Product Information

EBG 266-EN

MITSUBISHI ELECTRIC
Changes for the Better

MELSEC iQ-F Series

Programmable Controllers

Simple Motion Control

for reliable positioning solutions

EFFICIENT — Excellent performance and cost effectiveness

IMPROVED PERFORMANCE — Advanced motion control for up to 4 axes via SSCNETIII/H

MORE CHOICE — Various control functions available including advanced synchronous control, mark detection function or CAM auto generation

SIMPLE INSTALLATION — Simple and smart system installation

Simple Motion – reliable, accurate and easy

The Simple Motion module is part of the MELSEC iQ-F series, which stands for an innovative concept with outstanding performance and superior drive control

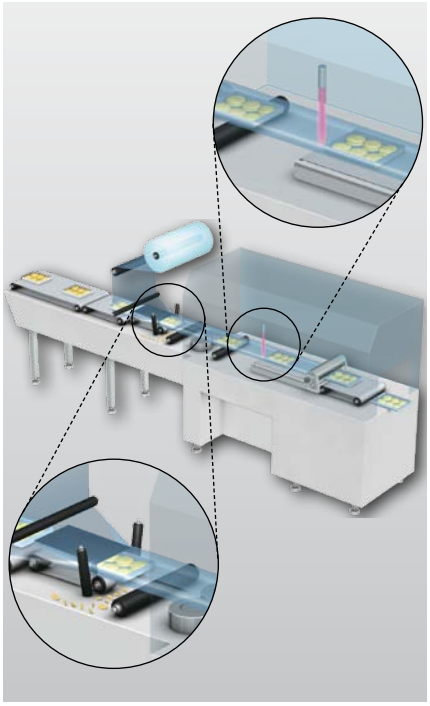
Impressive functions on a small footprint

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.

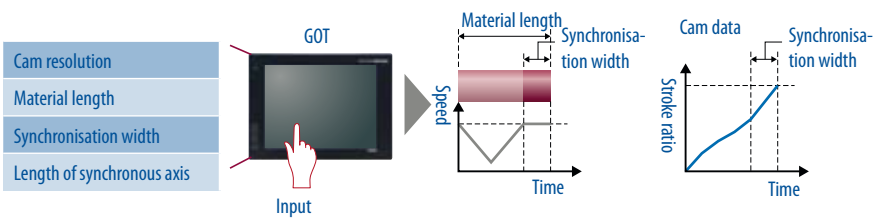
Various applications such as XY tables and sealing systems can easily realized using the positioning functions, which include linear interpolation (up to four axes), circular interpolation (max. two axes) and path control.

Motion control for the MELSEC iQ-F series

For the MELSEC iQ-F series Mitsubishi Electric offers the new FX5-40SSC-S 4-axis Simple Motion module. It complements the built-in positioning function of the MELSEC iQ-F base unit. Similar to positioning modules, this Simple Motion module is 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.



Synchronisation control with synchronous encoder



Automatic generation of cam data for rotary cutter

Motion made easy

Automatic operation can be easily achieved by entering position addresses, speeds etc. via the sequence program. Powerful additional functions such as M-Code, jump functions, step mode and target address change functions are also available.

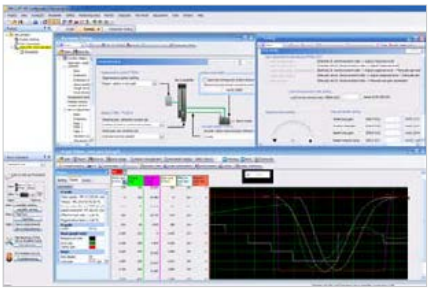
Speed and torque control can be used for tension control applications such as winding and unwinding. The control system can be switched between "position control", "speed and torque control" and "position control". This makes it possible to continue to maintain a position with absolute position coordinates even after the control system has been switched over.

Synchronisation and cam functions can be combined in one system when synchronized control is required.

