

AUTOMATION CONTROL IS MOVING FULL SPEED AHEAD

Don't let your network leave you behind.



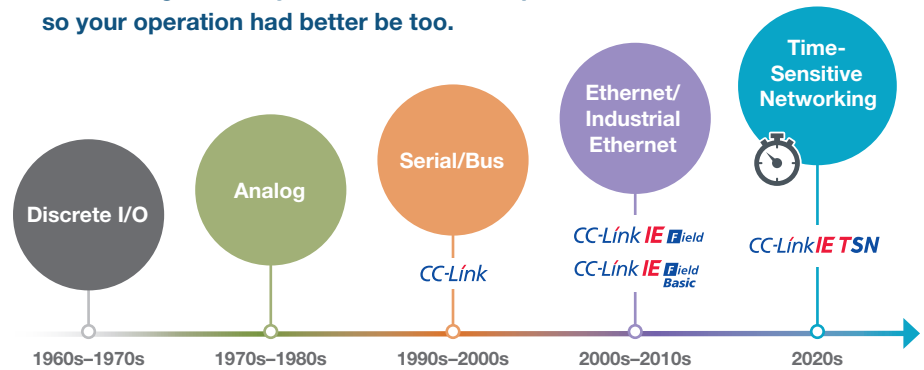
**Introducing the world's FIRST industrial protocol to use
time-sensitive networking**

- IIoT Ready
- ONE Network for Everything
- Fast and Powerful
- Easier Troubleshooting
- Enhanced Diagnostics
- Expansive Connectivity

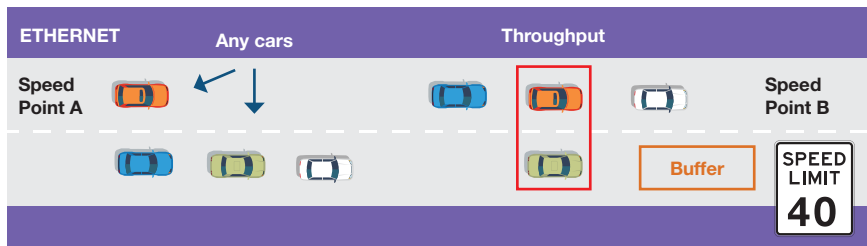
What is TSN?

Time-Sensitive Networking (TSN) is next-generation open integrated network technology with the advanced functionality to enable deterministic communications on standard Ethernet.

Networking is on a cycle of continuous improvement, so your operation had better be too.



Think of Ethernet like traffic on a highway.

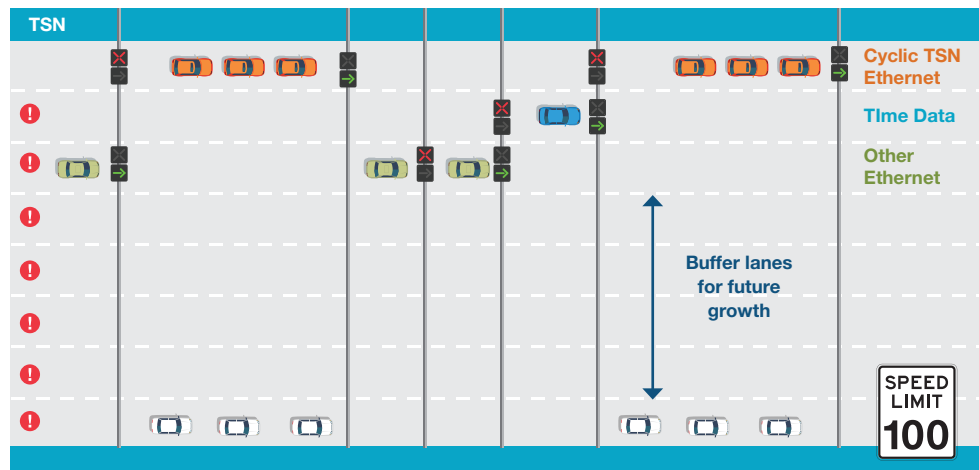


ETHERNET FEATURES	
Speed	5-20ms.....40mph
Throughput	100Mbps.....2 lanes
Type	Any EthernetAny vehicle in any lane
Buffer	UncontrolledTraffic congestion

TSN turns a conventional highway into a **smart** highway.

No matter how heavy the traffic, TSN guarantees high-speed performance and deterministic access without losing any data.

- It organizes and expedites the flow of traffic.
- It synchronizes communication to prevent congestion.
- It green-lights cyclical traffic through the fast lane, while scheduling non-critical "best-effort" data at staggered junctions.



