

Changes for the Better

iQ Platform
Programmable Controllers
MELSEC-Q Series [QnU]



The next level in Q performance

New products
have been added
to the lineup!

MELSEC  Series

QnU

Compatible with
Windows® 7

Unprecedented level of performance...

The next generation Q Series

"Universal model: QnU" is the next generation MELSEC-Q Series.

It is an ideal solution for users who want to increase productivity and processing speed of large-volume production information, which is critical for traceability.

The ultra-fast basic operation processing speed can greatly improve system performance.

Furthermore, the design concepts inherited from the Q Series make it more user-friendly and reliable.

This new generation programmable controller will bring your systems to the next level!

[High speed, high capacity]

In order to support highly complex applications and equipment, the "Universal model: QnU" provides the fastest data processing operations available. Additionally, machine control using a multi-CPU system can achieve even greater speed and accuracy.

Memory capacity has been increased to store larger numbers of programs and allow more control and production management data to be handled.



[Built-in Ethernet/USB port]

Ethernet is standard at the top layer of information networks. To improve the ability to connect with the top layer, the Universal model CPUs (Q03U and up) each include a built-in Ethernet version. Also, USB ports are now standard on all models for increased convenience.



[Enhanced lineup]

Low and ultra-high capacity models have been added to the lineup of Universal QnU programmable controllers. Choose from a range of program capacities (10 k to 1,000 k steps) to meet the specific needs of the application.

Current production requirements

- Minimize the operation cycle
- Must support strict quality management
- Incorporate more complex, large-scale equipment
- Support an increasingly large volume of control/production management data
- Minimize the response time to short product life cycles
- Maximize equipment uptime

These production needs are the basis for the creation of this latest generation of programmable controller.

has arrived!



I N D E X

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Improved Productivity

More User Friendly

Easy Maintenance



MELSEC  **Series**

QnU

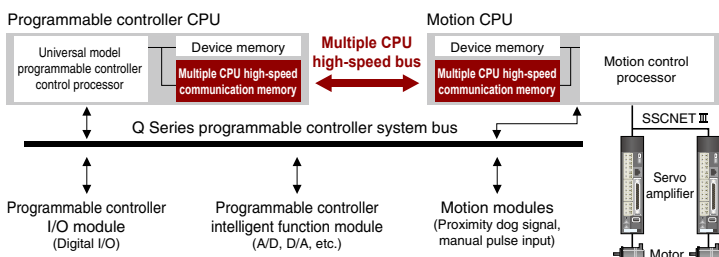
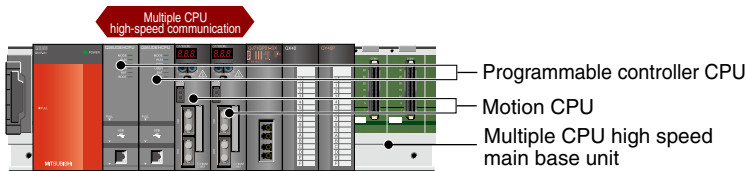
Welcome to the fast lane



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.



Models that support Multi-CPU high-speed communication:

- Q00UJ Q00U Q01U Q02U Q03U Q04U Q06U Q10U Q13U Q20U Q26U Q50U Q100U

The compatible CPU icons include the Ethernet port type and RS-232 port type. (Q03U and later. Q50U and Q100U are only available with an Ethernet port.)

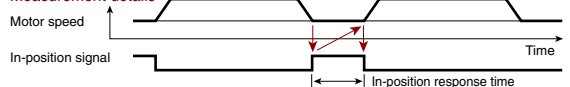
Example: **Q03U** = Q03UDECPU and Q03UDCPU

High-speed control with multiple CPUs

Program example

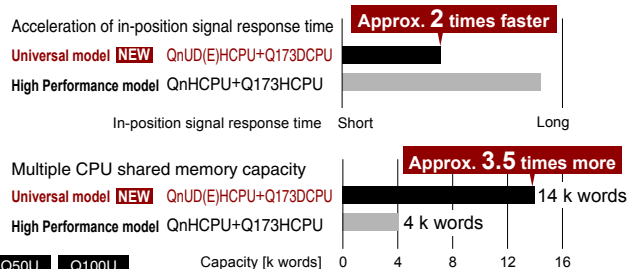


Measurement details



<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.

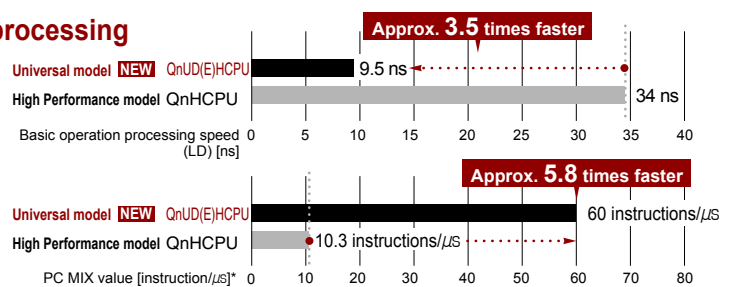




Improved production time with ultra-high-speed processing

To meet the increasing demand for shortening of production times, especially in large-scale, complex systems, the new models have our fastest basic operation processing speed (LD) yet, 9.5 ns.

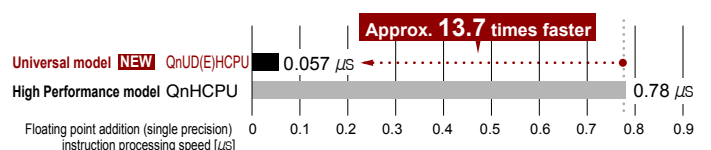
The result is a shortening of scan time, improved production time and processing accuracy. In addition, the programmable controller can now realize high-speed control which was previously only possible using microcontrollers.



* PC MIX value is the average number of instructions (basic instructions, data processing instructions, etc.) that can be executed in 1 ms. A larger value indicates a higher processing speed.

High-speed, high-precision data processing

The floating point addition processing speed has been greatly increased to 0.057 μs to support high-speed, high-precision operation processing. Also, new double precision instructions have been added to simplify programming and reduce calculation errors when implementing complex equations.



Universal model (New model)	QnUD(E)HCPU: Q04/ 06/ 10/ 13/ 20/ 26UDHCPU, Q04/ 06/ 10/ 13/ 20/ 26/ 50/ 100UDEHCPU
High Performance model	QnHCPU : Q02/ 06/ 12/ 25HCPU

		Universal model QnUD(E)HCPU	High Performance model QnHCPU
Addition (E+)	Single precision [μs]	0.057	0.78
	Double precision [μs]	4.3 *1	87 *2

*1 Minimum value

*2 Indicates internal double precision operation processing speed

Expanded network possibilities

CPU modules with built-in Ethernet

Q03UDE/ Q04U/ Q06U/ Q10U/ Q13U/ Q20U/ Q26U/ Q50U/ Q100UDEHCPU

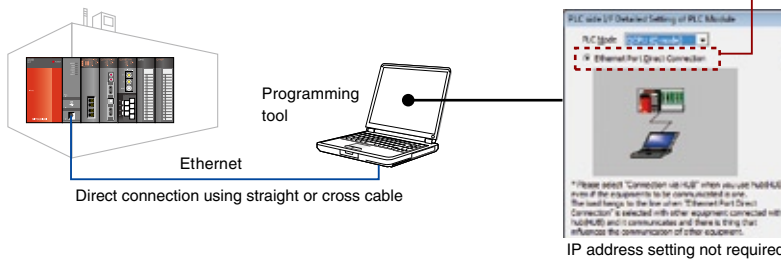


9 modules added to the lineup!

■ 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)

Check "Ethernet port direct connection."

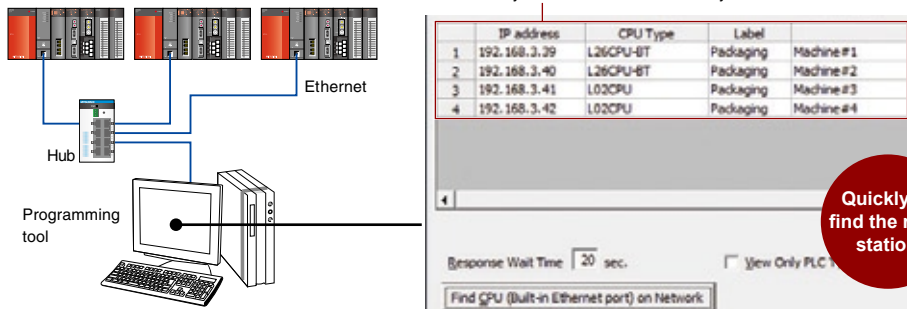


Easy connection, no parameter settings

■ Search and display a list of connected CPUs

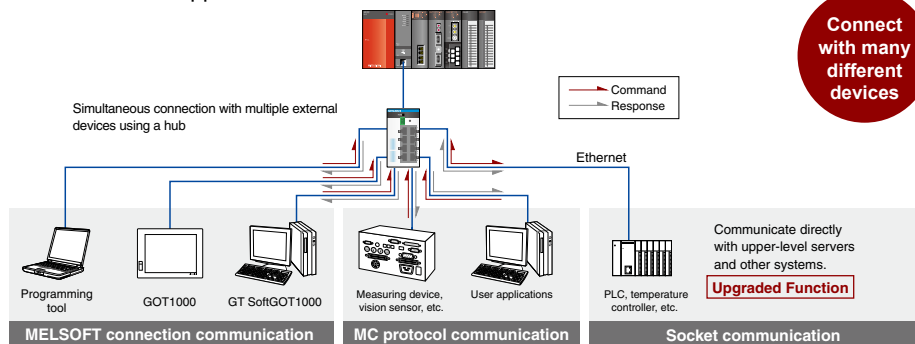
When multiple CPUs are connected via Ethernet hub, GX Developer or GX Works2 can search for and display a list of all connected built-in Ethernet CPUs. This allows the user to quickly and easily find the correct station even if the IP address is unknown. Then programming and maintenance functions can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

CPUs found by the search can be identified by their label and comment.



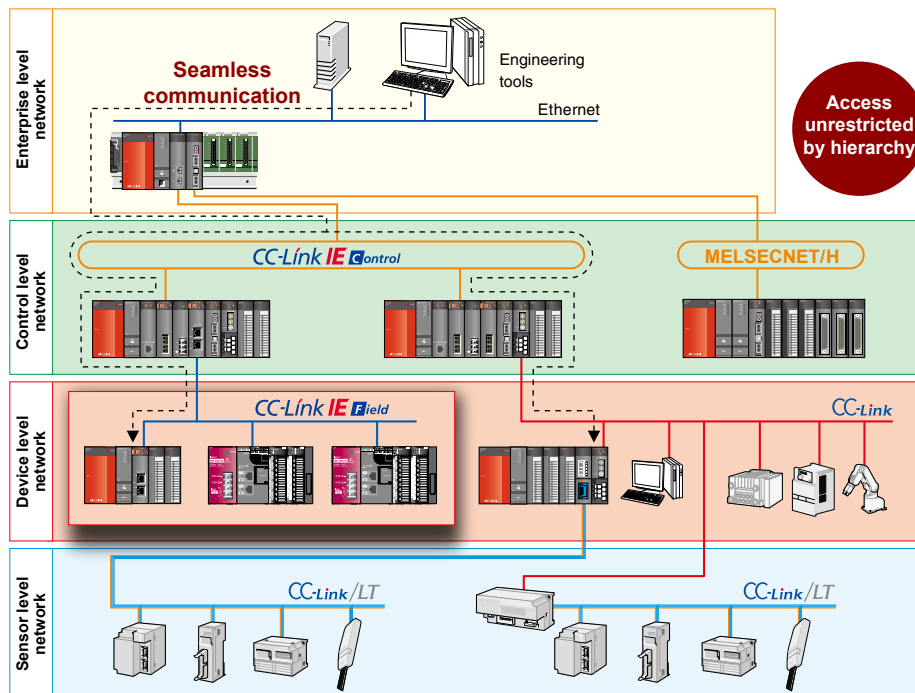
■ A wide range of connection possibilities

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



■ Seamless communication across all layers

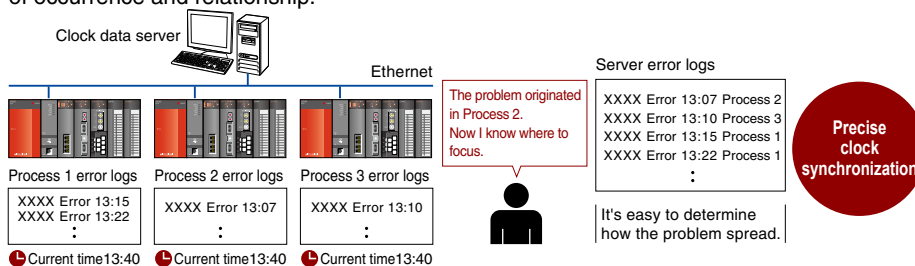
The new Universal model CPUs support a multitude of networking technologies including the high-speed, high-capacity CC-Link IE Controller Network and CC-Link IE Field Network. Along with MELSECNET/H, Ethernet, and CC-Link, these networks may be accessed seamlessly beyond network type or hierarchy. Each 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.



■ Always provide accurate clock data

Using the SNTP* clock synchronization function, programmable controller CPU clock data is automatically updated at regular intervals to maintain a very high level of accuracy. 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.

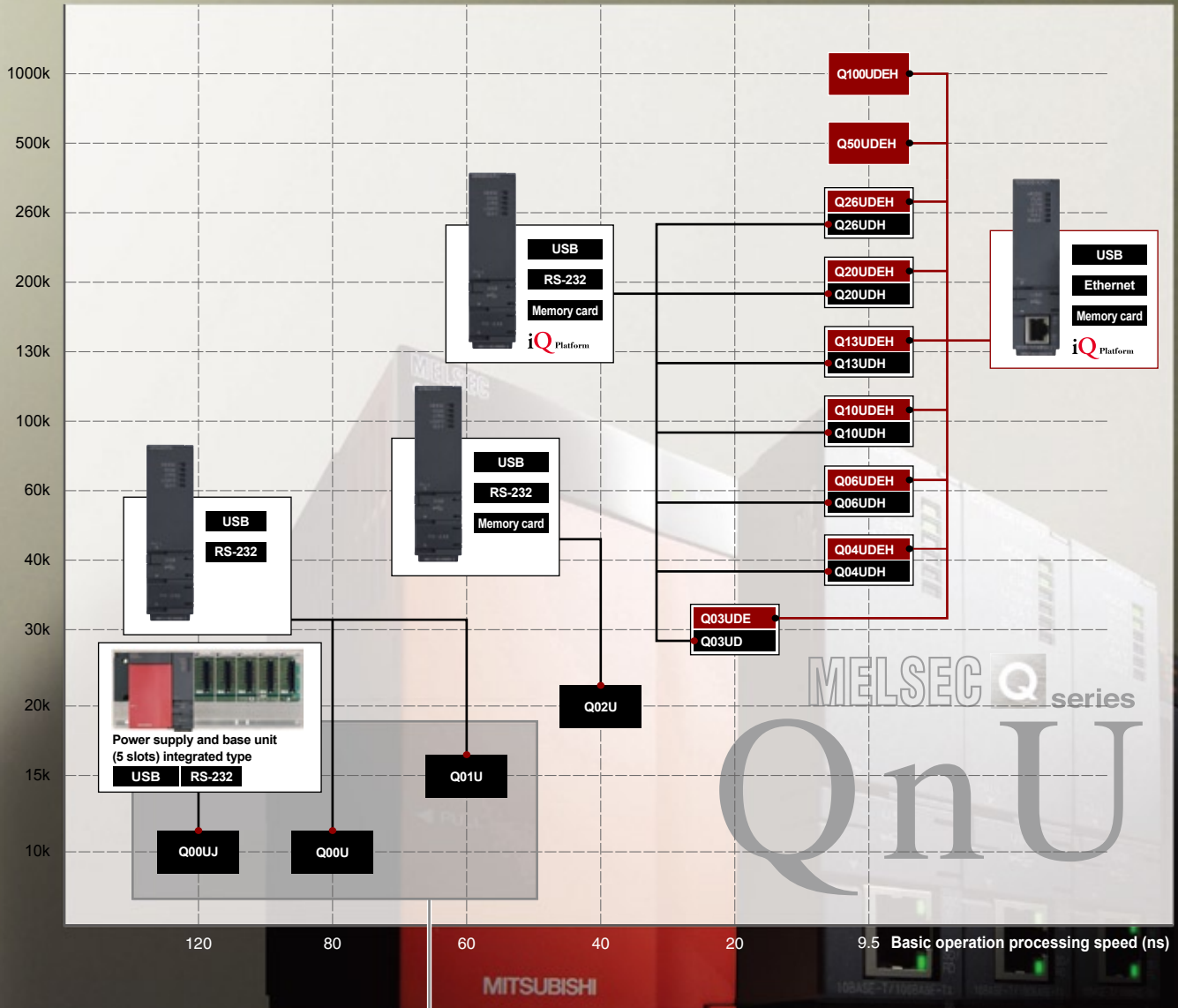
* SNTP: Simple Network Time Protocol



The expanded CPU lineup now includes low and very high memory capacities

The wide variety of QnU compatible products is sure to meet any need

Program capacity (step)



Improved performance

Compared to the previous generation of basic model QCPU, the performance specifications have been generously increased.

Support for multiple programs

The new Universal small-capacity type CPUs support up to 32 programs. Thanks to common architecture and instructions, changing PLC types between Universal series modules is easy.

USB connectivity

All Universal series include a USB port. This means that even when the RS-232 port is occupied by a peripheral such as a display device, engineering tools can be connected via the USB port.

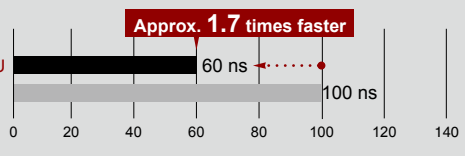


Small-capacity type CPUs

Universal model **NEW** Q01UCPU

Basic model Q01CPU

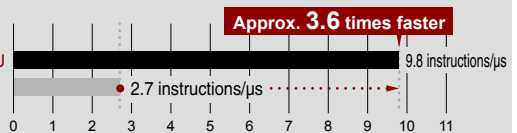
Basic operation processing speed (LD) [ns]



Universal model **NEW** Q01UCPU

Basic model Q01CPU

PC MIX value [instruction/μs]*

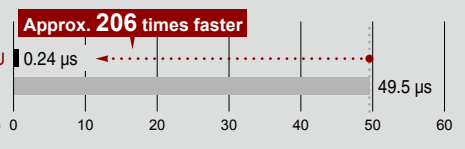


* PC MIX value is the average number of instructions (basic instructions, data processing instructions, etc.) that can be executed in 1 ms. A larger value indicates a higher processing speed.

Universal model **NEW** Q01UCPU

Basic model Q01CPU

Floating point addition (single precision) instruction processing speed [μs]



■ A selection of CPUs to fit any application

Two new ultra-large capacity type CPUs (500 k steps, and 1000 k steps) have been added to the lineup. Systems that previously required multiple CPUs can now fit in a single CPU, saving cost, energy, and space.

- In addition to the standard USB port (included in every CPU), Ethernet and RS-232 equipped CPU types are available. (See page 7.)
- With a CPU lineup including program memory ranging from 10 to 1000 k steps, practically any program size requirement can be met.



■ Expanded instruction set provides simplified programming

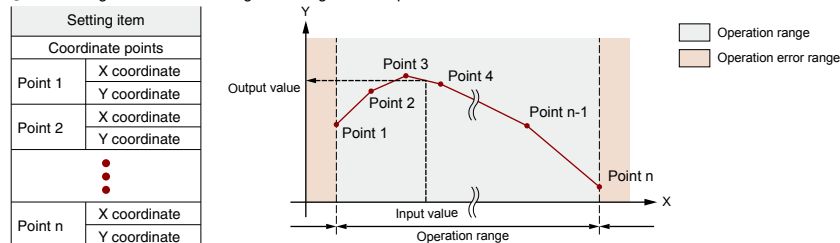
Convenient instructions such as the scaling instruction, exponentiation instruction, and rising/falling pulse contact instruction (closed contact) have been added. Programming that used to require a complicated process is now simple, thereby reducing the time required for development.



