MITSUBISHI ELECTRIC

Changes for the Better

for a greener tomorrow eco Changes

Ethernet-based Open Network
CC-Link IE Product Catalog

Complete range of CC-Link IE Field Network remote I/O

A major innovation in industrial networks providing reliable, flexible, and seamless communication

CC-Link + Industrial Ethernet

All-rounder network opens up new areas of control. Providing complete range of remote I/O modules for CC-Link IE Field Network.

The all-round CC-Link IE Field Network with free wiring performance is now equipped with complete block type remote I/O modules to further extend control ranges.
We provide perfect modules from abundant products line-up.
CC-Link IE Field Network supports various factory automation controls.

CC-Link IE Field

General Purpose, Flexible Network

The network is designed to simultaneously handle distributed control, I/O control, Safety control and motion control.
The network wiring layout is highly flexible to best fit the needs of the application. Choose from line, star, line and star mixed, or ring topology.

- Communication speed: 1 Gbps
- Maximum link registers: 16K words
- Maximum link relays: 32,768 bits
- Star topology
- Line topology
- Ring topology
- Easy to configure parameters
- Network diagnosis at-a-glance
- Seamless networking
- Copper STP cable
- Ethernet-based
- Safety Communication Function
- Motion control: Synchronous communication

CC-Link IE Control

High speed, large capacity, and highly reliable

Designed for high reliability, CC-Link IE Control Network is a machine to machine network using a 1 Gbps dual loop fiber optic connection.
Up to 128K words of link registers can be shared among controllers providing ample bandwidth for ever increasing amounts of recipe and traceability data.

- Communication speed: 1 Gbps
- Maximum link registers: 128K words
- Maximum link relays: 32,768 bits
- Ring topology
- Dual optical loop
- External power supply
- Easy to configure parameters
- Network diagnosis at-a-glance
- Seamless networking
- Multi-mode optical fiber cable
- Ethernet-based

Ethernet-based open network CC-Link IE

Seamless communication between upper-level information systems and lower-level field systems!
Choose the optimal network to meet your needs

CC-Link IE Field

Gigabit Ethernet

This Ethernet network with highly flexible wiring to match your device layout can perform high-speed controller distributed control, I/O control, safety control and motion control.

CC-Link IE Control

Gigabit Ethernet

This "core" network is intended for high-speed, large bandwidth controller level distributed control. Reliability is ensured through dual fiber optic loop connections and extensive RAS functions.

CC-Link CC-Link Safety CC-Link/LT

Released in 1996, CC-Link has become a global leader in open fieldbus networks. CC-Link Safety achieves the same outstanding performance of CC-Link while meeting strict safety requirements. CC-Link/LT is a cost saving network for small I/O applications.

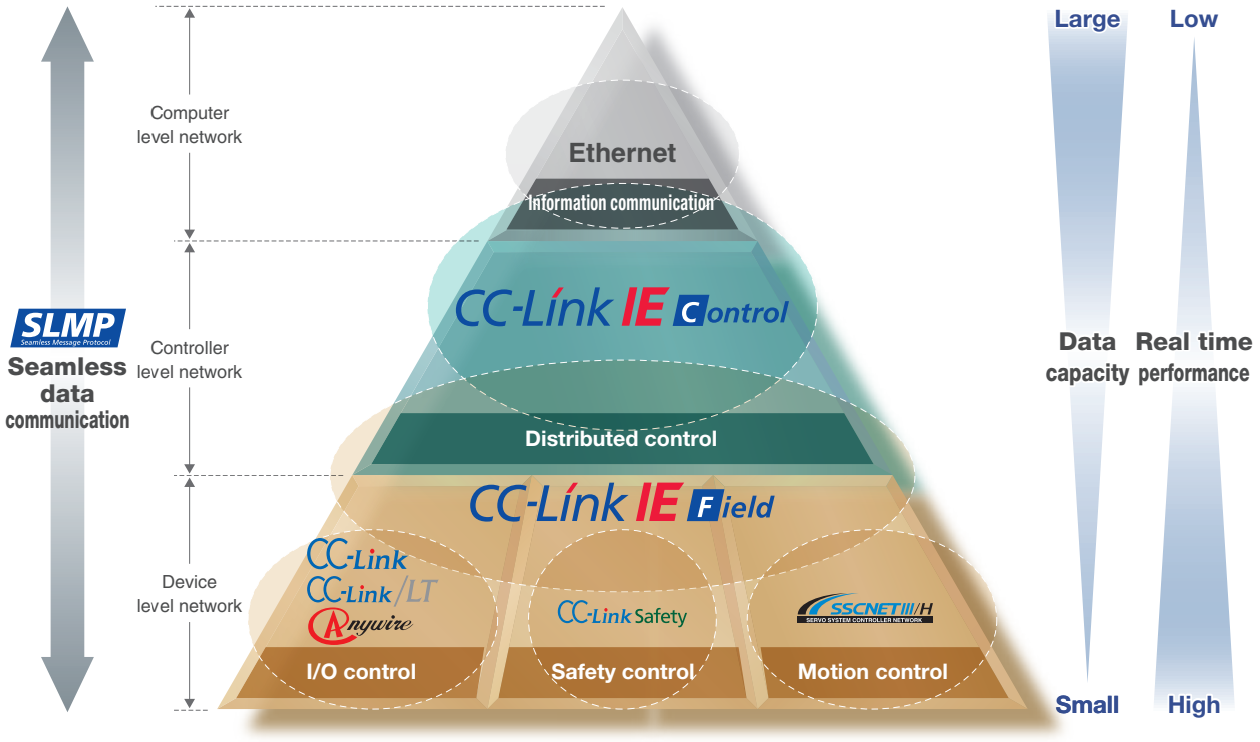
Anywire

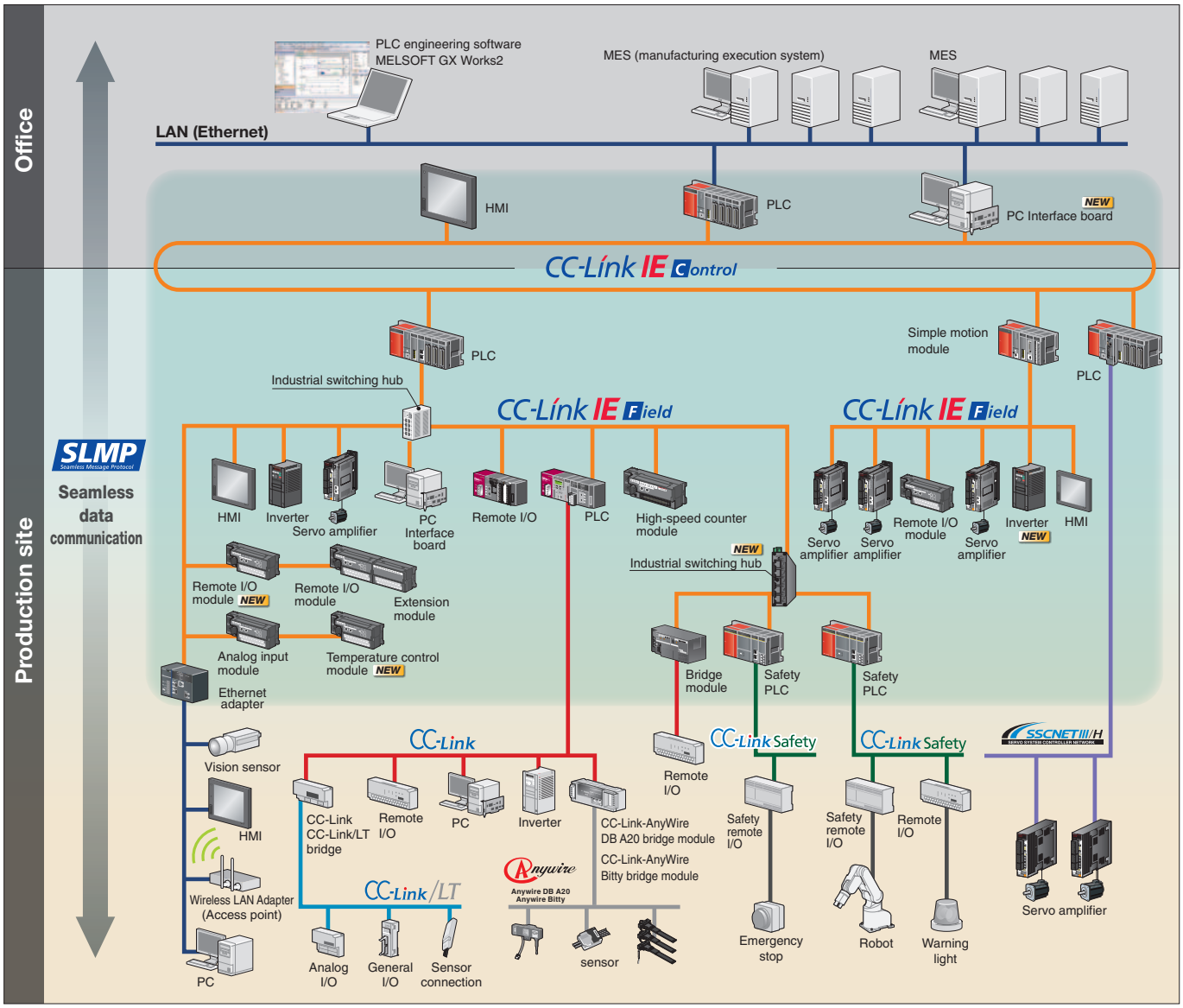
Anywire network with general-purpose electrical wires or robot cables enables to distribute control of sensors or actuators.

SSCNET III/H

SERVO SYSTEM CONTROLLER NETWORK

This is a Mitsubishi original servo system network designed for reliability. It utilizes an optical network for smooth, fast-response, and high-accuracy operation under all circumstances.





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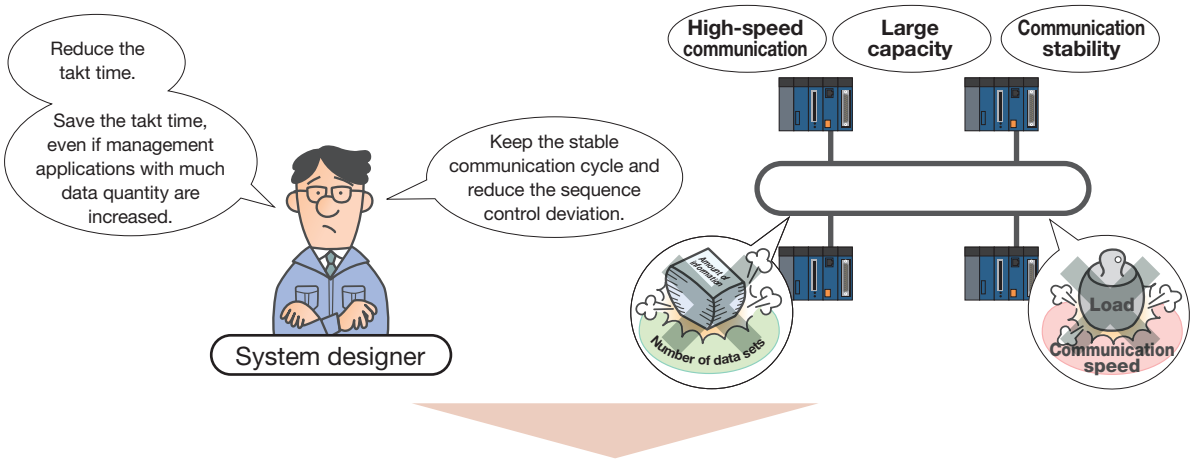
CC-Link IE Field

This versatile field network integrates distributed control, I/O control, safety control and motion control.
Its flexible wiring design allows for star, line, star and line mixed, or ring topology to ensure the network can meet the needs of any production line or equipment layout.

CASE 1

High-speed communication reduces takt time and stabilizes the control interval for higher performance



CC-Link IE Field makes it possible

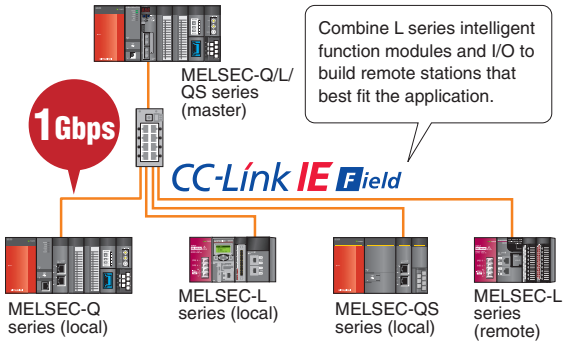
Communication speed 1Gbps | Maximum link registers 16Kwords

High-speed 1 Gbps communication

High-speed communication reduces takt time

The unprecedented data transfer speed provided by CC-Link IE Field Network increases the effectiveness of controller-to-controller and controller-to-field device communications, thus reducing takt time. It is now simple to establish high-speed I/O control and powerful distributed control systems.

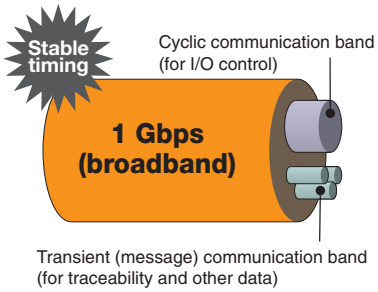
The ability to transfer large volumes of data enables high performance field devices to reach their full potential. With the ability to transfer large amounts of traceability data, systems capable of highly-detailed diagnostics can be constructed.



Cyclic communication is stable and reliable

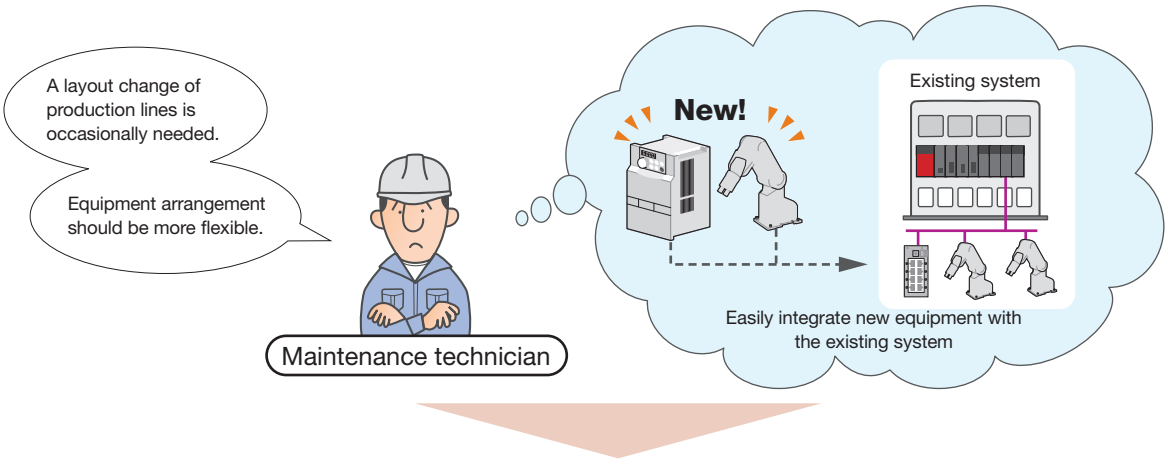
Improved quality of communication is achieved using a stable control period

The total bandwidth is divided between deterministic (cyclic) communication and transient (message) communication. The cyclic communication band, intended for I/O control, is fixed and will not suffer from degraded performance even when large volumes of traceability and diagnostic data are transferred via transient communication.



CASE 2

Flexibility allows easy addition of nodes and changes to the network layout



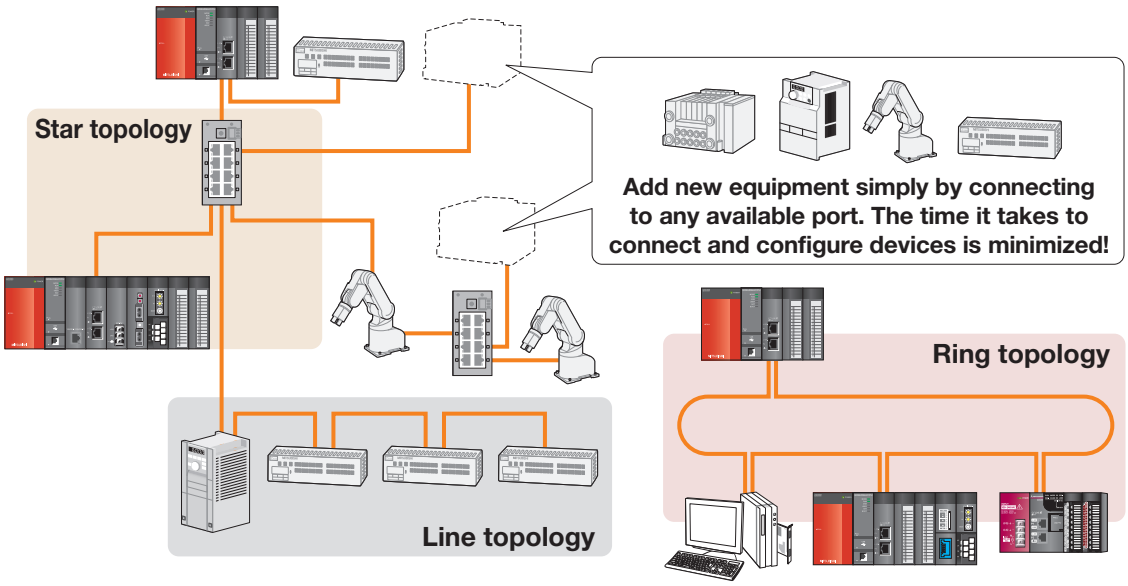
CC-Link IE Field makes it possible

Star topology | Line topology | Ring topology

Flexible network topology

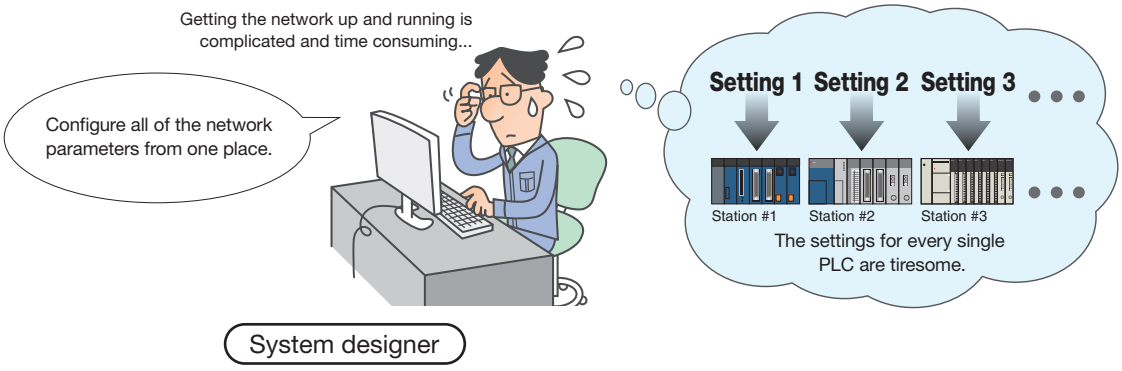
Add nodes or change the network layout entirely The system is highly flexible

Various network topologies may be used including star, line, star and line combination. This flexibility allows additional equipment to be simply connected to any available port, with little concern for restrictions.
Ring topology can be used also.(Star or line topology cannot be mixed with ring.)



CASE 3

Simplified network settings make configuring the network easy



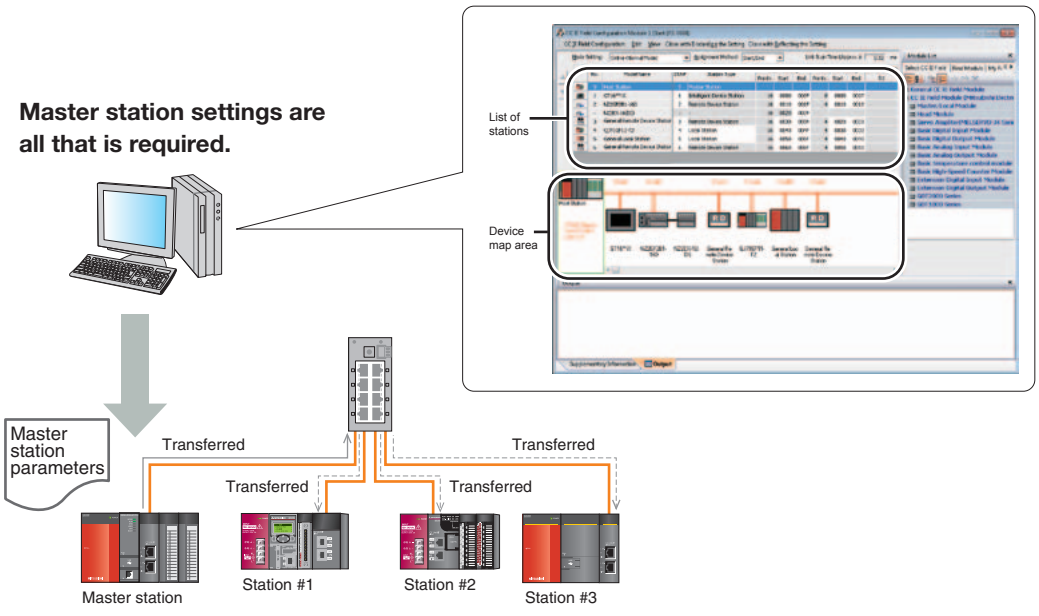
CC-Link IE Field makes it possible

Easy to configure parameters

Easy to configure settings

Just configure the master station to begin communications It's that easy!

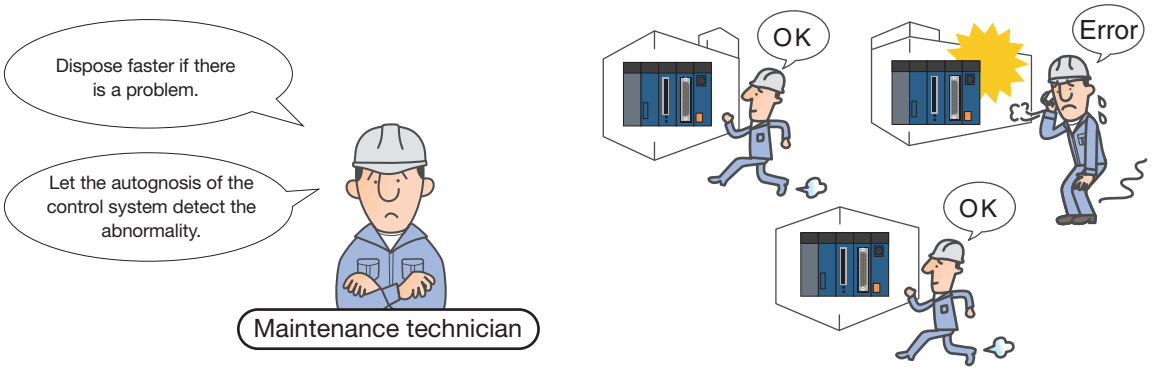
Using the engineering tool*1, only the master station's network parameter settings need to be configured, which greatly simplifies setup. Additionally, updating the system configuration is a breeze.



