

Changes for the Better

Motion Controller Q series
SSCNET III/H Compatible
Q170MSCPU / Q170MSCPU-S1

May 2013

New Product Release

SV1305-1E



Start with Stand-Alone

High speed control is achieved by combining the MELSERVO-J4 amplifier with the Q170MSCPU/Q170MSCPU-S1.

This controller integrates a power supply, PLC, and Motion controller, while being easy to use, and featuring improved Motion control and flexible expandability.

For total machine control use Stand-Alone!

- Power supply, PLC, and Motion Controller all in one
Empowered ! No more model selection worries!
- Better space-saving when combined with 2-axis/3-axis servo amplifier
Empowered ! Panel and equipment size can be reduced!
- Compatible with MELSEC-Q Series modules
Empowered ! Flexible expansion for any control purpose!
- Easy parameter setting
Empowered ! Speedy startup! Effortless debugging!
- Using program resources efficiently
Empowered ! System expansion with minimum design costs!



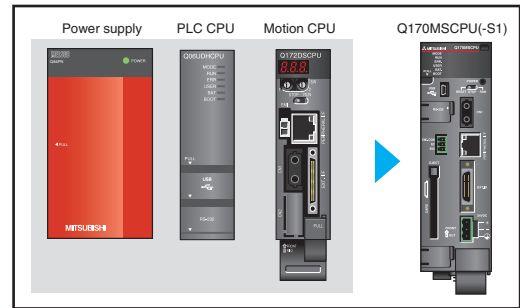
Mitsubishi has invented an original servo system synchronous network "SSCNET III/H" in pursuit of high response and reliability. The SSCNET III/H is an optical network that achieves smooth, high-response and high-accuracy operation.

Features

Power Supply, PLC CPU, and Motion Controller All in One !

The Q170MSCPU(-S1) integrates Motion CPU functions (equivalent to Q172DSCPU) and PLC CPU functions (equivalent to Q03UDCPU or Q06UDHCPU) all in one module. Therefore, this module can flexibly be applied to various machines by offering a wide variety of functions for synchronized operation and interfaces as standard.

- Up to 16 axes can be controlled.
- Wide variety of controls can be performed with this module, such as position control, speed control, torque control, and advanced synchronous control, etc.
- Incremental synchronous encoder interface and Mark detection interface are also integrated into this module.
- PLC capacity is increased to 60k steps, and up to 7 extension base units can be used.
- This module can be connected directly to COGNEX Vision system with Ethernet.
- The MELSEC-L series I/O modules, analog I/O units, and high-speed counter module can be used when the "LJ72MS15" SSCNET III/H head module is connected in the system.

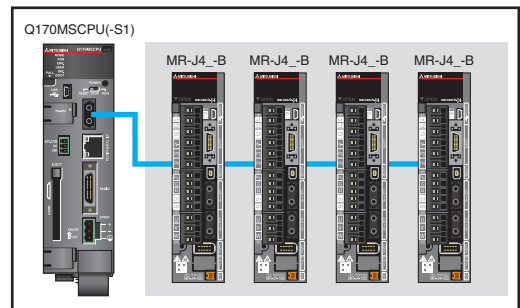


Compatible with Next-generation Servo System Network !