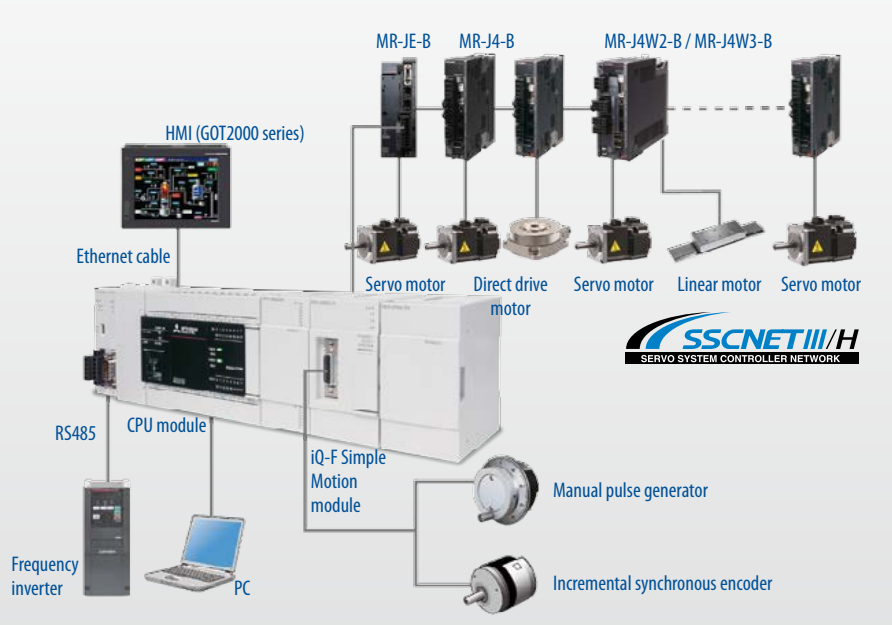
Simple programming

The motion module is programmed with the GX Works3 software package using standardised PLCopen® function tools. All data can be easily generated by means of special auxiliary functions such as automatic speed calculation, off-line simulation and automatic calculation of auxiliary arcs Programming and debugging can be easily carried out from your desk using a PC.

All you need is the FX5-40SSC-S module and a MELSEC iQ-F base unit. Neither the servo motors nor the servo amplifiers need to be connected for programming and testing. This considerably increases efficiency during setup and fault finding.



Easy synchronous control parameter settings



Structure of a system configuration comprising servo amplifiers and servo motors together with an MELSEC iQ-F PLC-CPU.

High-speed SSCNETIII/H

The SSCNETIII/H is a high-speed motion network which has been developed by Mitsubishi Electric based on optical communication. It enables full-duplex communication with transmission speeds of up to 150 MB/s with SSCNETIII/H and a guaranteed bus cycle time of 0.44 ms.

The use of fibre optic cables makes communication fully resistant to electrical interference. SSCNETIII/H users therefore benefit in the form of greater reliability and more flexibility, as the fibre optic cables can be laid anywhere – even next to powerful electric motors.

Mitsubishi Electric servo amplifiers which are compatible with SSCNETIII can be combined in one system and support various servo motors for a wide range of applications.

The MELSEC iQ-F

The compact modular MELSEC iQ-F series

The Mitsubishi MELSEC-F series has been reborn as the MELSEC iQ-F series, offering enhanced high speed bus, expanded built-in functions, advanced SSCNETIII/H support and improved engineering environment. Program and parameters are also set with the GX Works3 engineering software.

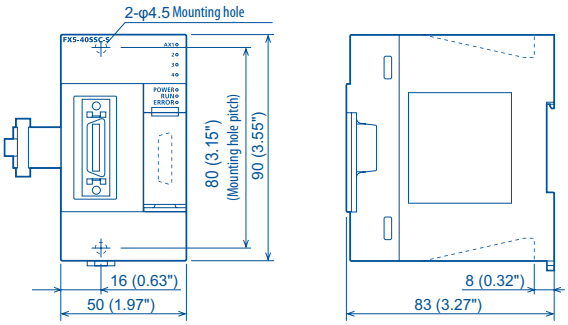
The base units are equipped with innovative processors and are designed for international use, operating on 100/240 V AC or 24 V DC. They are available with 32, 64 and 80 I/Os with either relay or transistor outputs. All base units are expandable up to 256 I/Os with expansion modules or up to 512 remote I/Os via suitable networks (CC-Link, CC-Link IE Field, Ethernet and Profibus).

The MELSEC iQ-F series is the result of the consistent development of the MELSEC FX3 series and offers outstanding performance. Mitsubishi Electric pioneered the compact PLC over thirty years ago and now claims market leadership in the compact PLC sector with over thirteen million controllers sold.

Specifications

Specifications		FX5-40SSC-S
Number of controllable axes		up to 4
Interpolation functions		Linear interpolation for up to 4 axes, circular interpolation for 2 axes
Output type		SSCNETIII/H
Output signal		Bus
Servo amplifier		MR-JE-B / MR-J4-B / MR-J4W2-B / MR-J4W3-B servo amplifier range (over SSCNETIII/H)
Operation cycle		1.77 ms
Positioning	Method	PTP (Point To Point) control, path control (linear and arc), speed control, speed-position switching control, position-speed switching control, speed-torque control
	Acceleration/deceleration control	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration
	Compensation	Backlash compensation, electronic gear, near pass function
	OPR control	5 different methods + fast OPR
Number of positioning data		600 per axis (can be set with GX Works3 or PLC program)
External input signals	Encoder	1 Encoder A/B phases, PULSE, SIGN
	Input	DI, EMI
Cam function	Output axis	up to 4 cam axis
	Number of cams	up to 64 (depending on memory capacity, cam resolution and number of coordinates)
	Cam data type	Stroke ratio data type, coordinate data type
	Cam auto generation	for rotary cutter

Dimensions



All dimensions in mm

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