



for a greener tomorrow

Changes for the Better

iQ Platform
Programmable Controllers
MELSEC-Q series [QnU]

Reaching higher, to the summit of the Q series



MELSEC  series

QnU

Performance on a different level brought to you
with the Programmable Controller

Continuously evolving Universal Model



Current production requirements are calling for an increase in productivity and carrying out production processes even faster due to an increase in production information such as production results and traceability. The MELSEC-Q series new generation programmable controller "Universal Model QnU" is a leader for these market needs. High-speed basic instruction processing on a micro scale dramatically increases your system and machine performance. Inheriting the high robust and ease of use design of the Q series. MELSEC QnU ... This new-generation programmable controller will open up new possibilities for your automation solution.

iQ Platform

MELSEC **Q** series

QnU

High-speed
1.9ns

Large capacity
1000K
steps

Built-in
Ethernet

Built-in
USB

SD
memory card
slot

Security

Data
logging
function



Improved Productivity

More User - Friendly

Easy Maintenance



Customer experiences created this new-generation Programmable Controller

- Support for shorter operation cycle times
- Support for higher quality control requirements
- Complex and large-scale equipment and systems
- Expanding control and production control data
- Shorter product cycles
- Support for higher equipment operation rates

I N D E X

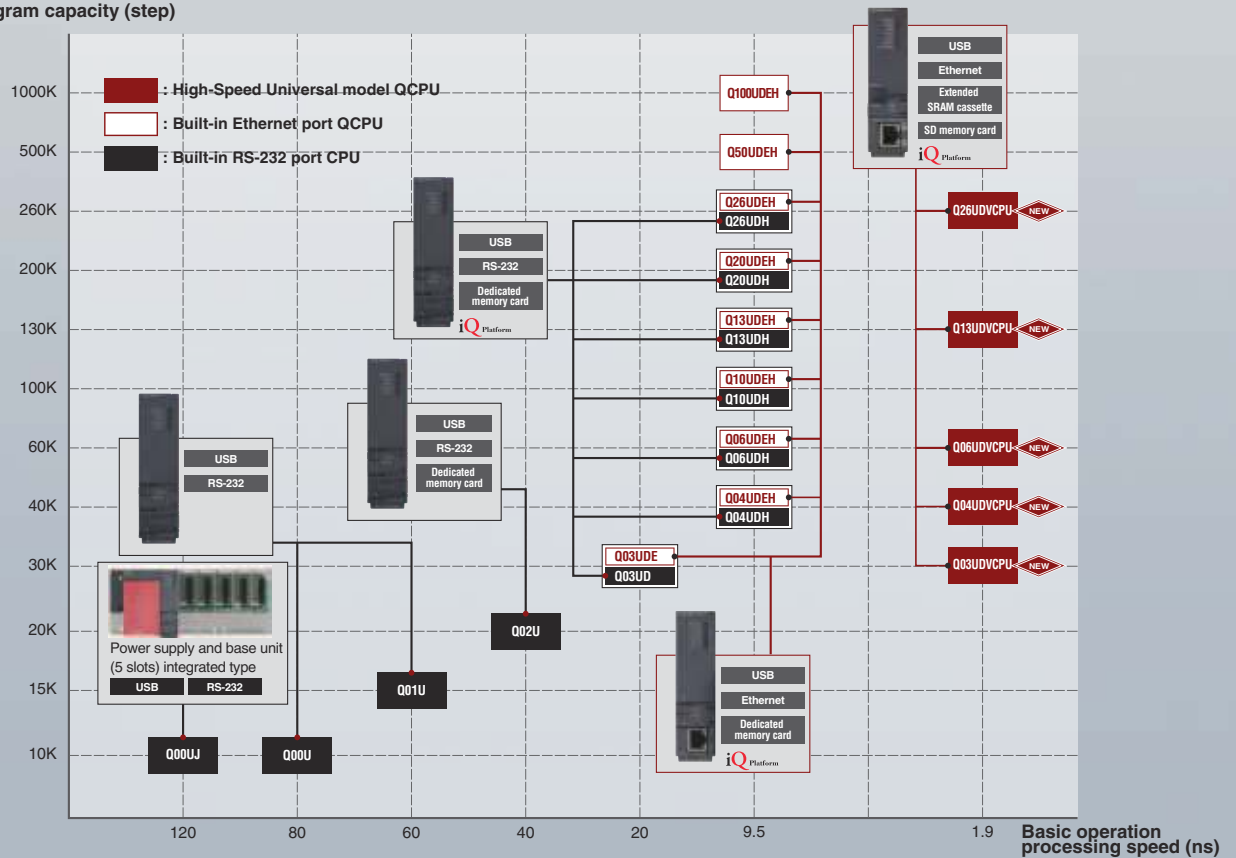
QnU CPU	P.3	Module Lineup	P.33
• Improved Productivity	P.5	Software	P.45
• More User-Friendly	P.9	Related Products	P.57
• Easy Maintenance	P.15	Specifications	P.69
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Reaching higher, to the summit of the Q series




■ MELSEC-Q series Universal Model Lineup

Program capacity (step)





New High-Speed Universal model QCPU

Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV 

Basic operation processing speed (LD instruction) 1.9ns	Program capacity 260K steps		
Ethernet	USB	SD memory card slot	Extended SRAM cassette
Data logging function	Security	iQ Platform	

*: This CPU type is only supported by GX Works2 (GX Developer is not supported).

■ High-speed Universal model QCPU

SD memory card slot

- ▶ Data logging function
- ▶ Boot operation
- ▶ Backup/Restore



CPU

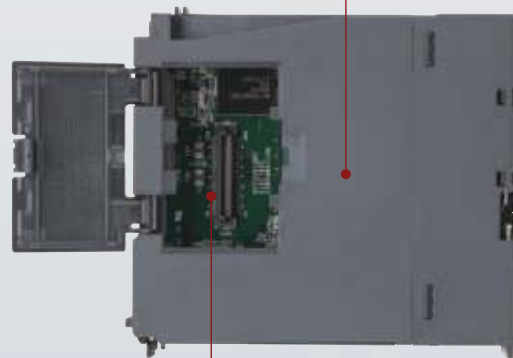
- ▶ Basic operation processing speed (LD instruction): 1.9ns
- ▶ Program capacity: maximum 260K steps
- ▶ Fixed Scan interrupt program (minimum interval): 100μs



Ethernet port



USB port



Cassette port

- ▶ Expand standard RAM (up to 8MB)
- ▶ Use simultaneously with SD memory card
- ▶ Continuously access file registers

Enhanced security functions

A max. 32-character file password can be set. Special characters (*, @, &, etc.) can be used in addition to alphanumeric characters making it harder to compromise the password. Also protection of valuable intellectual property can be enhanced by only allowing preregistered devices to access the CPU, blocking out unauthorized users.



Improved Productivity



Basic operation processing speed (LD instruction):

1.9ns

Performance that surpasses all others

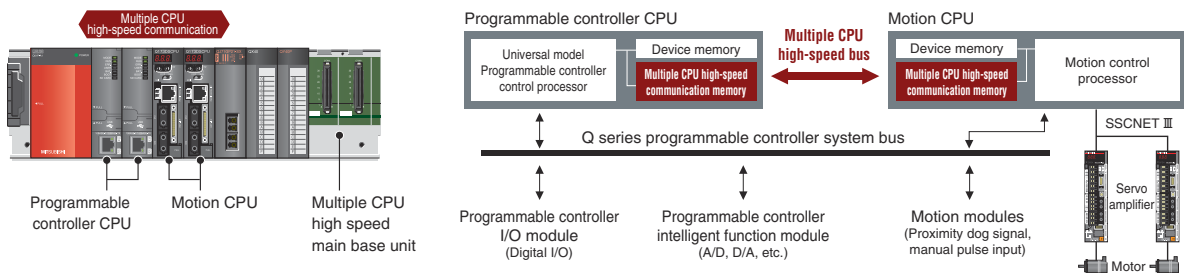
Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV

High-speed, high-accuracy machine control

To achieve truly high-speed synchronized control between multiple CPUs, a dedicated bus is used, independent of sequence program operation. (0.88 ms operation cycle)

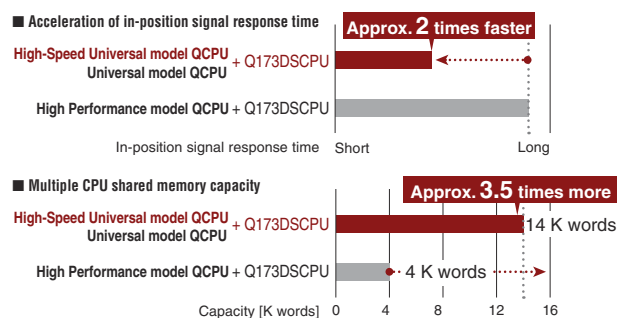
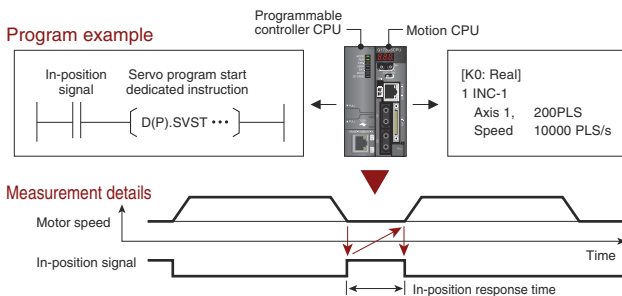
This multiple CPU high-speed communication is synchronized with motion control to maximize computational efficiency.

Additionally, the performance of the latest motion control CPU is twice as fast as the previous model, ensuring high-speed, high-accuracy machine control.



<In-position response time>

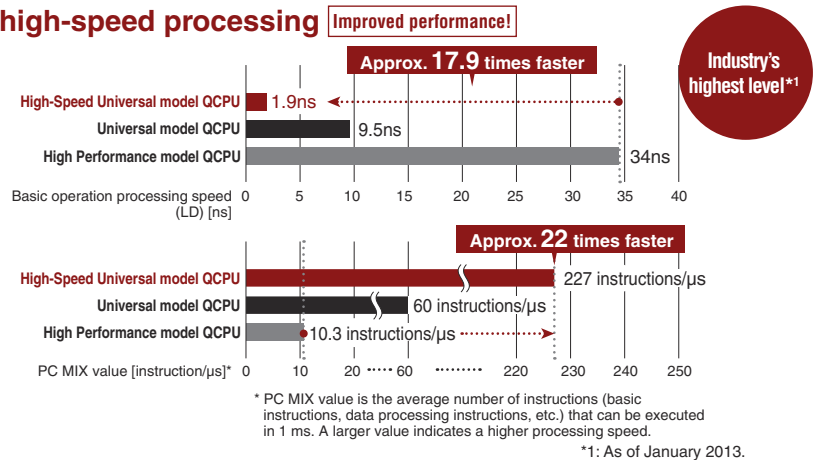
In a 2-axis, multi-CPU system consisting of a programmable controller CPU and motion CPU, the motion CPU receives the in-position signal from the amplifier of the first axis. Next, the programmable controller CPU sends a start command to the second amplifier. This example shows the time it takes from the stopping of motion on one axis until the beginning of motion on a second axis. This time is a good indicator of CPU-to-CPU data transfer speed.



*1: Q00UJ, Q00U, Q01U and Q02U are not supported.

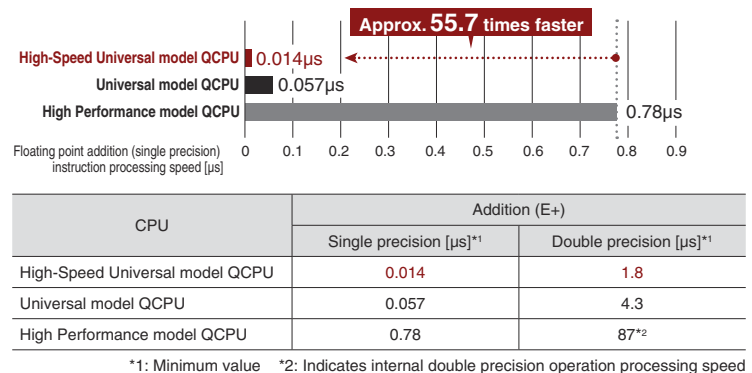
■ Improved production time with ultra-high-speed processing Improved performance!

As applications are getting larger and more complex it is essential to shorten the system operation cycle time. To achieve this, the ultra high-speed of 1.9ns (LD instruction) processing enables to realize shorter operating cycles.
 System performance can be improved by reducing the overall scan time, preventing any variances in performance. In addition to realization of high-speed control which is normally associated with microcomputer control.



■ High-speed, high-precision data processing Improved performance!

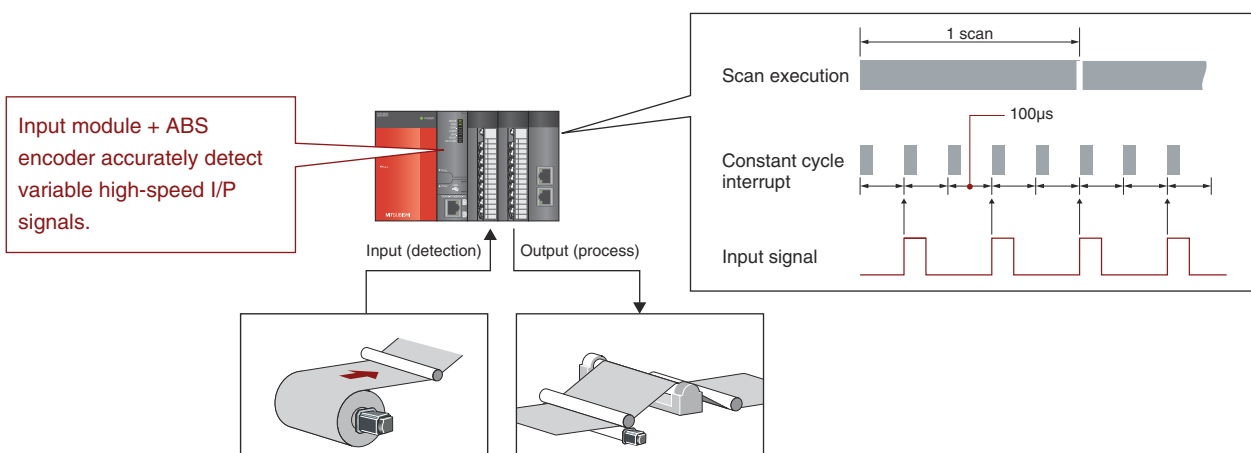
The floating point addition processing speed has been greatly increased to 0.014μs to support high-speed, high-precision operation processing. Also, new double-precision floating-point operation instruction have been added to simplify programming and reduce calculation errors when implementing complex equations.



■ Shorter fixed scan interrupt time realizing higher system accuracy Improved performance!

Reduced minimal fixed scan interrupt program time to 100μs*1.
 High-speed I/O signals resulting in high-accuracy control system.

Example: High-speed position detection of film paper feed system.



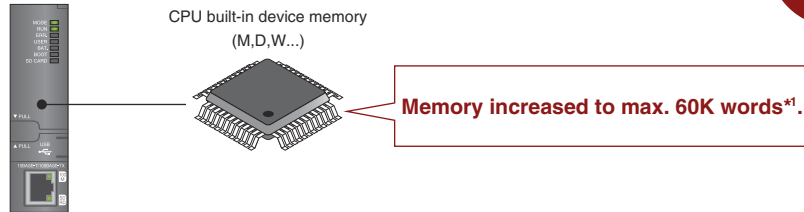
*1: Only supported by High-Speed Universal model QCPU

Improved Productivity

■ Improved basic functions Improved performance!

The CPU's built-in device memory capacity has been increased to a max. of 60K words*1. Support increasing control and quality data with high-speed processing.

Increased capacity!



*1: Only for Q13UDVCPU and Q26UDVCPU.

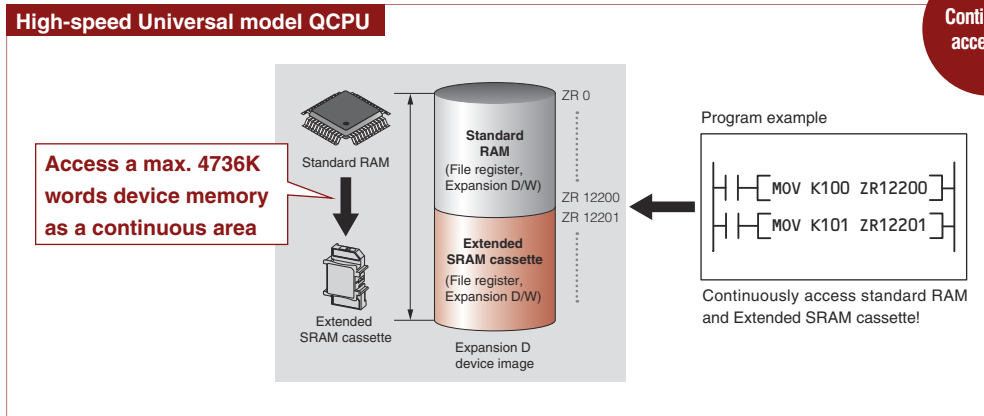
■ Large data volume at high-speed Improved performance!

Conventionally, continuous access to the standard RAM and SRAM card's file register area could not be achieved which had to be reflected in the user program.

When an 8MB Extended SRAM cassette is installed in the High-Speed Universal model QCPU, the standard RAM can be as one continuous file register with up to 4736K words capacity, simplifying the user program.

Even if the device memory is insufficient, the file register area can be expanded easily by installing the Extended SRAM cassette.

Continuous access! *1



*1: Only supported by High-Speed Universal model QCPU

◎File register capacity*2

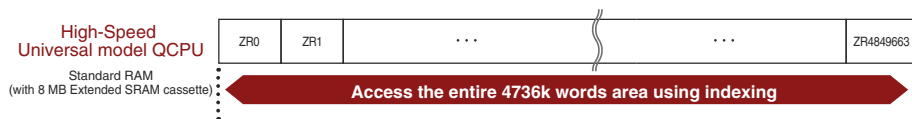
Model	Q03UDV NEW	Q04UDV NEW	Q06UDV NEW	Q13UDV NEW	Q26UDV NEW
Extended SRAM cassette not installed (Standard RAM capacity)	96K words (192KB)	128K words (256KB)	384K words (768KB)	512K words (1024KB)	640K words (1280KB)
with Q4MCA-1MBS (1MB)*3	608K words	640K words	896K words	1024K words	1152K words
with Q4MCA-2MBS (2MB)*3	1120K words	1152K words	1408K words	1536K words	1664K words
with Q4MCA-4MBS (4MB)*3	2144K words	2176K words	2432K words	2560K words	2688K words
with Q4MCA-8MBS (8MB)*3	4192K words	4224K words	4480K words	4608K words	4736K words

*2: Maximum capacity when using Extended SRAM cassette file as a file register. Total when CPU's standard RAM and Extended SRAM cassette are installed.

*3: Only High-Speed Universal model QCPU.

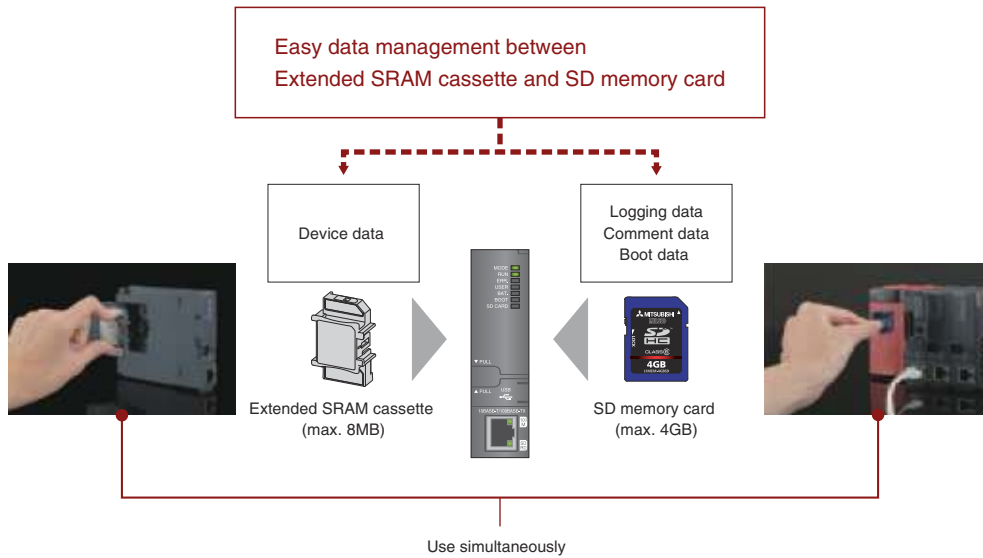
The index register has been extended to 32 bits to allow programming beyond the conventional 32K words and to enable use of the entire file register area.

The processing speed for indexing, which is essential for efficient operation of structured (array) data, has been increased. The scan time can be shortened when indexing is used in repetitive programs, such as FOR to NEXT instructions.



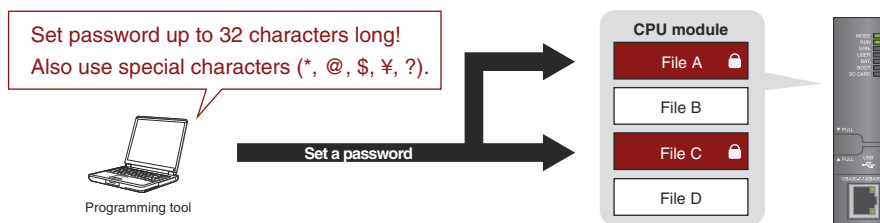
■ **SD memory card** Improved functionality!

SD memory card are supported by High-Speed Universal model QCPU allowing easy data exchange between the PC. The SD memory card and Extended SRAM cassette can be used at the same time allowing extension of file registers (with Extended SRAM cassette), data file logging, boot data, and storing of large comment data (SD memory card).

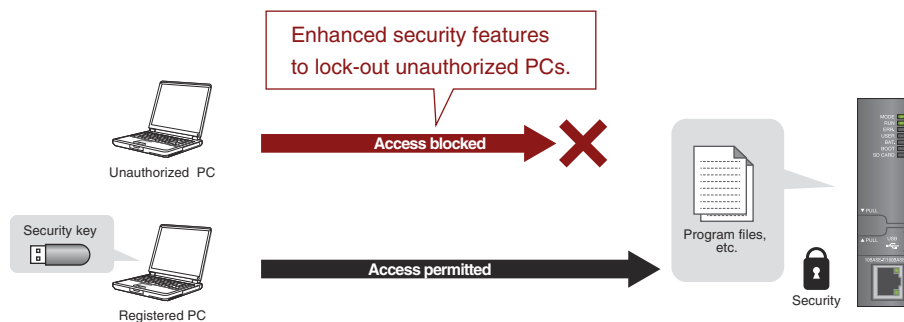


■ **Protect important data with enhanced security** Improved functionality!

A max. 32-character file password can be set *1.
 Special characters (*, @, &, etc.) can be used in addition to alphanumeric characters making it harder to compromise the password.



Also protection of valuable intellectual property can be enhanced by only allowing preregistered devices to access the CPU, blocking out unauthorized users*2.



*1: Only supported by High-Speed Universal model QCPU. Other models use 4 character password system.
 *2: Only supported by High-Speed Universal model QCPU.

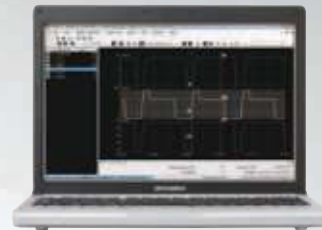


More User-Friendly

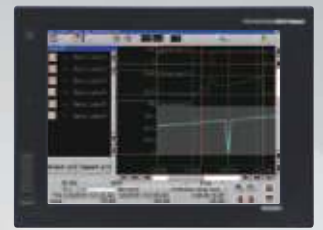
Data logging function Improved functionality!

Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV NEW

Display collected data on PC or GOT



Logging data display and analysis tool
GX LogViewer

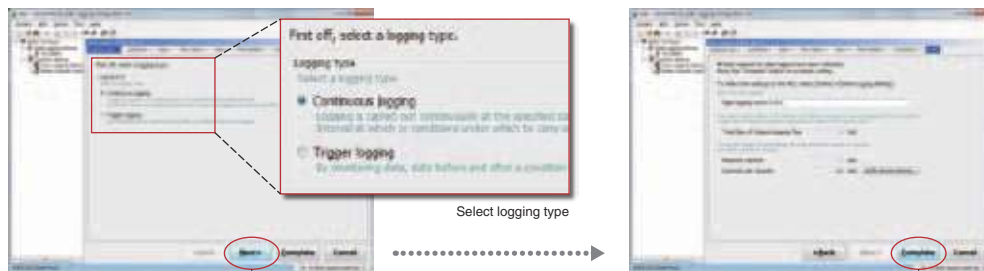


GOT log viewer function

■ Easy logging without a program

Save collected data in CSV format on a SD memory card just by completing easy settings with the dedicated setting tool wizard. Various reference materials including daily reports, form creation and general reports can be created easily within the saved CSV file. This data can be used for a wide variety of applications requiring traceability, production data, etc.

■ Setting with Wizard screen



Enter settings according to the wizard.
Click "Next" button to complete!

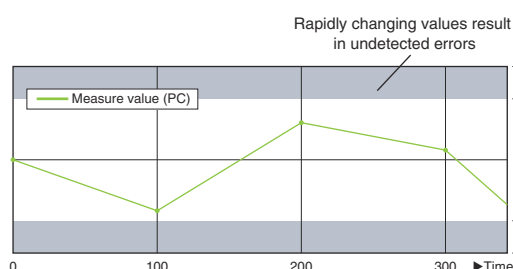


■ Logging of control data variances

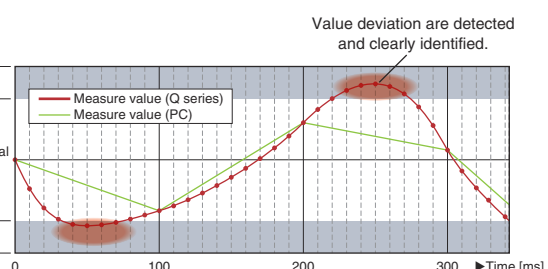
Data is collected during each scan or within millisecond intervals allowing detection of control deviation even at very high speeds.

Therefore, identification of errors can be conducted faster and in more detail.

■ Generic sample data from a PC or external device at 100ms intervals



■ Q series CPU data logging function is capable of sampling data at much higher intervals as to detect fast changing values.

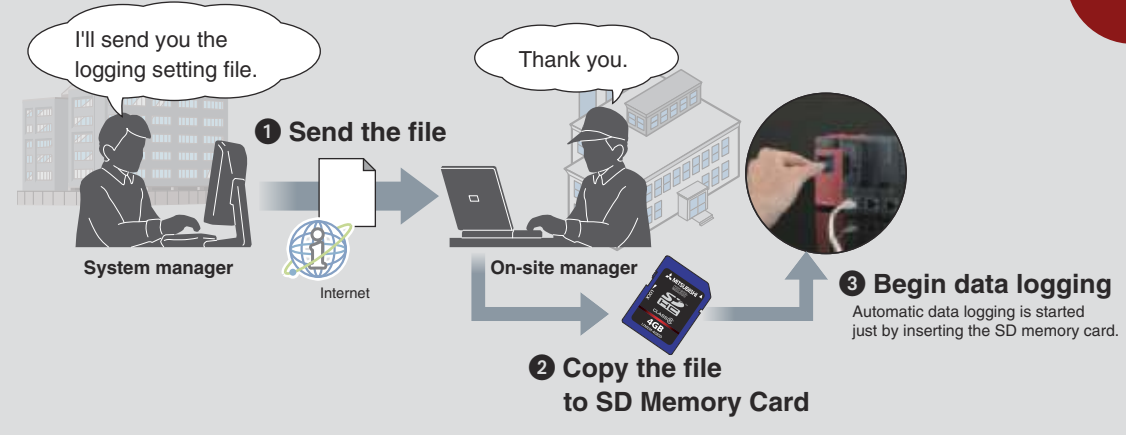


■ Automatic logging just by using a SD memory card

Automatic data logging realized just by inserting the SD memory card into the CPU, which is achieved as the memory card includes the logging configuration file. Instructing data logging remotely is also realized just by sending the configuration file by e-mail and copying onto the SD memory card (Patent pending).

Example: Quickly setup for automatic data logging on-site

Easy logging

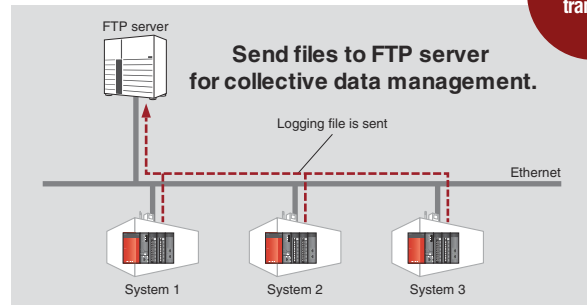


■ Automatically send logging files to FTP server

Data logging files stored on the SD memory card can be sent to FTP server just by making a simple setting with the Logging configuration tool. As the logging server can handle multiple files, management and maintenance tasks can be reduced.

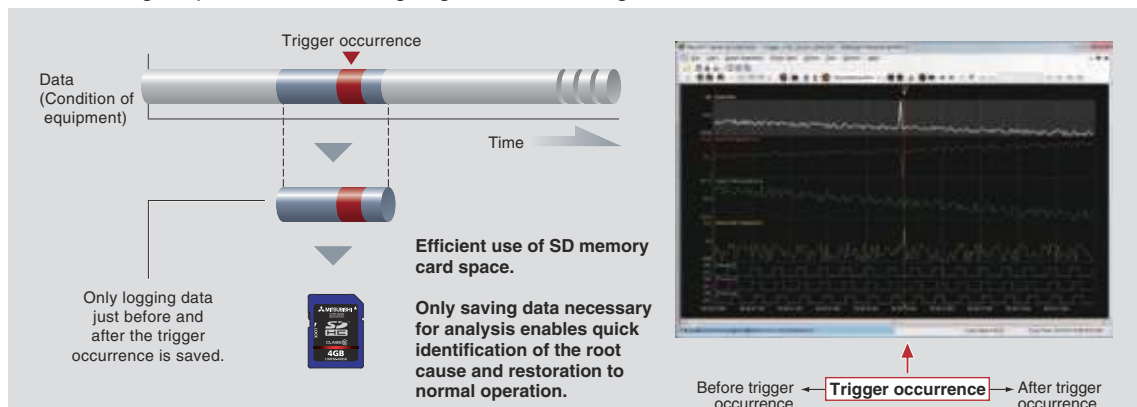
■ File transfer feature

Automatically transfer



■ Quick troubleshooting response

Error causes and solutions can be quickly done as only the required data related to the problem is extracted, without having to spend time on filtering large volumes of diagnostic data.



“GX LogViewer*1” and “Logging configuration tool*2” available for free

To receive a copy of GX LogViewer and Logging configuration tool, contact your local Mitsubishi Electric representative.

*1: Refer to page 61 for details on GX LogViewer.
 *2: The logging configuration tool is enclosed with GX Works2.

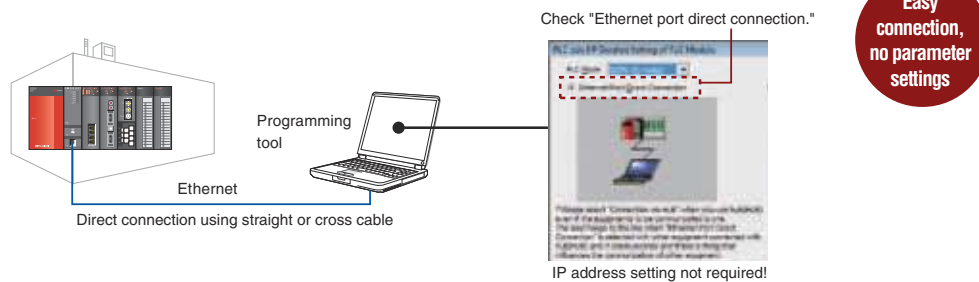
More User-Friendly

CPU modules with Built-in Ethernet Port

Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV 
 Q03UDE, Q04UDEH, Q06UDEH, Q10UDEH, Q13UDEH, Q20UDEH, Q26UDEH, Q50UDEH, Q100UDEH

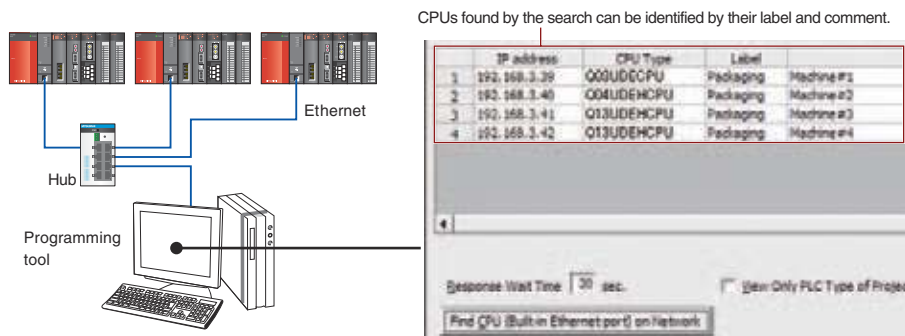
■ Easily connect to CPUs via Ethernet

IP address settings are not required to connect to CPU modules directly (one-to-one connection) using GX Works2 or GX Developer. Both straight and cross cables can be used, and are automatically identified by the CPU module. Therefore this connection method is as easy as using USB. Even operators who are not familiar with network settings can easily establish a connection. (Patent pending)



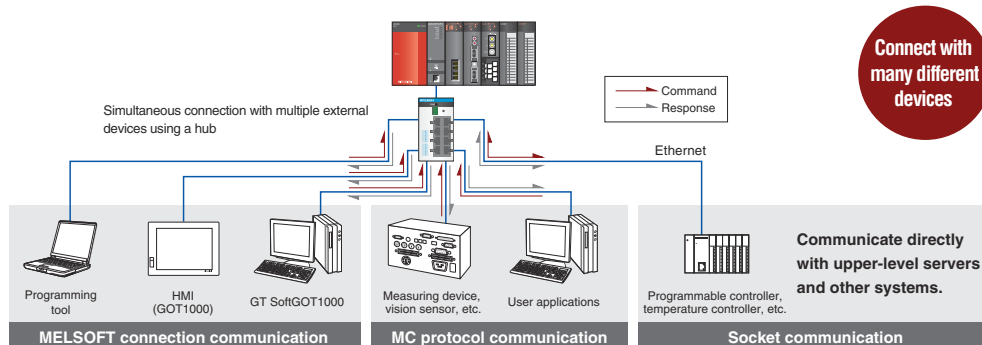
■ Search and display a list of connected CPUs

When multiple CPUs are connected via Ethernet hub, GX Developer or GX Works2 can search for and display a list of all connected built-in Ethernet CPUs. This allows the user to quickly and easily find the correct station even if the IP address is unknown. Then programming and maintenance functions can be performed without wasting any time.



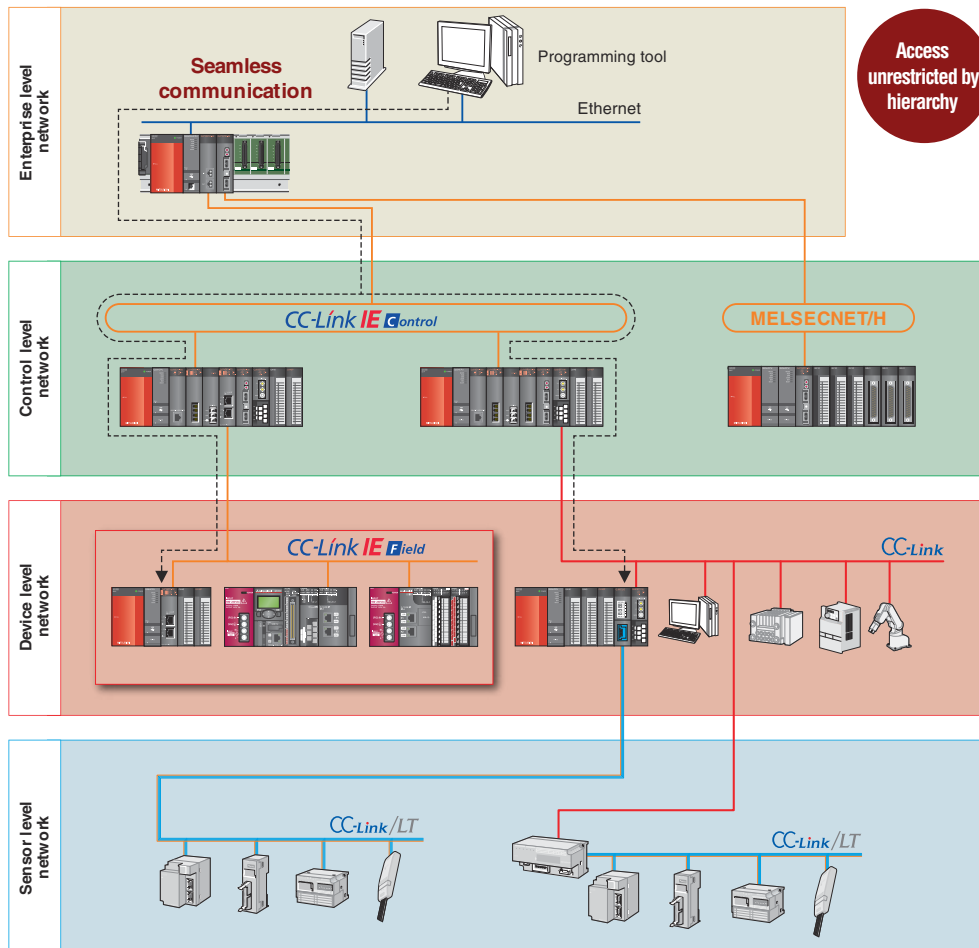
■ A wide range of connection possibilities

Establish high-speed Ethernet communication with various external devices to meet the needs of the application.



Seamless communication across all layers

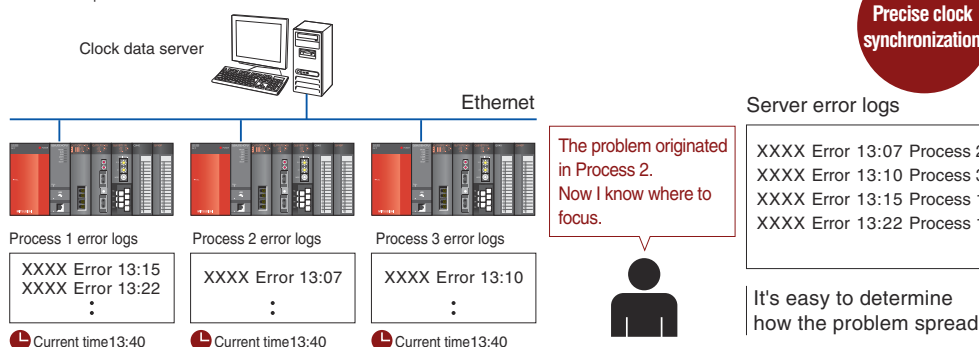
The Universal model QCPUs support a multitude of networking technologies including the high-speed, high-capacity CC-Link IE Controller Network and CC-Link IE Field Network. Along with MELSECNET/H, Ethernet, and CC-Link, these networks may be accessed seamlessly beyond network type or hierarchy. Each programmable controller on the network can be accessed for programming and maintenance duties by using a PC with the appropriate engineering tools connected via Ethernet.



Accurate clock data

The CPU module's clock is automatically corrected with the SNTP*1 clock synchronization function. When CPU clock data is reliably synchronized between systems, any time-stamped events or errors that involve more than one CPU can be easily understood in terms of their order of occurrence and relationship.

*1: SNTP Simple Network Time Protocol



More User-Friendly

■ Save valuable time using the sampling trace function*1

The sampling trace function is a useful diagnostic tool for analyzing error data, and sequence of events for program debug, etc. It can help reduce the overall time required for startup and commissioning of equipment.

In the multiple CPU configuration it can help to determine the timing and transfer of data between CPU modules. Collected data can be easily analyzed within the programming software tool with differences in word device and bit device values conveniently shown in chart and graph form.

In addition, the results from sampling trace can be exported to GX LogViewer CSV file format for analysis within the software.

Sampling trace execution condition settings

Configure how much data to capture

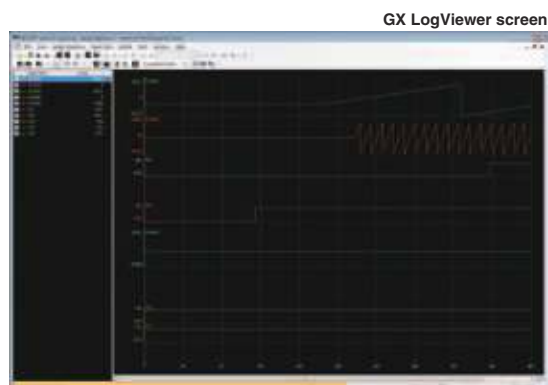
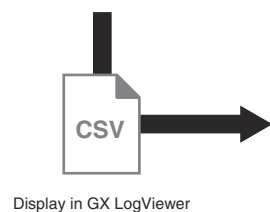
Configure when to capture the data

Configuring data collection is simple

Sampling Trace window: example results

Chart

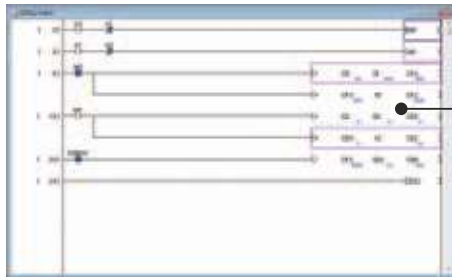
Trend graph



*1: Not supported by Q00UJ.

■ Simplify the debugging process

Universal model CPUs have the ability to use the "Executorial conditioned device test" function, which automatically sets device values to user specified values at any step during program simulation. Traditionally, to simulate real I/O or other device value change, a separate program would need to be written to perform debugging. By using the "Executorial conditioned device test" function, it is possible to debug even small portions of simple ladder programs without the need to modify the program or add rungs of ladder. Therefore, debugging can be completed faster and easier.