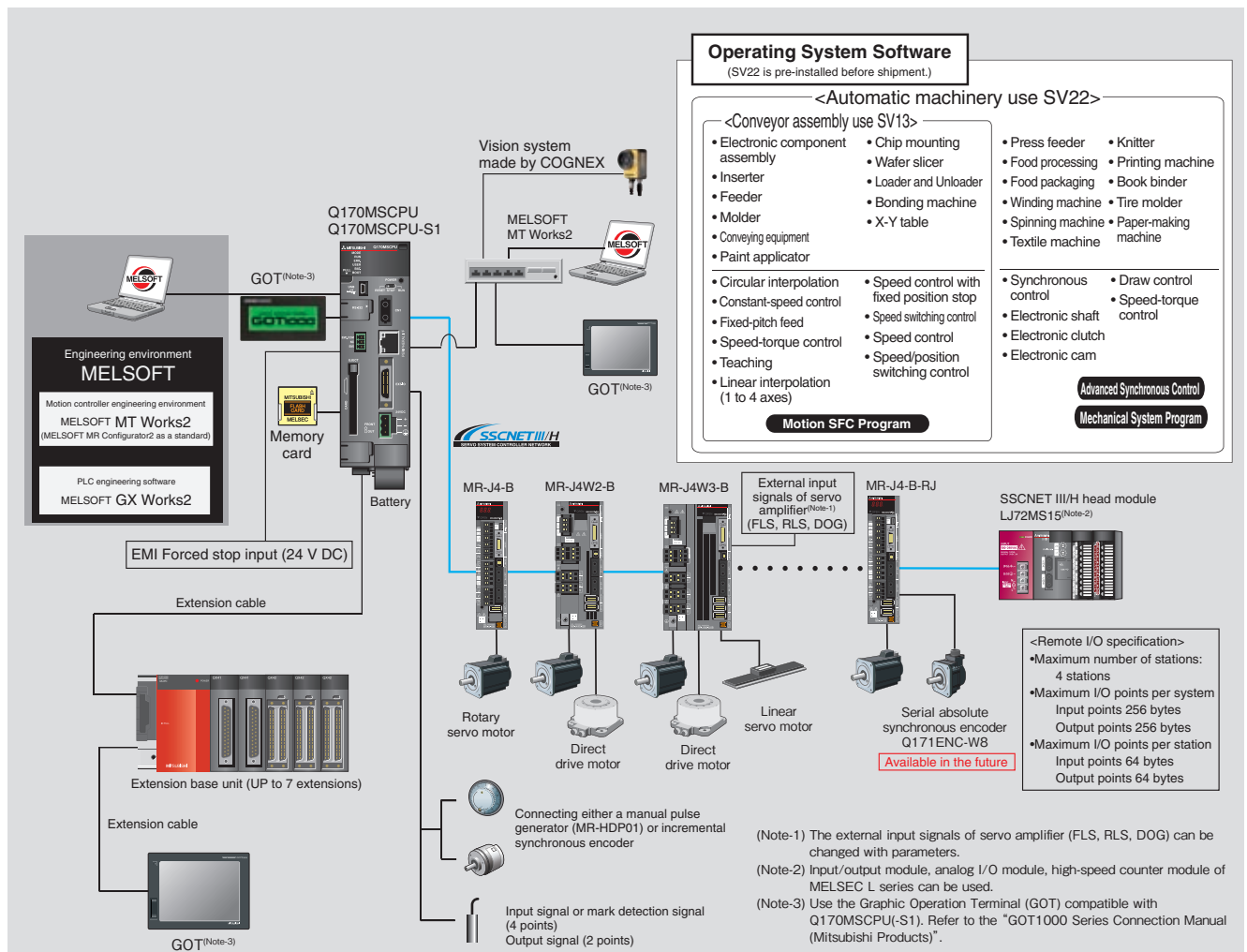


Communication speed is increased to 150Mbps full duplex (equivalent to 300 Mbps half duplex), three times faster than the conventional speed. System response is dramatically improved.

- Cycle times as fast as 0.22 ms
- No transmission collision
- Dramatically reduced wiring
- Deterministic and synchronized communication
- SSCNET III/H compatible and SSCNET III compatible products connected in a same system