[Scaling instruction]

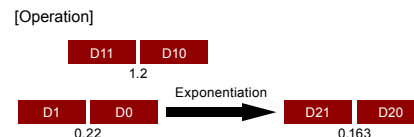
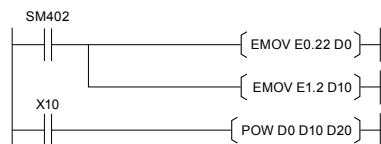
Create custom scaling profiles using an X/Y point table. The scaling instruction then automatically calculates intermediate points to convert an input value to the desired output level.

◎The scaling conversion is configured using X/Y data points



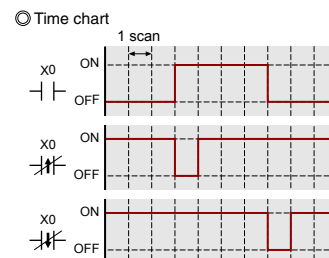
[Exponentiation instruction]

Perform exponentiation on real, 32-bit floating-point numbers. For example, the result of 0.22 raised to the 1.2 power is stored in D20 and 21.



[Leading and trailing edge pulse, closed contacts]

Previously, multiple instructions were required to create the same logic as a leading or trailing edge pulse, closed contact. Now these instructions are available for easy, direct programming.



◎Added instructions

Category	Instruction	Symbol
Contact instruction	Pulse operation start of closed contact	LDPI, LDFI
	Pulse series connection of closed contact	ANDPI, ANDFI
	Pulse parallel connection of closed contact	ORPI, ORFI
Shift instruction	n-bit right/left shift of n-bit data	SFTBR, SFTBL
Data processing instruction	Average value calculation	MEAN, DMEAN
String processing instruction	String insertion	STRINS
	String deletion	STRDEL
Special function instruction	Floating-point exponentiation operation	POW, POWD
	Floating-point common logarithm operation	LOG10, LOG10D
Data control instruction	Scaling (coordinate by point data)	SCL, DSCL
	Scaling (coordinate by X/Y data)	SCL2, DSCL2
Clock instruction	Date comparison	DT=, DT<>, DT>, DT<=, DT<, DT>=
	Time comparison	TM=, TM<>, TM>, TM<=, TM<, TM>=

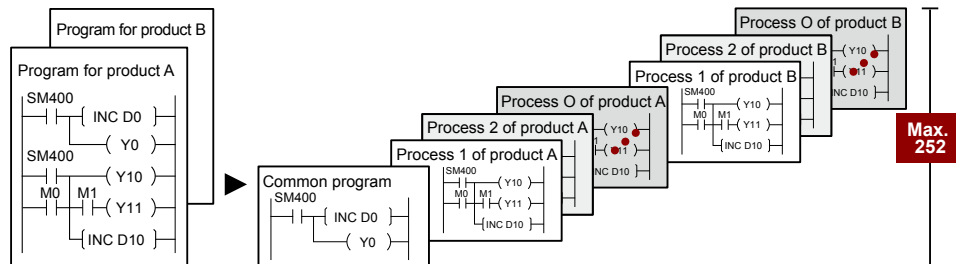
Compatible models: Q00UJ, Q00U, Q01U, Q02U, Q03U, Q04U, Q06U, Q10U, Q13U, Q20U, Q26U, Q50U, Q100U



More User Friendly

■ Structure programs into individual routines

The number of programs that can be used has been increased to a maximum of 252. This allows detailed program management by product, process, etc. and facilitates structuring programs into individual routines. Programs organized in this way can be readily debugged, monitored, and reused. Also, the standard ROM capacity has been expanded to a maximum of 16 MB to enable the storage of function blocks, label information, and device comments.



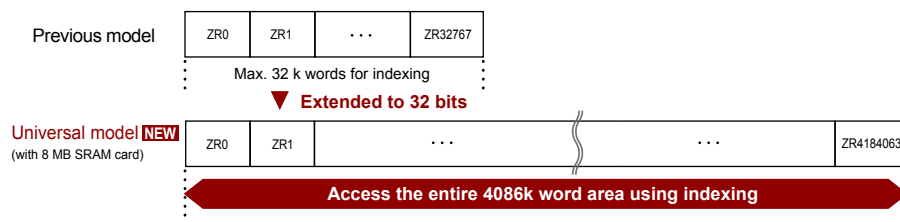
CPU		Q00UJ	Q00U	Q01U	Q02U	Q03UDE	Q04UDEH	Q06UDEH	Q10UDEH	Q13UDEH	Q20UDEH	Q26UDEH	Q50UDEH	Q100UDEH
Program memory	Program capacity	10 k steps		15 k steps	20 k steps	30 k steps	40 k steps	60 k steps	100 k steps	130 k steps	200 k steps	260 k steps	500 k steps	1000 k steps
	No. of programs	32			64	124						252		
Standard ROM capacity (Flash ROM)		256 KB	512 KB			1 MB		2 MB		4 MB		8 MB	16 MB	

■ Process large volumes of data at high speed

The standard RAM capacity has been increased to make more space for file registers. This allows larger amounts of production and quality data to be stored. With an 8 MB SRAM, a maximum of 4086 k words (about 4 times more than the previous model) can be used for file registers. In addition, the index register has been extended to 32 bits to allow programming beyond 32 k words and enabling use of the entire file register area by indexing*. To perform operations on structured (sequential) data efficiently, addressing using indexing is essential. The Index register processing speed has been dramatically improved to help to shorten scan times. This is especially true where indexing is used heavily, such as in FOR, NEXT loops.



* Not available for Q00UJCPU



©Standard RAM capacity (file register capacity)

Q00UJ	Q00U	Q01U	Q02U	Q03UDE	Q04UDEH	Q06UDEH	Q10UDEH	Q13UDEH	Q20UDEH	Q26UDEH	Q50UDEH	Q100UDEH
-	128 KB (64 k words)		192 KB (96 k words)	256 KB (128 k words)	768 KB (384 k words)	1024 KB (512 k words)		1280 KB (640 k words)		1536 KB (768 k words)	1792 KB (896 k words)	

©Memory card (SRAM)

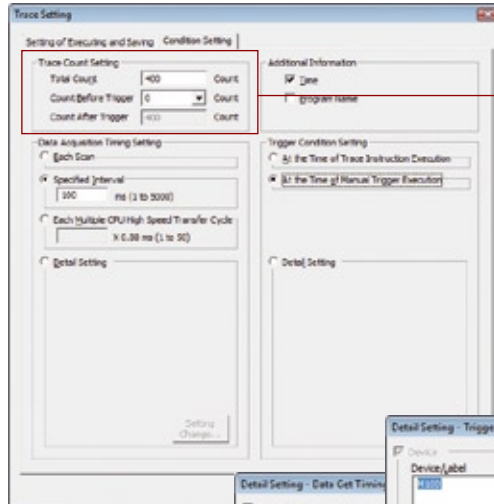
Model	Q2MEM-1MBS	Q2MEM-2MBS	Q3MEM-4MBS	Q3MEM-8MBS
Capacity	1 MB	2 MB	4 MB	8 MB
File register capacity*	505 k words	1017 k words	2039 k words	4086 k words

* Maximum capacity when the memory card is used as file register. Memory card cannot be used for Q00UJ, Q00U, and Q01UCPU.

■ Save valuable time using the sampling trace function

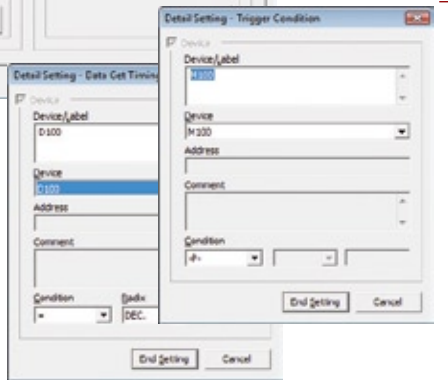
The start-up and commissioning time of new systems can be shortened by quickly verifying operation. The sampling trace function is also very useful for troubleshooting and debugging operations, where it can help to quickly understand sequence of events. In Multi-CPU systems, it is possible to confirm the timing and transfer of data between CPUs. Using GX Developer or GX Works2, the collected data is shown in an easy-to-understand chart and where word devices are specified, the change in value over time can be seen clearly using a trend graph.

Trace data collection settings



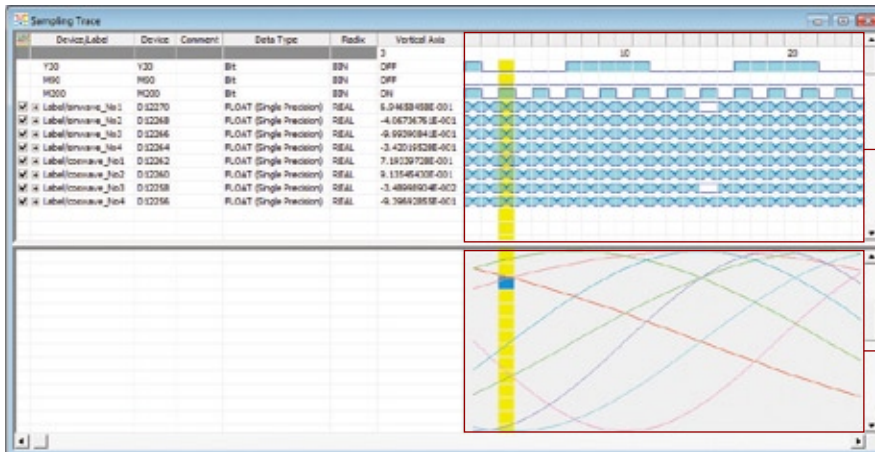
Configuring data collection is simple

Configure how much data to capture



Configure when to capture the data

Sampling Trace window: example results



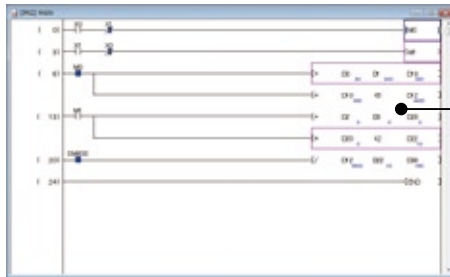
Chart

Trend graph

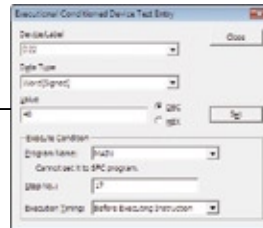
Compatible models: Q00UJ Q00U Q01U Q02U Q03U Q04U Q06U Q10U Q13U Q20U Q26U Q50U Q100U

■ 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.

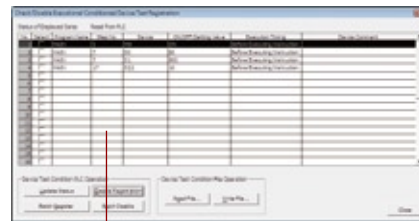


Devices that have been added to the executorial conditioned device test are highlighted by a pink box for easy identification.



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.

Compatible models: Q00UJ, Q00U, Q01U, Q02U, Q03U, Q04U, Q06U, Q10U, Q13U, Q20U, Q26U, Q50U, Q100U

■ 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.

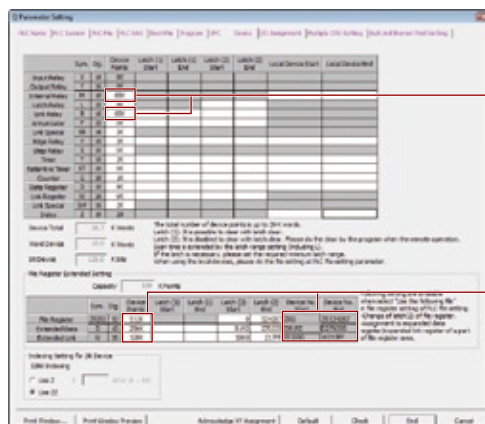
Extended device range

Compatible models: Q00UJ, Q00U, Q01U, Q02U, Q03U, Q04U, Q06U, Q10U, Q13U, Q20U, Q26U, Q50U, Q100U

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

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.

Compatible models: Q00UJ, Q00U, Q01U, Q02U, Q03U, Q04U, Q06U, Q10U, Q13U, Q20U, Q26U, Q50U, Q100U



[Extended range of bit devices]
Internal relays (M) and link relays (B) can be assigned up to 60 k points.

[File Register Extended Setting]
For example, the 896 k points of word devices in the standard ROM area of a Q100UDEHCPU can be divided as follows.

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

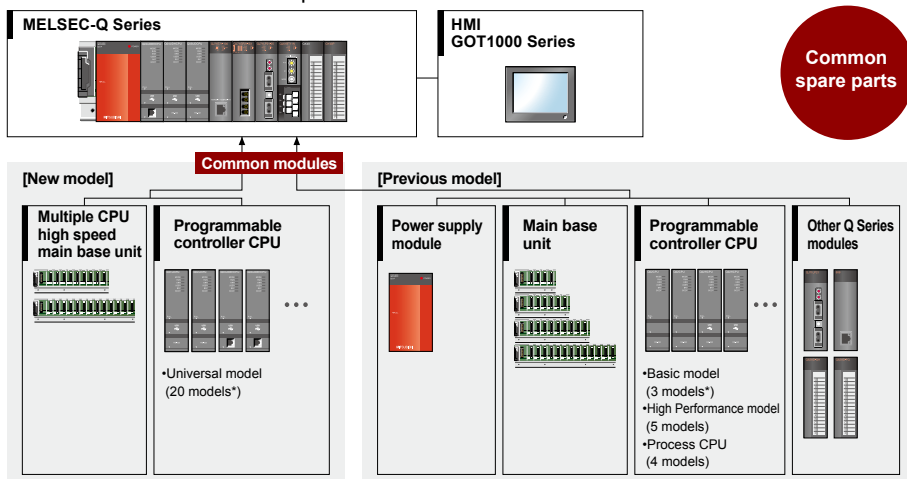
Easy Maintenance



■ Fully compatible with standard Q Series

[Use existing Q Series modules]

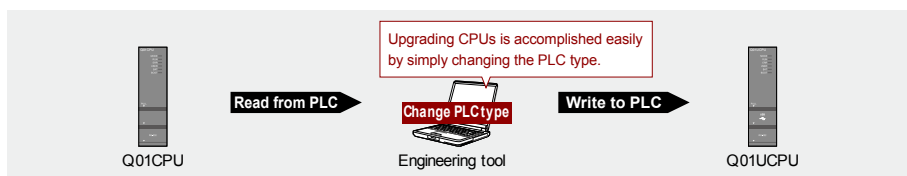
Q Series standard and high performance CPUs can be directly upgraded to QnU. Universal CPUs without any other modification to the system. By creating new systems using QnU CPUs, all other modules will still be common to existing Q Series systems and maintenance costs can be kept to a minimum.



*The Q00UCPU and Q00JCPU are all-in-one type, power supply, 5-slot base unit, and CPU integrated units.

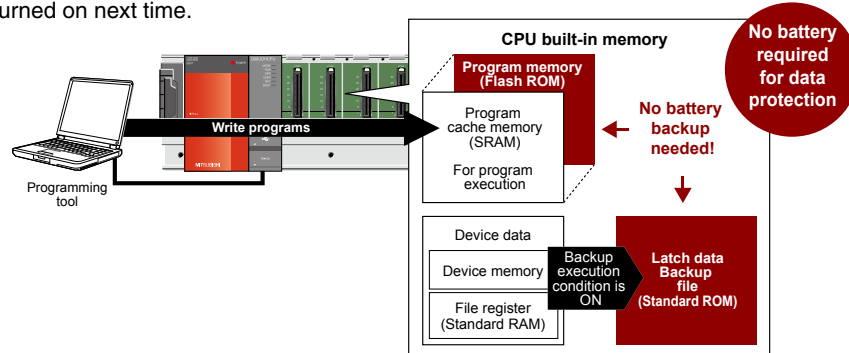
[Use existing Q Series programs]

By using the "Change PLC Type..." feature in GX Developer or GX Works2, existing Q series programs can be quickly and automatically converted to work with Universal series CPUs.



■ 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.



Compatible models: Q00UJ Q00U Q01U Q02U Q03U Q04U Q06U Q10U Q13U Q20U Q26U Q50U Q100U

■ Shorten system down recovery time

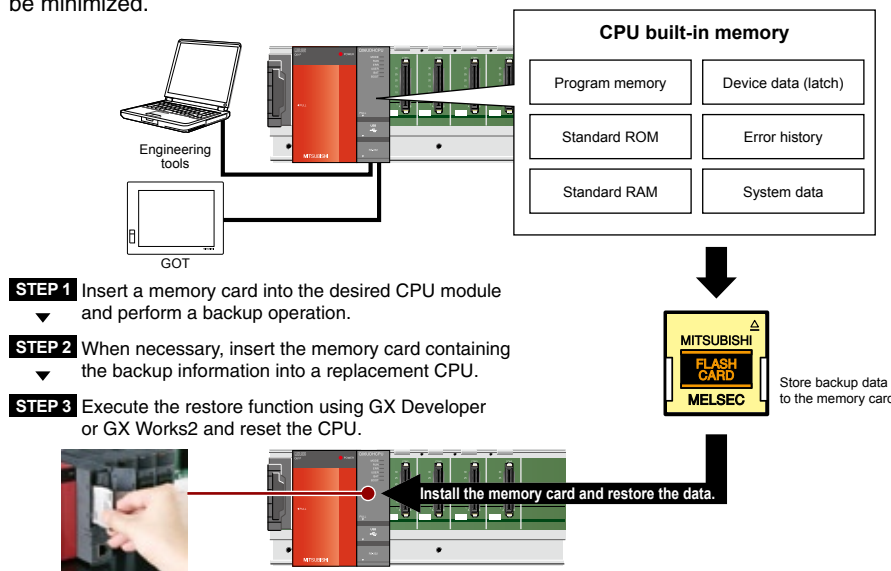
[CPU module change function]

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.

Create full backups of all CPU data



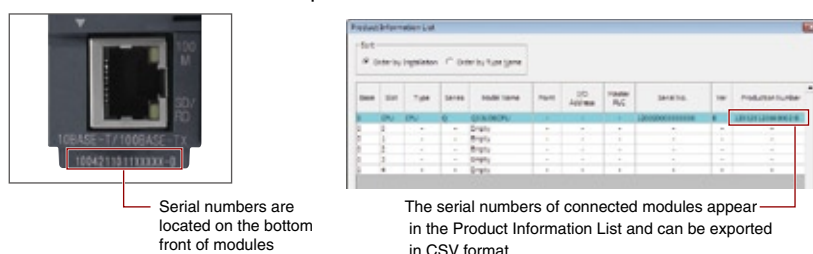
Compatible models: Q00UJ Q00U Q01U Q02U Q03U Q04U Q06U Q10U Q13U Q20U Q26U Q50U Q100U

■ 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.

Easily check serial numbers





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 lineup is ready to meet and exceed application requirements. Combine up to 4 CPUs on the same base unit to take advantage of high speed inter-CPU bus communication and construct the optimal system to meet to the desired scale and purpose. Create a system using redundant CPUs to increase reliability or meet special requirements.

