

FACTORY AUTOMATION

CC-Link IE TSN Product Catalog

CC-Link **IE** TSN



NEW Manager stations

- Programmable automation controllers MELSEC MX Controller
MX-R model/MX-F model P.21
- Master/local module RJ71GN11-SX P.21
- Motion control board MR-EM441G P.22

NEW Drives/GOT (HMI)

- LM7-□LG tension meter LM7-1LG/LM7-2LG P.24
- Industrial collaborative robot MELFA FR/CR/ASSISTA series controller
CR860-D/R P.25
- HMI GOT3000 Series GT37 model P.25

NEW Network interface board/Industrial computer

- CC-Link IE TSN interface board
NZ81GN11-SX/NZ81GN11-T2 P.36
- Industrial computer MELIPC Series MI2532-W/MI2332-W P.37



Mitsubishi Electric Corporation operates across a wide range of sectors, from home appliances and building systems to railway solutions, factory automation equipment, and satellites and leverages the synergy created by these diverse sectors to address various challenges and provide optimal solutions worldwide.

We, the Mitsubishi Electric Group, will continue to evolve in "carbon neutrality" and a "circular economy" by promoting innovation in products and services and providing integrated solutions through our business activities, all in order to realize a vibrant and sustainable society.

Under "Changes for the Better" which reflects the Mitsubishi Electric Group's commitment to "always strive to achieve something better", Mitsubishi Electric FA will expand the value of its products and services in the FA system business by advancing the provision and expansion of integrated solutions under the slogan "Automating the World" for an even better tomorrow. Through automation technology, we aim to contribute to innovation not only in the manufacturing industry but also across society as a whole.

We stand as your partner in shaping a smarter, more efficient, and more sustainable future.

SUSTAINABLE DEVELOPMENT GOALS

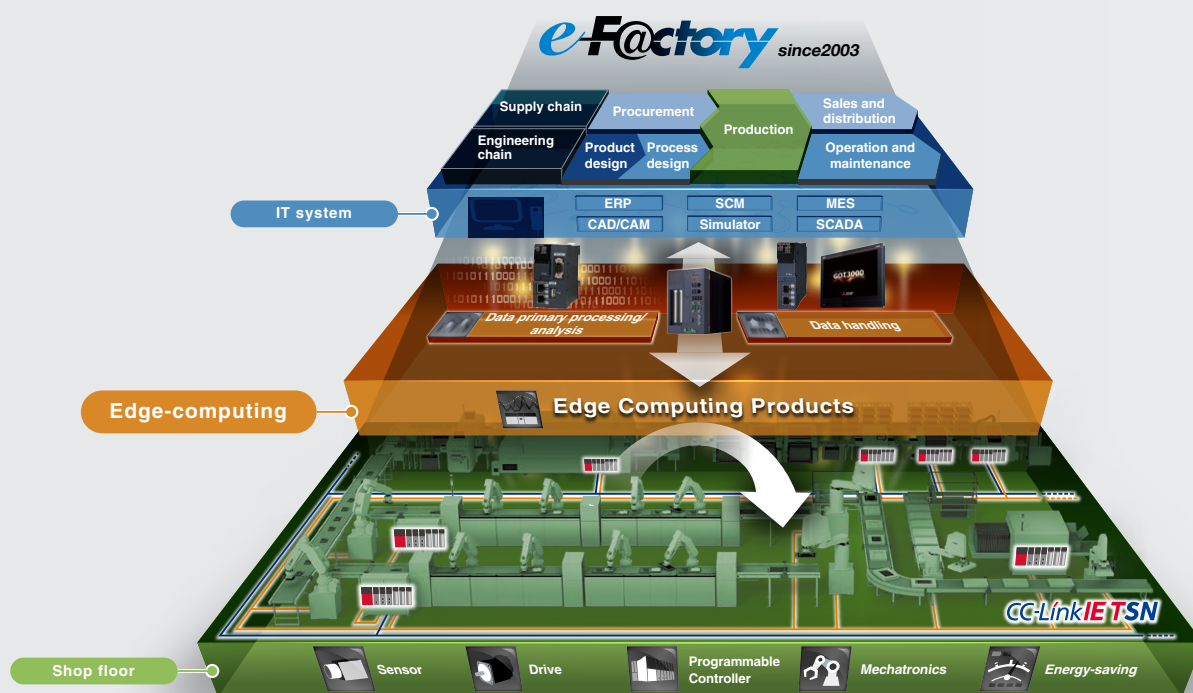
The Mitsubishi Electric Group is actively solving social issues, such as decarbonization and labor shortages, by providing production sites with energy-saving equipment and solutions that utilize automation systems, thereby helping towards a sustainable society.

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e-F@ctory

Maximize productivity and reduce costs with an intelligent smart factory solution

Intelligent smart factories utilize high-speed networks with large data bandwidths to meet current manufacturing needs. The combination of CC-Link IE TSN and Mitsubishi Electric's e-F@ctory solution ensures robust integration between IT and factory automation systems, providing an intelligent smart factory solution that reduces total cost while improving operations, production yield, and efficient management of the supply chain. e-F@ctory is the Mitsubishi Electric solution for adding value across the manufacturing enterprise by enhancing productivity, thereby simultaneously reducing maintenance and operating costs, and enabling the seamless flow of information throughout the plant. e-F@ctory uses a combination of factory automation and IT technologies in combination with various best-in-class partner products through its alliance program.



e-F@ctory

CC-Link IE TSN

- IT integration
- Open technology

- High speed, Time synchronization
- Network integration

MELSEC iQ-R

MELSEC iQ-F

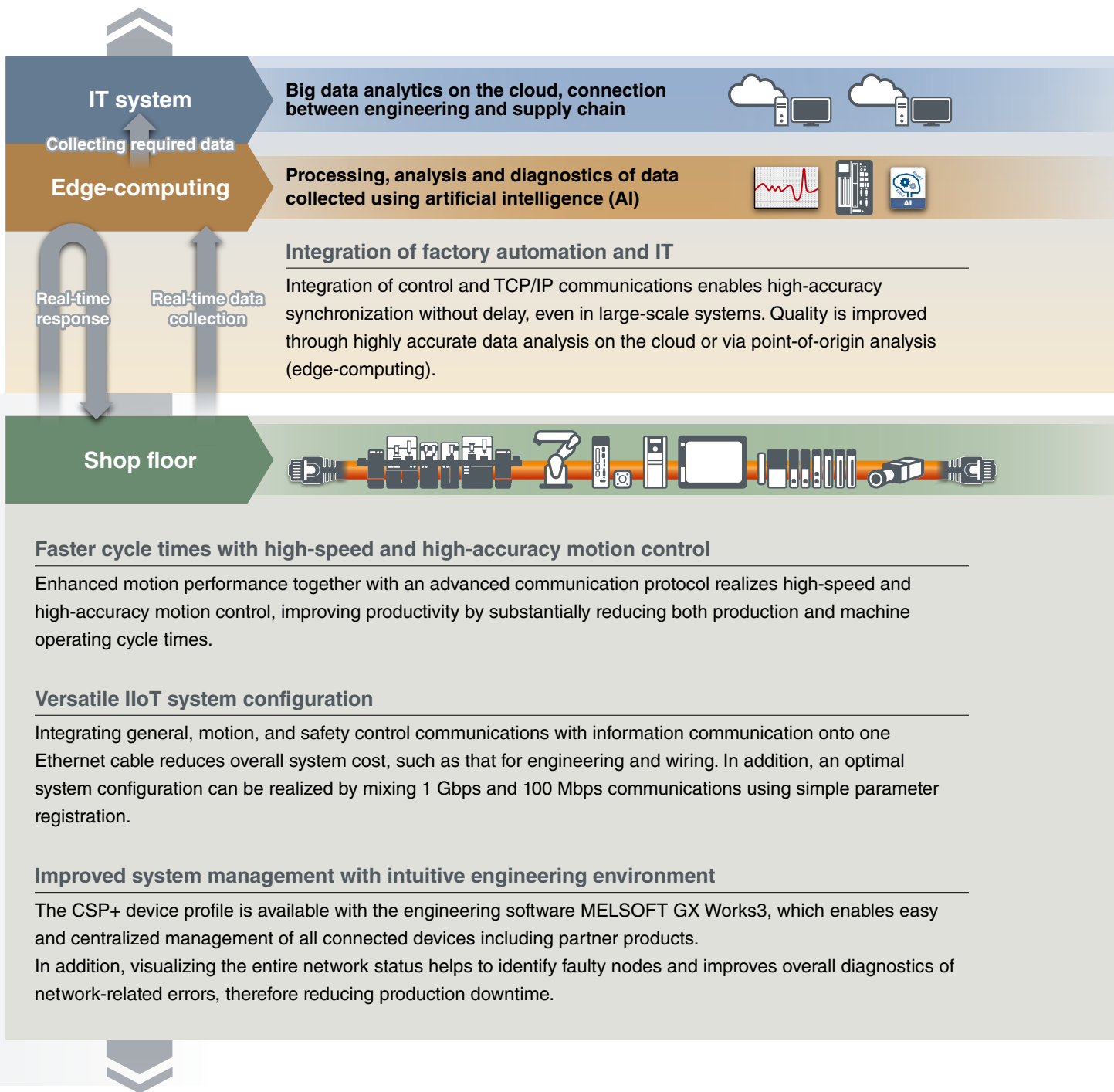
MELSERVO-J5

FREQROL-A800/E800

GOT2000

MELFA FR

MITSUBISHI ELECTRIC
CNC C80



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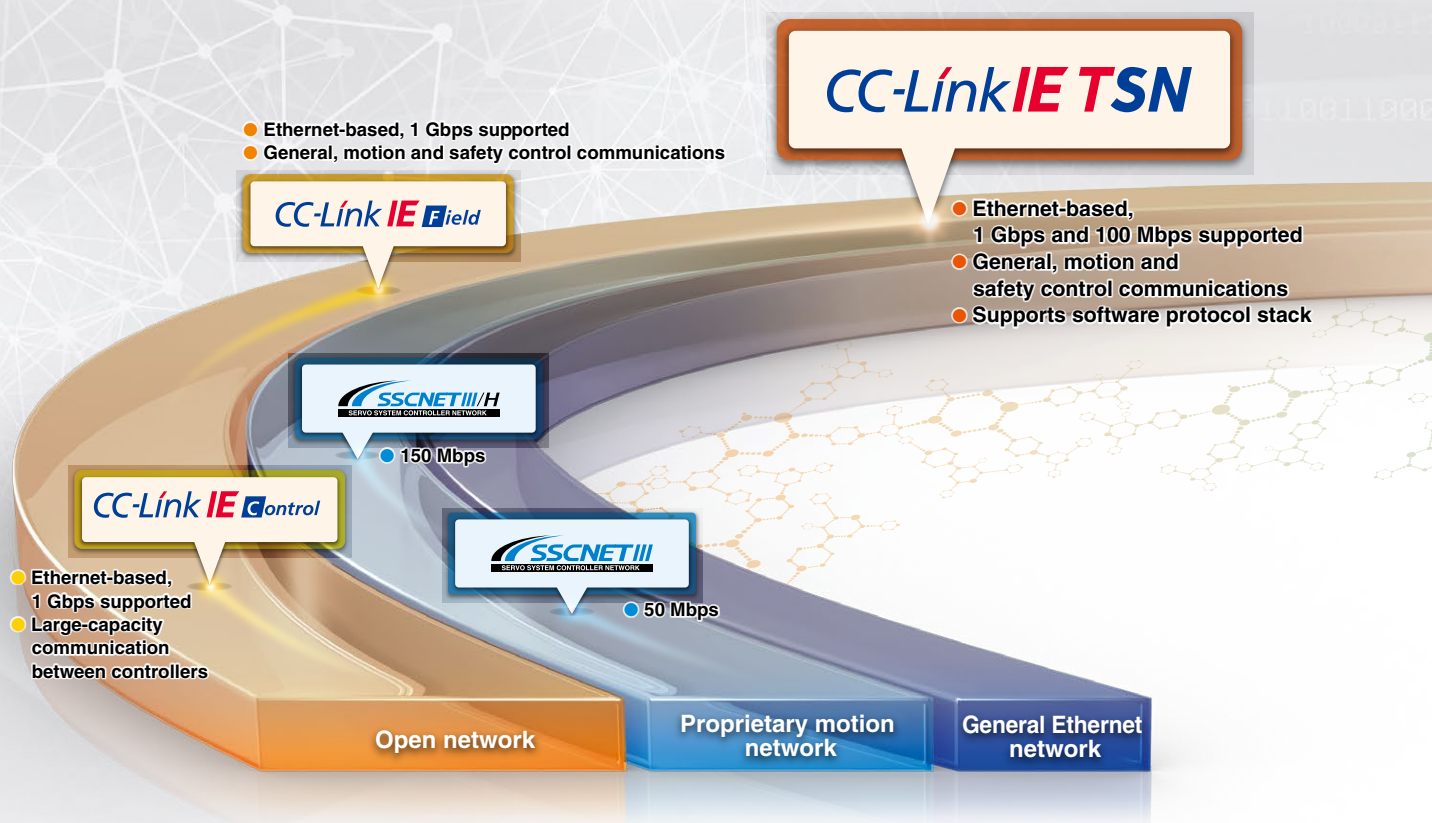


Open integrated networking across the manufacturing enterprise

Leveraging an integrated and open network utilizing TSN*1 technology realizes real-time data collection from the shop floor to IT systems

CC-Link IE TSN supports TCP/IP communications and applies it to industrial architectures through its support of TSN enabling real-time communications. With its flexible system architecture and extensive setup and troubleshooting features make CC-Link IE TSN ideal for building an IIoT infrastructure across the manufacturing enterprise.

*1. TSN: Time Sensitive Networking



What is Time-Sensitive Networking (TSN)?

TSN is the IEEE-defined standard technology that enables deterministic messaging on standard Ethernet. The technology ensures deterministic communications by utilizing the time synchronization method (IEEE 802.1AS) and time-sharing method (IEEE 802.1Qbv). With the addition of these standards to Ethernet technology, real-time control communication and non-real time information communication can be mixed, which is not possible with conventional Ethernet communications.

TSN Technology

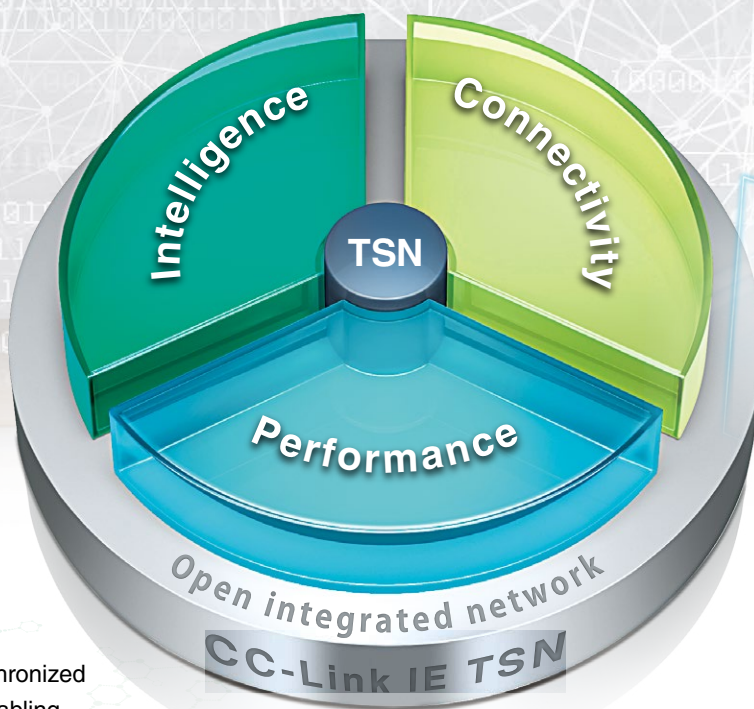
: Features utilizing TSN technology



CC-Link IE TSN
“IIoT system” movie



CC-Link IE TSN
“Integrated motion” movie



Real-time and synchronized communications enabling high-accuracy motion control and event processing

Performance

Current manufacturing trends are utilizing AI and predictive maintenance to ensure high productivity and quality are achieved simultaneously. This requires high-speed communication and deterministic control of large volumes of data to IT systems. The innovative communication technology of CC-Link IE TSN increases communication performance, enables high-accuracy motion control and high-speed I/O control without adversely affecting operating performance.

Intelligence

Intelligent networks that support industrial communications to realize easy device setup and preventive maintenance are essential for efficient operations. CC-Link IE TSN supports third-party diagnostic software, enabling troubleshooting of network devices (including standard Ethernet). Network event errors are time-stamped, enabling the actual cause of error to be easily evaluated. In addition, automatic generation of network system architectures and parameters simplifies commissioning.

Connectivity

CC-Link IE TSN is the key to realizing real-time communication in manufacturing systems utilizing TCP/IP-compatible Ethernet-based networks. It also enables third-party networks and standard Ethernet devices such as vision sensors and wireless routers to be integrated, and has multiple topology possibilities in support of highly scalable and flexible system architectures.



