Series	Language	Disk type	Art. no.
GX Works2 FX V01-2LOC-E	MELSEC FX3S, FX3G, FX3GC, FX3GE, FX3U, FX3UC	English	DVD	255804
GX Works2 FX V01-2LOC-E-INTRODUCTION				256745
GX Works2 V01-2LOC-E	All MELSEC PLCs (except MELSEC iQ-R/iQ-F),	English	DVD	234630
GX Works2 V01-5LOC-E				234631
GX Works2 V01-2LOC-E-UPGRADE				234632
GX Works2 V01-5LOC-E-UPGRADE				234634
GX Works2 V01-2LOC-E-INTRODUCTION				234789
GX Works2 V01-2LOC-G	All MELSEC PLCs (except MELSEC iQ-R/iQ-F),	German	DVD	244876
GX Works2 V01-5LOC-G				244877
GX Works2 V01-2LOC-G-INTRODUCTION				244878
Accessory	Programming cable FX-USB-AW			165288

GX Works3

☒ FX3S ☒ FX3G ☒ FX3GC ☒ FX3GE ☒ FX3U ☒ FX3UC ☒ FX5U ☒ FX5UC



Simply drag & drop when adding a module

GX Works3 supports the MELSEC iQ-F (and iQ-R) series and offers numerous functions to facilitate programming work and support the user.

The main IEC languages are supported by GX Works3:

- ST (Structured Text)
- FBD (Function Block Diagram)
- LD (Ladder Diagram)

Main features

- Achieving an easy and intuitive programming by only making "selections" in a graphical environment with module configuration diagram and module label/module FB.

- Supporting various applications (parameter settings of simple motion module, creation of positioning data, parameter setting and servo adjustments of servo amplifier).
- Enabling transmitting/receiving of the data between an external device and the CPU module by matching the protocol of the external device (Communication protocol support function).

Software	Series	Language	Disk type	Art. no.
GX Works3 V01-2LOC-E		English	CD	284378
GX Works3 V01-5LOC-E		English	CD	284379
GX Works3 V01-2LOC-E-UPGRADE		English	CD	286219
GX Works3 V01-2LOC-G		English, German	CD	304614
GX Works3 V01-5LOC-E-UPGRADE		English	CD	286220
GX Works3 V01-5LOC-G		English, German	CD	304645

Software for Profibus networks

■ GX Configurator DP



The GX Configurator DP is a user friendly configurations software for the open network Profibus DP.

The software package is a 32 bit application and runs under all Windows versions.

Configuration of all Profibus DP modules for the MELSEC Ans/QnAS and A/Q series and also the FX family is possible.

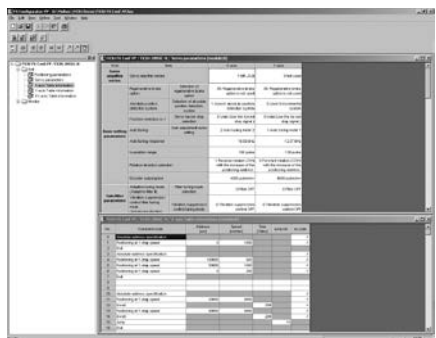
Due to the supported extended user parameters of a GSD file, easy parameter setting of Profibus DP slave devices is possible even for third-party devices.

The new GX Configurator DP enables the download of all configuration data via an overriding network.

All Profibus modules are configured via the backside bus.

Software		GX Configurator DP V07-1LOC-M
Supported Profibus DP master modules for the Mitsubishi Electric MELSEC series		A1S1J71PB92D, AJ71PB92D, QJ71PB92D
Language		English/German
Disk type		CD ROM
Order information		Art. no.
		231731
Accessory		Programming cable FX-USB-AW, art. no.: 165288

■ FX Configurator FP



FX Configurator-FP is beneficial for setting up table operation information, servo amplifier parameters and positioning parameters for the FX3U-SSC-H positioning module. Positioning operations and their associated parameters (speeds, addresses, torque limits etc.) can be monitored and tested with the integrated monitor and test functions.

Control patterns from simple to complicated combinations of positioning commands can easily be configured with new methods.