*1) MELSEC-Q Series and L Series are supported by GX Works2.
MELSEC-QS Series requires GX Developer.

CASE 4

Engineering tools make wiring problems and errors easy to diagnose



CC-Link IE Field makes it possible

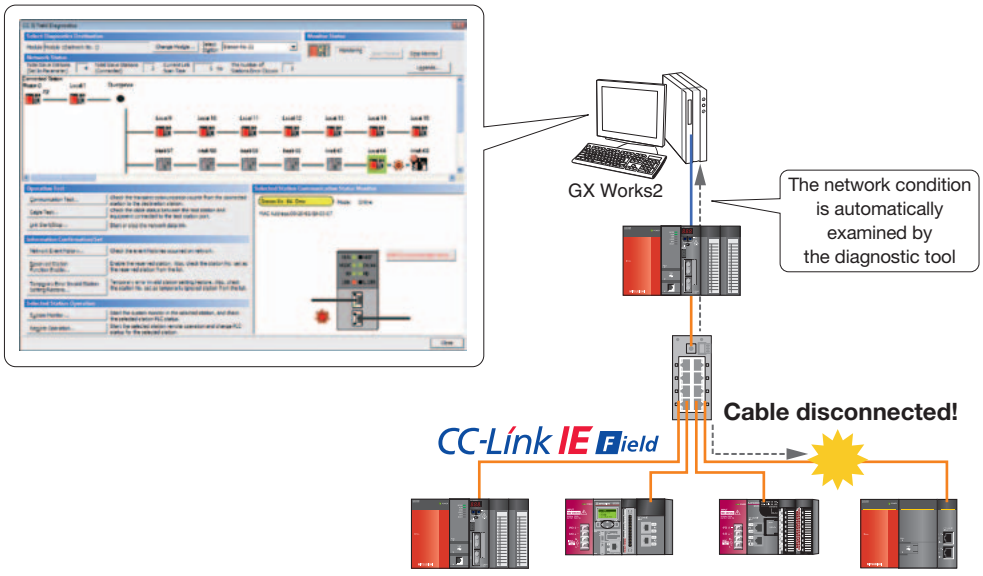
Network diagnosis at-a-glance

Easy diagnosis functions

Perform diagnostics and troubleshoot effectively regardless of experience

The engineering tool*1 enables you to identify network errors at a glance.
You can quickly identify the cause of a problem and implement the suggested remedy to minimize down time.

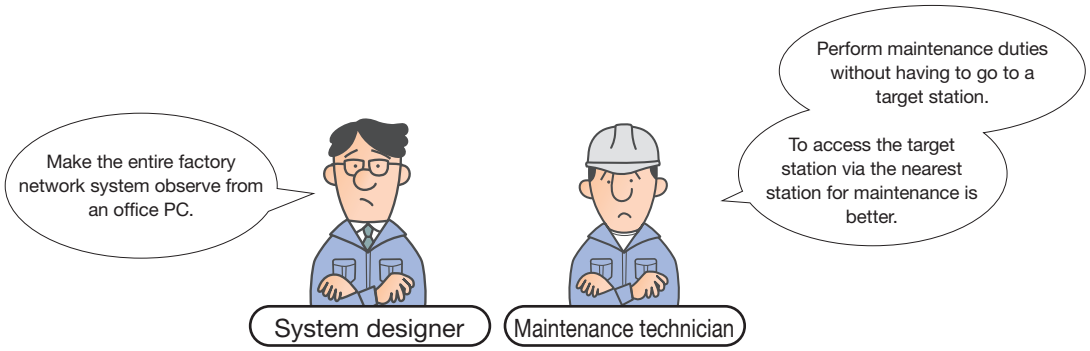
The network diagnostics tool automatically creates a graphical representation of the network. Using this diagram, cable problems and PLC errors are clearly visible allowing for fast response. Additionally, the condition of any remote station on the network can be monitored by directly accessing it from the same screen.



*1) MELSEC-Q Series and L Series are supported by GX Works2.
MELSEC-QS Series requires GX Developer.

CASE 5

Ease of connectivity means other stations can be accessed from anywhere, even across multiple networks!



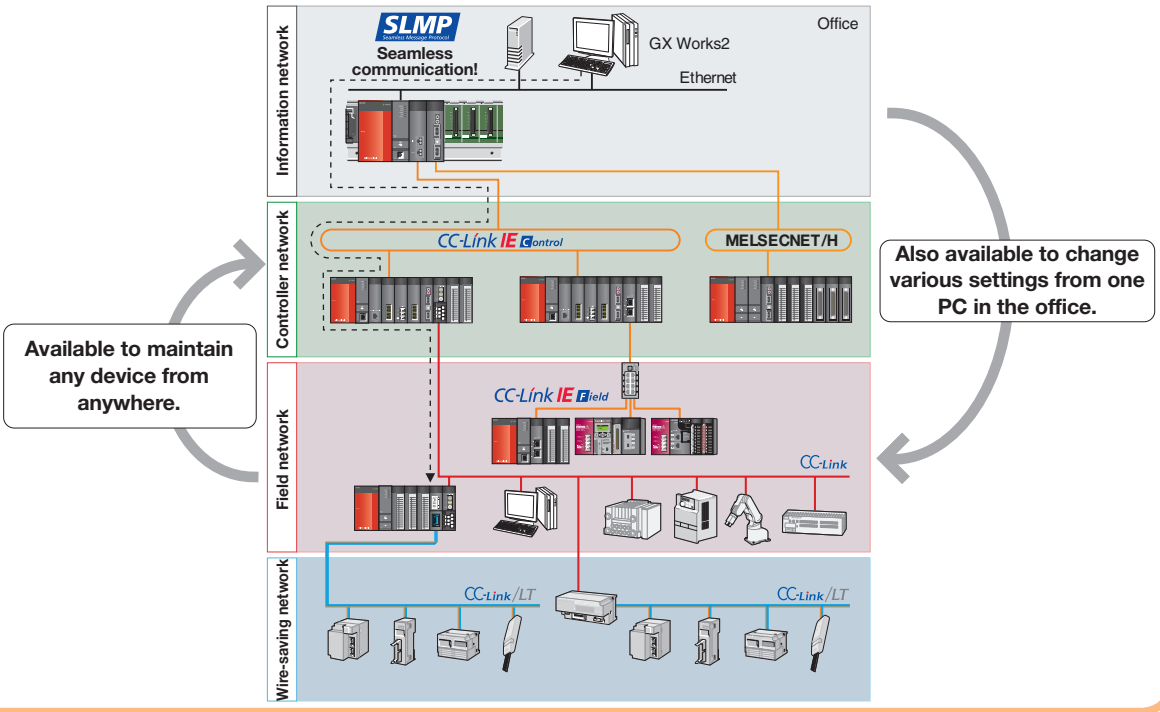
CC-Link IE Field makes it possible

Seamless networking

Seamless communication

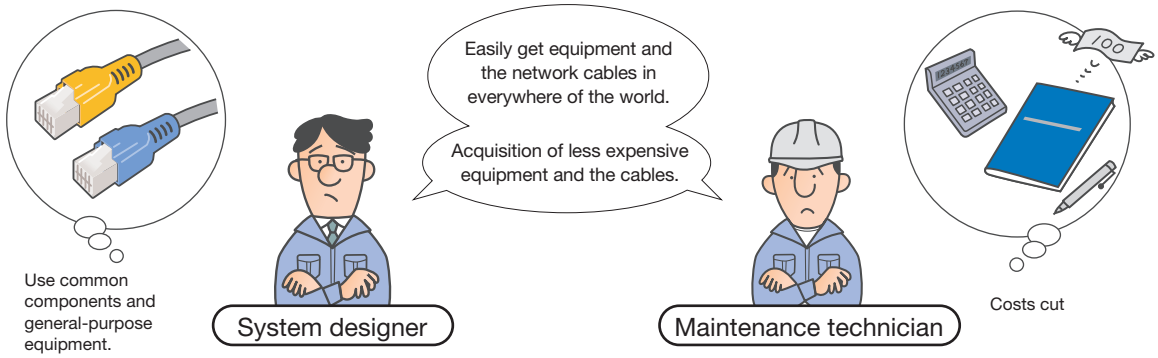
Remotely collect information and perform maintenance operations from anywhere

When joined together, different CC-Link networks operate seamlessly as one network so there is no need to pay attention to the network hierarchy. Once communication is established, data can be collected from field devices and maintenance duties can be performed. Everything from the field equipment to the upper level information system is accessible from any point on the network.



CASE 6

Cut costs by using commercially available Ethernet equipment



CC-Link IE Field makes it possible

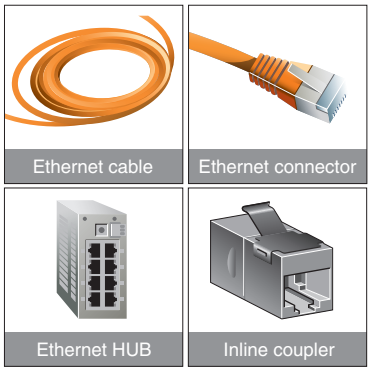
Ethernet-based

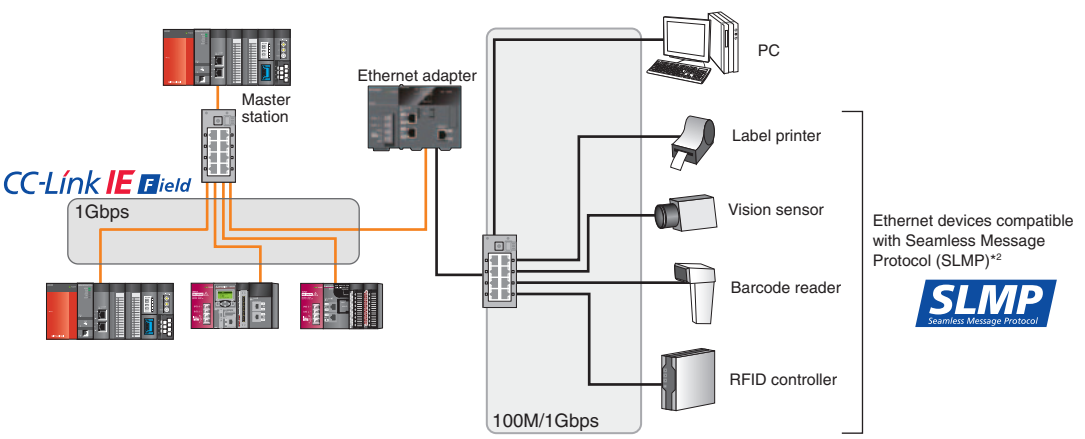
Ethernet-based network

Built on global standards

CC-Link IE Field Network has been designed to make use of commercially available Ethernet components including cables and hubs. Thanks to the common availability of these components, significant cost savings over alternative networks can be achieved.*1

Using the Ethernet adapter unit , Seamless Message Protocol (SLMP)*2 compatible Ethernet devices can be connected to CC-Link IE Field Network. A wide range of devices can be connected such as vision sensors and RFID controllers.

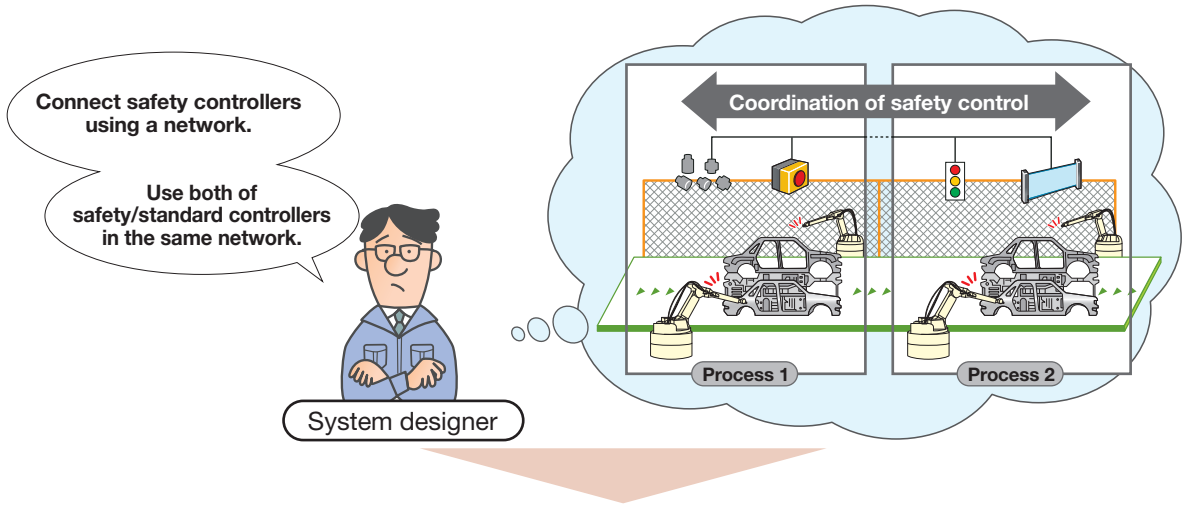




*1) Use the cables recommended by CC-Link Partner Association for CC-Link IE Field Network.
*2) Seamless message protocol (SLMP) is an integral part of CC-Link IE Field Network that supports transient communications.

CASE 7

Networked safety control signals allow cooperation between processes



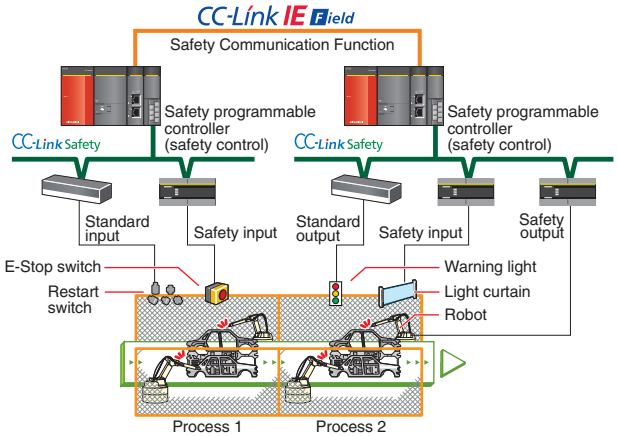
CC-Link IE Field makes it possible

Safety Communication Function

Safety Communication Function

Networked safety controllers allow cooperation between processes

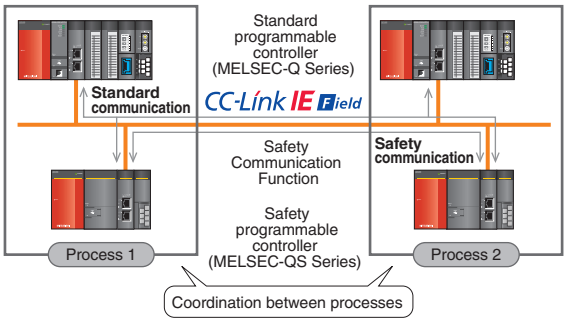
In order to share safety information between two or more safety CPUs, Safety Communication Function has been added to CC-Link IE Field Network.
By using Safety Communication Function, networked safety programmable controllers in each process of a production line may be safely shut-down in specific order during an emergency stop, for example.



Safety Communication Function

Safety and standard communication on the same network

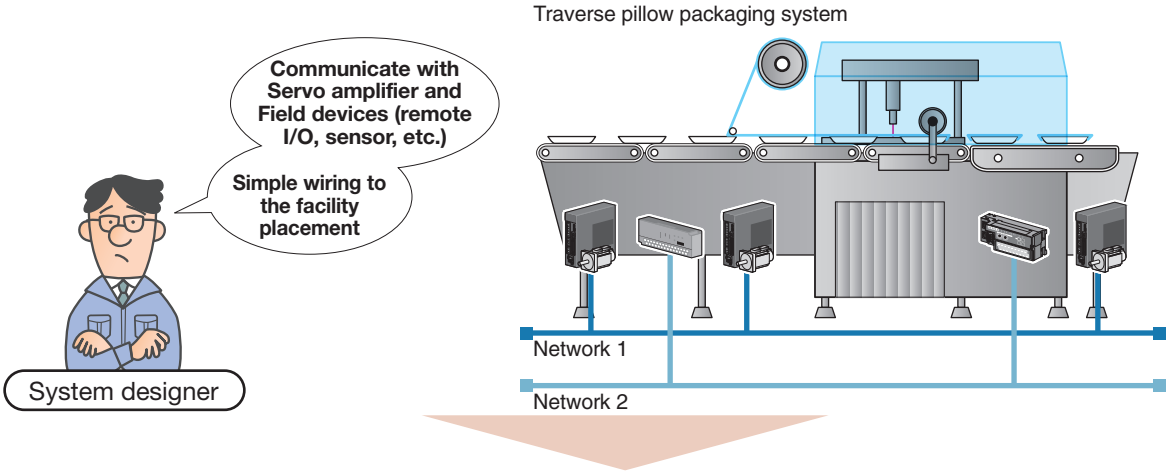
CC-Link IE Field Network can simultaneously perform standard communications and handle safety traffic. Safety signals such as an Emergency stop, green signal, etc. can be shared between programmable controllers at the same time as general signals like reset display, etc.



*1) MELSEC-Q Series and L Series are supported by GX Works2.
MELSEC-QS Series requires GX Developer.

CASE 8

Realize the combination use of field devices and motion control devices in a single network



CC-Link IE Field makes it possible

Motion control
Synchronous communication

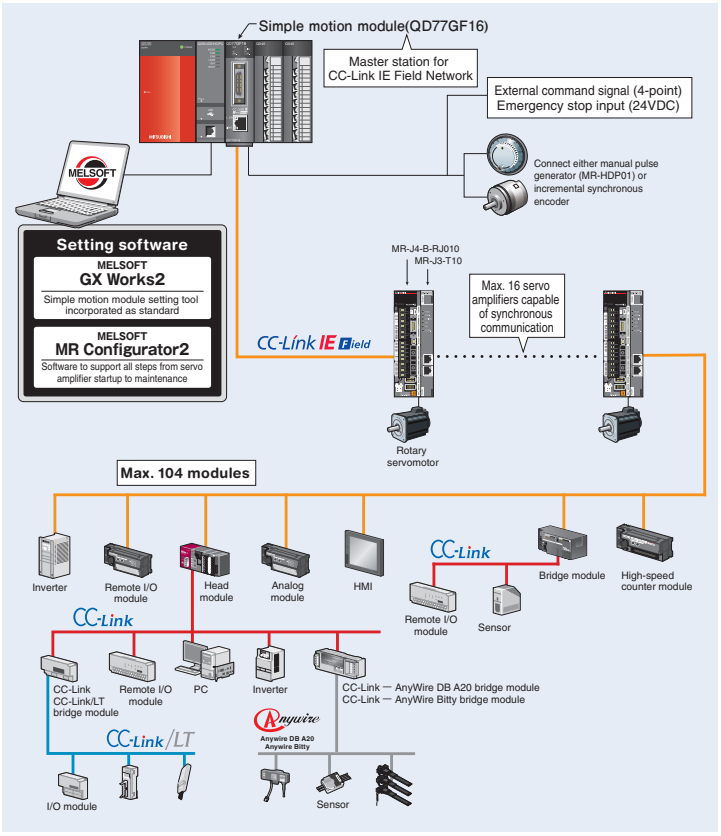
Synchronous control function for Simple motion module

Enable to mix the synchronous communication for motion control and standard communication on the same network

Simple motion module enables to mix Servo amplifiers and Field devices(remote I/O, sensor, etc.) in a single network.

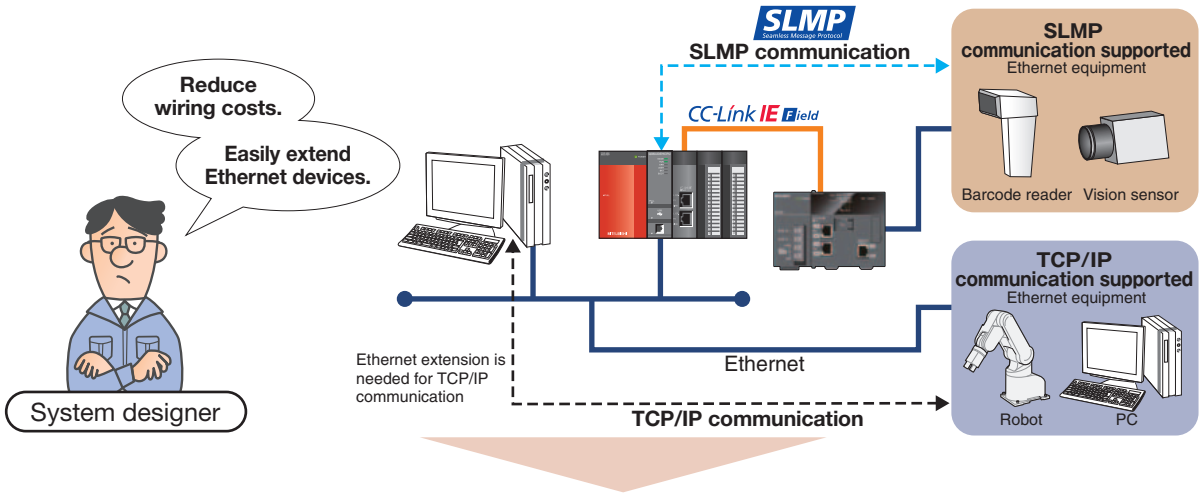
Performs interpolation control and synchronous control with simple parameter settings and starting from a sequence program.

Up to 16 axes can be controlled with this motion control. It supports food processing systems and processing machines that require synchronous control.



CASE 9

Seamlessly connect to TCP/IP communication compatible devices



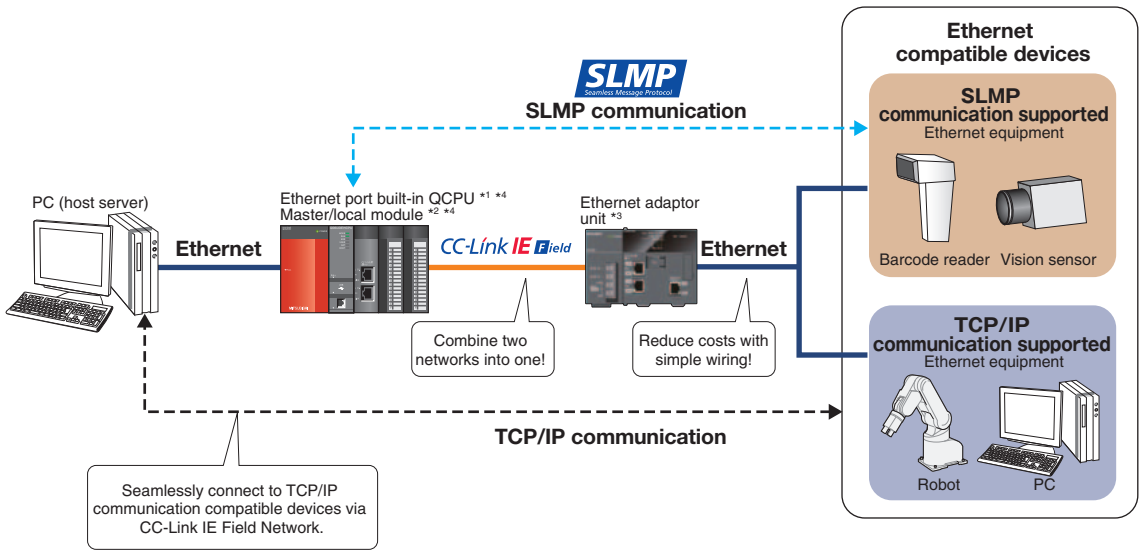
CC-Link IE Field makes it possible

Seamless collaboration

IP packet relay function

Perform TCP/IP communication via CC-Link IE Field Network

Communication with a designated IP address is possible over CC-Link IE Field Network. Wiring costs can be reduced since there's no need to lay Ethernet along CC-Link IE Field Network.