Performance

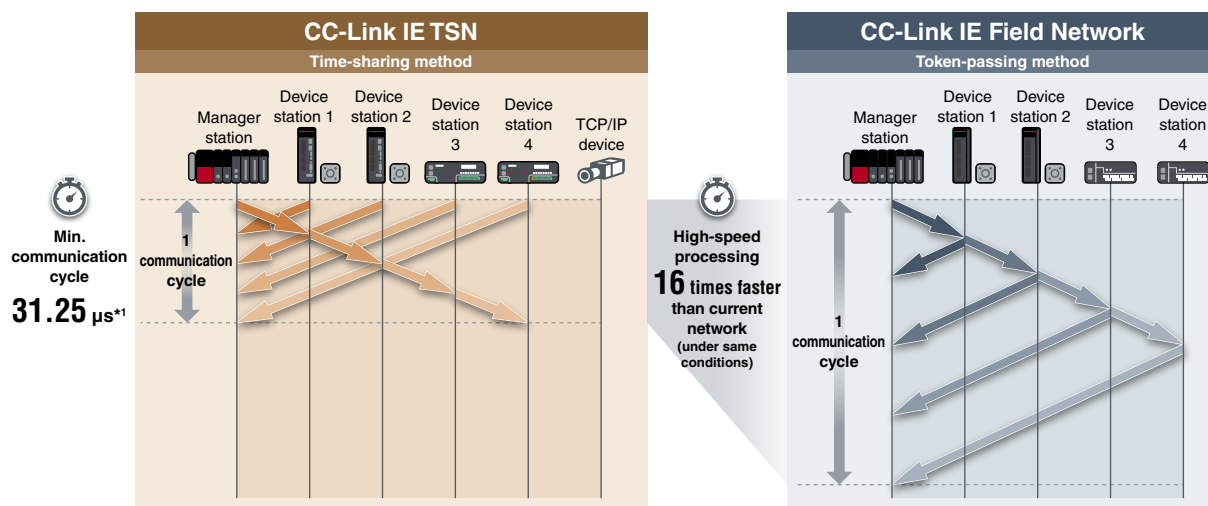
Reducing overall operating time with high-speed link scan

Min. communication cycle **31.25 μ s^{*1}**

High-speed processing **16^{*2} x faster**

Link points **2^{*3} x**

CC-Link IE TSN Class B^{*4} has been updated. With synchronized timing and time slots, connected stations are able to send and receive data at the same time. This realizes fast communication cycle time of just 31.25 μ s^{*1} and high-speed processing 16 times faster than current network performance, resulting in high-speed and highly accurate motion control. Productivity is simultaneously improved owing to a substantial increase in control performance, which reduces overall operating time and enables high-speed and large capacity data communication.



^{*1}. This value is achieved when fast operation mode of the motion module (RD78GH) is used. For details, please refer to the "MELSEC iQ-R Motion Module User's Manual (Application) (IB-0300411ENG)".

^{*2}. Comparison with CC-Link IE Field Network Motion

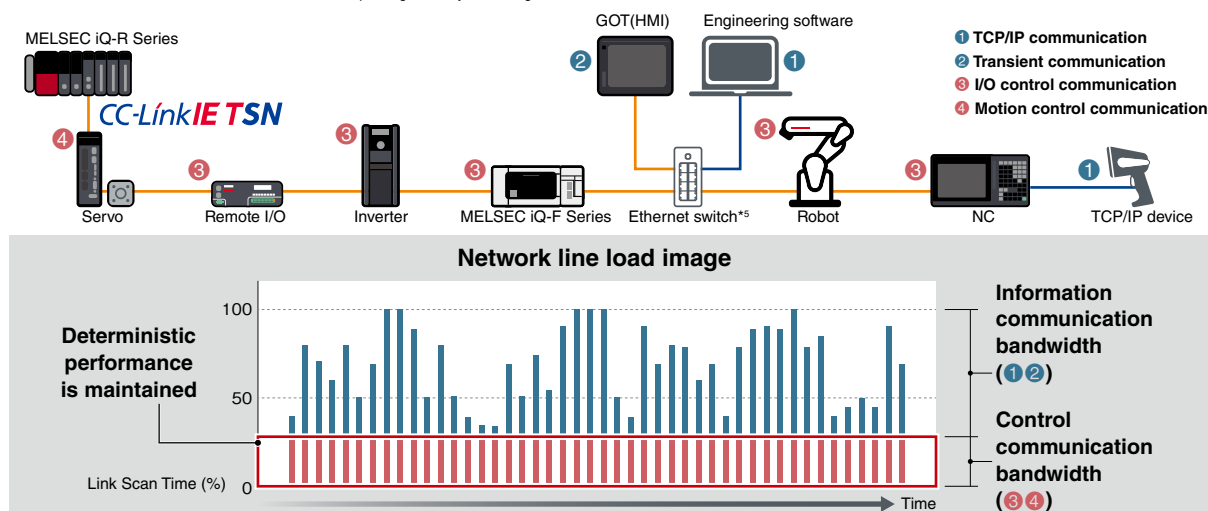
^{*3}. Comparison with CC-Link IE Field Network

^{*4}. For details on CC-Link IE TSN Classes, please refer to P.16.

Deterministic control even when mixed with TCP/IP communication TSN Technology

Deterministic performance of cyclic communication is maintained even when mixed with slower information data (non real-time). This enables TCP/IP communication devices to be used without affecting overall control.

^{*} Some devices cannot be connected to CC-Link IE TSN depending on the system configuration.



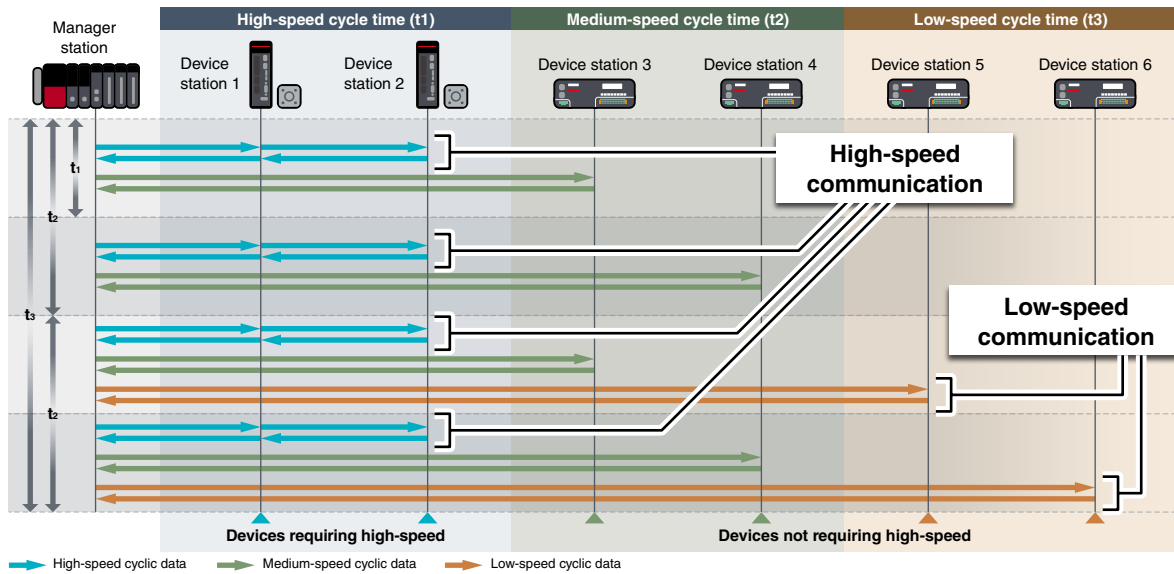
^{*5}. Class B managed Ethernet switch supporting CC-Link IE TSN recommended by the CC-Link Partner Association

Optimum control when mixing devices with different communication cycles

Communication cycle 3 set points

TSN Technology

High-speed communication devices ideal for high-speed, high-accuracy control and slower response devices ideal for monitoring can be connected using the same line by separating the communication cycle according to speed. This can maximize productivity by using optimum communication cycles based on device performance, such as device stations that require high-speed control and status monitoring stations that operate at lower communication speeds. Depending on project's requirements, if time synchronization is not needed for the application, CC-Link IE TSN Class A*¹ devices can be chosen to reduce cost.



*1. For details on CC-Link IE TSN Classes, please refer to P.16.

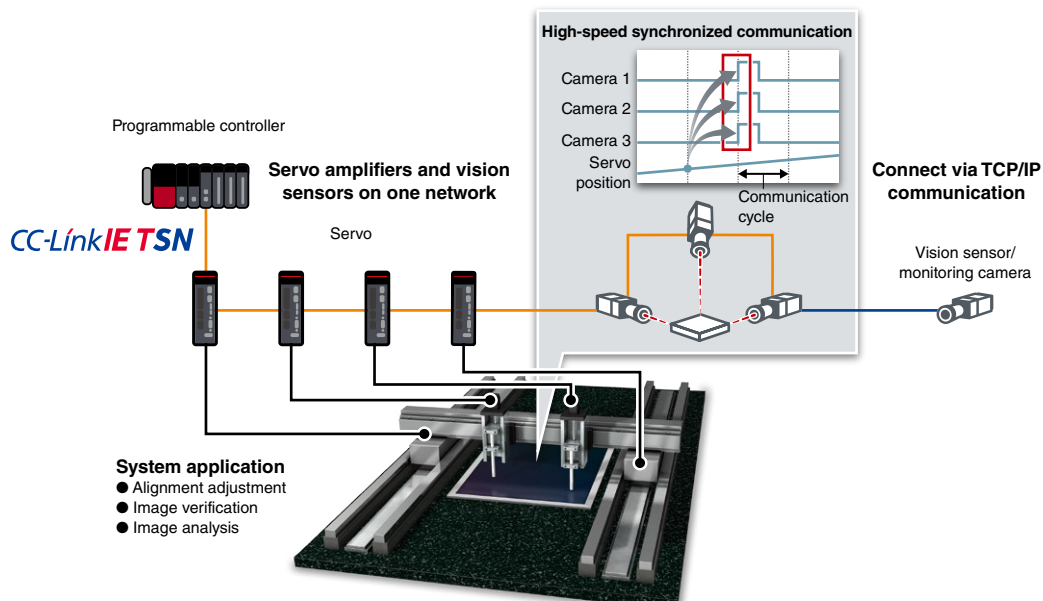
Realize high-accuracy synchronous control

Synchronization accuracy $\pm 1 \mu s$

Max. number of synchronized axes: 256 axes

TSN Technology

Servo amplifier and other device stations can be connected on the same network, enabling synchronous motion control between servo motors and device stations.



Features

System configuration

Manager stations

Drives/GOT (HMI)

Block-type remote modules

Network interface boards/communication software

Industrial Ethernet switches

Bridge modules

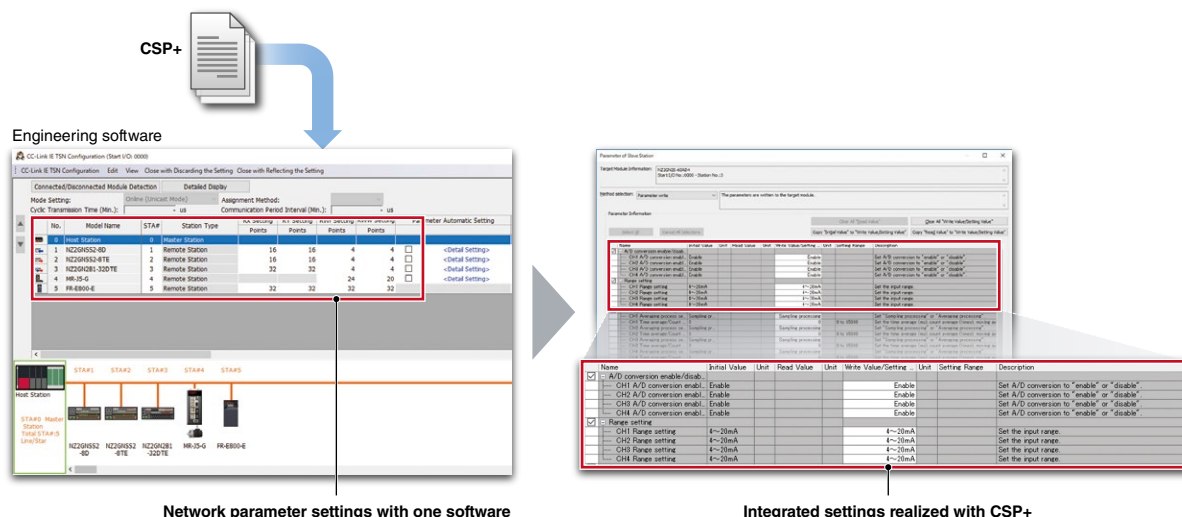
Energy measuring units

Accessories (partner products)

Development kits

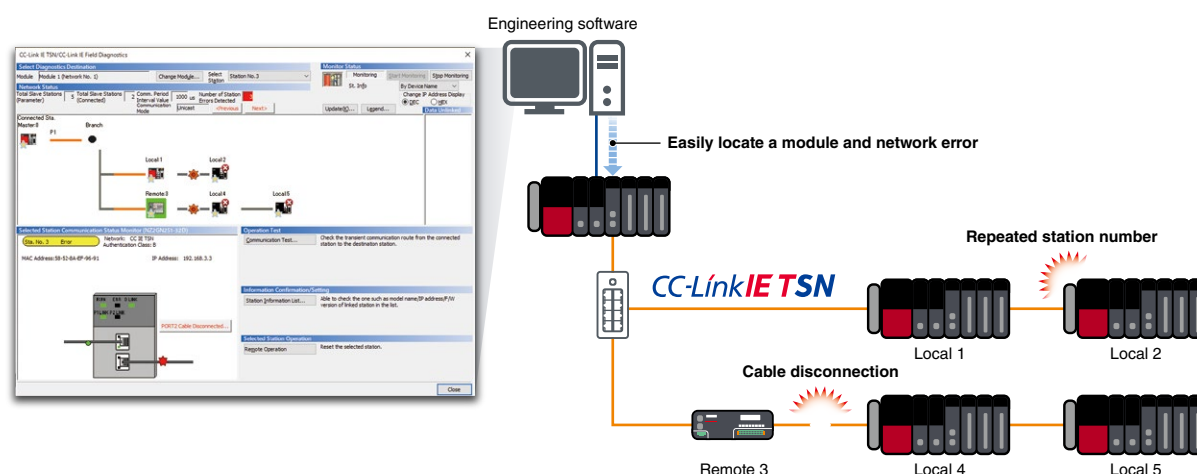
Easier parameter setting with imported device profiles (CSP+) Easy startup

Importing profiles (CSP+) describing device features into the engineering software GX Works3 realizes centralized management of connected devices including partner products. Different settings per connected device can be easily done in the same setting procedure.



Easier troubleshooting reduces downtime Easy diagnostics

The location of a cable disconnection and error can be quickly found by visualizing the CC-Link IE TSN network system image in order of connection using the engineering software GX Works3. Since diagnostics information can be checked in real-time, a network error due to an unexpected wiring change and module setting change can be quickly found, reducing downtime.

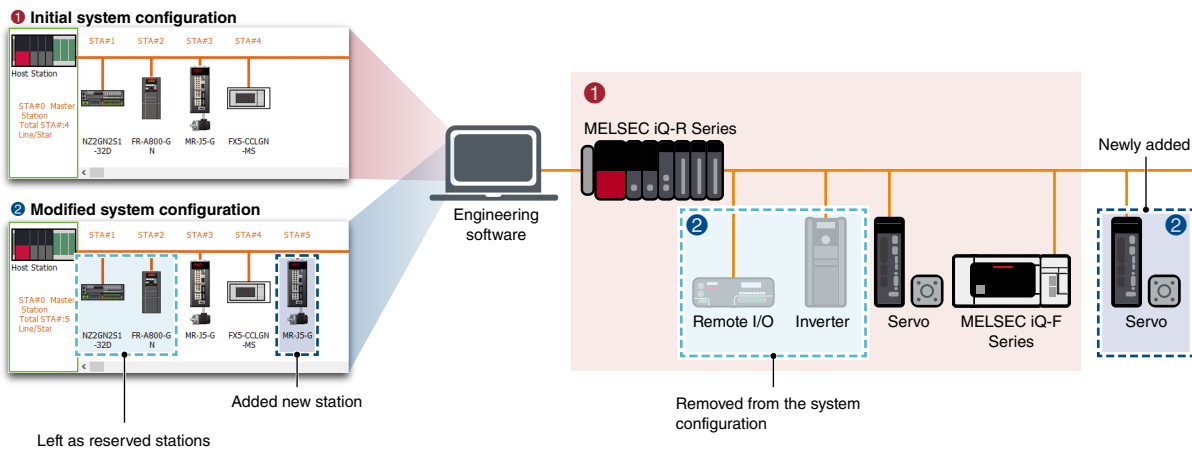




Intelligence

Auto-generation of network parameters Easy startup

Automatic generation of system parameters is relatively easy; simply connect the engineering software with the network manager station. New parameters are reflected automatically even when the system configuration changes, reducing overall network setup time.



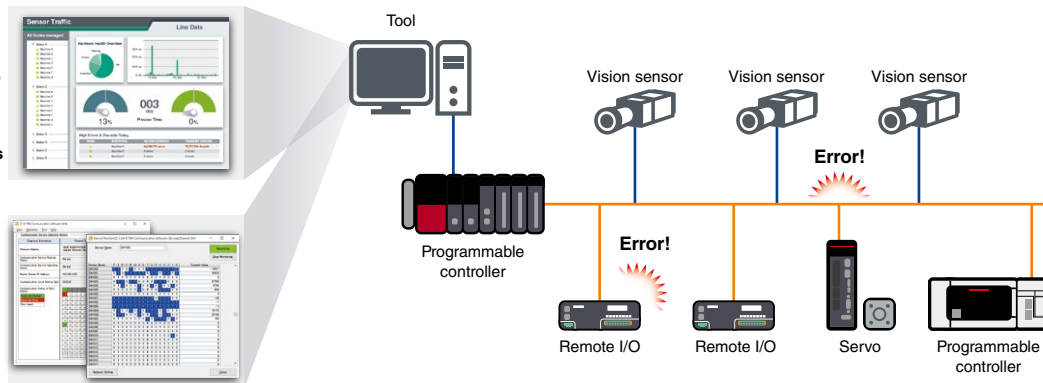
Easy diagnostics/data collection utilizing general Ethernet technology

Easy diagnostics Data collection

General Ethernet diagnostics software compatible with SNMP*1 can be used for monitoring CC-Link IE TSN and Ethernet network devices. In addition to Mitsubishi Electric's engineering software, system-wide diagnostic analysis and monitoring across the entire network are possible. CC-Link IE TSN communication software for Windows® realizes data collection at a low cost with easy setting without requiring network configuration setting change.