The software runs under all Windows® versions.

Software		FX Configurator FP V0100-1LOC-E
Supported modules for the Mitsubishi Electric MELSEC series		FX3U-20SSC-H
Language		English
Disk type		CD ROM
Order information		Art. no.
		189283
Accessory		Programming cable FX-USB-AW, art. no.: 165288

■ Hand-held programming unit



FX-30P programming unit

The FX-30P is a small, industrial programming and maintenance tool for the FX Series. This unit can perform program uploads/downloads and store up to 15 programs in its internal memory. Keywords can be registered, deleted or canceled in applicable PLCs. Program monitoring and data device adjustment functionality is also available. To stay up to date the latest firmware

can be downloaded on a PC then installed via the USB port. PLC programs on the PC can also be transferred via USB, eliminating the need for peripheral devices.
Note: FX-30P firmware and program downloads from a PC via the embedded USB port available in firmware versions 1.10 and later.

Specifications		FX-30P
Applicable for		Base units FX1S, FX1N, FX3G, FX2N, FX3U, FX3UC
Ambient temperature		0–40 °C
Ambient relative humidity (non-condensing)		5–95 %
Power supply		5 V DC ±5 %/155 mA (from main unit)
Display		LCD (with backlight)
Character display		21x8
Keyboard		35
Memory	Program capacity	Built-in RAM: 64K steps for program monitoring and modification RAM retention (for about five years, ambient temperature 25 °C(77 °F)) by battery. Built-in flash memory ROM: Up to 15 programs can be stored in the built-in flash memory ROM. Allowable number of writes: 100,000 times
	HPP held data	Display language setting (Japanese, English or Chinese), contrast, buzzer sound volume, brightness adjustment, screen saver and HPP protect key (saved in the built-in flash memory)
Cable		FX-20P-CAB0
Weight		kg 0.3
Dimensions (WxHxD)		mm 87x170x30
Order information		Art. no. 221271

MELSEC iQ-F series

Module type	CE		uL cUL	KC	Ship approvals							
	EMC	LVD*			ABS	DNV	LR	GL	BV	RINA	NK	KR
FX5U base units												
FX5U-32MR/DS	●	●	●	●	—	—	—	—	—	—	—	—
FX5U-32MR/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-32MT/DS	●	○	●	●	—	—	—	—	—	—	—	—
FX5U-32MT/DSS	●	○	●	●	—	—	—	—	—	—	—	—
FX5U-32MT/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-32MT/ESS	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-64MR/DS	●	●	●	●	—	—	—	—	—	—	—	—
FX5U-64MR/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-64MT/DS	●	○	●	●	—	—	—	—	—	—	—	—
FX5U-64MT/DSS	●	○	●	●	—	—	—	—	—	—	—	—
FX5U-64MT/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-64MT/ESS	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-80MR/DS	●	●	●	●	—	—	—	—	—	—	—	—
FX5U-80MR/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-80MT/DS	●	○	●	●	—	—	—	—	—	—	—	—
FX5U-80MT/DSS	●	○	●	●	—	—	—	—	—	—	—	—
FX5U-80MT/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5U-80MT/ESS	●	●	●	●	●	●	●	●	●	●	●	●
FX5UC base units												
FX5UC-32MT/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5UC-32MT/DSS	●	○	●	●	●	●	●	●	●	●	●	●
FX5UC-64MT/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5UC-64MT/DSS	●	○	●	●	●	●	●	●	●	●	●	●
FX5UC-96MT/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5UC-96MT/DSS	●	○	●	●	●	●	●	●	●	●	●	●
FX5 I/O modules (extension cable type)												
FX5-8EX/ES	●	○	●	●	●	●	●	●	●	●	●	●
FX5-16ER/ES	●	●	●	●	—	—	—	—	—	—	—	—
FX5-16ET/ES	●	○	●	●	—	—	—	—	—	—	—	—
FX5-16ET/ESS	●	○	●	●	—	—	—	—	—	—	—	—
FX5-16EX/ES	●	○	●	●	●	●	●	●	●	●	●	●
FX5-8EYR/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5-8EYT/ES	●	○	●	●	●	●	●	●	●	●	●	●
FX5-8EYT/ESS	●	○	●	●	●	●	●	●	●	●	●	●
FX5-16EYR/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5-16EYT/ES	●	○	●	●	●	●	●	●	●	●	●	●
FX5-16EYT/ESS	●	○	●	●	●	●	●	●	●	●	●	●
FX5-16ET/ES-H	●	○	●	●	●	●	●	●	●	●	●	●
FX5-16ET/ESS-H	●	○	●	●	●	●	●	●	●	●	●	●
FX5-32ER/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5-32ET/ES	●	●	●	●	●	●	●	●	●	●	●	●
FX5-32ET/ESS	●	●	●	●	●	●	●	●	●	●	●	●
FX5-32ER/DS	●	●	●	●	—	—	—	—	—	—	—	—
FX5-32ET/DS	●	○	●	●	—	—	—	—	—	—	—	—
FX5-32ET/DSS	●	○	●	●	—	—	—	—	—	—	—	—
FX5 I/O module (extension connector type)												
FX5-C16EX/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C16EX/DS	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C32EX/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C32EX/DS	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C16EYT/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C16EYT/DSS	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C32EYT/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C32EYT/DSS	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C32ET/D	●	○	●	●	●	●	●	●	●	●	●	●
FX5-C32ET/DSS	●	○	●	●	●	●	●	●	●	●	●	●
FX5 intelligent function module												
FX5-40SSC-S	●	—	●	●	—	—	—	—	—	—	—	—
FX5-80SSC-S	●	—	●	●	—	—	—	—	—	—	—	—
FX5-CCLIEF	●	○	●	●	—	—	—	—	—	—	—	—
FX5-20PG-P	●	—	●	●	—	—	—	—	—	—	—	—
FX5-CCL-MS	●	—	●	●	—	—	—	—	—	—	—	—
FX5-ASI-M	●	—	●	●	—	—	—	—	—	—	—	—