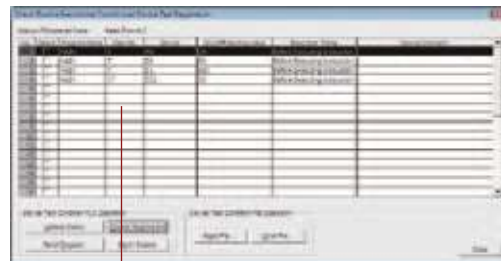


Devices that have been added to the executorial conditioned device test are highlighted by a pink box for easy identification.



No program modifications required

Configure the device setting by choosing the step No. and execution timing (before/after instruction execution).



A list of all devices being controlled by the function is automatically generated and can be saved and recalled for further debugging at a later time.

■ Improved flexibility of device point assignment

[Extended range of bit devices]

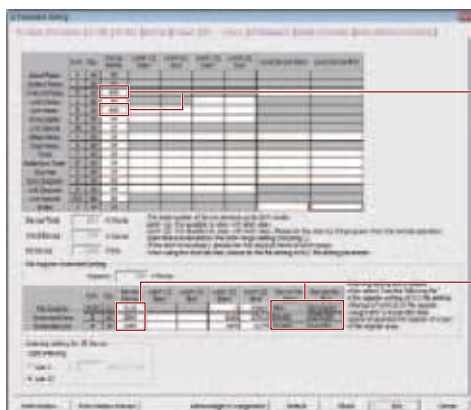
Bit devices, internal relay (M) and link relay (B), can now be assigned up to 60K points each. Previous models are limited to 32K points.

The total number of device points remains the same, however greater flexibility of device utilization and programming is achieved.

Expand bit and word devices

[File Register Extended Setting: data registers and link registers*1]

The number of Data Register (D) and Link Register (W) device points of can be extended using standard ROM or a memory card. Previous models only allow the extension of File Register (R/ZR) device points. Using this setting, it is easy to create more data or link registers to accommodate program changes, etc.



[Extended range of bit devices]

Internal relays (M) and link relays (B) can be assigned up to 60K points.

[File Register Extended Setting]

For example, the 896K points of word devices in the standard ROM area of a Q100UDEHCPU can be divided as follows.

- File register (R): 512K points
- Extended data register (D): 256K points
- Extended link register (W): 128K points

*1: Not supported by Q00UJ.

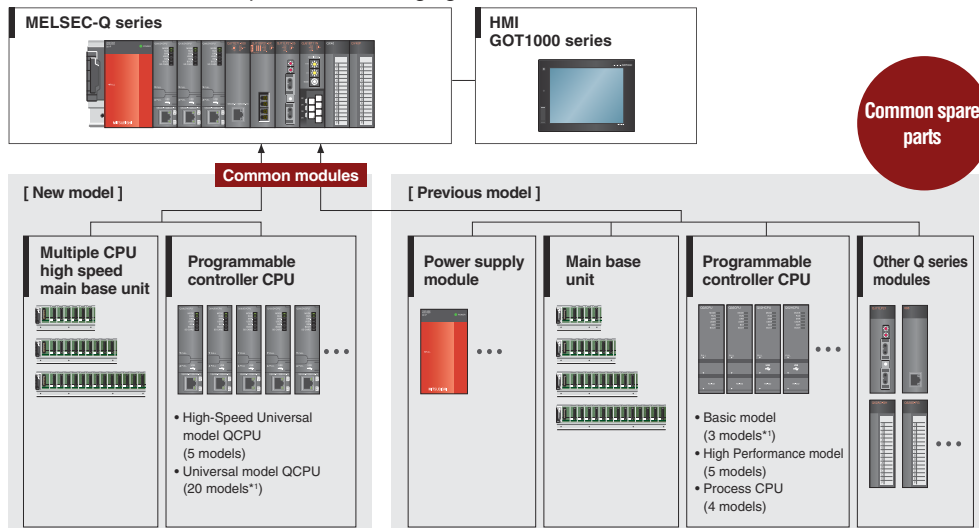
Easy Maintenance



■ Fully compatible with standard Q series

[Use existing Q series modules]

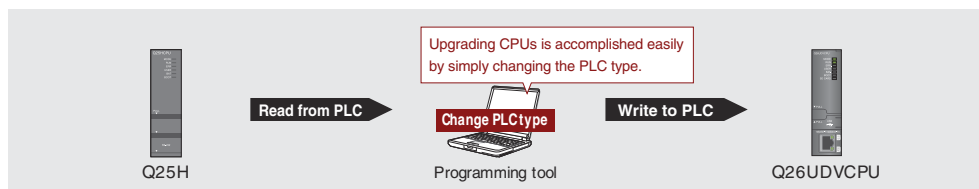
Conventional Q series modules are compatible with the Universal model QCPU series. Therefore, when requiring an upgrade, system maintenance costs of existing systems can be kept to a minimum with little disruption when changing over.



*1: The Q00JUCPU and Q00JCPU are all-in-one type, with integrated power supply, 5-slot base unit, and CPU.

[Use existing Q series programs]

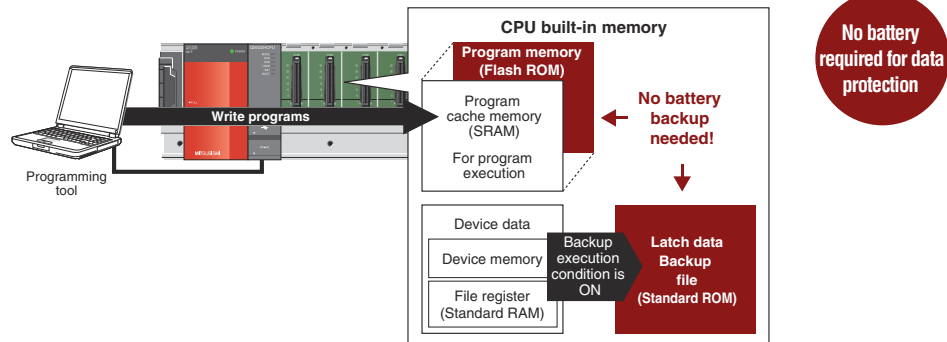
Conventional QCPU programs can be used just by changing the PLC type*2 within the programming tool, which enables easy upgrade to the universal model series with little re-engineering required.



*2: Depending on the program, the number of steps may vary when the PLC type is changed.

■ Automatically backup critical data

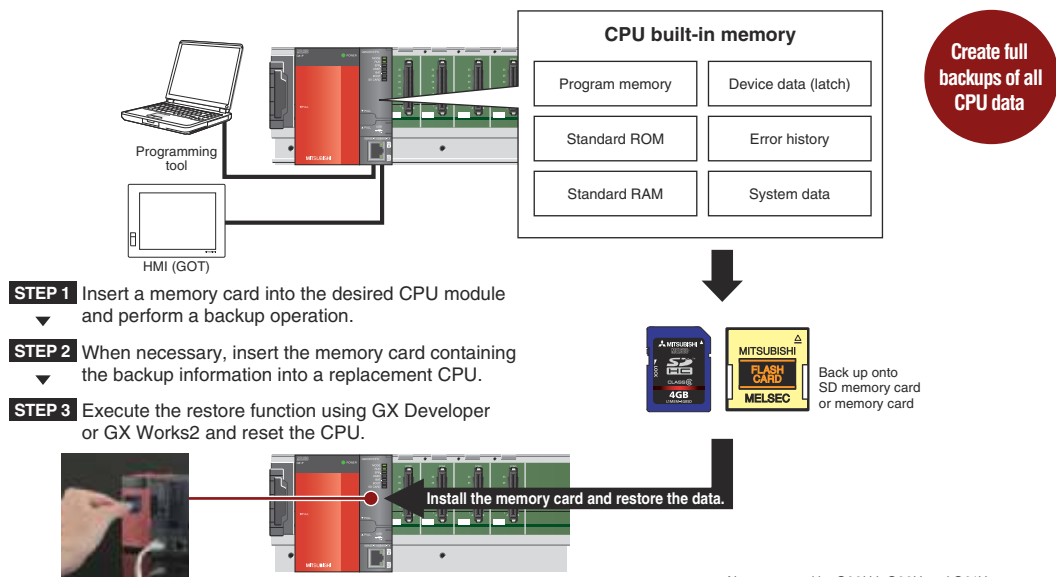
Programs and parameter files are automatically backed up to the program memory (Flash ROM) which does not require battery backup. This prevents loss of program and parameter data owing to failure in battery replacement and significantly reduces the battery backup time. Also, the important data, such as device data, can be backed up to the standard ROM in order to avoid losing them owing to flat battery in case of planned outage during consecutive holidays. The backup data is restored automatically when the power is turned on next time.



■ Shorten system down recovery time

[CPU module change function*1]

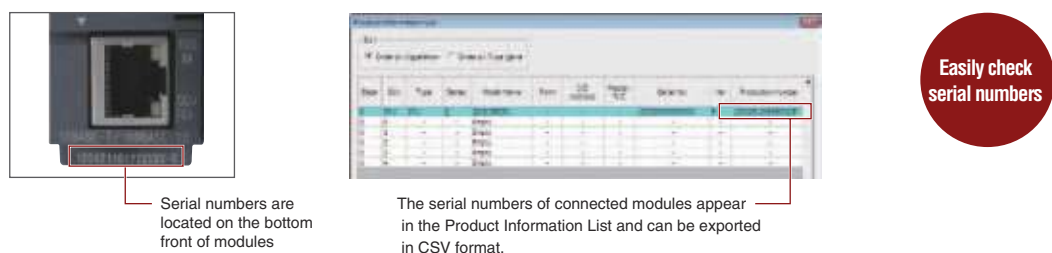
The CPU module change function allows the user to create a comprehensive backup of all CPU information to a memory card. In the unlikely event of a CPU failure or other catastrophic event, the backup data can be used to quickly program a new CPU module. Using this function, the system can rapidly be made operational and downtime can be minimized.



*1: Not supported by Q00UJ, Q00U and Q01U.

■ Serial numbers are now printed on the front of modules

Serial numbers can be checked quickly without having to remove them from the base unit. (No interruption of operation is necessary.) Also, serial numbers may be checked using the "product information list" feature included in GX Developer and GX Works2.



Serial numbers are located on the bottom front of modules

The serial numbers of connected modules appear in the Product Information List and can be exported in CSV format.



The iQ Platform incorporates many different CPU types to integrate multiple control disciplines including sequence, process, servo motion, robot, information handling, and more.

The extensive Q series offers Programmable controller, Process, Redundant, C Language, Motion, Robot and CNC CPUs to cover various different control requirements. With the multiple CPU configuration, a best-fit control system can be realized. In addition, high availability systems can be easily realized with the high-reliability redundant system range.

CPU Lineup



MELSEC PROCESS

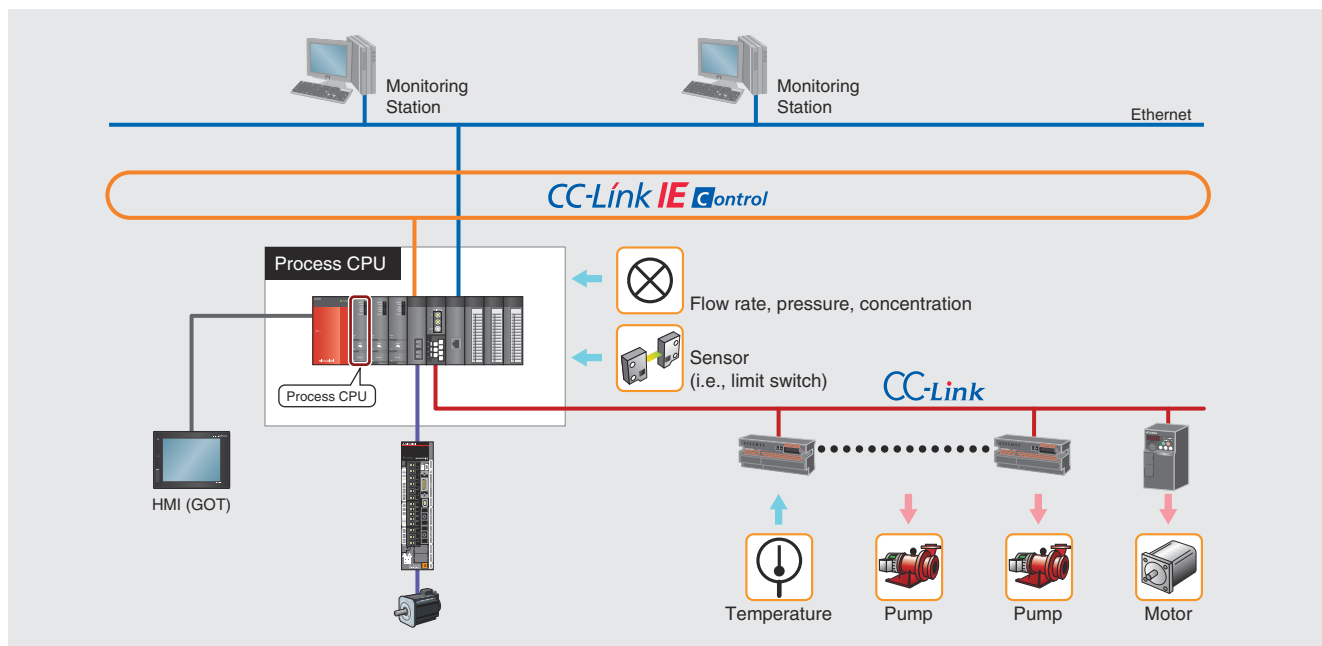
MELSEC process control is a flexible, highly reliable platform with advanced functionality designed to cost-effectively meet the needs of a wide range of industries.



Realize detailed instrument control to match the process state.

● Process CPU..... Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU

Q series process controllers offer features that rival those of costly DCS systems at a fraction of the cost. A single CPU can control a large number of PID loops while simultaneously performing standard sequence control. The process CPUs are complemented by a range of channel isolated high resolution analog I/O modules with online change (hot-swap) capability, and the function block programming and engineering software environment, PX Developer. In addition, PX Developer now supports GX Works2 programming software. With this connection between the two software, both sequence control and loop control programs can be used in the process CPU.

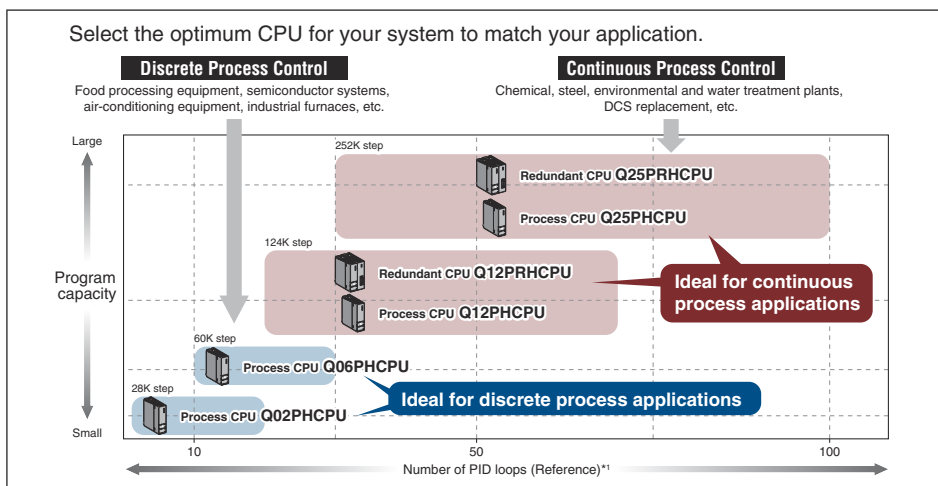
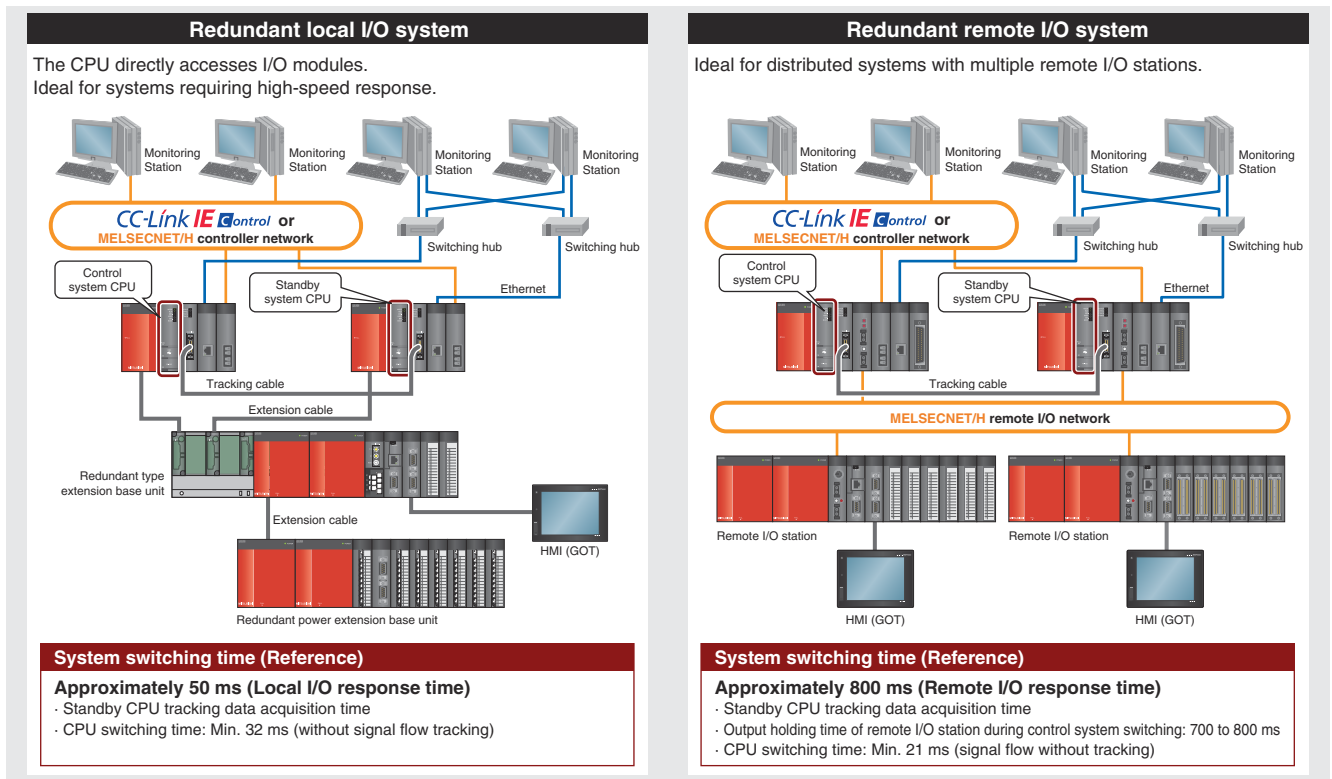


Redundancy to improve your system reliability.

● Redundant CPU Q12PRHCPU, Q25PRHCPU

The redundant systems are designed to provide the users with systems that have the properties of Q series and are not affected by sudden failures. The basic system including CPU module, power supply module, main base unit and network module is redundant to prevent system down. Programming can be performed without consciousness of redundancy.

In addition, PX Developer now supports GX Works2 programming software. With this connection between the two software, both sequence control and loop control programs can be used in the process CPU.



*1: The number of PID loops may change if programs (other than loop control) are large. Refer to the PX Developer Version 1 Programming Manual or process Technical Guide for details.



For details, refer to the "MELSEC Process Control/Redundant System" catalog.

New possibilities for pre-installed systems connected from the C Controller.

● C Controller CPU **Q24DHCCPU-V NEW, Q12DCCPU-V**

The C Controller (pre-installed with RTOS VxWorks®) is an embedded controller that can run C-language type programs. Based on the MELSEC system architecture, it utilizes industrial performance characteristics such as long term parts supply, high availability, and high functionality.

The Q24DHCCPU-V is a high-end information processing controller system with advantageous features such as high speed information processing and control system I/O, all within a very small foot-print. In addition, the Q12DCCPU-V is a standard model C Controller capable of high-speed I/O control in small spaces.

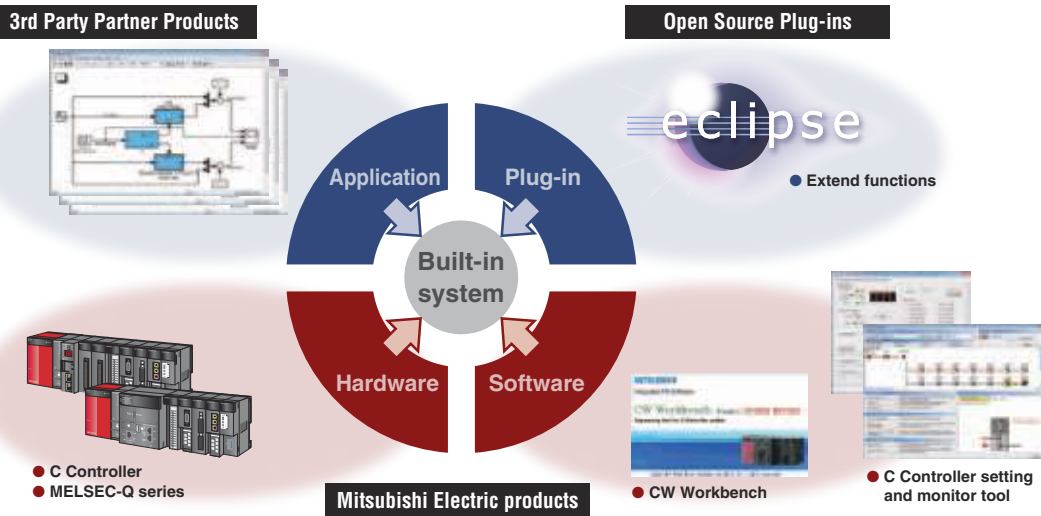
Having the two C Controller types together with the full range of MELSEC-Q series platform modules, a diverse range of applications requiring information processing and control can be realized based on the C programming language. Stronger, simpler, with higher performance, creating the “Standard” for embedded system Platforms. The MELSEC C Controller will continue to evolve as the core element for IA (Industrial Automation).



For details, refer to the “iQ Platform Real Time Operating System C Controller” catalog.

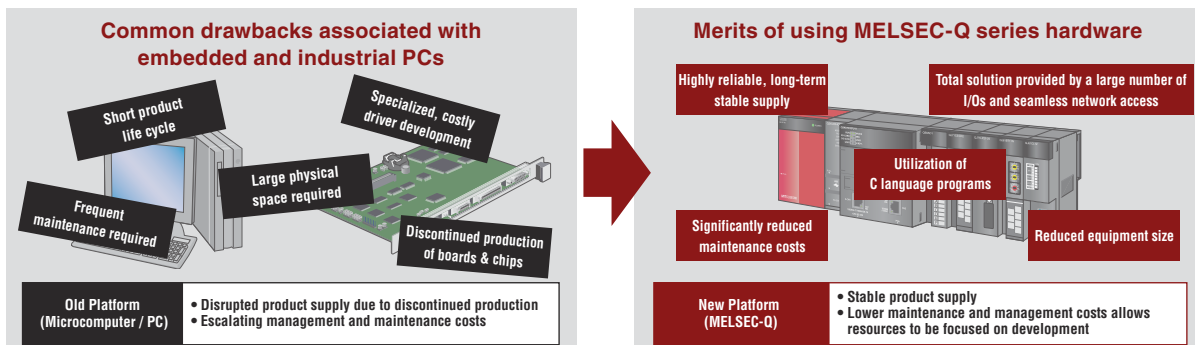
C Controller is an ideal solution for multiple system requirements

The C Controller (embedded with real-time OS VxWorks®) is a platform based on CW Workbench that realizes an attractive cost performance development environment. In addition to supporting 3rd party products and various plug-ins for a multiple structured system.



The C Controller overcomes the overheads associated with maintaining embedded PCs (micro boards., etc) and industrial PCs realizing a cost effective solution.

The C Controller platform is a solution that realizes PC level functionality without the burden of high maintenance costs usually associated with PCs. In addition, it includes a robust design that is ideal for industrial environments by being based on the high quality MELSEC control system.

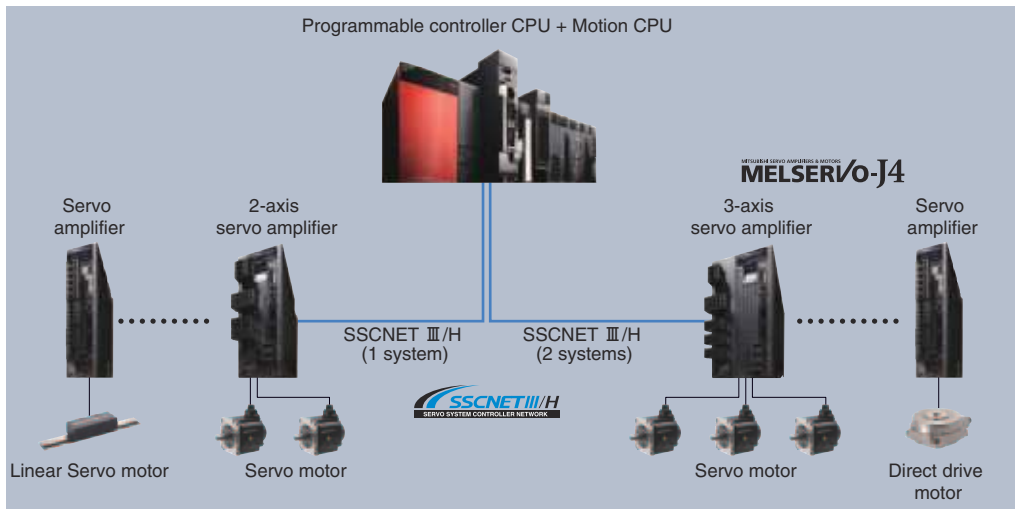




Flexibly connecting with servo amplifiers and servo motors, etc., via SSCNET III/H.

● **Motion CPU** **Q173DSCPU, Q172DSCPU**

Each Mitsubishi Electric Motion controller is capable of high-speed control of up to 32-axes (96-axes when using three CPUs together). Each Motion CPU is the same size as a standard Q series programmable controller. The new generation Motion controller is packed with advanced functions while saving space with its smaller size.

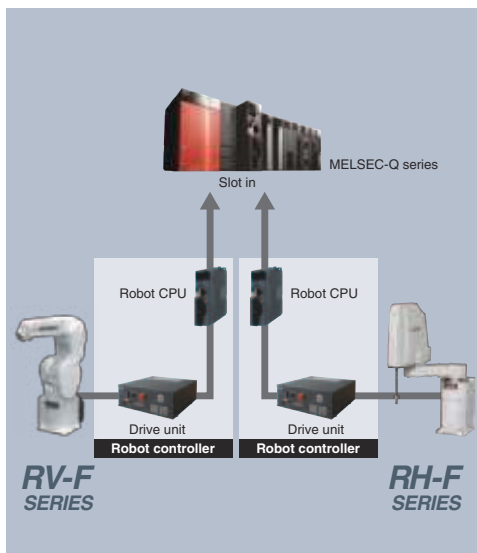


For details, refer to the "Motion Controller/ Simple Motion Module" catalog.

Automating production sites with robots.

● **Robot controller** **CR750-Q, CR751-Q**

The iQ Platform compatible robot controller increases the speed of data communications between CPUs and dramatically reduces I/O processing times using a high-speed standard base between multiple CPUs.

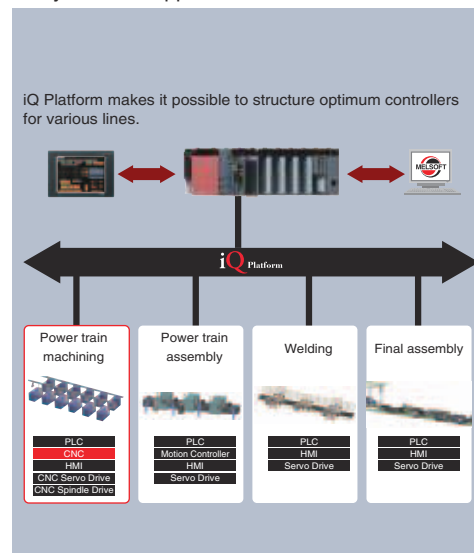


For details, refer to the "INDUSTRIAL ROBOT MELFA F Series" catalog.

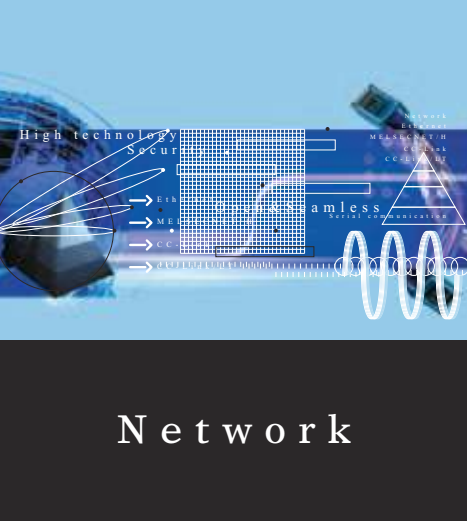
Integrating the high-performance CNC with high-speed PLC.

● **CNCCPU** **Q173NCCPU**

This CNC controller is part of the Mitsubishi FA integration solution "iQ Platform". The integration of the high-performance CNC and high-speed programmable controller helps reduce the total operation cycle time. Supporting a wide range of interface and I/O modules flexible to many different applications.



For details, refer to the "iQ Platform CNC C70 Series" catalog.

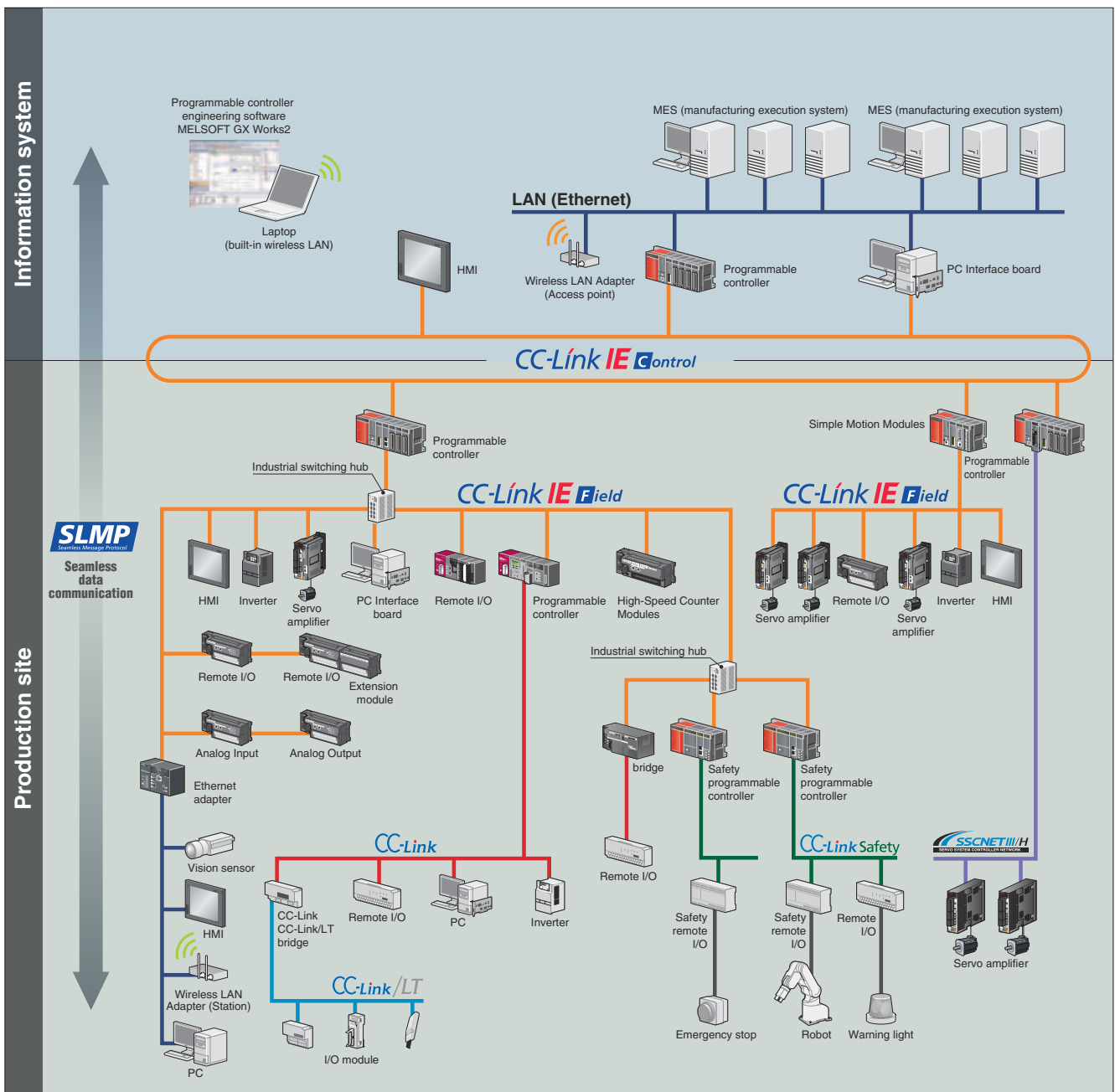


Seamless communication between upper-level information systems and lower-level field systems; scalable to fit any application size.

Today there is an increasing demand from production facilities for high speed control, effective management of data, flexible wiring, easy parameter settings, and predictive maintenance.

To answer these demands, Mitsubishi Electric has teamed up with the CC-Link Partner Association to provide reliable, open-standards networks that operate seamlessly with one another. Together, These and other Mitsubishi networks allow for flexible integration at any network level. The latest addition to the CC-Link portfolio is IE Field; an Ethernet based gigabit network designed to provide cost-effective, reliable connectivity to field devices.

Network Configurations

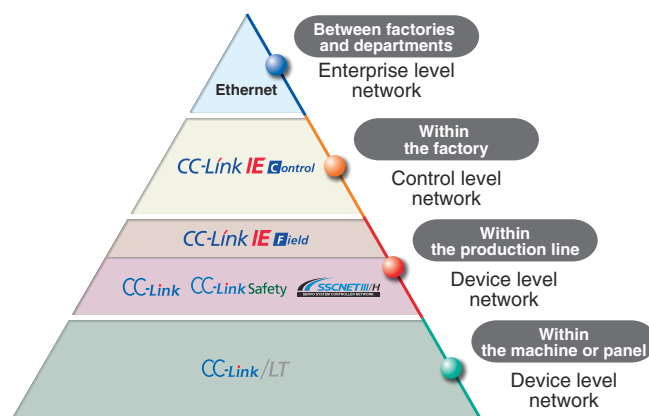


Seamless communication

Q series combines enterprise, control, device, and sensor level networks together through Ethernet, MELSECNET/H, and CC-Link networks to allow easy access to information, no matter where it resides on the network. It is possible to “drill down” from the top Ethernet layer, through multiple networks, and access programmable controllers using GX Works2 or other engineering tools.

In addition, many devices supporting SLMP* such as vision sensors and RFID controllers may be connected to the CC-Link IE Field network.

* SLMP (SeamLess Message Protocol) is a protocol advocated by the CCLink Partner Association.



CC-Link IE Control

CC-Link IE Control is the first controller network that integrates network system based on Ethernet. This controller network is designed to transmit not only control information also large-capacity data such as maintenance device information, conservation, and device settings in the open and seamless network environment.

- 1 Gbps high-speed communication
- Maximum number of link points per network:
 - Link relays (LB): 32768 points
 - Link registers (LW): 131072 points
 - Link inputs/outputs (LX, LY): 8192 points each
- Maximum number of connected stations per network: max. 120 units
- Maximum overall distance: 66km

CC-Link IE Field

CC-Link IE Field provides 1Gbps high speed transmission and real-time protocol that enables reliable remote I/O communication independent of transmission delay. This network is designed to transfer control data and device administrative information simultaneously.

- 1 Gbps high-speed communication
- Maximum link points per network:
 - Remote inputs/outputs (RX, RY): 16384 points
 - Remote registers (RWw): 8192 points
 - (RWr): 8192 points
- Maximum number of connected stations per network: max. 121 units
- Maximum overall distance: 12km

CC-Link

CC-Link is a high-speed field network capable of controlling the system and handling information at the same time, and offers high-speed, reliable input/output response and highly flexible expandability. This distinguished performance the network earned SEMI certification. A Japanese-origin, world standard open field network, CC-Link holds a large market share and has been winning the confidence of customer.

- Communication speeds up to 10 Mbps
- 8192 link device remote I/O points and 2048+2048 remote register points
- Connect with over 1,000 different 3rd party CC-Link compatible products
- Maximum overall distance: 100m (10Mbps)

CC-Link Safety

CC-Link Safety is a safety field network that prevents risks on the shop floor. This realizes a highly-reliable and a high-speed communication with less wiring.

- Maximum overall distance: 100m (10Mbps)

SSCNET III/H

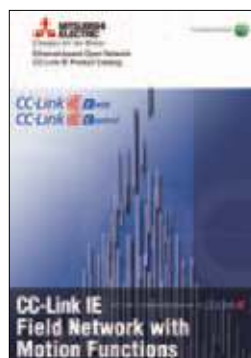
SSCNET III/H is flexibly applicable for long-distance wiring. This servo system controller network realizes high-speed, high-performance by adopting optical fiber.

- Communication speed: 150Mbps
- Communication cycle: 0.44ms/ 0.22ms
- Connect up to 16 axes per system
- Maximum overall distance: 1600m

CC-Link/LT

CC-Link LT is a sensor level network designed so that the production sites are free from complicated wiring or incorrect wiring. It inherits openness, high speed, and noise resistance from the CC-Link family and at the same time ensures reduced wiring costs because of its simple setting and easy installation.

- Make connections quickly and easily using dedicated connectors
- Use I/O points efficiently by using 'number of points mode' (4 points, 8 points, 16 points).
- Connect up to 1024 link points in 16-point mode.
- Up to 39m from master station (2.5Mbps)



For details about CC-Link networks, please refer to the "CC-Link IE" or "CC-Link Compatible Products" catalogs.

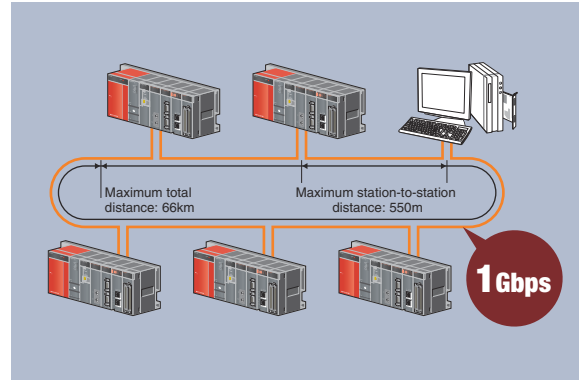
Highly reliable controller-to-controller (distributed control) network designed for large bandwidth and high-speed.

● CC-Link IE Controller Network module

Standard model..... **QJ71GP21-SX**

With external power supply function..... **QJ71GP21S-SX**

- » Commercially available Ethernet components can be used for significant cost savings over alternative networks.
- » Deterministic, reliable performance helps to reduce Operation cycle time. This cyclic data exchange is fixed and will not suffer from degraded performance even when large volumes of data are transferred.
- » Share massive amounts of data between controllers. (Up to 256 Kb of network shared memory per station)
- » The CC-Link IE Controller Network modules, QJ71GP21-SX and QJ71GP21S-SX, may be configured as normal stations, or the control station.



CC-Link IE Control

■ Performance Specifications^{*1}

Item		Specification	
Max. link points per network	LB	32K points (32768 points, 4KB) (Basic model QCPU or safety CPU: 16K points (16384 points, 2KB))	
	LW	128K points (131072 points, 256KB) (Basic model QCPU or safety CPU: 16K points (16384 points, 32KB))	
	LX	8K points (8192 points, 1KB)	
	LY	8K points (8192 points, 1KB)	
Max. link points per station	LB	Regular mode 16K points (16384 points, 2KB)	extended mode ^{*2} 32K points (32768 points, 4KB)
	LW	16K points (16384 points, 32KB)	128K points (131072 points, 256KB)
	LX	8K points (8192 points, 1KB)	8K points (8192 points, 1KB)
	LY	8K points (8192 points, 1KB)	8K points (8192 points, 1KB)
Communication speed		1Gbps	
Number of stations per network		120 (1 control station plus 119 normal stations)	
Connection cable		Optical fiber cable (Multi-mode fiber)	
Overall cable distance		66000m (When 120 stations are connected)	
Station-to-station distance (Max.)		550m (Core/Clad = 50/125 (m))	
Max. number of networks		239	
Max. number of groups		32	
Network topology		Ring	

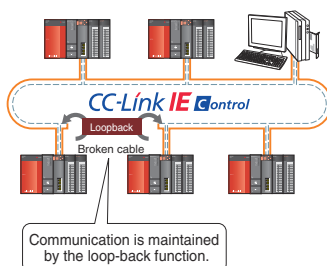
*1: When the control station is a Universal model QCPU.

*2: To use extended mode, (QJ71GP21(S)-SX) network modules and Universal model CPUs whose first five serial number digits are 12052 or later are required. All stations in the network must support enhanced mode. Also, GX Works2 version 1.34L or later is required.

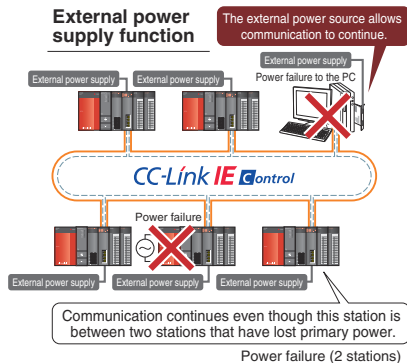
Designed to continue functioning even in the worst possible scenarios

- 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.

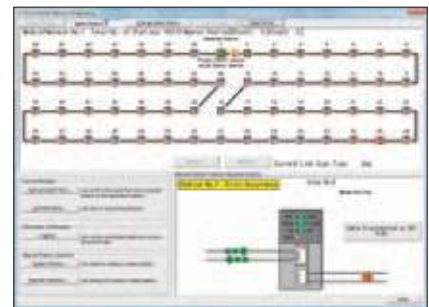
Loopback function



External power supply function



Visual display of network connection status





Connect to remote I/O stations and other Programmable Controllers for high-speed distributed control with advanced functionality.

