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Mitsubishi Electric to Release CC-Link IE TSN Compatible Factory Automation Products

Will contribute to smart factory construction by enhancing the company's e-F@ctory solution with TSN technology

TOKYO, March 7, 2019 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it will release the industry's first[1] 102 factory automation products, including programmable controllers, servo amplifiers, robots, GOTs (HMIs), inverters and CNCs that are compatible with the CC-Link IE TSN[2] next-generation industrial open network, starting from May 7[3]. Integration of machine control and information communication required for next-generation smart factories will be realized on one network, further enhancing Mitsubishi Electric's e-F@ctory[4] integrated factory automation solution. In addition, high-speed, high-precision communication will improve machine performance and thereby contribute to productivity and quality improvement.

[1] According to Mitsubishi Electric research as of March 7, 2019

[2] Ethernet-based industrial network, based on specifications disclosed by CC-Link Partner Association on Nov. 21, 2018, that adopts TSN technology to mix different protocols through time synchronization.

[3] For release dates in a specific regions please consult your local Mitsubishi Electric Sales Office.

[4] Integrated factory automation solution using a combination of factory automation and IT technologies and offering solutions to reduce the total cost of development, production, and maintenance.

Programmable controller
MELSEC iQ-R Series

Servo amplifier
MELSERVO-J5 Series

Robot
MELFA FR Series

CC-Link IE TSN compatible factory automation products (main products)

Product Features

1) ***Factory automation products support TSN technology for highly flexible Industrial Internet of Things (IIoT) system architecture***

   - Factory automation products offering industry-first compatibility with CC-Link IE TSN

   - Separately configured machine control and information communication can be integrated into one Ethernet cable, helping to reduce system configuration design and installation costs

   - Easy parameter registration allows mixing of multiple communication cycles, such as 1 Gbps and 100 Mbps, enabling easy configuration of optimum systems

2) ***High-speed, high-precision communication improves productivity and quality***

   - With a link scan[5] of 31.25 μs, high-speed processing is 16 times[6] faster compared to existing motion networks, drastically reducing facility and machine production cycle time for improved productivity

   - High-precision synchronous control[7] without communication delay, even in large-scale systems, realizes highly data analysis in cloud and edge computing systems, thereby improving quality

[5] Operation of sending master station data to local station and receiving local station data at the same time
[6] Comparison with CC-Link IE Field network motion
[7] Communication variation time is less than ±1 μs when a maximum of 254 stations are connected
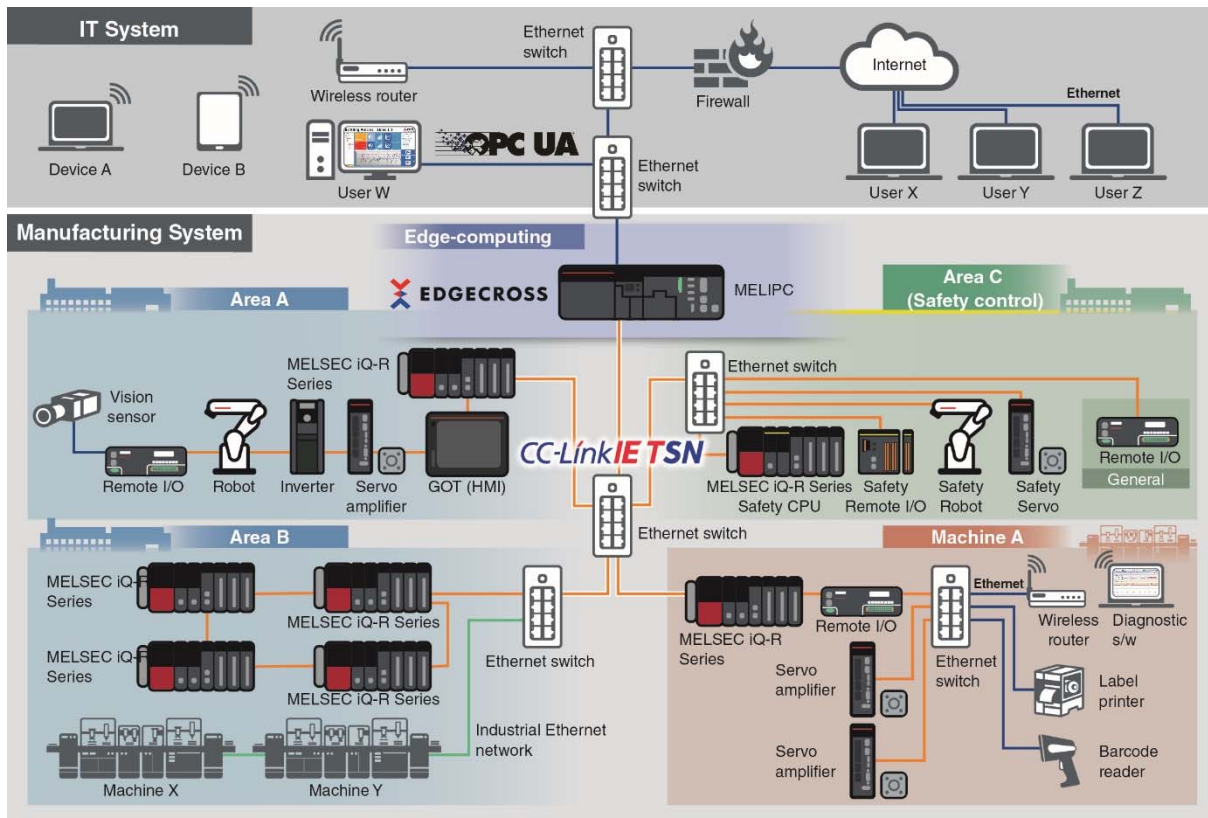
3) ***Engineering tool improves system management***