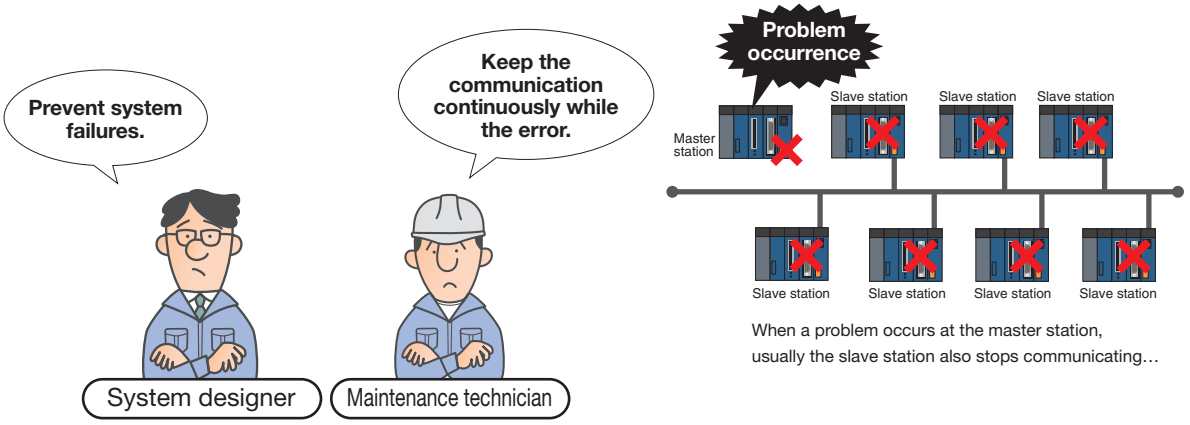


Versions supporting IP packet relay function
*1) Model version B or higher for which first five digits of serial number are 14022.
*2) Model version B or higher for which first five digits of serial number are 14023.
*3) Model version A or higher for which first five digits of serial number are 14022.

*4) GX Works (Version 1.77F or above) is required to set the parameters.

CASE 10

Avoiding failure of the entire network

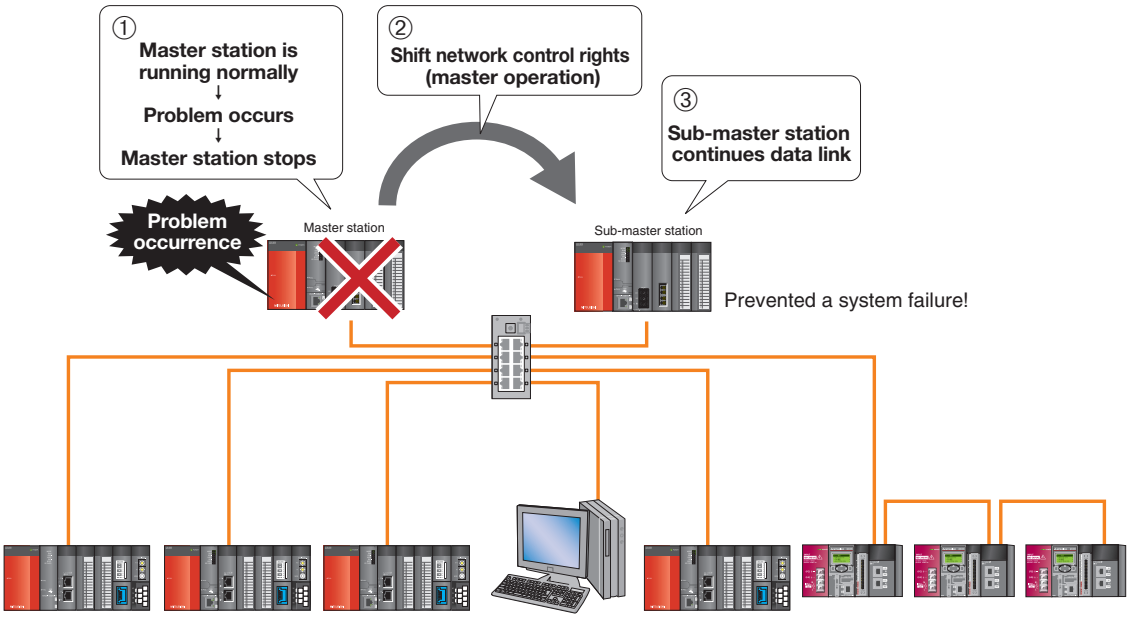


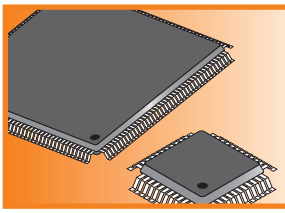
CC-Link IE Field makes it possible

Sub-master function

Continue data link even if master station stops

By connecting the master station and sub-master station in the same network, even if a problem occurs in the master station, the sub-master station step in for the master station and continue to control the slave station. Failure of the entire network because of a master station stop can be avoided.





Semiconductor production system

Seamless communication

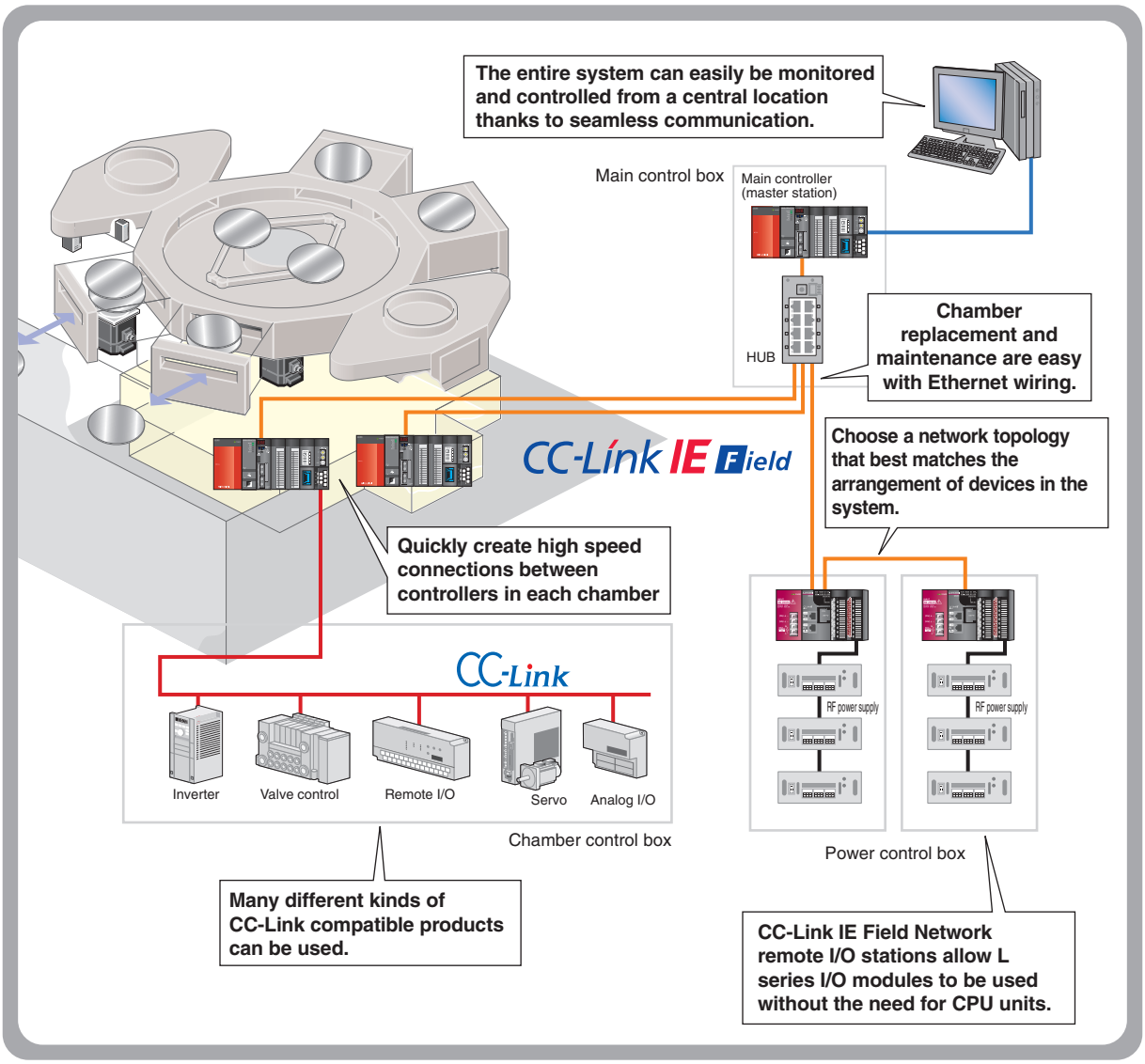
The entire system is operated and monitored from one place.

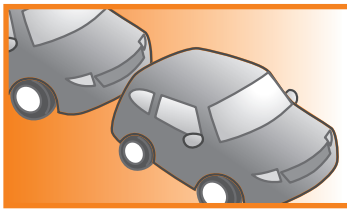
Flexible wiring

Star and line topologies can be mixed.

CC-Link integration

Incorporating CC-Link allows a wide variety of devices to be connected.





Automotive production process

Seamless communication

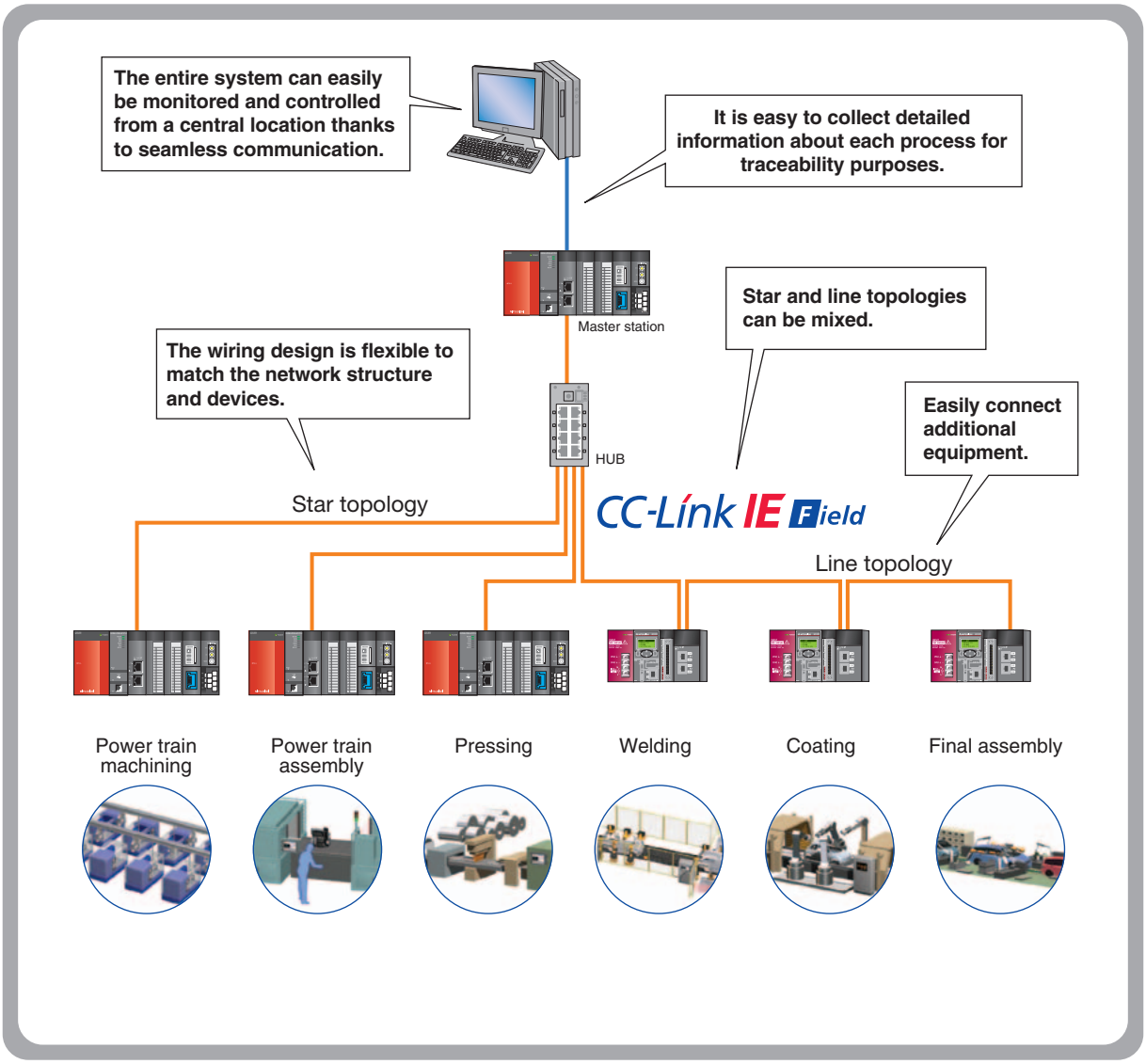
The entire system is operated and monitored from one place.

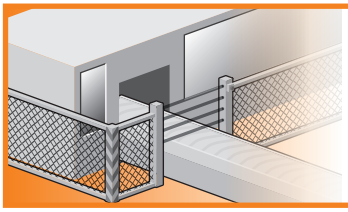
Flexible wiring

Star and line topologies can be mixed.

Distributed control

With the ability to share large amounts of data at high speed, controllers can work together in unison.





Support for production line safety (car welding line)

Coordination between safety processes

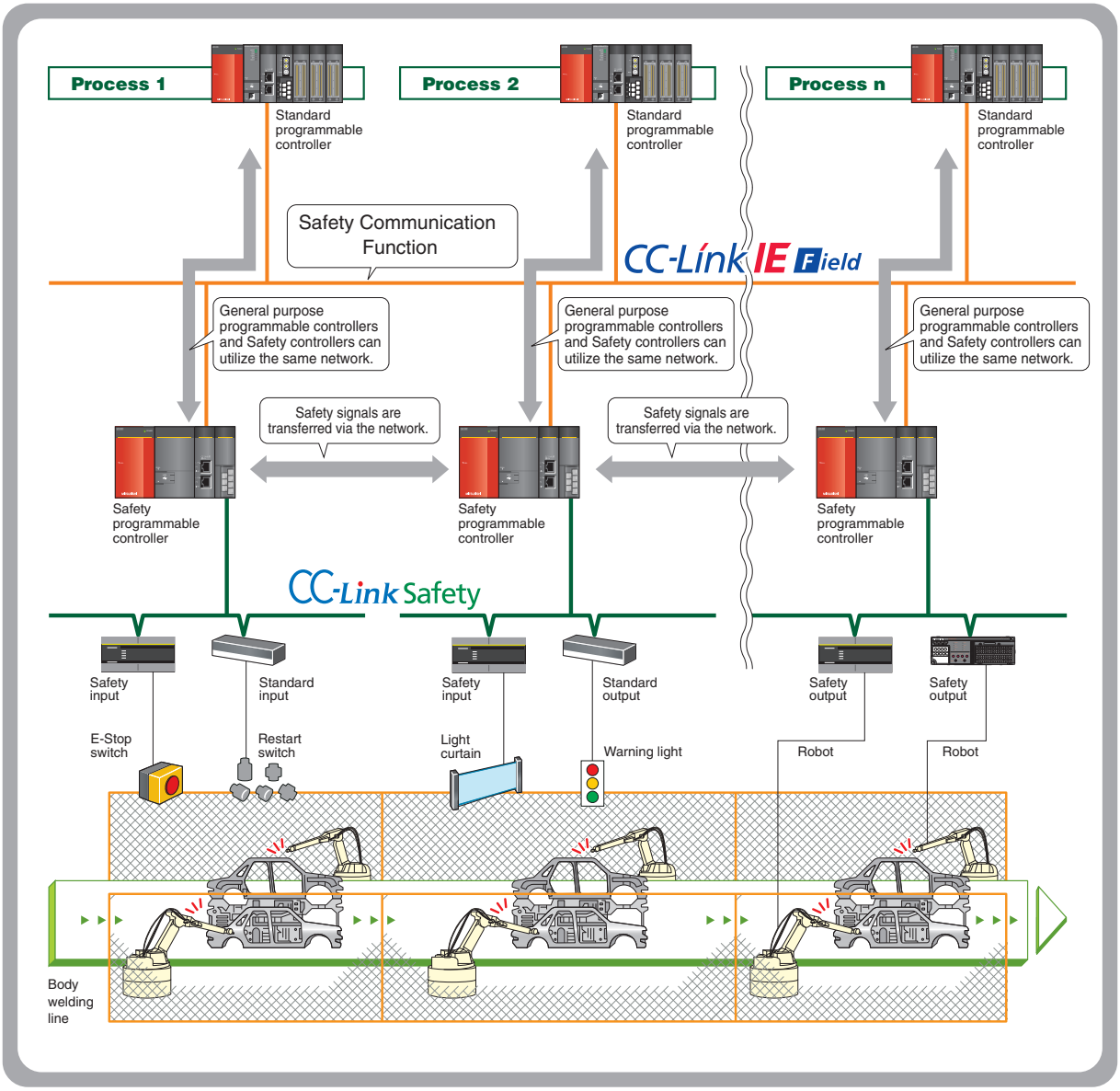
Control safety applications that require coordination between processes.

Simultaneously perform general communications

General information transfer and control and safety control can be performed using the same network.

Compatibility with CC-Link Safety

A wide range of equipment supporting CC-Link Safety can be used.



CC-Link IE Field Network master/local module

QJ71GF11-T2 / LJ71GF11-T2 / QS0J71GF11-T2*1

- Can operate as either a master or local station. Perfect for managing remote I/O control and distributed control.
- Devices from other stations can easily be accessed through transient communication using dedicated instructions.
- Function blocks for transient communication are available to further simplify messaging.
- The network can ensure 32bit data integrity using the station-based block data assurance function. (This ensures that pairs of word data are updated together during link refresh.)
- Safety Communication is available between MELSEC-QS series controllers.

*1) GX Developer (Version 8.98C or later) is required with network parameters settings of the master/local module.

QJ71GF11-T2 LJ71GF11-T2 QS0J71GF11-T2

Compatible PLC CPUs

- MELSEC-Q series Universal model QCPUs(High-speed Universal model QCPUs included), C Controller modules
- MELSEC-L series CPUs
- MELSEC-QS series Safety CPUs

For further details of compatible CPUs, refer to relevant product manuals.

CC-Link IE Field Network simple motion module

QD77GF16

- This module is used for the motion control. High-speed positioning control, synchronous control and cam control can be performed easily at a control cycle of 0.88ms, 1.77ms or 3.55ms just with simple parameter settings and startup from the sequence control.
- This module functions as the CC-Link IE Field Network's master station.*2 Communicate with servo amplifiers and field devices (remote I/O, sensors, etc.) with a single network. Up to 16 servo amplifier axes, and up to 104 field devices can be connected.

*2) Local station function, sub-master station function and safety communication function are not supported.

Compatible PLC CPUs

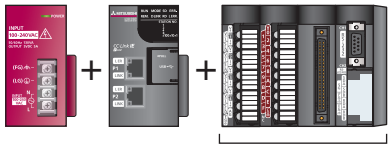
- MELSEC-Q series Universal model QCPUs(High-speed Universal model QCPUs included)

For further details of compatible CPUs, refer to relevant product manuals.

CC-Link IE Field Network head module for MELSEC-L Series*3

LJ72GF15-T2

- Using the head module, remote stations can be created from MELSEC-L Series I/O modules and intelligent function modules. Money can be saved on spare parts because the modules are the same as used with the CPU modules.
- Create remote I/O stations that just fit the application while maintaining the flexibility to grow. Save on wiring costs by condensing remote I/O to a single station.
- Access to other stations by way of remote I/O stations is possible, thus increasing the effectiveness of GX Works2.
- Troubleshooting, even after a power failure, is simple. Error information from remote I/O stations is automatically preserved by the master station.



Mix and match up to 10 L series I/O modules and intelligent function modules per station.

*3) For details of applicable modules, refer to the product manual.

CC-Link IE Field Network Block type remote module*1

- Easily disperse and layout the remote input/output modules to match your equipment.
- Connect with the extension module to the remote I/O or analog module to extend the number of I/O points.
- Compatible with the Synchronous communication function.*2 NEW
  The modules synchronize with a simple motion module(master station), then highly accurate synchronous operation for the slave stations is realized.

*1) CC-Link IE Controller Network master/local module(QJ71GF11-T2/LJ71GF11-T2), whose first 5-digit serial number is 14102 or later, is compatible with these I/O modules.

*2) NZ2GF2B1-16D, NZ2GF2B1-16T, NZ2GF2B1-16TE, NZ2GF2B-60AD4, NZ2GF2B-60DA4, NZ2GFCF-D62PD2

DC input module

- Response time can be set at 0ms, 0.2ms, 1ms, 1.5ms, 5ms, 10ms, 20ms and 70ms.
- Enables a high-speed input/output control with the Fast logic function.

18-point two-piece terminal block type

Synchronous communication available

Model	Input type		Input points	Rated input voltage/current	Wiring method	Connect Extended module
NZ2GF2B1-16D	DC input	Positive/negative common shared	16 points	24VDC(6mA)	1-wire	Available

NZ2GF2B1-16D

Sensor connector(e-CON) type

Model	Input type		Input points	Rated input voltage/current	Wiring method	Connect Extended module
NZ2GFCE3-16D NEW	DC input	Positive common	16 points	24VDC(4mA)	3-wire	Available
NZ2GFCE3-16DE NEW	DC input	Negative common	16 points	24VDC(4mA)	3-wire	Available

NZ2GFCE3-16D

MIL connector type

Model	Input type		Input points	Rated input voltage/current	Wiring method	Connect Extended module
NZ2GFCM1-16D NEW	DC input	Positive common	16 points	24VDC(4mA)	1-wire	Available
NZ2GFCM1-16DE NEW	DC input	Negative common	16 points	24VDC(4mA)	1-wire	Available

NZ2GFCM1-16D

Transistor output module

- The Number of ON times integration function easily accumulates the ON count of the connected output module.
- Enables a high-speed input/output control with the Fast logic function.