● **CC-Link IE Field Network module..... QJ71GF11-T2**

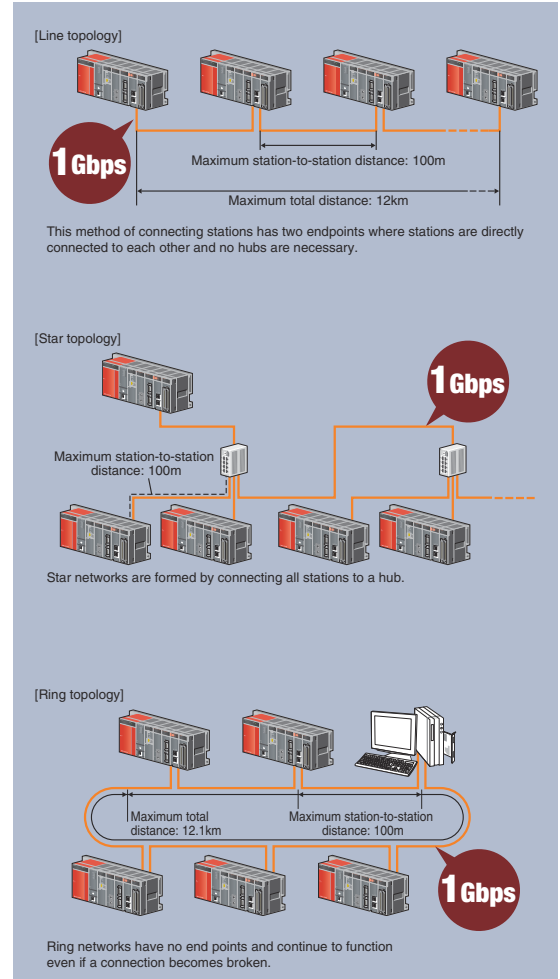
- » Tremendous speed and bandwidth using commercially available cables and connectors. The network design (topology) is highly flexible to fit any layout.
- » Operates as either a master or local station. Perfect for managing remote I/O control and distributed control.
- » Devices from other stations can be accessed easily via 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 forces pairs of word data to get updated together during link refresh.
- » The QJ71GF11-T2 CC-Link IE Field Network module can function as a slave or master station.



■ **Performance Specifications**

Item		Specification
Max. link points per network	RX	16K points (16384 points, 2KB)
	RY	16K points (16384 points, 2KB)
	RWr	8K points (8192 points, 16KB)
	RWw	8K points (8192 points, 16KB)
Max. link points per station	RX	2K points (2048 points, 256B)
	RY	2K points (2048 points, 256B)
	RWr	1K points (1024 points, 2KB)
	RWw	1K points (1024 points, 2KB)
Communication speed		1Gbps
Number of stations per network		121 (1 master plus 120 slave stations)
Connection cable		Ethernet cable of category 5e or higher (Double shielded cable) which satisfies 1000BASE-T standard
Maximum overall cable distance	Line topology	12km (with 1 master and 120 slaves connected)
	Star topology	Depends on the system configuration.*1
	Ring topology	12.1km (with 1 master and 120 slaves connected)
Max. station-to-station distance		100m
Max. number of networks		239
Network topology		Line, star, line and star mixed, or ring*2

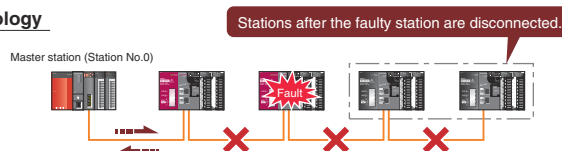
*1: Up to 20 hubs can be connected per network.
 *2: Ring networks may not be mixed with line or star networks. QJ71GF11-T2 network modules whose first five serial number digits are 12072 or later are required for ring networks. Additionally, GX Works2 version 1.34L or later is required.



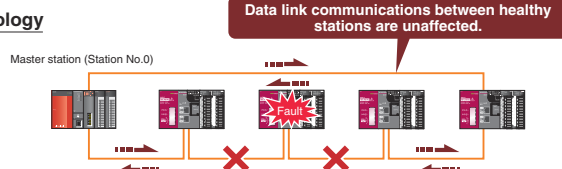
Easy diagnosis functions

- In certain situations such as power loss, a station could be prevented from communicating. In a line network this can cause perfectly healthy stations can become separated from the network. In a ring network, only the faulty station is separated, thus increasing the system reliability.

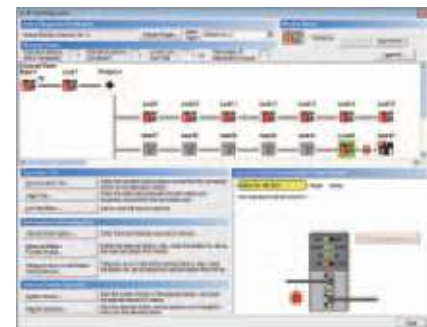
Line topology



Ring topology



Visual display of network connection status



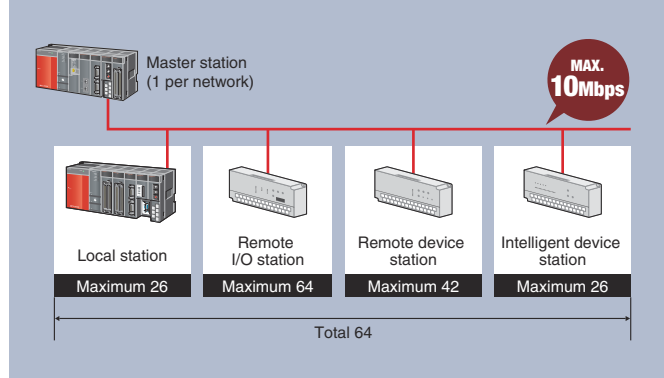
The network diagnostic tools in GX Works2¹ allow problems to be identified rapidly. In addition to a visual overview of the network and several other tools, detailed monitoring of CPUs and modules from any station, to any station is possible.

*1 Not supported by GX Developer.

Superior cost-performance field network with over a thousand 3rd party compatible devices.

● CC-Link network moduleQJ61BT11N

- » By building on reliable field bus technology, CC-Link is capable of moving large volumes of bit data, like ON/OFF relay status, and word data at high-speed.
- » CC-Link keeps cyclic transmission consistent and guarantees punctuality by separating it from message (transient) communication. Even if message communication becomes saturated, it will not effect the link scan time.
- » The QJ61BT11N module supports CC-Link version 1 and 2, and may be used as a local or master module.



■ Performance Specifications

Item		Specification	
Communication speed		Can select from 156 kbps/ 625 kbps/ 2.5 Mbps/ 5 Mbps/ 10 Mbps	
Transmission path		Bus (RS-485)	
Maximum number of link points per system ^{*1}		Remote inputs/outputs (RX, RY): 8192 points Remote registers (RWw): 2048 points Remote registers (RWr): 2048 points	
Maximum number of link points per system	Expanded cyclic setting	Single	Remote inputs/outputs (RX, RY): 32 points (30 points for local station) Remote registers (RWw): 4 points Remote registers (RWr): 4 points
		Double	Remote inputs/outputs (RX, RY): 32 points (30 points for local station) Remote registers (RWw): 8 points Remote registers (RWr): 8 points
		Quadruple	Remote inputs/outputs (RX, RY): 64 points (62 points for local station) Remote registers (RWw): 16 points Remote registers (RWr): 16 points
		Octuple	Remote inputs/outputs (RX, RY): 128 points (126 points for local station) Remote registers (RWw): 32 points Remote registers (RWr): 32 points
Maximum number of connected stations (master station)		64 ^{*2}	
Total distance/speed (When using Ver. 1.10)		1200m/156kbps,900m/625kbps,400m/2.5Mbps,160m/5Mbps,100m/10Mbps (Using repeaters, it is possible to extend the network distance up to 13.2km)	

*1: For CC-Link version 2.

*2: Using only remote I/O stations.

Device level wire-saving network.

● CC-Link/LT network module.....QJ61CL12

- » The maximum of 64 stations can be updated in as little as 1.2 ms (at 2.5 Mbps). Choose from 3 transmission speeds according to the required transmission distance.
- » CC-Link/LT slave stations do not require any parameters, only the transmission speed needs to be specified by the master station.
- » The QJ61CL12 CC-Link/LT network module can only function as a master station.



Item		Specification
Communication speed		156 kbps/625 kbps/2.5 Mbps
Transmission path		T-branch topology
Max. connected modules (master station)		64
Overall distance	Length of trunk line	35 m/2.5 Mbps, 100 m/625 kbps, 500 m/156 kbps
	Max. length drop line	4 m/2.5 Mbps, 16 m/625 kbps, 60 m/156 kbps
	Overall length drop lines	15 m/2.5 Mbps, 50 m/625 kbps, 200 m/156 kbps



Cost-effective distributed control network compatible with A and AnS series.

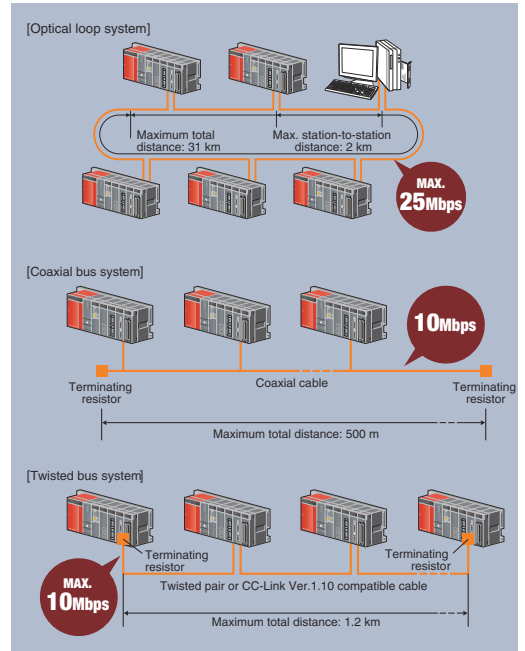
● MELSECNET/H network module

Optical loop type... **QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ72LP25-25, QJ72LP25G** (Remote I/O station)

Coaxial bus type **QJ71BR11, QJ72BR15** (Remote I/O station)

Twisted bus type **QJ71NT11B**

- » MELSECNET/H network systems support controller-to-controller, controller-to-PC, and controller-to-remote I/O station communications. Multiple wiring types are available and many functions designed to increase reliability are included, such as support for redundant systems.
- » Optical loop type: Communication speeds up to 25 Mbps. Fiber optic cable is immune to EMI/RFI noise. Up to 2km between stations using GI type cable.
- » Coaxial bus type: Using low cost coaxial cable allows networks to be constructed at less cost than optical loop networks.
- » Twisted bus type: The combination of an affordable network module and twisted-pair cables allows a network system to be built at very low cost.



■ Performance Specifications

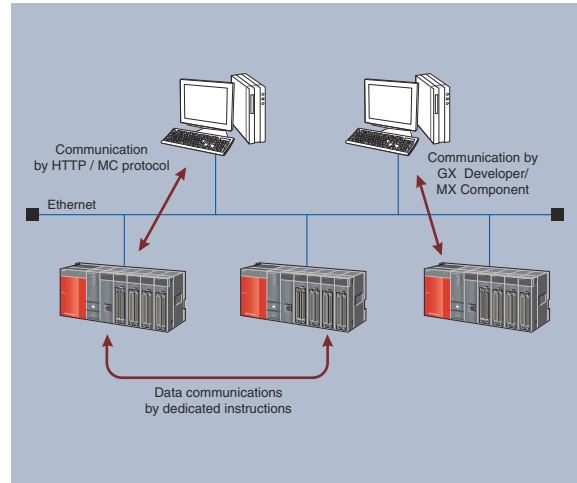
Item		Specification					
Network configurations		Optical loop system		Coaxial bus system		Twisted bus system	
Model		QJ71LP21(S)-25 QJ72LP25-25	QJ71LP21G QJ72LP25G	QJ71BR11 QJ72BR15	QJ71NT11B		
Cable		Fiber optic (SI)	Fiber optic (GI)	Coaxial (3C-2V)	Coaxial (5C-2V)	Twisted pair	CC-Link Ver.1.10-compatible cable
PLC to PLC network	Maximum number of link points per network	LB	16384 points (8192 points in the MELSECNET/10 mode)			16384 points	
		LW	16384 points (8192 points in the MELSECNET/10 mode)			16384 points	
		LX/LY	8192 points				
	Maximum number of link points per station	•MELSECNET/H mode $\{(LY + LB) / 8 + (2 \times LW)\} \leq 2000$ bytes •MELSECNET/H Extended mode $\{(LY + LB) / 8 + (2 \times LW)\} \leq 35840$ bytes					
Number of stations per network		Up to 64 stations (1 control station, 63 normal stations)		Up to 32 stations (1 control station, 31 normal stations)			
Remote I/O network	Maximum number of link points per network	LB	16384 points (Remote Master to Remote Sub-master or Remote I/O: 8192 points, Remote Sub-master or Remote I/O to Remote Master: 8192 points)				
		LW	16384 points (Remote Master to Remote Sub-master or Remote I/O: 8192 points, Remote Sub-master or Remote I/O to Remote Master: 8192 points)				
		LX/LY	8192 points				
	Maximum number of link points per station	• Remote Master to Remote I/O $\{(LY + LB) / 8 + (2 \times LW)\} \leq 1600$ bytes • Remote I/O to Remote Master $\{(LX + LB) / 8 + (2 \times LW)\} \leq 1600$ bytes • Multiplexed Remote Master from/to Multiplexed Remote Sub-master $\{(LY + LB) / 8 + (2 \times LW)\} \leq 2000$ bytes					
	Maximum I/O points per remote I/O station	$X + Y \leq 4096$ points If X/Y numbers are duplicated, only one side is taken into consideration.					
	Device points per remote I/O station	M	8192 points				
		SM	2048 points				
		D	12288 points				
SD		2048 points					
Number of stations per network		Up to 65 stations (1 remote master station, 64 remote I/O stations)		Up to 33 stations (1 remote master station, 32 remote I/O stations)			
Communication speed		25Mbps/10Mbps		10Mbps		156kbps/312kbps/625kbps/1.25Mbps/2.5Mbps/5Mbps/10Mbps	
Overall distance		30km		300m	500m	1200m/156kbps, 900m/312kbps, 600m/625kbps, 400m/1.25Mbps, 200m/2.5Mbps, 150m/5Mbps, 100m/10Mbps	
Distance between stations		Up to 1km		2km	—		

Connect to legacy networks and go beyond the capabilities of built-in Ethernet.

● **Ethernet interface module**

10BASE-T/100BASE-TX	QJ71E71-100
10BASE-5	QJ71E71-B5
10BASE-2	QJ71E71-B2

- » Use dedicated instructions for communication between programmable controller CPUs.
- » A communication library and sample code is available to allow a web server to access any of the Ethernet modules and exchange information with the programmable controller CPU module. In this way, the web server may host a web page that allows remote operation of a programmable controller over the internet via web browser.
- » To improve programming, maintenance, and debugging efficiency, multiple CPU connections may be established simultaneously using GX Developer and GX Works2.
- » The E-mail Function allows Ethernet modules to send e-mail with attachments in binary, ASCII, and CSV formats via a mail server.
- » Perform existence checks and keep connections open using the KeepAlive or PING functions. This can be used to ensure connectivity and quickly discover errors.

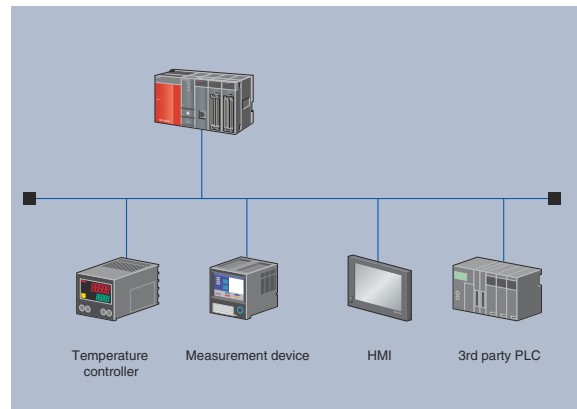


Connect with a large variety of devices using the MODBUS® interface module.

● **MODBUS® Interface Module**

RS-232 1ch, RS-422/485 1ch	QJ71MB91
10BASE-T/100BASE-TX	QJ71MT91

- » Using the master function, communicate with 3rd party MODBUS® compatible slave devices.
- » Slave mode is also supported, which allows communication with other MODBUS® masters such as 3rd party programmable controllers.
- » Using the QJ71MB91 synchronization function, a master station may be connected to CH1 (RS-232) and communicate with multiple slaves connected to the CH2 (RS-422/485) interface.
- » The QJ71MT91 module is able to operate using the master and slave functions simultaneously.

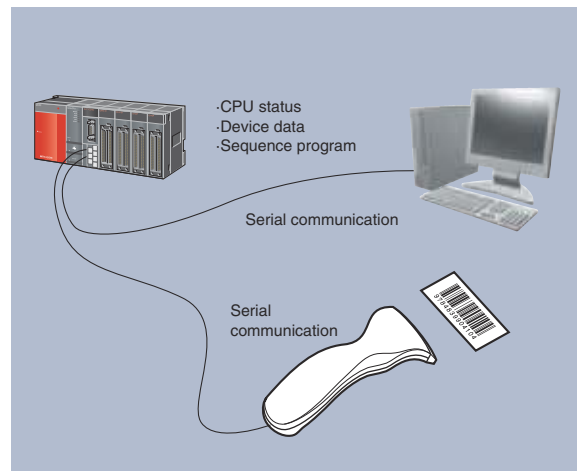


These highly flexible communications modules allow connection to practically any serial device.

● **Serial communication module**

RS-232 1ch, RS-422/485 1ch	QJ71C24N
RS-232 2ch	QJ71C24N-R2
RS422/485 2ch	QJ71C24N-R4

- » Push the limits of serial technology: baud rates up to 230.4kbps, distance up to 1200 m, and multiple block batch read/write up to 960 words from QCPU device memory.
- » External devices (PC, HMI, etc.) may read and write data in the programmable controller CPU using MC protocol.
- » Connect with intelligent devices using their native protocol (barcode reader, measurement device, etc.) by selecting non-procedure protocol and using a sequence program for communication control.
- » MELSOFT engineering tools can establish a connection to the programmable controller CPU through the serial connection to perform programming and maintenance duties.
- » Dedicated functions are available to facilitate RS-232 communication over public telephone lines using a serial modem. One of them, the remote password function, prevents unauthorized access to programmable controllers via the modem line.

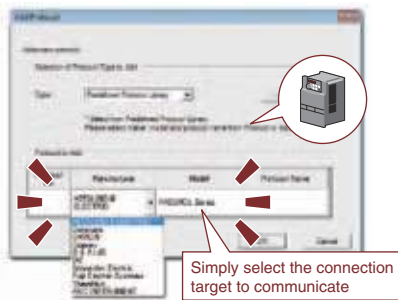




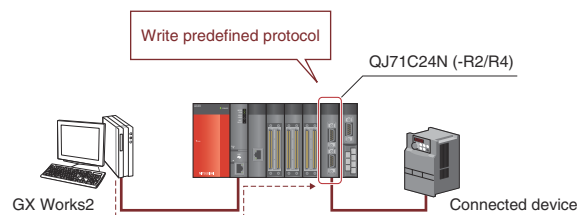
Easier to use through combination of serial communication module and GX Works2 (predefined protocol support function)

Communication with any device can be started quickly only by selecting the device from the predefined protocol library.

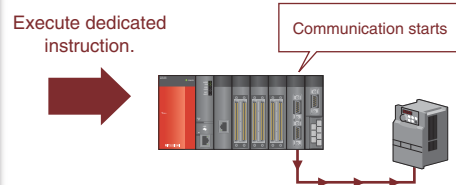
① Select the manufacturer and model (series) of the device to be connected.
There is no need for complicated predefined protocol setting for the device. Simply select the device from the prepared predefined protocol library.



② Write the predefined protocol to the module.
Write the set predefined protocol to QJ71C24N(-R2/R4) module. Up to 128 protocols can be set in one module.

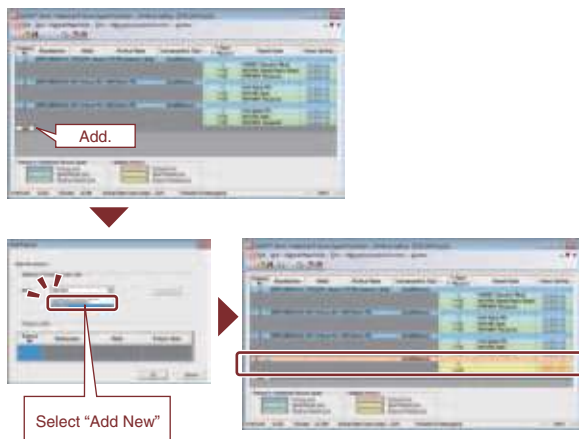


③ Execute the protocol with ladder program.
With ladder program, communication with any external device can be made only by executing a dedicated predefined protocol starting instruction.

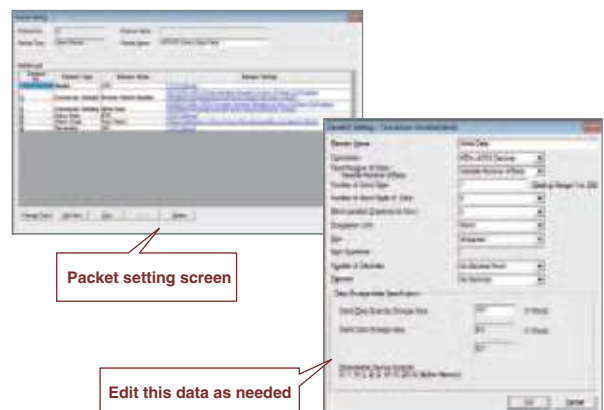


Easy to prepare and edit predefined protocol

• Even if the device to be connected is not contained in the predefined protocol library, the device can be added easily.



• The contents of the prepared predefined protocol can be displayed in a list form. The protocol can be edited easily.



* Supported by QJ71C24N (-R2/R4) with the function version B and a serial number whose first 5 digits are 11062 or higher.

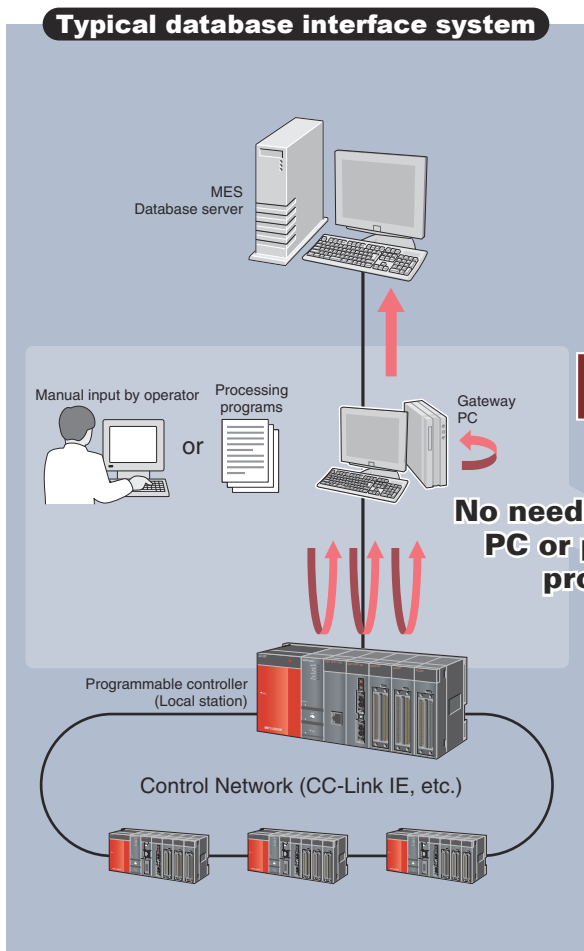
Make the jump from shop floor data to valuable information in real time.

● **MES Interface Module** **QJ71MES96**

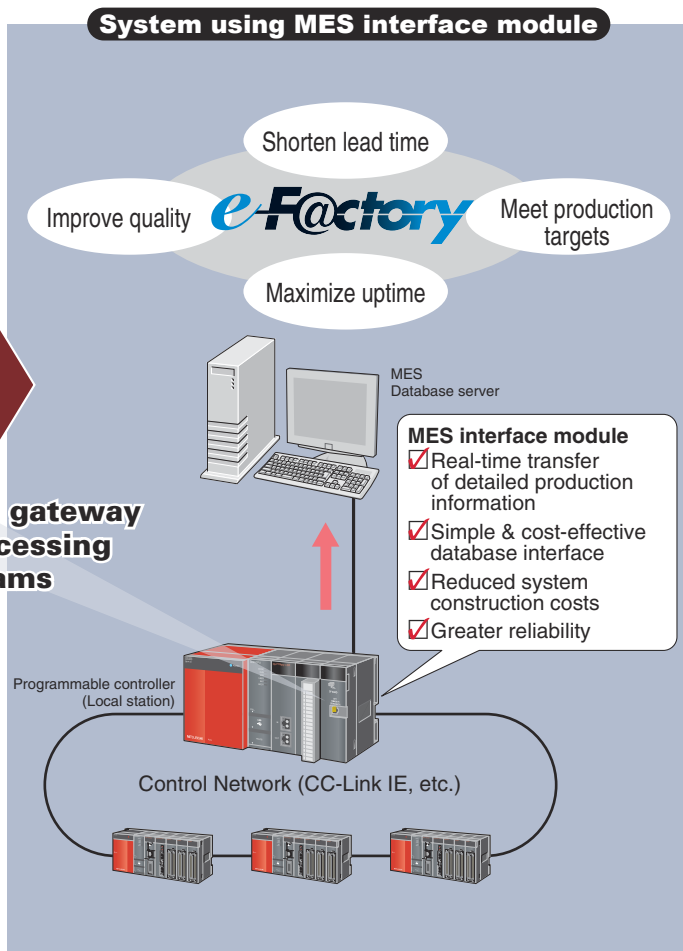
- » Simplify the process of connecting to enterprise system databases such as an MES* by connecting directly. Configuration of the module is easy, and does not require any programming.
- » When user-defined trigger conditions occur, the specified data is read and transferred via SQL text. This event-driven communication method reduces network loading when compared to conventional solutions, which are based on polling architecture.

- » Executes pre-registered SQL jobs. Also receives production instructions from MES and downloads production information from the database.

* MES (Manufacturing Execution System): A system that manages and controls production activities to optimize quality, production volume, delivery, costs, etc.



No need for gateway PC or processing programs



- MES interface module**
- Real-time transfer of detailed production information
 - Simple & cost-effective database interface
 - Reduced system construction costs
 - Greater reliability



The e-F@ctory concept aims to achieve the maximum benefit from manufacturing equipment by providing detailed information, from the shop floor directly to a MES (Manufacturing Execution System). This enables real-time decision making and production site optimization.



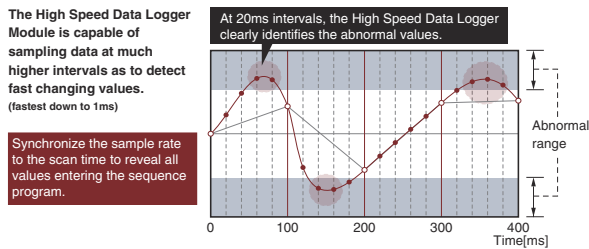
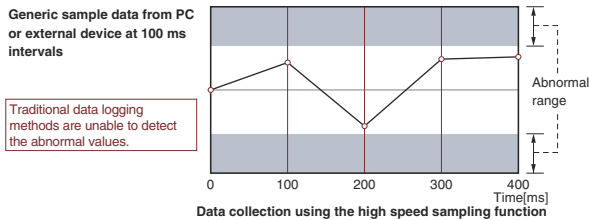
Fulfill the need for traceability and discover a powerful troubleshooting tool.

High Speed Data Logger Module QD81DL96

- » [High speed data sampling function]
The high speed data sampling function has the power to synchronize with the sequence program scan, ensuring that every value available to the program is logged for analysis. Using this method it is possible to perform detailed operational analysis and identify existing or potential problems.
- » [Trigger logging function]
Trigger logging allows the user to specify, in great detail, when data should be saved. This greatly simplifies the process of investigating why a problem has occurred and assists in the quick identification of solutions. Additionally, it allows CompactFlash memory card space to be used efficiently.

- » The logging data display and analysis tool, GX LogViewer, has a simple and effective interface that is user customizable and includes features to maximize the efficiency of analyzing collected data. The High speed Data Logger Module Configuration Tool enables the user to create sophisticated data collection rules using an intuitive step-by-step process. The wizardlike interface is beginner-friendly and includes features like importing global labels and device comments.
- » [Automatic generation of reports including graphs]
By creating an Excel® layout file and transferring it to the module, the report function can automatically fill in the numbers using sampled data to create reports on a reoccurring basis. All kinds of reports may be created that include charts, graphs, and other visual aids. It is even possible to e-mail the reports automatically!

High speed data sampling function



- CPUs that support the high speed data sampling function**
- High-Speed Universal model QCPU Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV, Q03UD(E), Q04UD(E)H, Q06UD(E)H, Q10UD(E)H, Q13UD(E)H, Q20UD(E)H, Q26UD(E)H, Q50UDEH, Q100UDEH (Compatible with QnU CPU modules starting with serial No. * 11012* or higher.)
 - * The high speed data sampling function supports only the host control CPU. (Other stations on the network are not supported.)

High Speed Data Logger Module tools

Data display and analysis tool: GX LogViewer

View a list of events or a trend graph [pictured left] either in real-time (online) or historical (saved file) modes. Helpful features ensure key information is immediately visible.

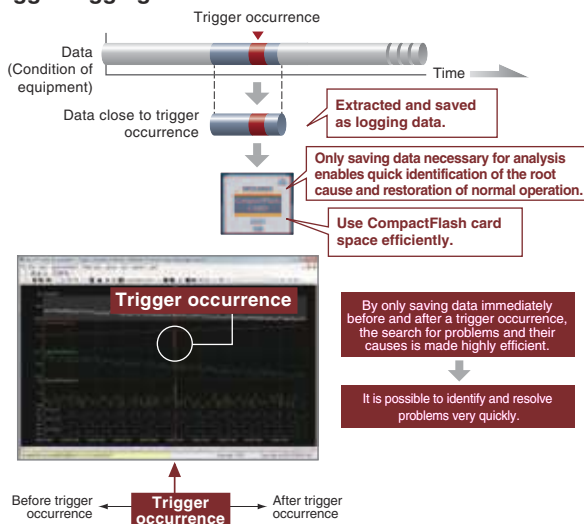
High Speed Data Logger Module Configuration Tool

[Select the logging type] [Select the data sampling method] [Specify data to be logged] Settings complete

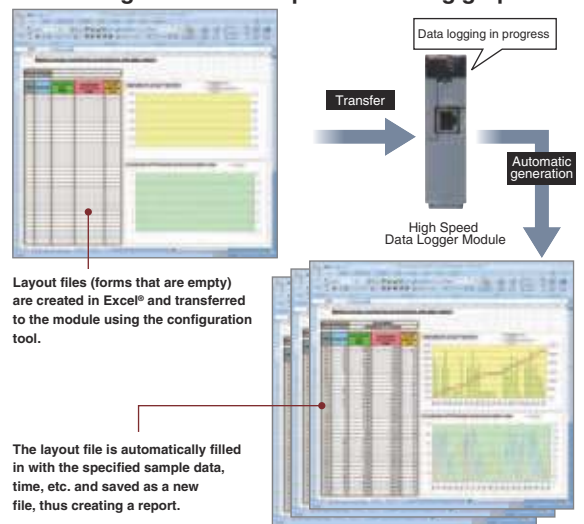
Even making sophisticated data collection rules is easy to do using the intuitive step-by-step configuration process.

* The High speed Data Logger Module Tools are available at no additional cost. Please contact your nearest Mitsubishi Electric representative for details.

Trigger logging function



Automatic generation of reports including graphs



Ethernet and CC-Link IE Field related products.

● **Wireless LAN Adapter** Ethernet

NZ2WL-US (U.S.A)^{*1*2}, NZ2WL-EU (Europe)^{*1*2}, NZ2WL-CN (China)^{*1*2}, NZ2WL-KR (Korea)^{*1*2}, NZ2WL-TW (Taiwan)^{*1*2}

- » 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.

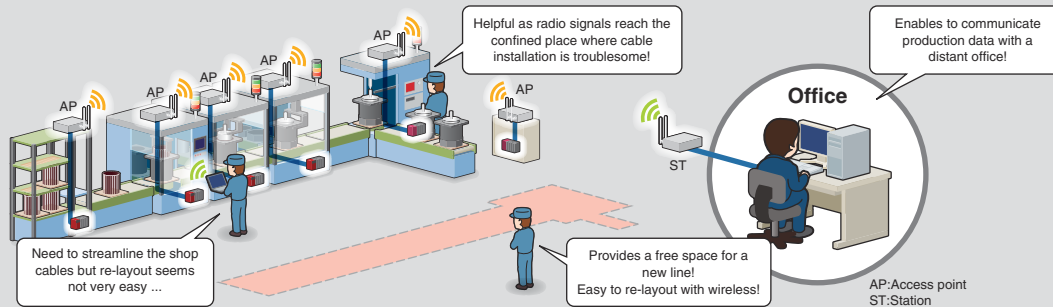
*1: Each product can be used only in the respective countries.
 *2: Supported both Access point and Station. They can be used by changing the setting.



The wireless LAN adapters were developed and are produced with CONTEC Co., Ltd. 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. Refer to the manual for details on the product.

Wireless LAN needs no cables!

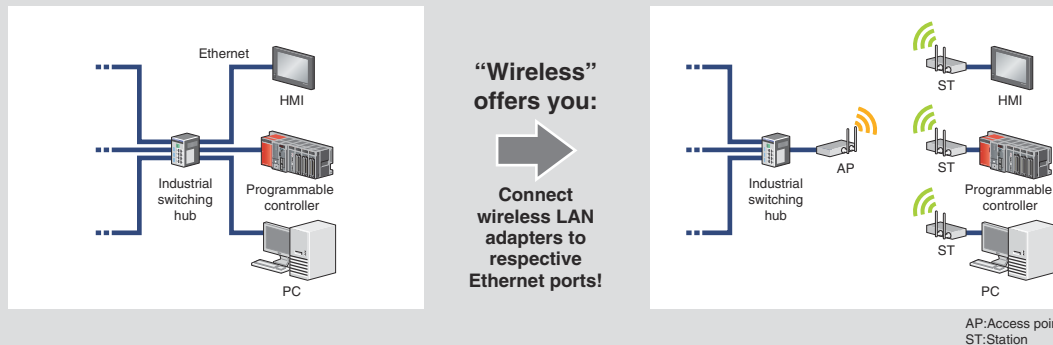
- Easy to work without being bothered by cable routing. Factory layouts can be easily changed, and costs for wiring can be substantially reduced.



Easily adapt existing FA devices to wireless connections!

- Programmable controllers, displays and PCs can be easily added to an existing Ethernet network just by attaching wireless LAN adapters.

[Note] Ethernet data communication through wireless LAN could be unstable compared to wired one due to packet loss depending on peripheral conditions and place of installation. Be sure to confirm it works as intended.



Trustworthy security

- Compatible with the latest security standards of WPA2/WPA. The security prevents unauthorized access such as bugging and falsification of data from outside.



● Industrial Switching HUB CC-Link IE Field Ethernet

NZ2EHG-T8, NZ2EHF-T8*1

- » NZ2EHG-T8 is compatible with transmission rates of 10 Mbps, 100 Mbps, and 1 Gbps.
- » NZ2EHF-T8 is compatible with transmission rates of 10 Mbps and 100 Mbps.
- » These switching hubs comply with IEEE802.3ab (1000 BASE-T), IEEE802.3u(100 BASE-TX), IEEE802.3 (10 BASE-T) standards.
- » AutoMDI/MDI-X and auto-negotiation are available.
- » The automatic power adjustment function can reduce power consumption by up to 80 percent.*2
- » These hubs do not use cooling fans, and yet a wide ambient-temperature operating range is permissible (0 to 50°C).
- » Quick detach mechanism allows easy DIN rail attachment and detachment.

*1: This model may not be connected directly to the CC-Link IE Field Network (1 Gbps). An Ethernet adapter module NZ2GF-ETB is required. For direct use with the CC-Link IE Field Network, please use NZ2EHG-T8.

*2: 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.

This series was developed and is produced with Contec Co. Ltd. Please note that the specifications and guarantee conditions of these products are different from those of MELSEC products. Please refer to the product manual for details.



[1Gbps]

[100Mbps]

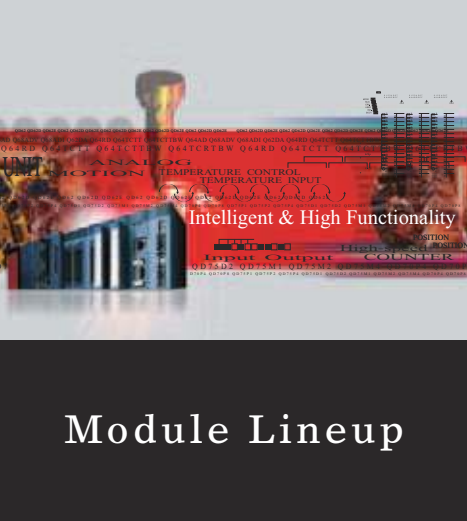
● CC-Link IE Field Network Ethernet Adapter Module CC-Link IE Field Ethernet

NZ2GF-ETB

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

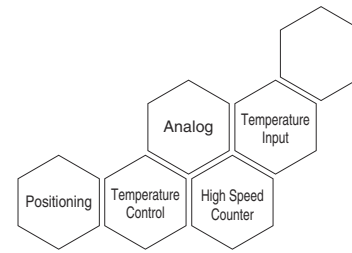
*1: SLMP (SeamLess Message Protocol) is a protocol advocated by the CC-Link Partner Association.





Comprehensive range of I/O and intelligent function modules.

The Q series I/O and intelligent function module lineup is extensive and capable of meeting the needs of a wide range of applications. Some of the available modules include motion control, serial digital and analog I/O modules, and channel isolated analog modules. Attain the ideal solution for the application, whether it be high speed positioning or high accuracy temperature control.



Input/Interrupt Modules

Point	DC input					DC/AC input	AC input	
	5 V DC		5/12 V DC	24 V DC		48 V DC/AC	100 to 120 V AC	100 to 240 V AC
	Positive	Negative	Positive/Negative	Positive	Negative	Positive/Negative		
8 points	—	—	—	QX48Y57*1		—	—	QX28
16 points	QX70H	QX90H	QX70	QX40 QX40-TS QX40-S1 QX40H QI60	QX80 QX80H QX80-TS	QX50	QX10 QX10-TS	—
32 points	—	—	QX71	QX41 QX41-S1 QX41-S2 QH42P*1 QX41Y41P*1	QX81 QX81-S2	—	—	—
64 points	—	—	QX72	QX42 QX42-S1	QX82 QX82-S1	—	—	—

*1: Composite I/O module: input specifications

Output Modules

Point	Contact output	TRIAC output	Transistor output				
	24 V DC, 240 V AC	100 to 240 V AC	5 to 12 V DC	5 to 24 V DC		12 to 24 V DC	
			Sink type	Sink type	Sink/Source type	Sink type	Source type
7 points	—	—	—	—	—	QX48Y57*1	—
8 points	QY18A	—	—	—	QY68A	—	—
16 points	QY10 QY10-TS	QY22	QY70	—	—	QY40P QY40P-TS QY50	QY80 QY80-TS
32 points	—	—	QY71	QY41H	—	QY41P QH42P*1 QX41Y41P*1	QY81P
64 points	—	—	—	—	—	QY42P	QY82P

*1: Output specifications for composite I/O module

- High Speed DC Input Module (Positive common type)
.....QX40H, QX70H
- High Speed DC Input Module (Negative common type)
.....QX80H, QX90H

Speed up control by catching the input signal variation at 0 ms*. Two devices with differing power systems can be connected to the same module using different 8 point common terminals.

* The actual response time is 5 μs delay when turning ON, 10 μs delay when turning OFF, because the hardware response time is added.

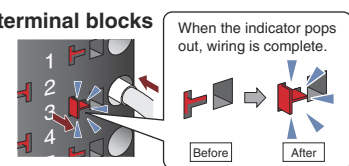
Common type	Input voltage	
	24 V DC	5 V DC
Positive	QX40H	QX70H
Negative	QX80H	QX90H

- Spring Clamp Terminal Block Type Input Module--QX10-TS, QX40-TS, QX80-TS
- Spring Clamp Terminal Block Type Output Module--QY10-TS, QY40P-TS, QY80-TS

Spring clamp terminal blocks visually indicate the connection status. Also, by eliminating screws, wiring and maintenance work is made easier.

Advantages of spring clamp terminal blocks

- Impervious to vibration, secured wiring connections.
- Eliminating screws greatly simplifies conventional maintenance.



Wiring connections are easily confirmed by high-contrast indicators.