In addition to quick diagnostics with engineering software, system-wide diagnostics and monitoring using general Ethernet tools

CC-Link IE TSN communication software reduces configuration cost when realizing a data collection system



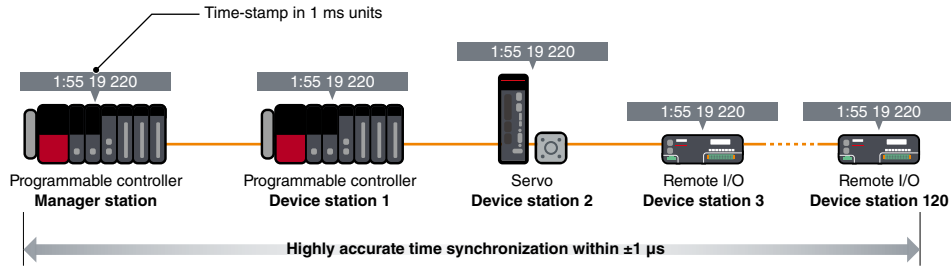
*1. SNMP: Simple Network Management Protocol

Error cause analysis with highly precise time synchronization

SoE

TSN Technology

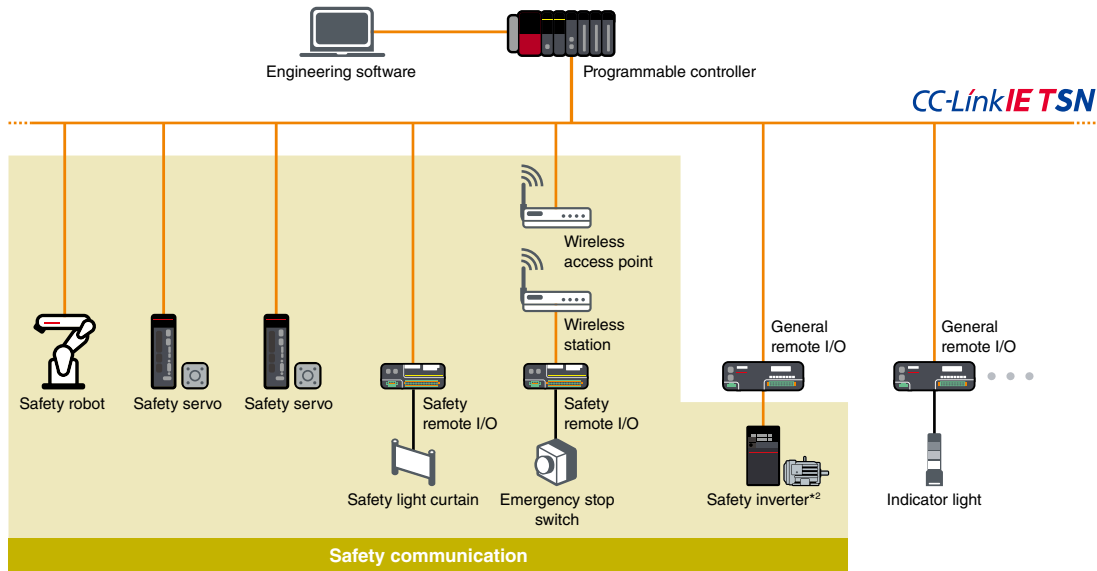
Highly accurate time synchronization accuracy within $\pm 1 \mu\text{s}$ and each station connected to the network sharing time-stamp information in 1 ms increments improves system diagnostics and troubleshooting by enabling sequential analysis of stations in the network. The error history is displayed consecutively based on time-stamp data, enabling accurate analysis of the cause of error using the actual time the event occurred.



Combining with safety communications

Safety communication

CC-Link IE TSN enables control of safety and non-safety communications realizing a flexible system whereby safety communications can be easily incorporated into the main control network. Safety sub-functions (STO/SS1/SS2/SOS/SLS/SBC/SSM)*¹ are also supported for drive-control devices that are on the network.



*1. Inverter FR-E800-SCE supports only STO/SS1/ SLS/SSM/SBC. Robot MELFA FR Series supports STO/SS1/SS2/SOS/SLS/SLP.

*2. When mixing 100 Mbps with 1 Gbps-rated devices on the same network, connect the 100 Mbps device after a device supporting 1 Gbps (class B).

Wireless communication

Using wireless communication enables flexible system configuration.



CC-Link IE TSN-compatible devices can be updated, ensuring latest functional version modules.





Connectivity

Combining real-time control and TCP/IP communication

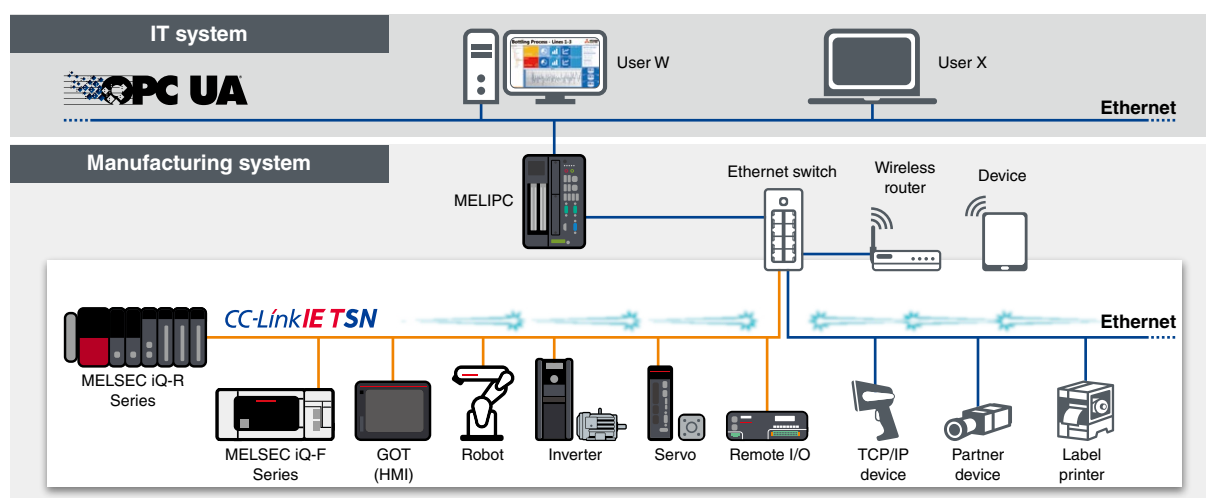
Standard Ethernet

Utilize TSN technology

Mixed communications

TSN Technology

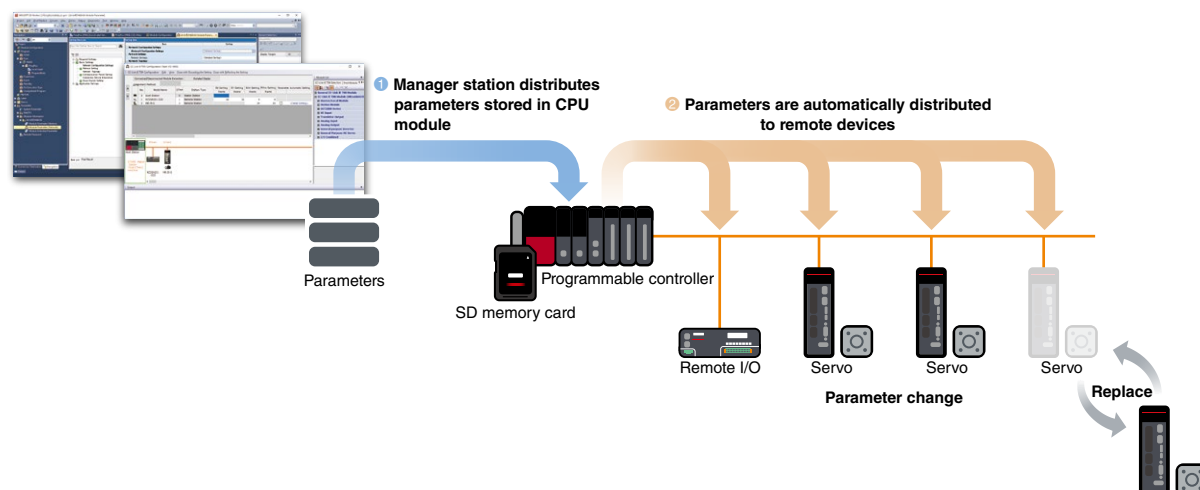
Supporting standard Ethernet enables various network-compatible devices and diagnostic software to be used, realizing an integrated network infrastructure that is easy to maintain. Ethernet communications supporting TCP/IP communication such as information that has been collected and analyzed by edge devices and IT systems can be mixed in the same line with the real-time control communications of CC-Link IE TSN.



Easy replacement of remote devices

Shorter startup

Network station parameters that are stored in the CPU module are automatically distributed to remote devices when initializing the network and when returning disconnected stations to the network. Individual registration of the parameters to each station is unnecessary after replacing remote devices.

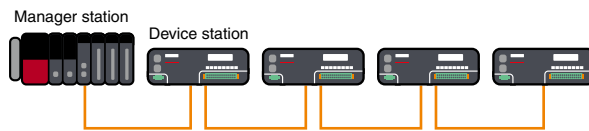


Flexible system configuration with multiple topologies

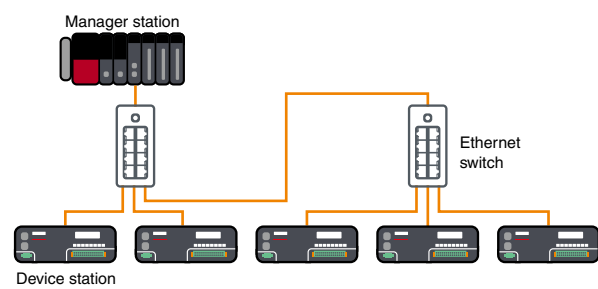
Flexible system

Line, star, and ring topologies are supported, allowing a flexible system configuration. Use line topology for high-speed, high-performance control. This is realized when a system is configured with CC-Link IE TSN-compatible device stations only without additional branch lines. Choose a star topology if a more flexible system configuration is needed. Using Ethernet switches, device stations can be easily distributed to achieve the desired system configuration. Ring topology is ideal for systems requiring high reliability. Data communications continue with normal stations even if a cable is disconnected or an error occurs on a device station via multi-directional communication.

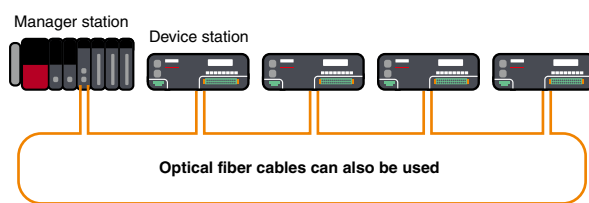
Line topology



Star topology

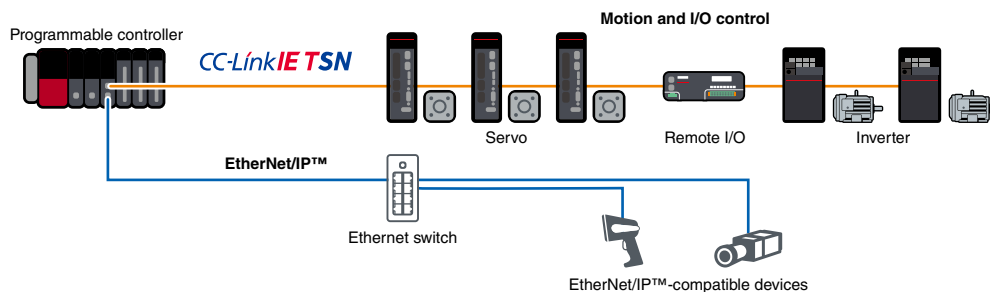


Ring topology



Integrate other network devices

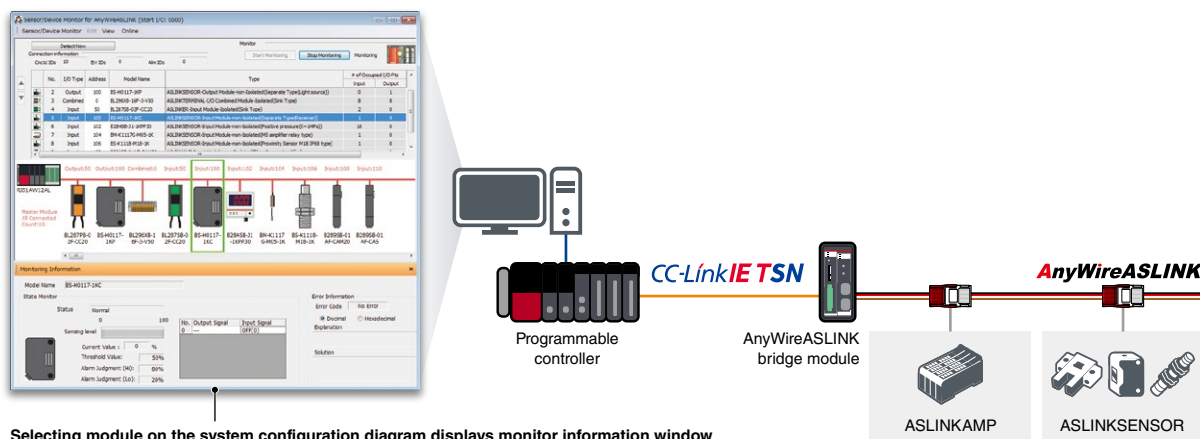
The CC-Link IE TSN Plus master/local module (RJ71GN11-EIP) supports both CC-Link IE TSN and EtherNet/IP™. One port can be connected to the CC-Link IE TSN network, whilst the other port can be connected to the EtherNet/IP™ network. Even if both networks are used simultaneously, functions similar to the CC-Link IE TSN master/local module can be used without affecting the CC-Link IE TSN communication performance. Both networks are easily settable within the engineering software GX Works3.



Visualization of sensors and space-saving

Sensor connection (iQSS)

The AnyWireASLINK bridge module integrates AnyWireASLINK-compatible sensors via CC-Link IE TSN. Settings and diagnostics of AnyWireASLINK-compatible sensors are easily done from the engineering software GX Works3 by connecting to a programmable controller via a network.



Selecting module on the system configuration diagram displays monitor information window

Features

System configuration

Manager stations

Drives/GOT (HMI)

Block-type remote modules

Network interface boards/communication software

Industrial Ethernet switches

Bridge modules

Energy measuring units

Accessories (partner products)

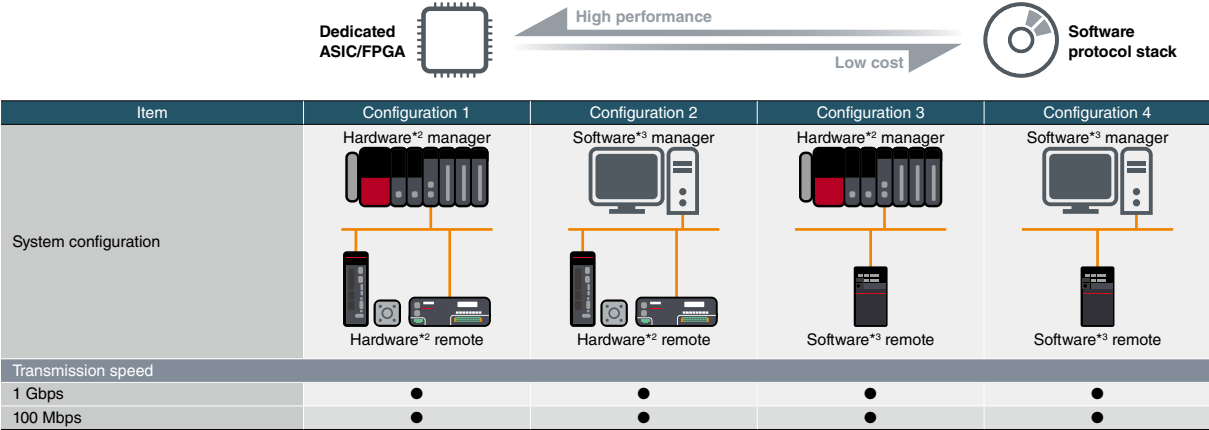
Development kits

Highly scalable system utilizing best-in-class devices

Various devices

CC-Link IE TSN can be implemented in a wide range of products, from high-performance devices using dedicated ASICs/FPGAs to low-cost devices using software protocol stacks on standard Ethernet chips. CC-Link IE TSN Classes are defined based on the required performance and application.*1

*1. For details on CC-Link IE TSN Class, please refer to "Features of CC-Link IE TSN Class B and Class A" at the bottom of this page.



*2. Hardware manager/remote: Development with dedicated LSI (ASIC, FPGA)
*3. Software manager/remote: Development with software protocol stack (standard Ethernet chip)

Features of CC-Link IE TSN Class B and Class A

■ CC-Link IE TSN Class B

- This class utilizes TSN technology to enable time-synchronized communication between devices with synchronization accuracy within ±1 μs, achieving high-speed, high-accuracy control
- The configuration consists of a Class B-compliant manager station, device stations, and switching hubs (only for a star topology)

■ CC-Link IE TSN Class A

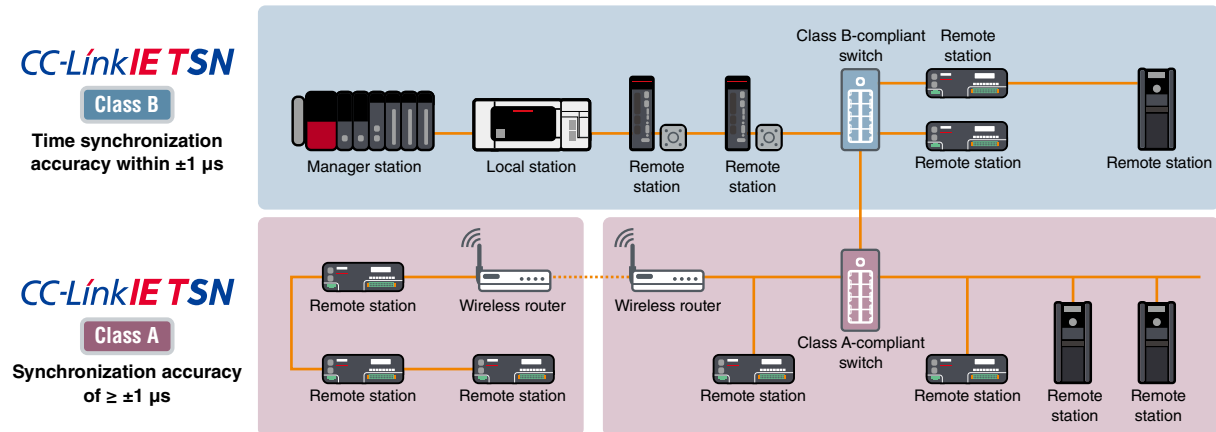
- This class achieves high-speed I/O control while reducing equipment costs by not requiring time synchronization technology
- The configuration consists of a Class B-compliant manager station, Class A-compliant device stations, and switching hubs (only for a star topology)
- Wireless communication is possible when combined with a wireless LAN adapter

■ Mixing CC-Link IE TSN Class B/A

- Class A devices can be mixed in a Class B system by using a Class B-compliant switching hub or by connecting Class A devices to the end of Class B devices

CC-Link IE TSN-compatible devices may support both Class B and Class A. Please check the specifications of the products to be used and set the parameters for the manager station and device stations according to the class of your system.