18-point two-piece terminal block type

Synchronous communication available

Model	Output type		Output points	Rated load voltage/Max. load current	Wiring method	Connect Extended module
NZ2GF2B1-16T	Transistor output	Sink type	16 points	12/24VDC(0.5A)	1-wire	Available
NZ2GF2B1-16TE	Transistor output	Source type	16 points	12/24VDC(0.5A)	1-wire	Available

NZ2GF2B1-16T

Sensor connector(e-CON) type

Model	Output type		Output points	Rated load voltage/Max. load current	Wiring method	Connect Extended module
NZ2GFCE3-16T NEW	Transistor output	Sink type	16 points	12/24VDC(0.5A)	3-wire	Available
NZ2GFCE3-16TE NEW	Transistor output	Source type	16 points	12/24VDC(0.5A)	3-wire	Available

NZ2GFCE3-16T

MIL connector type

Model	Output type		Output points	Rated load voltage/Max. load current	Wiring method	Connect Extended module
NZ2GFCM1-16T NEW	Transistor output	Sink type	16 points	12/24VDC(0.5A)	1-wire	Available
NZ2GFCM1-16TE NEW	Transistor output	Source type	16 points	12/24VDC(0.5A)	1-wire	Available

NZ2GFCM1-16T

Extension input/output module

- 16-point inputs/outputs can be extended for the remote I/O, analog, and high-speed counter modules.
- Extend the analog input module, the input signal from an external source with the Trigger conversion function controls the analog-digital conversion value's sampling timing.
- Extend to the high-speed counter module, the Cam switch function provides ON/OFF control at an accurate cycle.

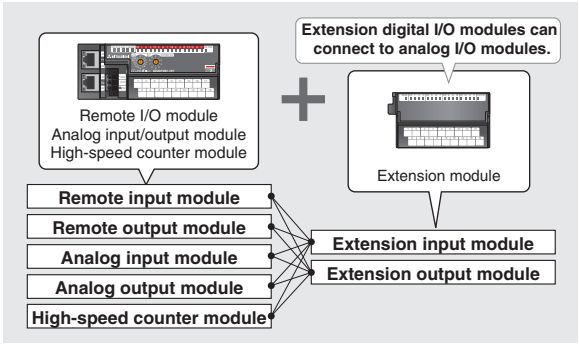
18-point two-piece terminal block type

Model	Input type		Input points	Rated input voltage/current	Wiring method
NZ2EX2B1-16D	DC input	Positive/negative common shared	16 points	24VDC(6mA)	1-wire

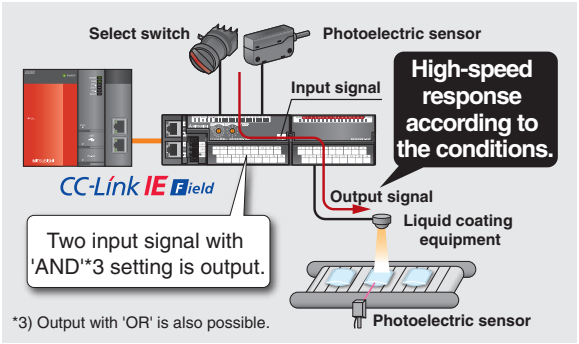
Model	Output type		Output points	Rated load voltage/Max. load current	Wiring method
NZ2EX2B1-16T	Transistor output	Sink type	16 points	12/24VDC(0.5A)	1-wire
NZ2EX2B1-16TE	Transistor output	Source type	16 points	12/24VDC(0.5A)	1-wire

NZ2EX2B1-16D

- Extension function
  The input/output can be extended with an extension module for the remote I/O, analog or high-speed counter modules.



- Fast logic function
  Output is controlled according to the input status of I/O module without going through the master station.



Analog input/output module

- Operates at the conversion speed of 400μs/channel (analog input module) and 100μs/channel (analog output module).
- By connecting an extension DC input module to the analog input module, it enables more precise A/D conversion speed control.(with the Trigger Conversion Function)

18-point two-piece terminal block type

Synchronous communication available

Model	Input/Output type	Occupied station	Number of channels	Connect Extended module
NZ2GF2B-60AD4	Voltage/current analog input	1 station	4 channels	Available
NZ2GF2B-60DA4	Voltage/current analog output	1 station	4 channels	Available

NZ2GF2B-60AD4

Temperature control module

- Operates at the sampling cycle of 250 ms/4 channels. Mixed control mode of standard control and heating-cooling control is equipped.
- The Simultaneous temperature rise, Peak current suppression, Self-tuning, and Heating-cooling control functions are available.

18-point two-piece terminal block type

Model	Input/Output type	Occupied station	Number of channels	Connect Extended module
NZ2GF2B-60TCTT4 NEW	Thermocouple input, transistor output, isolation between input channels	1 station	4 channels	Unavailable
NZ2GF2B-60TCRT4 NEW	Resistance thermometer input, transistor output, isolation between input channels	1 station	4 channels	Unavailable

NZ2GF2B-60TCTT4

High-speed counter module

- Operates the counting speed of input pulse at 8Mpps max. The duty ratio of the PWM output function can be set by 0.1μs and this enables precise output control.
- The Pulse measurement function with 100ns measurement resolution enables highly accurate pulse width measurement.

40 pins connector type

Synchronous communication available

Model	Input/Output type	Number of channels	Connect Extended module
NZ2GFCF-D62PD2	Differential input, DC input, coincidence output, transistor output(sink type)	2 channels	Available

NZ2GFCF-D62PD2

CC-Link IE Field Network interface board

PCI bus

Q80BD-J71GF11-T2 NEW

- Q80BD-J71GF11-T2 is compatible with PCI bus. It allows the connection of a personal computer to CC-Link IE Field Network.
- This interface board can be used as either a master station or local stations of CC-Link IE Field Network *1.

*1) The sub-master function and motion function are not supported.

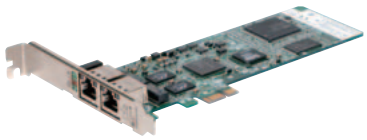
CC-Link IE Field Network interface board

PCI Express® bus

Q81BD-J71GF11-T2

- Q80BD-J71GF11-T2 is compatible with PCI Express® bus. It allows the connection of a personal computer to CC-Link IE Field Network.
- This interface board can be used as either a master station or local stations of CC-Link IE Field Network *2.

*2) The sub-master function and motion function are not supported.



Interface board operation environment

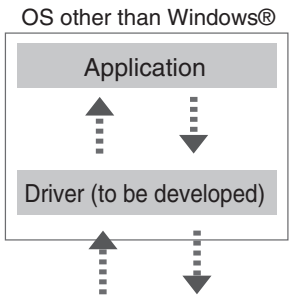
Item		Q80BD-J71GF11-T2 / Q81BD-J71GF11-T2
Personal computer		Windows® supported personal computer
	CPU	System requirements of the operating system must be met
	Required memory	
	PCI bus	Compliant with PCI standard Rev.2.2 (3.3VDC/5VDC, 32-bit bus, 33MHz frequency)
	PCI Express® bus	Compliant with PCI Express® bus standard 1.1 (Support 3.3VDC, maximum data bandwidth of 250MB/s, 100MHz frequency)
Operating system (English Version)*1*2		Microsoft® Windows XP® Professional Operating System, Service Pack 3 or later Microsoft® Windows XP® Home Edition Operating System, Service Pack 3 or later Microsoft® Windows Server® 2003 R2, Standard Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Enterprise Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Standard x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Vista® Home Basic Operating System, Service Pack 2 or later Microsoft® Windows Vista® Home Premium Operating System, Service Pack 2 or later Microsoft® Windows Vista® Business Operating System, Service Pack 2 or later Microsoft® Windows Vista® Ultimate Operating System, Service Pack 2 or later Microsoft® Windows Vista® Enterprise Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Standard Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Enterprise Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Standard x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Enterprise x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 R2, Standard Operating System Microsoft® Windows Server® 2008 R2, Enterprise Operating System Microsoft® Windows® 7 Home Premium (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Professional (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Ultimate (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Enterprise (32-bit version / 64-bit version) Operating System Microsoft® Windows Server® 2012 Standard Operating System Microsoft® Windows® 8 (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Pro (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Enterprise (32-bit version / 64-bit version) Operating System
Monitor		Resolution: 1024 x 768 dots or higher
Hard disk space		1GB or more
Removable media drive		CD-ROM disk drive
Programming language (English Version)*2		Microsoft® Visual Studio® .NET 2003 Visual Basic®*3 Microsoft® Visual Studio® 2005 Visual Basic®*3 Microsoft® Visual Studio® 2008 Visual Basic®*3 Microsoft® Visual Studio® 2010 Visual Basic® Microsoft® Visual Studio® 2012 Visual Basic®
		Microsoft® Visual Studio® .NET 2003 Visual C++® Microsoft® Visual Studio® 2005 Visual C++® Microsoft® Visual Studio® 2008 Visual C++® Microsoft® Visual Studio® 2010 Visual C++® Microsoft® Visual Studio® 2012 Visual C++®

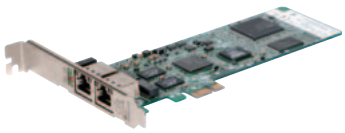
*1) Windows® XP (64-bit version) and Windows Vista® (64-bit version) are not supported.
*2) For a combination of the operation system and the programming language, refer to the Microsoft® Knowledge Base.
*3) 64-bit version user programs cannot be created using MELSEC data link library. Please use Visual Studio® 2010 or later.

Reference manual for the development of the PC interface board driver NEW

This reference manual (used to develop hardware drivers) is provided for customers who wish to use the CC-Link IE Field Network interface board with an operating system other than Windows®. This reference manual contains the following information that is required for driver development.

- Hardware information (PCI configuration, dual-port memory, register area memory map)
- Software information (Initial setting and parameter setting procedures for the driver)
- Sample code in C language with documentation (on the included CD-ROM)





CC-Link IE Field Network interface board Q81BD-J71GF11-T2

Type	Manual number	Inquiries
Driver Development Reference Manual for CC-Link IE Field Network Q80BD-J71GF11-T2 / Q81BD-J71GF11-T2	SH(NA)-081155ENG	Open System Center, Mitsubishi Electric Corporation, Nagoya Works TEL: +81-52-712-2369 FAX: +81-52-712-2419 E-mail: OSC@rj.MitsubishiElectric.co.jp

CC-Link IE Field Network Ethernet adapter module

NZ2GF-ETB

- Using Seamless Message Protocol (SLMP), a variety of Ethernet devices such as vision sensors and RFID controllers can be connected to CC-Link IE Field Network.
- Use a web browser to set station numbers, Ethernet options, and view error history.
- Compatible with 100Mbps/1Gbps transmission rates.

CC-Link IE Field Network CC-Link bridge module

NZ2GF-CCB

- The CC-Link Version 1 Remote I/O station and Remote device station connect to CC-Link IE Field Network via this module.
- Set the CC-Link parameters with simple switch operations.
- Link devices assigned to the bridge module are assigned as the CC-Link remote station's link devices on the original station No. order.
- CC-Link IE Field Network and CC-Link cycle transmission are independent.
- The remote buffer memory*1 of this module can check the status of CC-Link.

*1) To acquire the remote buffer memory, a sequence program for accessing the buffer memory is required. This program is provided by FB(Function Block) of MELSOFT Library. For the acquisition of FB, please contact your local Mitsubishi Electric sales office or sales representative.

Industrial switching hub

Powered by CONTEC

NZ2EHG-T8 / NZ2EHF-T8*2

NZ2EHG-T8 NZ2EHF-T8

- NZ2EHG-T8 is compatible with 10Mbps/100Mbps/1Gbps transmission rates.
- NZ2EHF-T8 is compatible with 10Mbps/100Mbps transmission rates.
- Equipped with Auto MDI/MDI-X and auto-negotiation functions.
- The automatic power adjustment function can reduce power consumption by up to 80 percent.*3
- Enables the unit to be used in ambient temperatures of 0 to 50°C, with fan less configuration.
- The DIN rail mounting mechanism provides the various types of module installation.

*2) NZ2EHF-T8 is unable to directly connect to CC-Link IE Field Network (for 1Gbps) ; therefore an Ethernet adapter module NZ2GF-ETB is required with the indirect connection for CC-Link IE Field Network.
NZ2EHG-T8 supports the direct connection.
*3) For comparison, power consumption was measured when all 8 ports were used and when none of them were used. This function is only available for NZ2EHG-T8.

NZ2EHG-T8 and NZ2EHF-T8 have a rated input supply voltage of 12 to 24 VDC.
These products were developed and are produced with Contec Co. Ltd.
Please note that the specifications and guarantee conditions of the products are different from the MELSEC Series products and the same Contec manufacturing products.

Industrial switching hub

Produced by Mitsubishi Electric System & Service

DT135TX NEW

- Compatible with 10Mbps/100Mbps/1000Mbps transmission rates, 5 ports. and the compact size unit with 12VDC up to 24VDC wide voltage-range.
- Passed the recommendation product examination of CC-Link Association.
- Equipped with Auto MDI/MDI-X and auto-negotiation functions.
- Possible to input 2 systematic power supplies by the constitution of redundant power supply.
- Supports the line, star, line and star combination network topologies.
- Complies with UL/CE standards, and supports export for Europe and North America.

Please note that the specifications and guarantee conditions of the product is different from the MELSEC Series products.

Wireless LAN Adapter*1*2

Powered by CONTEC

NZ2WL-US (U.S.A)/NZ2WL-EU (Europe)/NZ2WL-CN (China)/NZ2WL-KR (Korea)/NZ2WL-TW (Taiwan)

- Wireless LAN (Ethernet) in the factory provides flexibility in installing new line or alteration layouts. Wireless saves your wiring costs.
- Simply installing wireless LAN adapters makes existing FA equipment wireless.
- Compatible with the latest security standards of WPA2/WPA. The security prevents unauthorized access from outside.

*1) Each product can be used only in the respective countries. Supported both Access point and Station.

*2) These LAN adapters cannot directly connect to CC-Link IE Field Network at 1 Gbps. Please use an Ethernet adapter module(NZ2GF-ETB) for the indirect connection.

Please note that the general specifications and guarantee conditions of these products are different from those of programmable controllers (such as MELSEC series) and CONTEC products. For further details, refer to the product manual.

GOT2000/1000 Series CC-Link IE Field Network communication unit

GT15-J71GF13-T2

- GOT communication unit for CC-Link IE Field Network.
- The unit can be used as an intelligent device station in CC-Link IE Field Network when you build a system that includes HMI display(GOT).

Supported models GT27, GT16, GT15

CC-Link IE Field Network option card for FREQROL-A800 Series Inverter

FR-A8NCE NEW

- The CC-Link IE Field Network plug-in option card could be installed inside a FREQROL-A800 series inverter module.
- With ultra high-speed communication, various inverter functions could be monitored at faster rates. In addition, multiple monitor functions and multiple parameter read/write could be executed simultaneously for improved maintenance capabilities.
- Due to the nature of this seamless network, monitoring and configuration of the inverter is made simple even from an advanced information system.

CC-Link IE Field Network interface module for general-purpose AC Servo MELSERVO-J3/J4 Series

MR-J3-T10

- The MR-J4-B-RHJ010 servo amplifier mounting the MR-J3-T10 interface module is compatible with the motion control of the QD77GF16 simple motion module in CC-Link IE Field Network.
- The servo amplifier can be synchronized with the synchronous axes control and the interpolation axes control via the simple motion module.
- The MR-J3-T type servo amplifier is equipped with the positioning control function.
- The amplifier via the MR-J3-T10 interface can set the position data and the speed data in CC-Link IE Field Network.

MR-J3-T10

MR-J4-B-RJ010
MR-J3-T10

Cable and accessory

Ethernet cable

Produced by Mitsubishi Electric System & Service

SC-E5EW Series

- 1000BASE-T Standard compliant.
  This Ethernet cable with double shield has an outstanding shield performance.
- Available in lengths from 0.5m, and 1m increments from 1m to 100m. Available in lengths from 1m to 45m for indoor movable cables.

Item	SC-E5EW-S□M*1	SC-E5EW-S□M-MV*2	SC-E5EW-S□M-L*1
Cable type	Category 5e or higher, (Double shielded/STP) Straight cable		
Number of wires in core	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, 6.8mm	flame retardant PVC, 6.5mm	LAP sheath, 10mm
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) □:Cable length(up tp 100m in 1 meter increments.)
*2) □:Cable length(up to 45m in 1 meter increments.)

Inline coupler

Produced by Mitsubishi Electric System & Service

SPAD-RJ45S-E5E

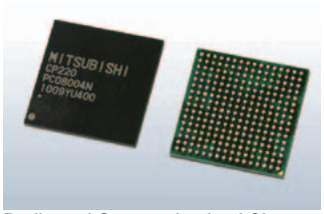
- 8 conductor RJ-45 female to female, shielded, fits standard type Keystone Wall Plate.
- Can be used in patch panels, wall jacks, or to extend cable lengths.

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

Dedicated Communication LSI

CP220

- CP220 is a dedicated communication LSI for intelligent device stations of CC-Link IE Field Network.
- CP220 allows you to simply develop CC-Link IE Field Network products without concern about communication protocol.
- CP220 allows you to perform cyclic transmission (RX/RY: 2048 bits each; RWr/RWw: 1024 words each) and transient transmission.
- CP220 automatically performs a major portion of the communication functions, thereby reducing the MPU (microcomputer) load and enabling designs that employ low-performing MPUs as well.
- The CD-ROM that comes with the reference manual includes C-language sample codes and circuit examples (PDF), making it possible to reduce development costs and shorten the development process.



Dedicated Communication LSI

Reference manual (CD-ROM)

Type	Model	Packaging Unit	Outline
Dedicated communication LSICP220	NZ2GACP220-60	60 pieces	CC-Link IE Field Network Intelligent Device Station Communication LSI CP220 Plastic BGA (ball grid array), 17x17 mm, 256 pins (16x16)
	NZ2GACP220-300	300 pieces	

Type	Manual No.	Manual Name	Inquiries
Reference manual	SH(NA)-081017ENG	CC-Link IE Field Network Intelligent Device Station Communication LSI CP220 Reference Manual	Open System Center, Mitsubishi Electric Corporation, Nagoya Works TEL: 052-712-2369 FAX: 052-712-2419 E-mail: OSC@rj.MitsubishiElectric.co.jp

Performance specifications

Item			MELSEC-Q Series master/local module QJ71GF11-T2	MELSEC-L Series master/local module LJ71GF11-T2	MELSEC-QS Series master/local module QS0J71GF11-T2	Interface board for PC Q80BD-J71GF11-T2 Q81BD-J71GF11-T2	MELSEC-Q Series simple motion module QD77GF16
Maximum link points per network		RX	16384 points, 2 Kbytes				8192 points, 1 Kbytes
		RY	16384 points, 2 Kbytes				8192 points, 1 Kbytes
		RWr	8192 points, 16 Kbytes				1024 points, 2 Kbytes
		RWw	8192 points, 16 Kbytes				1024 points, 2 Kbytes
Maximum link points per station	Master station	RX	16384 points, 2 Kbytes				8192 points, 1 Kbytes
		RY	16384 points, 2 Kbytes				8192 points, 1 Kbytes
		RWr	8192 points, 16 Kbytes				1024 points, 2 Kbytes
		RWw	8192 points, 16 Kbytes				1024 points, 2 Kbytes
	Local station*1	RX	2048 points, 256 bytes				–
		RY	2048 points, 256 bytes				–
		RWr	1024 points, 2048 bytes				–
		RWw	1024 points, 2048 bytes				–
	Sub-master station*1	RX	2048 points, 256 bytes		–	–	–
		RY	2048 points, 256 bytes		–	–	–
		RWr	1024 points, 2048 bytes		–	–	–
		RWw	1024 points, 2048 bytes		–	–	–
	Intelligent device station	RX	2048 points, 256 bytes		–	2048 points, 256 bytes	
		RY	2048 points, 256 bytes		–	2048 points, 256 bytes	
		RWr	1024 points, 2048 bytes		–	1024 points, 2048 bytes	
		RWw	1024 points, 2048 bytes		–	1024 points, 2048 bytes	
	Remote device station	RX	128 points, 16 bytes		–	128 points, 16 bytes	
		RY	128 points, 16 bytes		–	128 points, 16 bytes	
		RWr	64 points, 128 bytes		–	64 points, 128 bytes	
		RWw	64 points, 128 bytes		–	64 points, 128 bytes	
Ethernet		Communication speed	1Gbps				
		Connection cable	1000BASE-T Ethernet cable (Category 5e or higher), (Double shielded/STP) Straight cable				
		Station-to-station distance (max.)	100m				
		Topology	Line type, star type, line/star composite type, ring type*2				Line type, star type, line/star composite type
Overall cable distance (max.)		Line type	12000m (When 1 master station and 120 slave stations are connected)				
		Start type	Depends on system configuration*3				
		Ring type	12100m(When 1 master station and 120 slave stations are connected)				–
Maximum stations per network			121 stations (1 master station. 120 slave stations (including sub-master station))		121 stations*4(1 master station(general or safety station). 120 slave stations)	121 stations (1 master station. 120 slave stations)	121 stations (1 master station, 120 slave stations (16 servo amplifiers, 104 I/O stations))
Maximum number of networks			239				

*1) : The maximum number of points for one master station is listed. A sub-master station and a local station can receive data from other stations in addition to this number of points
*2) : The ring type requires a master/local module (QJ71GF11-T2) whose first five serial number digits are “12072” or higher.
*3) : A hub is required to use the star type wiring. Up to 20 hubs can be connected.
*4) : 32 safety stations can be connected.

For further details, please refer to the relevant product manuals.

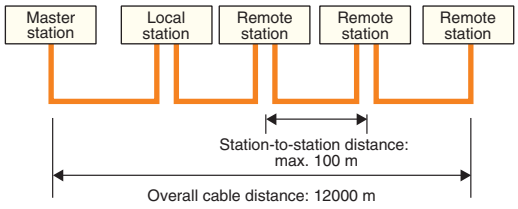
Cable specifications

Item		Specifications
Ethernet cable		Category 5e or higher, (Double shielded/STP) Straight cable
	Standard	The following conditioning cables: • IEEE802.3 (10000BASE-T) • ANSI/TIA/EIA-568-B (Category 5e)
	Connector	RJ-45 connector with shield

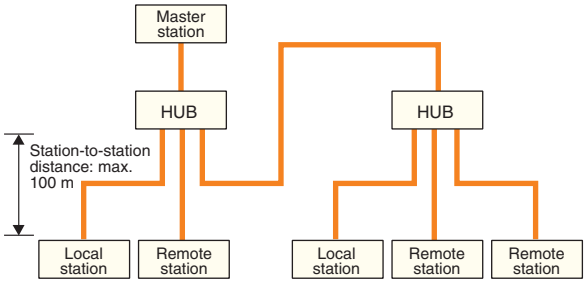
Note) Use the cables recommended by CC-Link Partner Association for CC-Link IE Field Network.
CC-Link IE Field Network cables are not compatible with CC-Link IE Controller Network.