CPU Lineup

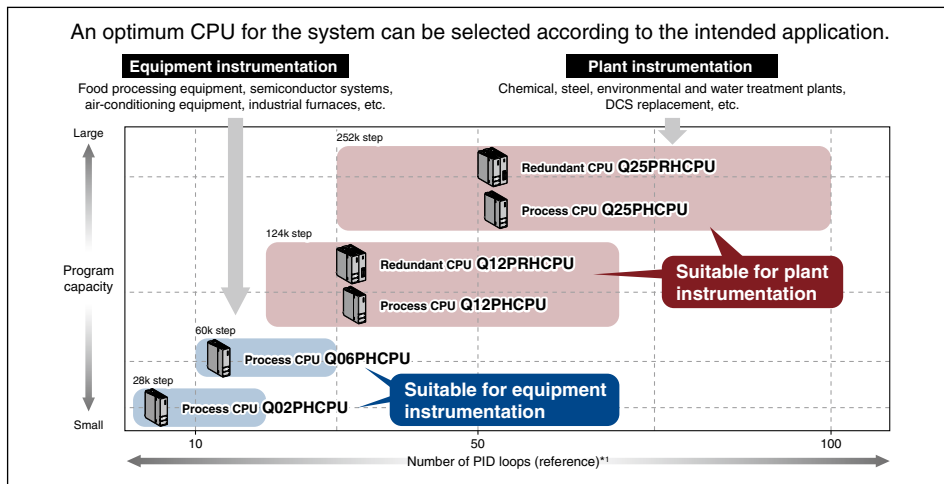
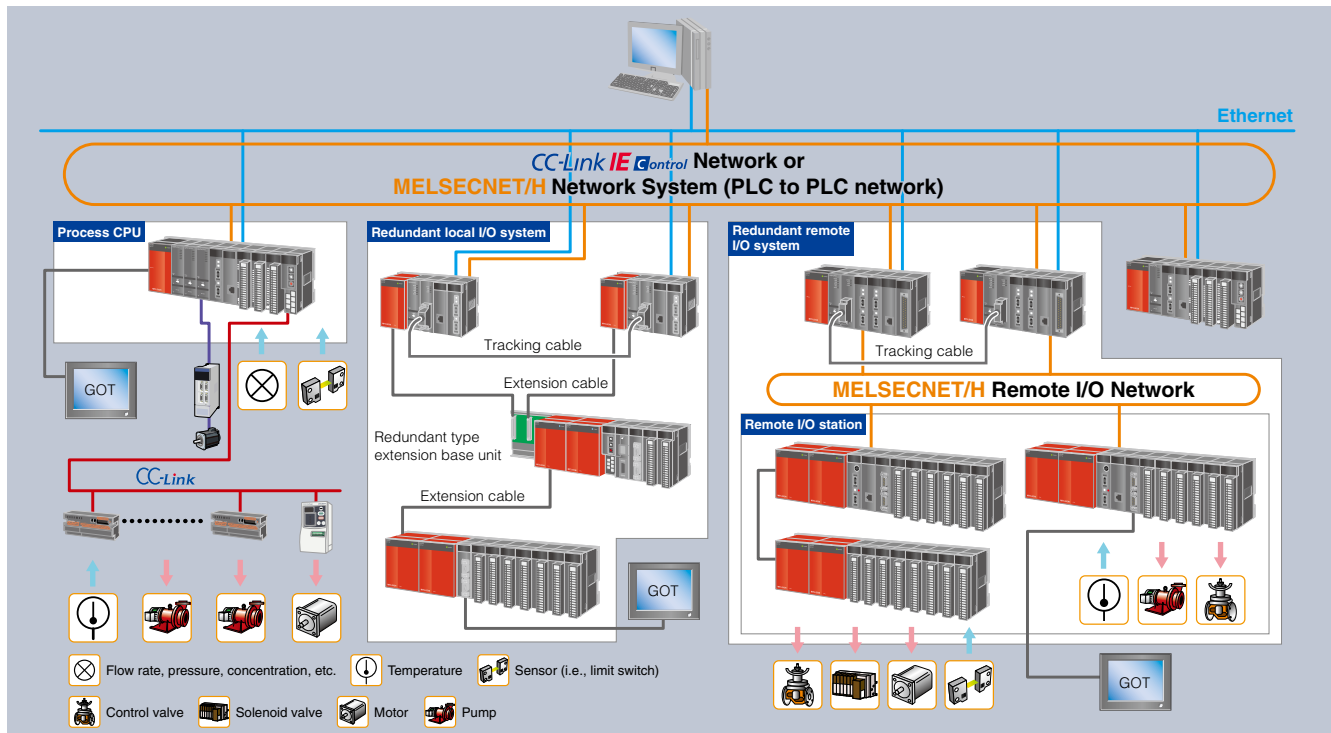
Process CPU·Redundant CPU

●Process CPUQ□PHCPU

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.

●Redundant CPUQ□PRHCPU

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.



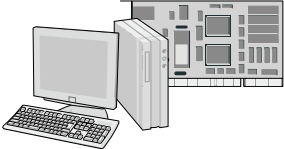

For details, refer to the "MELSEC Process Control/Redundant System" catalog.

*1 When programs other than the loop control program are large, the number of PID loops may not be secured. For more information, refer to PX Developer Version 1 Programming Manual or Instrumentation Technical Guide.

C Controller CPU

●C Controller CPUQ12DCCPU-V, Q06CCPU-V

C Control CPUs are an open invitation to C language programmers to take control of an application using their existing programming knowledge and tap into the power of MELSEC hardware. By utilizing MELSEC Q series, a stable, long term supply of hardware is assured. Experience the advantages of a pre-installed real-time operating system, VxWorks®, a large selection of Q series hardware including fully developed driver libraries, multiple-CPU high-speed communication with fully developed function libraries, and tight integration with highly advanced, precision servo and motion controllers.

Issues regarding the use of microcomputer/ personal computer environment	Advantages of using a C Control in the MELSEC environment
	
Previous hardware solution	MELSEC iQ Platform solution
<ul style="list-style-type: none"> -Unstable product supply due to discontinued board production -Increasing maintenance and management cost 	<ul style="list-style-type: none"> -Stable product supply -Lower maintenance and management cost allows assets to be focused on development
<div style="background-color: #800000; color: white; padding: 2px; display: inline-block;">Short product life cycle</div> <div style="background-color: #800000; color: white; padding: 2px; display: inline-block; margin-left: 20px;">Retirement of driver developer</div>	<div style="background-color: #800000; color: white; padding: 2px; display: inline-block;">Highly reliable, long-term stable supply</div> <div style="background-color: #800000; color: white; padding: 2px; display: inline-block; margin-left: 20px;">Total solution provided by a large number of I/Os and seamless network access</div>
<div style="background-color: #800000; color: white; padding: 2px; display: inline-block;">Large equipment</div>	<div style="background-color: #800000; color: white; padding: 2px; display: inline-block;">Significantly reduced maintenance cost</div> <div style="background-color: #800000; color: white; padding: 2px; display: inline-block; margin-left: 20px;">Reduced equipment size</div>
<div style="background-color: #800000; color: white; padding: 2px; display: inline-block;">Personal computers require a large amount of maintenance</div> <div style="background-color: #800000; color: white; padding: 2px; display: inline-block; margin-left: 20px;">Discontinued production of boards/chips</div>	

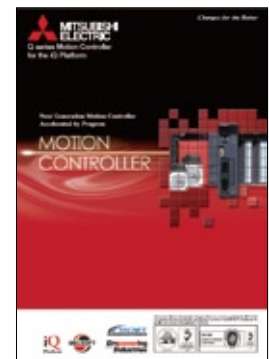
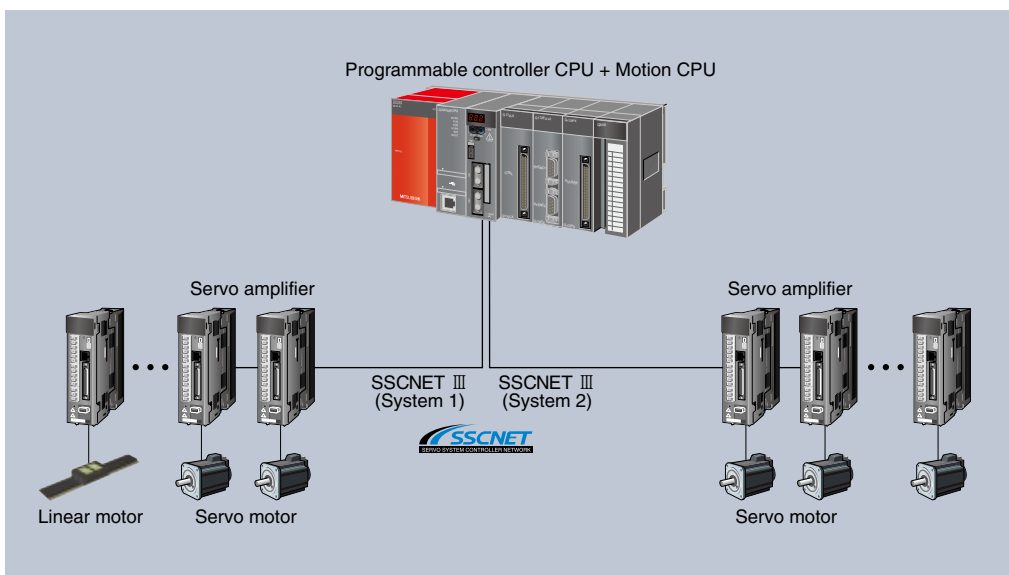


For details, refer to the "C Controller" catalog.

Motion CPU

●Motion CPUQ173DCPU, Q172DCPU

Each Mitsubishi Electric motion controller provides 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. By taking advantage of iQ platform integration, superior performance and large cost savings can be realized, especially when complex wiring is eliminated thanks to the "daisy-chain" connection of Mitsubishi intelligent digital servos.



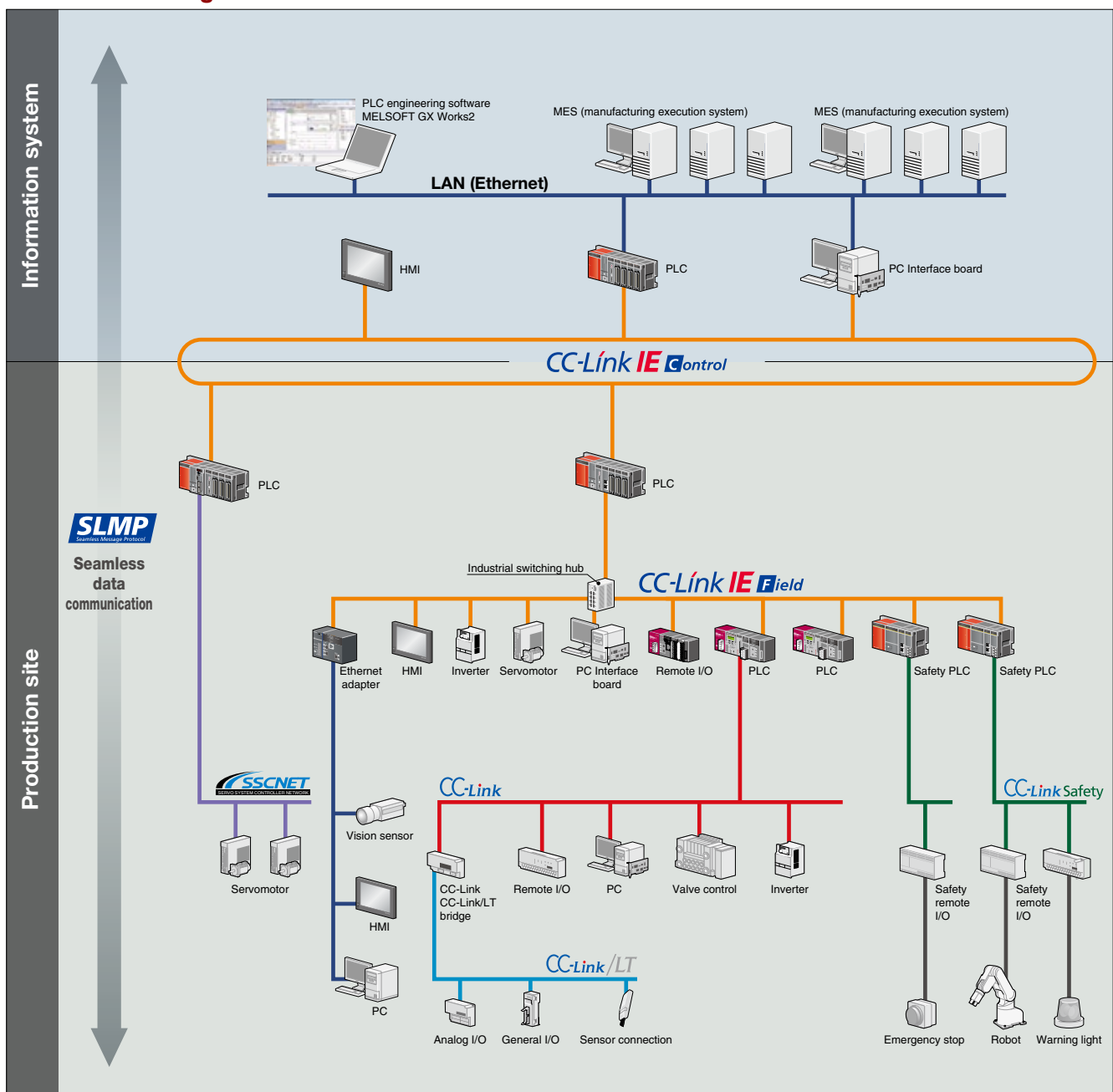


Network

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

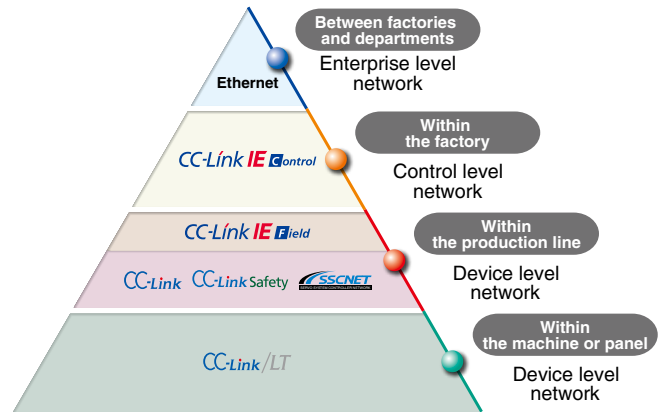
Today there is an increasing demand from production facilities for high speed control, effective management of data, flexible wiring, easy parameter settings, and predictive maintenance. To answer these demands, Mitsubishi Electric has teamed up with the CC-Link Partner Association to provide reliable, 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.



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 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

SERVO SYSTEM CONTROLLER NETWORK

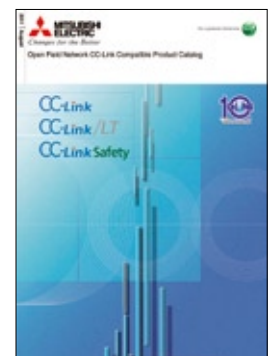
SSCNET is flexibly applicable for long-distance wiring. This servo system controller network realizes high-speed, high-performance by adopting optical fiber.

- Communication speed: 50Mbps
- Communication cycle: 0.44ms/0.88ms
- Connect up to 16 axes per system
- Maximum overall distance: 800m

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

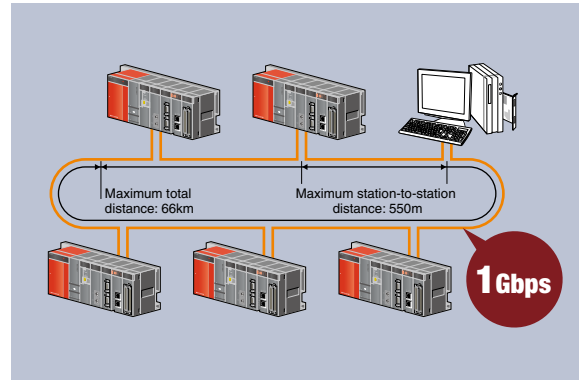
●CC-Link IE Controller Network module

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

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

Features

- Commercially available Ethernet components can be used for significant cost savings over alternative networks.
- Deterministic, reliable performance helps to reduce takt 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	

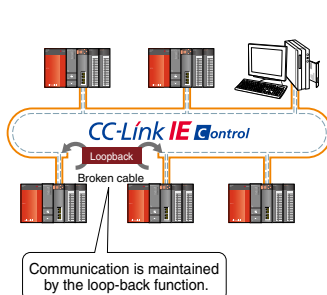
*1 When the control station is a Universal model QCPU.

*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.

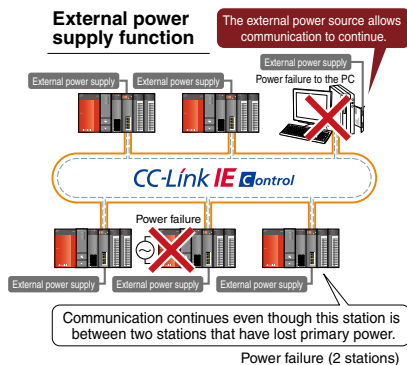
Designed to continue functioning even in the worst possible scenarios

- 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.

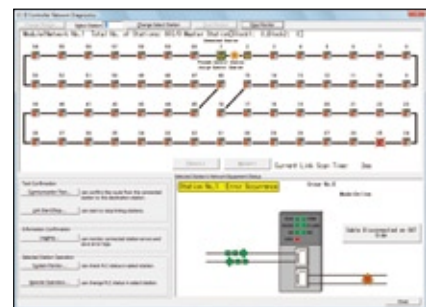
Loopback function



External power supply function



Visual display of network connection status



View the network connection status of entire system to identify problems at a glance. The cause of problems can be quickly identified and suggested remedies implemented to minimize down time.

Connect to remote I/O stations and other programmable controllers for high-speed distributed control with advanced functionality

●CC-Link IE Field Network moduleQJ71GF11-T2

Features

- 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.

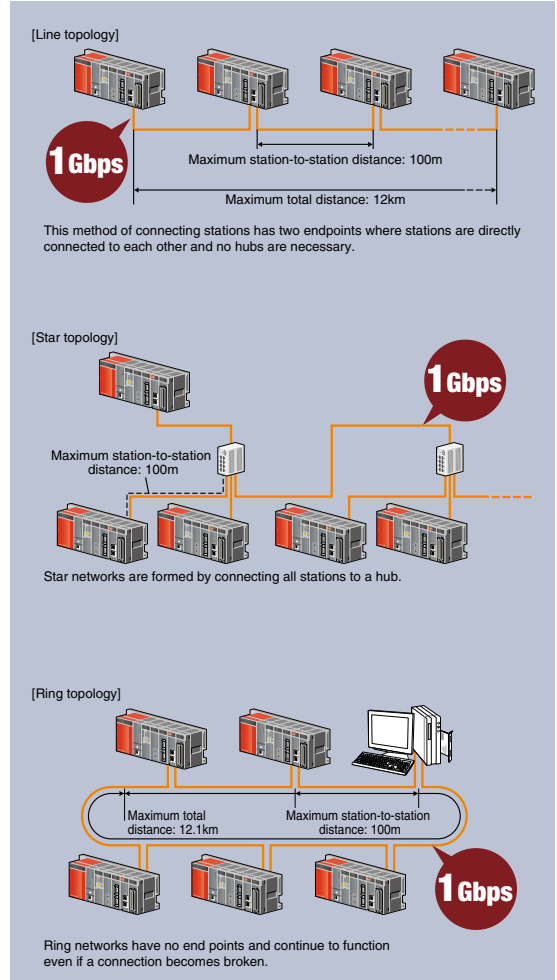


■Performance Specifications

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.

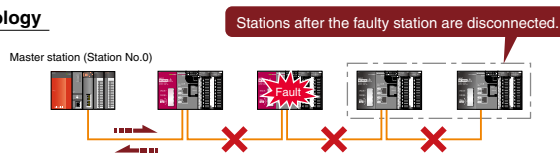
*2 Ring networks may not be mixed with line or star networks. QJ71GF11-T2 network modules whose first five serial number digits are 12072 or later are required for ring networks. Additionally, GX Works2 version 1.34L or later is required.



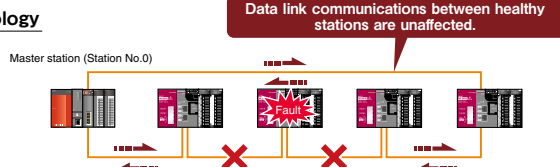
Easy diagnosis functions

- 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.

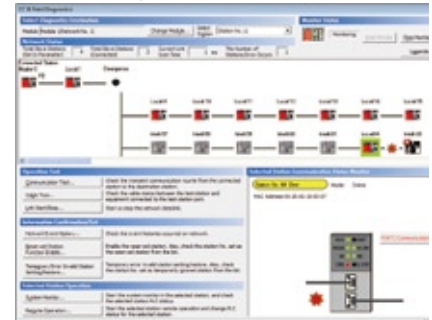
Line topology



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.

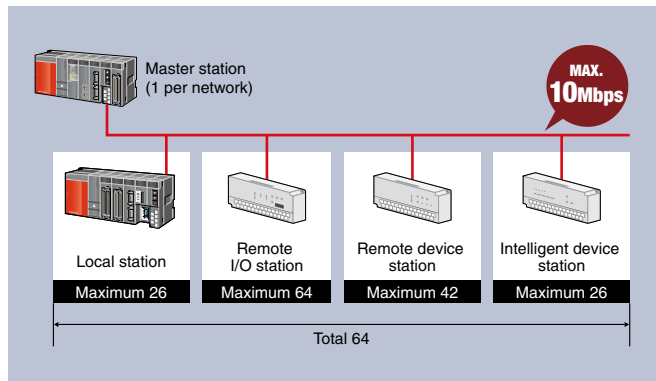
*1 Not supported by GX Developer.