TSN FEATURES	
Speed	31.25-μs..... 100mph
Throughput	1Gbps..... 8 lanes
Type	Any Ethernet (Scheduled) Any vehicle in correct lanes
Buffer	Controlled Extra lanes for growth

INTRODUCING

CC-Link IE TSN

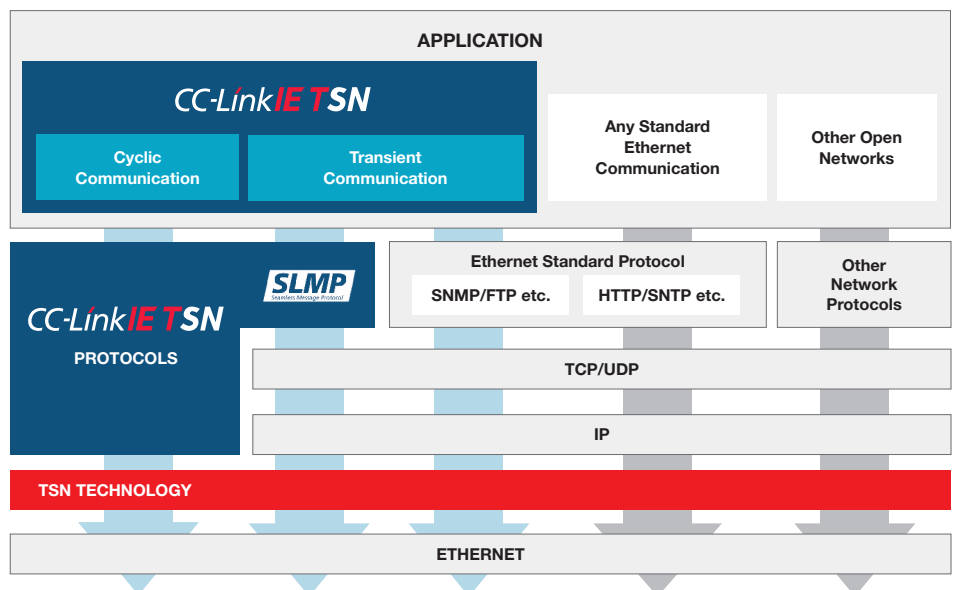
The premier industrial motion control network protocol to run on TSN technology



CC-Link IE TSN protocol is built directly on TSN technology.

- TSN technology enhances standard Ethernet.
- CC-Link IE TSN operates on TSN technology.
- It takes full advantage of TSN's capabilities to:
 - *Provide accurate time stamps*
 - *Optimize network traffic*
 - *Ensure determinism*

COMMUNICATIONS PROFILE



Can your network do all this?

If your network is **CC-Link IE TSN**, then yes it can.

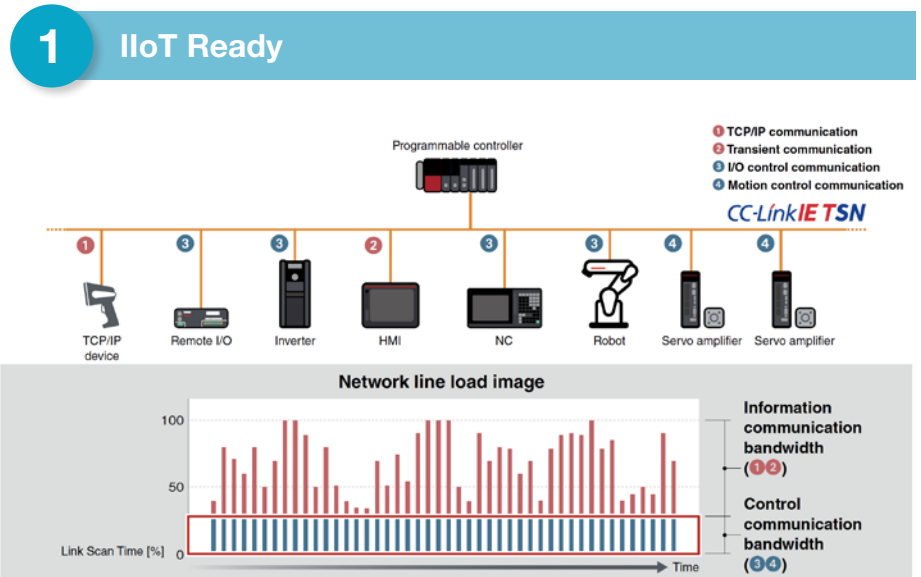
Is your network IIoT ready?

CC-Link IE TSN has the bandwidth to guarantee motion control, while still allowing:

- Non-critical IT traffic
- Other best effort TCP/IP devices
- SNMP network diagnostics

Control traffic moves in real time – no waiting!

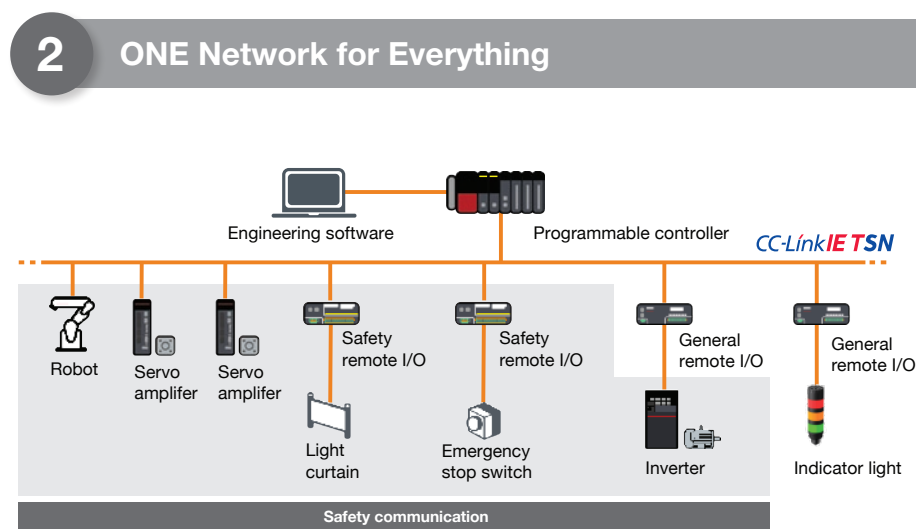
Best-effort traffic queues up and transfers.