Analog Modules

Number of channels	Channel isolated	Analog input							Analog output	
		Voltage input	Current input	Signal conditioning	Load cell	CT input	Temperature input		Voltage output	Current output
							Temperature input	RTD		
1ch	Yes	—	—	—	Q61LD	—	—	—	—	
2ch	Yes	—	—	Q62AD-DGH	—	—	—	—	Q62DA-FG	
	No	—	—	—	—	—	—	—	Q62DAN Q64AD2DA	
4ch	Yes	Q64AD-GH		—	—	—	Q64TD Q64TDV-GH	Q64RD-G	—	
	No	Q64AD Q64ADH Q64AD2DA		—	—	—	—	Q64RD	Q64DAN Q64DAH NEW	
6ch	Yes	—	—	Q66AD-DG	—	—	—	—	Q66DA-G	
8ch	Yes	Q68AD-G		—	—	—	Q68TD-G-H01 Q68TD-G-H02	Q68RD3-G	—	
	No	Q68ADV	Q68ADI	—	—	Q68CT	—	—	Q68DAVN Q68DAIN	

Temperature Control Modules

Number of channels	Wire break detection	Input	
		Thermocouple	RTD
4ch	Yes	Q64TCTTBWN	Q64TCRTBWN
	No	Q64TCTTN	Q64TCRTN

Loop Control Module

Number of channels	Input			
	Voltage	Current	Thermocouple	RTD
2ch	Q62HLC			

Simple Motion Modules

Number of axes	SSCNET III/H	CC-Link IE Field
2-axes	QD77MS2	—
4-axes	QD77MS4	—
16-axes	QD77MS16	QD77GF16 NEW

Positioning Modules

Number of axes	Specialised functionality type				Simple control and fast-response type			Built-in counter function type
	Open collector output	Differential drive output	SSCNET III	SSCNET	Open collector output	Differential drive output	SSCNET III	Open collector output
1-axis	QD75P1N	QD75D1N	QD75MH1	QD75M1	—	—	—	—
2-axes	QD75P2N	QD75D2N	QD75MH2	QD75M2	—	—	—	—
3-axes	—	—	—	—	—	—	—	QD72P3C3
4-axes	QD75P4N	QD75D4N	QD75MH4	QD75M4	QD70P4	QD70D4	—	—
8-axes	—	—	—	—	QD70P8	QD70D8	QD74MH8	—
16-axes	—	—	—	—	—	—	QD74MH16	—

Pulse Input/High-Speed Counter Modules

Number of channels	Maximum counting speed	Channel isolated	Input specifications			
			5 V DC	12 V DC	24 V DC	Differential drive output
2ch	2-phase input	No	QD62 QD62E QD65PD2			—
			—	—	—	QD62D
			—	—	—	QD64D2
			—	—	—	QD65PD2
6ch	2-phase input	No	QD63P6	—	—	—
8ch	1-phase input	Yes	QD60P8-G			—

Energy Measuring Module

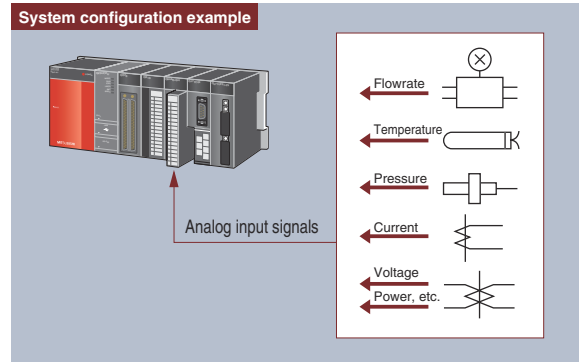
Number of channels	Energy measuring	Isolation monitoring
1ch	QE81WH QE81WH4W NEW	—
2ch	—	QE82LG

A wide range of application specific intelligent modules

A range of analog modules ideal for process control applications.

Isolated analog modules suitable for process control.

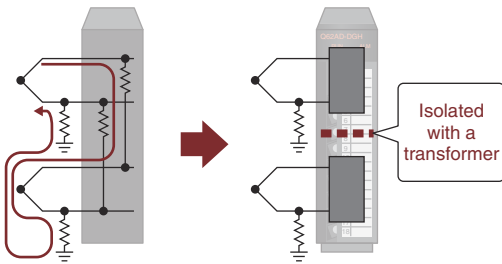
- Channel isolated high resolution analog-digital converter module **Q64AD-GH**
- Channel isolated high resolution analog-digital converter module **Q62AD-DGH**
- Channel isolated high resolution digital-analog converter module **Q62DA-FG**
- Channel isolated analog-digital converter module **Q68AD-G**
- Channel isolated analog-digital converter module (with signal conditioning function)..... **Q66AD-DG**
- Channel isolated digital-analog converter module **Q66DA-G**



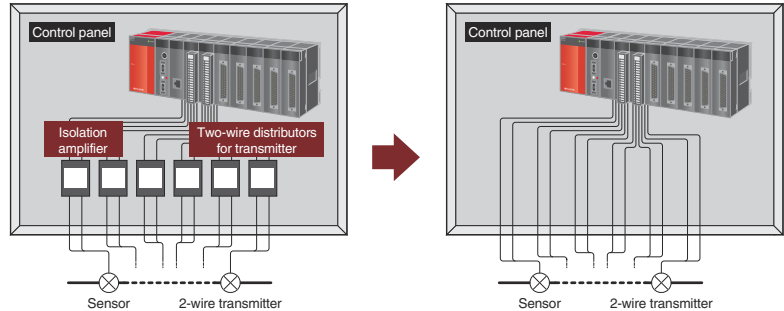
The channel isolated analog modules are specifically designed for process control applications by offering high accuracy conversion combined with high isolation voltage. Flow meters, pressure gauges, etc. can be directly connected to the analog input, and control valves to the analog output. Hardware and installation costs can be substantially reduced because external isolation amplifiers are not required. When used with a general purpose controller, a low cost process control solution can be created.

[High dielectric withstand voltage]

- Electric disturbances such as current and noise can be isolated.
- Standard analog input module
- Isolated analog input module



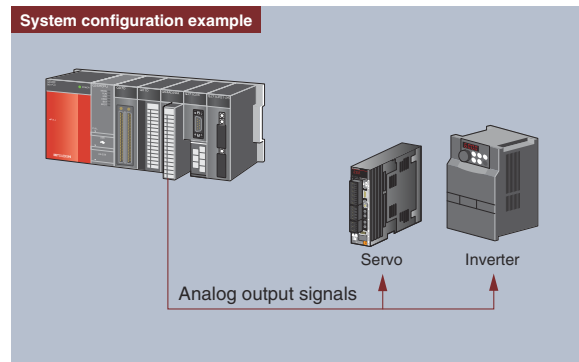
- External signal converters are not required.
- Without channel isolated analog module
- With channel isolated analog module



High conversion speed analog modules.

- High Speed Analog-Digital Converter Module **Q64ADH**
- Analog-Digital Converter Module **Q68ADV, Q68ADI**
- High Speed Digital-Analog Converter Module **Q64DAH** NEW
- Digital-analog converter module **Q62DAN, Q64DAN, Q68DAVN, Q68DAIN**
- Analog-Digital/Digital-Analog converter module ... **Q64AD2DA**

Many high-speed A/D and D/A conversion (analog) modules are available. These modules are feature packed to allow maximum flexibility when connecting to devices. Both speed and accuracy are great enough to control sensitive motion applications using servos or inverters.





High accuracy temperature input modules.

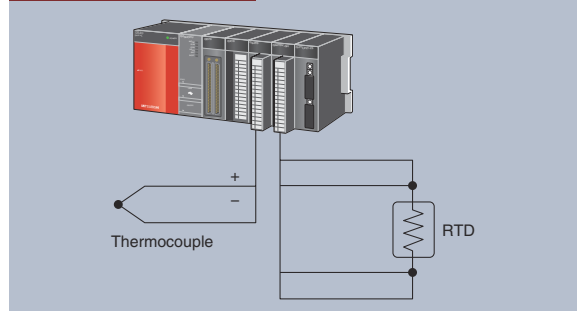
● Temperature input module

RTD input module **Q64RD, Q64RD-G, Q68RD3-G**

Thermocouple input module **Q64TD, Q64TDV-GH, Q68TD-G-H01, Q68TD-G-H02**

Temperature data can be captured by connecting a thermocouple or a resistance temperature detector. Multi-channel (8-channel) input types and channel-isolated types are available. An optimum model for the intended application can be selected.

System configuration example



PID loop control integrated temperature control modules.

● Temperature control module

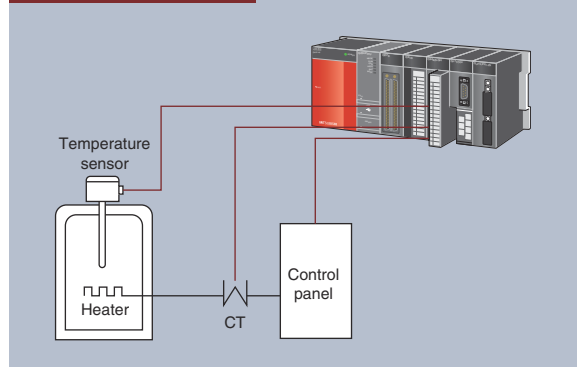
Platinum RTD input module..... **Q64TCRTN, Q64TCRTBWN**

Thermocouple input module **Q64TCTTN, Q64TCTTBWN**

The devices which require high stability of temperature control such as extrusion forming machines, these modules prevent overheating and overcooling. The standard control (heating or cooling) or heating-cooling control (heating and cooling) mode can be selected depending on the machine to be controlled.

In addition, the mixed control mode (combination of standard control and heating-cooling control) can be selected.

System configuration example



○ Peak current suppression function

This function avoids simultaneously turning on outputs to control the peak current. It can save energy and reduce the running cost.

○ Simultaneous temperature rise function

This function allows several loops to reach the set value at the same time to conduct uniform temperature control. It prevents idling and is effective in saving energy and reducing running cost.

○ Self-tuning function

The PID constant is automatically adjusted during control. The automatic tuning cost (time, materials and power) can be reduced.

Loop control module ideal for temperature and flow rate control environments which require fast response.

● Loop control module..... **Q62HLC**

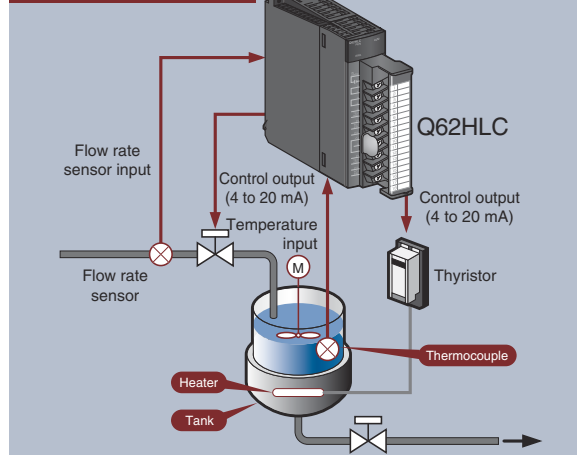
With its speed-proportional PID control format and 25 ms sampling cycle, the loop control module is well suited for high-precision, high-resolution thermocouple inputs, micro voltage inputs, voltage inputs, current inputs, and current outputs. It is also ideal for sudden temperature change control, pressure control, and flow control applications which require fast response.

○ Connectable to JIS, IEC, NBS, ASTM standards compliant thermocouples.

○ Permits analog value measurements of various input ranges by using micro voltage, voltage, and current input sensors.

○ Offers program control while automatically changing the target values (SV) and PID constants [proportional band (P), integral time (I), derivative time (D)] in a time-specific manner, as well as a cascade control function that permits control with CH 1 as the master, and CH 2 as the slave.

System configuration example



Interface with all types of load cell with the load cell I/P module.

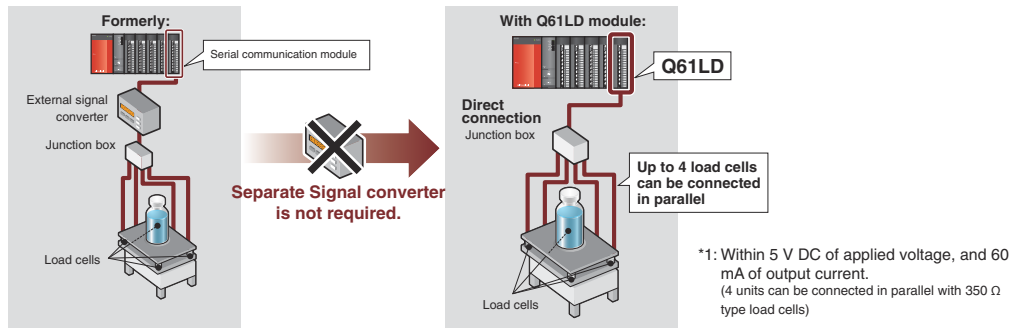
● Load Cell Input Module.....**Q61LD**

Load cells can now be directly connected to the programmable controller system without requiring a separate signal converter. The module achieves highly accurate measurement with steady data conversion speed that guarantees the accuracy of load cells.

Separate signal converter not required!

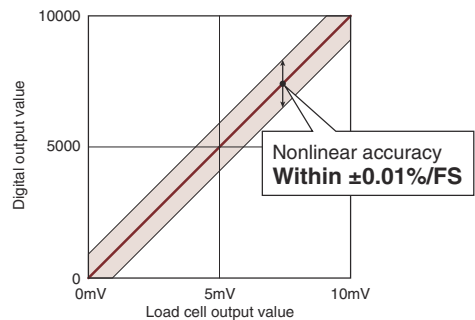
Reduce engineering costs by directly connecting a load cell to the Programmable Controller!

- Any type of load cell*1 such as magnetostriction, capacitive, gyroscope, or strain gauge.
- 6-wire system (combination of remote sensing and ratiometric methods) or 4-wire system load cells.



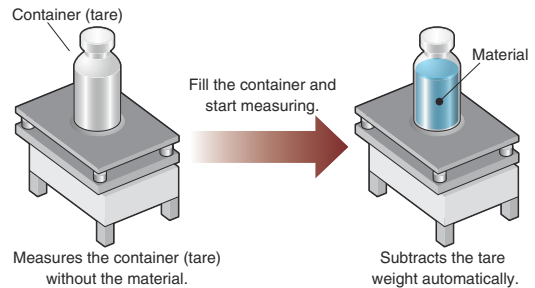
- Applications requiring high accuracy can be achieved by connecting the load cell directly to the programmable controller.

- Nonlinear accuracy: Within $\pm 0.01\%$ /FS
 - Zero drift: Within $\pm 0.25 \mu\text{V}/^\circ\text{C}$ RTI
 - Gain drift: Within $\pm 15 \text{ ppm}/^\circ\text{C}$
- (Load cell rated output is 2 mV/V, ambient temperature is 25°C, and the tare weight subtraction function is not used.)



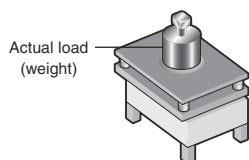
[Zero offset function]

This function subtracts the tare weight automatically relative to the load cell usage range when calibrating measuring instruments. Using this function can improve the accuracy of the measuring instrument.



[Static load calibration function]

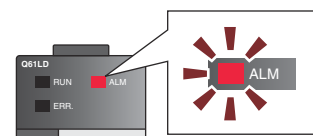
The gross weight value can be accurately calibrated by applying the actual load (weight) onto the load cell.



[Input signal error detection function]

Load cell input signal errors can be detected.

- Input signal error
- Weight capacity over error
- Zero point out of range
- Exceed conversion error





Direct CT sensor connection reduces wiring and saves space.

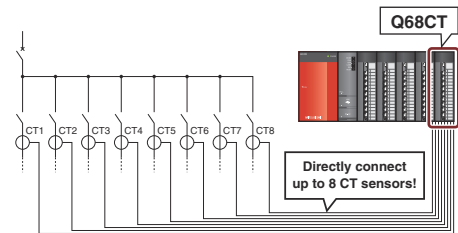
● **CT input module** **Q68CT**

The direct connection of the CT sensor *1 and the programmable controller has eliminated the need to connect a separate signal converter. Very accurate measurements can be achieved with stable data conversion speed for load control of systems and devices, monitoring of operations, and control and monitoring of power systems.

*1: The CT (Current Transformer) sensor refers to an instrument transformer, a current sensor is essential for measuring alternating currents.

Direct CT sensor connection reduces wiring and saves space

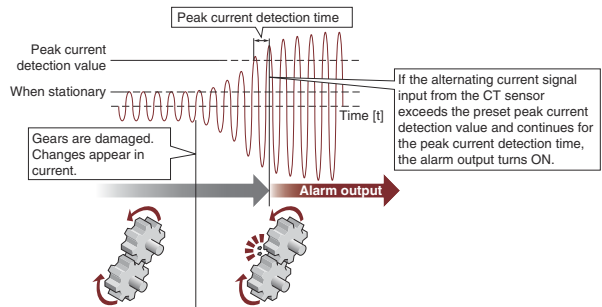
- Directly connect to the CT sensor without an external signal converter. The AC current for up to eight channels can be measured with one unit, by that reducing the wiring steps and costs.
- Set the CT sensor type (input range) for each channel. CT sensors from AC0 to 5A and AC0 to 600A can be selected with one unit.



Predictive maintenance of devices by detecting the peak current!

[Peak current detection function]

- The device can be serviced and troubleshooting performed by detecting the peak current. With a motor for example, the load applied on the motor by the gear wear and damage changes and the load current suddenly changes. The device trouble can be diagnosis by detecting the transient peak current at this time.



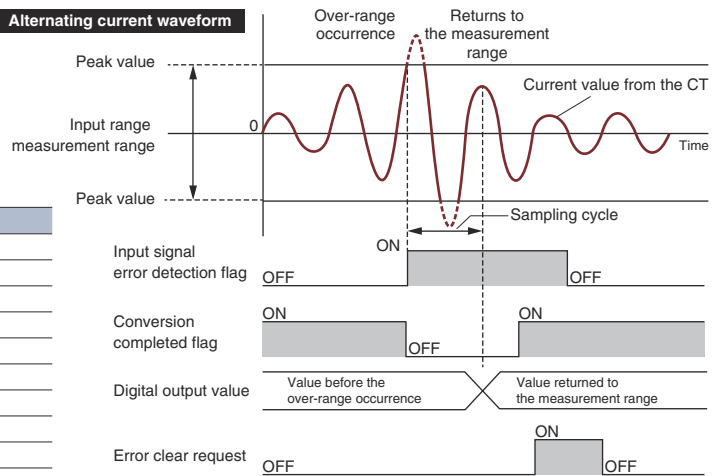
[Input signal error detection function]

- Over-range (peak value over) of the CT input value can be detected. Since the flow of a large current exceeding the range to the measurement target can be detected, errors in the measurement target can be monitored.

Input range setting	Detection level
0 to 5AAC	Approximately 6.25AAC
0 to 50AAC	Approximately 62.5AAC
0 to 100AAC	Approximately 125AAC
0 to 200AAC	Approximately 250AAC
0 to 400AAC	Approximately 500AAC
0 to 600AAC	Approximately 750AAC

Connectable CT sensors

Model	Manufacturer	Analog input range
EMU-CT50	Mitsubishi Electric Corporation	0 to 50AAC
EMU-CT100		0 to 100AAC
EMU-CT400		0 to 400AAC
EMU-CT600		0 to 600AAC
CTF-5A	Multi Measuring Instruments Co., Ltd. (introduced products)	0 to 5AAC
CTF-50A		0 to 50AAC
CTF-100A		0 to 100AAC
CTF-200A		0 to 200AAC
CTF-400A		0 to 400AAC
CTF-600A		0 to 600AAC
CTL-10-3FC	U.R.D. Co., Ltd. (introduced products)	0 to 5AAC, 0 to 50AAC
CTL-16-3FC		0 to 100AAC
CTL-24-3FC		0 to 200AAC
CTL-36-6SC		0 to 400AAC
CTL-36-9SC		0 to 600AAC



Simple motion module for positioning control and synchronous control.

Advanced control but simple use as the positioning module.

Speed/torque control and synchronous control are supported in addition to the traditional positioning control. Using the “simple motion module setting tool”, operations such as positioning setting, monitoring and debugging can be performed easily. In addition, collection of data synchronized with the motion controller can be collected and displayed in waveform.

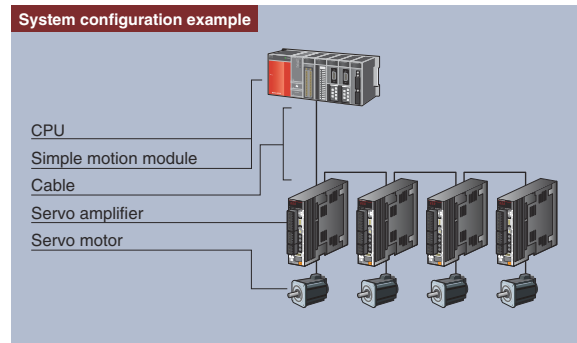
● Simple motion module

SSCNET III/H connection type QD77MS□

The □ in the above model indicates the number of axes (2, 4, 16).

The SSCNET III/H connection reduces wiring, enables connections of up to 100m between stations, and easily supports absolute position settings. The upper limit LS, lower limit LS, and near-point dog signals can be input from the servo amplifier, thus greatly reducing wiring. In addition to positioning control and speed control, processes such as synchronous control, cam control, torque control and Tightening & Press-fit control can be performed.

High compatibility with conventional models, projects and sequence programs for the positioning module (QD75MH) can be used easily in the simple motion module (QD77MS) projects.



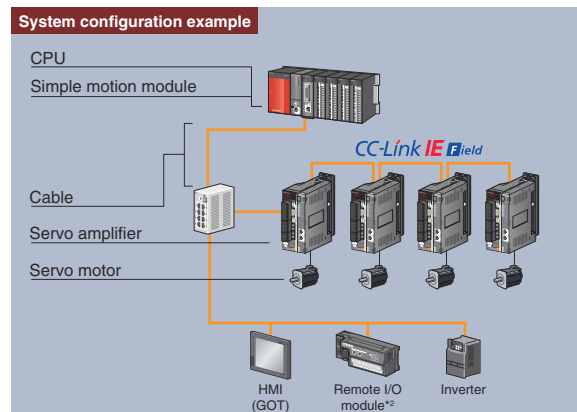
		QD77MS2	QD77MS4	QD77MS16
Maximum number of control axes		2-axes	4-axes	16-axes
Servo amplifier connection method		SSCNET III/H		
Maximum distance between stations		100m		
Control system		PTP (Point to Point) control, path control (both linear and arc can be set), speed control, speed/ position switching control, position/ speed switching control, synchronous control, cam control, torque control, Tightening & Press-fit control		
Starting time	1-axis linear control	0.88ms	0.88ms	1.77ms
	1-axis speed control			
	2-axes linear interpolation control			
	2-axes circular interpolation control			
	2-axes speed control	—	—	—
	3-axes linear interpolation control			
	3-axes speed control			
	4-axes linear interpolation control			
4-axes speed control				

CC-Link IE Field Network connection type QD77GF16 **NEW**

The simple motion module supports the general purpose CC-Link IE Field Network, with its flexible wiring. This module can be used as the CC-Link IE Field's master station (QJ71GF11-T2 or equivalent)*1 while retaining the simple motion module's functions. This realizes flexible networking supporting connection to various devices such as HMI (GOT), remote I/O, inverter, etc.

*1: QD77GF16 master station transmission style can use the line type or star type. Up to 104 slave devices can be connected to one network.

*2: The setting and diagnosis function using GX Works2 is disabled.



		QD77GF16	
Maximum number of control axes		16-axes	
Servo amplifier connection method		CC-Link IE Field Network	
Maximum distance between stations		100m	
Control system		PTP (Point to Point) control, path control (both linear and arc can be set), speed control, speed/position switching control, position/speed switching control, synchronous control, cam control	
Starting time	1-axis linear control	0.88ms	1.77ms
	1-axis speed control		
	2-axes linear interpolation control		
	2-axes circular interpolation control		
	2-axes speed control	1.77ms	3.55ms
	3-axes linear interpolation control		
	3-axes speed control		
	4-axes linear interpolation control		
4-axes speed control	3.55ms	7.11ms	

Operation cycle	Starting time
0.88ms	1.77ms
1.77ms	3.55ms
3.55ms	7.11ms



A large selection of motion control solutions are available to fit any motion application.

High-speed, accurate positioning control.

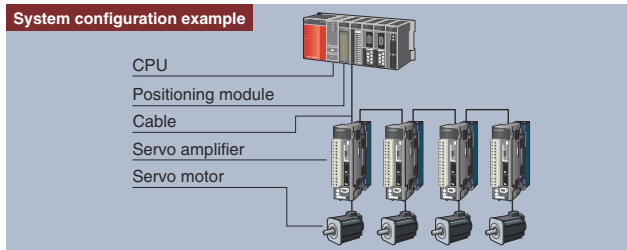
Various types of motion control are supported including 2 to 4-axes linear interpolation, 2-axes circular interpolation, speed control, speed/position changeover, path control and constant speed control. Making settings (including positioning data), monitoring, and debugging is made much easier using GX Works2's built-in intelligent function module tools or the stand-alone tool, GX Configurator-QP. For servo control, Q series leverages the benefits of SSCNET, a Mitsubishi high performance motion control network. This allows Mitsubishi intelligent digital servos to be connected by a simple daisy chain cable that reduces cost and increases performance.

● Positioning Module

SSCNET III connection type..... QD75MH□

The □ in the above model indicates the number of axes (1, 2, 4).

Using SSCNET III optical cables minimizes the required wiring, permits distances of up to 50 m between stations, and is highly resistant to EM/RFI. This format is also compatible with absolute position systems where the home position is established by a home position return data setting operation. Using the CN3 connection, limit switches and proximity DOG inputs can be made directly to the servo amplifier, greatly reducing the required wiring.



	QD75MH□	QD75M□
Servo amplifier connection method	SSCNET III	SSCNET
Max. distance between stations	50 m	30 m
Control system	PTP (Point To Point) control, path control (both linear and arc can be set), speed control, speed-position switching control, position-speed switching control	
Starting time*	1-axis linear control	3.5 ms
	1-axis speed control	3.5 ms
	2-axes linear interpolation control	4.0 ms
	2-axes circular interpolation control	4.0 ms
	2-axes speed control	3.5 ms
	3-axes linear interpolation control	4.0 ms
	3-axes speed control	3.5 ms
	4-axes linear interpolation control	4.0 ms
4-axes speed control	4.0 ms	

* Using the Pre-reading start function, the start time can be effectively shortened down to 1.1 ms.

● Positioning Module

Open collector pulse train output type QD75P□N

Differential driver pulse train output type QD75D□N

The □ in the above model indicates the number of axes (1, 2, 4).

For compatibility with the widest range of motion hardware, both open collector and differential driver type positioning modules are available. Transmission of high-speed pulses, up to 4Mpps, to a servo amplifier can be made reliably up to 10 meters away. These pulse train output positioning modules can provide a high level of speed and accuracy for practically any application.

	QD75P□N	QD75D□N
Pulse train output format	Open collector output	Differential drive output
Max. output pulse	200 kpps	1 Mpps
Max. connection distance to drive unit	2 m	10 m
Control system	PTP (Point To Point) control, path control (both linear and arc can be set), speed control, speed-position switching control, position-speed switching control	
Starting time*	1-axis linear control	1.5 ms
	1-axis speed control	1.5 ms
	2-axes linear interpolation control	1.5 ms
	2-axes circular interpolation control	2.0 ms
	2-axes speed control	1.5 ms
	3-axes linear interpolation control	1.7 ms
	3-axes speed control	1.7 ms
	4-axes linear interpolation control	1.8 ms
4-axes speed control	1.8 ms	

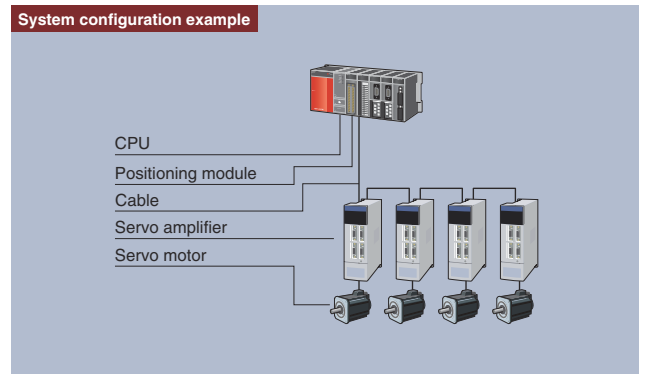
* Using the Pre-reading start function, the start time can be effectively shortened down to 3 ms.

● Positioning Module

SSCNET connection type QD75M□

The □ in the above model indicates the number of axes (1, 2, 4).

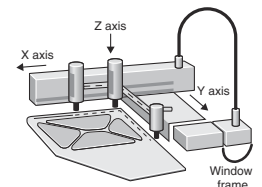
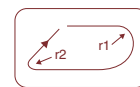
Connections made using SSCNET greatly reduce the required wiring compared to traditional systems. Not only can servo amplifiers be daisy chained together, but motion control input signals like proximity DOG, etc. can be wired directly to the servo amplifier. Absolute position system implementation is fully supported, and zero point return (OPR) may be executed using a data set.



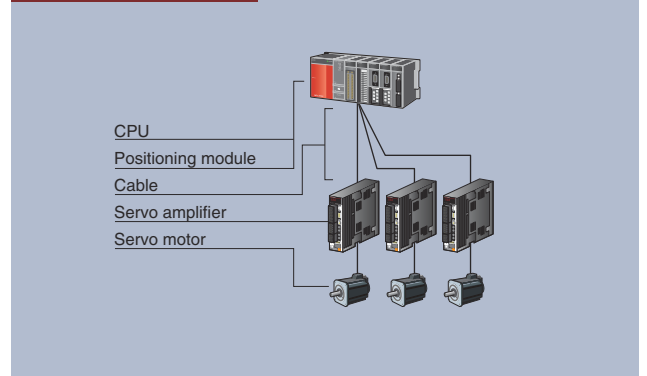
Application example ▶ Sealing

[Function]

- Constant speed pass control
- Linear, circular interpolation
- High-speed, high-accuracy pass control



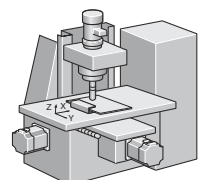
System configuration example



Application example ▶ X-Y table control

[Function]

- 2-axes linear interpolation
- 3-axes linear interpolation
- 2-axes circular interpolation
- Constant speed pass control



The ideal solution for simple multi-axis positioning.

These modules are ideal for high-speed linear positioning control in a multi-axis system. Easily satisfying the requirements for simple positioning control applications, these modules include functions, such as positioning control, speed control and variable positioning control.

● Positioning Module

SSCNET III connection type **QD74MH□**

The □ in the above model indicates the number of axes (8, 16).

Control up to 16-axes with a single module. The long list of functions includes positioning to an arbitrary position, incremental feed control, location control, a high-speed operating cycle, SSCNET III connectivity, electronic gears, backlash compensation, absolute position system, and linear interpolation of up to 4-axes.

		QD74MH□
Servo amplifier connection method		SSCNET III
Max. distance between stations		50m
Control system		PTP (Point To Point) control, path control (linear only)
Starting time	1-axis linear control	0.88ms
	2-axes linear interpolation control	
	3-axes linear interpolation control	
	4-axes linear interpolation control	

● Positioning Module

Open collector pulse train output type **QD70P□**

Differential driver pulse train output type **QD70D□**

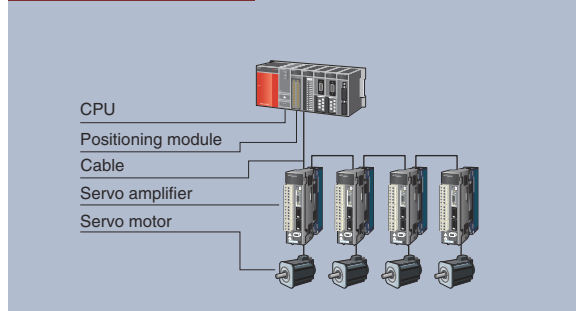
The □ in the above model indicates the number of axes (4, 8).

These modules are a great match for stepper motor control. Acceleration and deceleration can be performed smoothly with very fine changes in speed. "Fast start processing" is a basic feature that allows for a single axis positioning start time of just 0.1 ms.

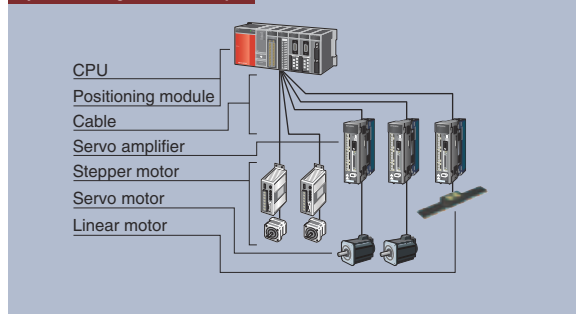
		QD70P□	QD70D□
Pulse train output format		Open collector output	Differential drive output
Max. output pulse		200 kpps	4 Mpps
Max. connection distance to drive unit		2 m	10 m
Control system		PTP (Point To Point) control, path control (linear only), speed-position switching control	
Starting time	1-axis start	0.1 ms	
	4-axes simultaneous start*1	0.2 ms	
	8-axes simultaneous start*1	0.4 ms	

*1: When START signal switches ON within 1 scan. There are no start delays between axes.

System configuration example



System configuration example



Positioning control using encoder feedback that is great for conveyor systems, processing machines, etc.

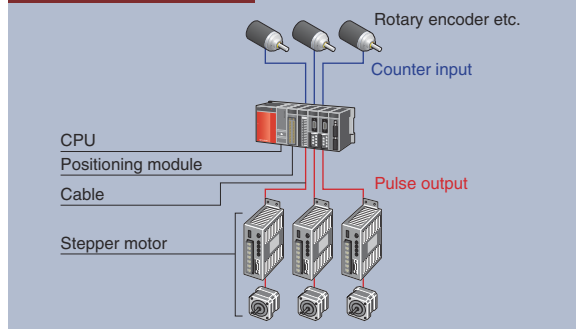
● Positioning Module with built-in counter function

Open collector pulse train output type **QD72P3C3**

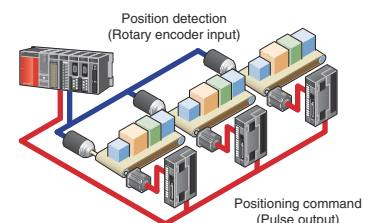
This module combines counter inputs and pulse outputs for 3-axes in a single module to save space and reduce cost. several useful functions such as 3-axes simultaneous start, target speed change, and coincidence detection are available.

		QD72P3C3	
Positioning control	Number of axes	3-axes	
	Pulse train output format	Open collector output	
	Max. output pulse	100 kpps	
	Control system	PTP (Point To Point) control, speed control	
	Start time	1-axis start	1 ms
3-axes concurrent start		1 ms	
Counter function	Number of channels	3 channels	
	Count input signal	Phase	1-phase input, 2-phase input
		Signal level	18 mA at 5 V DC, 2 to 6 mA at 24 V DC
		Pulse input	1 multiple of 2 phases, 2 multiple of 2 phases, 4 multiple of 2 phases, CW/CCW
Counting speed (max.)	100 kpps		

System configuration example



Application example > Conveyor position control





A selection of high-speed pulse counter modules for accuracy intensive, high resolution control applications is available.

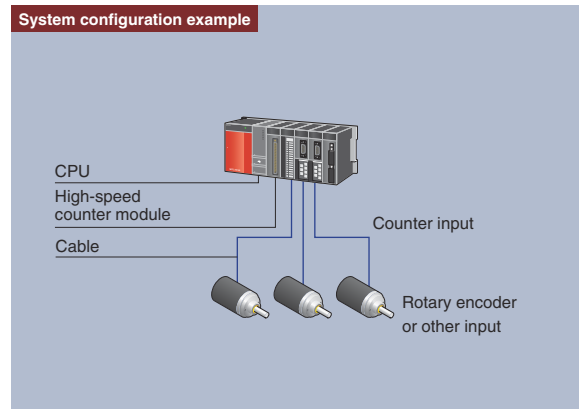
Pulse input modules capable of high-speed counting.

● High-speed counter module

- Standard type.....**QD62, QD62E, QD62D**
- Multi-channel high-speed counter module **QD63P6**
- 4 Mpps compatible high-speed counter module **QD64D2**
- Multi-Function Counter/Timer Module..... **QD65PD2**

Inputs may be connected to a variety of devices for positioning control, precision measurement, etc. The maximum counting speed may be adjusted via parameter (excluding QD64D2) for more reliable counting at lower frequencies.

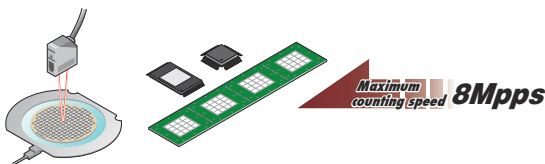
- » External coincidence output (QD64D2 includes 2 per channel): Select coincidence output, continuous comparison (QD64D2 only), or the coincidence detection interrupt function for flexible high-speed external device control.
- » Many functions are available to satisfy application requirements including the coincidence output test function (QD64D2 only), latch counter function (excluding QD63P6), and preset function.
- » Calculate pulses at speeds up to 8 Mpps (4 multiples of 2 phases). Perform precise position tracking using a high-resolution encoder for demanding applications such as semiconductor and LCD manufacturing. (QD65PD2)



	QD62 (DC input sinking output type)	QD62E (DC input sourcing output type)	QD62D (differential input sinking output type)	QD63P6 (DC input)	QD64D2 (DC input, sink output type)	QD65PD2 (DC/Differential input, external output terminals)	
Number of channels	2 channels			6 channels	2 channels	2 channels	
Count input signal	Phase	1-phase input, 2-phase input					
	Signal level	5/12/24 V DC 2 to 5 mA	EIA Standard RS-422-A Differential line driver level (AM26LS31 [manufactured by Texas Instruments] or equivalent)	5 V DC 6.4 to 11.5 mA	EIA Standard RS-422-A Differential line driver level (AM26LS31 [manufactured by Texas Instruments Incorporated] or equivalent)	[Differential input] EIA Standards RS-422-A, differential line driver level (AM26LS31 [manufactured by Texas Instruments] or equivalent) [DC input] 5/12/24 V DC, 7 to 10mA	
	Pulse input	1-phase pulse input (x1, x2), CW/CCW, 2-phase (x1, x2, x4)					
Counting speed (max.)	200 kpps		500 kpps	200 kpps	4 Mpps	[Differential input].....8 Mpps [DC input].....200 kpps	
Function	.Linear counter function .Ring counter function .Coincidence output function .Preset function		.Latch counter function .Count disable function .Sampling counter function .Periodic pulse counter function	.Linear counter function .Ring counter function .Coincidence detection function .Preset function .Periodic pulse counter function	.Linear counter function .Ring counter function .Coincidence detection function .Continuous comparison function .Preset function .Latch counter function	.Linear counter function .Ring counter function .Coincidence output function .Cam switch function .Preset/replace function .Latch counter function .Sampling counter function .Periodic pulse counter function .Count disable/preset/replace function	.Latch counter/preset/replace function .Internal clock function .Frequency measurement function .Rotation speed measurement function .Pulse measurement function .PWM output function .General input function .General output function

Multi-Function Counter/Timer Module (QD65PD2)

- **Perform extremely accurate position tracking!**
Counting speed up to 8 Mpps (4 multiples of 2 phases)



- **Multiple functions designed for ease of use!**

[Pulse measurement function]

With a resolution of 100 ns, it is possible to perform highly accurate pulse measurement.

[PWM output function]

Precisely control PWM output up to 200 kHz. With a resolution of 0.1 μs, superfine control of the duty cycle is possible.

[Cam switch function]

Configure up to 16 cam settings and use up to 8 dedicated outputs. The cam switch function enables highly accurate timing control.

- **Perform sophisticated control using coincidence detection!**

The coincidence output function allows complex applications to be supported. Depending on the situation, either the cam switch function or the coincidence output function can be used.

● Channel isolated pulse input module..... **QD60P8-G**

This module is appropriate for the measurement of input pulse counts (related to speed, revolution, instantaneous flow rate, etc.) and the measurement of quantities (length, cumulative flow, and so forth). The QD60P8-G operates on a 10 ms control cycle, thus the minimum value refresh time is 10 ms. The count cycle setting can be changed to the desired time for cumulative count values and moving average pulse counts (sampling pulse counts).

		QD60P8-G
Number of channels		8 channels
Count input signal	Phase	1-phase input
	Signal level	5 V DC/12 to 24 V DC, 4 mA or higher
	Pulse input	1-phase pulse input
Counting speed (max.)		30k/10k/1k/100/50/10/1/0.1pps

Power measurement units for easily measuring various energy information

Rack mountable type energy measuring module.

- Energy Measuring Module.....**QE81WH**
- Energy Measuring Module (Multi-circuit).....**QE84WH** **NEW**
- Energy Measuring Module (Three-phase 4-wire product)**QE81WH4W**
- Energy Measuring Module (Multi-circuit, Three-phase 4-wire product)....**QE83WH4W** **NEW**

Using only one module, highly detailed information about electric energy (consumption and regeneration), reactive energy, current, voltage, electric power, power factor, and frequency can be measured. Minimum and maximum values are constantly monitored and 2 types of upper/lower limit warnings can be implemented without any programming. The amount of electric power used by output devices only while ON can be measured.

The power rate during device operation and the power rate in takt units can be retrieved. The multi-circuit product allows power to be measured in a smaller space as up to four circuits can be measured with a 3-phase 3-wire product in one slot, and up to three circuits with a 3-phase 4-wire product. For example, one unit can be used to measure other loads from the control panel trunk.

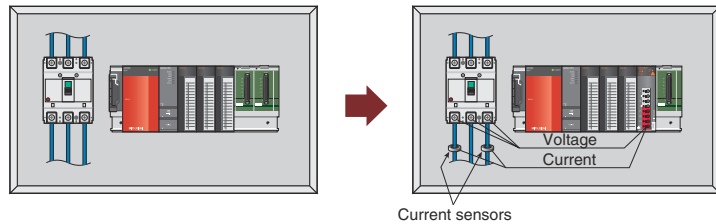
In addition, the parameters can be set easily with GX Works2 (Version 1.91V and higher).

Model	QE81WH	QE84WH*1	QE81WH4W	QE83WH4W*1
Phase wire system	single-phase 2-wire / single-phase 3-wire / three-phase 3-wire		3-phase 4-wire*2	
Instrument rating	Voltage circuit		63.5/110VAC to 277/480VAC	
	Current circuit		50, 100, 250, 400, 600VAC (Using dedicated split type current sensor. Each value indicates current sensor's primary current value.) 5VAC (Using dedicated 5A current sensor. 5A current sensor is used with two-stage configuration in combination with current transformer (CT). Primary current value can be set up to 6,000A.)	
	Frequency		50/60Hz (frequency automatically judged)	
Number of measurement circuits	1 circuit	4 circuits	1 circuit	3 circuits
Measurement items	Power rate (consumption, regenerative), reactive power rate, period power rate, current, voltage, power, power factory, frequency		Power rate (consumption, regenerative), reactive power rate, period power rate, current, voltage, power, reactive power, apparent power rate, power factory, frequency	

*1: Current measurement mode is provided. Up to eight circuits can be measured when measuring only the current value.
*2: The separate voltage transformer (QE8WH4VT) is required for the three-phase 4-wire compatible products.

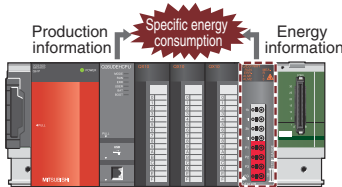
Minimal impact on control panel layout

- By mounting the energy measuring module onto the open slot of the base unit, measuring instrument can be added without changing the layout in the control panel.