Module type	CE		uL cUL	KC	Ship approvals							
	EMC	LVD*			ABS	DNV	LR	GL	BV	RINA	NK	KR
FX5 extension power supply module												
FX5-1PSU-5V	●	●	●	●	●	●	●	●	●	●	●	●
FX5-C1PS-5V	●	○	●	●	●	●	●	●	●	●	●	●
FX5 bus conversion module												
FX5-CNV-BUS	●	○	●	●	●	●	●	●	●	●	●	●
FX5-CNV-BUSC	●	○	●	●	●	●	●	●	●	●	●	●
FX5 connector conversion module												
FX5-CNV-IF	●	○	●	●	●	●	●	●	●	●	●	●
FX5-CNV-IFC	●	○	●	●	●	●	●	●	●	●	●	●
FX5 expansion adapter												
FX5-4AD-ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX5-4DA-ADP	●	○	● ^①	●	●	●	●	●	●	●	●	●
FX5-232ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX5-485ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX5U expansion board												
FX5-232-BD	●	○	—	●	●	●	●	●	●	●	●	●
FX5-485-BD	●	○	—	●	●	●	●	●	●	●	●	●
FX5-422-BD-GOT	●	○	—	●	●	●	●	●	●	●	●	●
FX5 special function module												
FX5-4AD-PT-ADP	●	○	●	●	—	—	—	—	—	—	—	—
FX5-4AD-TC-ADP	●	○	●	●	—	—	—	—	—	—	—	—
FX5-8AD	●	—	●	●	—	—	—	—	—	—	—	—
FX5-4LC	●	—	●	●	—	—	—	—	—	—	—	—
Terminal module												
FX-16E-TB	—	—	●	○	—	—	—	—	—	—	—	—
FX-32E-TB	—	—	●	○	—	—	—	—	—	—	—	—
FX-16EYR-TB	—	—	●	○	—	—	—	—	—	—	—	—
FX-16EYS-TB	—	—	—	—	—	—	—	—	—	—	—	—
FX-16EYT-TB	—	—	●	○	—	—	—	—	—	—	—	—
FX-16E-TB/UL	—	—	●	○	—	—	—	—	—	—	—	—
FX-32E-TB/UL	—	—	●	○	—	—	—	—	—	—	—	—
FX-16EYR-ES-TB/UL	—	—	●	○	—	—	—	—	—	—	—	—
FX-16EYS-ES-TB/UL	—	—	●	○	—	—	—	—	—	—	—	—
FX-16EYT-ES-TB/UL	—	—	●	○	—	—	—	—	—	—	—	—
FX-16EYT-ESS-TB/UL	—	—	●	○	—	—	—	—	—	—	—	—
Extended extension cable												
FX5-30EC	●	○	●	●	—	—	—	—	—	—	—	—
FX5-65EC	●	○	●	●	—	—	—	—	—	—	—	—
Connector conversion adapter												
FX5-CNV-BC	●	○	●	●	●	●	●	●	●	●	●	●
FX3 intelligent function module												
FX3U-4AD	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-4DA	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-4LC	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-1PG	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-2HC	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-16CCL-M	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-64CCL	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-128ASL-M	●	○	●	●	—	—	—	—	—	—	—	—
FX3 extension power supply module												
FX3U-1PSU-5V	●	●	●	●	—	—	—	—	—	—	—	—