Network topology examples

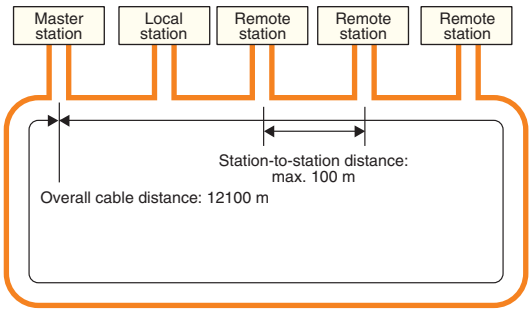
Line topology



Star topology



Ring topology



General specifications

The general specifications are applicable to all products in the Q Series and L Series unless an exception is indicated. The Q Series and L Series equipment is designed to be installed and operate within the environment specified by the general specifications. For the general specifications of products provided by other manufacturers, contact the relevant manufacturer or distributer.
The general specifications of jointly developed products may be different.
For more information, please refer to the product manuals or contact your local Mitsubishi representative for details.

Item	Specifications					
Operating ambient temperature	0 to 55°C					
Storage ambient temperature	-25 to 75°C*1					
Operating ambient humidity	5 to 95%RH*2, non-condensing					
Storage ambient humidity	5 to 95%RH*2, non-condensing					
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2		Frequency	Acceleration	Half amplitude	Sweep count
		Under intermittent vibration	5 to 8.4Hz	–	3.5mm (0.14 inches)	10 times each in X, Y, Z directions
			8.4 to 150Hz	9.8m/s^2	–	
		Under continuous vibration	5 to 8.4Hz	–	1.75mm (0.069 inches)	–
			8.4 to 150Hz	4.9m/s^2	–	
Shock resistance	Compliant with JIS B 3502, IEC 61131-2 (147 m/s2, 3 times in each of 3 directions X, Y, Z)					
Operating ambience	No corrosive gases					
Operating altitude*3	2000m max.					
Installation location	Inside control panel					
Overvoltage category*4	II max.					
Pollution level*5	2 max.					
Equipment category	Class I					

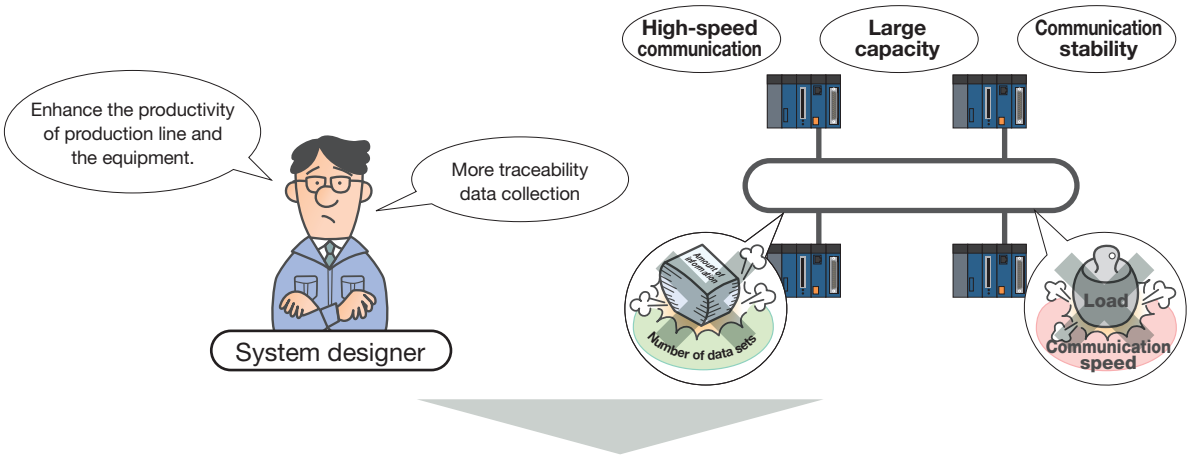
*1) The storage ambient temperature is -20 to 75°C if the system includes the AnS/A series modules.
*2) The operating ambient humidity and storage ambient humidity are 10 to 90%RH if the system includes the AnS/A series modules.
*3) Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0m.
Doing so can cause a malfunction.
When using the programmable controller under pressure, please contact your sales representative.
*4) 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.
*5) 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. A temporary conductivity caused by condensing must be expected occasionally.

CC-Link IE Control

This highly-reliable control network is designed to transfer large amounts of data at real-time speeds between PLCs.
CC-Link IE Controller Network includes a variety of functions and allows seamless communications among other CC-Link networks.

CASE 1

High speed communication enables the sharing of large amounts of data in real time



CC-Link IE Control makes it possible

Communication speed: 1Gbps
Maximum link registers: 128Kwords

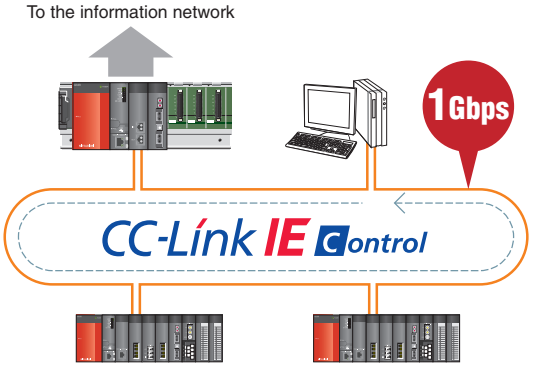
1 Gbps high-speed communication

Deterministic, reliable performance helps to reduce takt time

CC-Link IE Control Network is based on gigabit Ethernet technology but uses an open, deterministic protocol to maintain a constant link scan time.
The master/local module is compatible with nearly every Q series CPU module, allows large amounts of data to be shared among controllers at high speed and enables large scale distributed control systems.

The maximum number of link registers per station has been increased 8 fold!
Transfer large amounts of recipe or other data in a single link scan!

16 K words ➡ 128 K words*1

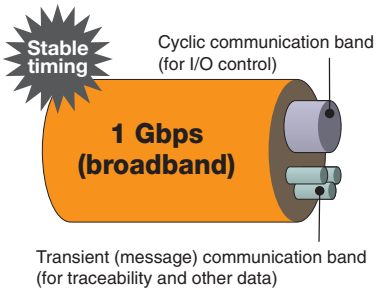


*1) To perform diagnostics or configure a network that uses more than 16 K link points per station, please use GX Works2 (Version 1.31H or later).

Cyclic communication is stable and reliable

Improved quality of communication is achieved using a stable control period

The total bandwidth is divided between deterministic (cyclic) communication and transient (message) communication. The cyclic communication band, intended for I/O control, is fixed and will not suffer from degraded performance even when large volumes of traceability and diagnostic data are transferred via transient communication.



CASE 2

The dual-loop fiber optical cabling design is exceptionally fault-tolerant

CC-Link IE Control makes it possible

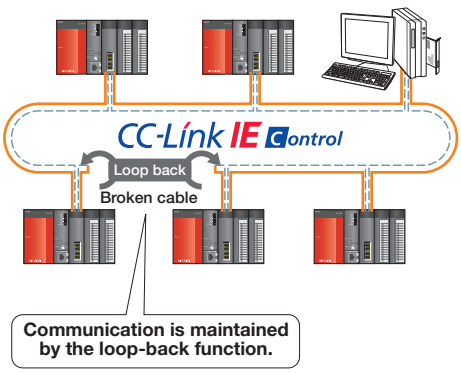
Multi-mode optical fiber cable | External power supply

Ultra-reliable ring topology network

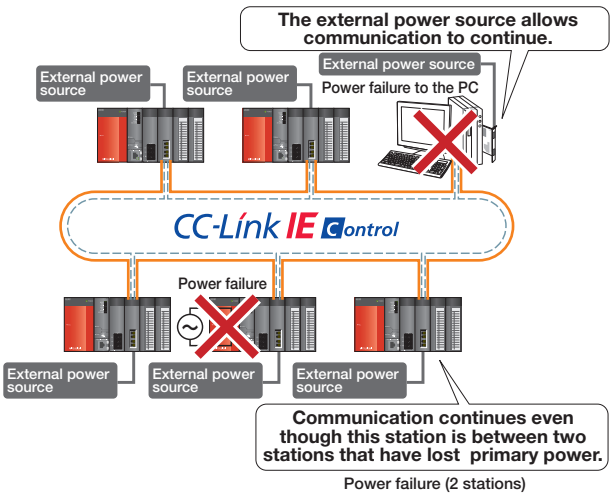
Designed to continue functioning even in the worst possible scenarios

The use of fiber optic cables which are completely immune to EMI and RFI noise allows the network to function in environments where other networks cannot. The dual loop design allows the network to continue functioning even if cables become damaged or the power is lost to a station. Additionally, CC-Link IE stations can be powered using an external supply. That allows communication to continue normally in the event of a loss of the primary power supply, without relying on the loop-back function.

Loop-back function

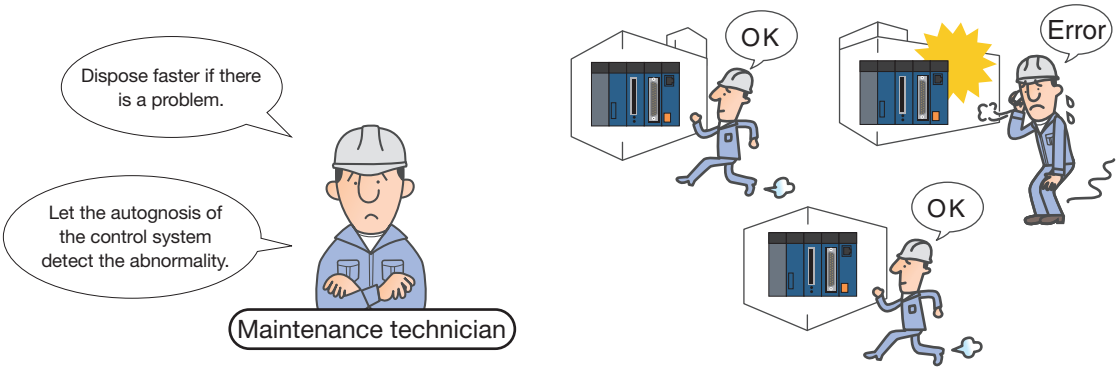


External power supply



CASE 3

Engineering tools make wiring problems and errors easy to diagnose



CC-Link IE Control makes it possible

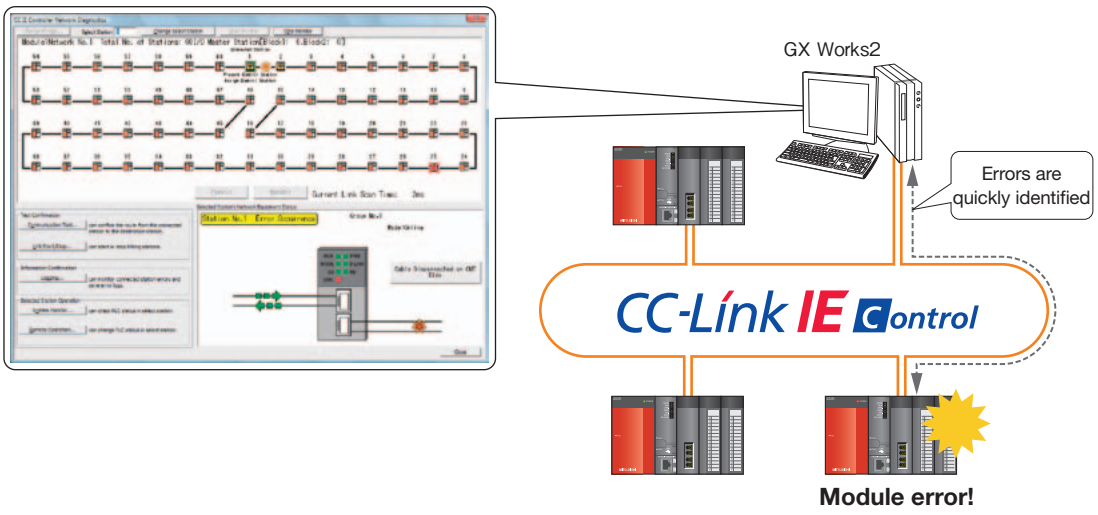
Network diagnosis at-a-glance

Easy diagnosis functions

Perform diagnostics and troubleshoot effectively regardless of experience

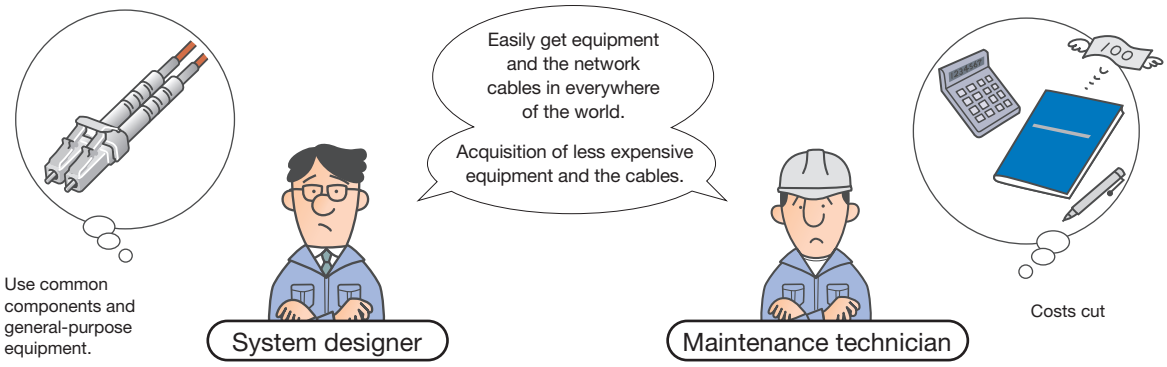
GX Works2 enables you to identify network errors at a glance. You can quickly identify the cause of a problem and implement the suggested remedy to minimize down time.

The network diagnostics tool automatically creates a graphical representation of the network. Using this diagram, cable problems and PLC errors are clearly visible allowing for fast response. Additionally, the condition of any remote station on the network can be monitored by directly accessing it from the same screen.



CASE 4

Cut costs by using commercially available Ethernet equipment



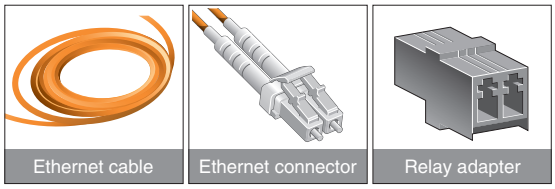
CC-Link IE Control makes it possible

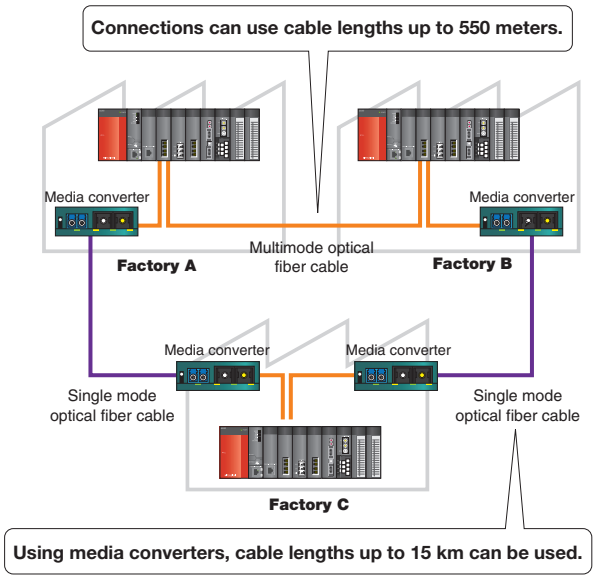
Ethernet-based

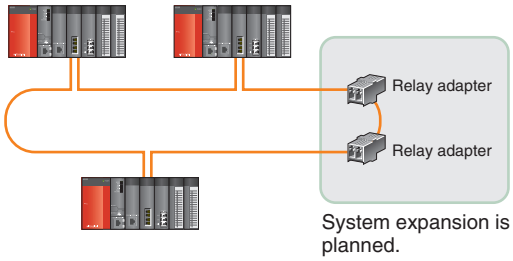
Ethernet-based network

Built on global standards

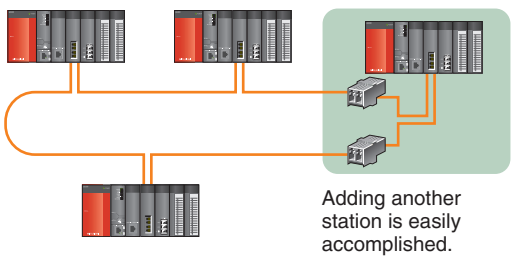
CC-Link IE has been designed to make use of commercially available Ethernet components including cables, connectors, and adapters. Thanks to the common availability of these components, significant cost savings over alternative networks can be achieved.



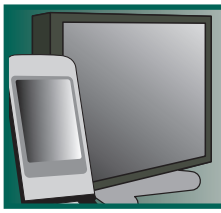




System expansion is planned.



Adding another station is easily accomplished.



Liquid-crystal production process

Super high speed

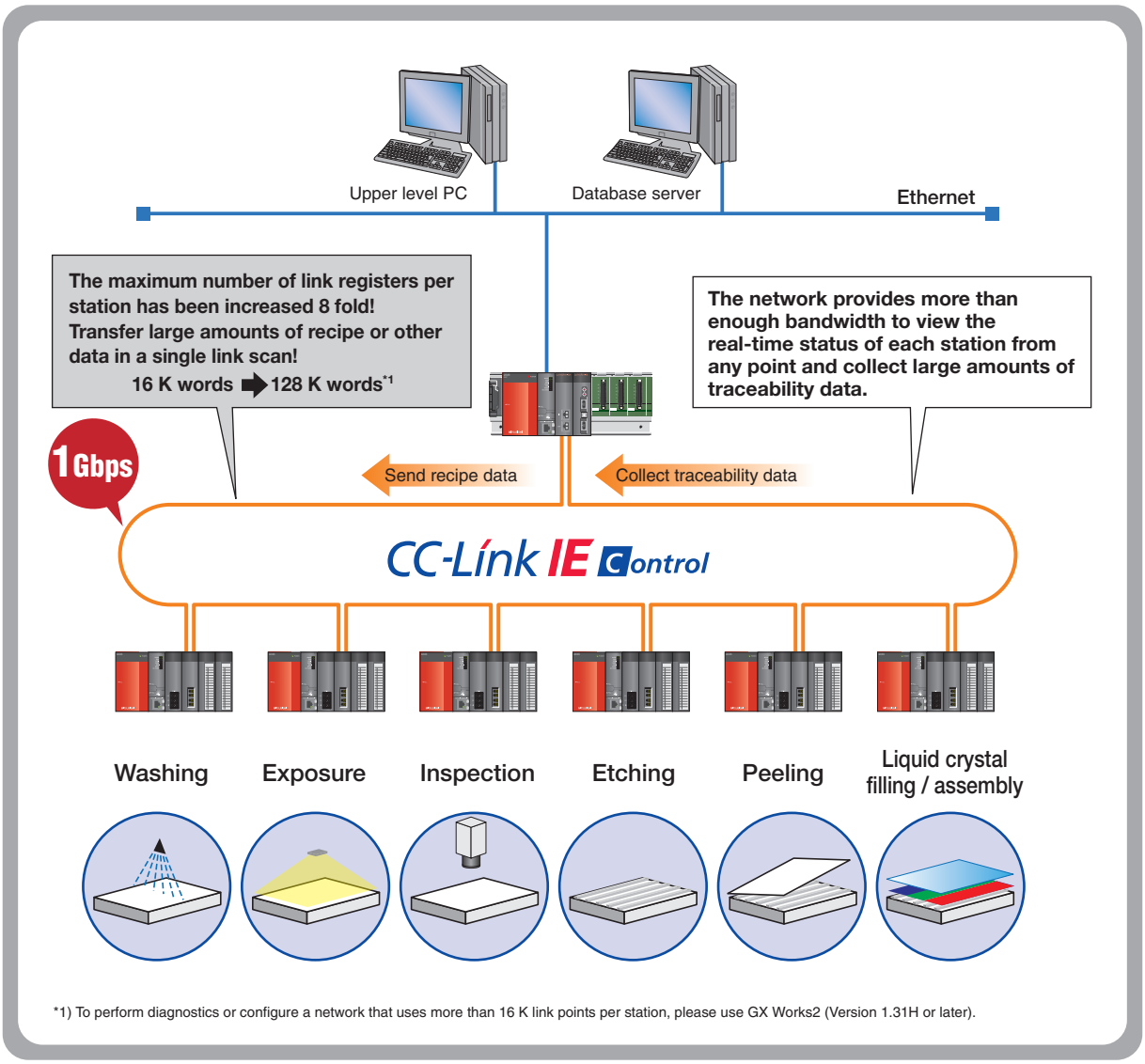
A 1 Gigabit per second communication speed allows data to be transferred between controllers quickly.

Large capacity

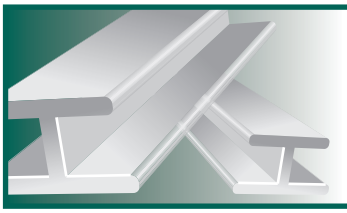
Every link scan, the bandwidth available for cyclic communication can share 16 K physical I/O signals, 32 K bit registers, and 128 K words of register data. Add to that the bandwidth available for transient communication, and it is more than enough for recipe information and traceability data.

Stable timing

Cyclic communication bandwidth is fixed and will not suffer from degraded performance even when transient communications are saturated.



*1) To perform diagnostics or configure a network that uses more than 16 K link points per station, please use GX Works2 (Version 1.31H or later).