Allows for detailed power measurement at high speed (250ms)

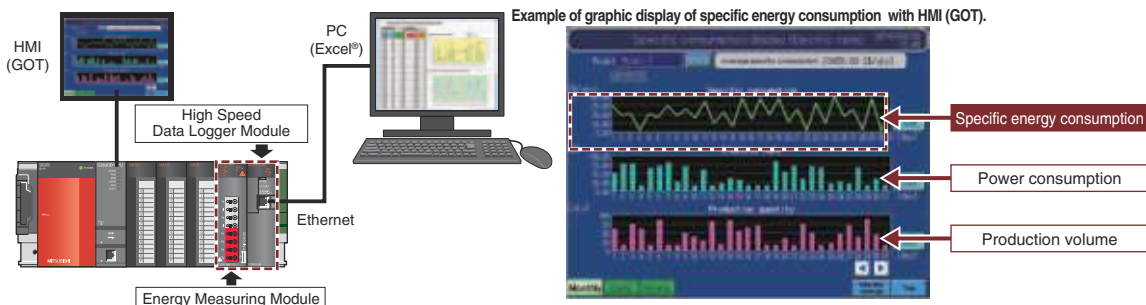
- Allows for easy specific energy consumption¹ management by matching the “production information” of the CPU module with the “energy information” of the energy measuring module.
- Since measured data is automatically collected in a buffer memory at 250ms, detailed specific energy consumption management is also available.



*1: The specific energy consumption is a numerical value displayed by “dividing energy consumption by production volume,” which is one type of index that measures energy productivity. Improving this number leads to improved productivity and energy conservation.

Allows for easy construction of a “visualization” system

- Allows for easy graphic display of specific energy consumption with a graphic operation terminal (GOT) installed on the control panel at the manufacturing site.
- Combination with the “high-speed data logger module (QD81DL96)” allows specific energy consumption analysis to be easily performed with a PC.





Isolation monitoring module measuring leakage current.

● Isolation monitoring moduleQE82LG

Leakage current can be measured for safety measures. Risks of electric shock are detected by monitoring leakage current (I_o). The isolated state of equipment can be constantly monitored. The resistive component leakage current (I_{or}) is measured to constantly monitor the condition of deterioration of equipment isolation. Two-stage warning is provided for each measurement item. Two-stage warning for each of leakage current (I_o) and resistive component leakage current (I_{or}) can be issued via ladderless communication. The two-stage warning function can be used to give a warning for calling for attention and a hazard warning. One module can monitor two circuits. One module can monitor two circuits of power supplies of the same phase/wire type on the same system. In addition, the parameters can be set easily with GX Works2 (Version 1.91V and higher). [Measurement items]

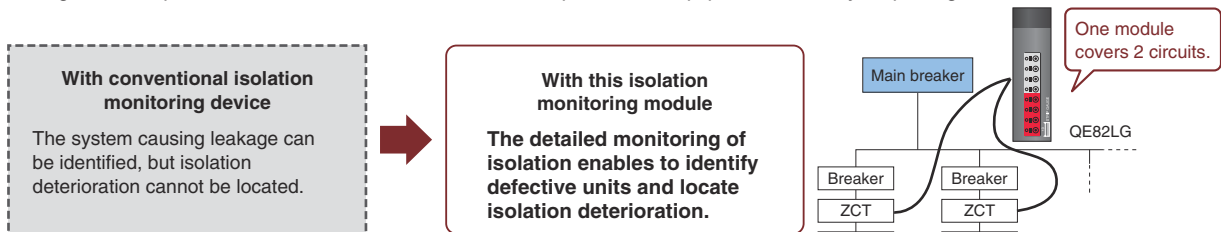
Leakage current (I_o) and resistive component leakage current (I_{or})

Model		Details	
Phase/wire type		Common to single-phase 2-wire and single-phase 3-wire/three-phase 3-wire types	
Instrument ratings	Voltage circuit *1 *2	Single-phase 2-wire Three-phase 3-wire	Common to 110 V AC and 220 V AC
		Single-phase 3-wire	110 V AC (between wires 1 and 2, between wires 2 and 3), 220 V AC (between wires 1 and 3)
	Leakage current circuit		1 A AC (ZCT is used. Primary current of ZCT)
	Frequency		50/60 Hz (automatic discrimination of frequency)
Number of circuits which can be monitored		2 circuits*3	

*1: The module can be connected directly to 110-V and 220-V power supplies. To connect to a 440-V power supply, an external voltage transformer (VT) is necessary. Leakage current cannot be measured if voltage input is not provided.
 *2: I_{or} can be measured on single-phase 3-wire and 3-phase 3-wire delta circuits. On special circuits, such as 3-phase 3-wire star circuits, high-resistance grounding circuits and capacitor grounding circuits, only I_o can be measured.
 *3: Leakage current (I_o , I_{or}) measurement on CH1 and CH2 can be performed only on circuits on the same system as the voltage input.

Early detection of isolation deterioration of production equipment

- The structure directly connected to programmable controller in the control panel saves space and facilitates measurement of leakage current in places close to loads.
- Failures caused by leakage (earth fault) and isolation of motor loads in production equipment can be monitored. Progression of isolation deterioration is not overlooked.
- The upper limit warning monitor can be set in two stages. Isolation deterioration and condition can be observed at an early stage, so that preventive measures can be taken before production equipment suddenly stops or goes down.

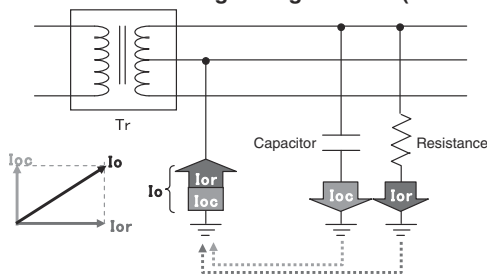


I_{or} system realizes constant monitoring of isolation deterioration of equipment

- With the conventional systems, such as inverter circuits with large capacitor component leakage current (I_{oc}), it has difficulty for isolation monitoring. The module is capable of measuring resistive component leakage current (I_{or}), and removes the I_{oc} component then monitors the accurate leakage current caused by isolation deterioration.
- Resistive component leakage current (I_{or}) is constantly measured even during operation of equipment. Signs of isolation deterioration can be detected without power interruption.

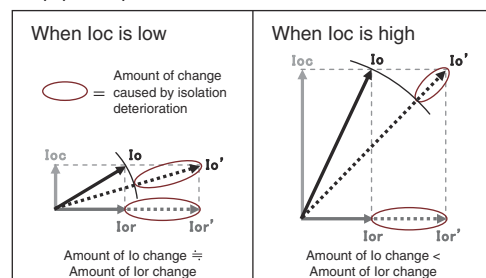
Leakage current (I_o) is affected by I_{oc} of entire equipment. Therefore, I_{or} measurement is effective in diagnosis of isolation deterioration.

■ Method of measuring leakage current (I_o measurement and I_{or} measurement)



I_{or} : Leakage current caused by isolation deterioration (leakage current of resistive component)
 I_{oc} : Leakage current (leakage current of electrostatic capacity) flowing even if isolation is in good condition
 I_o : Leakage current obtained by synthesizing I_{or} and I_{oc} (vector synthesis)

• I_{oc} fluctuates in equipment with long wiring length or equipment provided with inverter devices and filter,





The objective of MELSOFT integrated FA software is to increase productivity by combining tools for development, maintenance, and operation of Q series systems.

Automation has brought tremendous productivity benefits to industrial and commercial applications. By creating the MELSOFT integrated FA software family of products, Mitsubishi Electric is aiming to bring similar productivity benefits to system designers, automation engineers, operators, and maintenance personnel. MELSOFT engineering tools are undergoing continuous evolution in order to meet the demands of new technologies and applications.



Programmable Controller Engineering Software

GX Works2

GX Works2

GX Works2 focuses on driving down total cost by including features that speed up commissioning, reduce downtime, improve programming productivity, and provide strong security.



For details, refer to the "MELSOFT GX Works2" catalog.

● User interface that is "easy to use" by design

The programming tool GX Works2 has been developed from the ground up to be intuitive for all users and allow anyone to begin programming easily. The user interface and other functions provide a comfortable programming environment that enables improvements in design efficiency.

Fully integrated intelligent function module management tools.

Use tabs to easily switch between programs, parameters, and other screens.

Improve readability by hiding ladder rungs not relevant to the current operation.

Use "Watch windows" to conveniently monitor pertinent values.

Project tree gives compressive look at flow of information in program and structure.

Program titles help to identify the content of each program.

Cross reference devices and labels with ease.

Use the Inline-ST^{*1} feature to quickly write complex expressions in ladder programs.

*1 In-line ST can only be created in projects that use labels.

● Easily create circuits with few key inputs

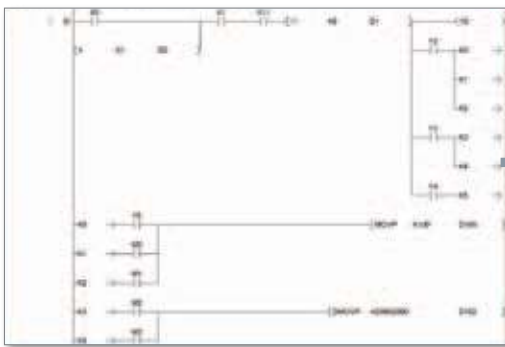
The program can be easily modified using the keyboard shortcut [Alt] + [←] / [→] or [Alt] + [↑] / [↓] keys.



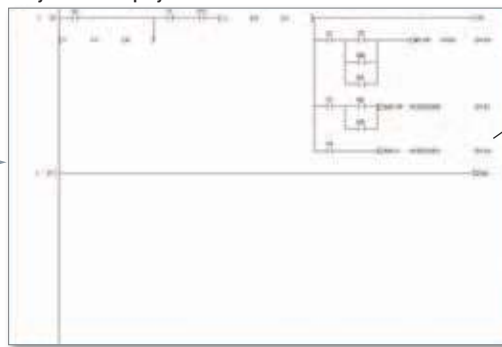
■ Editing the circuit
 [Alt] + [→] ... MOV → D0 → K4Y0
 [Alt] + [←] ... K4Y0 → D0 → MOV



■ Changing the device No.
 [Alt] + [↑] ... K4Y0 → K4Y1 → K4Y2
 [Alt] + [↓] ... K4Y2 → K4Y1 → K4Y0



Easy-to-read display



The number of contacts on one line can be changed to 9, 11, 13, 17 or 21 contacts.

The circuit line doesn't wrap, easier to read.

Click the Undo button.



Undo

Use Undo ([Ctrl] + [Z]) to go back to up to 30 previous input steps.



The device number is automatically incremented when repeatedly pasting a cut/copied ladder rung.



● Efficiently edit lines with keyboard

Ladder rungs can be easily modified just by using the various keyboard shortcut keys, eliminating the need to switch to editing mode.



Input line with or

Input lines up to coil in batch with

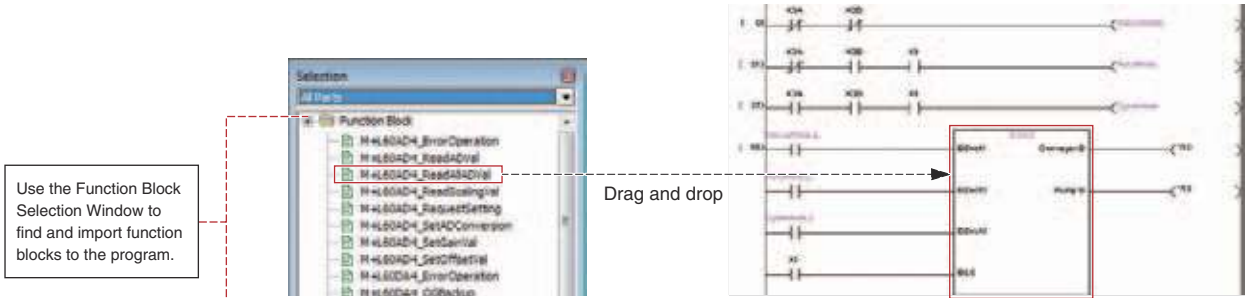
(Batch input lines in a vertical direction with)



■ How to input a line
 Press [Ctrl] + [→] or [Ctrl] + [↓] at an empty spot.
 Press [Ctrl] + [→] or [Ctrl] + [↓] on top of a line to delete it.

● Use function blocks for common operations

Function blocks allow selections of commonly used code to be easily reused and shared among projects. Shared or created function blocks can be added to a program using simple drag and drop operation. Using function blocks effectively results in faster development times with fewer programming mistakes.

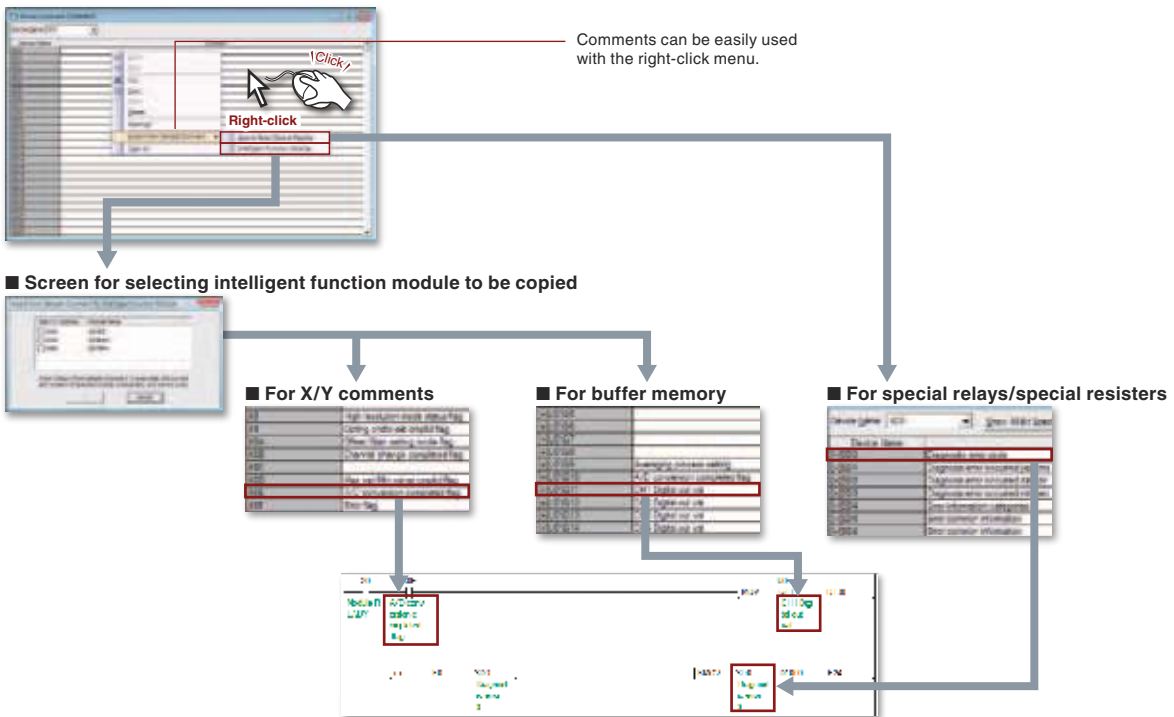


Use the Function Block Selection Window to find and import function blocks to the program.

Drag and drop

● Use sample comments to eliminate the need to input comments

Sample comments are provided for the CPU's special relays/registers and the intelligent function module's buffer memory/XY signals. These can be copied into the project's comments thus greatly reducing the time required for entering device comments.



Comments can be easily used with the right-click menu.

■ Screen for selecting intelligent function module to be copied

■ For X/Y comments

■ For buffer memory

■ For special relays/special registers

● Quickly identify similar devices

Word device comments can be registered per bit with the contents displayed directly on the ladder rung.

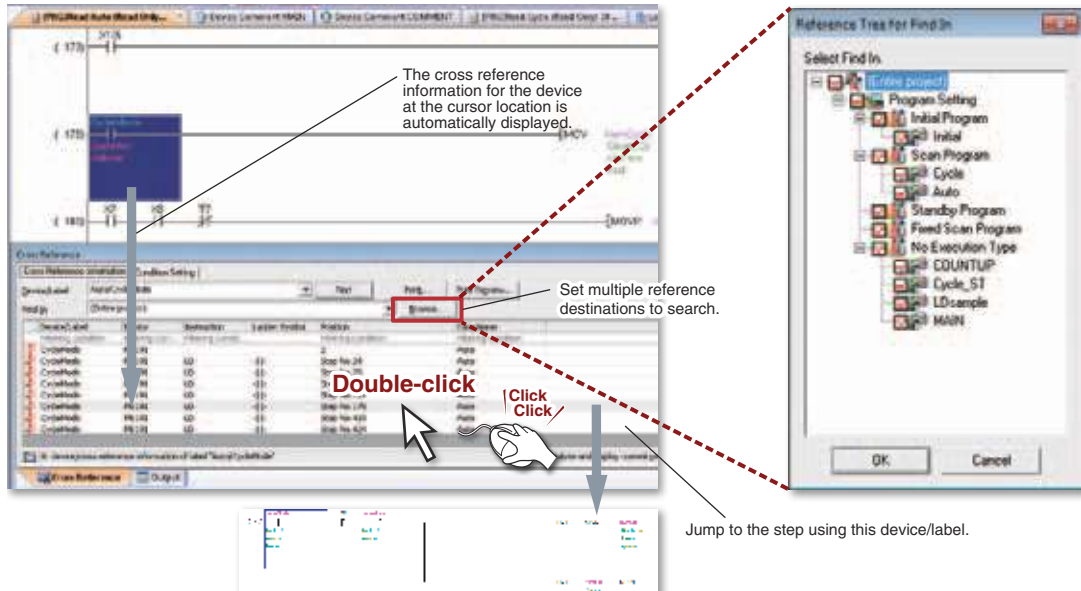


More device comments can be handled.



● **Cross referencing interlinked with circuit displays**

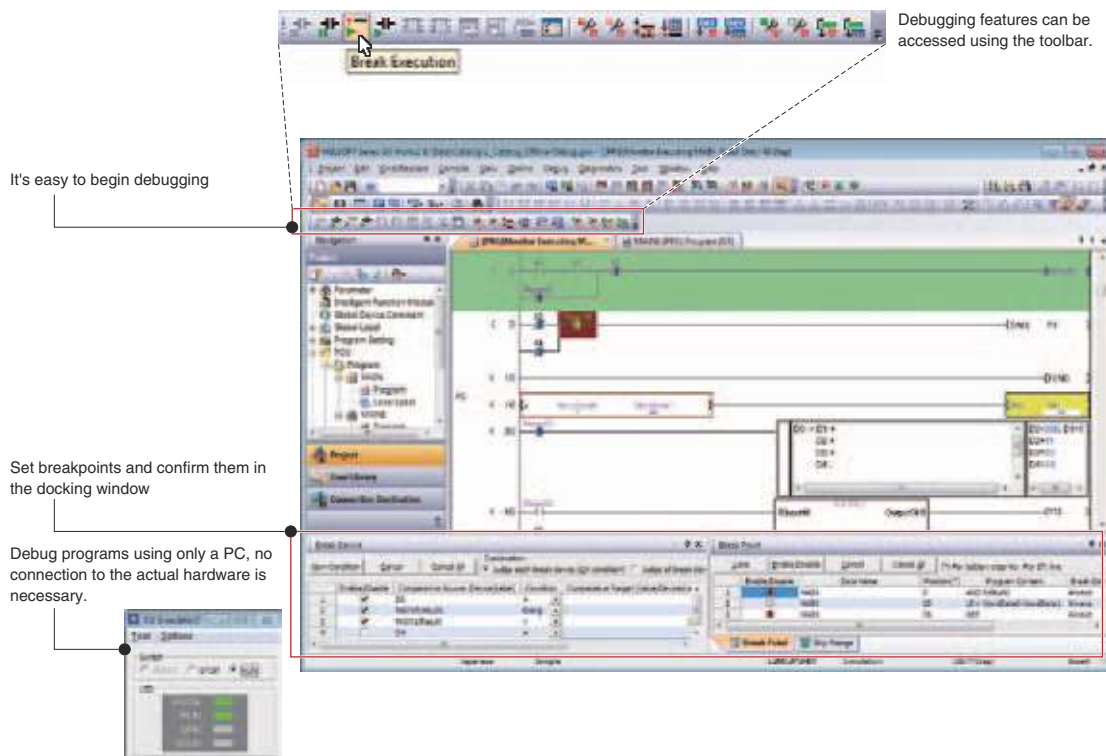
Relevant devices and labels can be searched within the contents of the program by using the cross reference tool. The results are immediately displayed in the cross reference dialog box conveniently besides the actual program view screen. It is then very easy to check where the relevant device is actually used within the program, just by double clicking on the target device.



● **Offline debug without physical hardware**

GX Simulator
Function

The simulation function is now integrated. The program can be executed in a step-by-step method, finding program errors more easily.

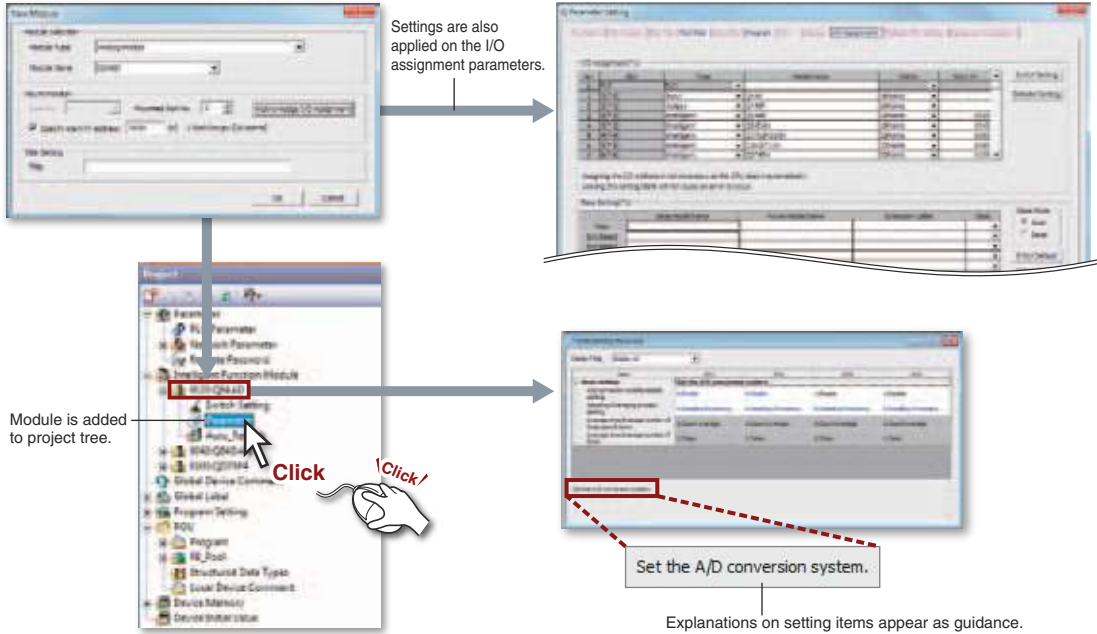


● **Integrating the intelligent function module setting tool (GX Configurator)**

GX Configurator
Function

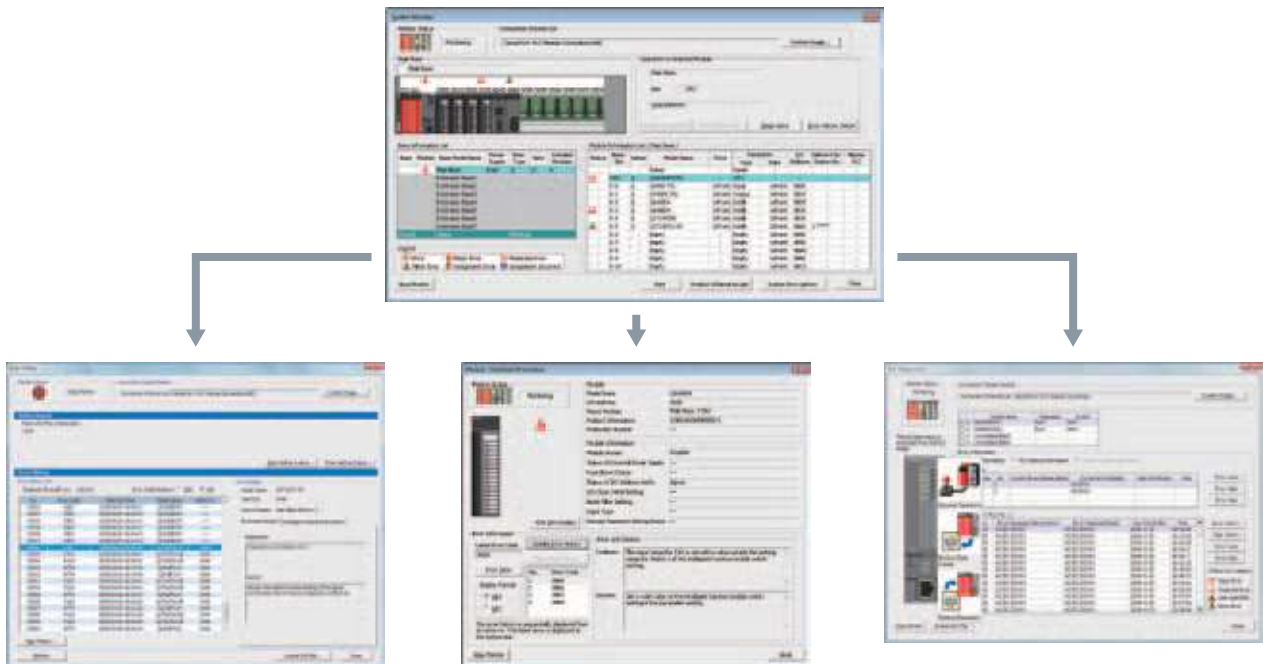
The intelligent function module's setting functions have been unified with GX Works2.
Manage the intelligent function module's setting with a GX Works2 project.

■ **New module addition screen**



● **Identify problems immediately using an interactive graphical system display**

Simplify troubleshooting with a combined, time-stamped, error history list for the CPU and all expansion modules.
The details section provides explanations of error codes and suggested solutions.



■ **System error history**

Simplify troubleshooting with a combined, time-stamped, error history list for CPUs and intelligent function modules.
The details section provides explanations of error codes and suggested solutions.

■ **Detailed module information**

Resolve intelligent function module issues quickly by clicking on a module to open this function. All of the information relevant to the module is displayed here including error codes, their description, and possible solutions.

■ **PLC diagnostics**

From one central window quickly read error and status information, export log files to CSV, perform remote CPU operations like reset, stop, CPU memory format, and more.



Time-stamped error history list

Simplify troubleshooting with a combined, time-stamped, error history list for the CPU and all expansion modules. The details section provides explanations of error codes and suggested solutions.

The screenshot shows the GX LogViewer interface. On the left, a table lists error history entries with columns for No., Error Code, Date and Time, Model Name, and Error I/O. On the right, a detailed view for error code 7D12 is shown, including an explanation: "Station number specification error. The transmission destination and source stations were the same when other station connection was specified." and a solution: "Check the transmission destination station number, or change to host connection."

Quickly identify the error, its cause, and solution without the need to reference a manual.

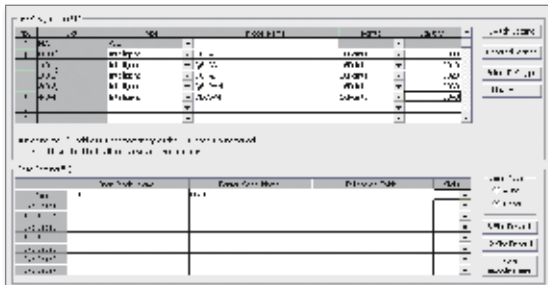
Save and edit labels and parameters with Excel®

Various program data can be exported in CSV file format. Exporting to CSV format has various advantages, as shown below:

- Data can be utilized on a PC even if GX Works2 is not installed
- Data can be saved directly on the PC
- Data can be sent and utilized off-site
- Utilization of data for creating documents and graphs are possible using Excel®
- Can use in other software that support CSV format

Example of I/O assignment setting CSV file

I/O assignment setting



- » Ladder program..... Write/Read
- » Label setting..... Write/Read
- » Parameter (I/O assignment setting, X/Y assignment confirmation) ... Write
- » Verification results..... Write
- » Sampling trace function..... Read (CSV file format that can be read with GX LogViewer)
- » Watch window device/label list..... Write/Read
- » System monitor diagnostics, product information, PC diagnostics, Module error history..... Write
- » Device memory..... Write/Read

CSV file

No.	I/O assignment	Advanced setting	Switch setting	Basic setting
1	X0-01	Inhibit	0	00000000
2	X0-02	Inhibit	0	00000000
3	X0-03	Inhibit	0	00000000
4	X0-04	Inhibit	0	00000000

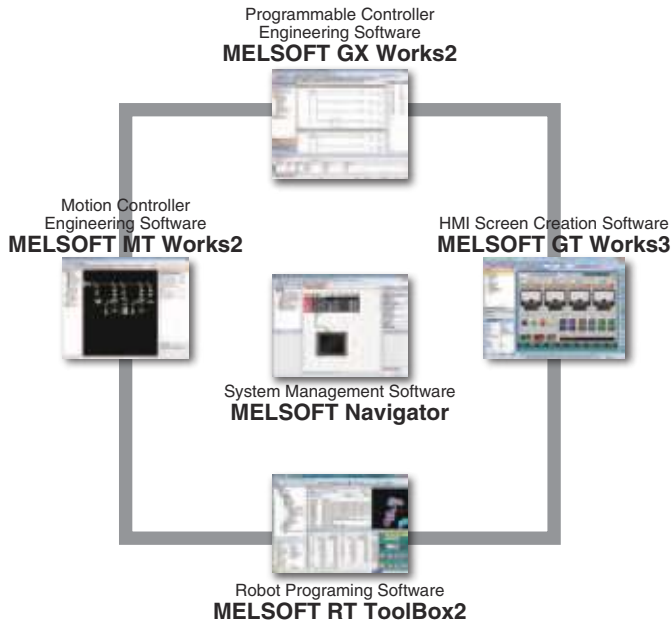
I/O assignment

Advanced setting

Switch setting

Basic setting

iQ Works



MELSOFT iQ Works

Next Generation Seamless Engineering Environment

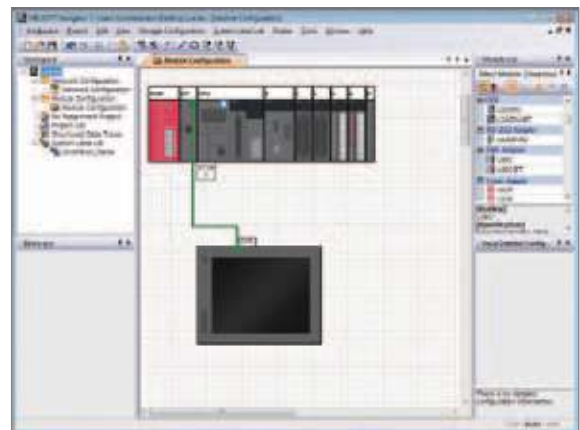
iQ Works is the combination of Mitsubishi engineering software (GX Works2, MT Works2, GT Works3, RT ToolBox2) that allows for the sharing of design information to improve programming efficiency and reduce TCO.



For details, refer to the "MELSOFT iQ Works" catalog.

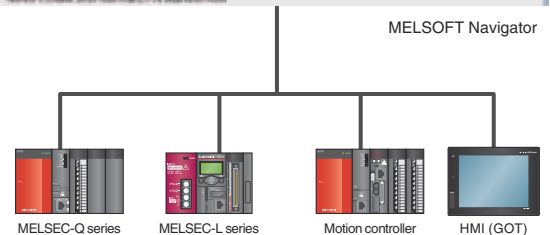
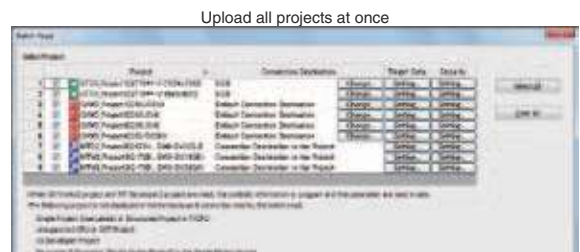
● **Graphical Project Management**

The entire control system is represented using the "Network Configuration" and "Module Configuration" windows. System components are easily added using a drag & drop interface and the validity of the system can be confirmed using the check function to ensure parameters are configured correctly, the power supply is sufficient, etc. Different project types can be grouped together (for example by factory, line, and cell) for central management.



● **Read project data for multiple devices in a batch**

Multiple projects can be read as a block just by having one connection to the programmable controller. If there are multiple devices such as other CPU or GOT on the same network as the target master programmable controller, it is possible to upload all projects to each target device without having to individually connect to each device.





● **Automatically start up the relevant maintenance software with a single click**

Just click on the corresponding project in the system configuration diagram or workspace tree to automatically startup the software relevant for that device. Maintenance can be efficiently performed without having to know and startup each relevant software manually.

Click on corresponding project in workspace tree



Click on corresponding device in system configuration diagram



Software for corresponding device automatically starts up

GX Works2

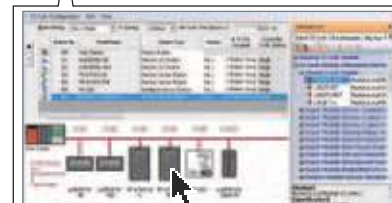
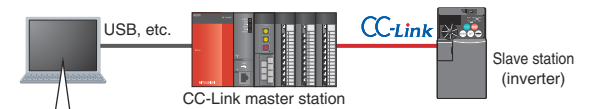
MT Works2

GT Works3

RT ToolBox2

● **Setup CC-Link slave stations**

There's no need to prepare a dedicated tool to check or change the parameter settings for the CC-Link slave station on-site. The latest version of iQ Works includes CC-Link slave station setting utility. Therefore, it is possible to directly confirm the inverter parameters or change the settings for changing the speed directly from the CC-Link configuration window, for example. In addition, error information can also be read easily.



Right-click the slave station illustration and select the "slave station parameter process"

Directly open slave station's setting screen from CC-Link configuration window.



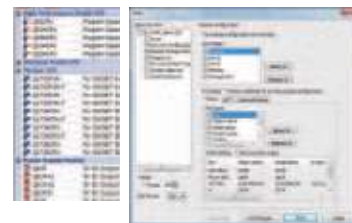
Slave station's parameter setting window opens

Set slave station parameters with GX Works2 and Navigator.

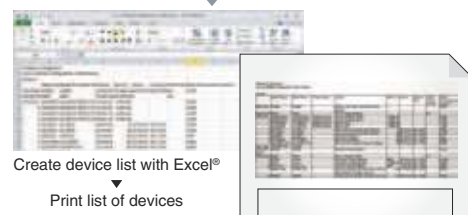
Get error information!

● **Prepare a device from the system configuration diagram with no manual inputs**

A list of modules used can be exported as a CSV file from the system configuration diagram. This is particularly useful when utilizing data for creating a bill of materials (BOM) in Excel®, etc.



Export CSV file from list of modules



Create device list with Excel®

Print list of devices

GX LogViewer



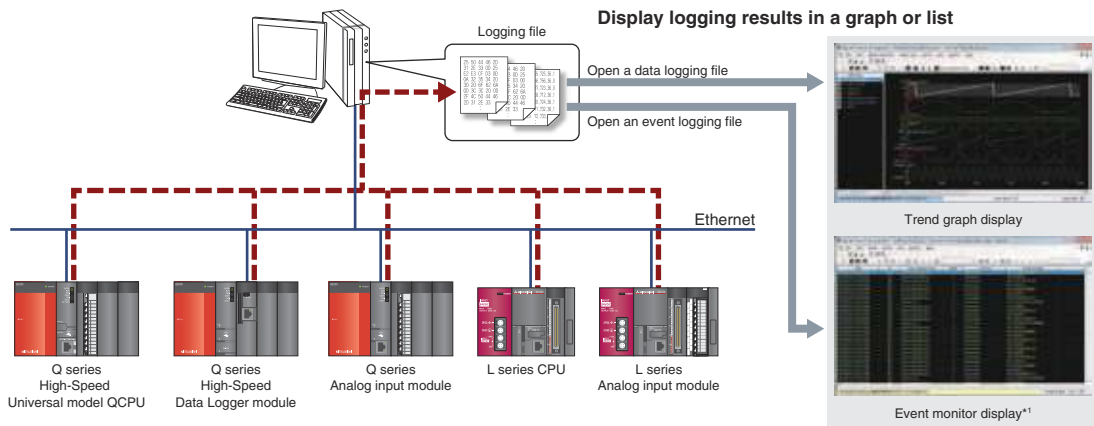
GX LogViewer

Visualizing the production process

Within modern manufacturing needs, data collection has become more important for fully optimizing the production process. GX LogViewer is a software tool that realizes visualization of large amounts of production data in a simple to use format. Utilizing this functionality to identify root error causes and improving the production rate.

● Easily display and analyze large amounts of collected logging data

This tool is used when large amounts of data need to be visualized and collected from the MELSEC-Q series or MELSEC-L series. The connection settings and checking of log files are the same as GX Works2 enabling individual connections to each module.



*1: The event monitor display is supported only with the Q series high-speed logger module.

● Easily adjust graphs without referring to the setup manual

[Arranging graphs]

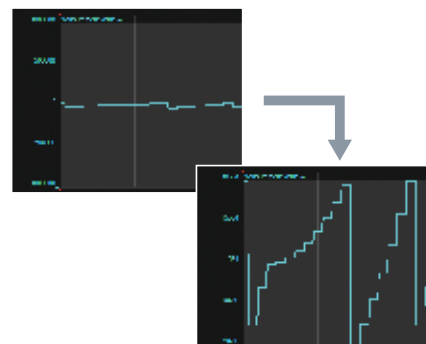
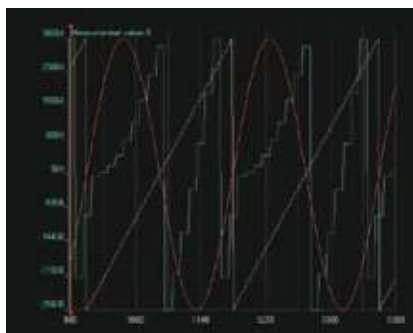
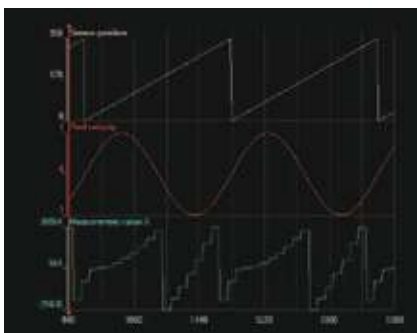
Able to arrange each graph so as not to overlap each other. It is easier to display the graphs as each graph is evenly spaced out.

[Overlapping graphs]

With this it is possible to overlap each graph over one another. Multiple graphs can be compared enabling easier data analysis and comparison.

[Automatically adjusting graphs]

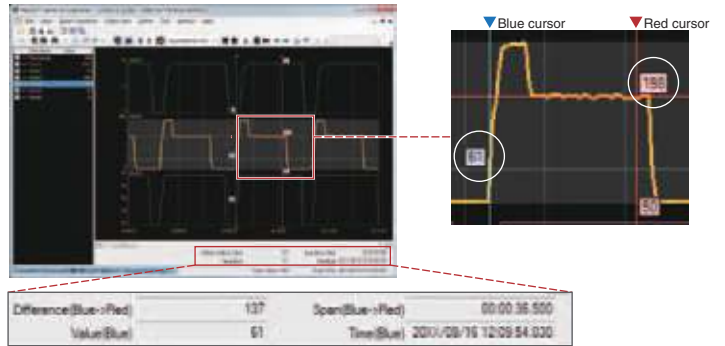
Various attributes of the graph are automatically adjusted (max/min values) as to display the upper and lower limit values better.





● **Easily confirm changes in data with dual cursors**

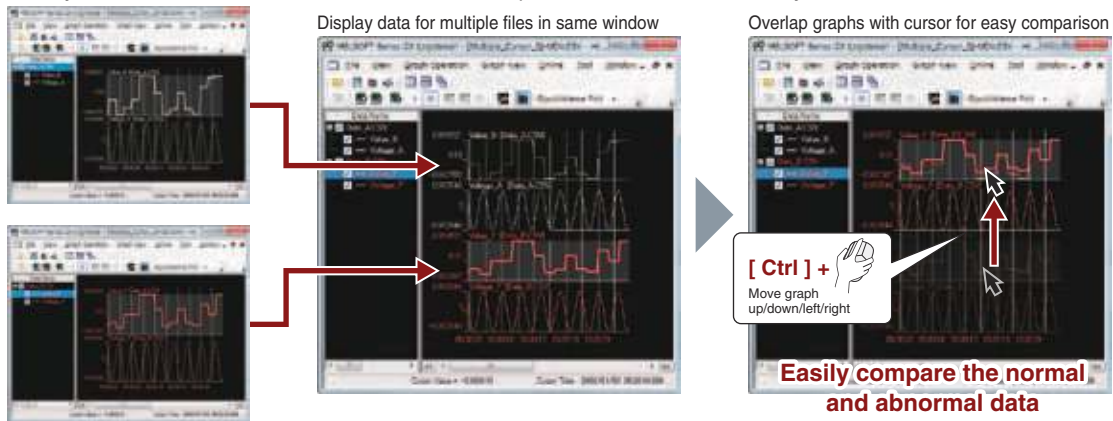
Data changes within a designated time frame can be quickly checked with user-friendly dual cursors (multi-cursors). When the cursors are moved to the point at which changes are to be confirmed, the difference in time and value between those points will appear.



The difference in time and value between the cursors is automatically calculated and displayed.

● **Display data for multiple files within one graph area for easy comparison**

Data for multiple files are displayed with the same time units in the same graph area. The display position within a file can be moved easily. This allows the differences of data within multiple files to be confirmed easily.



● **Quickly jump cursor to designated position**

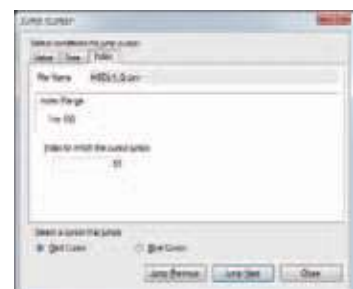
[Cursor jump]
Confirm data values by quickly moving the cursor to a designated value, time or index position in the trend graph.



[Value search]
Values are searched, and the cursor jumps to the position where the conditions match.



[Time designation]
The cursor jumps to the designated time.



