

# FX3U

## SSCNET III Module FX3U-20SSC-H

### Positioning and Control

Simple, Easy and High-Speed



**FX Networking  
Solutions**



High-speed and high-precision positioning for up to 2 axes



Communication with servo amplifiers via the high-speed SSCNET III with plug-and-play fiber optic cabling



Easy programming and configuration with FX Configurator-FP software



Control up to 16 axes per system

(2 axes per module and 8 modules per FX3U system when standard configuration rules are applied)

# Positioning made easy



Fast, high-precision positioning – even in critical areas

## SSCNET III offers new advantages

Smooth, high-speed, high accuracy operations are now attainable with the new generation SSCNET III synchronous communication network.

Cabling setup time is reduced with direct, plug-and-play connectivity to servo equipment. Additionally, fiber optic wiring enhances data transfer reliability, improves noise resistance and simplifies wiring diagrams.

Smooth control with high speed serial communication cycle times up to 1.7 ms improve positioning accuracy.

## Easy programming and setting

Servo parameters and positioning informations are easily set up with an FX3U PLC and FX Configurator-FP. This user-friendly Windows® software package makes it easy to setup a table of operational information, servo amplifier parameters and positioning parameters for the FX3U-20SSC-H. Positioning operations can be monitored and tested and a clearly arranged table operation feature reduces program development time.

## Precision at its best

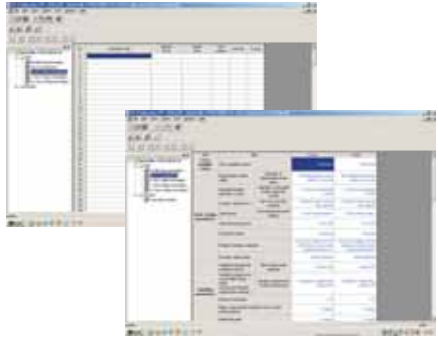
The combination of FX3U and SSCNET III is the right solution for cost effective, high speed and high precision positioning.

Reduced setup times and increased control distances for positioning operations enable a wide range of applications to be realized. Advanced control is possible with real-time monitoring of the servo amplifier and with new positioning commands.



Up to 8 FX3U-20SSC-H

SSCNET communication is simply "plug and play".



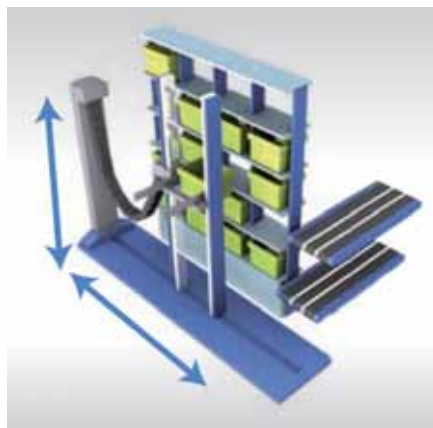
Screenshots FX Configurator-FP

## High speed positioning solutions

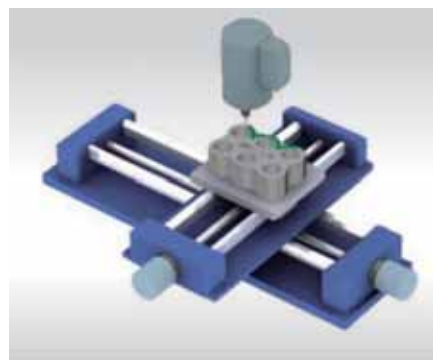
With the high resolution encoder on the MR-J3 servo motor, pulses may be counted for rates up to 262144 pulses/rev. Performance is enhanced giving more stable control in low speed regions where precision is a must.

## 2 axes for advanced operation control

High precision control of 2 axes with synchronous capability via SSCNET III optical wiring is available.



Simultaneous X and Y axis start and stop



2 axis linear or circular operation

The operation speed and target position can change during positioning for more flexibility in positioning applications.

### ■ Variable speed operation

Operation speeds change to user-specified speeds according to arbitrary timing intervals.

### ■ Override function

To change the operation speed at an arbitrary timing during positioning, the override function may be used for amplifying the signal from 0.1 % to 3000 %.

### ■ Target address change

The target address may be changed to a new location during positioning operation.

## 3 settings for zero return method

Various modes are available for setting a workpiece's mechanical zero return method including Dog type zero return, Data-type zero return and Stopper type zero return.

### ■ Dog type zero return

When a workpiece stops with a DOG type mechanical zero return, the zero-point position is set.

### ■ Stopper type mechanical zero return

A workpiece stops at the stopper position according to the zero return torque limit value and a new zero-point is defined.