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

●CC-Link network moduleQJ61BT11N

Features

- 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

Features

- 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

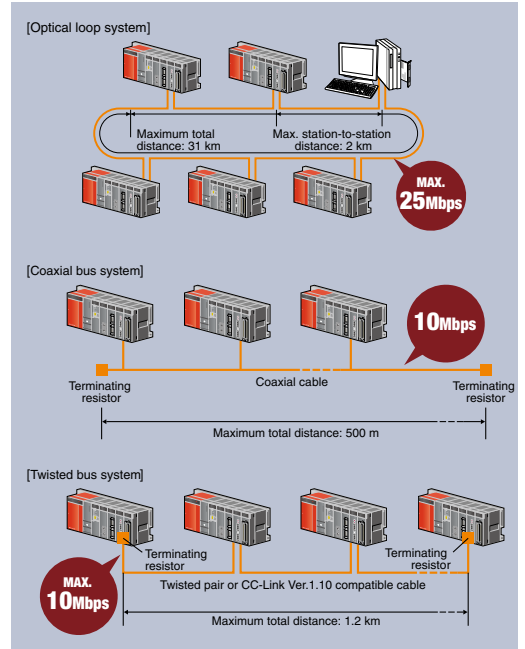
Optical loop type.... **QJ71LP21-25/QJ71LP21S-25/QJ71LP21G/
QJ72LP25-25/QJ72LP25G** (Remote I/O station)

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

Twisted bus type **QJ71NT11B**

Features

- 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

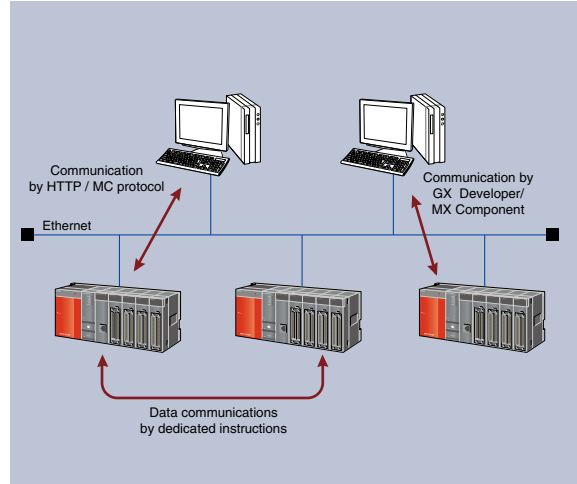
Item		Specification					
Network configurations		Optical loop system		Coaxial bus system		Twisted bus system	
Model		QJ71LP21(S)-25 QJ72LP25-25	QJ71LP21G QJ72LP25G	QJ71BR11 QJ72BR15	QJ71NT11B		
Cable		Fiber optic (SI)	Fiber optic (GI)	Coaxial (3C-2V)	Coaxial (5C-2V)	Twisted pair	CC-Link Ver.1.10-compatible 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			16384 points	
	Maximum number of link points per station	•MELSECNET/H mode $\{(LY + LB) / 8 + (2 \times LW)\} \leq 2000$ bytes •MELSECNET/H Extended mode $\{(LY + LB) / 8 + (2 \times LW)\} \leq 3584$ 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, 600m/312kbps, 400m/625kbps, 200m/1.25Mbps	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**

Features

- 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.

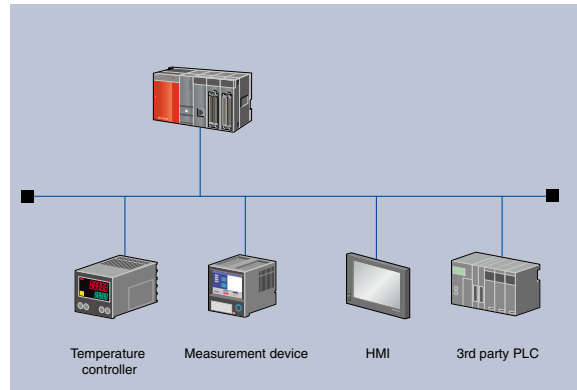


Connect with a large variety of devices using the MODBUS® interface module.

- **MODBUS® Interface Module**
- RS-232 1ch, RS-422/485 1ch..... **QJ71MB91**
- 10BASE-T/100BASE-TX..... **QJ71MT91**

Features

1. Using the master function, communicate with 3rd party MODBUS® compatible slave devices.
2. Slave mode is also supported, which allows communication with other MODBUS® masters such as 3rd party PLCs.
3. 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.
4. The QJ71MT91 module is able to operate using the master and slave functions simultaneously.

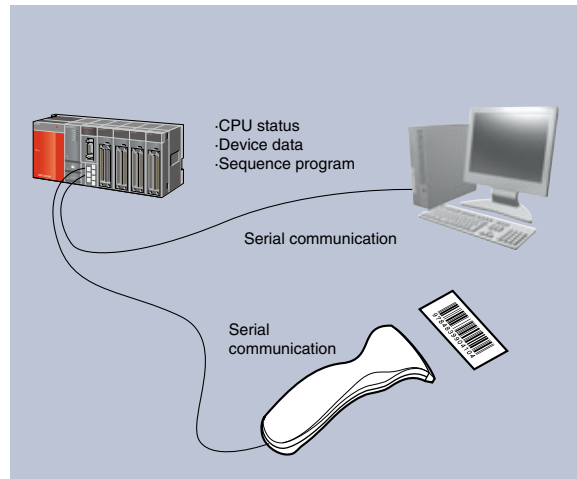


These highly flexible communications modules allow connection to practically any serial device

- **Serial communication module**
- RS-232 1ch, RS-422/485 1ch..... **QJ71C24N**
- RS-232 2ch..... **QJ71C24N-R2**
- RS422/485 2ch..... **QJ71C24N-R4**

Features

- 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 (personal computer, 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.

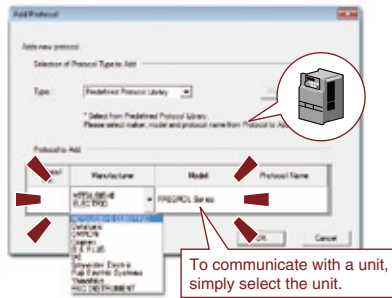




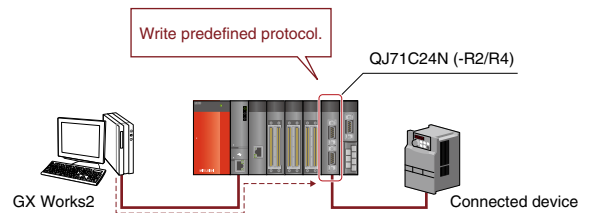
Easier to use through combination of serial communication module and GX Works2 (predefined protocol support function)

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.

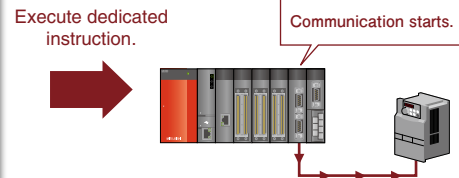
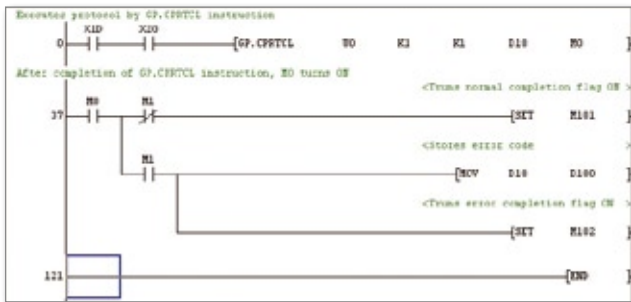


2. Write the predefined protocol to the module.
 Write the set predefined protocol to QJ71C24N(-R2/R4) module. Up to 128 protocols can be set in one module.



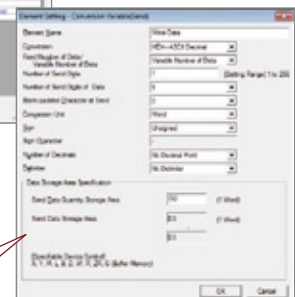
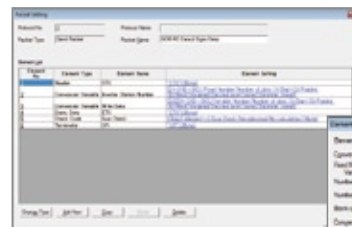
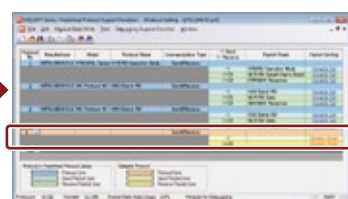
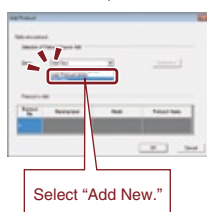
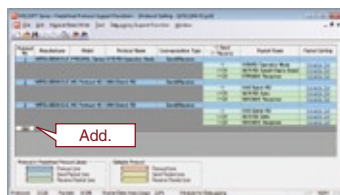
3. Execute the protocol with ladder program.

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.



The data can be edited as needed.

* 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

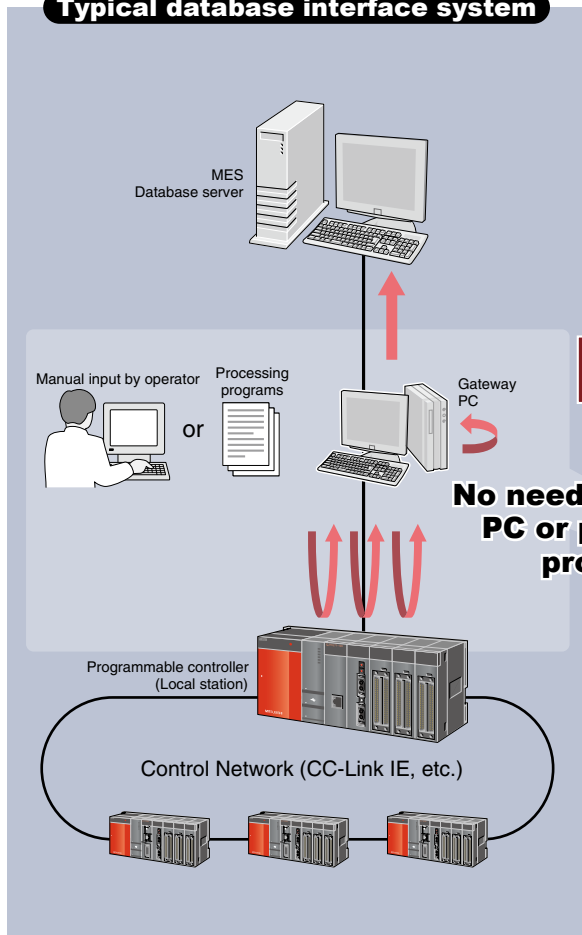
Features

- 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.

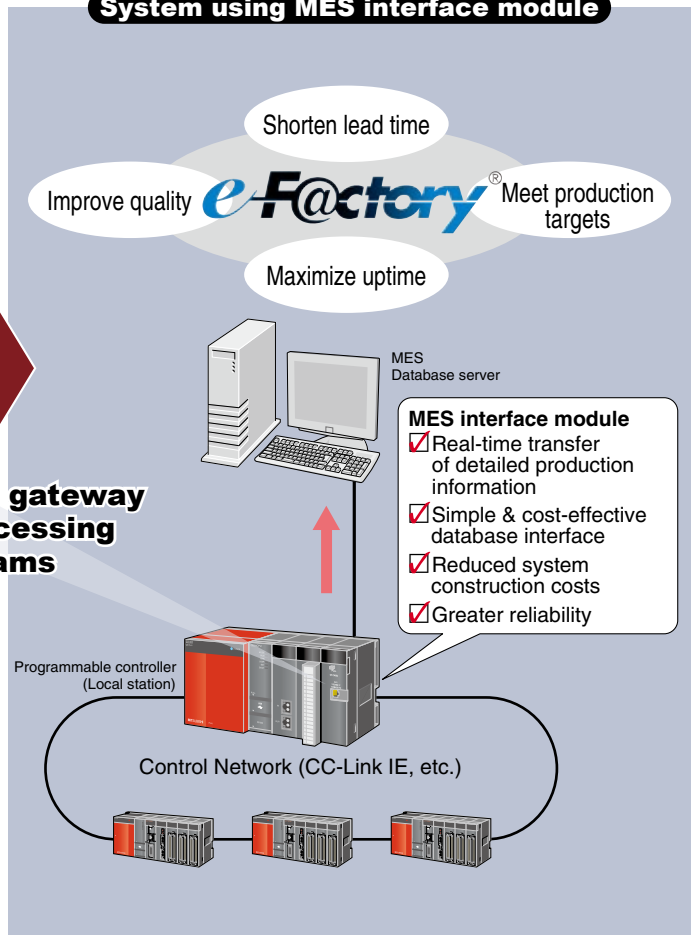
* MES (Manufacturing Execution System): A system that manages and controls production activities to optimize quality, production volume, delivery, costs, etc.

Typical database interface system



No need for gateway PC or processing programs

System using MES interface module



- 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

Features

1. [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.

2. [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.

3. 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.

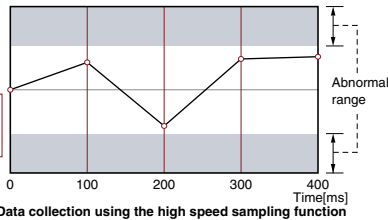
4. [Automatic generation of reports including graphs]

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

Generic sample data from personal computer or external device at 100 ms intervals

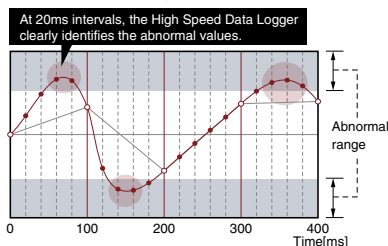
Traditional data logging methods are unable to detect the abnormal values.



Data collection using the high speed sampling function

The High Speed Data Logger Module is capable of sampling data at much higher resolutions to detect quickly changing values. (fastest down to 1ms)

Synchronize the sample rate to the scan time to reveal all values entering the sequence program.



At 20ms intervals, the High Speed Data Logger clearly identifies the abnormal values.

CPUs that support the high speed data sampling function

- Universal model QCPU Q03UD(E), Q04UD(E)H, Q06UD(E)H, Q10UD(E)H, Q13UD(E)H, Q20UD(E)H, Q26UD(E)H, Q50UDEH, Q100UDEH
- Serial No. In cases where the first five digits are 11012 or later.
- * The high speed data sampling function only supports the host control CPU. (Other stations are not supported via the network.)

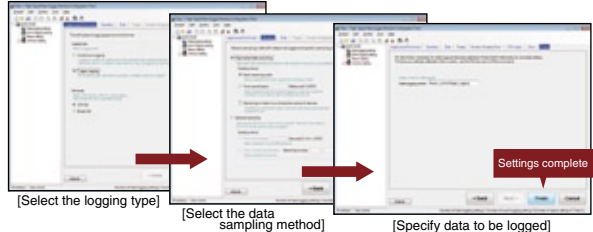
High Speed Data Logger Module tools

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.

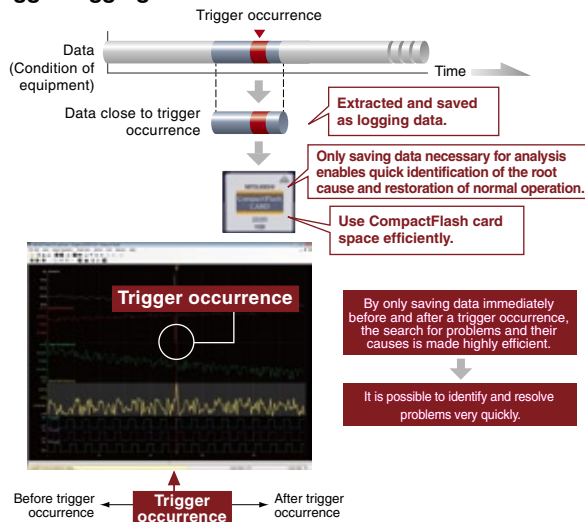
High Speed Data Logger Module Configuration Tool



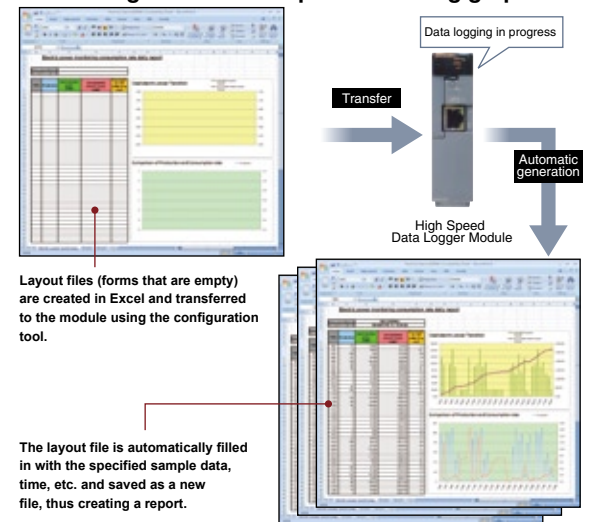
Even making sophisticated data collection rules is easy to do using the intuitive step-by-step configuration process.

* 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



Devices related to Ethernet and CC-Link IE Field

Industrial switching hub **CC-Link IE Field** **Ethernet**
 NZ2EHG-T8 / NZ2EHF-T8*1

Features

- NZ2EHG-T8 is compatible with transmission rates of 10 Mbps, 100 Mbps, and 1 Gbps.
- NZ2EHF-T8*1 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), and 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%.*2
- These hubs do not use cooling fans, and yet a wide ambient-temperature operating range is permissible (0 to 50°C).
- The various setting is possible by simple putting on and taking off DIN rail fixation mechanism.

*1 This model may not be connected directly to CC-Link IE Field Network (for 1 Gbps). An Ethernet adapter module NZ2GF-ETB is required. For direct use with 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.
 NZ2EHG-T8 and NZ2EHF-T8 have a rated input supply voltage of 12 to 24 VDC.

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.
 For details of the products, please refer to the manuals.



NZ2EHG-T8
(1Gbps)

NZ2EHF-T8
(100Mbps)

CC-Link IE Field Network Ethernet adapter module **CC-Link IE Field** **Ethernet**
 NZ2GF-ETB*1

Features

- Using Seamless Message Protocol (SLMP*2), 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 GX Works2 (Version 1.40S or later) is required when accessing a programmable controller CPU via Ethernet adapter module.
 *2 Seamless Message Protocol (SLMP) is a protocol for seamless communication which is provided by CC-Link Partner Association.



NZ2GF-ETB



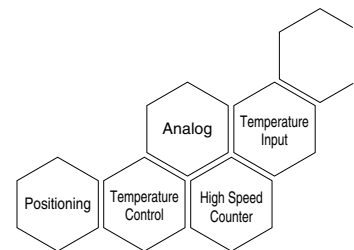
Intelligent Function Modules

Electronic intelligence for advanced control functions

Module Lineup

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 communication, temperature control, temperature input, standard 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 input/output 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/Source type	Sink type	Source type
7 points	–	–	–	–	QX48Y57 ^{*2}	–
8 points	QY18A	–	–	QY68A	–	–
16 points	QY10 QY10-TS	QY22	QY70	–	QY40P QY40P-TS QY50	QY80 QY80-TS
32 points	–	–	QY71	–	QY41P QH42P ^{*2} QX41Y41P ^{*2}	QY81P
64 points	–	–	–	–	QY42P	QY82P

*2 Composite input/output module, output specifications

● **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.