① Supported by manufacturing serial number 1660001 and later

● = comply, ○ = no need to comply

*LVD = Low Voltage Directive

[illegible][illegible]

*LVD = Low Voltage Directive

Module type	CE		uL cUL	KC	Ship approvals							
	EMC	LVD*			ABS	DNV	LR	GL	BV	RINA	NK	KR
FX2N extension units												
FX2N-32ER-ES/UL	●	●	●	●	●	●	●	●	●	●	—	●
FX2N-32ET-ESS/UL	●	●	●	●	●	●	●	●	●	●	—	●
FX2N-48ER-DS	●	●	●	●	—	—	—	—	—	—	—	●
FX2N-48ER-ES/UL	●	●	●	●	—	●	●	●	●	●	—	●
FX2N-48ET-DSS	●	○	●	●	●	●	—	—	—	●	—	●
FX2N-48ET-ESS/UL	●	●	●	●	●	●	●	●	●	●	—	●
FX2N extension blocks												
FX2N-8ER-ES/UL	●	●	●	○	—	●	—	●	—	—	—	—
FX2N-8EX-ES/UL	●	●	●	○	—	●	—	●	—	—	—	—
FX2N-8EYR-ES/UL	●	●	●	○	—	●	—	●	—	—	—	—
FX2N-8EYT-ESS/UL	●	●	●	○	—	●	—	●	—	—	—	—
FX2N-16EX-ES/UL	●	○	●	○	●	●	●	●	●	●	●	●
FX2N-16EYR-ES/UL	●	○	●	○	●	●	●	●	●	●	●	●
FX2N-16EYT-ESS/UL	●	○	●	○	●	●	●	●	●	●	●	●
FX2N special function modules												
FX2N-1HC	●	○	●	●	●	●	●	●	●	●	—	●
FX2N-2AD	●	○	●	●	●	—	—	●	—	—	●	●
FX2N-2DA	●	○	●	●	●	—	—	●	—	—	●	●
FX2N-5A	●	○	●	●	—	—	—	●	●	●	—	—
FX2N-8AD	●	○	●	●	—	—	—	●	●	●	●	—
FX2N-10PG	●	○	●	●	—	—	—	—	—	—	—	—
FX2N-32CCL	●	○	—	●	—	—	—	—	—	—	—	—
FX2N-32DP-IF-D	●	●	●	●	—	—	—	—	—	—	—	—
FX2N-64DNET	●	○	●	●	—	—	—	—	—	—	—	—
FX2N-232IF	●	○	—	●	●	●	●	●	●	—	—	—
FX2NC extension blocks												
FX2NC-16EX-DS	●	○	●	○	●	●	●	—	—	—	—	—
FX2NC-16EX-T-DS	●	○	●	○	●	●	●	—	—	—	—	—
FX2NC-16EYR-T-DS	●	●	●	○	●	●	●	—	—	—	—	—
FX2NC-16EYT-DSS	●	○	●	○	●	●	●	—	—	—	—	—
FX2NC-32-EX-DS	●	○	●	○	●	●	●	—	—	—	—	—
FX2NC special function modules												
FX2NC-1HC	●	●	●	●	—	—	—	—	—	—	—	—
FX3U special function modules												
FX3U-2HC	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-2HSY-ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-3A-ADP	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-4AD	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-4AD-ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-4AD-PNK-ADP	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-4AD-PT-ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-4AD-PTW-ADP	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-4AD-TC-ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-4DA	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-4DA-ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-4HSX-ADP	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-4LC	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-20SSC-H	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-232ADP-MB	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-485ADP-MB	●	○	●	●	●	●	●	●	●	●	●	●
FX3U-CF-ADP	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-ENET-ADP	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-ENET	●	○	●	●	●	●	●	●	—	—	—	—
FX3U-CAN	●	○	●	—	●	●	●	●	●	●	—	—
FX3U-16CCL-M	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-64CCL	●	○	●	●	—	—	—	—	—	—	—	—
FX3U-64DP-M	●	○	●	—	●	●	—	●	—	—	—	—
FX3U-J1939	●	○	●	—	●	●	●	●	●	●	—	—
FX3U-1PG	●	○	●	●	—	—	—	—	—	—	—	—
FX3G interface adapter												
FX3G-CNV-ADP	●	○	●	○	●	●	●	●	●	●	—	—
FX3S interface adapter												
FX3S-CNV-ADP	●	○	●	○	—	—	—	—	—	—	—	—