Can your network connect all of your devices?

CC-Link IE TSN controls:

- Field devices
- Safety devices
- Motion devices
- Peer-to-peer devices
- TCP/IP devices



Does your network combine both speed AND power?

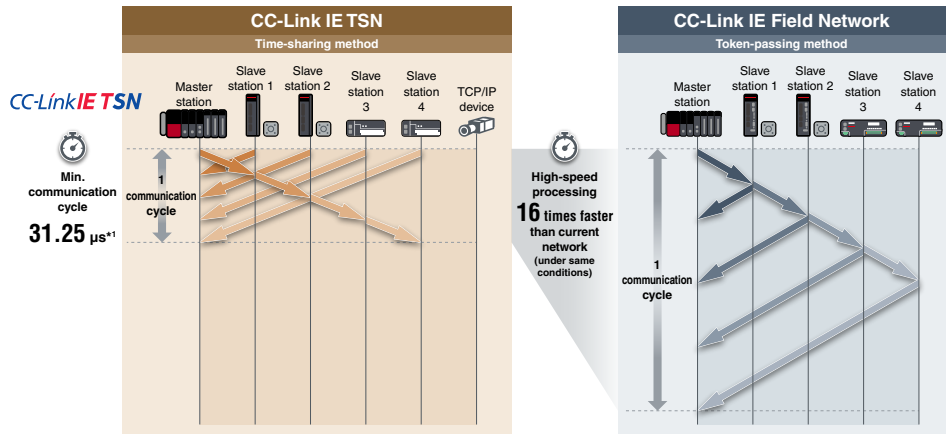
3 Fast and Powerful

CC-Link IE TSN has a lightning-fast cycle time of 31.25 microseconds.

That's up to 16x faster than our previous Industrial Ethernet Network, CC-Link IE Field.

CC-Link IE TSN can support up to 256-axis motion:

- More than 2x more than CC-Link IE Field
- 3.5kHz frequency response
- 67-million pulse encoder

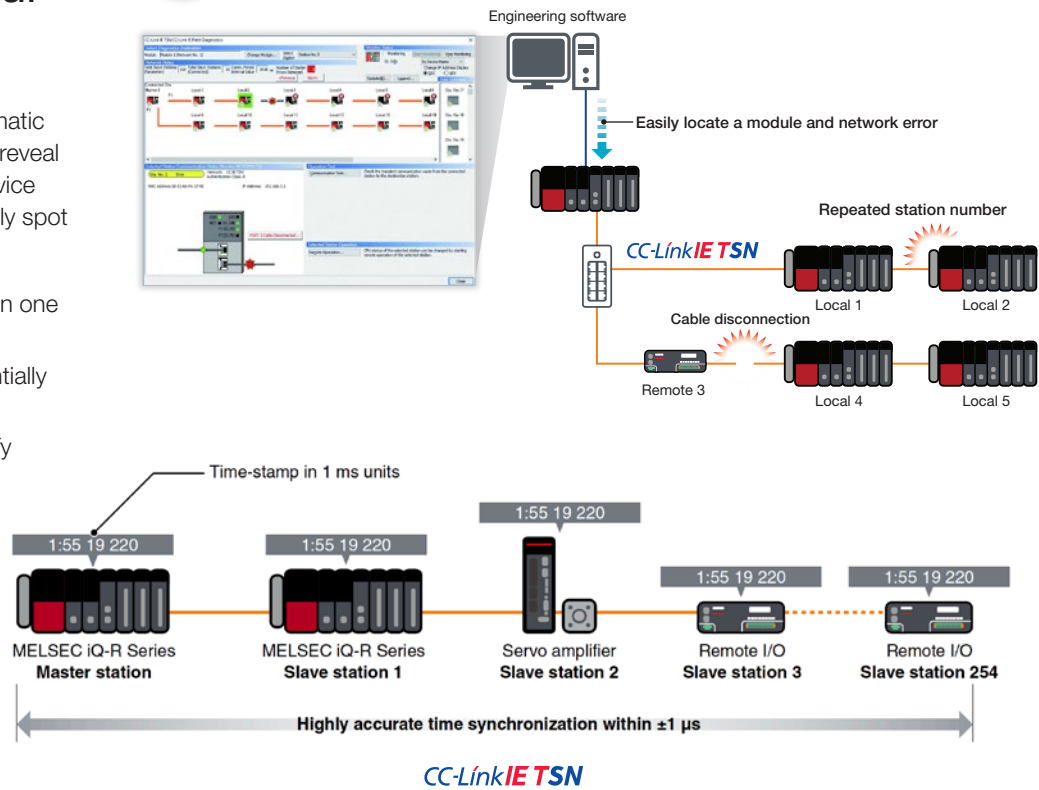


How easy is it to troubleshoot your network?