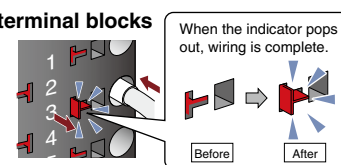
Common type	Input voltage	
	24 V DC	5 V DC
Positive	QX40H	QX70H
Negative	QX80H	QX90H

● **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	Current	Signal conditioning	Load cell	Temperature input		Voltage	Current
						Thermocouple	RTD		
1 ch	Yes	–	–	–	Q61LD	–	–	–	–
2 ch	Yes	–	–	Q62AD-DGH	–	–	–	Q62DA-FG	
	No	–	–	–	–	–	–	Q62DAN Q64AD2DA	
4 ch	Yes	Q64AD-GH		–	–	Q64TD Q64TDV-GH	Q64RD-G	–	–
	No	Q64AD Q64ADH SOON Q64AD2DA		–	–	–	Q64RD	Q64DAN	
6 ch	Yes	–	–	Q66AD-DG	–	–	–	Q66DA-G	
8 ch	Yes	Q68AD-G		–	–	Q68TD-G-H01 Q68TD-G-H02	Q68RD3-G	–	–
	No	Q68ADV	Q68ADI	–	–	–	–	Q68DAVN	Q68DAIN

Temperature Control Modules

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

Loop Control Module

Number of channels	Input			
	Voltage	Current	Thermocouple	RTD
2 ch	Q62HLC			

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 NEW	QD75D1N NEW	QD75MH1	QD75M1	–	–	–	–
2-axes	QD75P2N NEW	QD75D2N NEW	QD75MH2	QD75M2	–	–	–	–
3-axes	–	–	–	–	–	–	–	QD72P3C3
4-axes	QD75P4N NEW	QD75D4N NEW	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
2 ch	2-phase input	200 kpps	No	QD62, QD62E, QD65PD2			–
		500 kpps		–	–	–	QD62D
		4 Mpps		–	–	–	QD64D2
6 ch	2-phase input	200 kpps	No	QD63P6	–	–	QD65PD2
8 ch	1-phase input	30 kpps	Yes	QD60P8-G			–

Energy Measuring Module

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

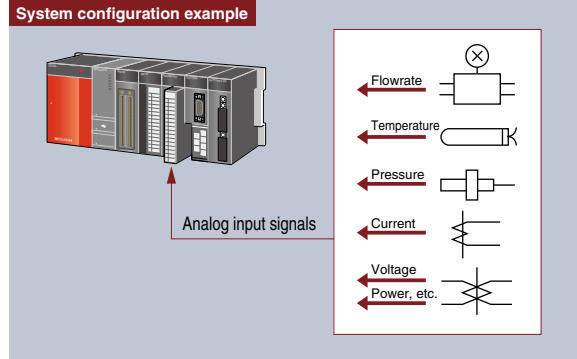
A wide range of application specific intelligent modules

A range of analog modules ideal for process control applications.

Isolated analog modules suitable for process control

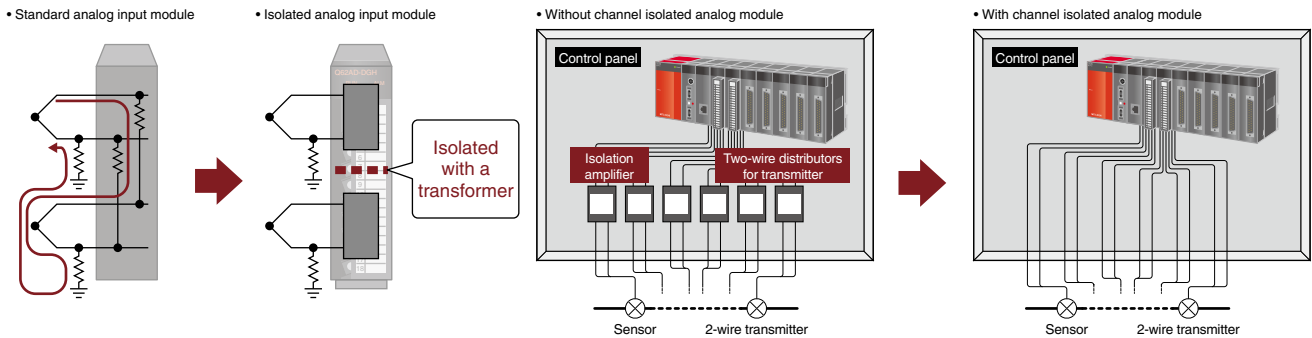
- Channel isolated high resolution analog-digital converter module **Q64AD-GH**
- Channel isolated high resolution analog-digital converter module (with signal conditioning function)..... **Q62AD-DGH**
- Channel isolated high resolution digital-analog converter module **Q62DA-FG**
- Channel isolated 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]

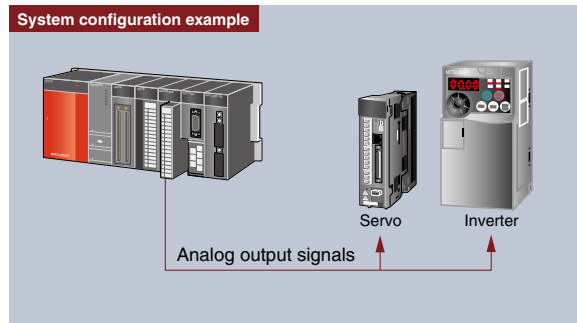
- Electric disturbances such as current and noise can be isolated.
- External signal converters are not required.



High conversion speed analog modules

- Analog-digital converter module..... **Q64ADH** SOON
Q68ADV, Q68ADI
- Digital-analog converter module..... **Q62DAN, Q64DAN, Q68DAVN, Q68DAIN**
- Analog-digital/Digital-analog converter module..... **Q64AD2DA**

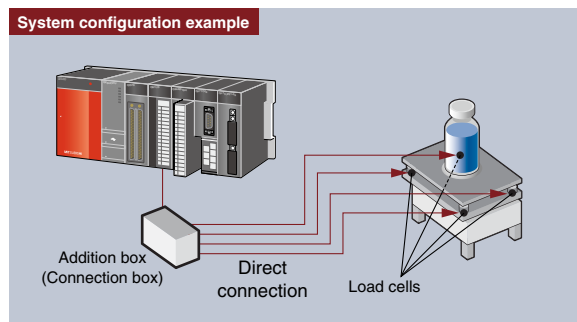
Many high-speed A/D and D/A conversion (analog) modules are available. These modules are feature packed to allow maximum flexibility when connecting to devices. Both speed and accuracy are great enough to control sensitive motion applications using servos or inverters.



Increase measurement accuracy and connect directly to the load cell addition box

- Load cell input module..... **Q61LD**

The need for a signal converter is eliminated when utilizing a direct connection to the load cell input module. The module achieves rock solid accuracy thanks to a steady data conversion speed that guarantees the accuracy of load cell measurements.





High accuracy temperature input modules

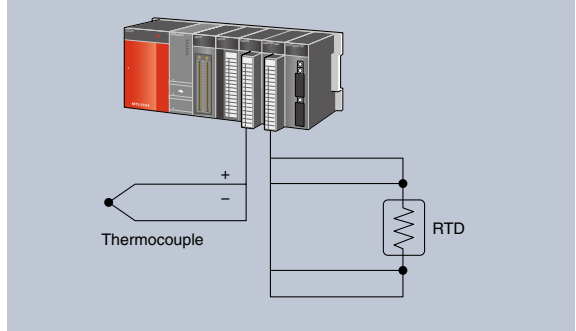
● Temperature input module

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 ^{NEW}, Q64TCRTBWN ^{NEW}**

Thermocouple input module..... **Q64TCTTN ^{NEW}, Q64TCTTBWN ^{NEW}**

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.

[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.

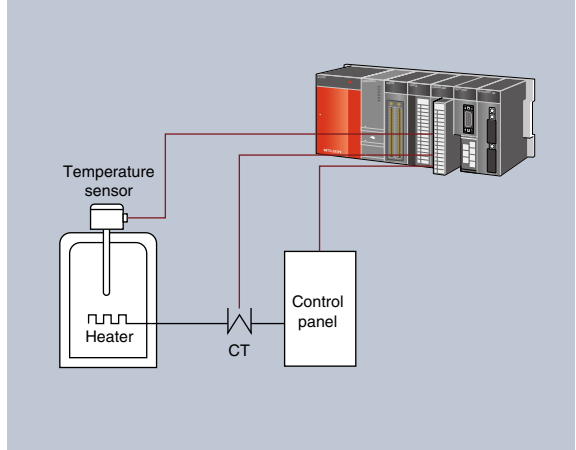
It prevents idling and is effective in saving energy and reducing running cost.

[Self-tuning function]

The PID constant is automatically adjusted during control.

The automatic tuning cost (time, materials and power) can be reduced.

System configuration example



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

● Loop control module..... **Q62HLC**

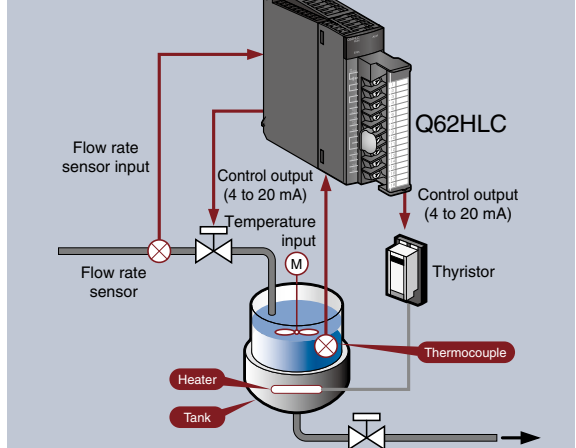
With its speed-proportional PID control format and 25 ms sampling cycle, the loop control module is well suited for high-precision, high-resolution thermocouple inputs, micro voltage inputs, voltage inputs, current inputs, and current outputs. It is also ideal for sudden temperature change control, pressure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



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

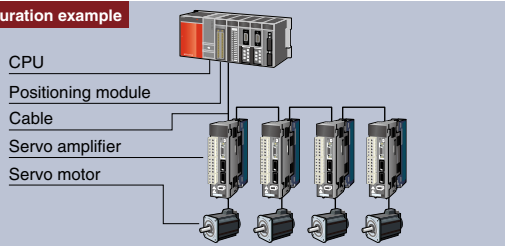
High-speed, accurate positioning control

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.

◎SSCNET III connection type.....QD75MH□

Using SSCNET III optical cables minimizes the required wiring, permits distances of up to 50 m between stations, and is highly resistant to EMI/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.

System configuration example



	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.

◎Pulse train output type

●Open collector pulse train output type.....QD75P□N **NEW**

●Differential driver pulse train output type...QD75D□N **NEW**

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.

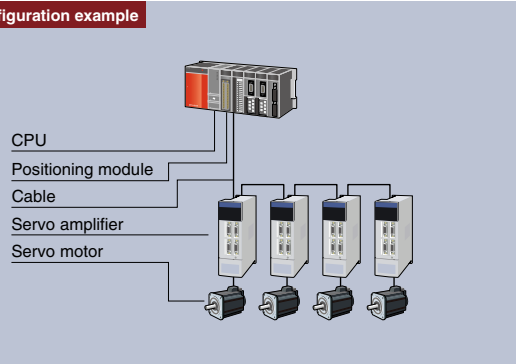
	QD75P□N	QD75D□N
Pulse train output format	Open collector output	Differential drive output
Max. output pulse	200 kpps	1 Mpps
Max. connection distance to drive unit	2 m	10 m
Control system	PTP (Point To Point) control, path control (both linear and arc can be set), speed control, speed-position switching 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.

○SSCNET connection type.....QD75M□

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.

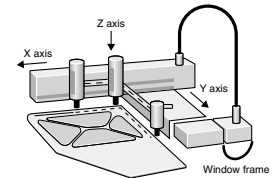
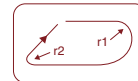
System configuration example



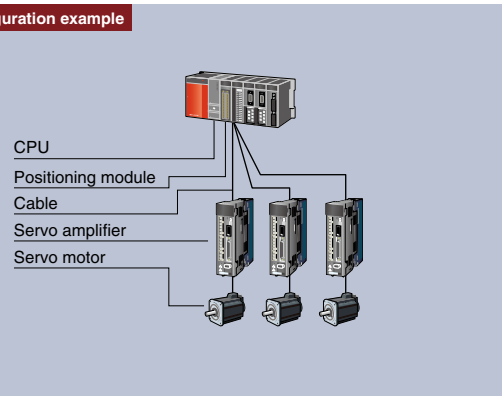
Application example ▶ Sealing

[Function]

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



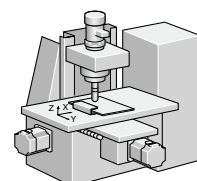
System configuration example



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.

◎ SSCNET III connection type.....QD74MH□

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		50 m
Control system		PTP (Point To Point) control, path control (linear only)
Starting time	1-axis linear control	0.88 ms
	2-axes linear interpolation control	
	3-axes linear interpolation control	
	4-axes linear interpolation control	

◎ Pulse train output type

● Open collector pulse train output type..... QD70P□

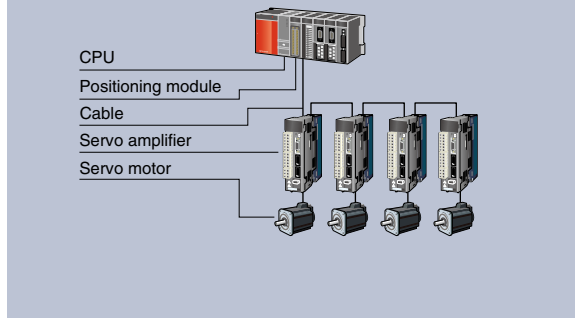
● Differential driver pulse train output type..... QD70D□

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.

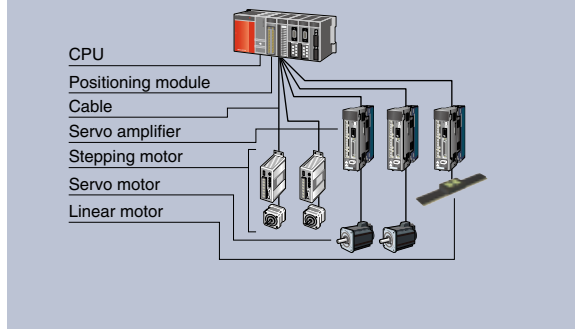
		QD70P□	QD70D□
Pulse train output format		Open collector output	Differential drive output
Max. output pulse		200 kpps	4 Mpps
Max. connection distance to drive unit		2 m	10 m
Control system		PTP (Point To Point) control, path control (linear only), speed-position switching control	
Starting time	1-axis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

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

System configuration example



System configuration example



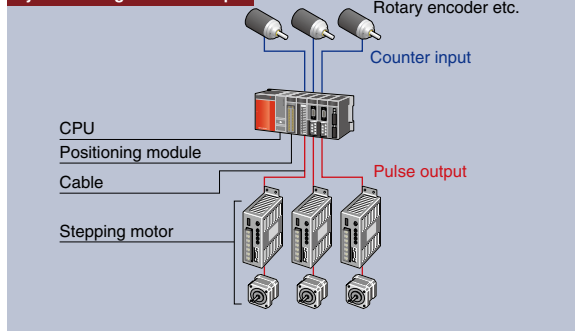
Positioning control using encoder feedback that is great for conveyor systems, processing machines, etc.

◎ Open collector output type with built-in counter function..... QD72P3C3

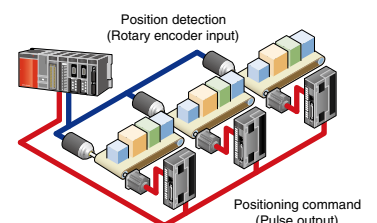
This module combines counter inputs and pulse outputs for 3-axes in a single module to save space and reduce cost. several useful functions such as 3-axes simultaneous start, target speed change, and coincidence detection are available.

		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.

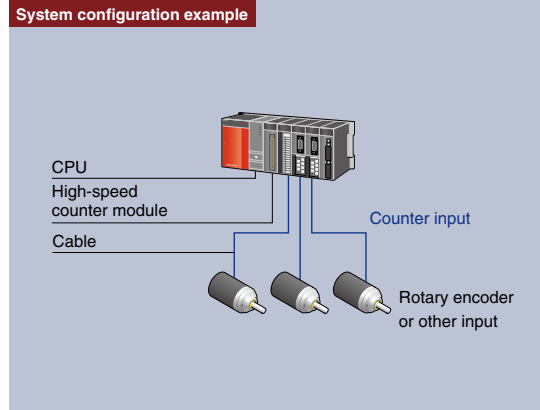
Pulse input modules capable of high-speed counting

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.

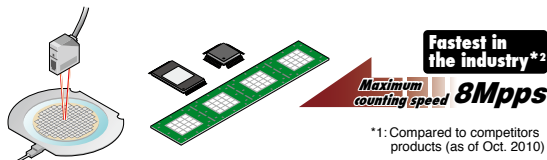
- External coincidence output (QD64D2 includes 2 per channel): Select coincidence output, continuous comparison (QD64D2 only), or the coincidence detection interrupt function for flexible high-speed external device control.
- Many functions are available to satisfy application requirements including 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	-Latch counter/preset/replace function -Internal clock function -Frequency measurement function -Rotation speed measurement function -Pulse measurement function -Count disable function -Sampling counter function -Periodic pulse counter function -Count disable/preset/replace 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



Programmable controller rack mounted energy measuring module

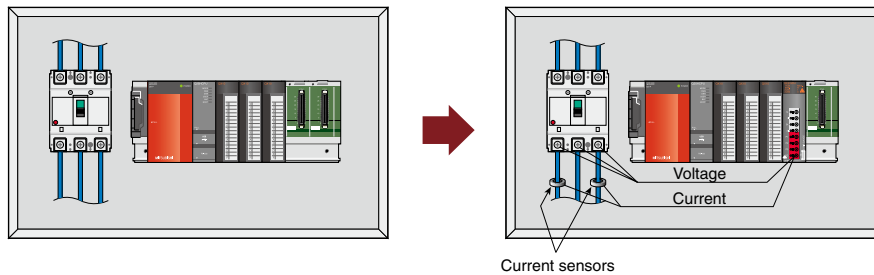
●MELSEC-Q Series Energy Measuring ModuleQE81WH

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. As a result, acquiring the amount of electric power used while operating and takt time becomes possible.

Item		Specifications
Phase wire system		single-phase 2-wire / single-phase 3-wire / three-phase 3-wire
Voltage circuit	single-phase 2-wire, three-phase 3-wire	110 V , 220 V AC
	single-phase 3-wire	110V AC (1 - 2 line, 2 - 3 line) 220 V (1 - 3 line)
Current circuit	50 A, 100 A, 250 A, 400 A, 600 A AC (Current sensor is used. Each value refers to the current at the primary side of current sensor.)	5 A AC (Current sensor is used together with current transformer (CT), and the primary-side current is configurable up to 6000 A.)
	5 A AC	
Frequency		50-60 Hz
Measurable circuit count		1 circuit

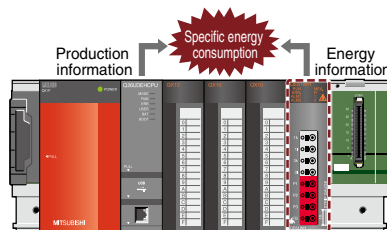
Minimal impact on control panel layout

●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)

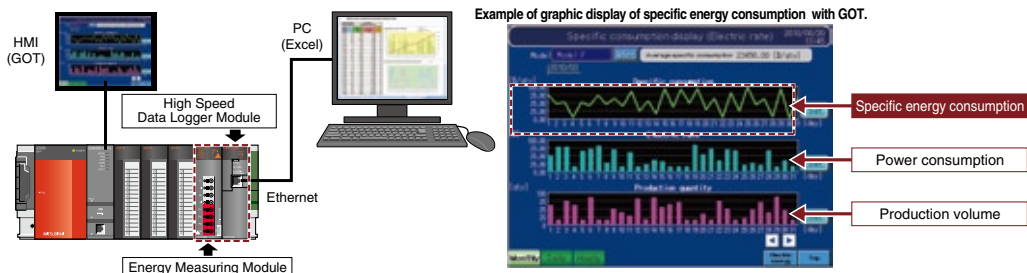
- Allows for easy specific energy consumption^{*1} management by matching the “production information” of the CPU unit with the “energy information” of the energy measuring module.
- Since measured data is automatically collected in a buffer memory at 250ms, detailed specific energy consumption management 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 NEW

Features

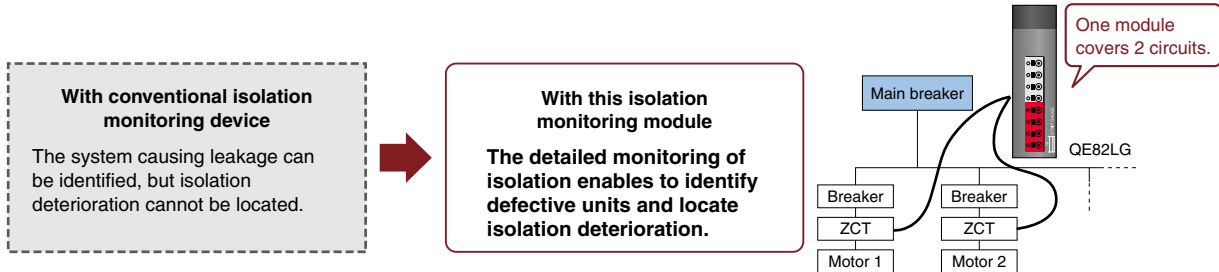
Leakage current can be measured for safety measures. Risks of electric shock are detected by monitoring leakage current (Io). The isolated state of equipment can be constantly monitored. The resistive component leakage current (Ior) is measured to constantly monitor the condition of deterioration of equipment isolation. Two-stage warning is provided for each measurement item. Two-stage warning for each of leakage current (Io) and resistive component leakage current (Ior) 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. [Measurement items] Leakage current (Io) and resistive component leakage current (Ior)

Function		Details
Phase/wire type		Common to single-phase 2-wire and single-phase 3-wire/3-phase 3-wire types
Instrument ratings	Voltage circuit *1 *2	Single-phase 2-wire 3-phase 3-wire
		Single-phase 3-wire
	Leakage current circuit	110 V AC (between wires 1 and 2, between wires 2 and 3), 220 V AC (between wires 1 and 3)
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 Ior 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 Io can be measured.
 *3 Leakage current (Io, Ior) 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 PLC 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.