For information on precautions related to system configuration, please refer to the manager product manual or consult your local Mitsubishi Electric representative.



CC-Link IE TSN Class B and Class A specifications

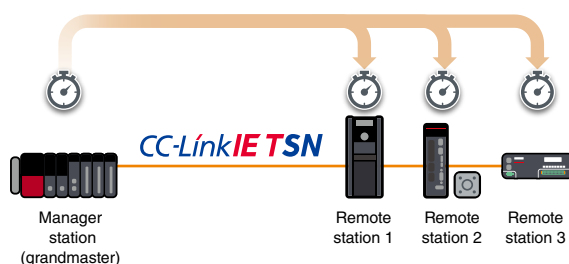
CC-Link IE TSN has Class B and Class A. Configure device parameters and select switches according to the class to be used. The specifications for each class are defined by the CC-Link Partner Association. The following only provides the key specifications.

Feature	CC-Link IE TSN Class	
	B	A
IEEE 802.1AS compliant (time synchronization method)	●	-
IEEE 802.1Qbv compliant (time sharing method)	●	-
Time synchronization accuracy	Within $\pm 1 \mu\text{s}$	-

■ IEEE 802.1AS

This function synchronizes the clock of each station to the grandmaster clock.

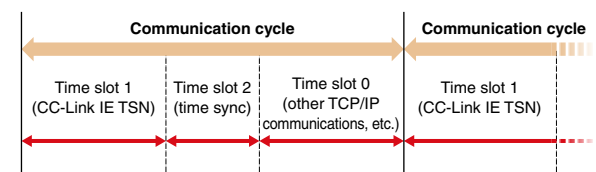
The CC-Link IE TSN manager station acts as the grandmaster, achieving time synchronization with other devices on the Ethernet with an accuracy within $\pm 1 \mu\text{s}$.



■ IEEE 802.1Qbv

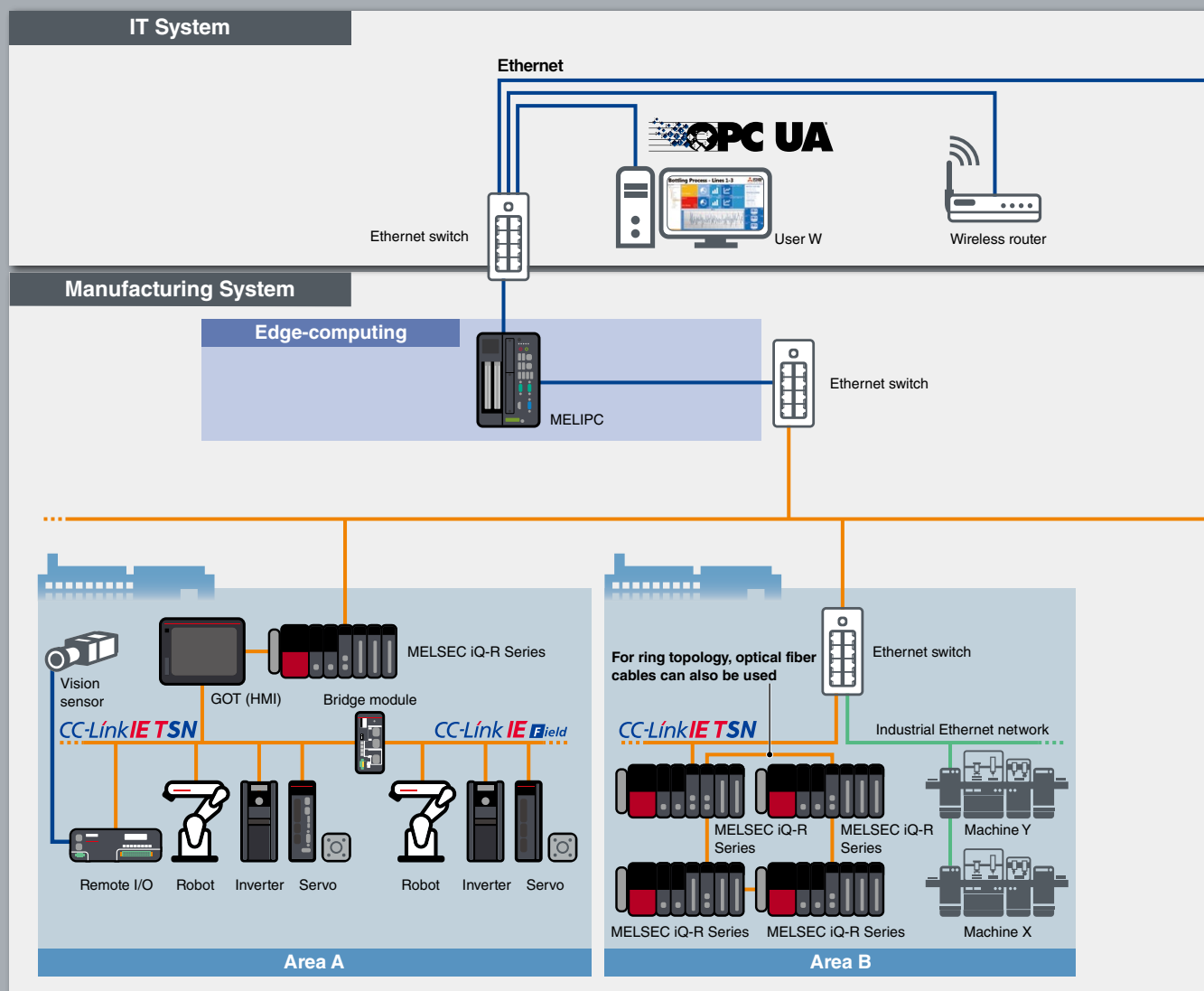
This function performs scheduling by dividing communication bandwidth (time slot) based on the synchronized time.

It enables deterministic communication over standard Ethernet.



System configuration

Seamless communication

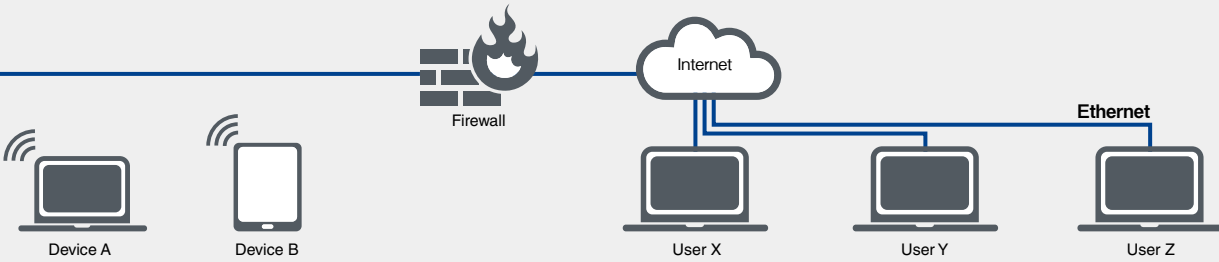


Flexible IIoT system configuration

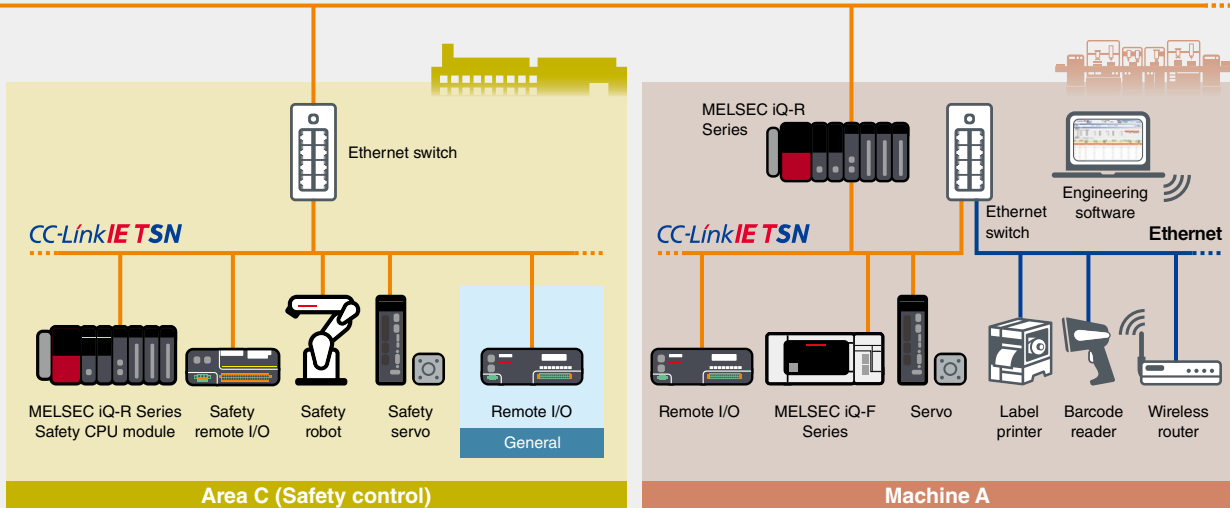
CC-Link IE TSN uses TSN, an Ethernet technology based on multiple standards. Utilizing TSN allows high-speed, deterministic control communications (real time) and information communications (non-real time) to coexist. This enables the use of TCP/IP communication devices without affecting real-time, deterministic communications, providing greater flexibility in connecting machines and equipment.

Increased productivity

Improved communication performance enables shorter production cycle time. Compared to current systems, adding further control axes and remote I/Os is much easier. In addition, optimum communication cycle times can be realized by supporting both high-speed and low-speed cycle communications according to device specifications.



CC-Link IE TSN



Reduce startup, engineering and maintenance costs

Through its support of SNMP, general Ethernet diagnostics software can be used to identify the network-related errors of CC-Link IE TSN and Ethernet devices more easily. The internal clocks of devices can be synchronized to within the microsecond, making it possible to log historical events in sequence and easily identify the cause of an error.

Various development methods available supporting different products

Product development for CC-Link IE TSN partner product vendors is relatively simple since various options are available. These include a dedicated ASIC/FPGA option for devices that require high performance, and a software protocol stack suitable for lower cost devices that can utilize a general Ethernet chip for network implementation.

Manager stations



The MELSEC MX Controller is Mitsubishi Electric's most advanced CPU module. It integrates sequence, motion, and network controls into a single module. It takes control speed and accuracy to new heights. It also incorporates a CC-Link IE TSN manager capability. In addition to motion control, the MELSEC MX Controller supports communication between controllers when used with MELSEC iQ-R or iQ-F Series master/local modules. This enables the network to be unified with CC-Link IE TSN.

MELSEC iQ-R or iQ-F Series master/local modules can be used as CC-Link IE TSN manager stations or local stations. Control communications that require real-time performance can be mixed with TCP/IP communications, maximizing the performance and functionality of CC-Link IE TSN. Large-scale systems can be constructed using long-distance wiring with optical fiber cables and high-speed, high-capacity communication between controllers.

The motion module provides a variety of control functions, such as positioning, synchronization, cam, velocity, and torque control when used with servo amplifiers that support CC-Link IE TSN. High-speed, high-accuracy motion control can also be achieved in industrial computer environments with motion software or a motion control board.

Programmable automation controllers MELSEC MX Controller Class B

MX-R model NEW MX-F model NEW

Mitsubishi Electric's highest-performance CPU module, the first to be equipped with a built-in CC-Link IE TSN manager capability

- The MELSEC MX Controller integrates sequence control, motion control, and network control into a single module, taking control speed and accuracy to the next level
- Can be used as a CC-Link IE TSN manager station
- Up to 253 stations*1 can be connected to MX-R, and up to 46 stations can be connected to MX-F. It offers Mitsubishi Electric's highest level of motion control performance, supporting multi-axis control for up to 256 axes
- In addition to motion control, it supports communication between controllers when used with MELSEC iQ-R or iQ-F Series master/local modules. This enables the network to be unified with CC-Link IE TSN
- A wide range of devices are supported, including third-party drive units that are compatible with CC-Link IE TSN

*1. Device stations supporting 253-station connections will be expanded.
For details, please refer to Technical Bulletin (FA-A-0451).



MXR500-256

MXF100-16-N32

Master/local module Class B

RJ71GN11-T2 RJ71GN11-SX NEW RJ71GN11-EIP FX5-CCLGN-MS

Network management module maximizes CC-Link IE TSN performance and functionality

- Can be used as a CC-Link IE TSN manager or local station
- Enables mixing of real-time control communication and TCP/IP communication
- Automatic detection of network devices and parameter distribution realizes easy network configuration
- RJ71GN11-T2 can be used as a safety manager or local station when paired with the MELSEC iQ-R Series safety CPU module
- RJ71GN11-T2 and RJ71GN11-EIP can control servo motors by using the profile mode of servo amplifiers
- RJ71GN11-EIP can connect CC-Link IE TSN devices to port 1 and EtherNet/IP™ devices to port 2 without affecting CC-Link IE TSN communication performance
- RJ71GN11-SX enables the construction of systems with long-distance wiring using optical fiber cables. It also allows the construction of large-scale systems through high-speed, high-capacity communication between controllers



RJ71GN11-T2

RJ71GN11-SX

RJ71GN11-EIP



FX5-CCLGN-MS

Features

System configuration

Manager stations

Drives/GOT (HMI)

Block-type remote modules

Network interface boards/communication software

Industrial Ethernet switches

Bridge modules

Energy measuring units

Accessories (partner products)

Development kits

■ Motion module Class B

RD78G RD78GH FX5-□SSC-G

Unlock new system capabilities together with CC-Link IE TSN

- PLCopen® Motion Control function blocks can easily perform various motion control functions such as, positioning, synchronization, cam, speed, and torque control
- Advanced motion control system realized by mixing servo amplifiers and I/O modules on one network
- Supports safety communication when paired with the MELSEC iQ-R Series safety CPU module
- FX5-□SSC-G utilizes the existing projects of the MELSEC iQ-F Series simple motion module (previous model)
- Operation mode of RD78G can be selected between “Simple Motion mode” and “PLCopen® motion control FB mode” considering the programming language and project



■ Motion control software Class B

SWM-G

Create new value together in a PC-based environment

- Supports a CC-Link IE TSN servo control system where RTX64 (real-time extension) is installed on a PC (RTX64 is included with SWM-G)
- Meets various application needs by offering various types of motion control, such as positioning, synchronous, cam, speed, and torque control using API libraries
- Utilizes network control to connect and set various remote devices (remote I/O modules, etc.) and TCP/IP devices



■ Motion control board Class B

MR-EM441G NEW

Achieve high-speed motion control in industrial computer environments

- Connects to the PCI Express® expansion slot of the industrial computer to achieve high-speed, high-accuracy motion control
- The built-in CPU handles motion and network control. High-speed, high-accuracy positioning is achieved without affecting the performance of the motor drive, even when the computer CPU is heavily loaded due to massive data processing.
- Interrupts to the industrial computer allow for the creation of event-driven user applications



Drives/GOT (HMI)



In addition to AC servos, inverters, and robots, various drive products, including tension meters, support CC-Link IE TSN. Using MELSEC MX Controllers and motion modules enables high-speed, high-accuracy synchronous control, enhancing production equipment performance.

The extensive lineup includes various devices that support safety communication, which is essential for equipment safety. It allows you to mix drive control and safety control, which was previously impossible with conventional networks. This enables you to build flexible networks while ensuring safety.

Furthermore, the GOT (HMI) also supports CC-Link IE TSN. Using data collected from the shop floor allows for real-time monitoring of the site status and enables preventive maintenance for AC servos and inverters through interactive functions like GOT Drive.

Features

System
configuration

Manager stations

Drives/GOT (HMI)

Block-type remote
modules

Network interface
boards/communication
software

Industrial Ethernet
switches

Bridge modules

Energy measuring
units

Accessories
(partner products)

Development kits

■ AC servo MELSERVO-J5/MELSERVO-JET Series Class B Class A

MR-J5-G MR-J5W-G MR-J5-G-HS/RJ MR-J5D-G4 MR-JET-G

Next generation MELSERVO-J5/MELSERVO-JET Series improves production systems

- Highly accurate synchronous control when combined with a motion module
- Multi-axis servo amplifier and drive unit are also available
- MR-J5-G-HS, MR-J5-G-RJ, MR-J5W□-G, and MR-J5D□-G4 which are compatible with safety communications support safety sub-functions: STO, SS1, SS2, SOS, SBC, SLS, SSM, SDI, SLI, and SLT



MR-J5-G MR-J5W3-G MR-J5D3-G4 MR-JET-G

■ Inverter A800/E800 Series

FR-A800-GN Class B Class A FR-E800-E/SCE Class A

Outstanding performance and uncompromising high quality

- Shop floor data collection in real-time using either 1 Gbps/100 Mbps*¹ communications speed
- Enables mixing of real-time control communication and TCP/IP communication
- FR-E800-SCE which is compatible with safety communications supports safety sub-functions STO/SS1/SLS/SBC/SSM

*1. FR-E800-E/SCE only supports 100 Mbps.

For FR-A800-GN, 100 Mbps is available for inverters manufactured in September 2020 or later.



FR-A800-GN

FR-E800-SCE

■ LM7-□LG tension meter Class B Class A

LM7-1LG NEW LM7-2LG NEW

Elevate your tension control with CC-Link IE TSN

- Can acquire tension data not only from Mitsubishi Electric LX tension detectors but also from strain gauge sensors from other manufacturers
- High-speed updates of the tension value help quickly detect tension fluctuations, even during acceleration/deceleration when large variations in tension occur
- Two models with different numbers of tension detection axes are available. Select the one that best suits your application



LM7-2LG

Industrial collaborative robot MELFA FR/CR/ASSISTA series controller **Class B**

CR800-D/R CR860-D/R **NEW**

iQ Platform-compatible controller

- Seamlessly integrates the various controllers used in a production site with HMIs, the engineering environment, and the network
- Multiple CPU architecture dramatically improves its interaction with factory automation equipment, offering highly precise control and fast yet simple information management*¹
- Safety devices connected with the safety remote modules of the safety programmable controllers can be used via the CC-Link IE TSN master/local module*¹
- Standalone controllers are also supported*²

*¹. R type controllers only.