4 Easier Troubleshooting

Only CC-Link IE TSN uses automatic topology recognition to instantly reveal the connection order of each device station by station and immediately spot any breaks.

- Synchronize time stamps within one microsecond.
- Follow error messages sequentially down the line.
- Quickly troubleshoot and rectify problems.

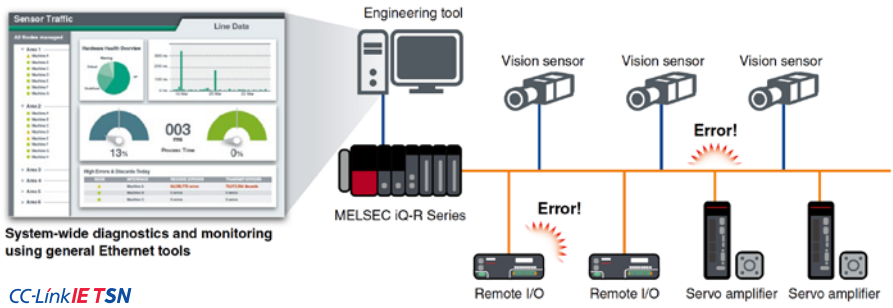


Does your network support SNMP for quick access to device status?

Simple Network Management Protocol (SNMP) is ready when you need it for monitoring and analysis across the entire network.

You won't need special software to ensure that the firmware of every module and field device is safely up to date.