### ■ Data-set type zero return

For operations without a mechanical zero-point or DOG return, the Data-set type zero return procedure is convenient for setting the zero-point of a workpiece.

## 4 times faster FROM/TO speeds

The new FX3U PLC controllers offer improved FROM/TO communication at speeds 4 to 5 times faster than before for quickly updating parameters and buffer memory data in the FX3U-20SSC-H.



Automatic bottle shutting with torque limiting

## Wide ranging applications

The combination of FX3U, SSCNET III and MR-J3 servos allows easy solutions to complex problems. For example, torque limiting can be easily set-up and controlled through a simple PLC program. This can then be used to manage performance, such as when a servo motor drives up to a mechanical stop. The torque increase will vary depending upon the load conditions, and so this limit can be simply "tuned" within the PLC program.

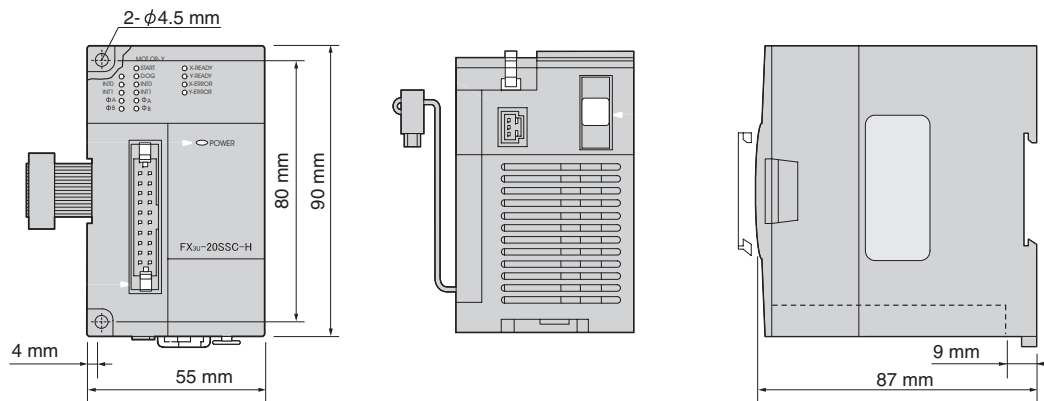
## Scalable solutions

Mitsubishi Electric offers a wide range of flexible positioning and motion control solutions. These range from built-in positioning functions for the FX1S/FX1N PLC family to optional modules such as the FX3U 200 kHz pulse train and counter adapters or the FX2N-10PG 1Mpps pulse train unit.

For larger systems, System Q offers QD70/QD75 positioning modules for 1 to 8 axes that can be combined to support many axes of control. System Q also offers a range of Motion CPUs which can be used independently to control up to 32 or as a combined system for 96 axes of control. So whatever your positioning needs are, there is a solution waiting for you.

# Specifications ///

Specifications	FX3U-20SSC-H	
Number of control axes	2 axes (linear interpolation or circular interpolation)	
Applicable PLC	FX3U PLC A maximum of 8 units can be connected with the FX3U PLC.	
Servo bus	SSCNET III	
Scan cycle	1.77ms, communication speed 50Mbps	
Positioning	method	Absolute/incremental system
	unit	PLS, $\mu\text{m}$ , $10^{-4}$ inch, mdeg
	unit magnification	1, 10, 100 and 1000-fold
	positioning range	-2147483648 to 2147483647 PLS
	speed command	Hz, cm/min., 10 deg/min. / inch/min
	acceleration/ deceleration	Trapezoidal acceleration/deceleration, S-pattern acceleration/deceleration: 1 to 5000 ms. Only trapezoidal acceleration/deceleration is available for interpolation
Starting time	1.6 ms or less	
Pulse frequency	1 – 50 MHz	
Control inputs	Interrupt input: 2 inputs (INT0 and INT1) per axis DOG: 1 input per input axis START: 1 input per axis Manual pulse generator: 1 input per axis (A/B-phase)	
Interface for external signals	20-pin connector at the front side	
Connectable servo amplifier type	MELSERVO MR-J3-□B (maximum 2 amplifiers can be connected per unit.)	
Connection to servo amplifiers	Via SSCNET cable	
Max. SSCNET cable over all length	Standard cable length: station to station 20 m max. Long distance cable length: station to station 50 m max.	
No. of occupied I/O points	8 points (input or output, whichever may be counted)	
Power supply	24 V DC (+20 % – 15 %) external, 5 V DC (100 mA) from main unit	
Dimensions (W × H × D)	(55 × 90 × 87) mm	
Weight	0.3 kg	



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