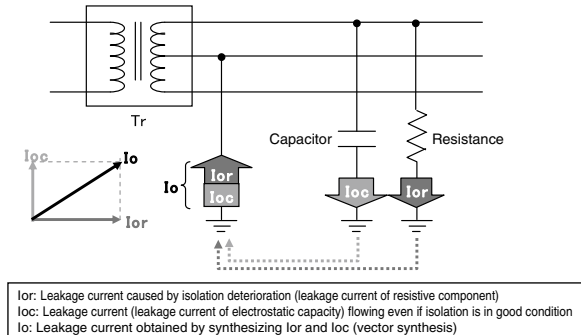
Ior system realizes constant monitoring of isolation deterioration of equipment.

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

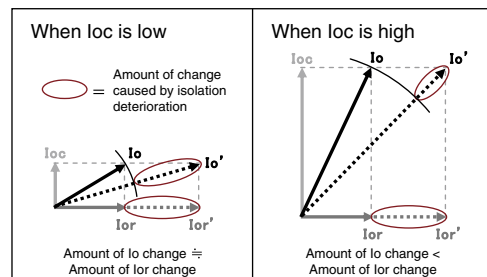
Leakage current (Io) is affected by Ioc of entire equipment.

Therefore, Ior measurement is effective in diagnosis of isolation deterioration.

Method of measuring leakage current (Io measurement and Ior measurement)



- Ioc 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.

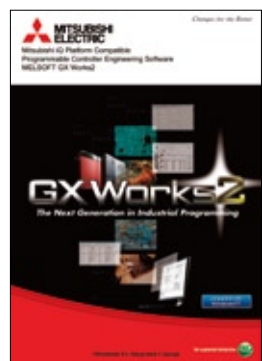
Compatible with Windows® 7

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.



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.

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

Fully integrated intelligent function module management tools.

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

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

Use "Watch windows" to conveniently monitor pertinent values.

Quickly identify each program and its execution type.

Program titles help to identify the content of each program.

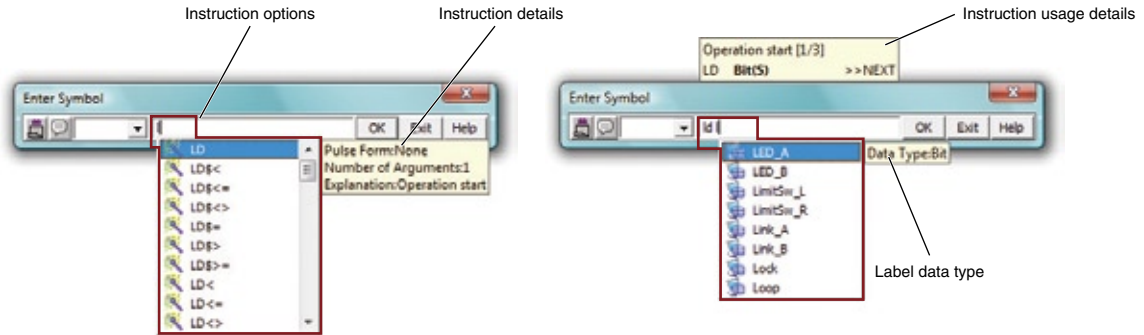
Display the cross reference information with ease.

Use the inline structured text*1 feature to quickly write complex expressions in ladder programs.

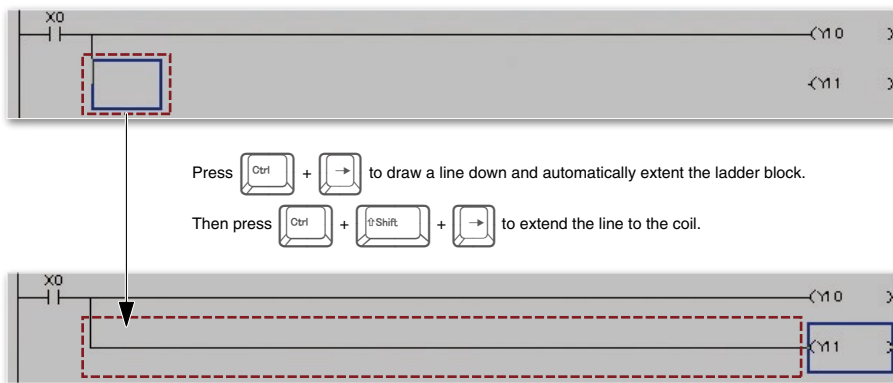
*1 The inline structured text function can be used only for a project with labels.

Time saving programming features

The dynamic list of instructions and labels prevents mistakes and saves time. There is no need to memorize all of these data as they can be found quickly using the list.

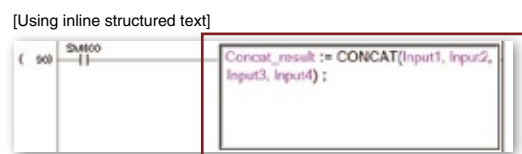
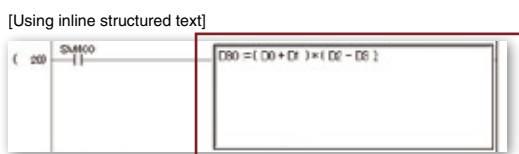
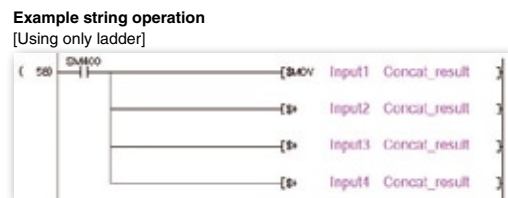
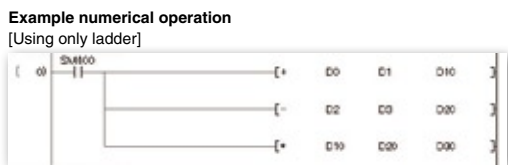


Hold down Ctrl and use the arrow keys (←, →, ↑, ↓) to draw and erase lines.
 Use Ctrl + Shift + (←, →) to edit continuous lines.



Describe operations easily in ladder programs

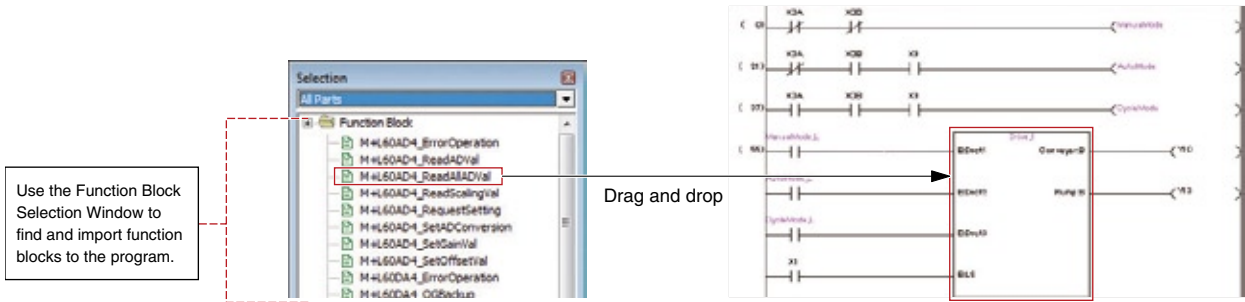
Using the inline structured text function it is possible to include structured text in ladder programs to simplify numerical and string operations. Using inline structured text can save time in the program development process and is more efficient with program memory.



Only one line of code is required!!

● **Use function blocks for common operations**

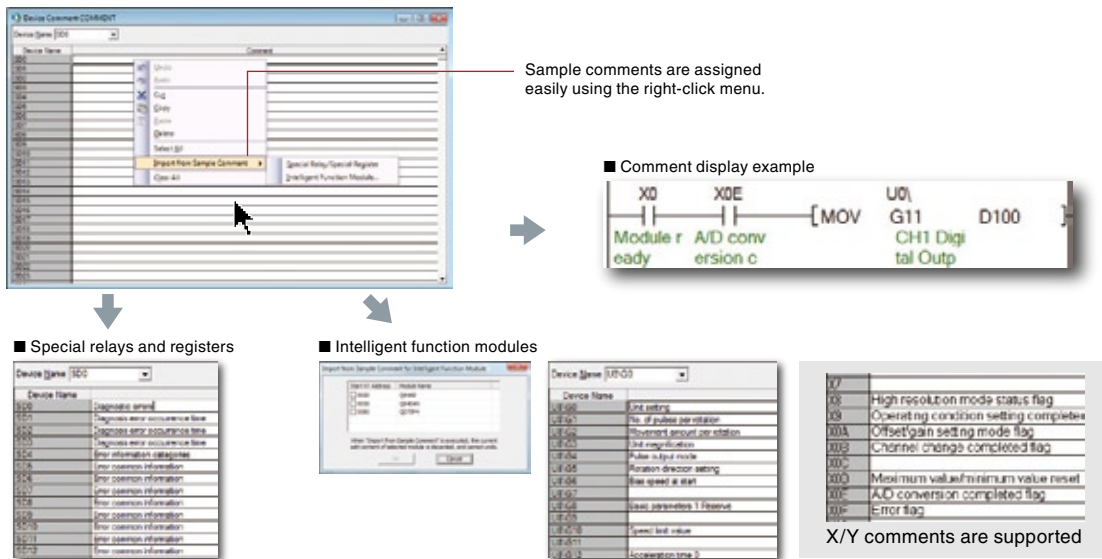
Function blocks allow selections of commonly used code to be easily reused and shared among projects. Shared or created function blocks can be added to a program using simple drag and drop operation. Using function blocks effectively results in faster development times with fewer programming mistakes.



● **Save time to input comments**

[Import from sample comment]

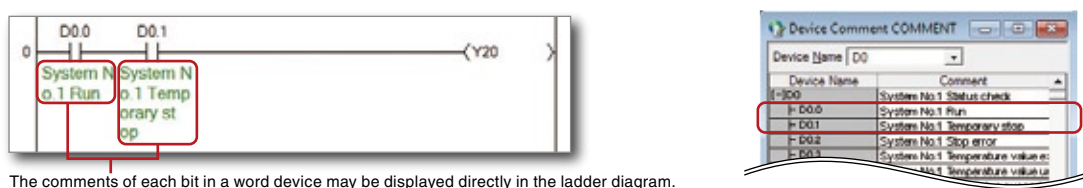
Easily assign default comments for CPU special relays, special registers, and intelligent function module devices.



● **Various ladder editor functions have been improved**

[Bit-wise commenting of word devices]

It is now possible for each bit of a word device to have it's own comment, enabling comprehensive program documentation.



The comments of each bit in a word device may be displayed directly in the ladder diagram.



● Easy project contents search

[Cross reference]

The cursor position can be used to automatically select a part of the program and create the cross reference information of devices/labels and display a list of the relevant sections. Easily jump from the cross reference results to the relevant parts of the program to confirm the locations.

Cross reference information for the device at the cursor location is automatically displayed.

Device/Label	Device	Rel	File	Position
[CycleMode]	M8189	Read		Step No. 680
CycleMode_D	M8190	Read		Step No. 682
X7	X7	Write		Step No. 684
CycleMode_S	M8179	Write		Step No. 685
CycleMode	M8189	Read		Step No. 704

Jump to other parts of the program by double-clicking the results.

[Cross reference]

Label names may be batch replaced.

■ Consecutive search with Enter key function
While performing a find operation, when the Enter key is pressed the cursor jumps to the next result.

Ctrl + F The cursor moves to the first result for "Auto"

When the Enter key is pressed, the next result for "Auto" is selected. (The cursor changes position.)

● Offline debugging without physical hardware

The simulation function is a built-in part of GX Works2 and can be started with the push of a single button. Even when access to physical hardware is unavailable, programs can be easily debugged.

Debugging features can be accessed using the toolbar.

It's easy to begin debugging

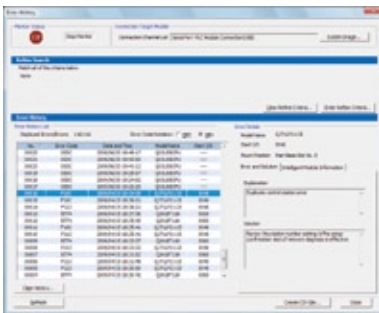
Set breakpoints and confirm them in the docking window

Line	Enable/Disable	Condition	Jump	Break Point	Break Co
1	[X]	NO	[X]	400	400
2	[X]	NO	[X]	401	401
3	[X]	NO	[X]	402	402
4	[X]	NO	[X]	403	403

Debug programs using only a PC, no need to connect to the actual hardware.

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

To quickly spot errors, an icon will appear next to malfunctioning modules based on the severity of the error. The interactive graphical system display provides immediate access to all of the diagnostic features and information about every module.



■ **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.

No.	Error Code	Date and Time	Model Name	Start I/O
00099	8702	2009/10/08 18:14:17	GJH-1BT11N	0110
00099	7D13	2009/10/08 17:53:06	GJ71C3M4-R2	00F0
00058	7D16	2009/10/08 17:52:32	GJ71C3M4-R2	00F0
00057	05DC	2009/10/08 16:14:09	G26UDEHCPU	----
00056	7D12	2009/10/08 16:00:53	GJ71C3M4-R2	00F0
00055	7D16	2009/10/08 15:56:40	GJ71C3M4-R2	00F0
00054	7D16	2009/10/08 15:50:24	GJ71C3M4-R2	00F0
00053	7D16	2009/10/08 14:59:03	GJ71C3M4-R2	00F0
00052	7D12	2009/10/08 14:43:27	GJ71C3M4-R2	00F0
00051	7D12	2009/10/08 14:35:53	GJ71C3M4-R2	00F0
00050	7FF2	2009/10/08 14:35:02	GJ71C3M4-R2	00F0
00049	1005	2009/10/08 14:03:44	G26UDEHCPU	----
00048	7F42	2009/10/08 13:37:00	GJ71C3M4-R2	00F0
00047	0C21	2009/10/08 13:13:56	G26UDEHCPU	----
00046	0834	2009/10/08 13:12:40	G26UDEHCPU	----
00045	05DC	2009/10/08 13:11:51	G26UDEHCPU	----
00044	7F42	2009/10/08 12:04:52	GJ71C3M4-R2	00F0
00043	0840	2009/10/08 12:04:17	GJ71C3M4-R2	00F0
00042	0840	2009/10/08 12:04:17	GJ71C3M4-R2	00F0

Explanation

Station number specification error. The transmission destination and source stations were the same when other station connection was specified.

Solution

Check the transmission destination station number, or change to host connection.

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



iQ Works

MELSOFT iQ Works integrates various kinds of programming software such as PLCs, motion controllers, GOTs and robots. This realizes seamless engineering environment.

● MELSOFT Navigator

MELSOFT Navigator is the heart of iQ Works. It enables the effortless design of large scale, multiple controller systems and seamlessly integrates the other MELSOFT programs included with iQ Works. Functions such as system configuration design, batch parameter setting, system labels, and batch read all help to reduce TCO.

■ Workspace management

PLC, motion controller, GOT and robot projects can be collectively controlled in the workspace.

● System configuration diagram

The entire system is graphically displayed as a network configuration, module configurations and CC-Link configurations.

The system configuration diagram can be created easily by drag-and-drop operations, and checks, such as power supply capacity check, can be conducted.

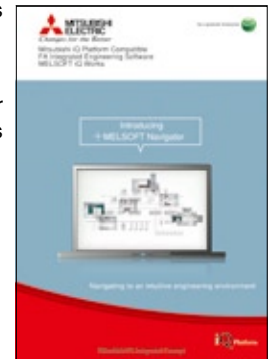
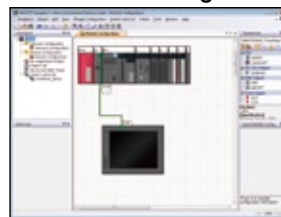
● System Labels

System labels can be shared across all supported platforms. By only having to create the labels once, communication is simplified, mistakes can be prevented, and programming time is reduced.

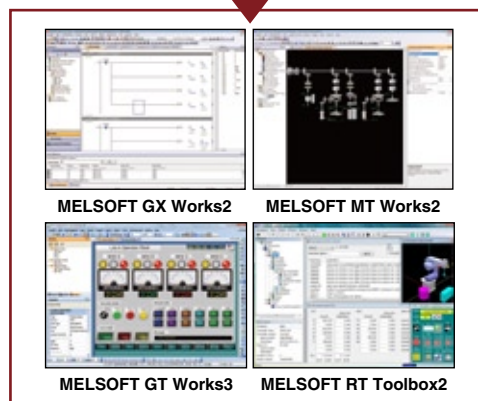
■ Integrated development environment

Any project in the system can be opened just by double-clicking the picture of the device it is assigned to. Additionally, by right-clicking a motion command in a PLC program and clicking "Jump", the corresponding motion program will automatically be opened.

MELSOFT Navigator



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



Other related software

● GX Developer

[The predecessor of GX Works2]

Fully compatible with QnA and A Series, GX Developer is the best software for programming legacy Mitsubishi programmable controllers. Currently it is also essential for programming the safety CPU and redundant/process CPUs.

● GX Simulator

[Confirm program operation with simulated hardware]

Test and debug programs at any time using a personal computer to ensure they operate as intended the first time they are written to a programmable controller CPU.

● GX Configurator

[Establish settings for intelligent device modules]

GX Works2 has integrated the standalone GX Configurator applications however, they are still necessary to quickly and easily configure these modules when using GX Developer.

● GX Converter

[Convenient documentation for GX Developer]

GX Converter allows instruction list language programs and program documentation to be exported as text or CSV. It is also possible to then import these files into a project. This program only works with GX Developer projects that do not use labels.

● PX Developer

[FBD programming tool for process control]

PX Developer is a comprehensive process control system design tool with control and monitoring capabilities, specifically designed for process and redundant CPUs. Create GOT screen templates for PID monitoring and control, write programs using the IEC61131-3 compliant function block diagram language, and much more.

* GX Developer is required in order to use PX Developer.

List of supported functions

Model	Programming function	Simulation function	Configuration function
GX Works2	○	○	○
GX Developer	○	x ^{*1}	x ^{*2}
GX Simulator	x	○	x
GX Configurator	x	x	○

*1 Requires GX Simulator.

*2 Requires GX Configurator.

MX Component



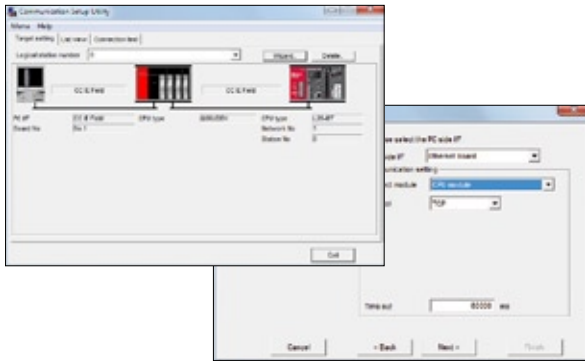
Easily connect personal computer to PLC

MX Component is the Active X® control library enables communication from a personal computer to a PLC regardless of communication protocol. Complicated programs for serial and Ethernet communication can be developed with simple steps.

