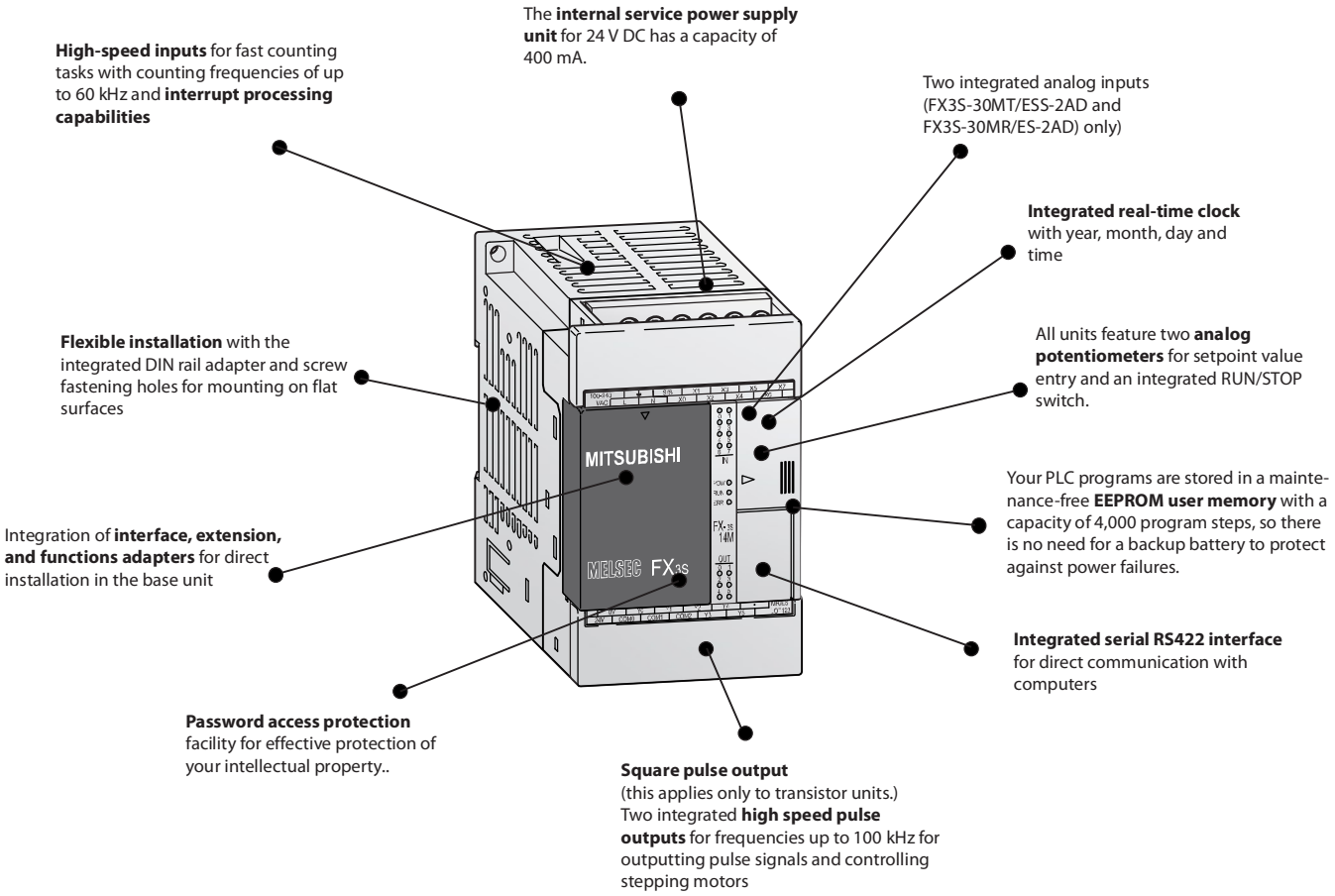
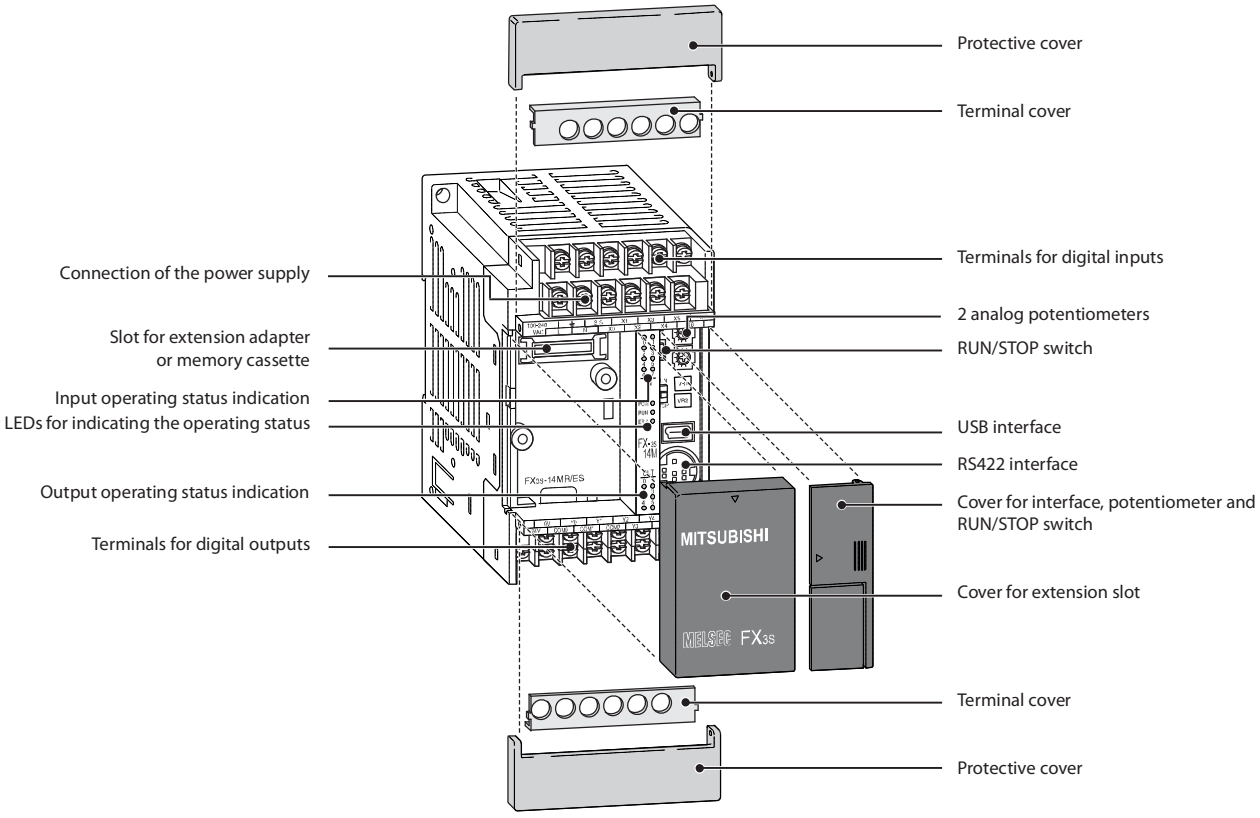
The MELSEC FX3S series