*². A network base card option is required.



CR800



CR860

HMI GOT3000 Series **Class A**

GT37 model **NEW**

Drive digital transformation on the shop floor with innovative technology

- 1-Gbps high-speed communication enables real-time collection of shop floor data
- The GT37's built-in Ethernet port supports CC-Link IE TSN remote station Class A, enabling its use as a remote station



HMI GOT3000 Series/GOT2000 Series CC-Link IE TSN communication unit **Class B**

GT25-J71GN13-T2

Improves productivity and efficiency through advanced visualization of production equipment

- CC-Link IE TSN-compatible GOT (HMI) communication unit
- Use as a CC-Link IE TSN local station
- GT37*³, GT27, and GT25*⁴ are supported

*³. An extension interface converter unit (GT37-IF2000) is required.

*⁴. GT2505, GT2512-WX, GT2510-WX, GT2507-W, GT2507T, GT2506HS, and GT2505HS are not supported.



Features

System configuration

Manager stations

Drives/GOT (HMI)

Block-type remote modules

Network interface boards/communication software

Industrial Ethernet switches

Bridge modules

Energy measuring units

Accessories (partner products)

Development kits

Block-type remote modules

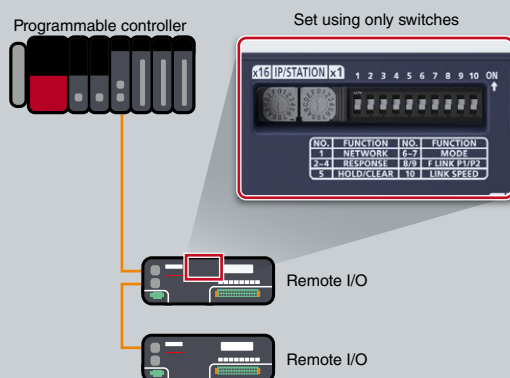


- Easily set parameters using only hardware switches*¹
- Detection of low power supply voltage
- Spring-clamp terminal block reduces wiring
- Input module conforms to IEC 61131-2 Type3 (digital input standard operation range), supporting various sensors*¹
- Switch to CC-Link IE Field Network device station mode*¹
- Block-type remote module with safety function enables safety control
- Input/output timing can be synchronized with inter-modular synchronization cycle, enabling highly accurate control of the system*¹

Block-type remote modules are recognized as device stations on the CC-Link IE TSN. They are mainly used when installation requires them to be close to connected I/Os to save on wiring. Digital I/O modules are the senses of the automation system and can be easily connected to switches, indicator lamps, sensors, and other devices. Analog modules can be connected to devices that process varying voltages and current signals. The combination of a block-type remote module with safety function and safety CPU module realizes safety network communications.

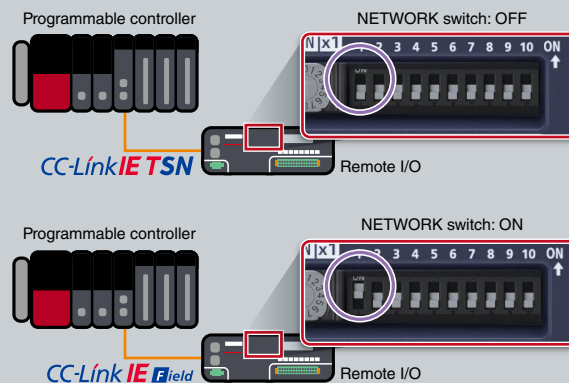
Easy system startup

The IP address for each module can be set easily using the switches on the front of the module. Additional functions can be set using switches as well, without requiring dedicated engineering software.



Switch to CC-Link IE Field Network device station mode*¹

Setting the switches on the front of the module enables to be used as either a CC-Link IE TSN or CC-Link IE Field Network device station without requiring separate modules.



*¹. Block type remote modules with safety functions are not supported, except for waterproof/dustproof type (IP67) I/O combined modules.

Input modules Class B Class A

- Response time can be set at 0 ms, 0.2 ms, 1 ms, 1.5 ms, 5 ms, 10 ms, 20 ms and 70 ms (initial setting is 1 ms)
- Input ON/OFF voltage and current comply with IEC 61131-2 (digital input standard operating range) Type3, supporting various sensors
- Functions can be easily setup from the front of the module using switches, without requiring dedicated engineering software

Spring-clamp terminal block

NZ2GN2S1-16D

NZ2GN2S1-32D



NZ2GN2S1-32D

Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2GN2S1-16D	Positive/negative common shared	16 points	24 V DC (6.6 mA)	1-wire
NZ2GN2S1-32D	Positive/negative common shared	32 points	24 V DC (6 mA)	1-wire

Screw terminal block

NZ2GN2B1-16D

NZ2GN2B1-32D



NZ2GN2B1-32D

Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2GN2B1-16D	Positive/negative common shared	16 points	24 V DC (6.6 mA)	1-wire
NZ2GN2B1-32D	Positive/negative common shared	32 points	24 V DC (6 mA)	1-wire

Sensor connector (e-CON)

NZ2GNCE3-32D



Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2GNCE3-32D	Positive common	32 points	24 V DC (6.6 mA)	3-wire

40-pin connector

NZ2GNCF1-32D



Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2GNCF1-32D	Positive/negative common shared	32 points	24 V DC (6.6 mA)	1-wire

Output modules Class B Class A

- Select either to hold or clear the output value when disconnected from the data link or when the manager station's programmable controller CPU module has stopped
- Prevents module malfunction using the output overload and overheat protection function
- Functions can be easily setup from the front of the module using switches, without requiring dedicated engineering software

Spring-clamp terminal block

NZ2GN2S1-16T
NZ2GN2S1-16TE
NZ2GN2S1-32T
NZ2GN2S1-32TE

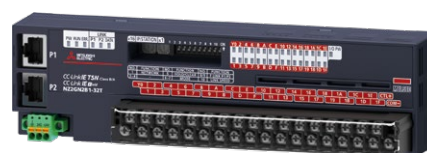


NZ2GN2S1-32T

Model	Output type Transistor output	Output points	Rated load voltage/Max. load current	Wiring type
NZ2GN2S1-16T	Sink	16 points	12/24 V DC (0.5 A/point, 4 A/common)	1-wire
NZ2GN2S1-16TE	Source	16 points	12/24 V DC (0.5 A/point, 4 A/common)	1-wire
NZ2GN2S1-32T	Sink	32 points	12/24 V DC (0.5 A/point, 5 A/common)	1-wire
NZ2GN2S1-32TE	Source	32 points	12/24 V DC (0.5 A/point, 5 A/common)	1-wire

Screw terminal block

NZ2GN2B1-16T
NZ2GN2B1-16TE
NZ2GN2B1-32T
NZ2GN2B1-32TE



NZ2GN2B1-32T

Model	Output type Transistor output	Output points	Rated load voltage/Max. load current	Wiring type
NZ2GN2B1-16T	Sink	16 points	12/24 V DC (0.5 A/point, 4 A/common)	1-wire
NZ2GN2B1-16TE	Source	16 points	12/24 V DC (0.5 A/point, 4 A/common)	1-wire
NZ2GN2B1-32T	Sink	32 points	12/24 V DC (0.5 A/point, 5 A/common)	1-wire
NZ2GN2B1-32TE	Source	32 points	12/24 V DC (0.5 A/point, 5 A/common)	1-wire

40-pin connector

NZ2GNCF1-32T



Model	Output type Transistor output	Output points	Rated load voltage/Max. load current	Wiring type
NZ2GNCF1-32T	Sink	32 points	12/24 V DC (0.1 A/point, 3.2 A/common)	1-wire

I/O combined modules Class B Class A

- Combined I/O modules include both input module and output module functions
- Response time can be set at 0 ms, 0.2 ms, 1 ms, 1.5 ms, 5 ms, 10 ms, 20 ms, and 70 ms (initial setting is 1 ms)
- Input ON/OFF voltage and current comply with IEC 61131-2 (digital input standard operating range) Type3, supporting various sensors
- Select either to hold or clear the output value when disconnected from the data link or when the manager station's programmable controller CPU module has stopped
- Prevents module malfunction using the output overload and overheat protection function
- Functions can be easily setup from the front of the module using switches, without requiring dedicated engineering software

Spring-clamp terminal block

NZ2GN2S1-32DT NZ2GN2S1-32DTE



NZ2GN2S1-32DT

Model	Input type DC input	Input points	Rated input voltage/ current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2GN2S1-32DT	Positive common	16 points	24 V DC (6 mA)	Sink	16 points	24 V DC (0.5 A/point, 4 A/common)	1-wire
NZ2GN2S1-32DTE	Negative common	16 points	24 V DC (6 mA)	Source	16 points	24 V DC (0.5 A/point, 4 A/common)	1-wire

Screw terminal block

NZ2GN2B1-32DT NZ2GN2B1-32DTE



NZ2GN2B1-32DT

Model	Input type DC input	Input points	Rated input voltage/ current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2GN2B1-32DT	Positive common	16 points	24 V DC (6 mA)	Sink	16 points	24 V DC (0.5 A/point, 4 A/common)	1-wire
NZ2GN2B1-32DTE	Negative common	16 points	24 V DC (6 mA)	Source	16 points	24 V DC (0.5 A/point, 4 A/common)	1-wire

Sensor connector (e-CON)

NZ2GNCE3-32DT



Model	Input type DC input	Input points	Rated input voltage/ current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2GNCE3-32DT	Positive common	16 points	24 V DC (6.6 mA)	Sink	16 points	24 V DC (0.5 A/point, 4 A/common)	3-wire

■ Analog input modules Class B Class A

- 200 μ s/CH analog input module conversion speed
- Functions can be easily setup from the front of the module using switches, without requiring dedicated engineering software

Spring-clamp terminal block
NZ2GN2S-60AD4



Model	Input type	Number of channels
NZ2GN2S-60AD4	Analog voltage/current input	4 channels

Screw terminal block
NZ2GN2B-60AD4



Model	Input type	Number of channels
NZ2GN2B-60AD4	Analog voltage/current input	4 channels

■ Analog output modules Class B Class A

- 200 μ s/CH analog output module conversion speed
- Functions can be easily setup from the front of the module using switches, without requiring dedicated engineering software

Spring-clamp terminal block
NZ2GN2S-60DA4



Model	Output type	Number of channels
NZ2GN2S-60DA4	Analog voltage/current output	4 channels

Screw terminal block
NZ2GN2B-60DA4



Model	Output type	Number of channels
NZ2GN2B-60DA4	Analog voltage/current output	4 channels

Waterproof/dustproof type (IP67) remote modules

- Complies with IP67. A control panel is no longer necessary, saving on hardware cost and space



NZ2GN12A42-16DT

Input modules Class B Class A

- Response time can be set at 0 ms, 0.2 ms, 1 ms, 1.5 ms, 5 ms, 10 ms, 20 ms and 70 ms

Waterproof connector (screw lock)

NZ2GN12A4-16D NZ2GN12A4-16DE

Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2GN12A4-16D	Positive common	16 points	24 V DC (7.3 mA)	2- to 4-wire
NZ2GN12A4-16DE	Negative common	16 points	24 V DC (7.3 mA)	2- to 4-wire

Output modules Class B Class A

- Since the maximum load current is 4 A/point, a large load can be connected

Waterproof connector (screw lock)

NZ2GN12A2-16T NZ2GN12A2-16TE

Model	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2GN12A2-16T	Sink	16 points	12/24 V DC (2 A/point, 4 A/point, 12 A/common)*1	2-wire
NZ2GN12A2-16TE	Source	16 points	12/24 V DC (2 A/point, 4 A/point, 12 A/common)*1	2-wire

I/O combined modules Class B Class A

- The I/O combined module controls both inputs and outputs all in one module
- Response time can be set at 0 ms, 0.2 ms, 1 ms, 1.5 ms, 5 ms, 10 ms, 20 ms and 70 ms
- Since the maximum load current is 4 A/point, a large load can be connected

Waterproof connector (screw lock)

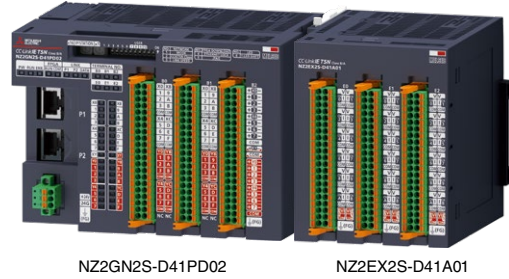
NZ2GN12A42-16DT NZ2GN12A42-16DTE

Model	Input type DC input	Input points	Rated input voltage/ current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2GN12A42-16DT	Positive common	8 points	24 V DC (7.3 mA)	Sink	8 points	12/24 V DC (2 A/point, 4 A/point, 12 A/common)*1	2- to 4-wire (input) 2-wire (output)
NZ2GN12A42-16DTE	Negative common	8 points	24 V DC (7.3 mA)	Source	8 points	12/24 V DC (2 A/point, 4 A/point, 12 A/common)*1	2- to 4-wire (input) 2-wire (output)

*1. Maximum load current specifications may vary depending on the output terminals. For more information, please refer to the relevant product manual.

FPGA modules Class B Class A

- Microsecond-fast and highly-accurate I/O response times with a field programmable gate array (FPGA)
- Operation of I/O values is processed on the order of nanoseconds in the FPGA. The logic circuit can be programmed flexibly using the Intel® Quartus® Prime Design software*¹
- Various communication types are available for the Ethernet communication with a higher-level system, from which suitable one can be selected according to the application and conditions. The module can also operate stand-alone during start-up or for incidental facilities
- Customer-designed complex logic circuits can be written to the FPGA. The module is ideal for replacing the existing FPGA boards and microcomputer boards developed in-house
- Logging data can be created as a CSV file and transferred to an FTP server using FTP (client). FTP can be used simultaneously with CC-Link IE TSN
- The module supports simple CPU communication, enabling data exchange with the CPU module
- The table below shows specifications of embedded FPGA



Item		Specifications
Embedded FPGA	Device name	5CGXFC7D6F2717N (Cyclone® V series by Intel Corporation)
	Circuit capacity	LUTs = 149.5K (650K gates), Block RAM = 7000 kbits
User usable capacity (recommended values)* ²		LUTs = 35K (150K gates), Block RAM = 4400 kbits
System clock		100 MHz

*1. Please contact Intel Corporation for any inquiries on Intel products. Please visit the website below.
www.intel.com

*2. If Timing Violation occurs in the logic synthesis result, review the user circuit.

Main modules

DC input/output

NZ2GN2S-D41P01

Model	DC input points	Transistor output points
NZ2GN2S-D41P01	48 (4 points/common, positive/negative common shared)	48 (4 points/common, sink, 0.1 A/point)

Differential input/output

NZ2GN2S-D41D01

Model	Differential input points	Differential output points	Differential input/output (shared) points
NZ2GN2S-D41D01	24 (10 Mpps* ³ at multiple of 4)	24 (10 Mpps at multiple of 4)	3 (5 Mpps at multiple of 2)

*3. Speeds of up to 16 Mpps can apply when compliance with the EMC Directive is not needed.

DC input/output, differential input/output

NZ2GN2S-D41PD02

Model	DC input points	Transistor output points	Differential input points	Differential output points	Differential input/output (shared) points
NZ2GN2S-D41PD02	32 (4 points/common, positive/negative common shared)	32 (4 points/common, sink, 0.1 A/point)	8 (10 Mpps* ⁴ at multiple of 4)	8 (10 Mpps at multiple of 4)	1 (5 Mpps at multiple of 2)

*4. Speeds of up to 16 Mpps can apply when compliance with the EMC Directive is not needed.

Extension modules

- The extension modules increase the number of input/output points of the main modules. The number of connectable module is one. The connected extension module can be controlled from the FPGA embedded in the main module

Spring-clamp terminal block - DC input/output type

NZ2EX2S-D41P01

Model	DC input points	Transistor output points
NZ2EX2S-D41P01	48 (4 points/common, positive/negative common shared)	48 (4 points/common, sink, 0.1 A/point)

Spring-clamp terminal block - differential input/output type

NZ2EX2S-D41D01

Model	Differential input points	Differential output points	Differential input/output (shared) points
NZ2EX2S-D41D01	24 (10 Mpps*1 at multiple of 4)	24 (10 Mpps at multiple of 4)	3 (5 Mpps at multiple of 2)

*1. Speeds of up to 16 Mpps can apply when compliance with the EMC Directive is not needed.

Spring-clamp terminal block - analog input/output type

NZ2EX2S-D41A01

Model	Analog input points	Analog output points
NZ2EX2S-D41A01	36 (voltage/current, 4 μ s/36 points)	6 (voltage/current, 6 μ s/6 points)

Block-type remote modules with safety functions

- Block-type remote modules that support safety functions
- Performs safety control when used together with the MELSEC iQ-R Series safety CPU module

Input module Class B Class A

- Input module with safety functions
- Single or double wiring can be selected per input point
- Compliant with international safety standards, ISO 13849-1 Category 4 PL e and IEC 61508 SIL 3

Spring-clamp terminal block

NZ2GNSS2-8D



Model	Input type DC input	Input points	Rated input voltage/current	Wiring type
NZ2GNSS2-8D	Negative common	Single wiring: 8 points Double wiring: 4 points	24 V DC (7.3 mA)	2-wire

Output module Class B Class A

- Output module with safety functions
- Single or double wiring can be selected per output point
- Compliant with international safety standards, ISO 13849-1 Category 4 PL e and IEC 61508 SIL 3

Spring-clamp terminal block

NZ2GNSS2-8TE



Model	Output type Transistor output	Output points	Rated load voltage/Max. load current	Wiring type
NZ2GNSS2-8TE	Source + source	Single wiring: 8 points Double wiring: 4 points	24 V DC (0.5 A/point, 4 A/common)	2-wire

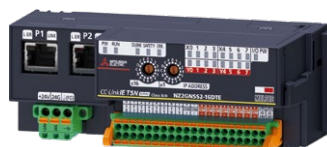
I/O combined module Class B Class A

- I/O combined module with safety functions
- Single or double wiring can be selected per input and output point
- Compliant with international safety standards, ISO 13849-1 Category 4 PL e and IEC 61508 SIL 3
- Embedded fast logic function enables control of safety logic from within the remote module. High-speed control (response speed: 5.8 ms*1) is realized without being affected by the safety CPU module and network processing speed

*1. Depends on the parameter settings.