Steel production process

Large capacity

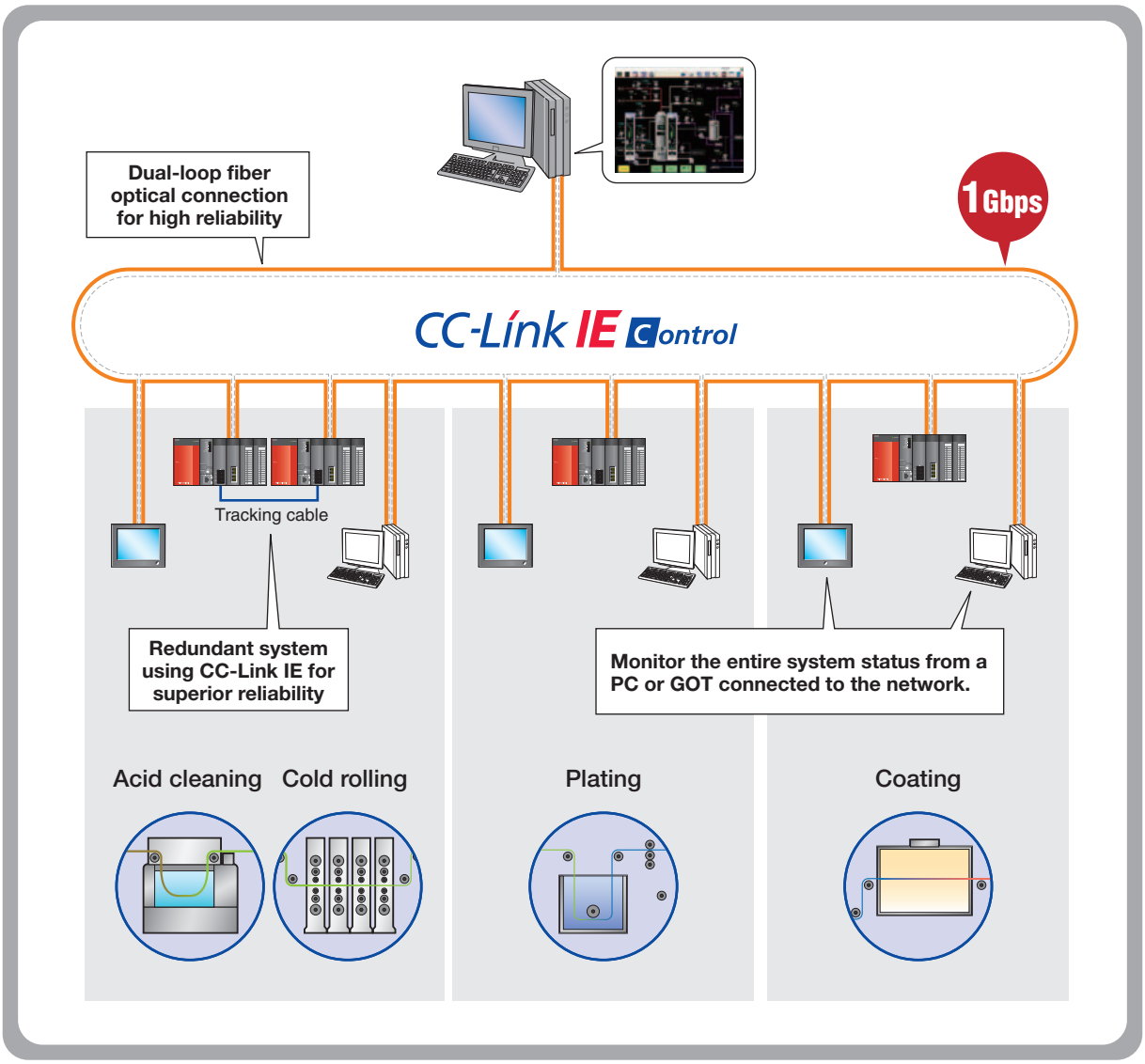
Transfer 16 K physical I/O signals, 32 K bit registers, and 128 K words of register data via cyclic communication every link scan. Add to that the bandwidth available for transient communication, and it is more than enough for recipe information and traceability data.

Large scale

Station-to-station distance up to 15 km using media converters (550 m using standard cable).
Up to 120 stations per network. Maximum total distance using standard cable: 66 km Maximum number of networks: 239

Highly reliable

Create a highly reliable system using redundant CPUs, a dual-loop optical network, and external power supplies.



Product lineup

CC-Link IE Controller Network module for MELSEC-Q Series

QJ71GP21-SX / QJ71GP21S-SX

- Use the same module as a control station or normal station (configure via parameters).
- Choose the module with the external power supply function (QJ71GB21S-SX) to maintain communication even if power from the base unit is lost.
- Several special instructions are available to easily perform transient communications via sequence program.
- The network can ensure 32bit data integrity using the station-based block data assurance function.
- The maximum link points per station has been increased to 128 K words using 'extended mode'. *1

Standard type　External power supply function type

*1) Extended mode requires the following modules and software.
•CC-Link IE Controller Network modules(QJ71GP21-SX/QJ71GP21S-SX) whose first five serial number digits are 12052 or later.
•Universal model QCPU whose first five serial number digits are 12052 or later.
•GX Works2 Version 1.40S or later.
Also, all stations must be compatible with extended mode.

Compatible PLC CPUs

- MELSEC-Q series Universal model QCPUs(High-speed Universal model QCPUs included), Basic model QCPUs, High Performance model QCPUs, Process CPUs, Redundant CPUs, C Controller modules
- MELSEC-QS series Safety CPUs

For further details of compatible CPUs, refer to relevant product manuals.

CC-Link IE Controller Network communication unit for GOT2000·1000 Series

GT15-J71GP23-SX*2

- Connect Mitsubishi Graphic Operator Terminals directly to CC-Link IE Controller Network.
- Functions as a normal station on CC-Link IE Controller Network.

*2) Not compatible with Extended mode.

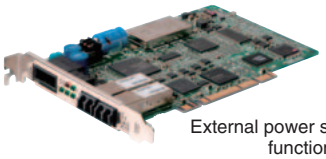
Compliant model····· GT27, GT16, GT15

CC-Link IE Controller Network interface board

PCI/PCI-X bus

Q80BD-J71GP21-SX*3 / Q80BD-J71GP21S-SX*3

- Using these PCI/PCI-X interface boards, PC control systems can be directly connected to CC-Link IE Controller Network.
- Can operate as the control station or a normal station.
- Choose the interface board with the external power supply function (Q80BD-J71GP21S-SX) to maintain communication even if power from the PCI interface is lost.



External power supply function type

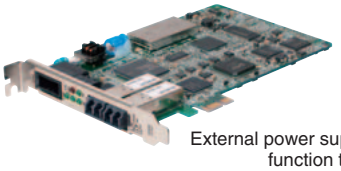
*3) Extended mode is supported by interface boards whose first five serial number digits are 12052 or later.

CC-Link IE Controller Network interface board

PCI Express® bus

Q81BD-J71GP21-SX / Q81BD-J71GP21S-SX

- Using these PCI Express interface boards, PC control systems can be directly connected to CC-Link IE Controller Network.
- Can operate as the control station or a normal station.
- Choose the interface board with the external power supply function (Q81BD-J71GP21S-SX) to maintain communication even if power from the PCI Express interface is lost.



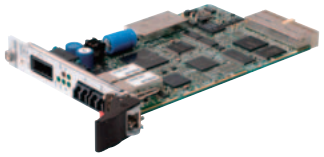
External power supply function type

CC-Link IE Controller Network interface board compatible with Compact PCI

Produced by Mitsubishi Electric Engineering

ECP-CLECBD / ECP-CLECBDS

- Using these Compact PCI bus interface boards, PC control systems can be directly connected to CC-Link IE Controller Network.
- Can operate as the control station or a normal station.
- Choose the interface board with the external power supply function (ECP-CLECBDS) to maintain communication even if power from the cPCI interface is lost.



External power supply function type

Operating environment for PC board

Interface board operation environment

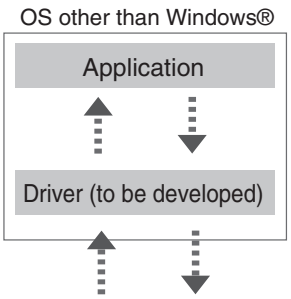
Item		Q81BD-J71GP21-SX / Q81BD-J71GP21S-SX	Q80BD-J71GP21-SX / Q80BD-J71GP21S-SX	ECP-CLECBD / ECP-CLECBDS
PC/ Industrial computer		Windows® supported personal computer		
	CPU	System requirements of the operating system must be met		
	Required memory			
	Installation slot	PCI Express® x1, x2, x4, x8, x16 bus slot (Half size)	PCI bus slot (Half size) PCI-X bus slot (Half size)	Compliant with Compact PCI bus slot (3U size)
	bus specifications	Compliant with PCI Express standard Rev.1.1 (3.3V DC, Link width 1lane, Basic clock 100MHz)	Compliant with PCI standard Rev.2.2 (3.3V/5V DC, 32-bit bus, Basic clock 33MHz)	Compact PCI PICMG 2.0 Rev 3.0 (5V or 3.3 V DC: Universal PCI compliance)
Operating system (English Version)*1*2		Microsoft® Windows® 2000 Professional Operating System Service Pack 4 or later*3 Microsoft® Windows® XP Home Edition Operating System Service Pack 2 or later Microsoft® Windows® XP Professional Operating System Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Standard Edition Operating System Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Enterprise Edition Operating System Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Standard x64 Edition Operating System Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Operating System Service Pack 2 or later Microsoft® Windows Vista® Home Basic Operating System Microsoft® Windows Vista® Home Premium Operating System Microsoft® Windows Vista® Business Operating System Microsoft® Windows Vista® Ultimate Operating System Microsoft® Windows Vista® Enterprise Operating System Microsoft® Windows Server® 2008 Standard Operating System Microsoft® Windows Server® 2008 Enterprise Operating System Microsoft® Windows Server® 2008 Standard x64 Edition Operating System Microsoft® Windows Server® 2008 Enterprise x64 Edition Operating System Microsoft® Windows Server® 2008 R2 Standard Operating System Microsoft® Windows Server® 2008 R2 Enterprise Operating System Microsoft® Windows® 7 Home Premium (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Professional (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Ultimate (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Enterprise (32-bit version / 64-bit version) Operating System Microsoft® Windows Server® 2012 Standard Operating System Microsoft® Windows® 8 (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Pro (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Enterprise (32-bit version / 64-bit version) Operating System		Microsoft® Windows® 2000 Professional Operating System Service Pack 4 or later Microsoft® Windows® XP Home Edition Operating System Service Pack 2 or later Microsoft® Windows® XP Professional Operating System Service Pack 2 or later
Monitor		Resolution: 1024x768 dots or higher		
Hard disk space		1GB or more		
Disk drive		CD-ROM disk drive		
Programming language (English Version)*2		Microsoft® Visual Basic® 6.0*4 Microsoft® Visual Basic® .NET 2003*4 Microsoft® Visual Studio® 2005 Visual Basic®*4 Microsoft® Visual Studio® 2008 Visual Basic®*4 Microsoft® Visual Studio® 2010 Visual Basic® Microsoft® Visual Studio® 2012 Visual Basic®		Microsoft® Visual Basic® 6.0 Microsoft® Visual Basic®.NET 2003 Microsoft® Visual Studio 2005 Visual Basic®
		Microsoft® Visual C++® 6.0 Microsoft® Visual C++® .NET 2003 Microsoft® Visual Studio® 2005 Visual C++® Microsoft® Visual Studio® 2008 Visual C++® Microsoft® Visual Studio® 2010 Visual C++® Microsoft® Visual Studio® 2012 Visual C++®		Microsoft® Visual C++® 6.0 Microsoft® Visual C++®.NET 2003 Microsoft® Visual Studio® 2005 Visual C++®

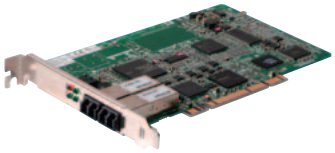
*1) Windows® XP (64-bit version) and Windows Vista® (64-bit version) are not supported.
*2) For a combination of the operation system and the programming language, refer to the Microsoft® Knowledge Base.
*3) Applicable to Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX only.
*4) 64-bit version user programs cannot be created using MELSEC data link library. Please use Visual Studio® 2010 or later.

Reference manual for the development of the PC interface board driver

This reference manual (used to develop hardware drivers) is provided for customers who wish to use the CC-Link IE Controller Network interface board with an operating system other than Windows®. This reference manual contains the following information that is required for driver development.

- Hardware information (PCI configuration, dual-port memory, I/O port memory map)
- Software information (Initial setting and parameter setting procedures for the driver)
- Sample code in C language with documentation (on the included CD-ROM)





CC-Link IE Controller Network interface board Q80BD-J71GP21-SX

Type	Manual number	Inquiries
Driver Development Reference Manual for CC-Link IE Controller Network Q80BD-J71GP21-SX	SH(NA)-080819ENG	Open System Center, Mitsubishi Electric Corporation, Nagoya Works TEL: +81-52-712-2369 FAX: +81-52-712-2419 E-mail: OSC@rj.MitsubishiElectric.co.jp

Cable and accessory

Optical fiber cable

Produced by Mitsubishi Electric System & Service

QG-AW/QG-B/QG-BU/QG-C/QG-DL/QG-VCT

- Several different types of cable are available. These include types for use inside panels, indoors, outdoors, and a reinforced type for outdoor use allowing placement in a variety environments.
- The newly developed thin cable (for indoor and outdoor use) incorporates a cord bundling structure, allowing safe use even in confined factory cable-conduits.
- The indoor and outdoor use cables are free of tension members, and have an allowable tension equivalent to the reinforced type for outdoor use that allows them to be pulled directly.
- The indoor use cable for movable using is good at flexibility. It can be used for movable parts such as Cableveyor.
- The UL certified cable QG-BU for indoor use supports the high flame resistant UL Listed (UL Type OFNR) compatible cable that has passed the UL1666 Riser Flame Test.
- The outdoor use cable is waterproof, and can be used even in flooded or temporarily submerged areas.

LCF connector
Duplex LC connector (IEC61754-20)

Standard accessories: Protective holder*1 (One protective holder is enclosed per cable.)

[Features]

- Protects the cable connector base prevents breakage
- Maintains minimum bending radius
- Saves space in control panel (60 mm or less from front of PLC to end of protective holder)

*1) The protective holder is unique to the Mitsubishi Electric System Service Co., Ltd. LCF connector and is not available as a single unit. It cannot be used with other LCF connector brands.

Splice adapter

Produced by Mitsubishi Electric System & Service

SPAD-LCF-G50/SPAD-SCF-G50/SPAD-FC-G50

- Extends optical fiber cable (Splice connection)
- Temporary connection for stations which may be extended later

SPAD-LCF-G50

Applicable connector

Type	Model	Specifications
Splice adapter for LCF Connector	SPAD-LCF-G50	Splice adapter for LCF connector Multimode 2 cores Connection loss: 0.3 dB (with master fiber)
Splice adapter for SC Connector	SPAD-SCF-G50	Splice adapter for SC connector Multimode 2 core Connection loss: 0.3 dB (with master fiber)
Splice adapter for FC Connector	SPAD-FC-G50	Splice adapter for FC connector Multimode 1 core Connection loss: 0.3 dB (with master fiber)

Connector insertion tool

Produced by Mitsubishi Electric System & Service

SCT-SLM

- Insert or remove connectors easily, even in tight spaces such as crowded control panels.

Applicable connector

- LCF/LC/SC/MU connector

Optical media converter

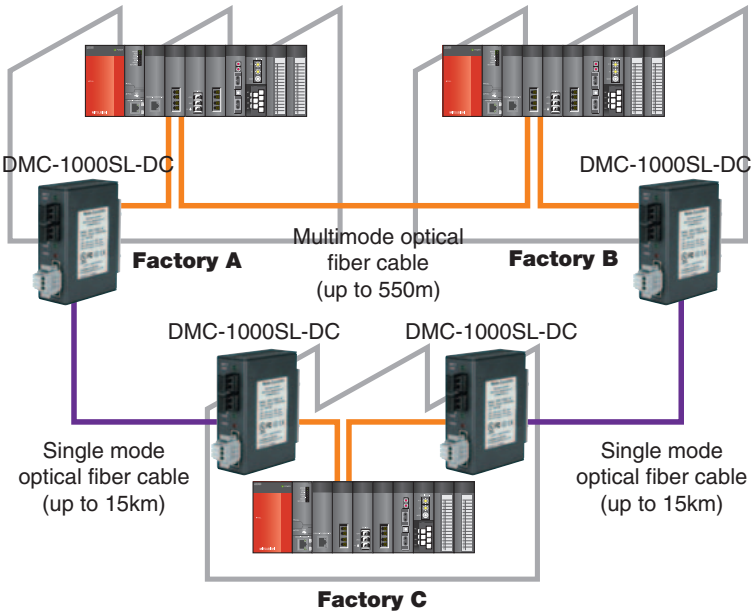
Produced by Mitsubishi Electric System & Service

DMC-1000SL-DC (DC24V)

- If more than the maximum segment length of 550 m is required, two of these units can be used to extend the total station to station distance to over 15 km.
- This converter is compatible with Link path-through. Therefore, the Loop-back function is available, even if the cables have damaged.

DMC-1000SL-DC

Application example



General specifications

Item	DMC-1000SL-DC
Working environment	Inside panel
Storage temperature/ Operating & storage humidity	-10°C~55°C/95%RH or less (no condensation)
Installation method	DIN rail or screw
Weight	250g (including DIN rail attachment and Power supply terminal block)
Dimensions	W31mm×H95mm×D90mm (including DIN rail attachment and Power supply terminal block)
Power supply specification	DC20.4V~26.4V (Power supply terminal block)
Standards	UL, CE, FCC Part15 Class B, VCCI Class B
Series connection	4 (max.)

Performance specifications

Item		DMC1000SL-DC	
		OPT1 port	OPT2 port
Conforming standard		IEEE802.3z Gigabit Ethernet (1000BASE-LX)	IEEE802.3z Gigabit Ethernet (1000BASE-SX)
Transmission format		Full duplex system	
Compatible Cable	Optical fiber	1000BASE-LX compatible single-mode optical fiber cable / 1000BASE-SX compatible multi-mode optical fiber cable (Band: 500 MHz·km or higher, λ=850 nm)	1000BASE-SX compatible multi-mode optical fiber cable*1 (Band: 500 MHz · km or higher, λ=850 nm)
	Connector	Duplex LC connector (IEC61754-20)	Duplex LC connector (IEC61754-20)
	Polishing method of connector	PC, SPC, AdPC, UPC polish	PC, SPC polish
	Method for connection	Crossing (A to B , B to A)	
Luminescence center wavelength		1270~1360nm	830~860nm
Permissible loss		10dB	7.5dB
Target transmission distance		15km (max.)*2 550m (max.)*3	550m (max.)

*1) For DMC-1000SL-DC: Optical fiber cable with a LC duplex connectors on both side
*2) 15km (max.) are applicable between same products with single-mode optical fiber cable. In case connecting with 1000BASE-LX compatible unit, the distance is 5km (max.).
*3) In case connecting with multi-mode optical fiber cable

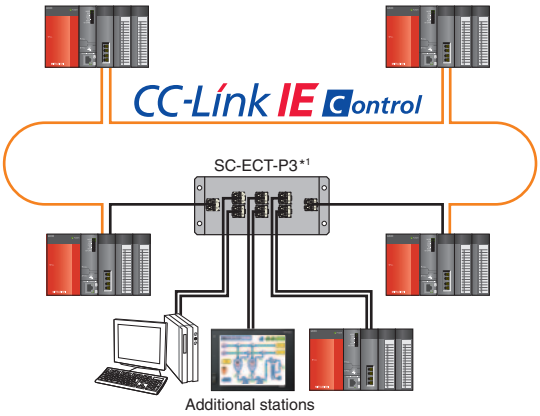
Connection terminal

Produced by Mitsubishi Electric System & Service

SC-ECT-P3

- Add up to 3 stations between existing stations.
- Stations can easily be added or removed.
- Allow for expansion of the network without having to change the existing cabling.
- Can be mounted by DIN rail or screw bracket.

Communication configuration example



* The solid black lines represent cables with a maximum distance of 150 meters.
If any station goes down, the loop back function will still be operational.

Specifications

Item		Specifications
Applicable optical fiber		1000 BASE-SX (MMF)-compatible optical fiber cable
	Standard	IEC60793-2-10 Types A1a.1 (50/125μm multimode)
	Transmission loss (max.)	3.5 (dB/km) or less (λ = 850 nm)
	Transmission band (min.)	500 (MHz·km) or higher (λ = 850 nm)
	Model	QG Series*2
Applicable light connector		Duplex LC connector
	Standard	IEC61754-20: Type LC connector
	Connection loss	0.3 (dB) or less
	Polished face	PC polish
	Model	DLCF-G50-D2*2
Number of possible connections		Max. 3 units
Operable environment		In board
Operable temperature/humidity range		0°C to +55°C / 5 to 95% RH (no condensation)
Connection distance		Max. 150 m*3
Installation		Screw or DIN rail
Weight		Approx. 300 g
External dimensions		W151 × D64 × H65 (mm)

*1) At least one unit should be connected to the connection terminal.
*2) Parts provided by Mitsubishi Electric System & Service.
*3) Cable length from SC-ECT-P3 to any other connection point.

Performance specifications

Item		Specifications	
Maximum link points per network	LB	32 K points (32768 points, 4 Kbytes) (Basic model QCPU, Safety CPU: 16 K points (16384 points, 2 Kbytes))	
	LW	128K K points (131072 points, 256 Kbytes) (Basic model QCPU, Safety CPU: 16 K points (16384 points, 32K Kbytes))	
	LX	8 K points (8192 points, 1 Kbyte)	
	LY	8 K points (8192 points, 1 Kbyte)	
Maximum link points per station		Regular mode	Extended mode*1
	LB	16 K points (16384 points, 2 Kbytes)	32 K points (32768 points, 4 Kbytes)
	LW	16 K points (16384 points, 32 Kbytes)	128 K points (131072 points, 256 Kbytes)
	LX	8 K points (8192 points, 1 Kbytes)	8 K points (8192 points, 1 Kbytes)
	LY	8 K points (8192 points, 1 Kbytes)	8 K points (8192 points, 1 Kbytes)
Communication speed		1Gbps	
Maximum stations per network		120 (1 control station plus 119 normal stations)	
Connection cable		Multi-mode fiber optical cable	
Laser Class (JIS C 6802, IEC 60825-1)		Class 1 laser product	
Overall cable distance		66000 m (When 120 stations are connected)	
Station-to-station distance (max.)		550 m (core/clad = 50/125 μm)	
Maximum number of networks		239	
Maximum number of groups		32	
Network topology		Duplex loop ring	

*1) Extended mode requires the following modules and software.
•CC-Link IE Controller Network modules(QJ71GP21-SX/QJ71GP21S-SX) whose first five serial number digits are 12052 or later.
•Universal model QCPU whose first five serial number digits are 12052 or later.
•GX Works2 Version 1.40S or later.
Also, all stations must be compatible with extended mode.

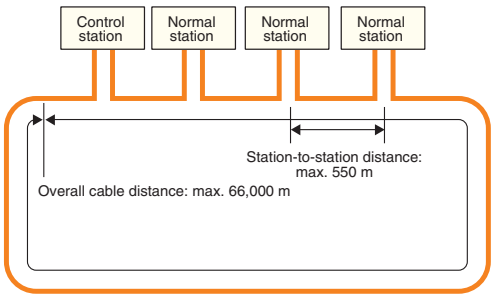
Cable specifications

Item		Specifications
Optical fiber specifications*1		1000BASE-SX (MMF) fiber optical cable
	Standard	IEC60793-2-10 Types A1a.1 (50/125μm multimode)
	Transmission loss (max.)	3.5 (dB/km) or less (λ = 850 nm)
	Transmission band (min.)	500 (MHz·km) or higher (λ = 850 nm)
Connector specifications*1		Duplex LC connector
	Standard	IEC61754-20: Type LC connector
	Connection loss	0.3 (dB) or less
	Polished face	PC (Physical Contact) polishing

*1) For recommended cables and other information, contact CC-Link Partner Association.