Module type	CE		uL cUL	KC	Ship approvals							
	EMC	LVD*			ABS	DNV	LR	GL	BV	RINA	NK	KR
FX3UC special function blocks												
FX3UC-1PS-5V	●	○	●	●	●	●	●	●	●	●	—	—
FX3UC-4AD	●	○	●	●	—	—	—	—	—	—	—	—
Adapter boards												
FX3G-1DA-BD	●	○	—	●	●	●	●	●	●	●	●	—
FX3G-2AD-BD	●	○	—	●	●	●	●	●	●	●	●	—
FX3G-8AV-BD	●	○	—	○	●	●	●	●	●	●	●	—
FX3G-232-BD	●	○	—	●	●	●	●	●	●	●	●	—
FX3G-422-BD	●	○	—	○	●	●	●	●	●	●	●	—
FX3G-485-BD	●	○	—	○	●	●	●	●	●	●	●	—
FX3U-232-BD	●	○	—	●	●	●	●	●	●	●	●	●
FX3U-422-BD	●	○	—	●	●	●	●	●	●	●	●	●
FX3U-485-BD	●	○	—	●	●	●	●	●	●	●	●	●
FX3U-CNV-BD	●	○	—	○	●	●	●	●	●	●	●	●
FX3U-USB-BD	●	○	—	●	●	●	●	●	●	●	●	●
FX3S-CNV-ADP	●	○	●	○	●	●	●	●	●	●	●	●
FX3G-CNV-ADP	●	○	●	○	●	●	●	●	●	—	●	—
Accessories												
ALPHA POWER 24	●	●	●	—	—	—	—	—	—	—	—	—
FX-10DM-E	●	○	—	●	—	—	—	—	—	—	—	—
FX-232AWC-H	●	○	—	●	—	—	—	—	—	—	—	—
FX-USB-AW	●	○	—	●	—	—	—	—	—	—	—	—
FX2N-CNV-BC	●	○	—	○	—	—	—	—	—	—	—	—
FX2NC-CNV-IF	●	○	—	—	—	—	●	—	—	—	—	—
FX3G-5DM	●	○	—	●	●	●	●	●	●	●	—	—
FX3U-1PSU-5V	●	●	●	—	—	—	—	—	—	—	—	—
FX3U-32BL	—	—	—	—	—	—	—	—	—	—	—	—
FX3U-7DM	●	○	—	●	●	●	●	●	●	●	●	●
FX3U-7DM-HLD	—	○	—	○	—	—	—	—	—	—	—	—
FX3UC-1PS-5V	—	—	—	—	—	●	—	—	—	—	—	—
Memory cassettes												
FX3G-EEPROM-32L	●	○	—	○	●	●	●	●	●	●	●	—
FX3U-FLROM-16	●	○	—	○	●	●	●	●	●	●	●	●
FX3U-FLROM-64	●	○	—	○	●	●	●	●	●	●	●	●
FX3U-FLROM-64L	●	○	—	○	●	●	●	●	●	●	●	●