Spring-clamp terminal block

NZ2GNSS2-16DTE



Model	Input type DC input	Input points	Rated input voltage/ current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2GNSS2-16DTE	Negative common	Single wiring: 8 points Double wiring: 4 points	24 V DC (7.3 mA)	Source + source	Single wiring: 8 points Double wiring: 4 points	24 V DC (0.5 A/point, 4 A/common)	2-wire

Waterproof/dustproof type (IP67) I/O combined modules Class B Class A

- I/O combined module with safety functions
- Compliant with international safety standards, ISO 13849-1 Category 4 PL e and IEC 61508 SIL 3 (NZ2GNS12A2-14DT complies with Category 3)
- Complies with IP67. A control panel is no longer necessary, saving on hardware cost and space
- Since the maximum load current is 4 A/point, a large load can be connected
- Embedded fast logic function enables control of safety logic from within the remote module. High-speed control (response speed: 5.8 ms^{*1}) is realized without being affected by the safety CPU module and network processing speed

NZ2GNS12A2-16DTE



^{*1}. Depends on the parameter settings.

Waterproof connector (screw lock)

NZ2GNS12A2-14DT NZ2GNS12A2-16DTE

Model	Input type DC input	Input points	Rated input voltage/current	Output type Transistor output	Output points	Rated load voltage/ Max. load current	Wiring type
NZ2GNS12A2-14DT	Negative common	Single wiring: 12 points Double wiring: 6 points	24 V DC (6.8 mA)	Source + sink	Single wiring: not possible Double wiring: 2 points	24 V DC (2 A/point, 4 A/point 6 A/common) ^{*2}	2-wire
NZ2GNS12A2-16DTE	Negative common	Single wiring: 12 points Double wiring: 6 points	24 V DC (6.8 mA)	Source + source	Single wiring: 4 points Double wiring: 2 points	24 V DC (2 A/point, 4 A/point 8 A/common) ^{*2}	2-wire

^{*2}. Maximum load current specifications may vary depending on the output terminals. For more information, please refer to the relevant product manual.

Features

System
configuration

Manager stations

Drives/GOT (HMI)

Block-type remote
modulesNetwork interface
boards/communication
softwareIndustrial Ethernet
switches

Bridge modules

Energy measuring
unitsAccessories
(partner products)

Development kits

Network interface board

■ CC-Link IE TSN interface board Class B

Optical fiber cable

NZ81GN11-SX NEW

Ethernet cable

NZ81GN11-T2 NEW

- These interface boards allow personal computers and controllers that support PCI Express® to connect to the CC-Link IE TSN network
- Can be used as a CC-Link IE TSN manager station or local station
- Applicable to a wide range of applications using CC-Link IE TSN, including control communication and information communication
- NZ81GN11-SX supports optical fiber cables, which have high noise immunity and are suitable for long-distance transmission. This allows for the implementation of large-scale systems with high-speed, high-capacity communication networks
- For information about the software package that enables setup, status display, and modification of the current value, please contact your local Mitsubishi Electric representative



NZ81GN11-SX



NZ81GN11-T2

Network interface board operating environment

Item	NZ81GN11-SX	NZ81GN11-T2
Personal computer		
Personal computer	A personal computer on which Microsoft® Windows® operates	A personal computer on which Microsoft® Windows® operates
CPU	The system requirements of the OS must be met	The system requirements of the OS must be met
Memory requirements	The system requirements of the OS must be met	The system requirements of the OS must be met
Installation slot	PCI Express® x1, x4, x8, x16 slots (Standard size, low profile size)	PCI Express® x1, x4, x8, x16 slots (Standard size, low profile size)
Bus specifications*1	Compliant with PCI Express® standard (3.3 V DC, Link width 1 lane, Reference clock 100 MHz)	Compliant with PCI Express® standard (3.3 V DC, Link width 1 lane, Reference clock 100 MHz)
Operating system*1*2		
Windows 11 Home	●	●
Windows 11 Pro	●	●
Windows 11 Enterprise	●	●
Windows 11 Education	●	●
Windows 11 IoT Enterprise LTSC 2024	●	●
Windows Server 2022 (Standard)	●	●
Windows Server 2019 (Standard)	●	●
Windows Server 2016 (Standard)	●	●
Windows 10 IoT Enterprise LTSC 2021	●	●
Windows 10 IoT Enterprise LTSC 2019	●	●
Windows 10 IoT Enterprise LTSC 2016	●	●
Programming language*1		
Microsoft® Visual Studio® Visual Basic	●	●
Microsoft® Visual Studio® Visual C++	●	●
Microsoft® Visual Studio® Visual C#	●	●
Microsoft® Visual Studio® Visual Studio 2022	●	●
Microsoft® Visual Studio® Visual Studio 2019	●	●
Microsoft® Visual Studio® Visual Studio 2017	●	●
.NET Framework		
.NET Framework 4.8 or later	●	●
Runtime library		
Microsoft Visual C++ 2015-2022 Redistributable (x64)	●	●
Microsoft Visual C++ 2015-2022 Redistributable (x86)	●	●

*1. For information on the combinations of operating systems and programming languages, please refer to the system requirements of each programming language on Microsoft Docs.

*2. Only the 64-bit version is supported.

For detailed information on the operating environment and the latest compatibility, please refer to the manual for each product.

Industrial computer

Industrial computer MELIPC Series

MI2532-W **NEW** MI2332-W **NEW**

Industrial computer with a license for CC-Link IE TSN communication software for Windows®

- Using the included CC-Link IE TSN communication software, you can easily collect high-accuracy control data without installing a CC-Link IE TSN interface board
- The versatile system expandability enables utilization of existing computer board assets. With the addition of a CC-Link IE TSN interface board, it can function as a manager or local station
- MELIPC meets international standards for temperature, vibration, shock, and electromagnetic compatibility, making it suitable for a wide range of industries
- Features Windows® OS with a 10-year support lifecycle
- Comprehensive support from Mitsubishi Electric for systems built with Mitsubishi Electric products

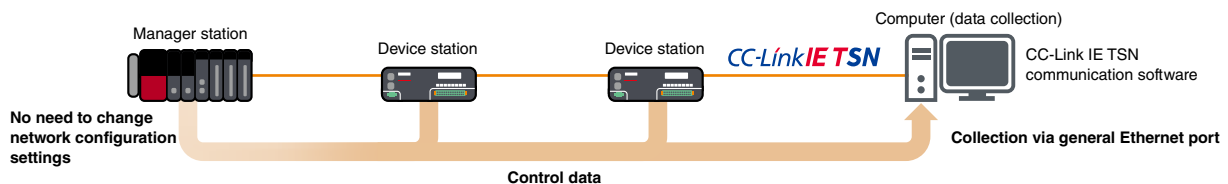


MI2532-W

Communication software

CC-Link IE TSN communication software for Windows® (CC-Link IE TSN data collector enclosed)

- Easily collects accurate control data of CC-Link IE TSN devices
- Collected data from the function library can be utilized for data analysis and monitoring
- Realizes accurate data analysis by collection of control data with time-stamp
- Reduces configuration cost for realizing a simple data collection system as setup is straightforward utilizing computer-based software
- CC-Link IE TSN data collector enables integration with Edgecross



NZ2MHG-TSNT4 Class B Class A

NZ2MHG-TSNT8F2 Class B Class A

- Star topology can be configured with a managed Ethernet switch.
NZ2MHG-TSNT4 is equipped with 4 Ethernet ports and NZ2MHG-TSNT8F2 is equipped with 8 Ethernet ports
- TCP/IP communication devices can be connected to empty Ethernet ports, enabling a highly flexible advanced system
- Disruptions to the control system are kept to a minimum when an error occurs such as remote device failure and a cable disconnection
- NZ2MHG-TSNT8F2 has two SFP ports, enabling long-distance connections using optical fiber cables
- Wiring distance between devices can be shortened, thereby reducing wiring cost. In addition, layout modification and addition/replacement of remote devices can be efficiently completed



NZ2MHG-TSNT4

NZ2MHG-TSNT8F2



This product was developed and manufactured by Moxa Inc.
Please note that the specifications and guarantee conditions of the products are different from the MELSEC Series products.

DT135TXA*1 Class A

DT135TXP*1 Class A NEW

DT138TXP*1 Class A NEW

- Supports transmission speeds of 10Mbps/100Mbps/1Gbps
- DT135TXP and DT138TXP support PoE power supply (power voltage 24–57 V DC)
- UL and CE certified, suitable for export to Europe and the United States
- Robust metal housing with excellent vibration and shock resistance

*1. Mitsubishi Electric System & Service products.



DT135TXA

DT135TXP

DT138TXP

CC-Link IE TSN Class

Either Class A or Class B applies to industrial Ethernet switches that support CC-Link IE TSN.

For the differences between Class B and Class A, please refer to P.16.

Information on model names and usage methods of compatible industrial Ethernet switches can be found on the CC-Link Partner Association website (<https://www.cc-link.org/en/>).

CC-Link IE TSN – CC-Link IE Field Network bridge module

NZ2GN-GFB

Class B

Class A

- Seamlessly integrates the CC-Link IE Field Network into CC-Link IE TSN
- Can be used as a remote station on CC-Link IE TSN and either as a manager or local station on the CC-Link IE Field Network
- Enables CC-Link IE TSN devices to be added to the CC-Link IE Field Network*¹
- Enables CC-Link IE Field devices to be added to CC-Link IE TSN

*1. NZ2GN-GFB does not operate as a manager station for CC-Link IE TSN. A manager station is required for the CC-Link IE TSN network.



CC-Link IE TSN-AnyWireASLINK bridge module*²

NZ2AW1GNAL

Class B

Class A

- Seamlessly integrates AnyWireASLINK products into CC-Link IE TSN
- AnyWireASLINK is a reduced wiring network realizing monitoring of sensors and reduced installation space
- Supports iQSS (iQ Sensor Solution), which enables parameter setup and monitoring of AnyWireASLINK products

*2. For further details, please refer to "DIGITAL LINK SENSOR AnyWireASLINK catalog (L(NA)08221E)".



CC-Link IE TSN – CC-Link bridge module

FA3-BR1TC*³

Class B

NEW

- Seamlessly connecting CC-Link devices to CC-Link IE TSN networks
- Operating as a remote station on CC-Link IE TSN and as a manager station on CC-Link
- Controlling CC-Link devices from CC-Link IE TSN devices (a CC-Link manager station not required)
- Using existing CC-Link devices and wiring helps to cut costs and reduce construction time
- Loading existing CC-Link device configurations as parameters and reflecting them in the CC-Link IE TSN automatic parameter settings

*3. Mitsubishi Electric Engineering product.



Features

System configuration

Manager stations

Drives/GOT (HMI)

Block-type remote modules

Network interface boards/communication software

Industrial Ethernet switches

Bridge modules

Energy measuring units

Accessories (partner products)

Development kits

Energy measuring units

Energy Measuring Unit EcoMonitorLight

EMU4-□D1A-MB **NEW**

EMU4-FD1-MB **NEW**

- EcoMonitorLight enables CC-Link IE TSN communication when combined with the dedicated option unit
- Single circuit measuring device with an integrated display enabling setting and measuring of current, voltage, and power. Measured data can be utilized for energy-saving for individual equipment



EMU4-HD1A-MB

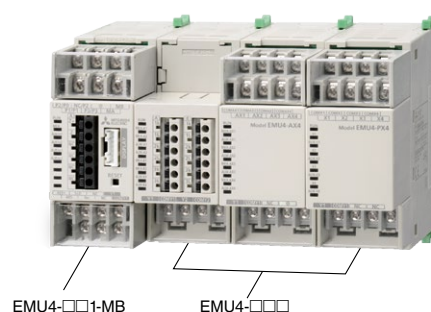
EMU4-FD1-MB

Energy Measuring Unit EcoMonitorPlus

EMU4-□□1-MB (basic unit) **NEW**

EMU4-□□□ (extension unit) **NEW**

- EcoMonitorPlus enables CC-Link IE TSN communication when combined with the dedicated option unit
- Combination of basic unit and extension units according to measurement items support leakage current measurement and analog/pulse input in addition to current, voltage, and power measurement of multiple circuits



EMU4-□□1-MB

EMU4-□□□

CC-Link IE TSN Communication Unit

EMU4-CM-TSN **Class A** **NEW**

- Measured energy data can be transmitted via CC-Link IE TSN communication when connected with EcoMonitorPlus and EcoMonitorLight



Mitsubishi Electric System & Service

For details of Mitsubishi Electric System & Service Co., Ltd. products, please contact us via email.
<Sales office> OVERSEAS SERVICE SECTION mail: osb.webmaster@melsc.jp

Ethernet cable

SC-E5EW Series

- 1000BASE-T Standard compliant. This Ethernet cable with double shield has an outstanding shield performance
- Available in lengths from 1 m to 100 m (in 1 m increments). For using in indoor movable area, available lengths are from 1 m to 45 m. Available in lengths less than 1 m also



Item	SC-E5EW-S□M*1	SC-E5EW-S□M-MV*2	SC-E5EW-S□M-L*3
Cable type	Category 5e or higher, (double shielded/STP) straight cable		
Number of core wires	8 wires (4 twisted pairs)		
Double shield	Aluminum/polyester tape, tin-plated annealed copper wire braid		
Installation environment	Indoor	Indoor movable	Indoor/outdoor
Finished outside diameter	Flame retardant PVC, 6.8 mm	Flame retardant PVC, 6.5 mm	LAP sheath, 10 mm
Connector	RJ-45 connector with shield, straight connection		
Conforming standards	IEEE802.3 1000BASE-T ANSI/TIA/EIA-568-B (Category 5e) ISO/IEC 11801		

*1. "□" in the model name denotes a cable length (0.5 m, from 1 m up to 100 m in 1 m increments).

*2. "□" in the model name denotes a cable length (0.1 m, 0.2 m, 0.3 m, 0.5 m, from 1 m up to 45 m in 1 m increments).

*3. "□" in the model name denotes a cable length (from 1 m up to 100 m in 1 m increments).

Inline coupler

SPAD-RJ45S-E5E

- 8 conductor RJ-45 female to female, shielded, fits standard type Keystone Wall Plate
- Can be used in patch panels, wall jacks, or to extend cable lengths



Item	Specifications
Adaptable connector	RJ-45 connector with shield
Operable temperature	-10...60°C
Conforming standards	IEEE 802.3 1000BASE-T ANSI/TIA/EIA-568-B (Category 5e) ISO/IEC 11801



For further inquiries concerning partner and CC-Link IE TSN products and development of supported products, please contact CLPA.



www.cc-link.org/en

Features

System configuration

Manager stations

Drives/GOT (HMI)

Block-type remote modules

Network interface boards/communication software

Industrial Ethernet switches

Bridge modules

Energy measuring units

Accessories (partner products)

Development kits

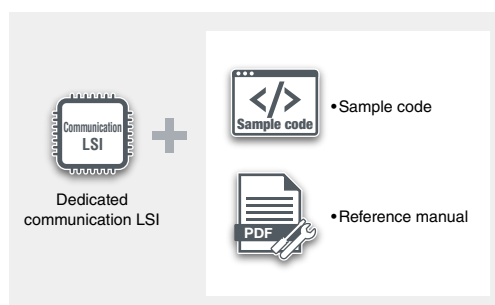
For further details, please refer to the
"Open Field Network CC-Link Family Compatible
Product Development Guidebook (L(NA)08052E)".



Development kits

■ Dedicated communication LSI CP610

- CC-Link IE TSN manager station/local station can be developed without considering protocols.
- Customizable sample code is provided to suit customers' hardware specifications and applications.*¹
- The included CC-Link IE TSN setting tool can be used for parameter settings and diagnostics of the CC-Link IE TSN manager station/local station.
- SPICE/IBIS models for transmission line simulation can be provided.*²

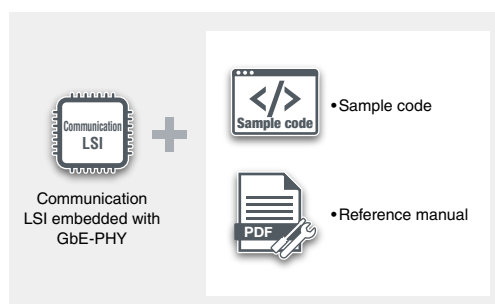


*1. Sample code is provided for when the PCI Express® bus is used as the connection interface for the CP610 and an external MPU, and for when a parallel bus is used.

*2. Confidentiality agreement needs to be signed to provide SPICE model and IBIS model. Please consult with your local Mitsubishi Electric sales office.

■ Communication LSI embedded with GbE-PHY CP620/CP621 **NEW**

- CC-Link IE TSN remote stations can be developed without considering protocols.*³
- The embedded GbE-PHY makes designing communication circuit patterns easier.
- CP620 is a package of BGA 484-pin (23 mm × 23 mm).
CP621 is a package of FBGA 356-pin (17 mm × 17 mm).
- Customizable sample code is provided to suit customers' hardware specifications and applications.
- H/W-RTOS*⁴ reduces the CPU load and enables lower power consumption.



*3. CC-Link IE Field Network intelligent device stations and remote stations can also be developed.

*4. H/W-RTOS: Hardware real-time operating system

	• Evaluation boards with CP621 can be purchased from Shimafuji Electric. Shimafuji Electric website URL : http://www.shimafuji.co.jp/en/
	• A kit including Shimafuji Electric's CP621 evaluation board and ICE, as well as an evaluation license for the IAR Embedded Workbench® for Arm® development toolchain can be purchased from IAR Systems. IAR Systems website URL : https://www.iar.com/

■ Sample code for CC-Link IE TSN remote station class A (provided by the CC-Link Partner Association)

- Devices supporting CC-Link IE TSN remote stations class A can be developed just by implementing software protocol stack in devices equipped with Ethernet interface

Download sample code from the CC-Link Partner Association website below.
https://www.cc-link.org/en/cclink/cclinkie/code_cclinkie_tsn.html



General specifications

The following table provides the environmental specifications required for using the CC-Link IE TSN master/local module and block-type modules listed in this catalog. For the environmental specifications required to use other products, please refer to the relevant product catalog or manual.