System configuration



Control specifications

Motion control specifications

Items	Specification	
	Q170MSCPU-S1	Q170MSCPU
Number of control axes	Up to 16 axes	
Operation cycle	0.22ms, 0.44ms, 0.88ms, 1.77ms, 3.55ms, 7.11ms	
Interpolation function	Linear interpolation (Up to 4 axes), Circular interpolation (2 axes), Helical interpolation (3 axes)	
Control modes	PTP (Point to Point) control, Speed control, Speed-position switching control, Fixed-pitch feed, Constant speed control, Position follow-up control, Speed control with fixed position stop, Speed switching control, High-speed oscillation control, Synchronous control/Cam control (SV22), Speed-torque control	
Acceleration/deceleration control	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration, Advanced S-curve acceleration/deceleration	
Programming language	Motion SFC, Dedicated instruction, Mechanical support language (SV22)	
Peripheral interface	RS-232, USB, Ethernet	
Manual pulse generator/ Incremental synchronous encoder interface	Signal input form	Phase A/ Phase B (magnification by 4)
	Maximum input pulse frequency	1Mpps (After magnification by 4, up to 4Mpps) (Differential-output type) 200kpps (After magnification by 4, up to 800kpps) (Voltage-output/Open-collector type)
Mark detection signal interface	4 points (internal I/F)	
Memory card interface	Internal I/F	
SSCNET III/H systems	1 ^(Note-1)	

(Note-1): The SSCNETIII compatible servo amplifier can be used, but the SSCNET compatible servo amplifier cannot be used.

PLC control specifications

Items	Specification	
	Q170MSCPU-S1	Q170MSCPU
PLC CPU	Equivalent to Q06UDHCPU	Equivalent to Q03UDCPU
Control mode	Stored program cyclic operation (scan process)	
Input/output control method	Refresh method	
PLC control language	Relay symbol language (ladder), Logic symbolic language (list), MELSP3 (SFC), MELSP-L, Structured text (ST)	
Number of instructions	Total instructions	858
	Real number operation instruction	Possible
	Special function instruction	Possible
Processing speed	LD instruction	9.5ns
	MOV instruction	19ns
Program capacity	60k steps (240k bytes)	30k steps (120k bytes)
Input/output points	4096 points	
Extension base unit	Up to 7 (Up to 64 slots)	

System configuration

Motion dedicated devices

Product	Model name	Description	Applicable overseas standards
Stand-alone Motion controller	Q170MSCPU	Integrated with power supply, PLC CPU, and Motion CPU With Q6BAT, 24VDC power supply connector, and emergency stop input cable connector	UL, CE, KC
	Q170MSCPU-S1		
Internal I/F connector set	LD77MHIOCON	Incremental synchronous encoder/Mark detection signal interface connector set (This connector set is not included with the Q170MSCPU(-S1).)	—

Software

<Operating system software>

Usage	Model name	
	Q170MSCPU-S1	Q170MSCPU
Conveyor assembly use (SV13)	SW8DNC-SV13QN	
Automatic machinery use (SV22)	SW8DNC-SV22QN	

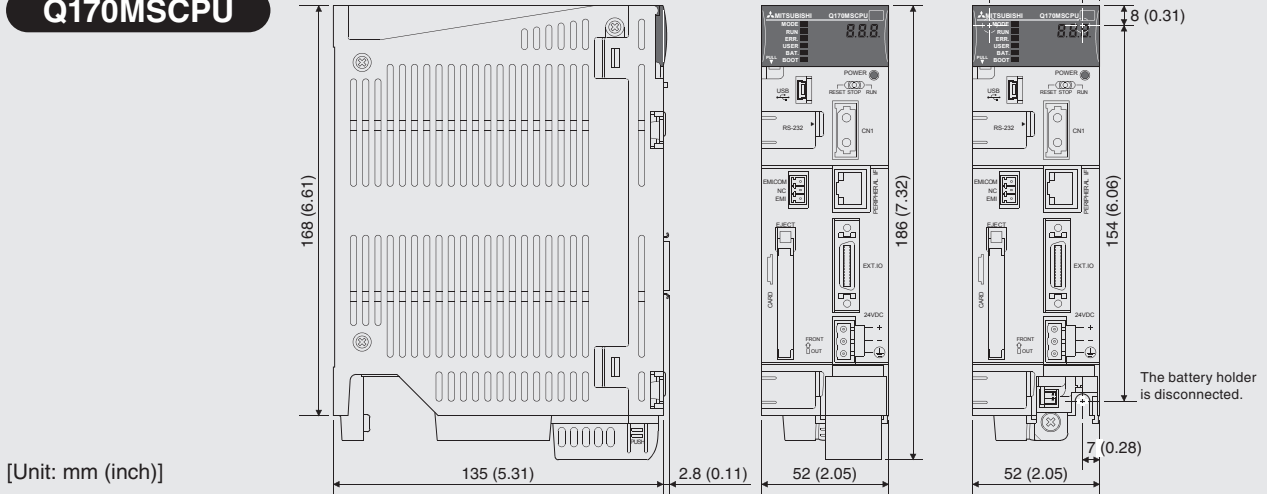
(Note): Operating system software (SV22) is Pre-installed into Motion controller before shipment.