● = comply, ○ = no need to comply
*LVD = Low Voltage Directive

M

MELSEC-F series	
Accessories	74
Analog modules	55
Certifications	104
Communication modules	68
Configuration	
FX3G	10
FX3GC	12
FX3GE	10
FX3S	12
FX3U	8
FX3UC	8
Data logger module	59
Dimensions	88
Extension adapters	71
High-speed counter adapters	60
High-speed counter modules	59
Interface adapters	73
I/O extension	49
Network modules	62
Positioning modules	60
Product overview	5
Software	99
Special functions	
FX control solutions	25
Specifications	
FX3G	41
FX3GC	41
FX3GE	41
FX3S	34
FX3U	45
FX3UC	48
Temperature control modules	58
Unit components	
FX3G	35
FX3GC	39
FX3GE	37
FX3S	32
FX3U	42
FX3UC	46

MELSEC IQ-F series	
Accessories	74
Analog modules	55
Base units	
FX5U	27
FX5UC	30
Certifications	103
Communication modules	68
Configuration	
FX5U	14
FX5UC	16
Dimensions	87
High-speed counter modules	59
Interface adapters	73
I/O extension	50
Powered extension units	50
Unpowered extension modules	52
Network modules	62
Positioning modules	60
Product overview	4
Simple Motion modules	61
Software	99
Special functions	
Advanced motion control	24
Basic positioning control	23
Battery-less and maintenance-free	22
Built-in analog inputs/outputs (with alarm output)	20
Built-in Ethernet port	19
Built-in positioning (200 kpps, 4 axes built in) + Positioning 2 axes (200 kpps, 2 axes)	22
Built-in RS485 port (with Modbus® function)	20
Built-in SD card slot	20
Data logging	21
High-speed system bus communication	19
Intuitive programming environment	21
Security functions	21
Simple motion modules (4-axis/8-axis control modules)	23
Specifications	
FX5U	28
FX5UC	31
Temperature control modules	58
Unit components	
FX5U	26
FX5UC	29

P

Programming	
ALPHA programming software	98
Hand-held programming unit	101
MELSOFT – programming and documentation software for standard personal computers	98
PLC programming software	99
GX Works2/GX Works2 FX	99
GX Works3	99
Software for Profibus networks	100
FX Configurator FP	100
GX Configurator DP	100

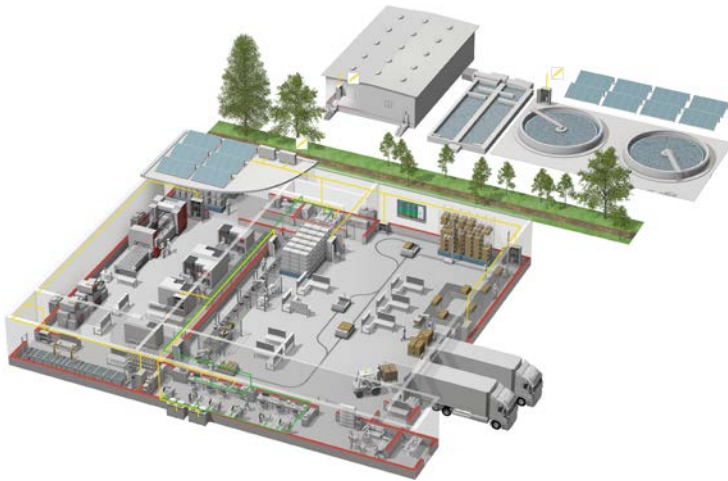
S

System description FX series	
Calculation of the power consumption	18
Components FX PLC	7
Configuration	8
Product overview	4
Selection guide	6

T

The ALPHA 2 series	
Accessories	86
Base units	83
Certifications	104
Dimensions	97
Extension modules	85
Software	98
Specifications	84
Unit components	82

Your solution partner



Mitsubishi Electric offers a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines

A name to trust

Since its beginnings in 1870, some 45 companies use the Mitsubishi name, covering a spectrum of finance, commerce and industry.