Item	MELSEC iQ-R Series master/local module Block-type remote module	MELSEC iQ-F Series master/local module
Operating ambient temperature (°C)	0...55* ¹	-20...55, non-freezing* ^{2,3}
Storage ambient temperature (°C)	-25...75	
Operating ambient humidity (% RH)	5...95, non-condensing	
Storage ambient humidity (% RH)		
Vibration resistance	Please refer to the relevant product manual	
Shock resistance	Compliant with IEC 61131-2:2007/JIS B 3502:2011 (147 m/s ² , 3 times each in directions X, Y, and Z)	147 m/s ² , Action time: 11 ms, 3 times each in directions X, Y, and Z by half-sine pulse * ⁴
Operating atmosphere	No corrosive gases* ⁵ , no flammable gases, no excessive conductive dust	
Operating altitude* ⁶ (m)	0...2000* ⁷	
Installation location	Inside a control panel	
Overvoltage category* ⁸	≤ II	
Pollution level* ⁹	≤ 2	

- *1. Enables standard MELSEC iQ-R Series modules to support extended operating ambient temperature of 0 to 60°C, ensuring the same performance as the standard operating ambient temperature (0 to 55°C). When requiring to use in an ambient temperature environment higher than 60°C, please consult your local Mitsubishi Electric representative.
- *2. In the case where operating ambient temperature is lower than 0°C, the specifications are different from the above description. For details, please refer to the "MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)" (SH-082452ENG).
- *3. When using FX5-CCLGN-MS manufactured in December 2020 or earlier, the operating ambient temperature is -20 to 50°C. The operating ambient temperature of the programmable controller system is the same.
- *4. The criterion is shown in IEC 61131-2.
- *5. The special coated products, which improve resistance to corrosive gas concentrations as specified in IEC 60721-3-3: 1994 3C2, are available for the use in a corrosive gas environment. For details of the special coated products, please consult your local Mitsubishi Electric representative.
- *6. Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0 m. Doing so may cause malfunction or lead to failure.
- *7. When using programmable controllers at an altitude higher than 2000 m, the upper limits of the permissible voltage and the operating ambient temperature become lower. For further details, please consult your local Mitsubishi Electric representative.
- *8. This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.
- *9. This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. Pollution level 2 is when only non-conductive pollution occurs. Temporary conductivity caused by condensation must be expected occasionally.

■ Performance specifications

Item	Programmable automation controllers MELSEC MX Controller MX-R model MXR300-16/ MXR300-32/ MXR300-64/ MXR500-128/ MXR500-256 NEW	Programmable automation controllers MELSEC MX Controller MX-F model MXF100-8-N32 MXF100-8-P32 NEW	Programmable automation controllers MELSEC MX Controller MX-F model MXF100-16-N32 MXF100-16-P32 NEW	MELSEC iQ-R Series master/local module RJ71GN11-T2	MELSEC iQ-R Series master/local module (optical fiber cable-compatible) RJ71GN11-SX NEW
Communication speed	1 Gbps/100 Mbps	1 Gbps/100 Mbps	1 Gbps/100 Mbps	1 Gbps/100 Mbps	1 Gbps
Maximum stations per network	254 (manager station 1, device station 253*) ^{*2}	39 (manager station 1, device station 38)	47 (manager station 1, device station 46)	121 (manager station 1, device station 120)	121 (manager station 1, device station 120)
Connection cable	Ethernet cable (Category 5e or higher)	Ethernet cable (Category 5e or higher)	Ethernet cable (Category 5e or higher)	Category 5e or higher, (double shielded/STP) straight cable	Optical fiber cable
Laser class (IEC 60825-1:2014, JIS C 6802:2014)	-	-	-	-	Class 1 laser product
Overall cable distance (m)	Line: 25300 Others: Depends on the system configuration	Line: 3800 Others: Depends on the system configuration	Line: 4600 Others: Depends on the system configuration	Line: 12000 Ring: 12100 Others: Depends on the system configuration	Line: 66000 Ring: 66550 Others: Depends on the system configuration
Maximum station-to-station distance (m)	100	100	100	100	550
Max. number of networks	239	239	239	239	239
Network topology ^{*3}	Line, star ^{*4}	Line, star ^{*4}	Line, star ^{*4}	Line, star ^{*4} , ring	Line, star ^{*4} , ring
Communication method	Time-sharing method/ time-managed polling method	Time-sharing method/ time-managed polling method	Time-sharing method/ time-managed polling method	Time-sharing method/ time-managed polling method	Time-sharing method/ time-managed polling method ^{*5}
Maximum link points per network					
RX/RX	16384 points each, 2 KB	16384 points each, 2 KB	16384 points each, 2 KB	16384 points each, 2 KB	16384 points each, 2 KB
RW/r/RWw	8192 points each, 16 KB	8192 points each, 16 KB	8192 points each, 16 KB	8192 points each, 16 KB	8192 points each, 16 KB
LB	-	-	-	32768 points, 4 KB When the number of link points is extended: 131072 points, 16 KB	32768 points, 4 KB When the number of link points is extended: 131072 points, 16 KB
LW	-	-	-	16384 points, 32 KB When the number of link points is extended: 524288 points, 1024 KB	16384 points, 32 KB When the number of link points is extended: 524288 points, 1024 KB
Maximum link points per station					
RX/RX	16384 points each, 2 KB	Manager station: 8192 points each, 1 KB	Manager station: 8192 points each, 1 KB	16384 points each, 2 KB	16384 points each, 2 KB
RW/r/RWw	8192 points each, 16 KB	Manager station: 4096 points each, 8 KB	Manager station: 4096 points each, 8 KB	8192 points each, 16 KB	8192 points each, 16 KB
LB	-	-	-	32768 points, 4 KB	32768 points, 4 KB
LW	-	-	-	16384 points, 32 KB	16384 points, 32 KB
Safety communications					
Max. number of safety connections per station	-	-	-	• Manager station: 120 • Local station: 1	-
Max. number of link points per safety connection (word)	-	-	-	8 (input: 8, output: 8)	-
Transient transmission capacity					
Transient transmission capacity (byte)	Max. 1920	Max. 1920	Max. 1920	Max. 1920	Max. 1920

*1. The maximum number of connectable stations is 256 when modules that operate as extension modules, such as a multiple-axis drive unit, are included in the number.

*2. Device stations supporting 253-station connections will be expanded. For details, please refer to Technical Bulletin (FA-A-0451).

*3. Please use a managed Ethernet switch supporting CC-Link IE TSN (class B) recommended by the CC-Link Partner Association.

*4. Line topology and star topology can be mixed.

*5. Availability depends on the firmware version.

Item	MELSEC iQ-R Series CC-Link IE TSN Plus master/local module RJ71GN11-EIP	MELSEC iQ-F Series master/local module FX5-CCLGN-MS* ¹	MELSEC iQ-R Series motion module RD78G□/GH□	MELSEC iQ-F Series motion module FX5-□SSC-G
Communication speed	1 Gbps/100 Mbps	1 Gbps/100 Mbps	1 Gbps/100 Mbps	1 Gbps/100 Mbps
Maximum stations per network* ²	121	61 (manager station)	121	21 (FX5-40SSC-G) 25 (FX5-80SSC-G)
Connection cable	Ethernet cable (Category 5e or higher)	Ethernet cable (Category 5e or higher)	Ethernet cable (Category 5e or higher)	Ethernet cable (Category 5e or higher)
Overall cable distance (m)	Line: 12000 Others: Depends on the system configuration	Line: 6000 (manager station) Others: Depends on the system configuration	Line: 12000 Star: Depends on the system configuration* ³ Ring: 12100* ⁴	Line: 2000 (FX5-40SSC-G) Line: 2400 (FX5-80SSC-G) Others: Depends on the system configuration
Maximum station-to-station distance (m)	100	100	100	100
Max. number of networks	239	239	239	239
Network topology* ⁵	Line* ⁶ , star* ⁷	Line, star* ⁷	Line, star* ⁷ , ring* ⁴	Line, star* ⁷
Communication method	Time-sharing method	Time-sharing method	Time-sharing method	Time-sharing method
Maximum link points per network				
RX/RX	16384 points each, 2 KB	16384 points each, 2 KB	16384 points each, 2 KB	8192 points each, 1 KB
RWr/RWw	8192 points each, 16 KB	8192 points each, 16 KB (manager station)	8192 points each, 16 KB	1024 points each, 2 KB
LB	When the number of link points is extended: 131072 points, 16 KB	-	-	-
LW	When the number of link points is extended: 524288 points, 1024 KB	-	-	-
Maximum link points per station				
RX/RX	16384 points each, 2 KB	8192 points each, 1 KB (manager station)	16384 points each, 2 KB	8192 points each, 1 KB
RWr/RWw	8192 points each, 16 KB	4096 points each, 8 KB (manager station)	8192 points each, 16 KB	1024 points each, 2 KB
LB	32768 points, 4 KB	-	-	-
LW	16384 points, 32 KB	-	-	-
Safety communications				
Max. number of safety connections per station	-	-	120 connections	-
Max. number of link points per safety connection (word)	-	-	8 (input: 8, output: 8)	-
Transient transmission capacity				
Transient transmission capacity (byte)	Max. 1920	Max. 1920	Max. 1920	Max. 1920
EtherNet/IP™ communications				
Data transmission speed (bps)	1G/100M	-	-	-
Class 1 communications	Number of connections	• Instance communications: 256* ⁸ • Tag communications: 256* ⁸	-	-
	Communication data size (byte)	1444 (per connection)* ⁹	-	-
	RPI (communication cycle) (ms)	0.5...60000 (in increments of 0.5 ms)	-	-
	PPS (communication processing performance)* ¹⁰ (pps)	12000	-	-
UCMM communications	Number of connections (number of simultaneous executions)	• Server: 96* ⁸⁺¹¹ • Client: 32	-	-
	Communication data size (byte)	• Message communications: 504 (including headers) • Tag communications: 498	-	-
Class 3 communications	Number of connections	• Server: 96* ⁸⁺¹¹ • Client: 256* ⁸	-	-
	Communication data size (byte)	• Message communications: 1404 (per connection) • Tag communications: 496 (per connection)	-	-

*1. For specifications of local station, please refer to the "MELSEC iQ-F FX5 CC-Link IE TSN Master/Local Module User's Manual (SH-082215ENG)".

*2. Includes a manager station.

*3. An Ethernet switch is required for a star topology. Up to 20 Ethernet switches can be connected.

*4. Ring topology is only possible for a system configured with RD78GH CC-Link IE TSN Class B only. Ring topology is not supported in systems mixing CC-Link IE TSN Class B and Class A, or in systems configured with CC-Link IE TSN Class A only.

*5. Please use a managed Ethernet switch supporting CC-Link IE TSN (class B) recommended by the CC-Link Partner Association.

*6. The CC-Link IE TSN Plus master/local module can only be connected at the end of the network.

*7. Line topology and star topology can be mixed.

*8. The total number of connections for Class 1 communications, UCMM tag communications (server function), and Class 3 communications is 256. Therefore, the number of each connection varies depending on the number and size of separate communications.

*9. If the external device does not support Large Forward Open (CIP option specifications), the communication data size is up to 504 bytes.

*10. PPS: Number of frames that can be processed per second

*11. The maximum number of simultaneous executions (the number of connections that can be received simultaneously) for the server function is 96 for the total of UCMM and Class 3 communications server functions.

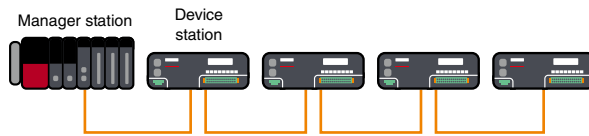
Item	CC-Link IE TSN interface board NZ81GN11-SX	CC-Link IE TSN interface board NZ81GN11-T2
Communication speed	1 Gbps	1 Gbps/100 Mbps
Maximum stations per network	121 (manager station 1, device station 120)	
Connection cable	Optical fiber cable	Ethernet cable (Category 5e or higher)
Overall cable distance (m)	Ring: 66550	Line: 12000 Ring: 12100 Others: Depends on the system configuration
Maximum station-to-station distance (m)	550	100
Max. number of networks	239	
Network topology*1	Ring	Line, star*2, ring
Communication method	Time-sharing method	Time-sharing method/time-managed polling method
Maximum link points per network*2		
RX/RX	16384 points each, 2 KB	
RW/r/RWw	8192 points each, 16 KB	
LB	32768 points, 4 KB When the number of link points is extended: 131072 points, 16 KB	32768 points, 4 KB
LW	16384 points, 32 KB When the number of link points is extended: 524288 points, 1024 KB	16384 points, 32 KB
Maximum link points per station*2		
RX/RX	16384 points each, 2 KB	
RW/r/RWw	8192 points each, 16 KB	
LB	32768 points, 4 KB When the number of link points is extended: 131072 points, 16 KB	32768 points, 4 KB
LW	16384 points, 32 KB When the number of link points is extended: 524288 points, 1024 KB	16384 points, 32 KB
Transient transmission capacity		
Transient transmission capacity (byte)	Max.1920	

*1. Please use a switching hub supporting CC-Link IE TSN Class B certified by the CC-Link Partner Association.

*2. Line topology and star topology can be mixed.

■ Network topologies

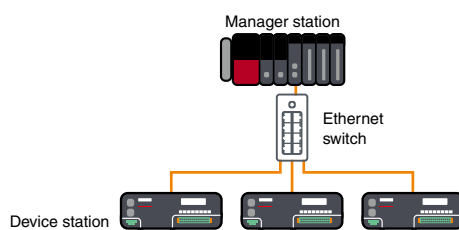
■ Line topology



Network topology ideal for system configurations with high-speed/high-performance control

- High-speed communication is possible as the system is configured with CC-Link IE TSN-compatible device stations only
- Easier system configuration without an Ethernet switch
- Ideal for highly accurate motion control systems

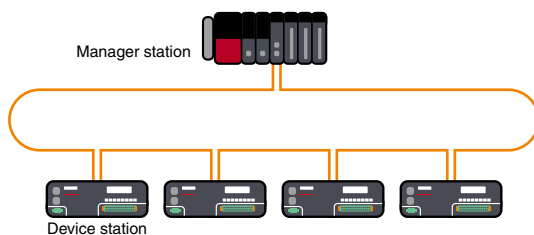
■ Star topology



Network topology ideal for flexible system configurations

- Easily realizes distributed arrangement of device stations with an Ethernet switch
- Easy to change/rearrange equipment or system configuration
- Ideal for general production line control systems

■ Ring topology



Network topology ideal for systems requiring high reliability^{*1*2}

- Maintain data communications with normal stations even if a cable is disconnected or an error occurs in one of the device stations
- Configuration without requiring an Ethernet switch
- Ideal for continuously operating control system

^{*1.} For information on supported network topologies, please refer to the manuals for each product.

^{*2.} Mixing with star topology or line topology is not supported.

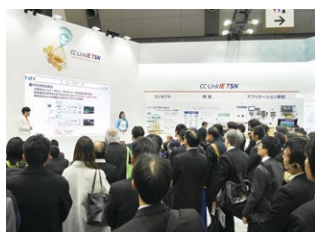
CC-Link Partner Association (CLPA) - Actively promoting worldwide adoption of CC-Link Family

**Proactively supporting CC-Link Family,
from promotion to specification development**

The CC-Link Partner Association (CLPA) was established to promote the worldwide adoption of the CC-Link open-field network. In 2018, CLPA has developed CC-Link IE TSN, the world's first open industrial network utilizes Time-Sensitive Networking (TSN) technology, which is an extension of standard Ethernet, to accelerate the construction of smart factories utilizing Industrial IoT (IIoT). By conducting promotional activities such as organizing trade shows and seminars, conducting conformance tests, and providing catalogs, brochures and website information, CLPA activities are successfully increasing the number of CC-Link partner manufacturers and CC-Link Family-compatible products. CLPA will provide a variety of development methods and develop a truly open industrial network on a global scale.



Seminar



Trade show



Conformance testing lab

■ Visit the CLPA website for the latest CC-Link Family information.



CLPA website
www.cc-link.org/en



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Global influence of CC-Link Family continues to spread

Centered in Japan, the CLPA has established bases of operations in 10 regions around the world. We lead the way in further opening up CC-Link Family network technology to the world. From helping vendors develop compatible products to consultation concerning system construction for our users, we provide a wide range of support services.