Network topology example

Ring topology



General specifications

The general specifications are applicable to all products in the Q Series and L Series unless an exception is indicated. The Q Series and L Series equipment is designed to be installed and operate within the environment specified by the general specifications. For the general specifications of products provided by other manufacturers, contact the relevant manufacturer or distributer.
The general specifications of jointly developed products may be different.
For more information, please refer to the product manuals or contact your local Mitsubishi representative for details.

<table>
<tr><th>Item</th><th colspan="6">Specifications</th></tr>
<tr><td>Operating ambient temperature</td><td colspan="6">0 to 55°C</td></tr>
<tr><td>Storage ambient temperature</td><td colspan="6">-25 to 75°C*1</td></tr>
<tr><td>Operating ambient humidity</td><td colspan="6">5 to 95%RH*2, non-condensing</td></tr>
<tr><td>Storage ambient humidity</td><td colspan="6">5 to 95%RH*2, non-condensing</td></tr>
<tr><td rowspan="5">Vibration resistance</td><td rowspan="5">Compliant with JIS B 3502 and IEC 61131-2</td><td></td><td>Frequency</td><td>Acceleration</td><td>Half amplitude</td><td>Sweep count</td></tr>
<tr><td rowspan="2">Under intermittent vibration</td><td>5 to 8.4Hz</td><td>–</td><td>3.5mm (0.14 inches)</td><td rowspan="2">10 times each in X, Y, Z directions</td></tr>
<tr><td>8.4 to 150Hz</td><td>9.8m/s²</td><td>–</td></tr>
<tr><td rowspan="2">Under continuous vibration</td><td>5 to 8.4Hz</td><td>–</td><td>1.75mm (0.069 inches)</td><td rowspan="2">–</td></tr>
<tr><td>8.4 to 150Hz</td><td>4.9m/s²</td><td>–</td></tr>
<tr><td>Shock resistance</td><td colspan="6">Compliant with JIS B 3502, IEC 61131-2 (147 m/s2, 3 times in each of 3 directions X, Y, Z)</td></tr>
<tr><td>Operating ambience</td><td colspan="6">No corrosive gases</td></tr>
<tr><td>Operating altitude*3</td><td colspan="6">2000m max.</td></tr>
<tr><td>Installation location</td><td colspan="6">Inside control panel</td></tr>
<tr><td>Overvoltage category*4</td><td colspan="6">II max.</td></tr>
<tr><td>Pollution level*5</td><td colspan="6">2 max.</td></tr>
<tr><td>Equipment category</td><td colspan="6">Class I</td></tr>
</table>

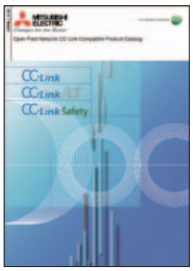
*1) The storage ambient temperature is -20 to 75°C if the system includes the AnS/A series modules.
*2) The operating ambient humidity and storage ambient humidity are 10 to 90%RH if the system includes the AnS/A series modules.
*3) Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0m.
Doing so can cause a malfunction.
When using the programmable controller under pressure, please contact your sales representative.
*4) 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.
*5) 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. A temporary conductivity caused by condensing must be expected occasionally.

Comparison of network specifications

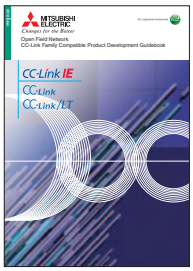
		CC-Link IE Control	MELSECNET/H			CC-Link IE Field	CC-Link
			Optical loop type	Coaxial bus type	Twist bus type		
Communication speed (bps)		**1G**	25M	10M	10 M (max.)	**1G**	10 M (max.)
Maximum number of link words (LW)	per network	**128K**	16K			**16K**[*2]	4K[*2]
	per station	**128K**[*1]	16K			**2K**[*2]	256[*2] (with 4 stations)
Maximum number of connected stations per network		**120**	64	32	32	**121**	65
Distance	Total extension distance (km)	**66**	30	2.5[*3]	0.1 (10 Mbps)	**12**	1.1[*3] (10 Mbps)
	Maximum station-to-station distance (m)	**550**	1000	500	100 (10 Mbps)	**100**	100 (10 Mbps)
Wiring	Topology	**Ring**	Ring	Bus	Bus	**Star, line, star and line mixed, or ring**	Bus, T-branch, or star
	Cable	**General-purpose Ethernet cable (multimode optical fiber)**	Optic cable	Coaxial cable	Twisted cable	**General-purpose Ethernet cable (Category 5e or better, double shielded, twisted pair)**	Twisted cable (CC-Link-dedicated cable)

*1) To perform diagnostics or configure a network that uses more than 16 K link points per station, please use GX Works2 (Version 1.31H or later).
*2) Maximum number of link points (RWr+RWw).
*3) When using repeater.

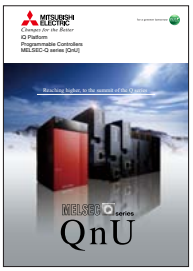
Related product catalogs



Open Field Network CC-Link Compatible Product Catalog
L(NA)08038E



Open Field Network CC-Link, CC-Link/LT Compatible Product Development Guidebook
L(NA)08052E



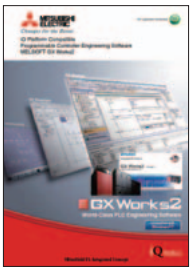
iQ Platform Programmable Controller
MELSEC-Q Series [QnU]
L(NA)08101E

Programmable Controllers
MELSEC-L Series
L(NA)08159E

SERVO AMPLIFIERS & MOTORS
MELSERVO-J
L(NA)03058

iQ Platform
Graphic Operation Terminal
GOT2000 Series
L(NA)08270ENG

Mitsubishi Safety Programmable Controller/Safety Controller/ Safety Relay Module
MELSEC Safety
L(NA)08192E



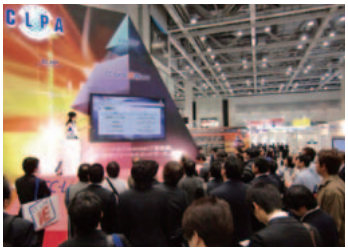
SoftwareMELSOFT GX Works2
L(NA)08122E

CC-Link Partner Association (CLPA) actively promotes the worldwide adoption of CC-Link networks

From promotion to specification development,CLPA actively supports CC-Link

CC-Link Partner Association (CLPA) was established to promote the worldwide adoption of the CC-Link open field network. By conducting promotional activities, such as organizing trade shows and seminars, implementing conformance tests, and providing catalogs, brochures, and website information, CLPA has been successfully increasing the number of CC-Link partner manufacturers and CC-Link compatible products. CLPA takes a major role in the globalization of CC-Link.

Seminar



Trade show

Conformance Testing Lab

The latest CC-Link information is posted on the website.

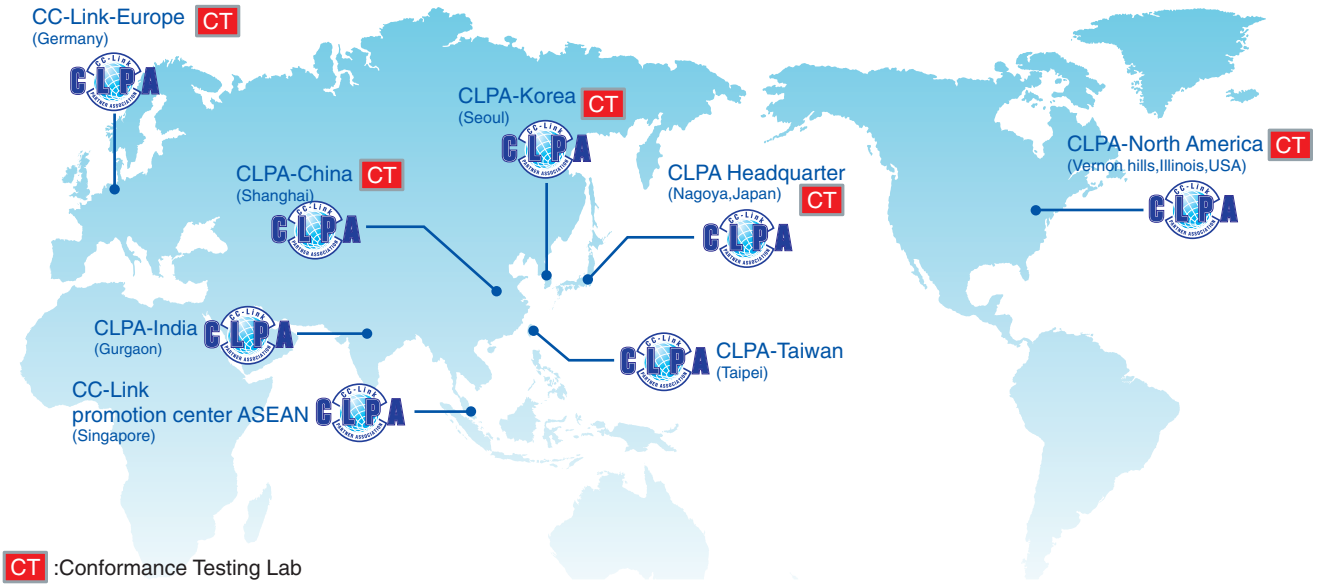
URL:http://www.cc-link.org

6F Ozone Front Bldg. 3-15-58 Ozone,
Kita-ku, Nagoya 462-0825 JAPAN
TEL: +81-52-919-1588 FAX: +81-52-916-8655
E-mail:info@cc-link.org

CC-Link
Partner Association

CC-Link continues to increase its global influence

CC-Link is supported globally by CLPA. With offices throughout the world, support for partner companies can be found locally.
Each regional CLPA office undertakes various support and promotional activities to further the influence of the network in that part of the world. For companies looking to increase their presence in Asia, CLPA is well placed to assist these efforts through offices in all major Asian economies.



CT :Conformance Testing Lab

Extensive global support coverage providing expert

Global FA centers

"Mitsubishi Electric Global FA centers" have been established in various countries around the world to cover the Americas, Europe, and Asia. FA centers help to ensure compliance with the certifications and regulations of different regions, initiate product development in response to local demands, and provide full-time, professional customer service.

German FA Center

Mitsubishi Electric Europe B.V. German Branch
Gothaer Strasse 8, D-40880 Ratingen, Germany
Tel: +49-2102-486-0 / Fax: +49-2102-486-1120
Area covered: Mainly Western Europe

UK FA Center

Mitsubishi Electric Europe B.V. UK Branch
Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, UK.
Tel: +44-1707-28-8780 / Fax: +44-1707-27-8695
Area covered: UK, Ireland

Czech republic FA Center

Mitsubishi Electric Europe B.V. Czech Branch
Avenir Business Park, Radicka 751/113e, 158 00 Praha5, Czech Republic
Tel: +420-251-551-470 / Fax: +420-251-551-471
Area covered: Czech, Slovakia

European FA Center

Mitsubishi Electric Europe B.V. Polish Branch
32-083 Balice ul. Krakowska 50, Poland
Tel: +48-12-630-47-00 / Fax: +48-12-630-47-01
Area covered: Central and Eastern Europe

Turkey FA Center

Mitsubishi Electric Turkey A.Ş Ümraniye Branch
Serifali Mahallesi Nutuk Sokak No:5 TR-34775 Umraniye, Istanbul, Turkey
Tel: +90-216-526-3990 / Fax: +90-216-526-3995
Area covered: Turkey

India FA Center

Mitsubishi Electric India Pvt. Ltd.
India Factory Automation Centre
Emerald House, EL-3, J Block, M.I.D.C., Bhosari, Pune, 411026, Maharastra State, India
Tel: +91-20-2710-2000 / Fax: +91-20-2710-2100
Area covered: India

Russian FA Center

Mitsubishi Electric Europe B.V. Russian Branch St.Petersburg office
Piskarevsky pr. 2, bld 2, lit "Sch", BC "Benua", office 720, 195027, St. Petersburg, Russia
Tel: +7-812-633-3497 / Fax: +7-812-633-3499
Area covered: Russia

Taiwan FA Center

L : Setsuyo Enterprise Co., Ltd.
6F., No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan, R.O.C.
Tel: +886-2-2299-2499 / Fax: +886-2-2299-2509
R : Mitsubishi Electric Taiwan Co.,Ltd.
No.8-1,Industrial 16th Road,Taichung Industrial Park ,Taichung, Taiwan 407, R.O.C.
Tel: +886-(0)4-2359-0688 / Fax: +886-(0)4-2359-0689
Area covered: Taiwan

Nagoya, Japan

Thailand FA Center

Mitsubishi Electric Automation (Thailand) Co., Ltd.
12th Floor, SV.City Building, Office Tower 1, No. 896/19 and 20 Rama 3 Road, Kwaeng Bangpongpang, Khet Yannawa, Bangkok 10120, Thailand
Tel: +66-2682-6522 / Fax: +66-2682-6020
Area covered: Thailand

ASEAN FA Center

Mitsubishi Electric Asia Pte. Ltd.
ASEAN Factory Automation Centre
307 Alexandra Road #05-01/02,
Mitsubishi Electric Bulding, Singapore
Tel: +65-6470-2480 / Fax: +65-6476-7439
Area covered: Southeast Asia

China (including Hong Kong area)

Beijing FA Center

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Beijing Office
Unit 908, Office Tower 1, Henderson Centre, 18 Jianguomennei Avenue, Dongcheng District, Beijing, China
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Area covered: China

Tianjin FA Center

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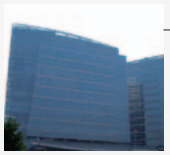
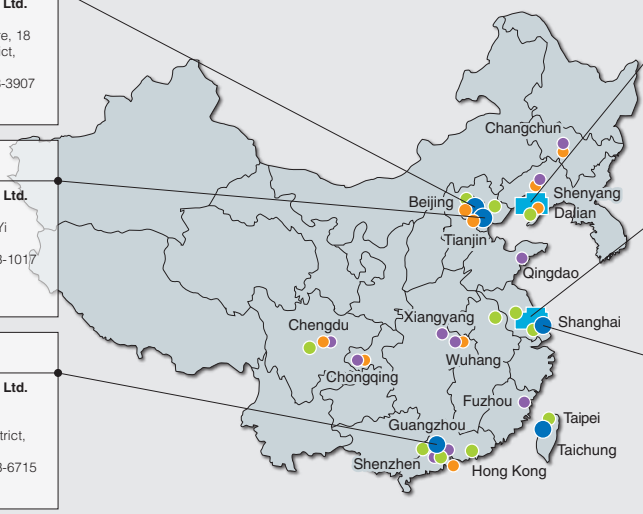
Area covered: China



Guangzhou FA Center

Mitsubishi Electric Automation (CHINA) Ltd.
Guangzhou Office
Rm.1609, North Tower, The Hub Center, No.1068, Xin Gang East Road, Haizhu District, Guangzhou, China
Tel: +86-20-8923-6730 / Fax: +86-20-8923-6715
Area covered: China



Local factory in China

Mitsubishi Electric Dalian Industrial Products Co., Ltd.

Local factory in China

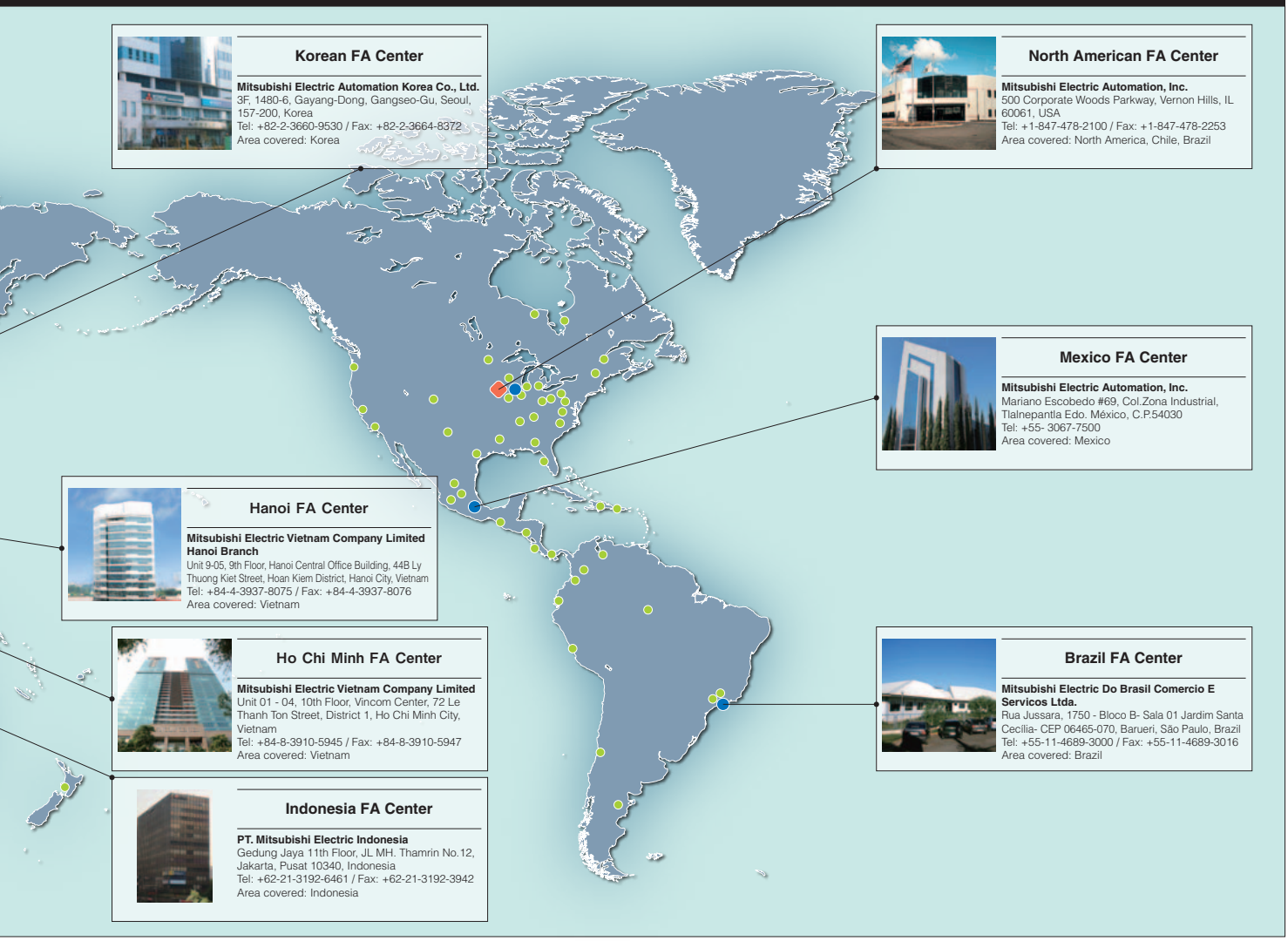
Mitsubishi Electric Automation Manufacturing (Changshu) Co., Ltd.
No.706 Southeast Building,Chengahu Southeast Economic Development Zone of Jiangsu,215500 China
Tel: 86-512-5213-3077 / Fax: 86-512-5213-3088

Shanghai FA Center

Mitsubishi Electric Automation (China) Ltd.
10F, Mitsubishi Electric Automation Center, No.1386 Hongqiao Road, Changning District, Shanghai, China
Tel: 86-21-2322-3030 / Fax: 86-21-2322-3000
Area covered: China

help whenever needed.

FA center | FA center satellite (China) | Mechatronics service center (China) | Sales and Service office | Factory location | Development center



Korean FA Center

Mitsubishi Electric Automation Korea Co., Ltd.
3F, 1480-6, Gayang-Dong, Gangseo-Gu, Seoul, 157-200, Korea
Tel: +82-2-3660-9530 / Fax: +82-2-3664-8372
Area covered: Korea

North American FA Center

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500 Corporate Woods Parkway, Vernon Hills, IL 60061, USA
Tel: +1-847-478-2100 / Fax: +1-847-478-2253
Area covered: North America, Chile, Brazil

Mexico FA Center

Mitsubishi Electric Automation, Inc.
Mariano Escobedo #69, Col.Zona Industrial, Tlalnepantla Edo. México, C.P.54030
Tel: +55- 3067-7500
Area covered: Mexico

Hanoi FA Center

Mitsubishi Electric Vietnam Company Limited
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Unit 9-05, 9th Floor, Hanoi Central Office Building, 44B Ly Thuong Kiet Street, Hoan Kiem District, Hanoi City, Vietnam
Tel: +84-4-3937-8075 / Fax: +84-4-3937-8076
Area covered: Vietnam

Ho Chi Minh FA Center

Mitsubishi Electric Vietnam Company Limited
Unit 01 - 04, 10th Floor, Vincom Center, 72 Le Thanh Ton Street, District 1, Ho Chi Minh City, Vietnam
Tel: +84-8-3910-5945 / Fax: +84-8-3910-5947
Area covered: Vietnam

Brazil FA Center

Mitsubishi Electric Do Brasil Comercio E Servicos Ltda.
Rua Jussara, 1750 - Bloco B- Sala 01 Jardim Santa Cecília- CEP 06465-070, Barueri, São Paulo, Brazil
Tel: +55-11-4689-3000 / Fax: +55-11-4689-3016
Area covered: Brazil

Indonesia FA Center

PT. Mitsubishi Electric Indonesia
Gedung Jaya 11th Floor, JL MH. Thamrin No.12, Jakarta, Pusat 10340, Indonesia
Tel: +62-21-3192-6461 / Fax: +62-21-3192-3942
Area covered: Indonesia

Compliance with international quality assurance standards.

All of Mitsubishi Electric's FA component products have acquired the international quality assurance "ISO9001" and environment management system standard "ISO14001" certification. Mitsubishi Electric's products also comply with various safety standards, including UL standards.
*For jointly developed and partner products, guaranteed quality standards may differ. Please refer to the product manuals for details.