[Index designation]
The cursor jumps to the designated index.

MX Component

MX Component Ver. UP

Easily connect PC to Programmable Controller

MX Component is the Active X® control/ .NET control library enabling communication from a PC to a programmable controller and motion controller regardless of communication protocol. Complicated programs for serial and Ethernet communication can be developed with simple steps.

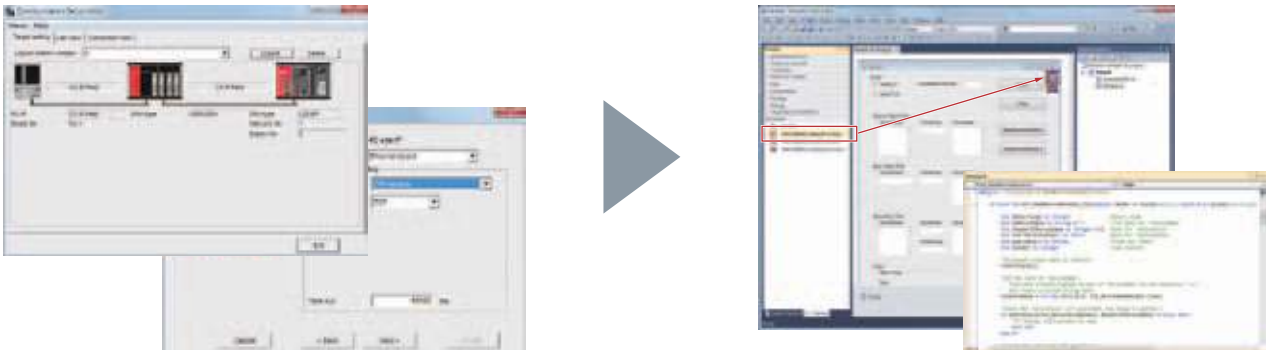


● **Easily set communication conditions with Wizard**

The Wizard style communication configuration utility facilitates access to the programmable controller's CPU. The communication configuration utilities saves the set programmable controller CPU's logic station number, making it simple to access the programmable controller's CPU just by setting the station number.

Follow the Wizard's instructions to set the communication.
(Control for configuration with only a program is available.)

Paste the MX Component control icon into the form.
The set communication path No. is set in the pasted control's properties. After setting the communication path No., write the program for reading the device.



● **Data collection by VBA**

Real time graph display applications can be created using VBA programming in Excel® and Access®. Logged programmable controller device data can be collected and saved in real-time.



● **Reduce man-hours by developing programs with labels**

Devices can be set according to the assigned label. Labels enable intuitive configuration of the program within MX Sheet or directly in the program itself. Therefore, if changes are made to the devices, there is no need to further change the program or MX Sheet file.



MX Sheet



MX Sheet Ver. UP

Easy data collection using Excel®

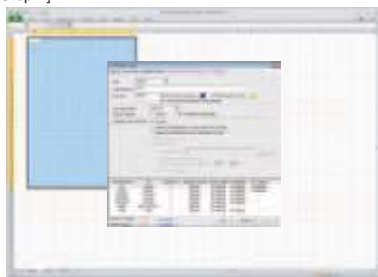
Enables monitoring of the programmable controller or motion controller, log data, collect alarm information, and changing setting values, etc., using familiar Excel® software.

● **Simple and program-less setting**

MX Sheet operation conditions can be set from Excel®.

Therefore, a communication program is not required to communicate between programmable controller and Excel®.

[Step1]



Start the configuration utility, select a function, and set the device conditions.

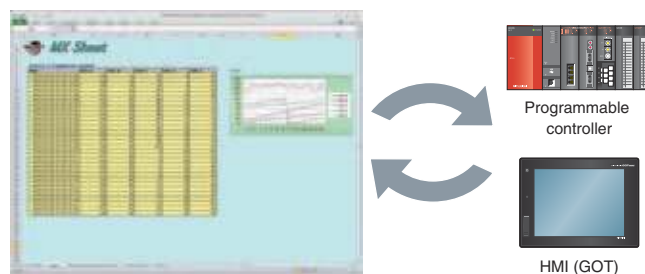
[Step2]



Then, data collection will be started only by arranging the screen and executing the function.

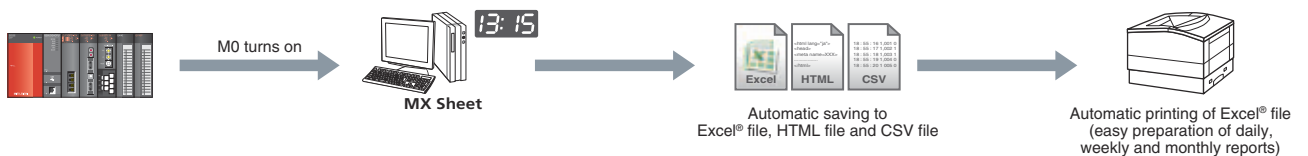
● **Direct connection between office and field**

The device data in the programmable controller is monitored and logged real time before being written to Excel®. Recipe data can also be transferred to programmable controller directly from Excel®.



● **Auto-generate periodic reports**

The data displayed on Excel® is automatically saved or printed at the specified time or as requested by the programmable controller. Periodic reports and test result lists are generated automatically.



Daily reports and monthly reports can be automatically saved and printed according to various conditions.



MELSEC Safety

The concept of safety is shifting from "zero accidents" to "zero risk."

The safety concept has shifted from human intervention based "zero accidents" to risk assessment based "zero risk".

To meet the accompanying needs of this shift, Mitsubishi Electric has introduced MELSEC Safety programmable controller to realize safety control compatible with established MELSEC programmable controller.

MELSEC Safety provides a comprehensive safety control solution.



MELSEC Safety realizes visualization of safety information, realizing optimal safety control, and boosting productivity.

The safety components such as Safety programmable controller, Safety controller, and Safety relay module provide a total safety solution.



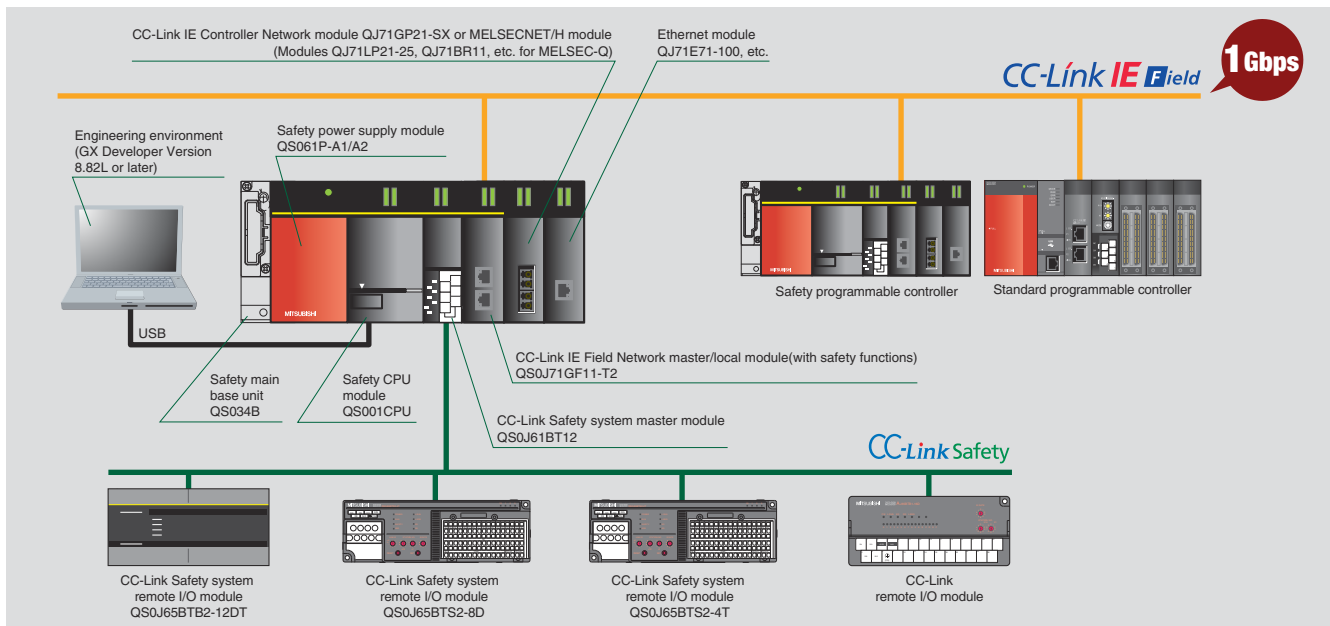
For details, refer to the "Safety Programmable Controller/ Safety Controller/Safety Relay Module MELSEC Safety" catalog.

Safety Programmable Controller MELSEC-QS series

● Safety CPU*1 QS001CPU

The safety programmable controller is an International Safety Standard certified programmable controller for safety control. When connected with a safety device, such as an emergency stop switch or light curtain, this programmable controller executes safety control by turning the safety output OFF with a user-created sequence program to stop movement toward a source of hazard, such as a robot. Machine control of the robot and conveyor, etc., is executed with a standard programmable controller in the conventional manner. The difference between the safety programmable controller and general-purpose programmable controller lies in that if the safety programmable controller itself fails, it performs a self-diagnosis to detect the failure and turn the safety output OFF forcibly. This CPU branches topology using the CC-Link Safety and CC-Link IE Field Network with safety communication function. This is ideal for large control systems requiring many safety I/O points.

*1: The CPU cannot be mounted on the Q series base unit.



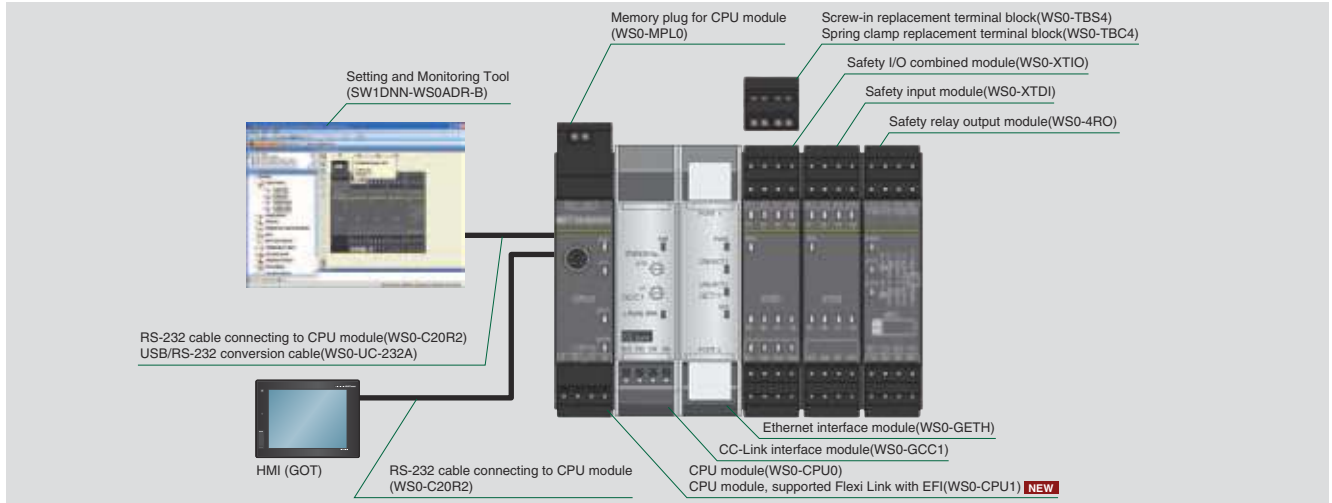
MELSEC-WS series Safety Controller

● Safety Controller CPU*1..... **WS0-CPU0, WS0-CPU1**

This compact new safety controller complies with ISO13849-1 PLe and IEC61508 SIL3 safety standards.

The most suitable application of MELSEC-WS is to ensure safe operation of stand-alone machines or systems. To meet your system configuration, it allows you to have additional I/O points of up to 144. Also, you can easily make settings and create logic by using the Setting and Monitoring Tool exclusively provided for the controller.

*1: The CPU cannot be mounted on the Q series base unit.



Powered by
SICK

The MELSEC-WS series is a joint venture between Mitsubishi Electric and SICK
SICK AG, a company based in Germany, is a manufacturer of safety related products and solutions. SICK designs and manufactures a broad range of safety products including industrial-use sensors and automatic identification systems.

MELSEC-QS series Safety Relay Modules

● Q series Safety Relay Module..... **QS90SR2SP-Q, QS90SR2SN-Q**

● CC-Link Safety Relay Module..... **QS90SR2SP-CC, QS90SR2SN-CC**

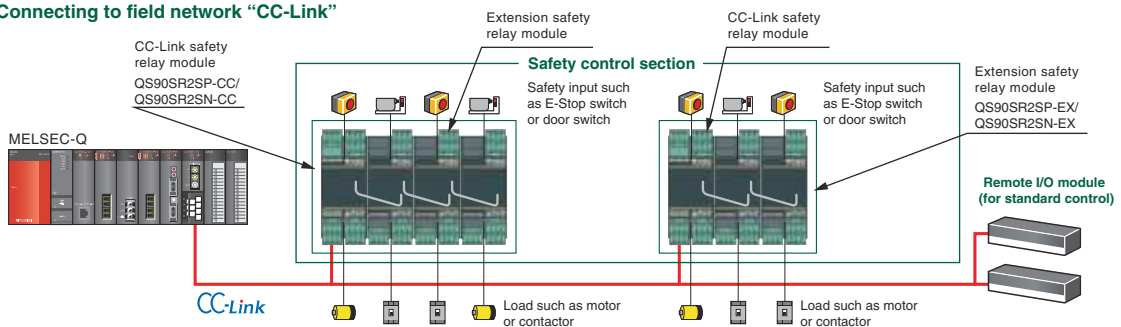
● Extension Safety Relay Module..... **QS90SR2SP-EX, QS90SR2SN-EX**

The safety relay module integrates the emergency stop circuit and the restart circuit with a double safety relay.

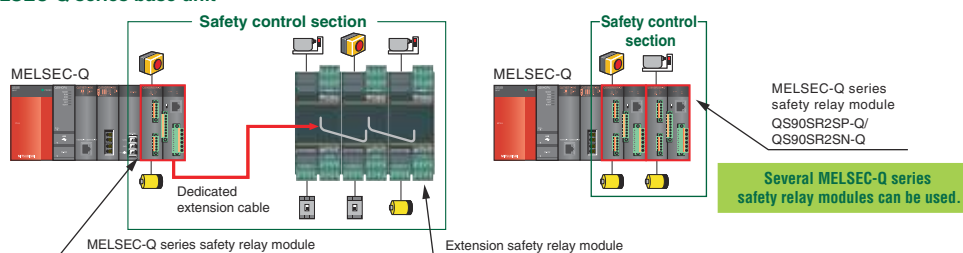
A basic safety function can be realized with just wiring, eliminating the need for programming and parameter settings.

Furthermore, the number of I/O points can be increased by adding extension modules.

■ Connecting to field network "CC-Link"



■ Mounting on MELSEC-Q series base unit





GRAPHIC OPERATION TERMINAL
GOT1000

H M I

Combination with GOT for all scenes from startup to maintenance

To start the equipment more quickly and minimize the downtime.

To create the value of time, GOT1000 has successively realized solutions as more than just an HMI.

Now the cooperation with programmable controller is strengthened through the quick operability and functionality of the HMI.

Enhanced functions required on site are reflected on its clear screen to realize advanced productivity and workability.

GRAPHIC OPERATION TERMINAL
GOT1000

GOTs evolve the face of control.



For details, refer to the "Mitsubishi Graphic Operation Terminal GOT1000 Series" catalog.

Graphic Operation Terminal

● GOT1000 series.....**GT16, GT15, GT14, GT11, GT10**

Program debugging can be performed without opening the panel

- FA transparent function

All models

Connected with a PC, the GOT acts as a transparent gateway to enable programming, start up, and adjustment of equipment using GX Works2 or GX LogViewer. Users do not have to bother with opening the cabinet or changing cable connections.



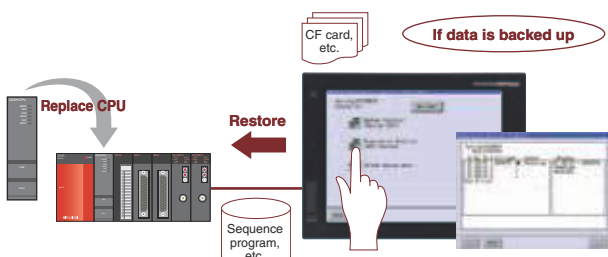
(On the GT10 series, the FA transparent function can be used via the interface on the rear side.)

Programmable Controller can be recovered promptly in case of emergency

- Backup/restoration function

GT16/ GT15/ GT14

Sequence programs and parameters can be backed up to the CF card or USB memory in the GOT. Users can then perform batch operation to restore the data to the programmable controller.

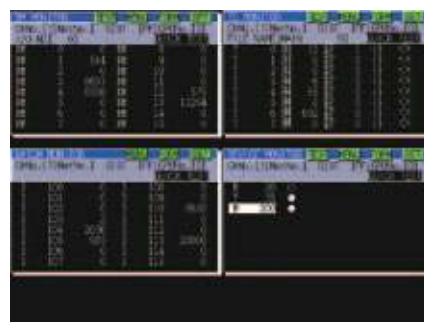


Programmable Controller conditions and errors can be checked quickly

- System monitor function

GT16/ GT15/ GT14/ GT11

Programmable controller devices can be monitored and changed.



- Intelligent module monitor function

GT16/ GT15

Buffer memory values and I/O information can be monitored and changed.

Supported by QD77MS, QD73A1 and LD75. **NEW**

* Supported by XGA / SVGA / VGA models.

- Network monitor function

GT16/ GT15

The CC-Link IE Controller Network, CC-Link IE Field Network, MELSECNET/H and MELSECNET/10 network line status can be monitored with a dedicated screen.

- Network module status display

GT16/ GT15

Enable monitoring of LED status, error status, among others of network modules on a GOT.

Monitoring of program of Programmable Controller on HMI

- Ladder monitor function and ladder editor function GT16/ GT15

Sequence programs can be monitored in a circuit diagram (ladder format).

* Supported by XGA / SVGA / VGA models.



- SFC monitor function GT16/ GT15

The Q series (Q mode) SFC programs (MELSAP3, MELSAP-L) can be monitored in a SFC diagram format.

* Supported by XGA / SVGA / VGA models.

[SFC Chart]

Block tabs
Touch a tab to display the block.

Step
The active step is highlighted. Touch the step to display the zoom window or SFC program of the relevant block. The SFC program scrolls automatically along with the progress of active steps.

Transition condition
Touching a transition condition displays a window for turning on or off a bit device.

Causes of trouble can be examined on site

- One-touch ladder jump function (Ladder monitor and ladder editor function) GT16/ GT15

By setting a program name and coil number of the Programmable controller to a touch switch, the relevant ladder circuit block can be displayed directly. Troubles can be handled smoothly from the alarm screen.

* Supported by XGA / SVGA / VGA models.

Display the ladder block of the coil set to the touch switch

One touch to jump to Ladder Monitor or Ladder Editor Screen

Easy to make changes in ladder through GOT

- Ladder editor function GT16/ GT15

Sequence programs of Q series (Q mode) can be edited in a circuit diagram (ladder format).

* Supported by XGA / SVGA / VGA models excluding the 5.7-inch type.

Touch the area you wish to edit. The circuit input window is displayed.

Enter ladder program

Enter ladder program

Insert row

Delete row

Insert column

Delete column

Circuit symbol: Changing from normally closed contact to normally open contact.
Device: Changing from M422 to M200.

Display of logging data without use of PC

- Log viewer function GT16

There is no need to have a PC on site. Confirm logging data in the GOT, then deal with the trouble quickly. As in GX LogViewer, two cursors (multi-cursor) displayed on the GOT make it easier to check the alternation of the data.

Blue cursor

Red cursor

Time	Blue cursor	Red cursor	Difference (blue-red)
01/31/2011 10:22:36.061	25.000	01/31/2011 10:22:16.061	-0:00:00:20.000
Value	25.000		-3700.000

The values between the cursors and change of time can be quickly checked.

Improved screen creating efficiency

- Template screens and sample screens All models

Use the template screens and sample screens to easily create various function screens such as historical trend graphs and alarms and controller monitor screens.

< Example of template screens >

- Historical graph + list screen
- Device monitor screen
- Temperature adjustment module Q64TC monitor screen



Man, machine and environment in perfect harmony

MELSERVO-J4 — trusted technology makes an evolutionary leap forward.
Introducing the MELSERVO-J4 series. Offering more than just improved performance, these servos are designed to drive the industries of tomorrow. Backed by Mitsubishi leadership in all-digital technology, MELSERVO has become one of the most globally respected names in factory automation. And now — with the safety, ease of use, and energy-efficient design of the new MELSERVO-J4 series — man, machine and environment can at last work together in perfect harmony.

MITSUBISHI SERVO AMPLIFIERS & MOTORS

MELSERVO-J4



For details, refer to the "MELSERVO-J4" catalog.

Servo amplifier

SSCNET III/H compatible, CC-Link IE Field Network interface with Motion compatible, and general-purpose interface compatible servo amplifiers are available. MR-J4W2-B/MR-J4W3-B multi-axis servo amplifiers achieve energy conservation, space-saving and reduced wiring. MR-J4-B(-RJ)/MR-J4W2-B/MR-J4-A(-RJ) servo amplifiers are compatible with fully closed loop control system.



SSCNET III/H compatible
servo amplifier
MR-J4-B(-RJ)



SSCNET III/H compatible
2-axis servo amplifier
MR-J4W2-B



SSCNET III/H compatible
3-axis servo amplifier
MR-J4W3-B



CC-Link IE Field Network
servo amplifier with Motion
MR-J4-B-RJ010*+ MR-J3-T10



General-purpose interface compatible
servo amplifier
MR-J4-A(-RJ)

* MR-J4-B-RJ010 servo amplifier is compatible only with the rotary servo motor.

Servo motor

A variety of models are available to match various applications. These include rotary servo motors for high-torque output during high speed, linear servo motors for highly accurate tandem synchronous control, and direct drive motors for compact and rigid machine, and high-torque operations.

Rotary servo motor



Small capacity, low inertia
HG-KR Series
Capacity: 50 to 750W



Small capacity, ultra-low inertia
HG-MR Series
Capacity: 50 to 750W



Medium capacity, medium inertia
HG-SR Series
Capacity: 0.5 to 7kW



Medium/large capacity, low inertia
HG-JR Series
Capacity: 0.5 to 22kW



Medium capacity, ultra-low inertia
HG-RR Series
Capacity: 1 to 5kW



Medium capacity, flat type
HG-UR Series
Capacity: 0.75 to 5kW

Linear servo motor



Core type
LM-H3 Series
Rating: 70 to 960N



Core type with magnetic
attraction counter-force
LM-K2 Series
Rating: 120 to 2400N



Core type
(natural/liquid cooling)
LM-F Series
Rating: 300 to 3000N (natural cooling)
Rating: 600 to 6000N (liquid cooling)



Coreless type
LM-U2 Series
Rating: 50 to 800N



TM-RFM Series
Rating: 2 to 240N-m

Direct drive motor

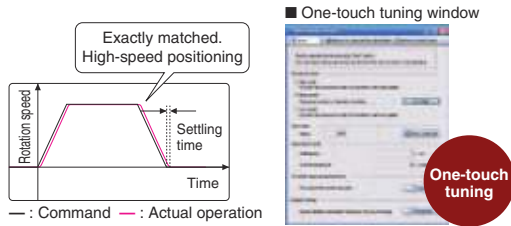
Machine

The leading edge in drive control

Advanced one-touch tuning

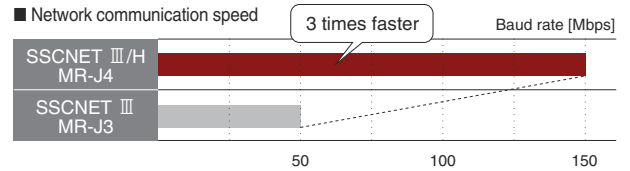
Servo gains including machine resonance suppression filter, advanced vibration suppression control II*, and robust filter are adjusted just by turning on the one-touch tuning function. Machine performance is utilized to the fullest using the advanced vibration suppression control function.

* The advanced vibration suppression control II automatically adjusts one frequency.



Motion network SSCNET III/H triples communication speeds

In the high-speed optical communication SSCNET III/H, communication speed is increased to 150 Mbps full duplex (equivalent to 300 Mbps half duplex), three times faster than the conventional speed. System response is dramatically improved.



Man

The leading edge in safety and convenience

Safety function according to IEC/EN 61800-5-2

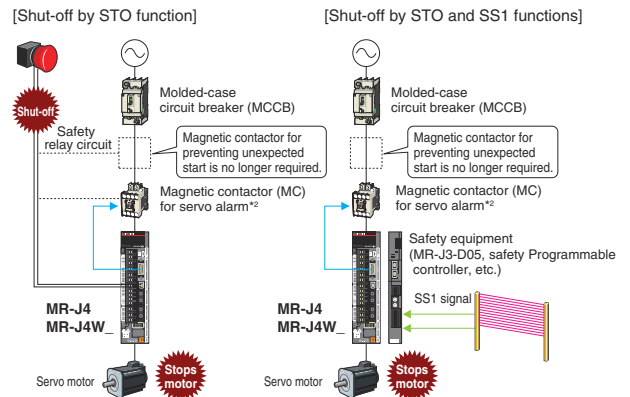
MELSERVO-J4 series servo amplifiers have integrated STO (Safe Torque Off) and SS1*1 (Safe Stop 1) functions as standard.

Safety system is easily configured in the machine. (SIL 2)

- Turning off the control power of servo amplifier is not required, cutting out the time for restart. Additionally, home position return is not required.
- Magnetic contactor for preventing unexpected motor start is not required.*2

*1: Safety equipment (MR-J3-D05, safety programmable controller MELSEC QS/WS series, etc.) is required.

*2: Two magnetic contactors are not required when STO function is used. However, in this diagram, one magnetic contactor is used to shut off the power at alarm occurrence.



The environment

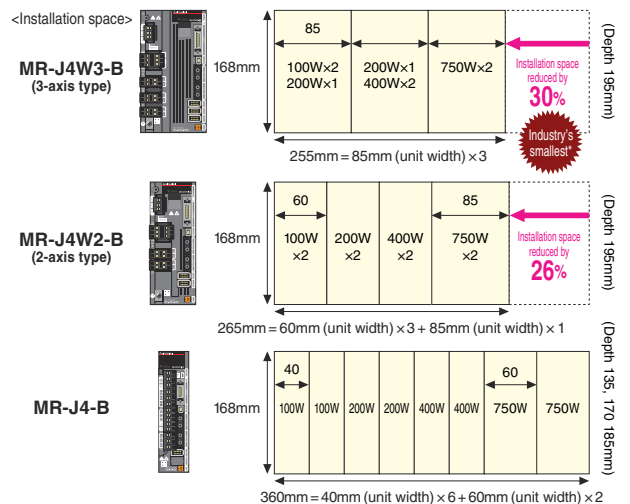
An evolution in eco-friendly design that's winning acclaim worldwide

Space-saving with industry's smallest* 3-axis type

2-axis servo amplifier MR-J4W2-B requires 26% less installation space than two units of MR-J4-B. 3-axis servo amplifier MR-J4W3-B requires 30% less installation space than three units of MR-J4-B.

* This is when two units of 100W, 200W, 400W, and 750W each are used.

* Based on Mitsubishi Electric research as of January 2013.



Achieving higher drive performance and energy conservation with inverters

Inverter

The inverter is a variable frequency power device that can easily and freely change the speed of a 3-phase induction motor.

The Mitsubishi inverter is high-performance and environment-conscious, and complies with global standards.

Select a model from our diverse lineup to match your needs.



Answering various needs with the best choices

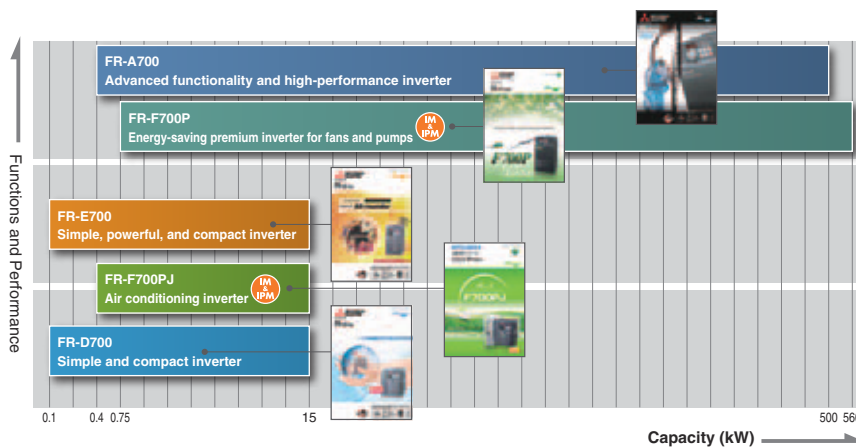
Frequency inverter



For details, refer to the "INVERTER FAMILY" catalog.

FR-700 series inverter

- FR-700 series.....A700, F700P, E700, F700PJ, D700

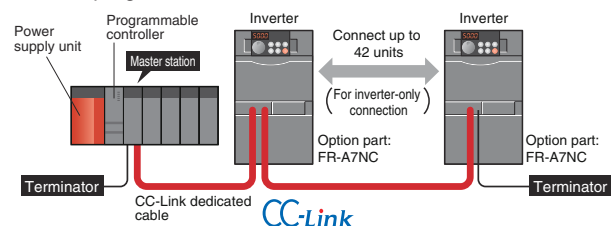


Control inverter with CC-Link communication

The inverter can be controlled to a programmable controller with CC-Link.*1

This function is supported with CC-Link Ver. 1.1 and Ver. 2.0.

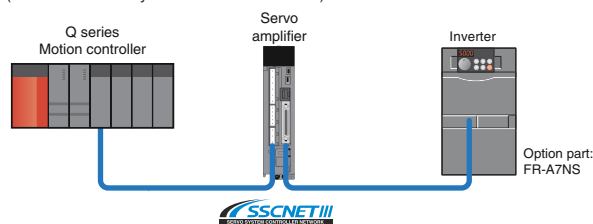
The inverter can be operated and monitored, and the parameters set from the programmable controller.



*1: The inverter operation part (FR-A7NC) is required. Please refer to the relevant catalog for additional information.

Easy synchronous operation with SSCNET III connection

Connect to a motion controller with SSCNET III². SSCNET III uses the high-speed synchronous serial communication method (high-speed, high-accuracy, high-reliability optical communication), and is perfect for synchronous operation. (SSCNET: Servo System Controller Network)



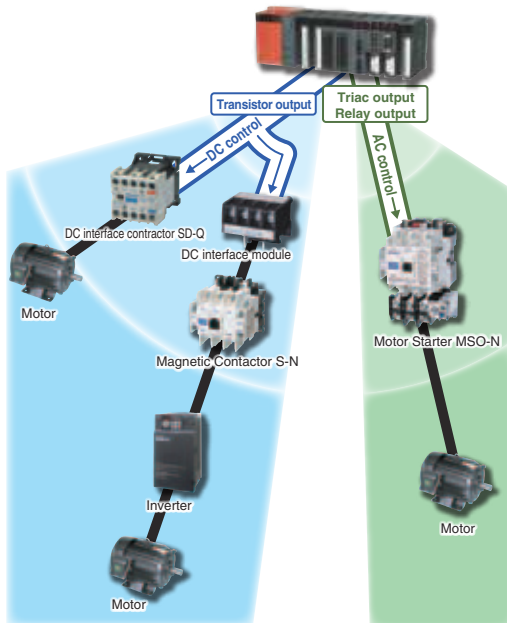
*2: Supported only with MELSEC-Q series. The inverter operation part (FR-A7NS) is required. Please refer to the relevant catalog for additional information.



Contactors and Motor Starters

Diverse variations to respond to all situations

The Mitsubishi Electric Contactors and Motor Starters MS-N series and DC interface contactor SD-Q series products are equipped with an environment and global compliance, compact size, ease-of-use and safety. Certification to various international standards, this highly reliable magnetic contactor is suitable for a variety of applications from panels to systems.



Direct drive with Programmable Controller

The SD-Q series has a small coil VA and can be driven by the programmable controller without adding an amplifying relay. By adding the DC interface module, the MS-N series can be used with a wide range of motor capacities.



For details, refer to the "Contactors and Motor Starters MS-N series" catalog.

		Programmable controller output module type		
		Transistor output	Contact output	Triac output
DC interface contactor SD-Q series	DC operation	○	○	—
Magnetic contactor MS-N series	AC operation	○ (Using DC interface module)	○	○
	DC operation	○	×	—

* This table shows the relation of the programmable controller output module type and operation interface. There may be restrictions according to the type of frame size, etc., that can be used. Refer to the MS-N series catalog for the types of magnetic contactor and models that can be used.

SD-Q series

Direct drive is possible with the programmable controller's transistor output. Since a relay and interface module are not required, the number of parts can be reduced, and space can be saved.

Standard surge absorber

Prevent adverse effects onto the peripheral equipment.

Standard terminal cover

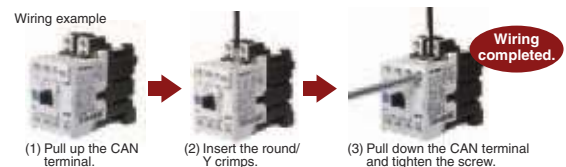
A terminal cover with finger protection function is mounted as a standard. This cover answers to user's needs for safety.

MS-N series

Environment-friendly Mitsubishi MS-N series ensures safety and conforms to various global standards. Its compact size contributes to space-saving in a machine. The MS-N series is suitable for MELSEC-Q series as well as other Mitsubishi FA equipment and can be used globally.

Mitsubishi's original CAN terminal structure for simple wiring (optional)

Mitsubishi MS-N series adopts the CAN terminal structure for simple wiring. Thus, wiring is reduced by approximately 35% compared to the conventional screw terminal wiring. (Based on Mitsubishi Electric research.) The CAN terminal structure also provides finger protection that complies with DIN VDE standard.



Mirror contact (auxiliary contact off at main contact welding)

The MS-N series meets requirements of "Control functions in the event of failure" described in EN 60204-1 "Safety of machinery-Electrical equipment of machines-", being suitable as interlock circuit contact. The MS-N series is applicable for category 4 safety circuit. We ensure safety for our customers.

Conforms to various global standards

Model	Standard				Certification		EC directive	Authority	CCC
	JIS/JEM	IEC	DIN/VDE	BS/EN	UL	CSA	CE	TÜV	GB
	Japan	International	Germany	England Europe	U.S.A	Canada	Europe	Germany	China
S-N10 to S-N400 MSO-N10 to MSO-N400 TH-N12KP to TH-N400KP	◎	◎	◎	◎	◎	◎	◎	◎*	◎

* The Motor Starters are certified under each type name of the Magnetic contactors and the Thermal Overload Relays on the condition that the Magnetic contactors and the Thermal Overload Relays are used in combination.



Vision Solution

COGNEX[®] machine vision system and Mitsubishi Electric FA Devices.

Innovating your production with this integral power.

Functioning as devices that “watch” instead of human eyes, COGNEX machine vision systems have continued to reform automation of production lines. Mitsubishi Electric FA devices, such as programmable controllers, lead the tomorrow of FA control. The possibilities of vision system solutions, created in the integration of this spirit of innovation, have continued to increase. “In-Sight EZ”, developed exclusively for use with Mitsubishi Electric FA devices, enhances functions. Affinity, including connectivity and ease of program development, has also been refined. The key solution for enhancing efficiency of inspections and identification, etc., for improving product quality and for reducing total costs lies within the integrated power of COGNEX + MITSUBISHI.

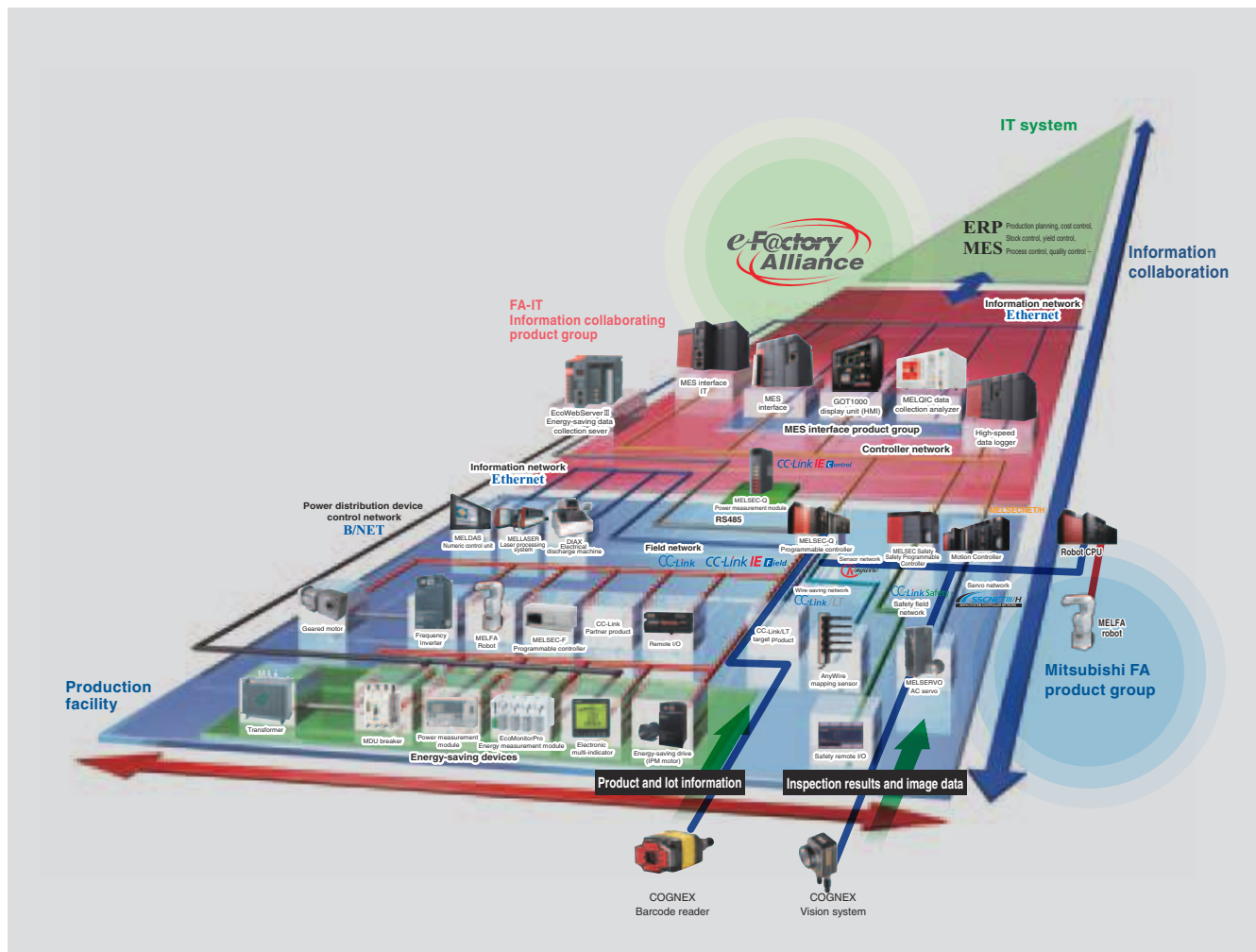
FA Integral Solutions

e-F@ctory + COGNEX Vision

“e-F@ctory” is an assimilation of solutions that integrate the “MES interface” enabling “visualization” with seamless information sharing and “iQPlatform” realizing flexible sharing within the production site. Mitsubishi Electric collaborates with partners from various fields to supports general factory optimization through the “e-F@ctory” concept. The latest achievement is the partnership of COGNEX Vision products and Mitsubishi Electric FA Devices.



For details, refer to the "Vision System and Factory Automation Solutions" catalog.



COGNEX In-Sight EZ Series

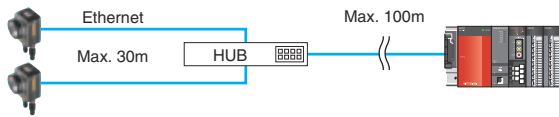
Partner Product

- Entry model EZ-700
- Standard model EZ-720
- High-speed processing model EZ-740
- High-resolution model EZ-742

Simple connection

- Directly connect with Ethernet

The "In-Sight EZ" can be directly connected to the Ethernet port provided on the "MELSEC-Q series universal model" and "MELSEC-L series" programmable controller, and to the Ethernet module on the MELSEC-F series. By using a switching hub, a multi-unit vision system having units installed as far as 100m away can be created.



- Connect with CC-Link

The expansion module option (CIO-MICRO-CC) supports the reliable open field network "CC-Link". The impressive high-speed response, reaching up to 10Mbps, high reliability and max. 1.2km long distant transmission allows a highly reliable system to be designed freely. CC-Link settings can be completed easily with EasyBuilder.



Simple communication with MC protocol

Now that "In-Sight EZ" supports MC protocol (communication protocol for programmable controller), data can be easily written from the vision system to the programmable controller. Communication is easily configured with "EasyBuilder". Just select the connected device and MC protocol, set the programmable controller device used for communication and select the communication data from the list. With the MC protocol scanner mode, a trigger can be applied on the vision system via MC protocol.



Simple control with control dedicated function blocks (FB)

The vision system control program can be created in a short time using the programmable controller programming tool "GX Works2" and rearranging labels by dragging and dropping the vision system control FB.

COGNEX DataMan® Barcode Reader

Partner Product

- Fixed DataMan DataMan 100/200/300
- Hand-held DataMan DataMan 8100/8500

Supporting a variety of barcode reading

- Industrial Ethernet compatible barcode reader

This barcode reader with Ethernet can easily be connected to the programmable controller with MC protocol, and can be used in a system with In-Sight EZ in the same Ethernet line.

With the Ethernet compatible DataMan, the read code can be adjusted with VisionView® in the same manner as In-Sight EZ. In collaboration with e-F@ctory, the code reading results and images can be sent to the MES interface unit.

- Reading various codes with simple adjustments

DataMan automatically optimizes the brightness of the image. The automatic focusing model adjusts the focal distance from the barcode reader and workpiece simultaneously, and greatly reduces the man-hours required from installation to operation. The DataMan common setup tool is available for more detailed settings.