   - Connected device profile coordination function with CSP+[8] of MELSOFT GX Works3 engineering tool manages all connected devices, including third-party partner products

   - Graphically displays entire network status to allow network and fault device diagnosis with intuitive operation, helping to reduce downtime due to errors
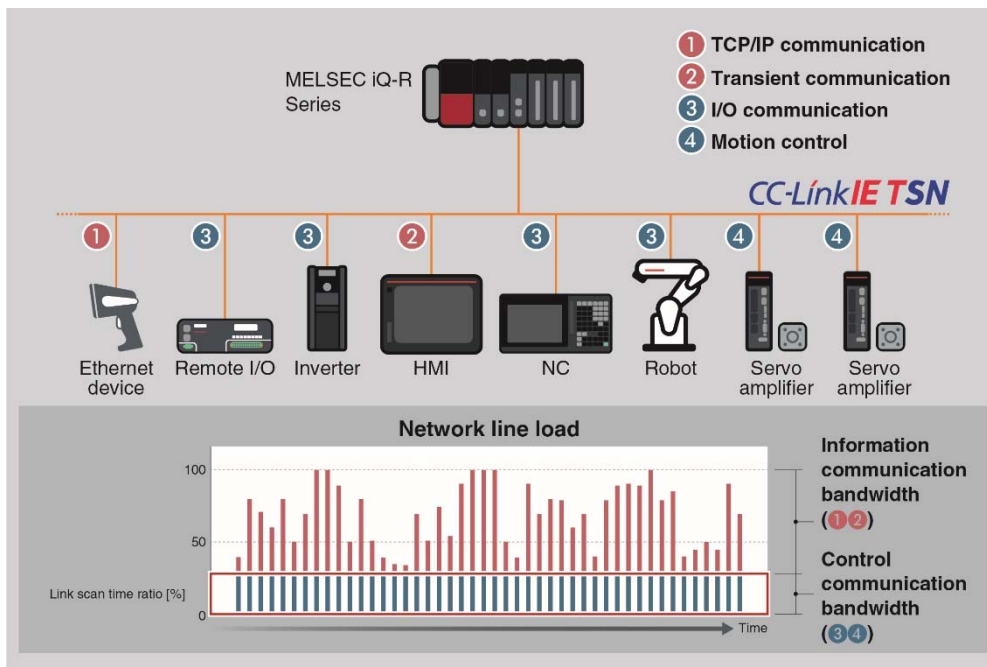
[8] Description language specifications released by CC-Link Partner Association. Manufacturers of connected devices provide necessary information for setup, operation, and maintenance.