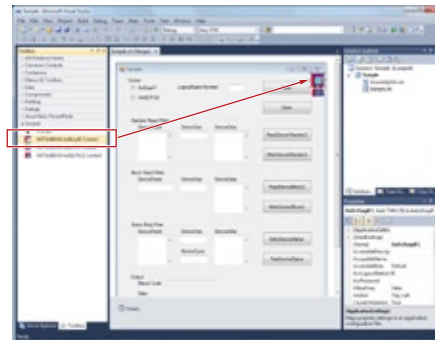
Greatly improved development efficiency

The wizard style configuration utility facilitates access to the target PLC CPU. Once configured, the conditions are saved. Then the PLC CPU can be accessed simply by specifying its station number.

1. Set the communication conditions according to the Wizard. (Control for configuration only with a program without using the Wizard is available.)



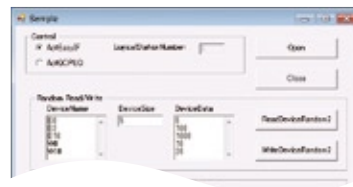
2. Paste the MX Component control icon in the form, and set the communication path number specified in 1, as a property for the control.



3. Then, describe the program for retrieving the device.

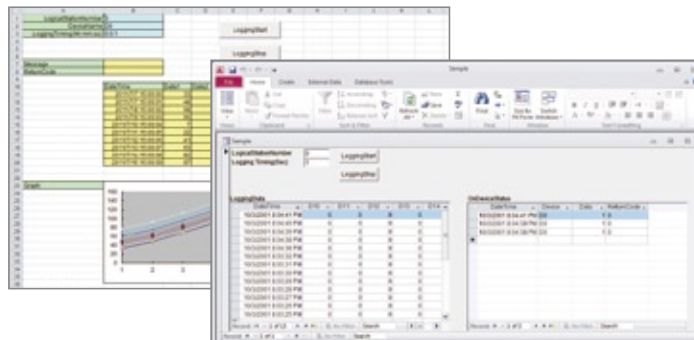


4. Completed.



Data collection by VBA

Real time graph display application can be created using VBA programming in Excel® and Access®. Logged PLC device data can be collected and saved in real time.



Remote monitoring and operation via Internet/Intranet

Remote PLCs can be monitored and operated from an ASP web page created with VB Script. Such web page can be accessed from personal computers or smart phones using Microsoft®'s browser (Internet Explorer®).



MX Sheet

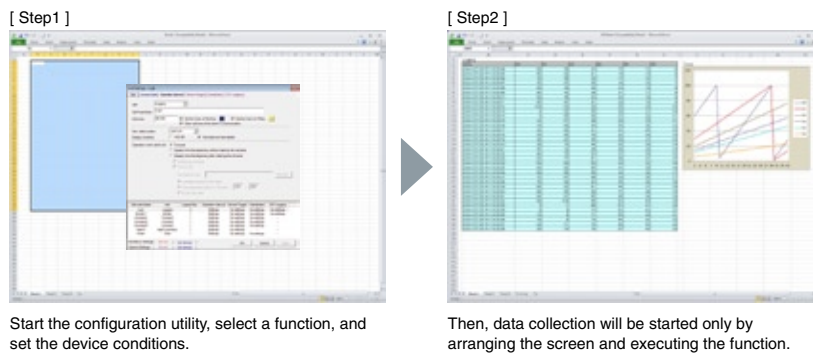


Easy data collection using Excel®

MX Sheet is an Excel® software package that enables PLC device data collection. PLC system monitoring, data logging, alarm message collection, system setting, etc. can be done using Excel®.

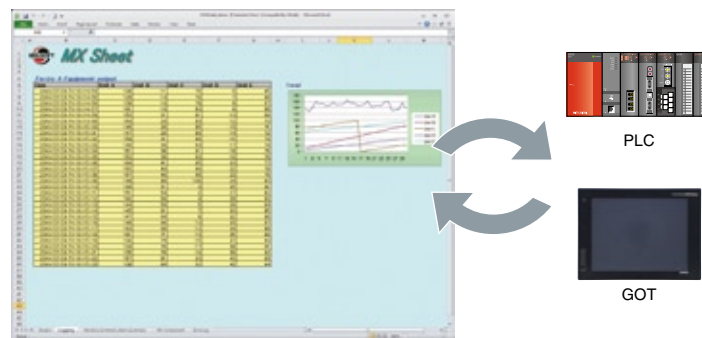
Simple and program-less setting

MX Sheet operation conditions can be set from Excel®. Therefore, a communication program is not required to communicate between PLC and Excel®.



Direct connection between office and field

The device data in the PLC is monitored and logged real time before being written to Excel®. Recipe data can also be transferred to PLC 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 PLC. Periodic reports and test result lists are generated automatically.





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 PLC to realize safety control compatible with established MELSEC programmable controller.

MELSEC Safety provides a comprehensive safety control solution.

MELSEC Safety



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

The safety components such as Safety PLC, Safety Controller, and Safety Relay Module provide a total safety solution.



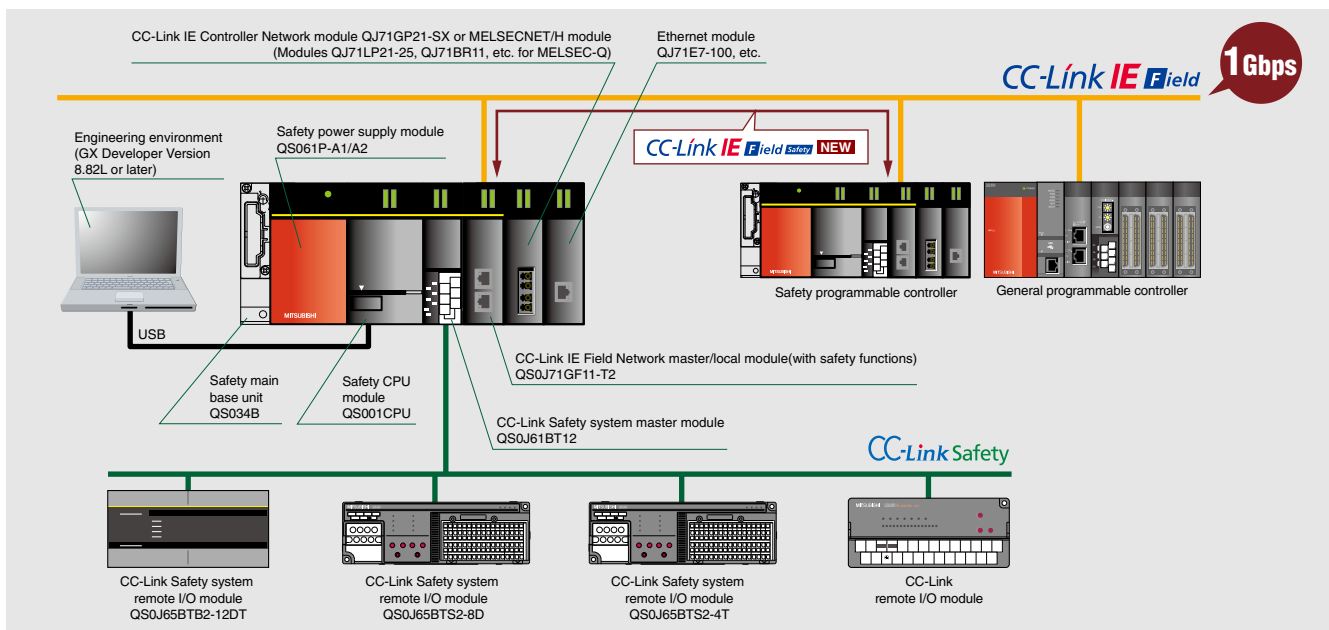
For details, refer to the "Safety Programmable Controller/Safety Controller/Safety Relay Module MELSEC Safety Safety" catalog.

Safety PLC MELSEC-QS Series

● Safety CPU* QS001CPU

The safety programmable controller is an International Safety Standard certified PLC 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 general-purpose 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 prevents the safety functions from being disabled because of a fault. Create a distributed safety control system using the CC-Link Safety network or the CC-Link IE Field Network with Safety Communication Function for large scale systems requiring many safety I/O points.

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



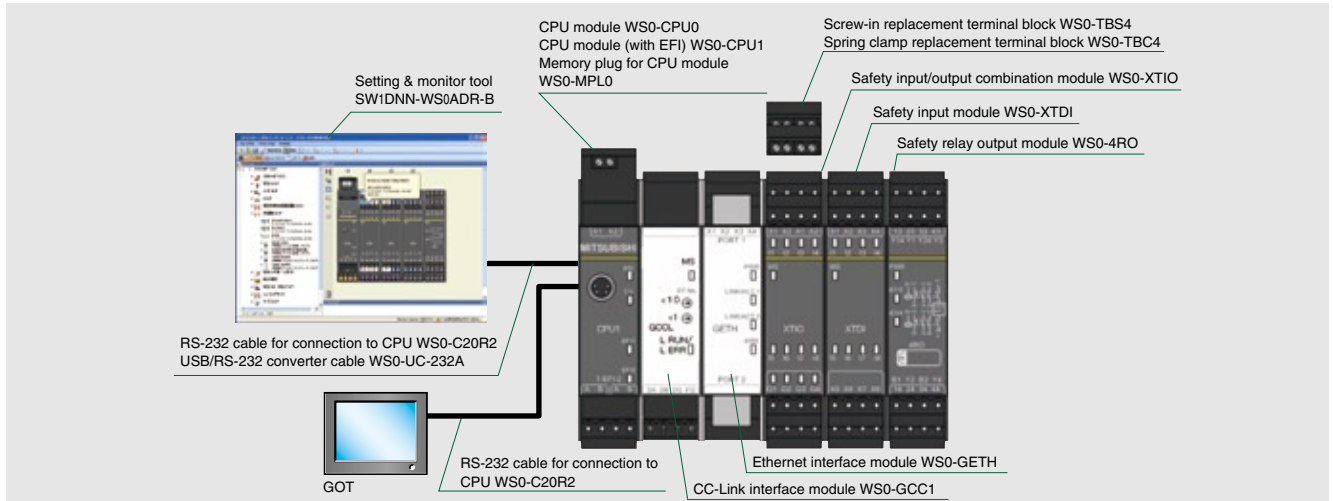
MELSEC-WS Series Safety Controller

● Safety Controller CPU* 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.

* Cannot be installed on the Q Series base.



Powered by
SICK

MELSEC-WS Series was developed and is manufactured jointly with Sick AG.

Sick AG is a German safety solution supplier that develops and manufactures safety functions and is one of the world's leading producers of sensors and sensor solutions for industrial applications.

* Please note that the specifications and warranty for this series is different from the MELSEC-Q and QS Series.

(For details, Please refer to the Mitsubishi Safety Programmable Controller/Safety Controller/Safety Relay Module MELSEC Safety)

MELSEC-QS Series Safety Relay Modules

● Q Series Safety Relay Module QS90SR2SP-Q, QS90SR2SN-Q

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

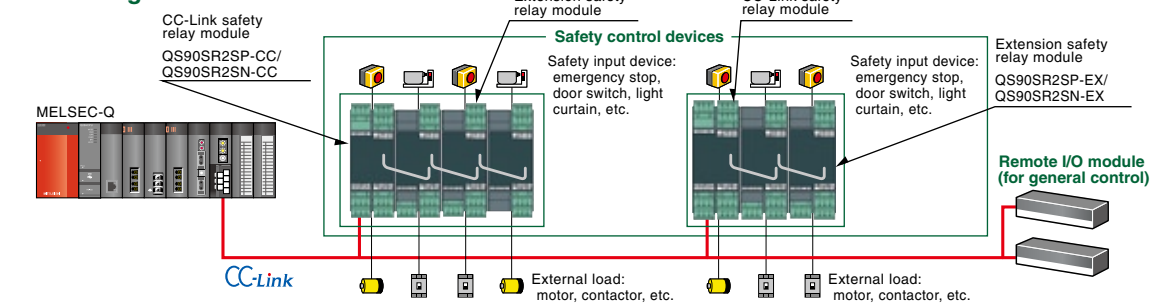
● Extension Safety Relay Module QS90SR2SP-EX, QS90SR2SN-EX

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

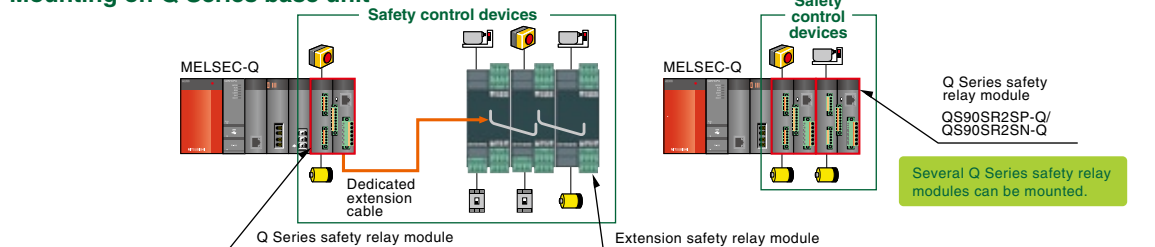
A basic safety function can be realized with just wiring, eliminating the need for programming and parameter settings.

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

Connecting to field network "CC-Link"



Mounting on Q Series base unit





HMI

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 PLC 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 more information, refer to the catalog of Mitsubishi Graphic Operation Terminal GOT1000 Series.

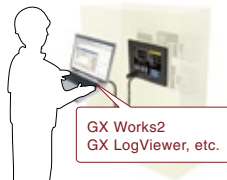
Graphic Operation Terminal

●GOT1000 series GT16, GT15, GT11, GT10

Program debugging can be performed without opening the panel.

- FA transparent function

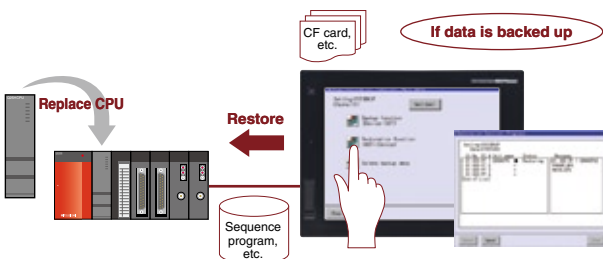
Connected with a personal computer, the GOT acts as a transparent gateway to enable programming, start up, and adjustment of equipment using GX Works2 or GX LogViewer. Users do not have to bother with opening the cabinet or changing cable connections. (On the GT10 series, the FA transparent function can be used via the interface on the rear side.)



PLC can be recovered promptly in case of emergency.

- Backup/restoration function

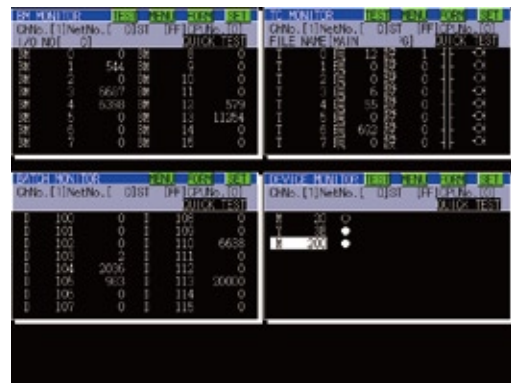
Sequence programs and parameters can be backed up to the CF card or USB memory in the GOT. Users can then perform batch operation to restore the data to the PLC.



PLC conditions and errors can be checked quickly.

- System monitor function

PLC devices can be monitored and changed.



- Intelligent module monitor function

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

- Network monitor function

Enable monitoring of network line conditions on a dedicated screen.

- Network module status display

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

Monitoring of program of PLC on HMI

- Ladder monitor function and ladder editor function

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

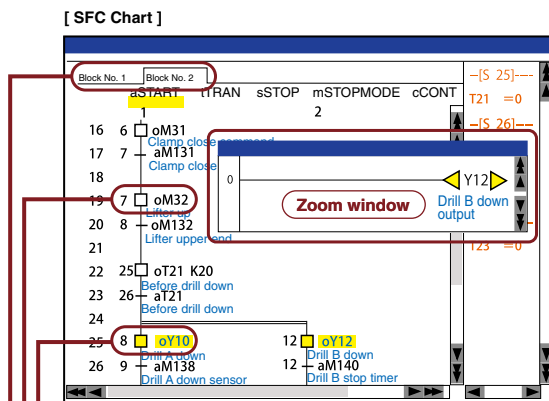
* Supported by XGA/SVGA/VGA models.



- SFC monitor function

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

* Supported by XGA/SVGA/VGA models.



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.

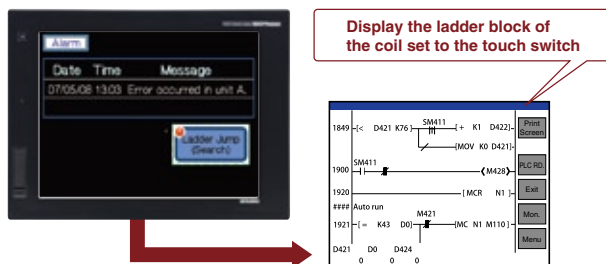
Transition condition

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)

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

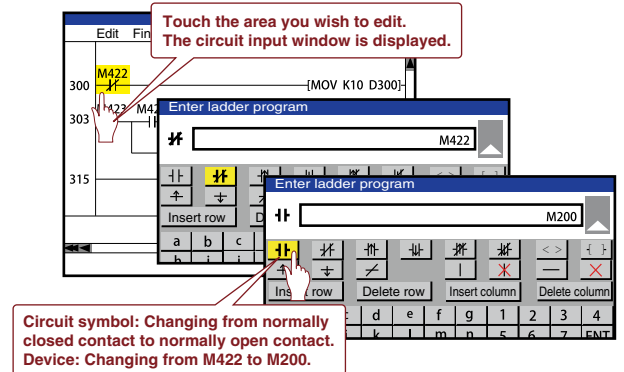


One touch to jump to Ladder Monitor or Ladder Editor Screen

Easy to make changes in ladder through GOT

- Ladder editor function

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



Display of logging data without use of personal computer

- Log viewer function

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	Difference (blue-red)
Time	01/31/2011 10:22:36.061	01/31/2011 10:22:16.061	-0:00:00:20.000
Value	25.000	-3700.000	-3725.000

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

CPU Module Performance Specifications

Universal model QCPU

Item		Q00UJCPU	Q00UCPU	Q01UCPU	Q02UCPU	Q03UDECPU	Q04UDEHCPU
						Q03UDCPU	Q04UDHCPU
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)	No				Q03UDECPU	Q04UDEHCPU
	RS-232	Yes				Q03UDCPU	Q04UDHCPU
Memory card interface		No			Yes		
Processing speed ²	LD instruction	0.12 μs	0.08 μs	0.06 μs	0.04 μs	0.02 μs	0.0095 μs
	MOV instruction	0.24 μs	0.16 μs	0.12 μs	0.08 μs	0.04 μs	0.019 μs
	PC MIX value ³ (instruction/μs)	4.92	7.36	9.79	14	28	60
	Floating point addition	0.42 μs	0.30 μs	0.24 μs	0.18 μs	0.12 μs	0.057 μs
Total number of instructions ⁴		822	848		850	858	
Operation (floating point operation) 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		10 k steps		15 k steps	20 k steps	30 k steps	40 k steps
Number of I/O device points [X/Y]		8192 points					
Number of I/O points [X/Y]		256 points	1024 points		2048 points	4096 points	
Internal relay [M]	*5	8192 points					
Latch relay [L]		8192 points					
Link relay [B]		8192 points					
Timer [T]		2048 points					
Retentive timer [ST]		0 points					
Counter [C]		1024 points					
Data register [D]		12288 points					
Link register [W]		8192 points					
Annunciator [F]		2048 points					
Edge relay [V]		2048 points					
Link special relay [SB]		2048 points					
Link special register [SW]		2048 points					
File register [R, ZR]		No	65536 points		65536 points ⁶	98304 points ⁶	131072 points ⁶
Step relay [S]	8192 points						
Index register/standard device register [Z]	20 points						
Index register [Z] (32-bit ZR indexing)	No	Max. 10 points (Z0 to Z18) (Index register [Z] is used in double words.)					
Pointer [P]	512 points			4096 points			
Interrupt pointer [I]	128 points			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	No	Yes					
Device initial values	Yes						

*1 The USB port terminal is mini-B.