- Amazing code reading algorithms IDMax®

1DMax+™: Provides an amazing two-dimensional code reading performance when directly marking parts with a laser or dot peen.

2DMax+™: The new HOTBARSTM technology allows weak codes and damaged large codes to be read at a high speed.

Various situations not supported with conventional laser scanning methods are not supported.

- DataMan - active in various industries

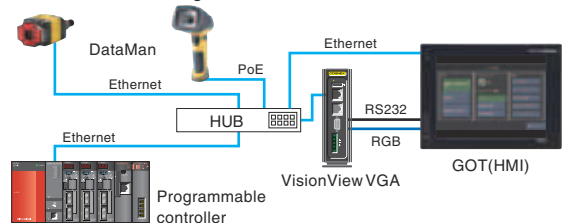


- Fixed DataMan 300 Series

- ▶ Equipped with latest reading algorithm 1DMax+, 2DMax+
- ▶ Powerful in reading extra small markings with a high resolution of 1,300,000 pixels
- ▶ Reduce installation and maintenance man-hours with liquid lens (option) for automatic focus adjustment and the tuning function
- ▶ Support for MC protocol scanner simplifies communication settings



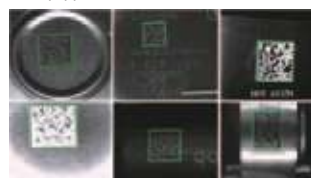
DataMan 300



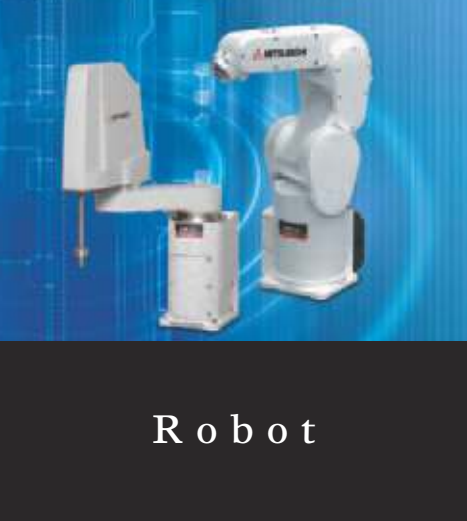
- Hand-held DataMan 8100/8500 Series

- ▶ Newly developed body enhances sturdiness
- ▶ UltraLight®: Two types of lightning enable optimum reading*1
- ▶ Standard automatic focus adjustment function
- ▶ Wireless model (communication range: max. 30m) available

*1: Equipped on DataMan 8500



DataMan 8500



Robot

Simulating people, and then surpassing them

The Mitsubishi Electric industrial robot will revolutionize your manufacturing site with faster, more intrinsic and simpler functions.

Mitsubishi Electric aims to easily realize automated production equipment. In addition to improving the performance of the robot, we propose the "MELFA F Series" which is equipped with intelligent technology we have developed and verified at our own production facilities.

The iQ Platform compatible robot controller increases the speed of data communications between CPUs and dramatically reduces I/O processing times using a high-speed standard base between multiple CPUs.



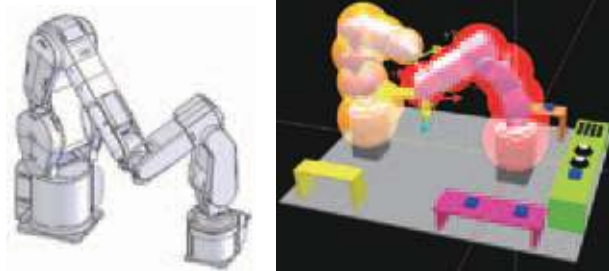
For details, refer to the "Mitsubishi INDUSTRIAL ROBOT MELFA F Series" catalog.

Robot

For automatic prevention of collisions between robots

- Collision Avoidance **NEW**

The software constantly monitors robots motion, predicts collisions before they occur, and immediately stops the robots. This avoids damage to the robot during both the JOG operations and automatic mode operations. Also, this enables the number of interlocks needed to prevent collisions between robots to be reduced. (Alarm shutdown)



Checking interference using the robot with a defined solid model

Decreases downtime during startup operation

Reduces the number of recovery man-hours required after collisions due to teaching operation errors or failure to set interlocks.

Coordinated control between multiple robots

- Coordinated control **NEW**

Enables coordinated control between multiple robots through CPU connection between the robots. Easy to operate and use under normal operation through individual robot operation.



Enables installation work to be completed while gripper positions between robots are maintained.

Coordinated transport

Enables transport of lengthy or heavy objects using multiple small-sized robots instead of larger ones.

Lineup

■ RV-F series



■ RH-F series



MEMO

A series of horizontal dashed lines for writing, spanning the width of the page.

CPU Module Performance Specifications

Universal model QCPU

Item		Q03UDVCPU NEW	Q04UDVCPU NEW	Q06UDVCPU NEW	Q13UDVCPU NEW	Q26UDVCPU NEW	Q00UJCPU	Q00UCPU	Q01UCPU	
Control method		Sequence program control method								
I/O control mode		Refresh								
Program language (sequence control language)		<ul style="list-style-type: none"> Relay symbol language (ladder) Logic symbolic language (list) MELSAP3 (SFC), MELSAP-L Function block Structured text (ST) 								
Peripheral connection port	USB ^{*1}	Yes								
	Ethernet (100BASE-TX/10BASE-T)	Yes					—			
	RS-232	—					Yes			
Memory card interface		Yes (SD Memory Card, SDHC Memory Card) ^{*2}					—			
Extended SRAM cassette port		Yes					—			
Processing speed ^{*3}	LD instruction	1.9ns					120ns	80ns	60ns	
	MOV instruction	3.9ns					240ns	160ns	120ns	
	PC MIX value ^{*4} (instruction/μs)	227					4.92	7.36	9.79	
	Floating point addition	0.014μs					0.42μs	0.30μs	0.24μs	
Total number of instructions ^{*5}		859					821	855		
Floating point instruction		Yes								
Character string processing instruction		Yes								
PID instruction		Yes								
Special function instruction (Trigonometric function, square root, exponential operation, etc.)		Yes								
Constant scan (Function for keeping regular scan time)		0.5 to 2000 ms (setting available in units of 0.1 ms)					0.5 to 2000 ms (setting available in units of 0.5 ms)			
Program capacity ^{*6}		30 K steps	40 K steps	60 K steps	130 K steps	260 K steps	10 K steps		15 K steps	
Number of I/O device points [X/Y]		8192 points								
Number of I/O points [X/Y]		4096 points					256 points	1024 points		
Internal relay [M] ^{*7}		9216 points	15360 points		28672 points		8192 points			
Latch relay [L] ^{*7}		8192 points								
Link relay [B] ^{*7}		8192 points								
Timer [T] ^{*7}		2048 points								
Retentive timer [ST] ^{*7}		0 points								
Counter [C] ^{*7}		1024 points								
Data register [D] ^{*7}		13312 points	22528 points		41984 points		12288 points			
Extended data register [D] ^{*7}		0 points					—	0 points		
Link register [W]		8192 points								
Extended link register [W] ^{*7}		0 points					—	0 points		
Annunciator [F] ^{*7}		2048 points								
Edge relay [V] ^{*7}		2048 points								
Link special relay [SB] ^{*7}		2048 points								
Link special register [SW] ^{*7}		2048 points								
File register [R, ZR]		98304 points ^{*8}	131072 points ^{*8}	393216 points ^{*8}	524288 points ^{*8}	655360 points ^{*8}	—	65536 points		
Step relay [S] ^{*7}		8192 points								
Index register/standard device register [Z]		Max. 20 points								
Index register [Z] (32-bit ZR indexing)		Max. 10 points (Index register [Z] is used in double words.)					—	Max. 10 points (Index register [Z] is used in double words.)		
Pointer [P]		4096 points					512 points			
Interrupt pointer [I]		256 points					128 points			
Special relay [SM]		2048 points								
Special register [SD]		2048 points								
Function input [FX]		16 points								
Function output [FY]		16 points								
Function register [FD]		5 points								
Local device		Yes					—	Yes		
Device initial values		Yes								

*1: The USB port terminal is mini-B.

*2: Mitsubishi Electric cannot guarantee the operation of any non-Mitsubishi Electric products.

*3: The processing speed is the same even when the device is indexed.

*4: The PC MIX value is the average number of instructions such as the basic and data processing instructions executed in 1μs. A larger value indicates a higher processing speed.

*5: Intelligent function module dedicated instructions are not included.

*6: When the QnUD(H)CPU or QnUDE(H)CPU is replaced with the QnUDVCPU, the number of steps in the program may change (increase or decrease). For more information, refer to the relevant Manual.

*7: Indicates the number of points in the default state. This can be changed with the parameter.

*8: Indicates the number of points when using the built-in memory (standard RAM). This can be increased with the Extended SRAM cassette.

When using together with the Extended SRAM cassette, the value obtained by totaling the number of points in the following table is the number of file registers that can be used.

with Q4MCA-1MBS (1MB)	with Q4MCA-2MBS (2MB)	with Q4MCA-4MBS (4MB)	with Q4MCA-8MBS (8MB)
524288 points	1048576 points	2097152 points	4194304 points

*9: Indicates the number of points when using the built-in memory (standard RAM). This can be expanded with the SRAM card or Flash card. (Writing from the program is not possible with the Flash card.) Up to 4184064 points can be used with the SRAM card.



Q02UCPU	Q03UDECPU Q03UDCPU	Q04UDEHCPU Q04UDHCPU	Q06UDEHCPU Q06UDHCPU	Q10UDEHCPU Q10UDHCPU	Q13UDEHCPU Q13UDHCPU	Q20UDEHCPU Q20UDHCPU	Q26UDEHCPU Q26UDHCPU	Q50UDEHCPU	Q100UDEHCPU
Sequence program control method									
Refresh									
<ul style="list-style-type: none"> • Relay symbol language (ladder) • Logic symbolic language (list) • MELSAP3 (SFC), MELSAP-L • Function block • Structured text (ST) 									
Yes									
—	Q03UDECPU	Q04UDEHCPU	Q06UDEHCPU	Q10UDEHCPU	Q13UDEHCPU	Q20UDEHCPU	Q26UDEHCPU	Yes	
Yes	Q03UDCPU	Q04UDHCPU	Q06UDHCPU	Q10UDHCPU	Q13UDHCPU	Q20UDHCPU	Q26UDHCPU	—	
Yes (SRAM card, Flash card, ATA card)									
—									
40ns	20ns			9.5ns					
80ns	40ns			19ns					
14	28			60					
0.18µs	0.12µs			0.057µs					
857	Q03 to Q26UDE(H)CPU:865 Q03 to 26UD(H)CPU:855						865		
Yes									
Yes									
Yes									
Yes									
0.5 to 2000 ms (setting available in units of 0.5 ms)									
20 K steps	30 K steps	40 K steps	60 K steps	100 K steps	130 K steps	200 K steps	260 K steps	500 K steps	1000 K steps
8192 points									
2048 points	4096 points								
8192 points									
8192 points									
8192 points									
2048 points									
0 points									
1024 points									
12288 points									
0 points								131072 points	
8192 points									
0 points									
2048 points									
2048 points									
2048 points									
2048 points									
65536 points* ⁹	98304 points* ⁹	131072 points* ⁹	393216 points* ⁹	524288 points* ⁹		655360 points* ⁹		786432 points* ⁹	917504 points* ⁹
8192 points									
Max. 20 points									
Max. 10 points									
(Index register [Z] is used in double words.)									
4096 points								8192 points	
256 points									
2048 points									
2048 points									
16 points									
16 points									
5 points									
Yes									
Yes									

CPU Module Performance Specifications

Basic model QCPU

Item		Q00JCPU	Q00CPU	Q01CPU
Control method		Sequence program control method		
I/O control mode		Refresh		
Program language (sequence control language)		<ul style="list-style-type: none"> Relay symbol language (ladder) Logic symbolic language (list) MELSAP3 (SFC), MELSAP-L Function block Structured text (ST) 		
Peripheral connection port	USB	—		
	RS-232	Yes		
Memory card interface		—		
Processing speed*1	LD instruction	200ns	160ns	100ns
	MOV instruction	700ns	560ns	350ns
	PC MIX value (instruction/μs)*2	1.6	2.0	2.7
	Floating point addition	65.5μs	60.5μs	49.5μs
Total number of instructions*3		534	564	
Floating point instruction		Yes		
Character string processing instruction		Yes*4		
PID instruction		Yes		
Special function instruction (Trigonometric function, square root, exponential operation, etc.)		Yes		
Constant scan (Function for keeping regular scan time)		1 to 2000 ms (setting available in units of 1 ms)		
Program capacity		8 K steps		14 K steps
Number of I/O device points [X/Y]		2048 points		
Number of I/O points [X/Y]		256 points	1024 points	
Internal relay [M]*5		8192 points		
Latch relay [L]*5		2048 points		
Link relay [B]*5		2048 points		
Timer [T]*5		512 points		
Retentive timer [ST]*5		0 points		
Counter [C]*5		512 points		
Data register [D]*5		11136 points		
Link register [W]*5		2048 points		
Annunciator [F]*5		1024 points		
Edge relay [V]*5		1024 points		
Link special relay [SB]		1024 points		
Link special register [SW]		1024 points		
File register [R, ZR]		—	65536 points	
Step relay [S]		2048 points		
Index register [Z]		10 points		
Pointer [P]		300 points		
Interrupt pointer [I]		128 points		
Special relay [SM]		1024 points		
Special register [SD]		1024 points		
Function input [FX]		16 points		
Function output [FY]		16 points		
Function register [FD]		5 points		
Local device		—		
Device initial values		Yes		

*1: The processing speed is the same even when the device is indexed.

*2: The PC MIX value is the average number of instructions such as the basic and data processing instructions executed in 1μs. A larger value indicates a higher processing speed.

*3: Intelligent function module dedicated instructions are not included.

*4: Character strings can be used only when using the character string transfer command (\$MOV).

*5: Indicates the number of points in the default state. This can be changed with the parameter.



High Performance QCPU

Item		Q02CPU	Q02HCPU	Q06HCPU	Q12HCPU	Q25HCPU
Control method		Sequence program control method				
I/O control mode		Refresh				
Program language (sequence control language)		<ul style="list-style-type: none"> • Relay symbol language (ladder) • Logic symbolic language (list) • MELSP3 (SFC), MELSP-L • Function block • Structured text (ST) 				
Peripheral connection port	USB	—	Yes (SRAM card, Flash card, ATA card)			
	RS-232	Yes				
Memory card interface		Yes				
Processing speed*1	LD instruction	79ns	34ns			
	MOV instruction	237ns	102ns			
	PC MIX value (instruction/μs)*2	4.4	10.3			
	Floating point addition	1.8μs	0.78μs			
Total number of instructions*3		725				
Floating point instruction		Yes				
Character string processing instruction		Yes				
PID instruction		Yes				
Special function instruction (Trigonometric function, square root, exponential operation, etc.)		Yes				
Constant scan (Function for keeping regular scan time)		0.5 to 2000 ms (setting available in units of 0.5 ms)				
Program capacity		28 K steps		60 K steps	124 K steps	252 K steps
Number of I/O device points [X/Y]		8192 points				
Number of I/O points [X/Y]		4096 points				
Internal relay [M]*4		8192 points				
Latch relay [L]*4		8192 points				
Link relay [B]*4		8192 points				
Timer [T]*4		2048 points				
Retentive timer [ST]*4		0 points				
Counter [C]*4		1024 points				
Data register [D]*4		12288 points				
Link register [W]*4		8192 points				
Annunciator [F]*4		2048 points				
Edge relay [V]*4		2048 points				
Link special relay [SB]		2048 points				
Link special register [SW]		2048 points				
File register [R, ZR]		32768 points*5	65536 points*5		131072 points*5	
Step relay [S]		8192 points				
Index register [Z]		16 points				
Pointer [P]		4096 points				
Interrupt pointer [I]		256 points				
Special relay [SM]		2048 points				
Special register [SD]		2048 points				
Function input [FX]		16 points				
Function output [FY]		16 points				
Function register [FD]		5 points				
Local device		Yes				
Device initial values		Yes				

*1: The processing speed is the same even when the device is indexed.

*2: The PC MIX value is the average number of instructions such as the basic and data processing instructions executed in 1μs. A larger value indicates a higher processing speed.

*3: Intelligent function module dedicated instructions are not included.

*4: Indicates the number of points in the default state. This can be changed with the parameter.

*5: Indicates the number of points when the built-in memory (standard RAM) is used. Capacity can be expanded by using an SRAM card or a Flash card.

(Writing from a program is not possible with a Flash card.)With an SRAM card, up to 1041408 points can be used.

CPU Module Performance Specifications

Process CPU

Item		Q02PHCPU	Q06PHCPU	Q12PHCPU	Q25PHCPU
Control method		Sequence program control method			
I/O control mode		Refresh			
Program language	Sequence control language	<ul style="list-style-type: none"> Relay symbol language (ladder) Logic symbolic language (list) MELSAP3 (SFC), MELSAP-L Function block Structured text (ST) 			
	Process control language	<ul style="list-style-type: none"> Process control FBD*1 			
Peripheral connection port	USB	Yes			
	RS-232	Yes			
Memory card interface		Yes (SRAM card, Flash card, ATA card)			
Processing speed*2	LD instruction	34ns			
	MOV instruction	102ns			
	PC MIX value (instruction/μs)*3	10.3			
	Floating point addition	0.78μs			
Total number of instructions*4		757			
Floating point instruction		Yes			
Character string processing instruction		Yes			
PID instruction		—			
Process control instruction		Yes			
Special function instruction (Trigonometric function, square root, exponential operation, etc.)		Yes			
Constant scan (Function for keeping regular scan time)		0.5 to 2000 ms (setting available in units of 0.5 ms)			
Program capacity		28 K steps	60 K steps	124 K steps	252 K steps
Loop control specifications	Process control instruction	52 types			
	No. of control loops	Unlimited*5			
	Control period	10 ms or more/control loop (variable setting possible at each loop)			
	Main functions	2-degree-of-freedom PID control, cascade control, auto-tuning function, feed-forward control			
Number of I/O device points [X/Y]		8192 points			
Number of I/O points [X/Y]		4096 points			
Internal relay [M]*6		8192 points			
Latch relay [L]*6		8192 points			
Link relay [B]*6		8192 points			
Timer [T]*6		2048 points			
Retentive timer [ST]*6		0 points			
Counter [C]*6		1024 points			
Data register [D]*6		12288 points			
Link register [W]*6		8192 points			
Annunciator [F]*6		2048 points			
Edge relay [V]*6		2048 points			
Link special relay [SB]		2048 points			
Link special register [SW]		2048 points			
File register [R, ZR]		65536 points*7		131072 points*7	
Step relay [S]		8192 points			
Index register [Z]		16 points			
Pointer [P]		4096 points			
Interrupt pointer [I]		256 points			
Special relay [SM]		2048 points			
Special register [SD]		2048 points			
Function input [FX]		16 points			
Function output [FY]		16 points			
Function register [FD]		5 points			
Local device		Yes			
Device initial values		Yes			

*1: PX Developer is required for programming by FBD.

*2: The processing speed is the same even when the device is indexed.

*3: The PC MIX value is the average number of instructions such as the basic and data processing instructions executed in 1μs. A larger value indicates a higher processing speed.

*4: Intelligent function module dedicated instructions are not included.

*5: The number of control loops is limited by the combination of the device memory capacity (128 words/loop used) and the control period.

*6: Indicates the number of points in the default state. This can be changed with the parameter.

*7: Indicates the number of points when the built-in memory (standard RAM) is used. Capacity can be expanded by using an SRAM card or a Flash card. (Writing from a program is not possible with a Flash card.)
With an SRAM card, up to 1041408 points can be used.



Redundant CPU

Item		Q12PRHCPU	Q25PRHCPU
Control method		Sequence program control method	
I/O control mode		Refresh	
Program language	Sequence control language	<ul style="list-style-type: none"> • Relay symbol language (ladder) • Logic symbolic language (list) • MELSP3 (SFC), MELSP-L • Function block • Structured text (ST) 	
	Process control language	<ul style="list-style-type: none"> • Process control FBD*1 	
Peripheral connection port	USB	Yes	
	RS-232	Yes	
Memory card interface		Yes (SRAM card, Flash card, ATA card)	
Processing speed*2	LD instruction	34ns	
	MOV instruction	102ns	
	PC MIX value (instruction/μs)*3	10.3	
	Floating point addition	0.78μs	
Total number of instructions*4		778	
Floating point instruction		Yes	
Character string processing instruction		Yes	
PID instruction		Yes	
Process control instruction		Yes	
Special function instruction (Trigonometric function, square root, exponential operation, etc.)		Yes	
Constant scan (Function for keeping regular scan time)		0.5 to 2000 ms (setting available in units of 0.5 ms)	
Program capacity		124 K steps	252 K steps
Loop control specifications	Process control instruction	52 types	
	No. of control loops	Unlimited*5	
	Control period	10 ms or more/control loop (variable setting possible at each loop)	
	Main functions	2-degree-of-freedom PID control, cascade control, auto-tuning function, feed-forward control	
Number of I/O device points [X/Y]		8192 points	
Number of I/O points [X/Y]		4096 points	
Internal relay [M]*6		8192 points	
Latch relay [L]*6		8192 points	
Link relay [B]*6		8192 points	
Timer [T]*6		2048 points	
Retentive timer [ST]*6		0 points	
Counter [C]*6		1024 points	
Data register [D]*6		12288 points	
Link register [W]*6		8192 points	
Annunciator [F]*6		2048 points	
Edge relay [V]*6		2048 points	
Link special relay [SB]		2048 points	
Link special register [SW]		2048 points	
File register [R, ZR]		131072 points*7	
Step relay [S]		8192 points	
Index register [Z]		16 points	
Pointer [P]		4096 points	
Interrupt pointer [I]		256 points	
Special relay [SM]		2048 points	
Special register [SD]		2048 points	
Function input [FX]		16 points	
Function output [FY]		16 points	
Function register [FD]		5 points	
Local device		Yes	
Device initial values		Yes	

*1: PX Developer is required for programming by FBD.

*2: The processing speed is the same even when the device is indexed.

*3: The PC MIX value is the average number of instructions such as the basic and data processing instructions executed in 1μs. A larger value indicates a higher processing speed.

*4: Intelligent function module dedicated instructions are not included.

*5: The number of control loops is limited by the combination of the device memory capacity (128 words/loop used) and the control period.

*6: Indicates the number of points in the default state. This can be changed with the parameter.

*7: Indicates the number of points when the built-in memory (standard RAM) is used. Capacity can be expanded by using an SRAM card or a Flash card. (Writing from a program is not possible with a Flash card.) With an SRAM card, up to 1041408 points can be used.

General Specifications

General specifications indicate the environmental specifications in which this product can be installed and operated. Unless otherwise specified, the general specifications apply to all products of the Q series.

Install and operate the Q series products in the environment indicated in the general specifications.

Item	Specification					
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	Under intermittent vibration	Frequency	Acceleration	Amplitude	Sweep count
			5 to 8.4Hz	—	3.5mm (0.14 inches)	10 times each in X, Y, Z directions
		8.4 to 150Hz	9.8 m/s ²	—	—	
		Under continuous vibration	5 to 8.4Hz	—		1.75 mm (0.069 inches)
8.4 to 150Hz	4.9 m/s ²	—	—			
Shock resistance	Compliant with JIS B 3502, IEC 61131-2 (147 m/s ² , 3 times in each of 3 directions X, Y, Z)					
Operating ambience	No corrosive gases					
Operating altitude*3	2000m (6562 feet) 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: 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 2 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.

Communication Performance Comparison

[Comparison between built-in Ethernet port CPU and Ethernet module (QJ71E71-100)]

Function/performance	Built-in Ethernet port CPU QnUDE(H)CPU	Ethernet module QJ71E71-100
Communication speed	100 Mbps	100 Mbps
Communication with GX Developer	Yes	Yes
Communication with GOT	Yes	Yes
MC protocol communication	Yes*1	Yes
Socket communication	Yes*2	Yes (Fixed buffer communication)
Random access buffer communication	No	Yes
Communication by data link instruction	No	Yes
FTP server function	Yes	Yes
E-mail function	No	Yes

*1: QnA compatible 3E frame device memory access commands only. Refer to the manual for details.

*2: Some differences in function. Refer to the manual for details.



Module Combinations for Multiple CPU System

Restrictions apply depending on CPU type, the number that can be installed, and supported serial No. For more information, please refer to the relevant users manual for each CPU.

[Multiple CPU high speed main base unit (Q3□DB)]

- Possible
- Possible (multiple CPU high-speed communication not available)
- × Impossible

CPU 1 \ CPU 2 to 4		High-Speed Universal model QCPU	Universal model QCPU		High Performance model QCPU	Process CPU	Motion CPU/ Robot CPU ¹⁾ / CNC CPU		C Controller CPU	
		Q03UDV NEW Q04UDV NEW Q06UDV NEW Q13UDV NEW Q26UDV NEW iQ Platform	Q00U Q01U Q02U	Q03UD(E) Q04UD(E)H Q06UD(E)H Q10UD(E)H Q13UD(E)H Q20UD(E)H Q26UD(E)H Q50UDEH Q100UDEH iQ Platform	Q02(H) Q06H Q12H Q25H	Q02PH Q06PH Q12PH Q25PH	Q172D Q173D Q172DS Q173DS CR750-Q CR751-Q Q173NC iQ Platform	Q172H Q173H Q172 Q173	Q24DHCCPU-V NEW Q12DCCPU-V iQ Platform	Q06CCPU-V
High-Speed Universal model QCPU	Q03UDV NEW Q04UDV NEW Q06UDV NEW Q13UDV NEW Q26UDV NEW iQ Platform	●	×	●	○	○	●	×	●	×
Universal model QCPU	Q00U ^{*2} Q01U ^{*2} Q02U ^{*2}	×	×	×	×	×	×	×	○	○
	Q03UD(E) Q04UD(E)H Q06UD(E)H Q10UD(E)H Q13UD(E)H Q20UD(E)H Q26UD(E)H Q50UDEH Q100UDEH iQ Platform	●	×	●	○	○	●	×	●	○
High Performance model QCPU	Q02(H) Q06H Q12H Q25H	○	×	○	○	○	×	×	○	○

*1: The robot CPU includes CR750-Q, CR751-Q.
*2: Q00U, Q01U, or Q02U does not support multiple CPU high-speed communication.

[Main base unit other than Q3□DB]

- Possible (multiple CPU high-speed communication not available)
- × Impossible

CPU 1 \ CPU 2 to 4		High-Speed Universal model QCPU	Universal model QCPU		High Performance model QCPU	Process CPU	Motion CPU/ Robot CPU ¹⁾ / CNC CPU		C Controller CPU	
		Q03UDV NEW Q04UDV NEW Q06UDV NEW Q13UDV NEW Q26UDV NEW iQ Platform	Q00U Q01U Q02U	Q03UD(E) Q04UD(E)H Q06UD(E)H Q10UD(E)H Q13UD(E)H Q20UD(E)H Q26UD(E)H Q50UDEH Q100UDEH iQ Platform	Q02(H) Q06H Q12H Q25H	Q02PH Q06PH Q12PH Q25PH	Q172D Q173D Q172DS Q173DS CR750-Q CR751-Q Q173NC iQ Platform	Q172H Q173H Q172 Q173	Q24DHCCPU-V NEW Q12DCCPU-V iQ Platform	Q06CCPU-V
High-Speed Universal model QCPU	Q03UDV NEW Q04UDV NEW Q06UDV NEW Q13UDV NEW Q26UDV NEW iQ Platform	○	×	○	○	○ ^{*2}	×	×	○ ^{*4}	×
Universal model QCPU	Q00U Q01U Q02U	×	×	×	×	×	×	○ ^{*2*3*4}	○ ^{*4}	○ ^{*4}
	Q03UD(E) Q04UD(E)H Q06UD(E)H Q10UD(E)H Q13UD(E)H Q20UD(E)H Q26UD(E)H Q50UDEH Q100UDEH iQ Platform	○	×	○	○	○ ^{*2}	×	×	○ ^{*4}	○ ^{*4}
High Performance model QCPU	Q02(H) Q06H Q12H Q25H	○	×	○	○	○ ^{*2}	×	○ ^{*2*4*5}	○ ^{*4}	○ ^{*4}

*1: The robot CPU includes CR750-Q, CR751-Q.
*2: The slim type main base unit (Q3□SB) cannot be used.
*3: Can only use 1x Motion CPU.
*4: In case of using Q06CCPU-V or Q12DCCPU-V, the redundant power main base unit (Q3□RB) cannot be used.
*5: Cannot be used together with Q03UD(E), Q04UD(E)H, Q06UD(E)H, Q10UD(E)H, Q13UD(E)H, Q20UD(E)H, Q26UD(E)H, Q50UDEH, Q100UDEH, Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV CPU or Q12DCCPU-V.

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help whenever needed.

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Complying with international quality assurance standards.

All of Mitsubishi Electric's FA component products have acquired the international quality assurance "ISO9001" and environmental management system standard "ISO14001" certification. Mitsubishi Electric FA products also comply with many safety and shipping standards, including CE, UL, ABS, and DNV.

*For jointly developed and partner products, guaranteed quality standards may differ. Please refer to the product manuals for details.

Safety Standards

	CE : Council Directive of the European Communities		UL : Underwriters Laboratories Listing
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Shipping Standards

	LR : Lloyd's Register of Shipping approval		DNV : Norwegian Maritime approval		RINA : Italian Maritime approval
ClassNK	NK : ClassNK approval		ABS : American Bureau of Shipping approval		BV : Bureau Veritas approval
	GL : Germanischer Lloyd approval				

Product List

*Always refer to user's manuals for information on usable modules, restrictions, etc. before using.

*Contact your local Mitsubishi sales office or representative for the latest information on the MELSOFT versions and compatible OS.

CPU

[Legend] **DB** : Double brand product (Note) **NEW** : Recently released product **SOON** : Product available soon

Product	Model	Outline
High-Speed Universal model QCPU	Q03UDVCPU NEW	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 30 K steps, basic operation processing speed (LD instruction): 1.9 ns, program memory capacity: 120 KB, multiple CPU high-speed communication, peripheral connection ports: USB, Ethernet, and Extended SRAM cassette
	Q04UDVCPU NEW	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 40 K steps, basic operation processing speed (LD instruction): 1.9 ns, program memory capacity: 160 KB, multiple CPU high-speed communication, peripheral connection ports: USB, Ethernet, and Extended SRAM cassette
	Q06UDVCPU NEW	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 60 K steps, basic operation processing speed (LD instruction): 1.9 ns, program memory capacity: 240 KB, multiple CPU high-speed communication, peripheral connection ports: USB, Ethernet, and Extended SRAM cassette
	Q13UDVCPU NEW	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 130 K steps, basic operation processing speed (LD instruction): 1.9 ns, program memory capacity: 520 KB, multiple CPU high-speed communication, peripheral connection ports: USB, Ethernet, and Extended SRAM cassette
	Q26UDVCPU NEW	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 260 K steps, basic operation processing speed (LD instruction): 1.9 ns, program memory capacity: 1040 KB, multiple CPU high-speed communication, peripheral connection ports: USB, Ethernet, and Extended SRAM cassette
Universal model QCPU	Q00UJCPU	No. of I/O points: 256 points, no. of I/O device points: 8192 points, program capacity: 10 K steps, basic operation processing speed (LD instruction): 0.12 μs, program memory capacity: 40 KB, peripheral connection ports: USB and RS232, no memory card I/F, 5-slot base, with 100 to 240 V AC input / 5 V DC/3 A output power supply
	Q00UCPU	No. of I/O points: 1024 points, no. of I/O device points: 8192 points, program capacity: 10 K steps, basic operation processing speed (LD instruction): 0.08 μs, program memory capacity: 40 KB, peripheral connection ports: USB and RS232, no memory card I/F
	Q01UCPU	No. of I/O points: 1024 points, no. of I/O device points: 8192 points, program capacity: 15 K steps, basic operation processing speed (LD instruction): 0.06 μs, program memory capacity: 60 KB, peripheral connection ports: USB and RS232, no memory card I/F
	Q02UCPU	No. of I/O points: 2048 points, no. of I/O device points: 8192 points, program capacity: 20 K steps, basic operation processing speed (LD instruction): 0.04 μs, program memory capacity: 80 KB, peripheral connection ports: USB and RS232, with memory card I/F
	Q03UDCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 30 K steps, basic operation processing speed (LD instruction): 0.02 μs, program memory capacity: 120 KB, multiple CPU high-speed communication, peripheral connection ports: USB and RS232, with memory card I/F
	Q04UDHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 40 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 160 KB, multiple CPU high-speed communication, peripheral connection ports: USB and RS232, with memory card I/F
	Q06UDHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 60 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 240 KB, multiple CPU high-speed communication, peripheral connection ports: USB and RS232, with memory card I/F
	Q10UDHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 100 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 400 KB, multiple CPU high-speed communication, peripheral connection ports: USB and RS232, with memory card I/F
	Q13UDHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 130 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 520 KB, multiple CPU high-speed communication, peripheral connection ports: USB and RS232, with memory card I/F
	Q20UDHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 200 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 800 KB, multiple CPU high-speed communication, peripheral connection ports: USB and RS232, with memory card I/F
Built-in Ethernet type	Q03UDECPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 30 K steps, basic operation processing speed (LD instruction): 0.02 μs, program memory capacity: 120 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q04UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 40 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 160 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q06UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 60 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 240 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q10UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 100 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 400 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q13UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 130 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 520 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q20UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 200 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 800 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q26UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 260 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 1040 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q50UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 500 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 2000 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F
	Q100UDEHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 1000 K steps, basic operation processing speed (LD instruction): 0.0095 μs, program memory capacity: 4000 KB, multiple CPU high-speed communication, peripheral connection ports: USB and Ethernet, with memory card I/F

Note: General specifications and product guarantee conditions of jointly developed products are different from those of MELSEC products. For more information, please refer to the product manuals or contact your local Mitsubishi representative for details.



CPU

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product	Model	Outline	
Basic model QCPU	Q00JCPU	No. of I/O points: 256 points, no. of I/O device points: 2048 points, program capacity: 8 K steps, basic operation processing speed (LD instruction): 0.2 μs, program memory capacity: 58 KB, peripheral connection ports: RS232, no memory card I/F, 5-slot base, with 100 to 240 V AC input / 5 V DC/3 A output power supply	
	Q00CPU	No. of I/O points: 1024 points, no. of I/O device points: 2048 points, program capacity: 8 K steps, basic operation processing speed (LD instruction): 0.16 μs, program memory capacity: 94 KB, peripheral connection ports: RS232, no memory card I/F	
	Q01CPU	No. of I/O points: 1024 points, no. of I/O device points: 2048 points, program capacity: 14 K steps, basic operation processing speed (LD instruction): 0.1 μs, program memory capacity: 94 KB, peripheral connection ports: RS232, no memory card I/F	
High Performance model QCPU	Q02CPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 28 K steps, basic operation processing speed (LD instruction): 0.079 μs, program memory capacity: 112 KB, peripheral connection ports: RS232, with memory card I/F	
	Q02HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 28 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 112 KB, peripheral connection ports: USB and RS232, with memory card I/F	
	Q06HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 60 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 240 KB, peripheral connection ports: USB and RS232, with memory card I/F	
	Q12HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 124 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 496 KB, peripheral connection ports: USB and RS232, with memory card I/F	
	Q25HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 252 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 1008 KB, peripheral connection ports: USB and RS232, with memory card I/F	
Process CPU	Q02PHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 28 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 112 KB, peripheral connection ports: USB and RS232, with memory card I/F	
	Q06PHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 60 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 240 KB, peripheral connection ports: USB and RS232, with memory card I/F	
	Q12PHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 124 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 496 KB, peripheral connection ports: USB and RS232, with memory card I/F	
	Q25PHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 252 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 1008 KB, peripheral connection ports: USB and RS232, with memory card I/F	
Redundant CPU	Q12PRHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 124 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 496 KB, peripheral connection ports: USB and RS232, with memory card I/F	
	Q25PRHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 252 K steps, basic operation processing speed (LD instruction): 0.034μs, program memory capacity: 1008 KB, peripheral connection ports: USB and RS232, with memory card I/F	
Tracking cable	QC10TR	Tracking cable 1 m	
	QC30TR	Tracking cable 3 m	
C Controller CPU	Q24DHCCPU-V NEW	No. of I/O points: 4096 points, endian format: little endian, removable storage: SD memory card, OS:VxWorks® Version 6.8.1	
	Q12DCCPU-V	No. of I/O points: 4096 points, endian format: little endian, removable storage: CompactFlash card, OS:VxWorks® Version 6.4	
	Q06CCPU-V	No. of I/O points: 4096 points, endian format: little endian, removable storage: CompactFlash card, OS:VxWorks® Version 5.4	
	Option	Q12DCCPU-CBL ^{*1*2}	RS-232 connection converter cable (custom mini-DIN to 9-pin D-sub connector)
		L1MEM-2GBSD ^{*1*3}	SD memory card, capacity: 2 GB
		L1MEM-4GBSD ^{*1*3}	SDHC memory card, capacity: 4 GB
		GT05-MEM-128MC ^{*4}	CompactFlash card, capacity: 128 MB
		GT05-MEM-256MC ^{*4}	CompactFlash card, capacity: 256 MB
		QD81MEM-512MBC ^{*2*5}	CompactFlash card, capacity: 512 MB
		QD81MEM-1GBC ^{*2*5}	CompactFlash card, capacity: 1 GB
		QD81MEM-2GBC ^{*2}	CompactFlash card, capacity: 2 GB
QD81MEM-4GBC ^{*2}	CompactFlash card, capacity: 4 GB		
QD81MEM-8GBC ^{*2}	CompactFlash card, capacity: 8 GB		

*1: For use with Q24DHCCPU.

*2: For use with Q12DCCPU-V.

*3: Mitsubishi Electric shall not guarantee the operation of any non-Mitsubishi Electric products.

*4: Can only be used in combination with Multi-CPU high speed base.

*5: For use with Q06CCPU-V.

CPU

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product	Model	Outline
Battery	Q6BAT	Replacement battery
	Q7BAT	Replacement large-capacity battery
	Q7BAT-SET	Large-capacity battery with holder for mounting CPU
	Q8BAT	Replacement large-capacity battery module
	Q8BAT-SET	Large-capacity battery module with CPU connection cable
Extended SRAM cassette	Q4MCA-1MBS*1 NEW	Extended SRAM cassette, capacity: 1 MB
	Q4MCA-2MBS*1 NEW	Extended SRAM cassette, capacity: 2 MB
	Q4MCA-4MBS*1 NEW	Extended SRAM cassette, capacity: 4 MB
	Q4MCA-8MBS*1 NEW	Extended SRAM cassette, capacity: 8 MB
SD memory card	L1MEM-2GBSD*2	SD memory card, capacity: 2 GB
	L1MEM-4GBSD*2	SDHC memory card, capacity: 4 GB
Memory card	Q2MEM-1MBS*3	SRAM memory card, capacity: 1 MB
	Q2MEM-2MBS*3	SRAM memory card, capacity: 2 MB
	Q3MEM-4MBS*4	SRAM memory card, capacity: 4 MB
	Q3MEM-4MBS-SET*4	SRAM memory card with cover, capacity: 4 MB
	Q3MEM-8MBS*4	SRAM memory card, capacity: 8 MB
	Q3MEM-8MBS-SET*4	SRAM memory card with cover, capacity: 8 MB
	Q2MEM-2MBF*3	Linear Flash memory card, capacity: 2 MB
	Q2MEM-4MBF*3	Linear Flash memory card, capacity: 4 MB
	Q2MEM-8MBA*3	ATA card, capacity: 8 MB
	Q2MEM-16MBA*3	ATA card, capacity: 16 MB
	Q2MEM-32MBA*3	ATA card, capacity: 32 MB
Memory card adapter	Q2MEM-ADP*3	Adapter for Q2MEM memory card's standard PCMCIA slot
SRAM card battery	Q2MEM-BAT*3	Replacement battery for Q2MEM-1MBS and Q2MEM-2MBS
	Q3MEM-BAT*4	Replacement battery for Q3MEM-4MBS and Q3MEM-8MBS
Connection cable	QC30R2	RS-232 cable for connecting PC and CPU, 3 m (between mini-DIN6P and Dsub9P)
Cable disconnection prevention holder	Q6HLD-R2	Holder for preventing RS-232 cable (Programmable Controller CPU connection) disconnection

*1: For use with QnUDVCP.

*2: For use with QnUDVCP, Q24DHCCPU. Mitsubishi Electric shall not guarantee the operation of any non-Mitsubishi Electric products.

*3: For use with universal model QCPU (excluding QnUDV) with memory card interface, high performance model QCPU, process CPU and redundant CPU.

*4: For use with universal model QCPU (excluding QnUDV) with memory card interface.



Base

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product	Model	Outline
Main base	Q33B	3 slots, 1 power supply module required, for Q series modules
	Q35B	5 slots, 1 power supply module required, for Q series modules
	Q38B	8 slots, 1 power supply module required, for Q series modules
	Q312B	12 slots, 1 power supply module required, for Q series modules
Multiple CPU high speed main base	Q35DB	5 slots, power supply module required, for Q series modules
	Q38DB	8 slots, 1 power supply module required, for Q series modules
	Q312DB	12 slots, 1 power supply module required, for Q series modules
Slim type main base	Q32SB	2 slots, 1 slim type power supply module required, for Q series modules
	Q33SB	3 slots, 1 slim type power supply module required, for Q series modules
	Q35SB	5 slots, 1 slim type power supply module required, for Q series modules
Redundant power main base	Q38RB	8 slots, 2 redundant power supply modules required, for Q series modules
Extension base	Q63B	3 slots, 1 power supply module required, for Q series modules
	Q65B	5 slots, 1 power supply module required, for Q series modules
	Q68B	8 slots, 1 power supply module required, for Q series modules
	Q612B	12 slots, 1 power supply module required, for Q series modules
	Q52B	2 slots, power supply module not required, for Q series modules
	Q55B	5 slots, power supply module not required, for Q series modules
Redundant power extension base	Q68RB	8 slots, 2 redundant power supply modules required, for Q series modules
Redundant type extension base	Q65WRB*1	5 slots, 2 redundant power supply modules required, for Q series modules
Extension cable	QC05B	0.45 m cable for connecting extension base unit
	QC06B	0.6 m cable for connecting extension base unit
	QC12B	1.2 m cable for connecting extension base unit
	QC30B	3 m cable for connecting extension base unit
	QC50B	5 m cable for connecting extension base unit
	QC100B	10 m cable for connecting extension base unit
DIN rail mounting adapter	Q6DIN1	DIN rail mounting adapter for Q38B, Q312B, Q68B, Q612B, Q38RB, Q68RB, Q65WRB, Q38DB, and Q312DB
	Q6DIN2	DIN rail mounting adapter for Q35B, Q65B, and Q00UJCPU
	Q6DIN3	DIN rail mounting adapter for Q32SB, Q33SB, Q35SB, Q33B, Q52B, Q55B, and Q63B
	Q6DIN1A	DIN rail mounting adapter (with vibration-proofing bracket set) for Q3mB, Q5mB, Q6mB, Q38RB, Q68RB, and Q65WRB
Blank cover	QG60	Blank cover for I/O slot

*1: Only compatible with redundant CPU system.