The Mitsubishi brand name is recognized around the world as a symbol of premium quality.

Mitsubishi Electric Corporation is active in space development, transportation, semi-conductors, energy systems, communications and information processing, audio visual equipment and home electronics, building and energy management and automation systems, and has 237 factories and laboratories worldwide in over 121 countries.

This is why you can rely on Mitsubishi Electric automation solution - because we know first hand about the need for reliable, efficient, easy-to-use automation and control in our own factories.

As one of the world's leading companies with a global turnover of over 4 trillion Yen (over \$40 billion), employing over 100,000 people, Mitsubishi Electric has the resource and the commitment to deliver the ultimate in service and support as well as the best products.



Low voltage: MCCB, MCB, ACB



Medium voltage: VCB, VCC



Power monitoring, energy management



Compact and Modular Controllers



Inverters, Servos and Motors



Visualization: HMIs, Software, MES connectivity



Numerical Control (NC)



Robots: SCARA, Articulated arm



Processing machines: EDM, Lasers, IDS



Air-conditioning, Photovoltaic, EDS

Global Partner. Local Friend.

European Offices

Germany Mitsubishi Electric Europe B.V. Mitsubishi-Electric-Platz 1 D-40882 Ratingen Phone: +49 (0)2102 / 486-0	Czech Rep. Mitsubishi Electric Europe B.V. Pekárská 621/7 CZ-155 00 Praha 5 Phone: +420 255 719 200	France Mitsubishi Electric Europe B.V. 25, Boulevard des Bouvets F-92741 Nanterre Cedex Phone: +33 (0)1 / 55 68 55 68	Ireland Mitsubishi Electric Europe B.V. Westgate Business Park, Ballymount IRL-Dublin 24 Phone: +353 (0)1 4198800	Italy Mitsubishi Electric Europe B.V. Viale Colleoni / Palazzo Sino I-20064 Agrate Brianza (MB) Phone: +39 039 / 60 53 1	Netherlands Mitsubishi Electric Europe B.V. Nijverheidsweg 23C NL-3641RP Mijdrecht Phone: +31 (0) 297 250 350	Poland Mitsubishi Electric Europe B.V. ul. Krakowska 50 PL-32-083 Balice Phone: +48 (0) 12 347 65 00
Russia Mitsubishi Electric (Russia) LLC 2 bld. 1, Letnikovskaya st. RU-115114 Moscow Phone: +7 495 / 721 2070	Spain Mitsubishi Electric Europe B.V. Carretera de Rubí 76-80 Apdo. 420 E-08190 Sant Cugat del Valles (Barcelona) Phone: +34 (0) 93 / 5653131	Sweden Mitsubishi Electric Europe B.V. (Scandinavia) Hedvig Möllers gata 6 SE-223 55 Lund Phone: +46 (0) 8 625 10 00	Turkey Mitsubishi Electric Turkey Elektrik (Oranieri A.Ş.) Serifali Mahallesi Nutuk Sokak No:5 TR-34775 Ümraniye-İSTANBUL Phone: +90 (216) 969 25 00	UK Mitsubishi Electric Europe B.V. Travellers Lane UK-Hatfield, Herts. AL10 8XB Phone: +44 (0)1707 / 28 87 80	UAE Mitsubishi Electric Europe B.V. Dubai Silicon Oasis United Arab Emirates - Dubai Phone: +971 4 3724716	