5 Enhanced Diagnostics

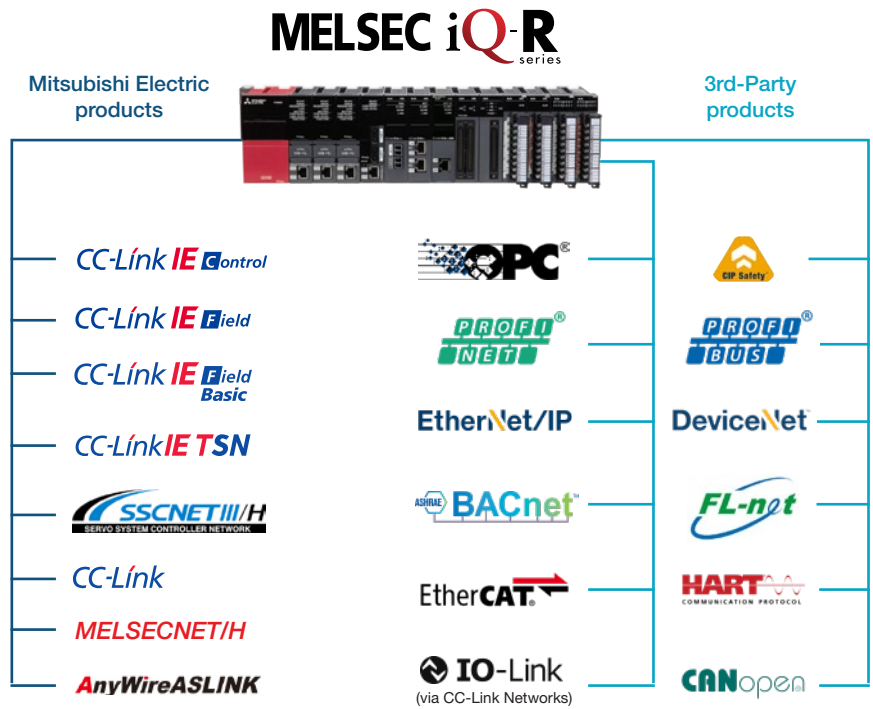


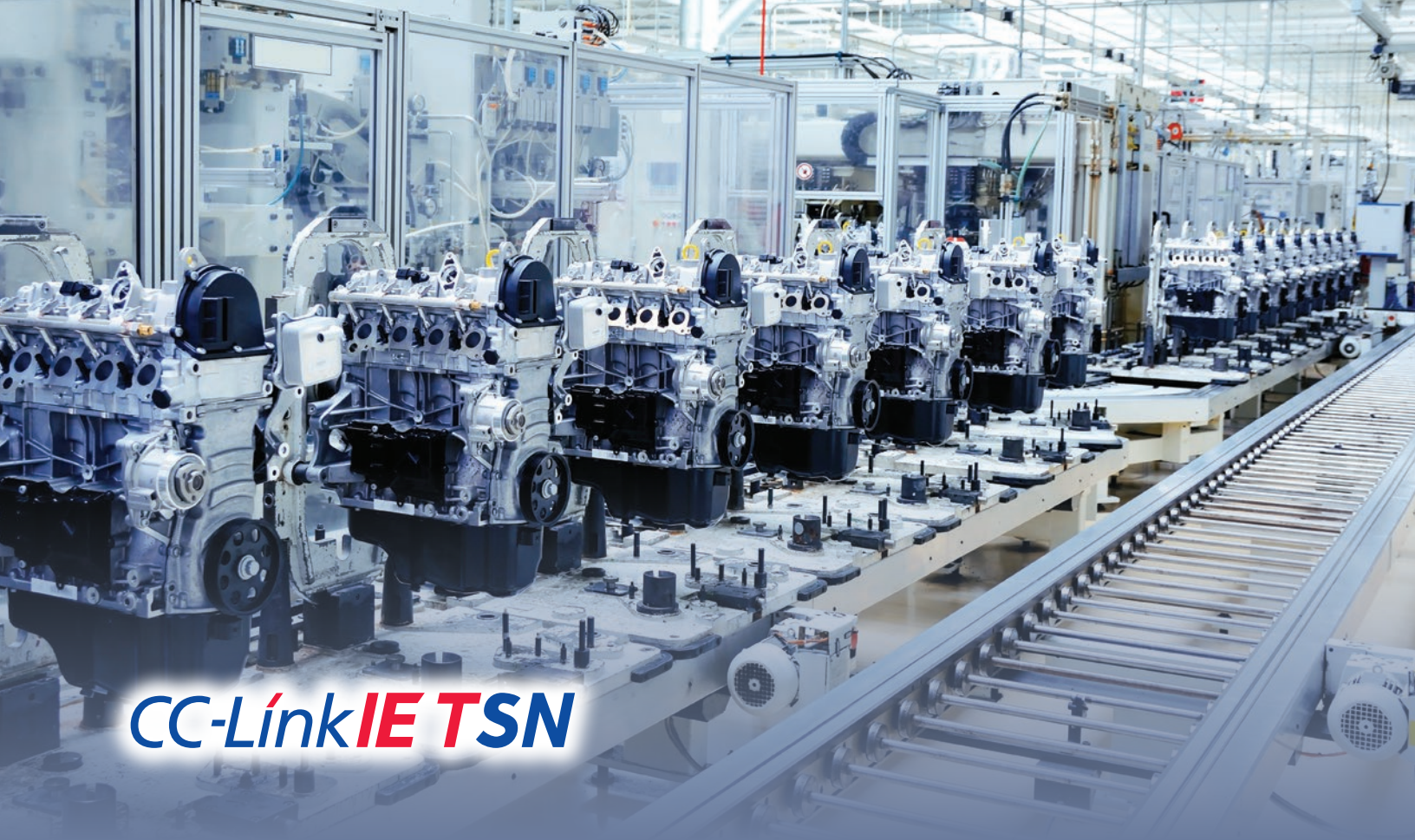
Can you say your controller is the most connected ever?

Rest easy if your system relies on 3rd-party products that aren't yet compatible with CC-Link IE TSN. Mitsubishi Electric controllers provide everything you need for a successful machine build including:

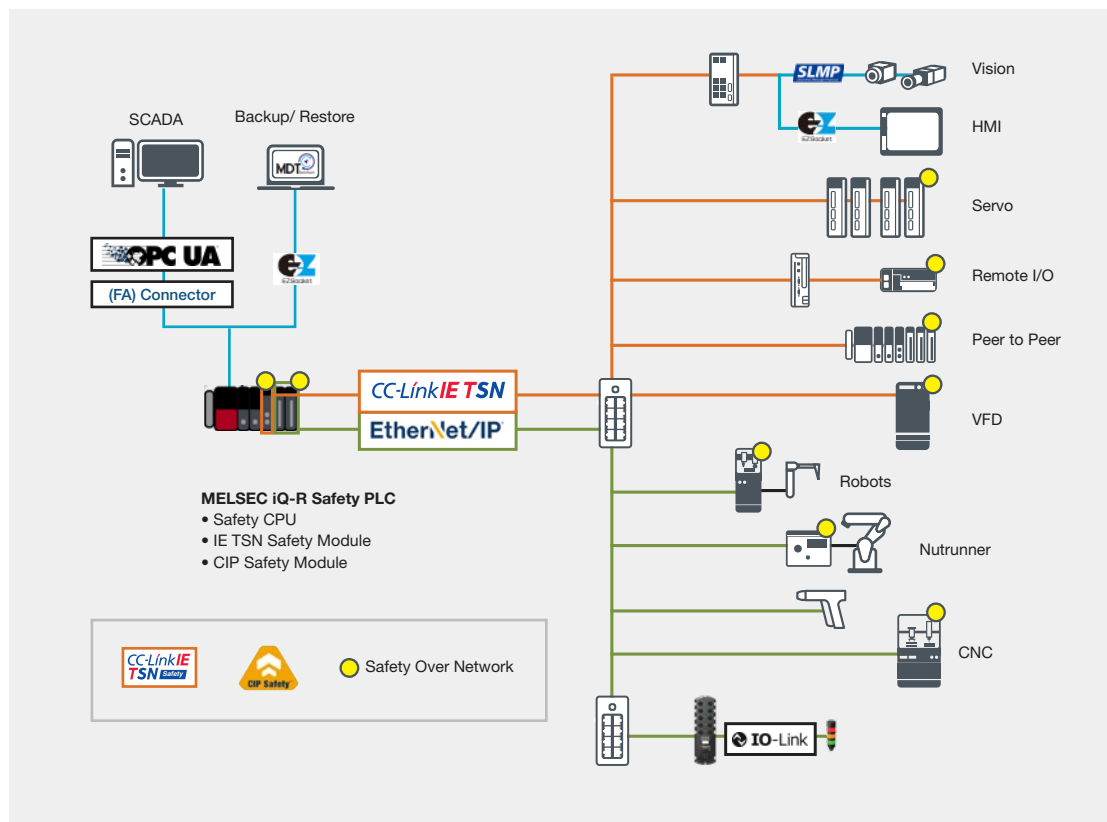
- Nearly all open networks
- Legacy support
- Backwards compatibility for existing Mitsubishi Electric products.