Power supply

Power supply	Q61P	Input voltage: 100 to 240 V AC, output voltage: 5 V DC, output current: 6 A
	Q62P	Input voltage: 100 to 240 V AC, output voltage: 5/24 V DC, output current: 3/0.6 A
	Q63P	Input voltage: 24 V DC, output voltage: 5 V DC, output current: 6 A
	Q64PN	Input voltage: 100 to 240 V AC, output voltage: 5 V DC, output current: 8.5 A
Power Supply with Life Detection	Q61P-D	Input voltage: 100 to 240 V AC, output voltage: 5 V DC, output current: 6 A
Slim type power supply	Q61SP	Input voltage: 100 to 240 V AC, output voltage: 5 V DC, output current: 2 A
Redundant power supply	Q63RP	Input voltage: 24 V DC, output voltage: 5 V DC, output current: 8.5 A
	Q64RP	Input voltage: 100 to 120/200 to 240 V AC, output voltage: 5 V DC, output current: 8.5 A

I/O module

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product		Model	Outline
Input	AC	QX10	16 points, 100 to 120 V AC, response time: 20 ms, 16 points/common, 18-point terminal block
		QX10-TS	16 points, 100 to 120 V AC, response time: 20 ms, 16 points/common, 18-point spring clamp terminal block
		QX28	8 points, 100 to 240 V AC, response time: 20 ms, 8 points/common, 18-point terminal block
	DC (Positive common) ^{*1}	QX40	16 points, 24 V DC, response time: 1/5/10/20/70 ms, 16 points/common, positive common, 18-point terminal block
		QX40-TS	16 points, 24 V DC, response time: 1/5/10/20/70 ms, 16 points/common, positive common, 18-point spring clamp terminal block
		QX40-S1	16 points, 24 V DC, response time: 0.1/0.2/0.4/0.6/1 ms, 16 points/common, positive common, 18-point terminal block
		QX40H	16 points, 24 V DC, response time: 0/0.1/0.2/0.4/0.6/1 ms, 8 points/common, positive common, 18-point terminal block
		QX41 ^{*2 *3}	32 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, positive common, 40-pin connector
		QX41-S1 ^{*2}	32 points, 24 V DC, response time: 0.1/0.2/0.4/0.6/1 ms, 32 points/common, positive common, 40-pin connector
		QX41-S2 ^{*2 *3}	32 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, positive common, 40-pin connector
	AC/DC	QX42 ^{*2}	64 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, positive common, 40-pin connector
		QX42-S1 ^{*2}	64 points, 24 V DC, response time: 0.1/0.2/0.4/0.6/1 ms, 32 points/common, positive common, 40-pin connector
	DC sensor	QX50	16 points, 48 V AC/DC, response time: 20 ms, 16 points/common, positive/negative common, 18-point terminal block
		QX70	16 points, 5/12 V DC, response time: 1/5/10/20/70 ms, 16 points/common, positive/negative common, 18-point terminal block
	DC (Negative common) ^{*1}	QX70H	16 points, 5 V DC, response time: 0/0.1/0.2/0.4/0.6/1 ms, 8 points/common, positive common, 18-point terminal block
		QX71 ^{*2}	32 points, 5/12 V DC, response time: 1/5/10/20/70 ms, 32 points/common, positive/negative common, 40-pin connector
		QX72 ^{*2}	64 points, 5/12 V DC, response time: 1/5/10/20/70 ms, 32 points/common, positive/negative common, 40-pin connector
		QX80	16 points, 24 V DC, response time: 1/5/10/20/70 ms, 16 points/common, negative common, 18-point terminal block
		QX80-TS	16 points, 24 V DC, response time: 1/5/10/20/70 ms, 16 points/common, negative common, 18-point spring clamp terminal block
		QX80H	16 points, 24 V DC, response time: 0/0.1/0.2/0.4/0.6/1 ms, 8 points/common, negative common, 18-point terminal block
		QX81 ^{*3 *4}	32 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, negative common, 37-pin D-sub connector
QX81-S2 ^{*3 *4}		32 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, negative common, 37-pin D-sub connector	
Output	Relay	QX82 ^{*2}	64 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, negative common, 40-pin connector
		QX82-S1 ^{*2}	64 points, 24 V DC, response time: 0.1/0.2/0.4/0.6/1 ms, 32 points/common, negative common, 40-pin connector
		QX90H	16 points, 5 V DC, response time: 0/0.1/0.2/0.4/0.6/1 ms, 8 points/common, negative common, 18-point terminal block
	Triac	QY10	16 points, 24 V DC/240 V AC, 2 A/point, 8 A/common, response time: 12 ms, 16 points/common, 18-point terminal block
		QY10-TS	16 points, 24 V DC/240 V AC, 2 A/point, 8 A/common, response time: 12 ms, 16 points/common, 18-point spring clamp terminal block
	Transistor (Sink)	QY18A	8 points, 24 V DC/240 V AC, 2 A/point, response time: 12 ms, 18-point terminal block, all points independent
		QY22	16 points, 100 to 240 V AC, 0.6 A/point, 4.8 A/common, response time: 1 ms + 0.5 cycle, 16 points/common, 18-point terminal block, with surge suppression
		QY40P	16 points, 12 to 24 V DC, 0.1 A/point, 1.6 A/common, response time: 1 ms, 16 points/common, sink type, 18-point terminal block, overload protection function, overheat protection function, surge suppression
		QY40P-TS	16 points, 12 to 24 V DC, 0.1 A/point, 1.6 A/common, response time: 1 ms, 16 points/common, sink type, 18-point spring clamp terminal block, overload protection function, overheat protection function, surge suppression
		QY41H	32 points, 5 to 24 V DC 0.2 A/point, 2 A/common, response time: 2 us, 32 points/common, sink type, 40-pin connector, with surge suppression
QY41P ^{*2}		32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type, 40-pin connector, overload protection function, overheat protection function, surge suppression and surge suppression	
QY42P ^{*2}		64 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type, 40-pin connector, overload protection function, overheat protection function, surge suppression	
Transistor (Independent)	QY50	16 points, 12 to 24 V DC, 0.5 A/point, 4 A/common, response time: 1 ms, 16 points/common, sink type, 18-point terminal block, with surge suppression and fuse	
	QY68A	8 points, 5 to 24 V DC, 2 A/point, 8 A/module, response time: 10 ms, sink/source type, 18-point terminal block, with surge suppression, all points independent	
TTL CMOS	QY70	16 points, 5 to 12 V DC, 16 mA/point, 256 mA/common, response time: 0.5 ms, 16 points/common, sink type, 18-point terminal block, with fuse	
	QY71 ^{*2}	32 points, 5 to 12 V DC, 16 mA/point, 512 mA/common, response time: 0.5 ms, 32 points/common, sink type, 40-pin connector, with fuse	
Transistor (Source)	QY80	16 points, 12 to 24 V DC, 0.5 A/point, 4 A/common, response time: 1 ms, 16 points/common, source type, 18-point terminal block, with surge suppression and fuse	
	QY80-TS	16 points, 12 to 24 V DC, 0.5 A/point, 4 A/common, response time: 1 ms, 16 points/common, source type, 18-point spring clamp terminal block, with surge suppression and fuse	
	QY81P ^{*4}	32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, source type, 37-pin D-sub connector, overload protection function, overheat protection function, surge suppression	
	QY82P ^{*2}	64 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, source type, 40-pin connector, overload protection function, overheat protection function, surge suppression	
I/O	DC input/ transistor output	QH42P ^{*2 *5}	Input: 32 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, positive common, output: 32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type, 40-pin connector, overload protection function, overheat protection function, surge suppression
		QX48Y57	Input: 8 points, 24 V DC, response time: 1/5/10/20/70 ms, 8 points/common, positive common, output: 7 points, 12 to 24 V DC, 0.5 A/point, 2 A/common, response time: 1 ms, 7 points/common, sink type, 18-point terminal block, with surge suppression and fuse
		QX41Y41P ^{*2 *5}	Input: 32 points, 24 V DC, response time: 1/5/10/20/70 ms, 32 points/common, positive common, output: 32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type, 40-pin connector, overload protection function, overheat protection function, surge suppression
Interrupt module		QI60	16 point, 24 V DC, response time: 0.1/0.2/0.4/0.6/1 ms, 16 points/common, 18-point terminal block

*1: "Positive common" indicates that the positive lead of a DC power supply must be connected to the common terminal. Accordingly, "Negative common" indicates that the negative lead must be connected to the common terminal.
 *2: Connector is not provided. Separately order one of the following: A6CON1/A6CON2/A6CON3/A6CON4.
 *3: The rated input currents are different. [QX41: approx. 4 mA, QX41-S2: approx. 6 mA, QX81: approx. 4 mA, QX81-S2: approx. 6 mA]
 *4: Connector is not provided. Separately order one of the following: A6CON1E/A6CON2E/A6CON3E.
 *5: The number of occupied input/output points is different. [QH42P: 32 points; QX41Y41P: 64 points (first 32 points: input / second 32 points: output)]



I/O module

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product	Model	Outline	
Connector	A6CON1	32-point connector soldering type (40-pin connector)	
	A6CON2	32-point connector crimp-contact type (40-pin connector)	
	A6CON3	32-point connector pressure-displacement (flat cable) type (40-pin connector)	
	A6CON4	32-point connector soldering type (40-pin connector, cable connectable in bidirection)	
	A6CON1E	32-point connector soldering type (37-pin D-sub connector)	
	A6CON2E	32-point connector crimp-contact type (37-pin D-sub connector)	
Spring clamp terminal block	Q6TE-18SN	For 16-point I/O modules, 0.3 to 1.5 mm ² (22 to 16 AWG)	
	Q6TE-18S*1	For 16-point I/O modules, 0.3 to 1.5 mm ² (22 to 16 AWG)	
Terminal block adapter	Q6TA32	For 32-point I/O modules, 0.5 mm ² (20 AWG)	
	Q6TA32-TOL	Q6TA32 dedicated tool	
Connector/terminal block conversion module	A6TBXY36	For positive common input modules and sink output modules (standard type)	
	A6TBXY54	For positive common input modules and sink output modules (2-wire type)	
	A6TBX70	For positive common input modules (3-wire type)	
	A6TBX36-E	For negative common input modules (standard type)	
	A6TBX54-E	For negative common input modules (2-wire type)	
	A6TBX70-E	For negative common input modules (3-wire type)	
	A6TBY36-E	For source output modules (standard type)	
	A6TBY54-E	For source output modules (2-wire type)	
	Cable	AC05TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 0.5 m
		AC10TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 1 m
		AC20TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 2 m
		AC30TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 3 m
		AC50TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 5 m
		AC80TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 8 m *Common current 0.5 A or lower
		AC100TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type), 10 m *Common current 0.5 A or lower
		AC05TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type), 0.5 m
		AC10TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type), 1 m
		AC20TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type), 2 m
AC30TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type), 3 m		
AC50TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type), 5 m		
Relay terminal module	A6TE2-16SRN	For 40-pin connector 24 V DC transistor output modules (sink type)	
Cable	AC06TE	For A6TE2-16SRN, 0.6 m	
	AC10TE	For A6TE2-16SRN, 1 m	
	AC30TE	For A6TE2-16SRN, 3 m	
	AC50TE	For A6TE2-16SRN, 5 m	
	AC100TE	For A6TE2-16SRN, 10 m	

*1: When newly introducing the terminal block, use Q6TE-18SN.

Analog I/O module

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product		Model	Outline
Analog input	Voltage input	Q68ADV	8 channels, input: -10 to 10 V DC, output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000, conversion speed: 80 µs/channel, 18-point terminal block
	Current input	Q62AD-DGH	2 channels; input, 4 to 20 mA DC, output (resolution): 0 to 32000, 0 to 64000, conversion speed: 10 ms/2 channels, 18-point terminal block, channel isolated, supplies power to 2-wire transmitter
		Q66AD-DG* ¹	6 channels, input: 4 to 20 mA DC (when 2-wire transmitter is connected), 0 to 20 mA DC, output (resolution): 0 to 4000, 0 to 12000, conversion speed: 10 ms/channel, 40-pin connector, channel isolated, supplies power to 2-wire transmitter
		Q68ADI	8 channels, input: 0 to 20 mA DC, output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000, conversion speed: 80 µs/channel, 18-point terminal block
	Voltage/current input	Q64AD	4 channels; input -10 to 10 V DC, 0 to 20 mA DC, output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000, conversion speed: 80 µs/channel, 18-point terminal block
		Q64ADH	4 channels; input -10 to 10 V DC, 0 to 20 mA DC, output (resolution): 0 to 20000, -20000 to 20000, -5000 to 22500, conversion speed: 20 µs/channel, 18-point terminal block
		Q64AD-GH	4 channels, input: -10 to 10 V DC, 0 to 20 mA DC, output (resolution): 0 to 32000, -32000 to 32000, 0 to 64000, -64000 to 64000, conversion speed: 10 ms/4 channels, 18-point terminal block, channel isolated
Q68AD-G* ¹		8 channels, input: -10 to 10 V DC, 0 to 20 mA DC, output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000, conversion speed: 10 ms/channel, 40-pin connector, channel isolated	
Analog output	Voltage output	Q68DAVN	8 channels, input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, -16000 to 16000, output: -10 to 10 V DC, conversion speed: 80 µs/channel, 18-point terminal block
	Current output	Q68DAIN	8 channels, input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000; output: 0 to 20 mA DC, conversion speed: 80 µs/channel, 18-point terminal block
	Voltage/current output	Q64DAH NEW	4 channels, input (resolution): 0 to 20000, -20000 to 20000 output: -10 to 10V DC, 0 to 20 mA DC, conversion speed: 20 µs/channel, 18-point terminal block
		Q62DAN	2 channels, input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, -16000 to 16000, output: -10 to 10 V DC, 0 to 20 mA DC, conversion speed: 80 µs/channel, 18-point terminal block
		Q62DA-FG	2 channels, input (resolution): 0 to 12000, -12000 to 12000, -16000 to 16000, output: -12 to 12 V DC, 0 to 22 mA DC, conversion speed: 10 ms/2 channels, 18-point terminal block
		Q64DAN	4 channels, input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, -16000 to 16000, output: -10 to 10 V DC, 0 to 20 mA DC, conversion speed: 80 µs/channel, 18-point terminal block
		Q66DA-G* ¹	6 channels, input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, -16000 to 16000, output: -12 to 12 V DC, 0 to 22 mA DC, conversion speed: 6 ms/channel, 40-pin connector, channel isolated
Analog input/output	Voltage and current input/output	Q64AD2DA	input: 4 channels, input: -10 to 10 V DC, 0 to 20 mA DC » output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000 » conversion speed: 500 µs/channel output: 2 channels Input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -16000 to 16000 » output: -10 to 10 V DC, 0 to 20 mA DC » conversion speed: 500 µs/channel 18-point terminal block
Load cell input	Q61LD	1 channel, input (load cell output): 0.0 to 3.3 mV/V, output (resolution): 0 to 10000, conversion speed: 10 ms, 18-point terminal block	
CT input module	Q68CT	8 channels, input: CT 0 to 5A AC, 0 to 50A AC, 0 to 100A AC, 0 to 200A AC, 0 to 400A AC, 0 to 600A AC, output: 0 to 12000, 18-point terminal block	

*1: A connector is not provided. The A6CON4 connector must be ordered separately.



Analog I/O module

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product		Model	Outline
Temperature input	RTD	Q64RD	4 channels, platinum RTD (Pt100, JPt100), disconnection detection function, conversion speed: 40 ms/channel, 18-point terminal block
		Q64RD-G	4 channels, platinum RTD (Pt100, JPt100), nickel RTD (Ni100), disconnection detection function, conversion speed: 40 ms/channel, disconnection detection function, isolation between channels, 18-point terminal block
		Q68RD3-G*1	8 channels, platinum RTD (Pt100, JPt100), nickel RTD (Ni100), disconnection detection function, conversion speed: 320 ms/8 channels, isolation between channels, 40-pin connector
	Thermocouple	Q64TD	4 channels, thermocouple (B, R, S, K, E, J, T, N), disconnection detection function, conversion speed: 40 ms/channel, isolation between channels, 18-point terminal block
		Q64TDV-GH	4 channels, thermocouple (B, R, S, K, E, J, T, N), disconnection detection function, conversion speed: sampling cycle x 3, sampling cycle: 20 ms/channel, isolation between channels, 18-point terminal block
		Q68TD-G-H01*1*2	8 channels, thermocouple (B, R, S, K, E, J, T, N), disconnection detection function, conversion speed: 320 ms/8 channels, isolation between channels, 40-pin connector
		Q68TD-G-H02*1	8 channels, thermocouple (B, R, S, K, E, J, T, N), disconnection detection function, conversion speed: 640 ms/8 channels, isolation between channels, 40-pin connector
Temperature control	RTD	Q64TCRTN*3	4 channels, platinum RTD (Pt100, JPt100), heating control/cooling control/heating-cooling control, sampling cycle: 500 ms/4 channels, isolation between channels, 18-point terminal block
		Q64TCRT	4 channels, platinum RTD (Pt100, JPt100), heating control/cooling control, sampling cycle: 500 ms/4 channels, isolation between channels, 18-point terminal block
		Q64TCRTBWN*3	4 channels, platinum RTD (Pt100, JPt100), heating control/cooling control/heating-cooling control, heater disconnection detection function, sampling cycle: 500 ms/4 channels, isolation between channels, two 18-point terminal blocks
		Q64TCRTBW	4 channels, platinum RTD (Pt100, JPt100), heating control/cooling control, heater disconnection detection function, sampling cycle: 500 ms/4 channels, isolation between channels, two 18-point terminal blocks
	Thermocouple	Q64TCTTN	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PL II, W5Re/W26Re), heating control/cooling control/heating-cooling control, sampling cycle: 500 ms/4 channels, isolation between channels, 18-point terminal block
		Q64TCTT	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PL II, W5Re/W26Re), heating control/cooling control, sampling cycle: 500 ms/4 channels, isolation between channels, 18-point terminal block
		Q64TCTTBWN	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PL II, W5Re/W26Re), heating control/cooling control/heating-cooling control, heater disconnection detection function, sampling cycle: 500 ms/4 channels, isolation between channels, two 18-point terminal blocks
		Q64TCTTBW	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PL II, W5Re/W26Re), heating control/cooling control, heater disconnection detection function, sampling cycle: 500 ms/4 channels, isolation between channels, two 18-point terminal blocks
Loop control		Q62HLC	2 channels, input: thermocouple/micro voltage/voltage/current, conversion speed (input): 25 ms/2 channels, sampling cycle: 25 ms/2 channels; output: 4 to 20 mA DC, conversion speed (output): 25 ms/2 channels, 18-point terminal block, with 5 PID control modes

*1: A connector is not provided. The A6CON4 connector must be ordered separately.
 *2: The number of modules that can be installed is restricted based on the combination of power supply and base unit.
 *3: When fitting the spring clamp terminal block, use Q6TE-18SN. The conventional model, Q6TE-18S, cannot be used with it.

Positioning and Pulse I/O module

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product		Model	Outline
Simple motion	With SSCNET III/H connectivity	QD77MS2*1	2-axes, 2-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET III/H connectivity
		QD77MS4*1	4-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET III/H connectivity
		QD77MS16*1	16-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET III/H connectivity
	With CC-Link IE Field Network connectivity	QD77GF16 NEW	16-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 26-pin connector, with CC-Link IE Field Network connectivity
Positioning	Open collector output	QD75P1N*1	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD75P1*1	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD75P2N*1	2-axes, 2-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD75P2*1	2-axes, 2-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD75P4N*1	4-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD75P4*1	4-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD70P4*1	4-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 200 kpps, 40-pin connector
		QD70P8*1	8-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 200 kpps, 40-pin connector
	Differential output	QD75D1N*1	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 4 Mpps, 40-pin connector
		QD75D1*1	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 1 Mpps, 40-pin connector
		QD75D2N*1	2-axes, 2-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 4 Mpps, 40-pin connector
		QD75D2*1	2-axes, 2-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 1 Mpps, 40-pin connector
		QD75D4N*1	4-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 4 Mpps, 40-pin connector
		QD75D4*1	4-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 1 Mpps, 40-pin connector
		QD70D4*1	4-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 4 Mpps, 40-pin connector
		QD70D8*1	8-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 4 Mpps, 40-pin connector
	With SSCNET connectivity	QD75M1*2	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET connectivity
		QD75M2*2	2-axes, 2-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET connectivity
		QD75M4*2	4-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET connectivity
		With SSCNET III connectivity	QD75MH1*2
	QD75MH2*2		2-axes, 2-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET III connectivity
	QD75MH4*2		4-axes, 2-/3-/4-axis linear interpolation, 2-axis circular interpolation, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET III connectivity
	QD74MH8		8-axes, control unit: pulse, no. of positioning data: 32/axis, with SSCNET III connectivity
	Open collector output with built-in counter function	QD74MH16	16-axes, control unit: pulse, no. of positioning data: 32/axis, with SSCNET III connectivity
		QD72P3C3*1	Positioning: 3-axes, control unit: pulse, no. of positioning data: 1/axis, max. output pulse: 100 kpps, counter: 3 channels, 100 kpps, count input signal: 5/24 V DC, 40-pin connector
	High-Speed Counter	QD62*2	2 channels, 200/100/10 kpps, count input signal: 5/12/24 V DC, external input: 5/12/24 V DC, coincidence output: transistor (sink), 12/24 V DC, 0.5 A/point, 2 A/common, 40-pin connector
		QD62E*2	2 channels, 200/100/10 kpps, count input signal: 5/12/24 V DC, external input: 5/12/24 V DC, coincidence output: transistor (source), 12/24 V DC, 0.1 A/point, 0.4 A/common, 40-pin connector
		QD62D*2	2 channels, 500/200/100/10 kpps, count input signal: EIA standards RS-422-A (differential line driver), external input: 5/12/24 V DC; coincidence output: transistor (sink), 12/24 V DC, 0.5 A/point, 2 A/common, 40-pin connector
		QD63P6*1	6 channels, 200/100/10 kpps, count input signal: 5 V DC, 40-pin connector
		QD64D2*1	2 channels, 4 Mpps, count input signal: EIA standards RS-422-A (differential line driver), external input: 24 V DC, coincidence output: transistor (sink), 12/24 V DC, 0.5 A/point, 2 A/common, 40-pin connector
		QD65PD2*1	2 Channels Differential input: 40 kpps/400 kpps/800 kpps/2 Mpps/4 Mpps/8 Mpps » Count input signal level: EIA Standards RS-422-A, differential line driver level DC Input: 10 kpps/100 kpps/200 kpps » Count input signal level: 5/12/24 V DC, 7 to 10mA external outputs: Transistor (sink type) output, 12/24 V DC 0.1 A/point, 0.8 A/common
	Channel isolated pulse input	QD60P8-G	8 channels, 30 kpps/10 kpps/1 kpps/100 pps/50 pps/10 pps/1 pps/0.1 pps, count input signal: 5/12 to 24 V DC

*1: A connector is not provided. The A6CON1/A6CON2/A6CON4 connector must be ordered separately.

*2: A connector is not provided. The A6CON1/A6CON2/A6CON3/A6CON4 connector must be ordered separately.



Energy Measuring Module

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product	Model	Outline
Energy Measuring	QE81WH*1	3-phase 3-wire type, Number of measurement circuits: 1 circuit, Measured items: power rate (consumption, regenerative), current, voltage, power, power factor, etc.
	QE84WH*1+2 NEW	3-phase 3-wire type, Number of measurement circuits: 4 circuits, Measured items: power rate (consumption, regenerative), current, voltage, power, power factor, etc.
	QE81WH4W*1+3	3-phase 4-wire type, Number of measurement circuits: 1 circuit, Measured items: power rate (consumption, regenerative), current, voltage, power, power factor, etc.
	QE83WH4W*1+2+3 NEW	3-phase 4-wire type, Number of measurement circuits: 3 circuits, Measured items: power rate (consumption, regenerative), current, voltage, power, power factor, etc.
Option	QE8WH4VT	QE81WH4W, QE83WH4W dedicated voltage transformer (63.5/110 VAC to 227/480 VAC)
Isolation monitoring	QE82LG*4	Measured items: leakage current (I _o), resistive component leakage current (I _{or}), number of measured circuits: 2 circuits

*1: Dedicated current sensors are required for operation.
 *2: Current measurement mode is provided. Up to eight circuits can be measured when measuring only the current value.
 *3: The separate voltage transformer (QE8WH4VT) is required for the three-phase 4-wire compatible products.
 *4: Dedicated residual current transformers are required for operation.

Information module

MES interface		QJ71MES96	High-Speed Data Logger module *CompactFlash card are required
	Option	GT05-MEM-128MC	CompactFlash card, capacity: 128 MB
		GT05-MEM-256MC	CompactFlash card, capacity: 256 MB
		QD81MEM-512MBC	CompactFlash card, capacity: 512 MB
		QD81MEM-1GBC	CompactFlash card, capacity: 1 GB
High-Speed Data Logger		QD81DL96	High-Speed Data Logger module *CompactFlash card are required
	Option	QD81MEM-512MBC	CompactFlash card, capacity: 512 MB
		QD81MEM-1GBC	CompactFlash card, capacity: 1 GB
		QD81MEM-2GBC	CompactFlash card, capacity: 2 GB
		QD81MEM-4GBC	CompactFlash card, capacity: 4 GB
		QD81MEM-8GBC	CompactFlash card, capacity: 8 GB
Ethernet		QJ71E71-100	10BASE-T/100BASE-TX
		QJ71E71-B2	10BASE2
		QJ71E71-B5	10BASE5
Serial communication		QJ71C24N	RS-232: 1 channel, RS-422/485: 1 channel, total transmission speed of 2 channels: 230.4 kbps
		QJ71C24N-R2	RS-232: 2 channels, total transmission speed of 2 channels: 230.4 kbps
		QJ71C24N-R4	RS-422/485: 2 channels, total transmission speed of 2 channels: 230.4 kbps
Intelligent communication		QD51	BASIC program execution module, RS-232: 2 channels
		QD51-R24	BASIC program execution module, RS-232: 1 channel, RS-422/485: 1 channel
		SW11VD-AD51HP*1	Software package for QD51, AD51H-S3, and A1SD51S

*1: The program is run in Windows® command prompt.

Control network module

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product		Model	Outline
CC-Link IE Controller Network		QJ71GP21-SX	Multi-mode fiber optic cable, dual loop, controller network (control/normal station)
		QJ71GP21S-SX	Multi-mode fiber optic cable, dual loop, controller network (control/normal station), with external power supply function
MELSENET/H	Optical loop (SI)	QJ71LP21-25	SI/QSI/H-PCF/ broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station) or remote I/O network (remote mater station)
		QJ71LP21S-25	SI/QSI/H-PCF/ broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station) or remote I/O network (remote mater station), with external power supply function
		QJ72LP25-25	SI/QSI/H-PCF/ broadband H-PCF fiber optic cable, dual loop, remote I/O network (remote I/O station)
	Optical loop (GI)	QJ71LP21G	GI-50/125 fiber optic cable, dual loop, controller network (control/normal station) or remote I/O network (remote master station)
		QJ72LP25G	GI-50/125 fiber optic cable, dual loop, remote I/O network (remote I/O station)
	Coaxial bus	QJ71BR11	3C-2V/5C-2V coaxial cable, single bus, controller network (control/normal station) or remote I/O network (remote master station)
		QJ72BR15	3C-2V/5C-2V coaxial cable, single bus, remote I/O network (remote I/O station)
Twist bus	QJ71NT11B	Twisted pair cable, single bus, controller network (control/normal station)	
CC-Link IE Field Network		QJ71GF11-T2 ¹	Master/local station, CC-Link IE Field Network compatible
CC-Link		QJ61BT11N	Master/local station, CC-Link Ver. 2 compatible
CC-Link/LT		QJ61CL12	Master station
FL-net (OPCN-2)	Ver. 2.00	QJ71FL71-T-F01	10BASE-T, 100BASE-TX
		QJ71FL71-B2-F01	10BASE2
		QJ71FL71-B5-F01	10BASE5
	Ver. 1.00	QJ71FL71-T	10BASE-T
		QJ71FL71-B2	10BASE2
		QJ71FL71-B5	10BASE5
MODBUS®		QJ71MB91	MODBUS® RS-232,RS-422/485 configurable as master or slave
		QJ71MT91	MODBUS®/TCP 10BASE-T/100BASE-TX configurable as master or slave
AS-i		QJ71AS92	Master station, AS-Interface Specification Version 2.11 compatible



Replacement support MELSEC-A/QnA transition products

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product		Model	Outline
Q Large base	Main base	Q35BL* ¹	5 slots. Power supply module installation required. For Q series large input/output module installation
		Q38BL* ¹	8 slots. Power supply module installation required. For Q series large input/output module installation
	Extension base	Q65BL* ¹	5 slots. Power supply module installation required. For Q series large input/output module installation
		Q68BL* ¹	8 slots. Power supply module installation required. For Q series large input/output module installation
	Large blank cover	Q55BL* ¹	5 slots. Power supply module installation not required. For Q series large input/output module installation
		QG69L* ¹	For gap adjustment when a previous Q series module is installed on the Q large base
Q Large I/O	Input	QX11L* ¹	For replacement of A-series large type module "AX11". 32 points, 100 to 120 V AC, response time: 25 ms, 32 points/common, 38-point terminal block
		QX21L* ¹	For replacement of A-series large type module "AX21". 32 points, 200 to 240 V AC, response time: 25 ms, 32 points/common, 38-point terminal block
	Output	QY11AL* ¹	For replacement of A-series large type module "AY10A, AY11A". 16 points, 24 V DC/240 V AC, 2 A/point; 16 A/all points, all-point independent contacts, response time: 12 ms, 38-point terminal block
		QY13L* ¹	For replacement of A-series large type module "AY13". 32 points, 24 V DC/240 V AC, 2 A/point; 5 A/common, 8 points/common, response time: 12 ms, 38-point terminal block
		QY23L* ¹	For replacement of A-series large type module "AY23". 32 points, 100 to 240 V AC; 0.6 A/point, 2.4 A/common, 8 points/common, response time: 1 ms + 0.5 cycle, 38-point terminal block
		QY51PL	For replacement of A-series large type module "AY41, AY41P, AY51, AY51-S1". 32 points, transistor (sync), 12/24 V DC; 0.5 A/point; 4A/common, 16 points/common, response time: 1 ms, 38-point terminal block
High-Speed Counter		QD62-H01* ²	For replacement of A-series large type module "AD61". 2 channels, 50 kpps, count input signal: 5/12/24 V DC, external input: 5/12/24 V DC, coincidence output: transistor (sync), 12/24 V DC, 0.5 A/point; 2 A/common
		QD62-H02* ²	For replacement of A-series large type module "AD61-S1". 2 channels, 10 kpps, count input signal: 5/12/24 V DC, external input: 5/12/24 V DC, coincidence output: transistor (sync), 12/24 V DC, 0.5 A/point; 2 A/common
Positioning		QD73A1	For replacement of "A1SD70". 1 axis. Number of positioning data items: 1 data/axis, analog output
Extension base	AnS series	QA1S51B* ³	1 slot. Does not require installation of AnS series power supply module. For AnS series module installation
		QA1S65B* ³	5 slots. Requires AnS series power supply module installation. For AnS series module installation
		QA1S68B* ³	8 slots. Requires AnS series power supply module installation. For AnS series module installation
	A series	QA65B* ³	5 slots. Requires A series power supply module installation. For A series module installation
		QA68B* ³	8 slots. Requires A series power supply module installation. For A series module installation
For MELSECNET (II) local station		A1SJ71AP23Q* ⁴	Optic cable, duplex loop, MELSECNET (II) local station
		A1SJ71AR23Q* ⁴	3C-2V/5C-2V coaxial cable, duplex loop, MELSECNET (II) local station
For MELSECNET/B local station		A1SJ71AT23BQ* ⁴	Twisted pair cable, single bus, MELSECNET/B local station

*1: Only supported only by High Performance QCPU and Universal QCPU (Excluding Q00UJCPU).

*2: A connector is not provided. Please order one of the following separately: A6CON1/A6CON2/A6CON3/A6CON4

*3: Only supported only by High Performance model QCPU.

*4: Only supported by high performance model QCPU and universal model QCPU (first five digits of serial No. 13102 or higher).

PC interface board

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

Product		Model	Outline
CC-Link IE Controller Network		Q80BD-J71GP21-SX	PCI bus/PCI-X bus, Japanese/English OS compatible, multi-mode fiber optic cable, dual loop, controller network (control/normal station)
		Q81BD-J71GP21-SX	PCI Express bus, Japanese/English OS compatible, multi-mode fiber optic cable, dual loop, controller network (control/normal station)
		Q80BD-J71GP21S-SX	PCI bus/PCI-X bus, Japanese/English OS compatible, multi-mode fiber optic cable, dual loop, controller network (control/normal station), with external power supply function
		Q81BD-J71GP21S-SX	PCI Express bus, Japanese/English OS compatible, multi-mode fiber optic cable, dual loop, controller network (control/normal station), with external power supply function
CC-Link IE Field Network		Q81BD-J71GF11-T2*1	PCI Express compatible, Ethernet connections in line, star, or line and star mixed, configurable as master or local station.
MELSECNET/H(10)	Optical loop (S1)	Q81BD-J71LP21-25	PCI Express bus, Japanese/English OS compatible, SI/QSI/H-PCF/broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station)
		Q80BD-J71LP21-25	PCI bus, Japanese/English OS compatible, SI/QSI/H-PCF/broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station)
	Optical loop (G1)	Q80BD-J71LP21S-25	PCI bus, Japanese/English OS compatible, SI/QSI/H-PCF/broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station), with external power supply function
		Q80BD-J71LP21G	PCI bus, Japanese/English OS compatible, GI-50/125 fiber optic cable, dual loop, controller network (control/normal station)
Coaxial bus	Q80BD-J71BR11	PCI bus, Japanese/English OS compatible, 3C-2V/5C-2V coaxial cable, single bus, controller network (control/normal station)	
	CC-Link		Q81BD-J61BT11
		Q80BD-J61BT11N	PCI bus, Japanese/English OS compatible, master/local interface board, CC-Link Ver. 2 compatible

*1: Does not support being used as the master station in a ring network.

Ethernet related products

Wireless LAN Adapter	U.S.A.	NZ2WL-US*1*2 DB	Conforms to IEEE 802.11a, IEEE 802.11b, IEEE 802.11g standards
	Europe	NZ2WL-EU*1*2 DB	Conforms to IEEE 802.11a, IEEE 802.11b, IEEE 802.11g standards
	China	NZ2WL-CN*1*2 DB	Conforms to IEEE 802.11a, IEEE 802.11b, IEEE 802.11g standards
	Korea	NZ2WL-KR*1*2 DB	Conforms to IEEE 802.11a, IEEE 802.11b, IEEE 802.11g standards
	Taiwan	NZ2WL-TW*1*2 DB	Conforms to IEEE 802.11a, IEEE 802.11b, IEEE 802.11g standards
Industrial switching HUB		NZ2EHG-T8 DB	10Mbps/100Mbps/1Gbps AUTO-MDIX, DIN rail mountable, 8 ports
		NZ2EHF-T8 DB	10Mbps/100Mbps AUTO-MDIX, DIN rail mountable, 8 ports
CC-Link IE Field Network Ethernet Adapter		NZ2GF-ETB	100Mbps/1Gbps compatible station for expanding CC-Link IE Field Networks

*1: Each product is usable only in the respective country.

*2: Both access points and stations are supported, and can be switched with the settings.



»For details on the software versions compatible with each module, refer to the manual for each product.

Please contact your local Mitsubishi Electric sales office or representative for the latest information about MELSOFT software versions and compatible operating systems.

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

* Refer to the "Compatible CPUs" table for individual part names.

Software MELSOFT GX series

Product	Model	Outline	Compatible CPU*						
			Universal model			High Performance model	Basic model	Process CPU	Redundant CPU
			QnUDV	QnU	QnUD(E)				
GX Works2	SW1DNC-GXW2-E	Programmable controller engineering software (software with integrated functions including tools for programming, simulation and various module setting/monitoring)	●	●	●	●	●	— *1	— *1
GX Developer	SW8D5C-GPPW-E	MELSEC programmable controller programming software	—	●	● *2	●	●	●	●
	SW8D5C-GPPW-EV	MELSEC programmable controller programming software (upgrade)	—	●	● *2	●	●	●	●
GX Simulator*3	SW7D5C-LLT-E	MELSEC programmable controller simulation software	—	●	● *2	●	●	●	●
	SW7D5C-LLT-EV	MELSEC programmable controller simulation software (upgrade)	—	●	● *2	●	●	●	●
GX Converter*3	SW0D5C-CNVW-E	Excel/text data converter	—	—	—	●	●	●	●
GX Configurator-AD*3	SW2D5C-QADU-E	Analog to digital conversion module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-DA*3	SW2D5C-QDAU-E	Digital to analog conversion module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-SC*3	SW2D5C-QSCU-E	MELSEC-Q dedicated serial communication module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-CT*3	SW0D5C-QCTU-E	MELSEC-Q dedicated high-speed counter module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-TC*3	SW0D5C-QTCU-E	MELSEC-Q dedicated temperature control module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-TI*3	SW1D5C-QTIU-E	MELSEC-Q dedicated temperature input module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-FL*3	SW0D5C-QFLU-E	MELSEC-Q dedicated FL-net module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-PT*3	SW1D5C-QPTU-E	MELSEC-Q dedicated positioning module QD70 setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-MB*3	SW1D5C-QMBU-E	MODBUS master module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-AS*3	SW1D5C-QASU-E	AS-i master module setting/monitoring tool	—	●	● *2	●	●	●	●
GX Configurator-QP	SW2D5C-QD75P-E	Positioning module QD75P/D/M setting/monitoring tool	—	●	● *2	●	●	●	●
GX Explorer	SW2D5C-EXP-E	Maintenance tool	—	—	—	●	●	● *4	—
GX RemoteService- I	SW2D5C-RAS-E	Remote access tool	—	—	—	●	●	● *4	—
GX Works	SW4D5C-QSET-E	Set type products (7 in total): GX Developer, GX Simulator, GX Explorer, GX Configurator-AD, DA, SC, CT	*5						
	SW8D5C-GPPLT-E	GX Developer, GX Simulator, GX Explorer	*5						

*1: Supported only for simple project mode.

*2: Not compatible with Q50UDEHCPU, Q100UDEHCPU, and QJ71GF11-T2.

*3: Not compatible with Q02PHCPU and Q06PHCPU.

*4: To determine which CPUs are supported, refer to the individual products above.

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

* Refer to the "Compatible CPUs" table for individual part names.

Software MELSOFT PX series

Product	Model	Outline	Compatible CPU*							
			Universal model			High Performance model	Basic model	Process CPU	Redundant CPU	
			QnUDV	QnU	QnUD(E)					
PX Developer	SW1D5C-FBDQ-E	Process control FBD software package	—	—	—	—	—	●	●	
	SW1DNC-FBDQMON-E	Process control FBD software package monitoring tool	—	—	—	—	—	●	●	
PX Works	SW3D5C-FBDGPP-E	Set type products (6 in total): PX Developer, GX Developer, GX Configurator-AD, DA, CT, TI	*1							

*1: To determine which CPUs are supported, refer to the individual products.

Software MELSOFT MX series

MX Component	SW4DNC-ACT-E*1 NEW	ActiveX® library for communication	●	●	●	●	●	●	●	
MX Sheet	SW2DNC-SHEET-E NEW	Excel® communication support tool	●	●	●	●	●	●	●	
MX Works	SW2DNC-SHEETSET-E NEW	A set of two products: MX Component, MX Sheet	*2							
MX MESInterface	SW1DNC-MESIF-E	MES interface module QJ71MES96 dedicated information linkage tool	*3							

*1: To use MX Sheet, MX Component is required.

*2: To determine which CPUs are supported, refer to the individual products.

*3: Required when using the MES interface module.

Software MELSOFT iQ Works

MELSOFT iQ Works	SW1DNC-IQWK-E (CD-ROM edition)	FA engineering software*1 <ul style="list-style-type: none"> •System management software "MELSOFT Navigator" Upstream design, tool for linkage to iQ Works products •Programmable controller engineering software "MELSOFT GX Works2" Tools for programmable controller programming, simulation and various module setting/monitoring
	SW1DND-IQWK-E (DVD-ROM edition)	<ul style="list-style-type: none"> •Motion controller engineering software "MELSOFT MT Works2" Total support tools for motion controller design and maintenance •Display screen creation software "MELSOFT GT Works3" Support tools for display screen creation •Robot Programming Software: MELSOFT RT ToolBox2 mini Programming and total engineering tool for robots

*1: To determine which CPUs are supported, refer to the individual products.

Compatible CPUs

Item	Model
Universal model QCPU	QnUDV Q03UDV, Q04UDV, Q06UDV, Q13UDV, Q26UDV
	QnU Q00UJ, Q00U, Q01U, Q02U
	QnUD(E) Q03UD(E), Q04UD(E)H, Q06UD(E)H, Q10UD(E)H, Q13UD(E)H, Q20UD(E)H, Q26UD(E)H, Q50UDEH, Q100UDEH
High Performance model QCPU	Q02, Q02H, Q06H, Q12H, Q25H
Basic model QCPU	Q00J, Q00, Q01
Process CPU	Q02PH, Q06PH, Q12PH, Q25PH
Redundant CPU	Q12PRH, Q25PRH



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iQ Platform

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

CC-Link CC-Link IE



Mitsubishi Electric Programmable Controllers

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