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

*6 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.



	Q06UDEHCPU	Q10UDEHCPU	Q13UDEHCPU	Q20UDEHCPU	Q26UDEHCPU		
	Q06UDHCPU	Q10UDHCPU	Q13UDHCPU	Q20UDHCPU	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							
	Q06UDEHCPU	Q10UDEHCPU	Q13UDEHCPU	Q20UDEHCPU	Q26UDEHCPU	Yes	
	Q06UDHCPU	Q10UDHCPU	Q13UDHCPU	Q20UDHCPU	Q26UDHCPU	No	
Yes							
0.0095 μs							
0.019 μs							
60							
0.057 μs							
858							
Yes							
Yes							
Yes							
Yes							
0.5 to 2000 ms (setting available in units of 0.5 ms)							
	60 k steps	100 k steps	130 k steps	200 k steps	260 k steps	500 k steps	1000 k steps
8192 points							
4096 points							
8192 points							
8192 points							
8192 points							
2048 points							
0 points							
1024 points							
12288 points							
8192 points							
2048 points							
2048 points							
2048 points							
2048 points							
	393216 points ^⑥	524288 points ^⑥	655360 points ^⑥		786432 points ^⑥	917504 points ^⑥	
8192 points							
20 points							
Max. 10 points (Z0 to Z18) (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	No		
	RS-232	Yes		
Memory card interface		No		
Processing speed ¹	LD instruction	0.2 μs	0.16 μs	0.1 μs
	MOV instruction	0.7 μs	0.56 μs	0.35 μs
	PC MIX value ² (instruction/μs)	1.6	2.0	2.7
	Floating point addition	65.5 μs	60.5 μs	49.5 μs
Total number of instructions ³		318	327	
Operation (floating point operation) 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]		2048 points		
Link relay [B]		2048 points		
Timer [T]		512 points		
Retentive timer [ST]		0 points		
Counter [C]		512 points		
Data register [D]		11136 points		
Link register [W]		2048 points		
Annunciator [F]		1024 points		
Edge relay [V]		1024 points		
Link special relay [SB]		1024 points		
Link special register [SW]		1024 points		
File register [R, ZR]	No	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	No			
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) • MELSAP3 (SFC), MELSAP-L • Function block • Structured text (ST) 				
Peripheral connection port	USB	No	Yes			
	RS-232	Yes				
Memory card interface		Yes				
Processing speed ¹	LD instruction	0.079 μs	0.034 μs			
	MOV instruction	0.237 μs	0.102 μs			
	PC MIX value ² (instruction/μs)	4.4	10.3			
	Floating point addition	1.8 μs	0.78 μs			
Total number of instructions ³		381				
Operation (floating point operation) 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]		8192 points				
Latch relay [L]		8192 points				
Link relay [B]		8192 points				
Timer [T]		2048 points				
Retentive timer [ST]		0 points				
Counter [C]		1024 points				
Data register [D]		12288 points				
Link register [W]		8192 points				
Annunciator [F]		2048 points				
Edge relay [V]		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			
Processing speed ^{*2}	LD instruction	0.034 μs			
	MOV instruction	0.102 μs			
	PC MIX value ^{*3} (instruction/μs)	10.3			
	Floating point addition	0.78 μs			
Total number of instructions ^{*4}		422			
Operation (floating point operation) instruction		Yes			
Character string processing instruction		Yes			
PID instruction		No ^{*5}			
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 ^{*6}			
	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]	*7	8192 points			
Latch relay [L]		8192 points			
Link relay [B]		8192 points			
Timer [T]		2048 points			
Retentive timer [ST]		0 points			
Counter [C]		1024 points			
Data register [D]		12288 points			
Link register [W]		8192 points			
Annunciator [F]		2048 points			
Edge relay [V]		2048 points			
Link special relay [SB]	2048 points				
Link special register [SW]	2048 points				
File register [R, ZR]	65536 points ^{*8}		131072 points ^{*8}		
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 Process control instruction contain PID functions, making the instruction unnecessary.

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

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

*8 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) • MELSAP3 (SFC), MELSAP-L • Function block • Structured text (ST) 	
	Process control language	<ul style="list-style-type: none"> • Process control FBD^{*2} 	
Peripheral connection port	USB	Yes	
	RS-232	Yes	
Memory card interface		Yes	
Processing speed ^{*1}	LD instruction	0.034 μs	
	MOV instruction	0.102 μs	
	PC MIX value ^{*3} (instruction/μs)	10.3	
	Floating point addition	0.78 μs	
Total number of instructions ^{*4}		414	
Operation (floating point operation) 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]		8192 points	
Link relay [B]		8192 points	
Timer [T]		2048 points	
Retentive timer [ST]		0 points	
Counter [C]		1024 points	
Data register [D]		12288 points	
Link register [W]		8192 points	
Annunciator [F]		2048 points	
Edge relay [V]		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 The processing speed is the same even when the device is indexed.

*2 FX Developer is required for programming by FBD.

*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					
Storage ambient temperature	-25 to 75 ^{*1}					
Operating ambient humidity	5 to 95%RH ^{*2} , non-condensing					
Storage ambient humidity	5 to 95%RH ^{*2} , non-condensing					
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2		Frequency	Acceleration	Amplitude	Sweep count
		Under intermittent vibration	5 to 8.4Hz	—	3.5mm (0.14 inches)	10 times each in X, Y, Z directions
			8.4 to 150Hz	9.8 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 II applies to equipment for which electrical power is supplied from fixed facilities.

The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.

*5 This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.

Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.

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

[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		Universal model QCPU		High Performance model QCPU	Process CPU	Motion CPU		C Controller CPU	
		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 <i>iQ</i> Platform	Q02(H) Q06H Q12H Q25H	Q02PH Q06PH Q12PH Q25PH	Q172D Q173D <i>iQ</i> Platform	Q172H Q173H Q172 Q173	Q12DCCPU-V <i>iQ</i> Platform	Q06CCPU-V
Universal model QCPU	Q00U Q01U Q02U *1	×	×	×	×	×	×	○	○
	Q03UD(E) Q04UD(E)H Q06UD(E)H Q10UD(E)H Q13UD(E)H Q20UD(E)H Q26UD(E)H Q50UDEH Q100UDEH <i>iQ</i> Platform	×	◎	○	○	◎	×	◎	○
	Q02(H) Q06H Q12H Q25H	×	○	○	○	×	×	○	○

*1 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		Universal model QCPU		High Performance model QCPU	Process CPU	Motion CPU		C Controller CPU	
		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 <i>iQ</i> Platform	Q02(H) Q06H Q12H Q25H	Q02PH Q06PH Q12PH Q25PH	Q172D Q173D <i>iQ</i> Platform	Q172H Q173H Q172 Q173	Q12DCCPU-V <i>iQ</i> Platform	Q06CCPU-V
Universal model QCPU	Q00U Q01U Q02U	×	×	×	×	×	○ ^{*1} ○ ^{*2} ○ ^{*3}	○ ^{*3}	○ ^{*3}
	Q03UD(E) Q04UD(E)H Q06UD(E)H Q10UD(E)H Q13UD(E)H Q20UD(E)H Q26UD(E)H Q50UDEH Q100UDEH <i>iQ</i> Platform	×	○	○	○ ^{*2}	×	×	○ ^{*3}	○ ^{*3}
	Q02(H) Q06H Q12H Q25H	×	○	○	○ ^{*2}	×	○ ^{*2} ○ ^{*3} ○ ^{*4}	○ ^{*3}	○ ^{*3}

*1 Only one motion CPU can be used

*2 The slim type main base unit (Q3□SB) cannot be used.

*3 The redundant power main base unit (Q38RB) cannot be used.

*4 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 CPU or Q12DCCPU-V.

Reaching out to the world using a global network

Global FA center

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

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 Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, UK.
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European FA Center
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 Area covered: Central and Eastern Europe

German FA Center
Mitsubishi Electric Europe B.V. - German Branch
 Gotthard Strasse 8, D-40680 Ratingen, Germany
 Tel: 49-2102-486-0 / Fax: 49-2102-486-1120
 Area covered: Mainly Western Europe

Czech republic FA Center
Mitsubishi Electric Europe B.V. - o.s. Czech office
 Avenir Business Park, Radicka 714/113a, 158 00 Prahá5, Czech Republic
 Tel: 420-251-551-470 / Fax: 420-251-551-471
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India FA Center
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 Area covered: China

China (including Hong Kong area)

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 Area covered: China

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 Area covered: China



to provide comprehensive customer support.

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Area covered: Southeast Asia, India

Brazil FA Center

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Area covered: Brazil

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
	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, power supply

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

Product	Model	Outline
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
	Q26UDHCPU	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 RS232, with memory card I/F
	Built-in Ethernet type	Q03UDECPU
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
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

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, power supply

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

Product	Model	Outline	
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	Q12DCCPU-V	No. of I/O points: 4096 points, endian format: little endian, removable storage: CF card, OS: VxWorks Version 6.4	
	Q06CCPU-V	No. of I/O points: 4096 points, endian format: little endian, removable storage: CF card, OS: VxWorks Version 5.4	
	Option	Q12DCCPU-CBL ^{*1}	RS-232 connection converter cable (custom mini-DIN to 9-pin D-sub connector)
		GT05-MEM-128MC ^{*2}	128 MB CompactFlash card
		GT05-MEM-256MC ^{*2}	256 MB CompactFlash card
		QD81MEM-512MBC	512 MB CompactFlash card
		QD81MEM-1GBC	1 GB CompactFlash card
		QD81MEM-2GBC ^{*1}	2 GB CompactFlash card
		QD81MEM-4GBC ^{*1}	4 GB CompactFlash card
QD81MEM-8GBC ^{*1}	8 GB CompactFlash card		
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	
	Memory card	Q2MEM-1MBS	SRAM memory card, capacity: 1 MB
Q2MEM-2MBS		SRAM memory card, capacity: 2 MB	
Q3MEM-4MBS		SRAM memory card, capacity: 4 MB	
Q3MEM-4MBS-SET		SRAM memory card with cover, capacity: 4 MB	
Q3MEM-8MBS		SRAM memory card, capacity: 8 MB	
Q3MEM-8MBS-SET		SRAM memory card with cover, capacity: 8 MB	
Q2MEM-2MBF		Linear Flash memory card, capacity: 2 MB	
Q2MEM-4MBF		Linear Flash memory card, capacity: 4 MB	
Q2MEM-8MBA		ATA card, capacity: 8 MB	
Q2MEM-16MBA		ATA card, capacity: 16 MB	
Q2MEM-32MBA		ATA card, capacity: 32 MB	
Memory card adapter	Q2MEM-ADP	Adapter for Q2MEM memory card's standard PCMCIA slot	
SRAM card battery	Q2MEM-BAT	Replacement battery for Q2MEM-1MBS and Q2MEM-2MBS	
	Q3MEM-BAT	Replacement battery for Q3MEM-4MBS and Q3MEM-8MBS	
Connection cable	QC30R2	RS-232 cable for connecting personal computer 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 Q12DCCPU-V

*2 For use with Q06CCPU-V

Base

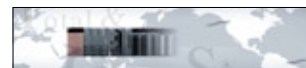
[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon

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 NEW	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 Q3□B, Q5□B, Q6□B, 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: 6A
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	
		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		
	AC/DC	QX50	16 points, 48 V AC/DC, response time: 20 ms, 16 points/common, positive/negative common, 18-point terminal block	
	DC sensor	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	
		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	
	DC (Negative common) ¹	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	
		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	
	Output	Relay	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
QY18A			8 points, 24 V DC/240 V AC, 2 A/point, response time: 12 ms, 18-point terminal block, all points independent	
Triac		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 suppressor	
Transistor (Sink)		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	
		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	
		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 suppressor and fuse	
TTL CMOS		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 suppressor, all points independent	
		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	
Transistor (Source)		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	
		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 suppressor 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 suppressor 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 suppressor 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)	
	A6CON3E	32-point connector pressure-displacement (flat cable) type (37-pin D-sub connector)	
Spring clamp terminal block	Q6TE-18SN NEW	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 SOON 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	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	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	
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 × 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
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} NEW 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 NEW 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 NEW 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.

Pulse I/O and positioning module

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

Product	Model	Outline	
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	
High-Speed Counter	QD62 ^{*1}	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 ^{*1}	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 ^{*1}	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 ^{*2}	6 channels, 200/100/10 kpps, count input signal: 5 V DC, 40-pin connector	
	QD64D2 ^{*2}	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 ^{*2}	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	
Positioning	Open collector output	QD75P1N ^{*2} NEW	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD75P1 ^{*2}	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 200 kpps, 40-pin connector
		QD75P2N ^{*2} NEW	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 ^{*2}	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 ^{*2} NEW	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 ^{*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, max. output pulse: 200 kpps, 40-pin connector
		QD70P4 ^{*2}	4-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 200 kpps, 40-pin connector
		QD70P8 ^{*2}	8-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 200 kpps, 40-pin connector
	Differential output	QD75D1N ^{*2} NEW	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 4 Mpps, 40-pin connector
		QD75D1 ^{*2}	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, max. output pulse: 1 Mpps, 40-pin connector
		QD75D2N ^{*2} NEW	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 ^{*2}	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 ^{*2} NEW	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 ^{*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, max. output pulse: 1 Mpps, 40-pin connector
		QD70D4 ^{*2}	4-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 4 Mpps, 40-pin connector
		QD70D8 ^{*2}	8-axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 4 Mpps, 40-pin connector
	With SSCNET connectivity	QD75M1 ^{*1}	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector
		QD75M2 ^{*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
		QD75M4 ^{*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 connectivity	QD75MH1 ^{*1}	1-axis, control unit: mm, inch, degree, pulse, no. of positioning data: 600/axis, 40-pin connector, with SSCNET III connectivity
		QD75MH2 ^{*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 connectivity
		QD75MH4 ^{*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 connectivity
		QD74MH8	8-axes, control unit: pulse, no. of positioning data: 32/axis, with SSCNET III connectivity
	QD74MH16	16-axes, control unit: pulse, no. of positioning data: 32/axis, with SSCNET III connectivity	
Open collector output with built-in counter function	QD72P3C3 ^{*2}	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	

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

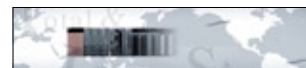
*2 A connector is not provided. The A6CON1/A6CON2/A6CON4 connector must be ordered separately.

Energy Measuring Module

Energy Measuring	QE81WH ^{*1}	Measured items: electric energy (consumption and regeneration), reactive energy, current, voltage, electric power, power factor, and frequency number of measured circuits: 1 circuit
Isolation monitoring	QE82LG ^{*2} NEW	Measured items: leakage current (Io), resistive component leakage current (Ior), number of measured circuits: 2 circuits

*1 Dedicated current sensors are required for operation.

*2 Dedicated residual current transformers are required for operation.



Information module

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

Product	Model	Outline	
MES interface	QJ71MES96	MES interface module *MX MESInterface and CompactFlash card are required.	
	Option	GT05-MEM-128MC	128 MB CompactFlash card
		GT05-MEM-256MC	256 MB CompactFlash card
		QD81MEM-512MBC	512 MB CompactFlash card
		QD81MEM-1GBC	1 GB CompactFlash card
High-Speed Data Logger	QD81DL96	High-Speed Data Logger module *CompactFlash card are required	
	Option	QD81MEM-512MBC	512 MB CompactFlash card
		QD81MEM-1GBC	1 GB CompactFlash card
		QD81MEM-2GBC	2 GB CompactFlash card
		QD81MEM-4GBC	4 GB CompactFlash card
		QD81MEM-8GBC	8 GB CompactFlash card
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

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	
MELSECNET/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
	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 IE Field Network Ethernet Adapter	NZ2GF-ETB ^{*1}	Compatible with transmission rates of 100Mbps/1Gbps For CC-Link IE Field Network extension station	
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	

*1 Supported by Universal model CPUs whose first five serial number digits are 12012 or higher.
GX Works2 version 1.25B or later is required for configuration and diagnostics.
Additionally, GX Works2 is required for CC-Link IE Field network configuration and diagnostics.

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
Q Large I/O	Input	QG69L ^{*1}	For gap adjustment when a previous Q Series module is installed on the Q large base
		QX11L ^{*1}	For replacement of "A" large 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" large 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" large 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" large 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
High-Speed Counter	QY23L ^{*1}	For replacement of "A" large 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	
	QD62-H01 ^{*2}	For replacement of "A" large 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	
Extension base	AnS series	QD62-H02 ^{*2}	For replacement of "A" large 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
		QA1S65B ^{*3}	5 slots. Requires AnS series power supply module installation. For AnS series module installation
	A series	QA1S68B ^{*3}	8 slots. Requires AnS series power supply module installation. For AnS series module installation
For MELSECNET (II) local station		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 ^{*3}	Optic cable, duplex loop, MELSECNET (II) local station
		A1SJ71AR23Q ^{*3}	3C-2V/5C-2V coaxial cable, duplex loop, MELSECNET (II) local station
For MELSECNET/B local station		A1SJ71AT23BQ ^{*3}	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.



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 NEW	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 NEW	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 PC Interface Board		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 (SI)	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)
		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
	Optical loop (GI)	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	PCI Express bus, Japanese/English OS compatible, master/local interface board, CC-Link Ver. 2 compatible
		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

Product	Model	Outline
Industrial switching HUB	NZ2EHG-T8 DB	10 Mbps/100 Mbps/1 Gbps AUTO-MDIX, DIN rail mountable, 8 ports
	NZ2EHF-T8 DB	10 Mbps/100 Mbps AUTO-MDIX, DIN rail mountable, 8 ports

*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.

MELSOFT GX Series

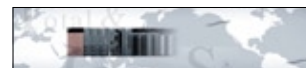
Product	Model	Outline	Compatible CPU*					
			Universal model		High Performance model	Basic model	Process CPU	Redundant CPU
			QnU	QnUD(E)				
GX Works2	SW1DNC-GXW2-E	Programmable controller engineering software (software with integrated functions including tools for programming, simulation and various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

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

*2 This is a GX Developer plug-in. GX Developer is required.

*3 Not compatible with Q02PHCPU and Q06PHCPU.

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



MELSOFT PX Series

[Legend] **DB** : Double brand product **NEW** : Recently released product **SOON** : Product available soon
 * Refer to the "Compatible CPUs" table for individual part names.

Product	Model	Outline	Compatible CPU					
			Universal model		High Performance model	Basic model	Process CPU	Redundant CPU
			QnU	QnUD(E)				
PX Developer	SW1D5C-FBDQ-E	Process control FBD software package	-	-	-	-	●	●
PX Works	SW3D5C-FBDGPP-E	A set of six products: PX Developer, GX Developer, GX Configurator-AD, DA, CT, TI	*1					

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

MELSOFT MX Series

MX Component	Model	Outline	●	●	●	●	●	●
			QnU	QnUD(E)	High Performance model	Basic model	Process CPU	Redundant CPU
MX Component	SW3D5C-ACT-E	ActiveX® library for communication	●	●	●	●	●	●
MX Sheet *3	SW1D5C-SHEET-E	Excel® communication support tool	●	●	●	●	●	●
MX Works	SW1D5C-SHEETSET-E	A set of two products: MX Component, MX Sheet	*1					
MX MESInterface	SW1DNC-MESIF-E	MES interface module QJ71MES96 dedicated information linkage tool	*2					

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

*2 Required when using the MES interface module.

*3 To use MX Sheet, MX Component is required.

MELSOFT iQ Works

MELSOFT iQ Works	SW1DNC-IQWK-E (CD edition)	FA engineering software*1 • System management software "MELSOFT Navigator" Upstream design, tool for linkage to iQ Works products • PLC engineering software "MELSOFT GX Works2" Tools for PLC programming, simulation and various module setting/monitoring • Motion controller engineering software "MELSOFT MT Works2" Total support tools for motion controller design and maintenance
	SW1DND-IQWK-E (DVD edition)	• Display screen creation software "MELSOFT GT Works3" Support tools for display screen creation • Robot Programing Software: MELSOFT RT ToolBox2 mini NEW 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	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	