Engineering environment MELSOFT series

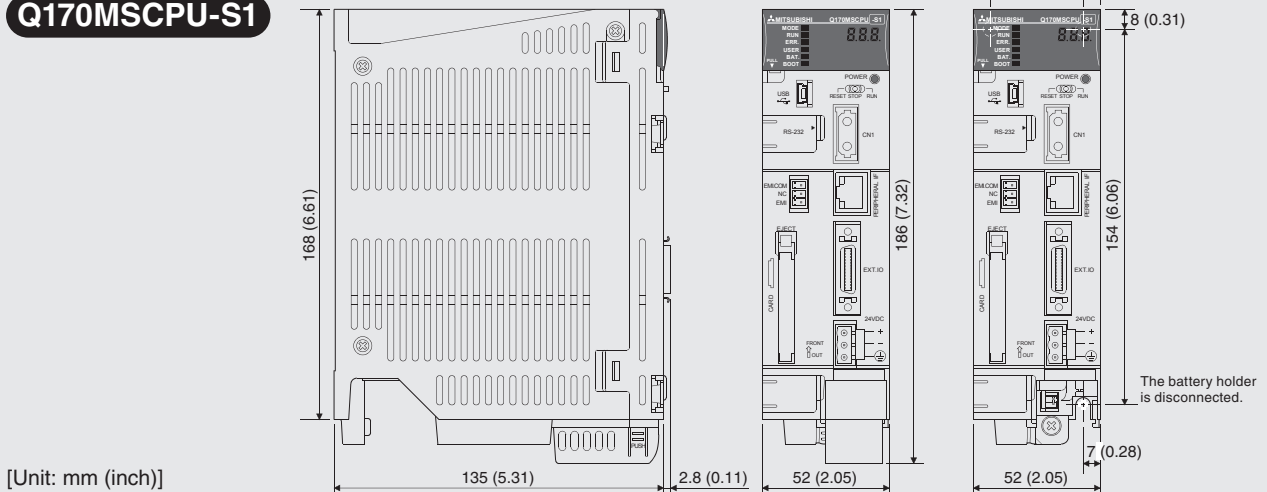
Product	Model name	Description	Applicable Version
MELSOFT MT Works2	SW1DNC-MTW2-E	Conveyor assembly use SV13 Automatic machinery use SV22	1.56J
MELSOFT GX Works2	SW1DNC-GXW2-E	Sequence program creation	1.77F
MELSOFT IQ Works	SW1DNC-IQWK-E	<ul style="list-style-type: none"> System Management Software [MELSOFT Navigator] Programmable Controller Engineering Software [MELSOFT GX Works2] Motion Controller Engineering Environment Software [MELSOFT MT Works2] Servo Setup Software [MELSOFT MR Configurator2] 	License product (1 license in CD-ROM)
	SW1DND-IQWK-E	<ul style="list-style-type: none"> GOT1000 Screen Design Software [MELSOFT GT Works3] Robot Total Engineering Support Software [MELSOFT RT ToolBox2 mini] 	License product (1 license in DVD-ROM)

Exterior Dimensions

Q170MSCPU



Q170MSCPU-S1



Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems)



Safety Warning

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

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS: 1-14, YADA-MINAMI 5, HIGASHI-KU, NAGOYA, JAPAN