Japan	● CLPA Headquarters CT		
Asia-Pacific	● CLPA-China CT	● CLPA-India	● CLPC-ASEAN
	● CLPA-Korea CT	● CLPA-Taiwan	● CLPC-Thailand
EMEA	● CLPA-Europe CT		
	● CLPA-Turkey		
Americas	● CLPA-Americas		
	● CLPA-Mexico		

CT : Conformance testing lab

Regional Offices ►



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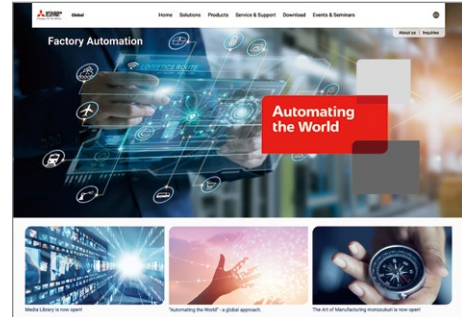
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■ Product list

Model name	Outline	Station type			CC-Link IE TSN Class
		Manager station	Device station		
		Local station	Remote station		
Programmable automation controllers MELSEC MX Controller MX-R model*1					
MXR300-16 NEW	Maximum number of connected stations: 254*2*3 Maximum number of control axes: 16	●	-	-	B
MXR300-32 NEW	Maximum number of connected stations: 254*2*3 Maximum number of control axes: 32	●	-	-	B
MXR300-64 NEW	Maximum number of connected stations: 254*2*3 Maximum number of control axes: 64	●	-	-	B
MXR500-128 NEW	Maximum number of connected stations: 254*2*3 Maximum number of control axes: 128	●	-	-	B
MXR500-256 NEW	Maximum number of connected stations: 254*2*3 Maximum number of control axes: 256	●	-	-	B
Programmable automation controllers MELSEC MX Controller MX-F model*1					
MXF100-8-N32 NEW	Maximum number of connected stations: 39 Maximum number of control axes: 8	●	-	-	B
MXF100-8-P32 NEW	Maximum number of connected stations: 39 Maximum number of control axes: 8	●	-	-	B
MXF100-16-N32 NEW	Maximum number of connected stations: 47 Maximum number of control axes: 16	●	-	-	B
MXF100-16-P32 NEW	Maximum number of connected stations: 47 Maximum number of control axes: 16	●	-	-	B
MELSEC iQ-R Series master/local module					
RJ71GN11-T2	Maximum number of connected stations: 121	●	●	-	B
RJ71GN11-SX NEW	Maximum number of connected stations: 121; Optical fiber cable-compatible	●	●	-	B
MELSEC iQ-R Series CC-Link IE TSN Plus master/local module					
RJ71GN11-EIP	Maximum number of connected stations: 121; 1 Gbps/100 Mbps manager station/local station; EtherNet/IP™ system compatible scanner	●	●	-	B
MELSEC iQ-F Series master/local module					
FX5-CCLGN-MS	Maximum number of connected stations: 61*4	●	●	-	B
MELSEC iQ-R Series motion module					
RD78G4	Maximum number of control axes: 4	●	-	-	B
RD78G8	Maximum number of control axes: 8	●	-	-	B
RD78G16	Maximum number of control axes: 16	●	-	-	B
RD78G32	Maximum number of control axes: 32	●	-	-	B
RD78G64	Maximum number of control axes: 64	●	-	-	B
RD78GHV	High-performance type; Maximum number of control axes: 128	●	-	-	B
RD78GHW	High-performance type; Maximum number of control axes: 256	●	-	-	B
MELSEC iQ-F Series motion module					
FX5-40SSC-G	Maximum number of control axes: 4	●	-	-	B
FX5-80SSC-G	Maximum number of control axes: 8	●	-	-	B
Motion control software SWM-G					
SW1DNN-SWMG-M*5	Motion control software	●	-	-	B
USB keys for motion control software					
MR-SWMG16-U	Maximum number of control axes: 16	-	-	-	-
MR-SWMG32-U	Maximum number of control axes: 32	-	-	-	-
MR-SWMG64-U	Maximum number of control axes: 64	-	-	-	-
MR-SWMG128-U	Maximum number of control axes: 128	-	-	-	-
Software license for motion control software					
MR-SWMG16-E	Maximum number of control axes: 16	-	-	-	-
MR-SWMG32-E	Maximum number of control axes: 32	-	-	-	-
MR-SWMG64-E	Maximum number of control axes: 64	-	-	-	-
MR-SWMG128-E	Maximum number of control axes: 128	-	-	-	-
Motion control board					
MR-EM441G NEW	Maximum number of control axes: 64	●	-	-	B
AC servo					
MR-J5-G	MELSERVO-J5 Series servo amplifier	-	-	●	B/A
MR-J5W2-G	MELSERVO-J5 Series 2-axis servo amplifier	-	-	●	B/A
MR-J5W3-G	MELSERVO-J5 Series 3-axis servo amplifier	-	-	●	B/A
MR-J5-G-HS	MELSERVO-J5 Series servo amplifier fully closed loop control 4-wire; load-side encoder A/B/Z-phase input supported; Safety sub-function 3 points of functional safety I/O signals	-	-	●	B/A
MR-J5-G-RJ	MELSERVO-J5 Series servo amplifier fully closed loop control 4-wire; load-side encoder A/B/Z-phase input supported; Safety sub-function	-	-	●	B/A
MR-J5D1-G4	MELSERVO-J5 Series 1-axis drive unit	-	-	●	B/A
MR-J5D2-G4	MELSERVO-J5 Series 2-axis drive unit	-	-	●	B/A
MR-J5D3-G4	MELSERVO-J5 Series 3-axis drive unit	-	-	●	B/A
MR-JET-G	MELSERVO-JET Series servo amplifier	-	-	●	B/A

*1. For MELSEC MX Controller, local station connection will be supported in the future.

*2. The maximum number of connectable stations is 256 when modules that operate as extension modules, such as a multiple-axis drive unit, are included in the number.

*3. Device stations supporting 253-station connections will be expanded. For details, please refer to Technical Bulletin (FA-A-0451).

*4. For specifications of local station, please refer to the "MELSEC iQ-F FX5 User's Manual (CC-Link IE TSN) (SH(NA)-082215ENG)".

*5. For information on how to obtain the software, please contact your local Mitsubishi Electric sales office or representative.

Type	Model name	Outline	Station type			CC-Link IE TSN Class
			Manager station	Device station		
				Local station	Remote station	
Inverter and supported option						
FR-A800-GN		FREQROL-A800 Series inverter with CC-Link IE TSN communication function	-	-	●	B/A* ¹
FR-A8NCG		FREQROL-A800 and FREQROL-F800 Series plug-in option for CC-Link IE TSN	-	-	●	B/A* ¹
FR-A8NCG-S		Inverter compatible with safety communication option FR-A800-F/G plug-in option for CC-Link IE TSN safety communication function* ²	-	-	●	B/A
FR-E800-E		FREQROL-E800 Series inverter	-	-	●	A
FR-E800-SCE		FREQROL-E800 sub-function supported inverter	-	-	●	A
Tension meter						
LM7-1LG NEW		Power input: 24 V DC, detector input: 1 axis	-	-	●	B/A
LM7-2LG NEW		Power input: 24 V DC, detector input: 2 axes	-	-	●	B/A
Robot						
CR800-R/CR860-R		MELSEC iQ-R Series-compatible robot controller FR Series* ³	*4	*4	*4	B
CR800-D/CR860-D NEW		Controller for FR/CR/ASSISTA series (standalone type)* ⁵	*4	*4	*4	B
HMI GOT						
GT25-J71GN13-T2		CC-Link IE TSN communication unit Supported models: GT37* ⁶ , GT27, GT25* ⁷	-	●	-	B
GT37 model NEW		GOT3000 Series GT37 model hardware	-	-	●	A
Block-type remote module						
DC input	NZ2GN2S1-16D	16 points; 24 V DC; Response time: 0...70 ms; Positive/negative common shared; Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2S1-32D	32 points; 24 V DC; Response time: 0...70 ms; Positive/negative common shared; Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-16D	16 points; 24 V DC; Response time: 0...70 ms; Positive/negative common shared; Screw terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-32D	32 points, 24 V DC; Response time: 0...70 ms; Positive/negative common shared; Screw terminal block; 1-wire	-	-	●	B/A
	NZ2GNCE3-32D	32 points; 24 V DC; Response time: 0...70 ms; Positive common; Sensor connector (e-CON); 3-wire	-	-	●	B/A
	NZ2GNCF1-32D	32 points; 24 V DC; Response time: 0...70 ms; Positive/negative common; 40-pin connector; 1-wire	-	-	●	B/A
Transistor output	NZ2GN2S1-16T	16 points; 12/24 V DC; Sink; Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2S1-16TE	16 points; 12/24 V DC; Source; Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2S1-32T	32 points; 12/24 V DC; Sink; Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2S1-32TE	32 points; 12/24 V DC; Source; Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-16T	16 points; 12/24 V DC; Sink; Screw terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-16TE	16 points; 12/24 V DC; Source; Screw terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-32T	32 points; 12/24 V DC; Sink; Screw terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-32TE	32 points; 12/24 V DC; Source; Screw terminal block; 1-wire	-	-	●	B/A
I/O combined	NZ2GN2S1-32DT	[Input] 16 points; 24 V DC; Response time: 0...70 ms; Positive common [Output] 16 points; 24 V DC; Sink Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2S1-32DTE	[Input] 16 points; 24 V DC; Response time: 0...70 ms; Negative common [Output] 16 points; 24V DC; Source Spring-clamp terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-32DT	[Input] 16 points; 24 V DC; Response time: 0...70 ms; Positive common [Output] 16 points; 24 V DC; Sink Screw terminal block; 1-wire	-	-	●	B/A
	NZ2GN2B1-32DTE	[Input] 16 points; 24 V DC; Response time: 0...70 ms; Negative common [Output] 16 points; 24 V DC; Source Screw terminal block; 1-wire	-	-	●	B/A
	NZ2GNCE3-32DT	[Input] 16 points; 24 V DC; Response time: 0...70 ms; Positive common [Output] 16 points; 24 V DC; Sink Sensor connector (e-CON); 3-wire	-	-	●	B/A
Analog input	NZ2GN2S-60AD4	4 channels; Input: -10...10 V DC, 0...20 mA DC; Conversion speed: 200 μs/CH; Spring-clamp terminal block	-	-	●	B/A
	NZ2GN2B-60AD4	4 channels; Input: -10...10 V DC, 0...20 mA DC; Conversion speed: 200 μs/CH; Screw terminal block	-	-	●	B/A
Analog output	NZ2GN2S-60DA4	4 channels; Output: -10...10 V DC, 0...20 mA DC; Conversion speed: 200 μs/CH; Spring-clamp terminal block	-	-	●	B/A
	NZ2GN2B-60DA4	4 channels; Output: -10...10 V DC, 0...20 mA DC; Conversion speed: 200 μs/CH; Screw terminal block	-	-	●	B/A

*1. Class A is supported by inverters and options manufactured in October 2022 or later.

*2. Can be used when inverters and options manufactured in October 2023 or later are combined.

*3. Applies to version C2 or later of the controllers manufactured in April 2021 or later.

*4. MELSEC iQ-R Series master/local module (RJ71GN11-T2) is separately required.

*5. Version E2z or later of a controller and a robot controller option network base card (2F-DQ535-TSN) are required.

*6. An extension interface converter unit (GT37-IF2000) is required.

*7. Not all GT25 models are supported. For more information, please refer to "GOT2000 Series catalog (L(NA)08270ENG)".

Type	Model name	Outline	Station type			CC-Link IE TSN Class
			Manager station	Device station	Remote station	
Waterproof/dustproof type (IP67) remote module						
DC input	NZ2GN12A4-16D	16 points; 24 V DC; Response time: 0...70 ms; Positive common; Waterproof connector; 2- to 4-wire	-	-	●	B/A
	NZ2GN12A4-16DE	16 points; 24 V DC; Response time: 0...70 ms; Negative common; Waterproof connector; 2- to 4-wire	-	-	●	B/A
Transistor output	NZ2GN12A2-16T	16 points; 12/24 V DC; Sink; Waterproof connector; 2-wire	-	-	●	B/A
	NZ2GN12A2-16TE	16 points; 12/24 V DC; Source; Waterproof connector; 2-wire	-	-	●	B/A
I/O combined	NZ2GN12A42-16DT	[Input] 8 points; 24 V DC; Response time: 0...70 ms; Positive common; 2- to 4-wire [Output] 8 points; 12/24 V DC; Sink; 2-wire Waterproof connector	-	-	●	B/A
	NZ2GN12A42-16DTE	[Input] 8 points; 24 V DC; Response time: 0...70 ms; Negative common; 2- to 4-wire [Output] 8 points; 12/24 V DC; Source; 2-wire Waterproof connector	-	-	●	B/A
FPGA module						
DC input/output	NZ2GN2S-D41P01	[Input] 48 points; 24 V DC; Response time: 1 μs or less; Positive/negative common shared [Output] 48 points; 5/12/24 V DC; Sink	-	-	●	B/A
Differential input/output	NZ2GN2S-D41D01	[Differential (RS-422) input] 24 points; Response time: 0.2 μs or less [Differential (RS-422) output] 24 points [Differential (RS-485) input/output] 3 points	-	-	●	B/A
DC input/output, differential input/output	NZ2GN2S-D41PD02	[Input] 32 points; 24 V DC; Response time: 1 μs or less; Positive/negative common shared [Output] 32 points; 5/12/24 V DC; Sink [Differential (RS-422) input] 8 points; Response time: 0.2 μs or less [Differential (RS-422) output] 8 points [Differential (RS-485) input/output] 1 point	-	-	●	B/A
DC input/output	NZ2EX2S-D41P01	[Input] 48 points; 24 V DC; Response time: 1 μs or less; Positive/negative common shared [Output] 48 points; 5/12/24 V DC; Sink	-	-	●	-
Differential input/output	NZ2EX2S-D41D01	[Differential (RS-422) input] 24 points; Response time: 0.2 μs or less [Differential (RS-422) output] 24 points [Differential (RS-485) input/output] 3 points	-	-	●	-
Analog input/output	NZ2EX2S-D41A01	[Input] 36 points; -9.9...9.9 V DC, -19.8...19.8 mA DC [Output] 6 points; -9.9...9.9 V DC, 0.2...19.8 mA DC	-	-	●	-
Block-type remote module with safety functions						
DC input	NZ2GNSS2-8D	Single wiring: 8 points; Double wiring: 4 points; 24 V DC; Response time: 1...70 ms; Negative common; Spring-clamp terminal block; 2-wire	-	-	●	B/A
Transistor output	NZ2GNSS2-8TE	Single wiring: 8 points; Double wiring: 4 points; 24 V DC; Source + source; Spring-clamp terminal block; 2-wire	-	-	●	B/A
I/O combined	NZ2GNSS2-16DTE	[Input] Single wiring: 8 points; Double wiring: 4 points; 24 V DC; Response time: 1...70 ms; Negative common [Output] Single wiring: 8 points; Double wiring: 4 points; 24 V DC Source + source; Spring-clamp terminal block; 2-wire	-	-	●	B/A
Waterproof/dustproof type (IP67) I/O combined	NZ2GNS12A2-14DT	[Input] Single wiring: 12 points; Double wiring: 6 points; 24 V DC; Response time: 1...70 ms; Negative common [Output] Single wiring not possible; Double wiring: 2 points; 24 V DC Source + sink; Waterproof connector; 2-wire	-	-	●	B/A
	NZ2GNS12A2-16DTE	[Input] Single wiring: 12 points; Double wiring: 6 points; 24 V DC; Response time: 1...70 ms; Negative common [Output] Single wiring: 4 points; Double wiring: 2 points; 24 V DC Source + source; Waterproof connector; 2-wire	-	-	●	B/A
Network interface board						
NZ81GN11-SX NEW		PCI Express® bus-compatible CC-Link IE TSN manager station/local station	●	●	-	B
NZ81GN11-T2 NEW		PCI Express® bus-compatible CC-Link IE TSN manager station/local station	●	●	-	B
Industrial Ethernet switch						
NZ2MHG-TSNT4		10 Mbps/100 Mbps/1 Gbps; Auto MDI/MDI-X; DIN rail; 4 ports	-	-	-	B/A
NZ2MHG-TSNT8F2		10 Mbps/100 Mbps/1 Gbps; Auto MDI/MDI-X; DIN rail; 8 ports	-	-	-	B/A
DT135TXA* ¹		10 Mbps/100 Mbps/1 Gbps; Auto MDI/MDI-X; DIN rail; 5 ports	-	-	-	A
DT135TXP* ¹ NEW		10 Mbps/100 Mbps/1 Gbps; Auto MDI/MDI-X; DIN rail; Power supply 4 ports	-	-	-	A
DT138TXP* ¹ NEW		10 Mbps/100 Mbps/1 Gbps; Auto MDI/MDI-X; DIN rail; Power supply 8 ports	-	-	-	A
Bridge module						
NZ2GN-GFB		CC-Link IE TSN-CC-Link IE Field Network bridge module	-	-	●	B/A
NZ2AW1GNAL		CC-Link IE TSN-AnyWireASLINK bridge module	-	-	●	B/A
FA3-BR1TC* ² NEW		CC-Link IE TSN-CC-Link bridge module	-	-	●	B

*1. Mitsubishi Electric System & Service products.

*2. Mitsubishi Electric Engineering product.

MELIPC

Model name	Outline
MI2532-W NEW	IPC with Intel® Core™ i7 CC-Link IE TSN communication software license included MELSOFT VIXIO development license (6 months) included, e-Manual Viewer preinstalled
MI2332-W NEW	IPC with Intel® Core™ i3 CC-Link IE TSN communication software license included, e-Manual Viewer preinstalled

Energy measuring units

Model name	Outline
EMU4-□□1A-MB	EcoMonitorLight remote station
EMU4-FD1-MB	EcoMonitorLight remote station
EMU4-□□1-MB	EcoMonitorPlus remote station
EMU4-□□□	EcoMonitorPlus extension unit
EMU4-CM-TSN	CC-Link IE TSN Communication Unit (EcoMonitorLight/Plus)*1

*1. CC-Link IE TSN Class A device

Partner products

Model name	Outline
Ethernet cable	
SC-E5EW-□□M	Double shielded cable; Category 5e; for indoor use; manufactured by Mitsubishi Electric System & Service Co., Ltd.
SC-E5EW-□□M-MV	Double shielded cable; Category 5e; for indoor movable part; manufactured by Mitsubishi Electric System & Service Co., Ltd.
SC-E5EW-□□M-L	Double shielded cable; Category 5e; for indoor/outdoor use; manufactured by Mitsubishi Electric System & Service Co., Ltd.
Inline coupler	
SPAD-RJ45S-E5E	RJ-45 connector with shield 2 pieces; manufactured by Mitsubishi Electric System & Service Co., Ltd.

Development kits/communication software

Type	Model	Outline	CC-Link IE TSN Class
Manager station/local station communication LSI	NZ2GACP610-60	CC-Link IE TSN manager station and local station communication LSI CP610 (PC17005F)*2 60 pieces	B
	NZ2KT-NPETNG51	CC-Link IE TSN manager station and local station communication LSI Device kit (CP610 × 60, Flash ROM*3 × 60)	B
	SW1DNN-GN610SRC-M	Source code development kit (communication firmware, user program, configurator)	B
Remote station communication LSI	NZ2GACP620-60	Communication LSI with GbE-PHY for CC-Link IE TSN remote station CP620 (PC17004R) 60 pieces	B
	NZ2GACP620-300	Communication LSI with GbE-PHY for CC-Link IE TSN remote station CP620 (PC17004R) 300 pieces	B
	NZ2GACP621-90 NEW	Communication LSI with GbE-PHY for CC-Link IE TSN remote station CP621 (PC18008R) 90 pieces	B
	NZ2GACP621-720 NEW	Communication LSI with GbE-PHY for CC-Link IE TSN remote station CP621 (PC18008R) 720 pieces	B
CC-Link IE TSN communication software for Windows®	SW1DND-CCIETCT-M	Computer-based CC-Link IE TSN data collection software	-

*2. The flash ROM must be prepared separately. Refer to the Recommended Parts/Specified Parts section for details. For the communication firmware, please contact your local Mitsubishi Electric representative.

*3. A flash ROM to which the communication firmware has been written is included.

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Controllers



Computerized Numerical Controllers



Drive Products



Human Machine Interfaces



Robots



Low-voltage Power Distribution Products



Medium-voltage Power Distribution Products



Energy Saving Supporting Devices



Processing Machines: EDM, Lasers



Engineering and Solution Software

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