Representatives

Austria GEVA Wiener Straße 89 A-2500 Baden Phone: +43 (0)2252 / 85 55 20	Belarus OOO TECHNIKON Prospect Nezavisimosti 177-9 BY-220125 Minsk Phone: +375 (0)17 / 393 1177	Bosnia and Herzegovina INEA RBT d.o.o. Siegne 11 SI-1000 Ljubljana Phone: +386 (0)1 / 513 8116	Bulgaria AKHNATON 4, Andrei Lipchev Blvd., PO Box 21 BG-1756 Sofia Phone: +359 (0)2 / 817 6000	Croatia INEA CR Lozinska 4 a HR-10000 Zagreb Phone: +385 (0)1 / 36 940 - 01 / - 02 / - 03	Czech Republic AutoCont C.S. S.R.O. Kafkova 1853/3 CZ-702 00 Ostrava 2 Phone: +420 595 691 150	Denmark HANS FØLSGAARD A/S Theilgaards Torv 1 DK-4600 Kjaer Phone: +45 4320 8600
Estonia Electrobit OÜ Pärnu mnt. 160 EST-11317 Tallinn Phone: +372 6518 140	Finland UTU Automation Oy Rehtori 37 FIN-28400 Ulvila Phone: +358 (0)207 / 463 500	Greece UTECO A.B.E.E. S. Marogerous Str. GR-18542 Piraeus Phone: +30 (0)211 / 1206-900	Hungary MELTRADO Kft. Fehér utca 14. HU-1107 Budapest Phone: +36 (0)1 / 431-9726	Kazakhstan TOO Kazpromavtomatika Ul. Zhambyla 28 KAZ-100017 Karaganda Phone: +7 7212 / 50 10 00	Latvia OAK Integrator Products SIA Rīgas iela 23 LV-1058 Rīga Phone: +371 67842280	Lithuania Automatikos Centras, UAB Neries kvartinė 14A-101 LT-48397 Kaunas Phone: +370 37 262707
Malta ALFATRADO Ltd. 99, Paola Hill Malta-Paola PLA 1702 Phone: +356 (0)21 / 697 816	Moldova INTEHISIS SRL bld. Traian 23/1 MD-2060 Kishinev Phone: +373 (0)22 / 66 4242	Portugal Fonseca S.A. R. João Francisco do Casal 87/89 PT-3801-997 Aveiro, Esqueira Phone: +351 (0)234 / 303 900	Romania Sinus Trading & Services Aleea Lacul Morii Nr. 3 RO-060841 Bucuresti, Sector 6 Phone: +40 (0)21 / 430 40 06	Serbia INEA SR d.o.o. Ul. Karadžićeva 12/217 SER-11300 Smederevo Phone: +386 (026) 461 54 01	Slovakia SIMAP SK Dolné Pádky 603/97 SK-911 06 Trenčín Phone: +421 (0)32 743 04 72	Slovenia INEA RBT d.o.o. Siegne 11 SI-1000 Ljubljana Phone: +386 (0)1 / 513 8116
Switzerland OMNI RAY AG Im Schörlis 5 CH-8600 Dübendorf Phone: +41 (0)44 / 802 28 80	Ukraine CSC- AUTOMATION Ltd. 4 B. Yevhenia Sverstyuka Str. UA-02002 Kiev Phone: +380 (0)44 / 494 33 44					
Israel GIRIT CELADON Ltd. 12 Haomanut Street IL-42505 Netanya Phone: +972 (0)9 / 863 39 80	Israel ILAN & GAVISH Ltd. 24 Shenkar St., Kiryat Arie IL-49001 Petah-Tikva Phone: +972 (0)3 / 922 18 24	Israel SHERF MOTION TECHN. Ltd. Rehov Hamerkava 19 IL-58851 Holon Phone: +972 (0)3 / 559 54 62	Lebanon CEG LIBAN Cebaco Center/Block A Autostrade DORA Lebanon-Beirut Phone: +961 (0)1 / 240 445	South Africa ADROIT TECHNOLOGIES 20 Waterford Office Park 189 Witkoppen Road ZA-Fourways Phone: +27 (0)11 / 658 8100		

Version check



Art. no. 167840-H

Mitsubishi Electric Europe B.V.

FA - European Business Group
Mitsubishi-Electric-Platz 1
D-40882 Ratingen Germany
Tel.: +49(0)2102-4860 Fax: +49(0)2102-4861120
info@mitsubishielectric.com
https://eu3a.mitsubishielectric.com

Specifications subject to change. All trademarks and copyrights acknowledged.

Printed August 2017