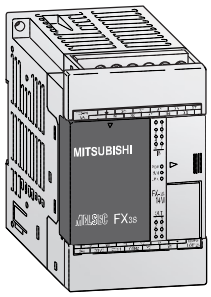


Description of the unit components



■ Base units

☑ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC



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
Max. number 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	6,5
Weight	kg	0.30	0,30	0.30	0,30	0.30	0,30	0.30	0,30
Dimensions (WxHxD)	mm	90x60x75	90x60x75	90x60x75	90x60x75	90x60x75	90x60x75	90x60x75	90x60x75
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
Max. number 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	21	8,5
Weight	kg	0.40	0,40	0.40	0,40	0.45	0,45	0,45	0.45	0,45	0,45
Dimensions (WxHxD)	mm	90x75x75	90x75x75	90x75x75	90x75x75	90x100x75	90x100x75	90x100x75	90x100x75	90x100x75	90x75x75
Order information	Art. no.	267126	271689	267128	271697	267129	271690	271654	267131	271686	271698

■ Specifications ☑ FX3S ☐ FX3G ☐ FX3GC ☐ FX3GE ☐ FX3U ☐ FX3UC

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 (147m/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); 0.5G 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 66–67

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	0.5
	- per group ②	A	8	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

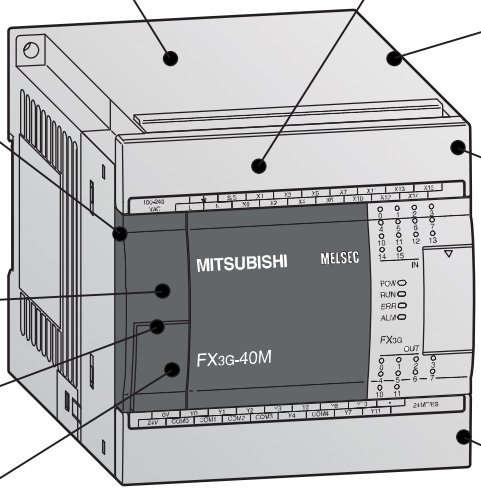
The MELSEC FX3G series

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).

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.



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

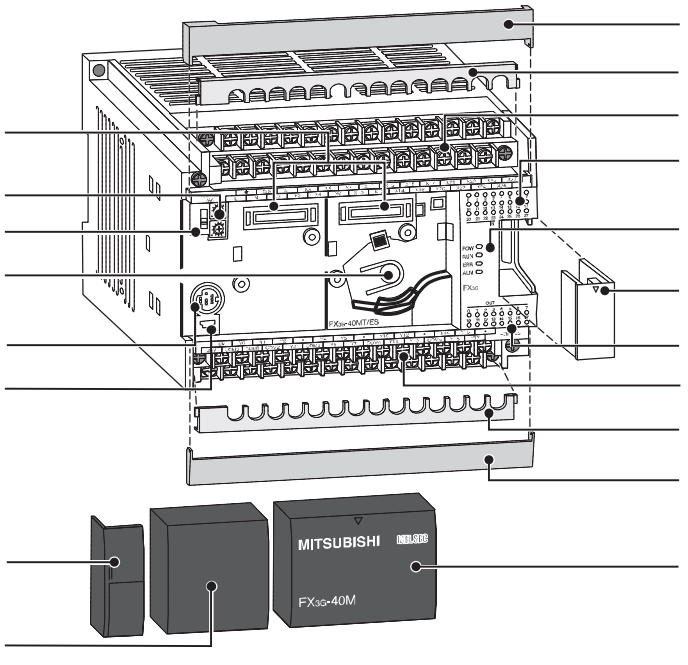
An **integrated RUN/STOP switch** is available.

Connection possibility for special function adapter modules

Two integrated serial interfaces for direct communication with computers.

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



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