6 Expansive Connectivity





General Topology



Product List

Type	Model name	Outline	Station type			Certified class
			Master station	Slave station		
				Local station	Remote station	
MELSEC iQ-R Series master/local module						
	RJ71GN11-T2	Maximum number of connected stations: 121	●	●	-	B
MELSEC iQ-F Series master/local module						
	FX5-CCLGN-MS	Maximum number of connected stations: 61*	●	●	-	B
MELSEC iQ-R Series motion modules						
	RD78G4	Maximum number of control axes: 4	●	-	-	B
	RD78G8	Maximum number of control axes: 8	●	-	-	
	RD78G16	Maximum number of control axes: 16	●	-	-	
	RD78G32	Maximum number of control axes: 32	●	-	-	
	RD78G64	Maximum number of control axes: 64	●	-	-	
	RD78GHV	High-performance type, maximum number of control axes: 128	●	-	-	
	RD78GHW	High-performance type, maximum number of control axes: 256	●	-	-	
MELSEC iQ-F Series motion modules						
	FX5-40SSC-G NEW	Maximum number of control axes: 4	●	-	-	B
	FX5-80SSC-G NEW	Maximum number of control axes: 8	●	-	-	
Motion software SWM-G						
	SW1DNN-SWMG-M*2 NEW	Motion control software	●	-	-	B
USB keys for motion software						
	MR-SWMG16-U NEW	Maximum number of control axes: 16	-	-	-	-
	MR-SWMG32-U NEW	Maximum number of control axes: 32	-	-	-	-
	MR-SWMG64-U NEW	Maximum number of control axes: 64	-	-	-	-
	MR-SWMG128-U NEW	Maximum number of control axes: 128	-	-	-	-
AC servos						
	MR-J5-G	MELSERVO-J5 Series servo amplifier	-	-	●	B
	MR-J5W2-G	MELSERVO-J5 Series 2-axis servo amplifier	-	-	●	
	MR-J5W3-G	MELSERVO-J5 Series 3-axis servo amplifier	-	-	●	
	MR-J5-G-RJ	MELSERVO-J5 Series servo amplifier fully closed loop control 4-wire load-side encoder A/B/Z-phase input compatible, safety sub-function	-	-	●	
	MR-JET-G	MELSERVO-JET Series servo amplifier	-	-	●	
Inverters						
	FR-A800-GN	FREQROL-A800 CC-Link IE TSN supported inverter	-	-	●	B
	FR-A8NCG	CC-Link IE TSN supported integrated option for FREQROL-A800 and FREQROL-F800 Series	-	-	●	
	FR-E800-E	FREQROL-E800 CC-Link IE TSN supported inverter	-	-	●	A
	FR-E800-SCE	FREQROL-E800 CC-Link IE TSN safety sub-function supported inverter	-	-	●	
Robot						
	CR800-R NEW	MELSEC iQ-R Series compatible robot controller FR Series *3	*4	*4	*4	B
HMI GOT2000 Series						
	GT25-J71GN13-T2	CC-Link IE TSN communication unit Supported models: GT27, GT25*5	-	●	-	B

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

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

*3. CR800-R controllers with version C2 or later, produced in or after April 2021 are supported.