Safety Standards

CE	CE : Council Directive of the European Communities
c UL us	UL : Underwriters Laboratories Listing

Compatible products list

CC-Link IE Field Network

Mitsubishi Electric Corporation

Note: DB … Double brand product* NEW … New released SOON … Available soon

Type		Model	Outline
Master/local module		QJ71GF11-T2	CC-Link IE Field Network master/local station for MELSEC-Q Series
		LJ71GF11-T2	CC-Link IE Field Network master/local station for MELSEC-L Series
		QS0J71GF11-T2	CC-Link IE Field Network master/local station (with the Safety function) for MELSEC-QS Series
Simple motion module		QD77GF16	CC-Link IE Field Network master station for MELSEC-Q Series 16 axes 2-/3-/4-axis linear interpolation 2-axis circular interpolation synchronous control, Control unit: mm inch degree pulse, Number of positioning data: 600 data/axis
Head module		LJ72GF15-T2	Head module(END cover equipped) compatible with MELSEC-L Series
Remote I/O module	DC input	NZ2GF2B1-16D	16 points, 24VDC, Response time: 0 to 70ms, Positive/negative common shared, 18-point terminal block, 1-wire
		NZ2GFCE3-16D*1*2 NEW	16 points, 24VDC, Response time: 0 to 70ms, Positive common(sink type), Sensor connector(e-CON), 3-wire
		NZ2GFCE3-16DE*1*2 NEW	16 points, 24VDC, Response time: 0 to 70ms, Negative common(source type), Sensor connector(e-CON), 3-wire
		NZ2GFCM1-16D*1 NEW	16 points, 24VDC, Response time: 0 to 70ms, Positive common(sink type), MIL connector, 1-wire
		NZ2GFCM1-16DE*1 NEW	16 points, 24VDC, Response time: 0 to 70ms, Negative common(source type), MIL connector, 1-wire
	Transistor output	NZ2GF2B1-16T	16 points, 12/24VDC(0.5A), Sink type, 18-point terminal block, 1-wire
		NZ2GF2B1-16TE	16 points, 12/24VDC(0.5A), Source type, 18-point terminal block, 1-wire
		NZ2GFCE3-16T*1*2 NEW	16 points, 12/24VDC(0.5A), Sink type, Sensor connector(e-CON), 3-wire
		NZ2GFCE3-16TE*1*2 NEW	16 points, 12/24VDC(0.5A), Source type, Sensor connector(e-CON), 3-wire
		NZ2GFCM1-16T*1 NEW	16 points, 12/24VDC(0.5A), Sink type, MIL connector, 1-wire
		NZ2GFCM1-16TE*1 NEW	16 points, 12/24VDC(0.5A), Source type, MIL connector, 1-wire
Analog-digital converter module		NZ2GF2B-60AD4	4 channels, Input: -10 to 10VDC, Output: DC0 to 20mA, Conversion speed:400us/ch, 18-point terminal block
Digital-analog converter module		NZ2GF2B-60DA4	4 channels, output: -10 to 10VDC, Output: DC0 to 20mA, Conversion speed: 100μs/ch, 18-point terminal block
Temperature control module		NZ2GF2B-60TCTT4 NEW	4 channels, Thermocouple input, Transistor output, 18-point terminal block
		NZ2GF2B-60TCRT4 NEW	4 channels, Resistance temperature detector, Transistor output, 18-point terminal block
High-speed counter		NZ2GFCF-D62PD2	2 channels [Differential input] Counting speed:10kpps/100kpps/200kpps/500kpps/1Mpps/2Mpps/4Mpps/8Mpps, Count input signal:EIA Standard RS-422-A (Differential line driver) [DC input] Counting speed:10kpps/100kpps/200kpps, Count input signal:5/24VDC 4 to 8mA Coincidence output:Transistor(sink type), 5 to 24VDC, 0.1A/point, 0.4A/common, 40 pin-connector
Extension remote I/O module	DC input	NZ2EX2B1-16D	16 points, 24VDC, Response time: 0 to 70ms, Positive/negative common shared, 18-point terminal block, 1-wire
	Transistor output	NZ2EX2B1-16T	16 points, 12/24VDC(0.5A), Sink type, 18-point terminal block, 1-wire
		NZ2EX2B1-16TE	16 points, 12/24VDC(0.5A), Source type, 18-point terminal block, 1-wire
Network interface board for PC		Q80BD-J71GF11-T2 NEW	CC-Link IE Field Network master/local station, Compatible with PCI bus
		Q81BD-J71GF11-T2	CC-Link IE Field Network master/local station, Compatible with PCI Express® bus
Ethernet adapter module		NZ2GF-ETB	Compatible with Ethernet devices, Transmission rate: 100Mbps/1Gbps
Network bridge module		NZ2GF-CCB	CC-Link IE Field Network - CC-Link bridge module
Industrial switching hub		NZ2EHG-T8 DB	10Mbps/100Mbps/1Gbps, AUTO-MDIX, DIN rail, 8 ports
		NZ2EHF-T8 DB	10Mbps/100Mbps, AUTO-MDIX, DIN rail, 8 ports
Wireless LAN Adapter		NZ2WL-US/NZ2WL-EU/NZ2WL-CN/ NZ2WL-KR/ NZ2WL-TW DB	IEEE802.11a, IEEE802.11b, IEEE802.11g standards, 12 - 24VDC
Communication unit for GOT2000/1000 Series		GT15-J71GF13-T2	CC-Link IE Field Network communication unit for GOT2000/1000 Series GT27/GT16/GT15 model
Communication unit for FREQROL-A800 Series inverter		FR-A8NCE NEW	CC-Link IE Field Network communication unit for FREQROL-A800 Series
Interface module for MELSERVO-J3/J4 Series (AC servo)		MR-J3-T10	CC-Link IE Field Network interface module for MELSERVO-J3/J4 Series

*1) A connector for Power supply and FG is required with e-CON and MIL connector type remote I/O module. Please refer to the sale parts list below.
*2) A sensor connector is required with e-CON connector type remote I/O module. Please refer to the products list(P.56) of Mitsubishi Electric system & Service Co., Ltd.

For further details, please refer to the relevant product manuals.

Separate sale parts

Type	Model	Outline
One touch connector plug for Power supply and FG	A6CON-PW5P (35505-6080-A00 GF*3)	Core wire size of applicable cable: 0.75mm2(0.66 to 0.98mm2)(AWG18), 0.16mm or larger for strand diameter, Insulating coating material PVC (heat resistant vinyl) Outer diameter of applicable cable:ϕ2.2 to 3.0mm Maximum rated current: 7A*4, 10 pieces
	A6CON-PW5P-SOD (35505-6180-A00 GF*3)	Core wire size of applicable cable: 0.75mm2(0.66 to 0.98mm2)(AWG18), 0.16mm or larger for strand diameter, Insulating coating material PVC (heat resistant vinyl) Outer diameter of applicable cable:ϕ2.0 to 2.3mm Maximum rated current: 7A*4, 10 pieces
Online connector plug for Power supply and FG	A6CON-PWJ5P (35720-L200-A00 AK*3)	Online connector plug for Power supply and FG, 5 pieces

*3) Model name by plug manufacturer 3M Company.
*4) The allowable current value of the cable connected must be observed.

* General specifications and product guarantee conditions of jointly developed products are different from those of MELSEC products.
For further details, please refer to the product manuals, or contact your local Mitsubishi Electric sales representative.

Mitsubishi Electric System & Service Co., Ltd.

Type		Model	Outline
Industrial switching hub		DT135TX NEW	10Mbps/100Mbps/1000Mbps, AUTO-MDIX, DIN rail, 5 ports
Cable/ accessory	Double shielded network cable	SC-E5EW-S M	(Double shielded/STP) Straight cable, Category 5e or higher, For indoor use
		SC-E5EW-S M-MV	(Double shielded/STP) Straight cable, Category 5e or higher, For indoor movable part
		SC-E5EW-S M-L	(Double shielded/STP) Straight cable, Category 5e or higher, For indoor/outdoor use
	Option	SPAD-RJ45S-E5E	RJ-45 connector with shield
Sensor connector(e-CON)		ECN-M014R	Core wire size of applicable cable: 0.14 to 0.30mm2(26 to 24 AWG) Outer diameter of applicable cable:ϕ0.8 to 1.0mm Maximum rated current: 2.0A, 20 pieces
		ECN-M024Y	Core wire size of applicable cable: 0.14 to 0.30mm2(26 to 24 AWG) Outer diameter of applicable cable:ϕ1.0 to 1.2mm Maximum rated current: 2.0A, 20 pieces
		ECN-M034OR	Core wire size of applicable cable: 0.14 to 0.30mm2(26 to 24 AWG) Outer diameter of applicable cable:ϕ1.2 to 1.6mm Maximum rated current: 2.0A, 20 pieces
		ECN-M044GN	Core wire size of applicable cable: 0.30 to 0.50mm2(22 to 20 AWG) Outer diameter of applicable cable:ϕ1.0 to 1.2mm Maximum rated current: 2.0A, 20 pieces
		ECN-M054BL	Core wire size of applicable cable: 0.30 to 0.50mm2(22 to 20 AWG) Outer diameter of applicable cable:ϕ1.2 to 1.6mm Maximum rated current: 2.0A, 20 pieces
		ECN-M064GY	Core wire size of applicable cable: 0.30 to 0.50mm2(22 to 20 AWG) Outer diameter of applicable cable:ϕ1.6 to 2.0mm Maximum rated current: 2.0A, 20 pieces

For details of Mitsubishi Electric System & Service Co., Ltd. products,
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CC-Link IE Controller Network

Mitsubishi Electric Corporation

Note: DB ...Double brand product* NEW ...Released product SOON ...Available soon

Type	Model	Outline
Controller network module	QJ71GP21-SX	CC-Link IE Controller Network control station/normal station for MELSEC-Q Series
	QJ71GP21S-SX	CC-Link IE Controller Network control station/normal station(with the External power supply function) for MELSEC-Q Series
Communication unit for GOT2000/GOT1000 Series	GT15-J71GP23-SX	CC-Link IE Controller Network control station/normal station communication unit compatible for GOT2000/GOT1000 Series GT27, GT16, GT15 model
Network interface board for PC	Q80BD-J71GP21-SX	CC-Link IE Controller Network control station/normal station, Compatible with PCI bus/PCI X bus
	Q80BD-J71GP21S-SX	CC-Link IE Controller Network control station/normal station(with the External power supply function), Compatible with PCI bus/PCI X bus
	Q81BD-J71GP21-SX	CC-Link IE Controller Network control station/normal station, Compatible with PCI Express® bus
	Q81BD-J71GP21S-SX	CC-Link IE Controller Network control station/normal station(with the External power supply function), Compatible with PCI Express® bus

Mitsubishi Electric System & Service Co., Ltd.

Type		Model	Outline
Cable and accessory	Optical fiber cable	QG-AW	Optical fiber cable compatible with CC-Link IE Controller Network (in the control board)
		QG-B	Optical fiber cable compatible with CC-Link IE Controller Network (indoor)
		QG-BU	UL certified optical fiber cable compatible with CC-Link IE Controller Network (indoor)
		QG-C	Optical fiber cable compatible with CC-Link IE Controller Network (outdoor)
		QG-DL	Optical fiber cable compatible with CC-Link IE Controller Network (reinforced outdoor)
		QG-VCT	Optical fiber cable compatible with CC-Link IE Controller Network (indoor, movable use)
	Option	SPAD-LCF-G50	Splice adapter for LCF connector Multimode 2 cores Connection loss: 0.3 dB (with master fiber)
		SPAD-SCF-G50	Splice adapter for SC connector Multimode 2 cores Connection loss: 0.3 dB (with master fiber)
		SPAD-FC-G50	Splice adapter for FC connector Multimode 1 core Connection loss: 0.3 dB (with master fiber)
		SCT-SLM	Connector insertion tool (applicable connector: LCF connector, LC connector, SC connector, MU connector)
Optical media converter		DMC-1000SL-DC	Optical media converter compatible with CC-Link IE Controller Network (DC24V)
Connection terminal		SC-ECT-P3	Cable bundling device compatible with CC-Link IE Controller Network

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Mitsubishi Electric Engineering Co., Ltd.

Type	Model	Outline
Interface board compatible with Compact PCI	ECP-CLECBD	For control master/local station of CC-Link IE Controller Network compatible with Compact PCI bus Japanese/English OS
	ECP-CLECBDS	For control master/local station of CC-Link IE Controller Network compatible with Compact PCI bus Japanese/English OS With external power supply function

* General specifications and product guarantee conditions of jointly developed products are different from those of MELSEC products.
For further details, please refer to the product manuals, or contact your local Mitsubishi Electric sales representative.

MEMO

[FA Products]

PLC | MELSEC-Q Series Universal Model

Introducing the high-speed QCPU (QnUDVCPU) for faster processing of large data volumes.

◎Realize high-speed, high-accuracy machine control with various iQ Platform compatible controllers and multiple CPUs.
◎Easily connect to GOTs and Programming tools using built-in Ethernet port.
◎25 models from 10k step small capacity to 1000k step large capacity, are available.
◎Seamless communication and flexible integration at any network level.

Product Specifications

Program capacity	10k steps to 1000k steps
Number of I/O points [X/Y], number of I/O device points [X/Y]	256 points to 4096 points/8192 points
Basic instruction processing speed (LD instruction)	120 ns to 1.9 ns
External connection interface	USB (all models equipped), Ethernet, RS-232, memory card, extended SRAM cassette
Function module	I/O, analog, high-speed counter, positioning, simple motion, temperature input, temperature control, network module
Module extension style	Building block type
Network	Ethernet, CC-Link IE controller network, CC-Link IE field network, CC-Link, CC-Link/LT, MELSECNET/H, SSCNETⅢ (/H), AnyWire, RS-232, RS-422

Programmable Controller | MELSEC-L Series

"Light & Flexible" condensing various functions easily and flexibly.

◎CPU equipped as a standard with various functions including counter, positioning and CC-Link.
◎The base-less structure with high degree of freedom saves space in the control panel.
◎Easily confirm the system status and change the settings with the display unit.
◎Ten models are available in program capacities from 20 k steps to 260 k steps.

Product specifications

Program capacity	20 k steps/60 k steps/260 k steps
Number of input/output points [X/Y]	1024 points/4096 points
Number of input/output device points [X/Y]	8192 points
Basic instruction processing speed (LD instruction)	60 ns/ 40 ns/ 9.5 ns
External connection interface	USB, Ethernet, RS-232, SD memory card, CC-Link (L26CPU-BT/PBT)
Function modules	I/O, analog, high-speed counter, positioning, simple motion, temperature control, network module
Unit expansion style	Base-less structure
Network	Ethernet, CC-Link IE Field network, CC-Link, CC-Link/LT, SSCNETIII(/H), RS-232, RS-422

HMI | Graphic Operation Terminal GOT2000 Series GT27 Model

To the top of HMIs with further user-friendly, satisfactory standard features.

◎Comfortable screen operation even if high-load processing (e.g. logging, device data transfer) is running. (Monitoring performance is twice faster than GT16)
◎Actual usable space without using an SD card is expanded to 128MB for more flexible screen design.
◎Multi-touch features, two-point press, and scroll operations for more user-friendliness.
◎Outline font and PNG images for clear, beautiful screen display.

Product Specifications

Screen size	12.1", 10.4", 8.4" (15" coming soon)
Resolution	SVGA, VGA (XGA coming soon)
Intensity adjustment	32-step adjustment
Touch panel type	Analog resistive film
Built-in interface	RS-232, RS-422/485, Ethernet, USB, SD card
Applicable software	GT Works3
Input power supply voltage	100 to 240VAC (+10%, −15%), 24VDC (+25%, −20%)

Inverter | FR-A800 Series

High-functionality, high-performance inverter

◎Realize even higher responsiveness during real sensor-less vector control or vector control, and achieve faster operating frequencies.
◎The latest automatic tuning function supports various induction motors and also sensor-less PM motors.
◎The standard model is compatible with EU Safety Standards STO (PLd, SIL2). Add options to support higher level safety standards.
◎A variety of useful functions provide USB memory support and customization with a PLC function.

Product Specifications

Inverter capacity	200V class: 0.4kW to 90kW, 400V class: 0.4kW to 500kW
Control method	High-carrier frequency PWM control (Select from V/F, advanced flux vector, real sensor-less vector or PM sensor-less vector control), vector control (when using options)
Output frequency range	0.2 to 590Hz (when using V/F control or advanced flux vector control)
Regenerative braking torque (Maximum tolerable usage rate)	200V class: 0.4K to 1.5K (150% at 3%ED) 2.2K/3.7K (100% at 3%ED) 5.5K/7.5K (100% at 2%ED) 11K to 55K (20% continuous) 75K or more (10% continuous), 400V class: 0.4K to 7.5K (100% at 2%ED) 11K to 55K (20% continuous) 75K or more (10% continuous)
Starting torque	200% 0.3Hz (3.7K or less), 150% 0.3Hz (5.5K or more) (when using real sensor-less vector, vector control)

AC Servo | Mitsubishi General-Purpose AC Servo MELSERVO-J4 Series

Industry-leading level of high performance servo

◎Industry-leading level of basic performance: Speed frequency response (2.5kHz), 4,000,000 (4,194,304p/rev) encoder
◎Advanced one-touch tuning function achieves the one-touch adjustment of advanced vibration suppression control Ⅱ, etc.
◎Equipped with large capacity drive recorder and machine diagnosis function for easy maintenance.
◎2-axis and 3-axis servo amplifiers are available for energy-conservative, space-saving, and low-cost machines.

Product Specifications

Power supply specifications	1-phase/3-phase 200V AC, 3-phase 400V AC
Command interface	SSCNET Ⅲ/H, SSCNET Ⅲ (compatible in J3 compatibility mode), CC-Link IE Field Network interface with Motion, pulse train, analog
Control mode	Position/Speed/Torque/Fully closed loop
Speed frequency response	2.5kHz
Tuning function	Advanced one-touch tuning, advanced vibration suppression control Ⅱ, robust filter, etc.
Safety function	STO, SS1 SS2, SOS, SLS, SBC, SSM (compatible when combined with motion controller)
Compatible servo motor	Rotary servo motor (rated output: 0.05 to 22kW), linear servo motor (continuous thrust 50 to 3000N), direct drive motor (rated torque: 2 to 240N・m)

Sensor-less Servo | FR-E700EX Series, MM-GKR Series

Compact and high-function drive unit, low-inertial small capacity sensor-less PM motor

◎Use PM sensor-less vector control to control dedicated PM motors with high accuracy without an encoder.
◎High-accuracy speed control (speed fluctuation rate ±0.05%) and positioning control are supported.
◎The dedicated PM motor (MM-GKR) is quiet as it has no cooling fan. The compact and lightweight unit also supports reduction gears.
◎The standard model supports RS-485 communication. CC-Link communication is supported with an additional option.

Product Specifications

Drive unit / motor capacity		200V class: 0.1kW to 0.75kW
Control method		PM sensor-less vector control (low speed range: high frequency superimposition control)
Rated speed		3000r/min
Speed fluctuation rate		±0.05% (at 0 to 100% load fluctuation)
Position control	Command input method	The point table method and zero point return enable position control with absolute position commands
	Positioning accuracy	±1.8° (machine angle: equivalent to 200 [pulses/rev] resolution, input voltage 200V, wiring length within 5m)
Starting torque		200% (default value)
Communication specifications		Built-in: RS-485 communication (Mitsubishi inverter protocol, Modbus-RTU protocol), option: CC-Link communication

Magnetic Starter | MS-T Series

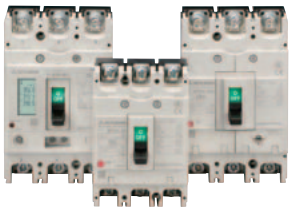
Exceed your expectations.

◎10A frame model is over 16% smaller with a width of just 36mm!!
◎New integrated terminal covers.
◎Reduce your coil inventory by up to 50%.
◎Be certified to the highest international levels while work is ongoing to gain other country.

Product specifications

Frame	10 A to 32 A
Applicable standards	Certification to various standards including IEC, JIS, CE, UL, TÜV, CCC.
Terminal cover	Standard terminal cover improves safety, simplifies ordering, and reduces inventory, etc.
Improved wiring	Wiring and operability are improved with streamlining wiring terminal BC specifications.
Operation coil rating	Wide range of operation coil ratings reduces number of coil types from 14 (N Series) to 7 types and simplifies selection.
Option units	Diverse lineup includes Auxiliary Contact Block, Operation Coil Surge Absorber Unit, Mechanical Interlock Unit.

Low Voltage Circuit Breakers | Mitsubishi WS-V Series Molded Case Circuit Breakers, Earth Leakage Circuit Breakers



Technologies based on long year experience realize more improved performance.

◎The new electronic circuit breakers can display various measurement items.
◎Improvement of breaking performance with new breaking technology “Expanded ISTAC”.
◎Compliance with global standard for panel and machine export.
◎Commoditization of internal accessories for shorter delivery time and stock reduction.

Product Specifications.

Frame	32-250A Frame
Applicable standard	Applicable to IEC, GB, UL, CSA, JIS and etc.
Expansion of UL listed product line-up	New line-up of 480VAC type with high breaking performance for SCCR requirement
Commoditization of internal accessories	Reduction of internal accessory types from 3 to 1
Commoditization for AC and DC circuit use	Common use of 32/63A frame in both AC and DC circuit
Compact size for easy to use	Thermal adjustable and electronic circuit breakers are same size as 250AF fixed type
Measuring Display Unit (MDU) breakers	MDU breakers measure, display and transmit energy date to realize energy management.

Robot | MELFA F Series

High speed, high precision and high reliability industrial robot

◎Compact body and slim arm design, allowing operating area to be expanded and load capacity increased.
◎The fastest in its class using high performance motors and unique driver control technology.
◎Improved flexibility for robot layout design considerations.
◎Optimal motor control tuning set automatically based on operating position, posture, and load conditions.

Product Specifications

Degrees of freedom	Vertical:6 Horizontal:4
Installation	Vertical:Floor-mount, ceiling mount, wall mount (Range of motion for J1 is limited) Horizontal:Floor-mount
Maximum load capacity	Vertical:2-20kg Horizontal:3-20kg
Maximum reach radius	Vertical:504-1503mm Horizontal:350-1,000mm

iQ Platform compatible CNC to provide TCO reduction effect.

◎A CNC structured in building block method on iQ Platform.

◎High performance CNC integrated with high-speed PLC offers high-speed control to reduce cycle time.

◎A wide variety of FA products helps construct flexible lines.

Product specifications

Maximum number of control axes (NC axis + spindle + PLC axis)	16 axes
Maximum number of part system	Machining center system: 7 systems, Lathe system: 3 systems
Maximum number of NC axes per part system	8 axes
Maximum program capacity	2,000 kB (5,120 m)
Maximum number of files to store	124 files/252 files
Number of input/output points	4,096 points
Safety observation function	Safety signal comparison function, speed monitoring function, duplexed emergency stop

For detailed information, please refer to: http://www.mitsubishielectric.com/fa/worldwide/index.html

Precautions before use

This publication explains the typical features and functions of the products herein and does not provide restrictions and other information related to usage and module combinations. Before using the products, always read the product user manuals. Mitsubishi Electric will not be held liable for damage caused by factors found not to be the cause of Mitsubishi Electric; opportunity loss or lost profits caused by faults in Mitsubishi Electric products; damage, secondary damage, or accident compensation, whether foreseeable or not, caused by special factors; damage to products other than Mitsubishi Electric products; and to other duties.

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- To use the products given in this publication properly, always read the relevant manuals before use.
- The products have been manufactured as general-purpose parts for general industries, and have not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the products for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- The products have been manufactured under strict quality control. However, when installing the products where major accidents or losses could occur if the products fail, install appropriate backup or fail-safe functions in the system.

CC-Link CC-Link IE MELSOFT

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