Background

As manufacturers shift to smart factories, which utilize IIoT for improved production and increased data collection from shop floors via connected factory automation devices, demands are rising for increasingly high-speed and high-accuracy industrial networks. This is also creating needs for real-time data collection on shop floors, primary processing of machine data by edge computing, and seamless transfer of data to IT systems. In response, Mitsubishi Electric will introduce a variety of factory automation products compatible with CC-Link IE TSN to realize high-speed and high-accuracy production machinery for improved productivity, and a single network to integrate all factory devices with one Ethernet cable and manage all data from the shop floor, thereby enhancing e-F@ctory for increased manufacturing competitiveness.

Network configuration (including future support functions and products)

Network line load

Type	Product name	Model	Main specifications	Release schedule
Master/ local	MELSEC iQ-R Series master/local module	RJ71GN11-T2	Max. connectable stations 121	Starting from May 7
Master/ local	MELSEC iQ-F Series master/local module	FX5	Max. connectable stations 61[9]	TBA
Master/ local	MELSEC iQ-R Series motion module	RD78G	Max. controllable axes 4/8/16/32/64/128/256 axes	Starting from May 7
Master/ local	MELSEC iQ-F Series motion module	FX5	Max. controllable axes 4/8/16 axes	TBA
Slave	Remote I/O module	NZ2GN2S1-32	Spring clamp terminal block 32 points, DC input/transistor output	Starting from May 7
		NZ2GN2B1-32	Screw terminal block 32 points, DC input/transistor output	Starting from May 7
Slave	Remote analog module	NZ2GN2S-60	Spring clamp terminal block 4ch, analog input/output	Starting from May 7
		NZ2GN2B-60	Screw terminal block 4ch, analog input/output	Starting from May 7
Slave	HMI GOT2000 Series communication module	GT25‑J71GN13‑T2	Installable with GT27, GT25 model	May 31
Slave	AC servo MELSERVO-J5 Series servo amplifier	MR-J5-G	Voltage：200 V class Capacity：0.1 to 3.5 kW	Starting from May 7
			Voltage：200 V class Capacity：5 to 22 kW	TBA
		MR-J5W2-G	Voltage：200 V class 2 axes integrated Capacity：0.2 to 1.0 kW	Starting from May 7
		MR-J5W3-G	Voltage：200 V class 3 axes integrated Capacity：0.2 to 0.4 kW	Starting from May 7
		MR-J5-G4	Voltage：400 V class Capacity：0.6 to 22 kW	TBA
Slave	FREQROL-A800 Series inverter	FR-A820-GN	Voltage：200 V class Capacity：0.4 kW to 90 kW	Starting from May 7
		FR-A84-GN	Voltage：400 V class Capacity：0.4 kW to 500 kW	Starting from May 7
	Inverter plug-in option for communication	FR-A8NCG	Communication speed: 1 Gbps Installable with FREQROL-A800/F800 Series	Starting from May 7
Master/ local	Industrial robot MELFA FR Series R type	CR800-R	MELSEC iQ-R Series master/local module can be installed	Starting from May 7
Master/ local	Numerical controller (CNC) C80 Series	R16NCCPU-S1		Starting from May 7
Engineeri ng tool	MELSOFT GX Works3	SW1DND-GXW3	Engineering software for programmable controller	Starting from May 7

[9] Specifications may be subject to change.

Contribution to the Environment

The products announced in this release will help to improve productivity and thereby optimize energy consumption at production sites.

Ethernet is a registered trademark of Xerox Corporation.
e-F@ctory is a trademark of Mitsubishi Electric Corporation.
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About Mitsubishi Electric Corporation

With nearly 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of 4,444.4 billion yen (in accordance with IFRS; US$ 41.9 billion*) in the fiscal year ended March 31, 2018. For more information visit:
www.MitsubishiElectric.com

*At an exchange rate of 106 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2018