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

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

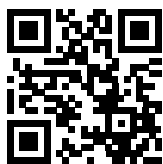
Product List

Type	Model name	Outline	Station type			Certified class
			Master station	Slave station	Remote station	
Block-type remote modules						
DC input	NZ2GN2S1-16D NEW	16 points, 24 V DC, response time 0...70 ms, positive/negative common shared spring-clamp terminal block, 1-wire	-	-	●	B
	NZ2GN2S1-32D	32 points, 24 V DC, response time 0...70 ms, positive/negative common shared spring-clamp terminal block, 1-wire	-	-	●	
	NZ2GN2B1-16D NEW	16 points, 24 V DC, response time 0...70 ms, positive/negative common shared screw terminal block, 1-wire	-	-	●	
	NZ2GN2B1-32D	32 points, 24 V DC, response time 0...70 ms, positive/negative common shared screw terminal block, 1-wire	-	-	●	
	NZ2GNCE3-32D	32 points, 24 V DC, response time 0...70 ms, positive common, sensor connector (e-CON), 3-wire	-	-	●	
	NZ2GNCF1-32D	32 points, 24 V DC, response time 0...70 ms positive/negative common, 40-pin connector, 1-wire	-	-	●	
Transistor output	NZ2GN2S1-16T NEW	16 points, 12/24 V DC (0.5 A), sink type, spring-clamp terminal block, 1-wire	-	-	●	
	NZ2GN2S1-16TE NEW	16 points, 12/24 V DC (0.5 A), source type, spring-clamp terminal block, 1-wire	-	-	●	
	NZ2GN2S1-32T	32 points, 12/24 V DC (0.5 A), sink type, spring-clamp terminal block, 1-wire	-	-	●	
	NZ2GN2S1-32TE	32 points, 12/24 V DC (0.5 A), source type, spring-clamp terminal block, 1-wire	-	-	●	
	NZ2GN2B1-16T NEW	16 points, 12/24 V DC (0.5 A), sink type, screw terminal block, 1-wire	-	-	●	
	NZ2GN2B1-16TE NEW	16 points, 12/24 V DC (0.5 A), source type, screw terminal block, 1-wire	-	-	●	
	NZ2GN2B1-32T	32 points, 12/24 V DC (0.5 A), sink type, screw terminal block, 1-wire	-	-	●	
	NZ2GN2B1-32TE	32 points, 12/24 V DC (0.5 A), source type, screw terminal block, 1-wire	-	-	●	
I/O combined	NZ2GNCF1-32T	32 points, 12/24 V DC (0.1 A), sink type, 40-pin connector, 1-wire	-	-	●	
	NZ2GN2S1-32DT	Input: 16 points, 24 V DC, response time 0...70 ms, positive common Output: 16 points, 24 V DC (0.5 A), sink type spring-clamp terminal block, 1-wire	-	-	●	
	NZ2GN2S1-32DTE	Input: 16 points, 24 V DC, response time 0...70 ms, negative common Output: 16 points, 24V DC (0.5 A), source type spring-clamp terminal block, 1-wire	-	-	●	
	NZ2GN2B1-32DT	Input: 16 points, 24 V DC, response time 0...70 ms, positive common Output: 16 points, 24 V DC (0.5 A), sink type screw terminal block, 1-wire	-	-	●	
	NZ2GN2B1-32DTE	Input: 16 points, 24 V DC, response time 0...70 ms, negative common Output: 16 points, 24 V DC (0.5 A), source type screw terminal block, 1-wire	-	-	●	
Analog input	NZ2GNCE3-32DT	Input: 16 points, 24 V DC, response time 0...70 ms, positive common Output: 16 points, 24 V DC (0.5 A), sink type sensor connector (e-CON), 3-wire	-	-	●	
	NZ2GN2S-60AD4	4 channels, input: -10...10 V DC, 0...20 mA DC conversion speed: 200 µs/channel, spring-clamp terminal block	-	-	●	
Analog output	NZ2GN2B-60AD4	4 channels, input: -10...10 V DC, 0...20 mA DC conversion speed: 200 µs/channel, screw terminal block	-	-	●	
	NZ2GN2S-60DA4	4 channels, output: -10...10 V DC, 0...20 mA DC conversion speed: 200 µs/channel, spring-clamp terminal block	-	-	●	
	NZ2GN2B-60DA4	4 channels, output: -10...10 V DC, 0...20 mA DC conversion speed: 200 µs/channel, screw terminal block	-	-	●	
Waterproof/dustproof type (IP67) remote modules						
DC input	NZ2GN12A4-16D NEW	16 points, 24 V DC, response time 0...70 ms, positive common waterproof connector, 2- to 4-wire	-	-	●	B
	NZ2GN12A4-16DE NEW	16 points, 24 V DC, response time 0...70 ms, negative common waterproof connector, 2- to 4-wire	-	-	●	
Transistor output	NZ2GN12A2-16T NEW	16 points, 12/24 V DC (2A, 4A), sink type, waterproof connector, 2-wire	-	-	●	
	NZ2GN12A2-16TE NEW	16 points, 12/24 V DC (2A, 4A), source type, waterproof connector, 2-wire	-	-	●	
I/O combined	NZ2GN12A42-16DT NEW	Input: 8 points, 24 V DC, response time 0...70 ms, positive common, 2- to 4-wire Output: 8 points, 12/24 V DC (2A, 4A), sink type, 2-wire, waterproof connector	-	-	●	
	NZ2GN12A42-16DTE NEW	Input: 8 points, 24 V DC, response time 0...70 ms, negative common 2- to 4-wire Output: 8 points, 12/24 V DC (2A, 4A), source type, 2-wire, waterproof connector	-	-	●	
Block-type remote modules with safety function						
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
Transistor output	NZ2GNSS2-8TE	Single wiring: 8 points/double wiring: 4 points, 24 V DC (0.5 A) source + source type, spring-clamp terminal block, 2-wire	-	-	●	
I/O combined	NZ2GNSS2-16DTE	Input: 8 points (single wire)/4 points (double wire), 24 V DC response time 1...70 ms, negative common Output: 8 points (single wire)/4 points (double wire), 24 V DC (0.5 A) source + source type, spring-clamp terminal block, 2-wire	-	-	●	
Bridge module						
	NZ2AW1GNAL NEW	CC-Link IE TSN-AnyWireASLINK bridge module	-	-	●	B

CC-Link **IE TSN**

Your connection to everything you need for smart factory solutions.

- Maximize productivity and reduce costs with one network integration.
- Minimize complexity of system changes and line integration.
- Achieve faster cycle times with high-speed, high-accuracy motion control.



Scan to watch our demo and see what makes TSN (Time-Sensitive Networking) so powerful.



Cylinder Head Application Example

1 Easy Troubleshooting

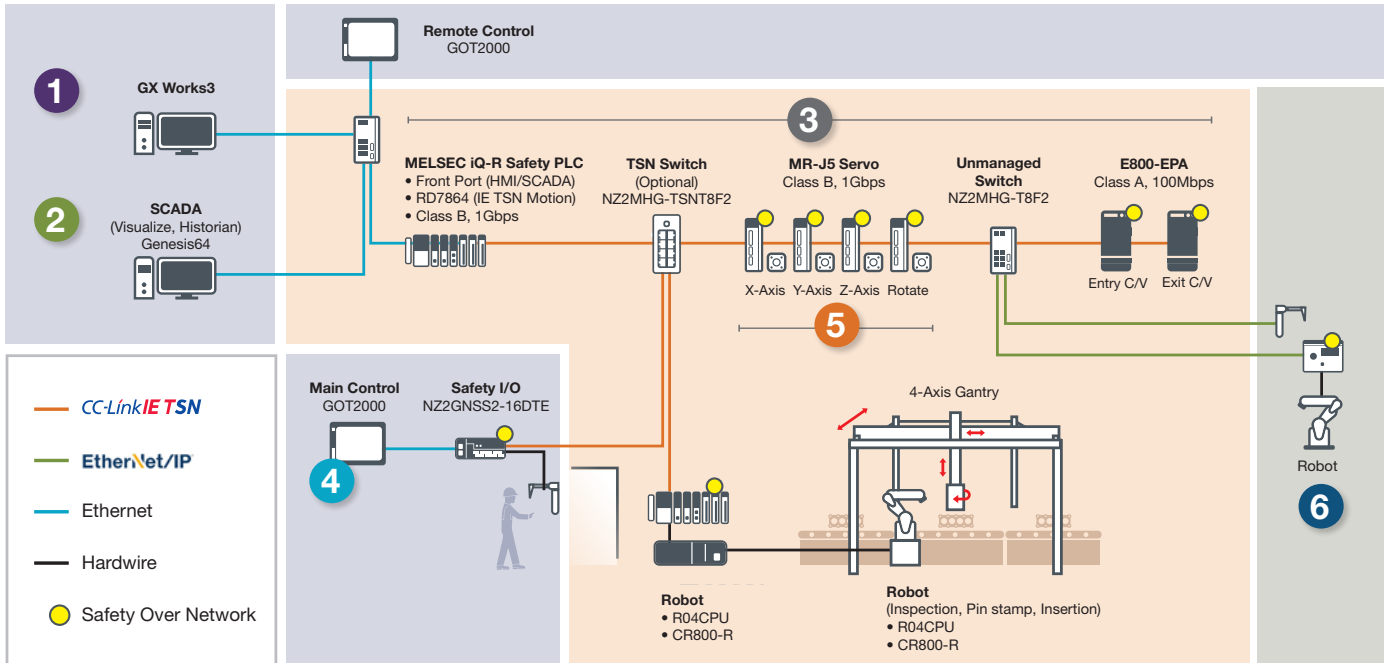
- Automatic topology recognition
- Time synchronization within 1 ms
- Consecutive & sequential error analysis

2 Enhanced Diagnostics

- SNMP-ready without specialized software
- Analyze & monitor from a single IP address
- Quickly update firmware across the network

3 ONE Network for Everything

- Field devices
- Safety devices
- Motion devices
- Peer-to-peer devices
- TCP/IP devices



4 IIoT Ready

- Ample bandwidth for IIoT Devices
- Non-critical IT traffic
- Other best-effort TCP/IP devices

5 Fast and Powerful

- 31.25- μ s cycle time
- 256-axis capability
- 3.5kHz response frequency
- 26-bit batteryless ABS encoder resolution

6 Expansive Connectivity

- 3rd-party network support
- TSN safety & CIP safety support
- Mitsubishi Electric legacy and backward compatibility support

Contact Mitsubishi Electric to put your solution in motion.



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e-Factory



Mitsubishi Electric's e-F@ctory concept utilizes both FA and IT technologies, through collaboration with e-F@ctory Alliance Partners, to reduce the total cost of development, production, and maintenance, with the aim of achieving manufacturing that is a "step ahead of the times".