Changes for the Better

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Mitsubishi Programmable Logic Controller

MELSEC Q series

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MELSOFT

CC-Link

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

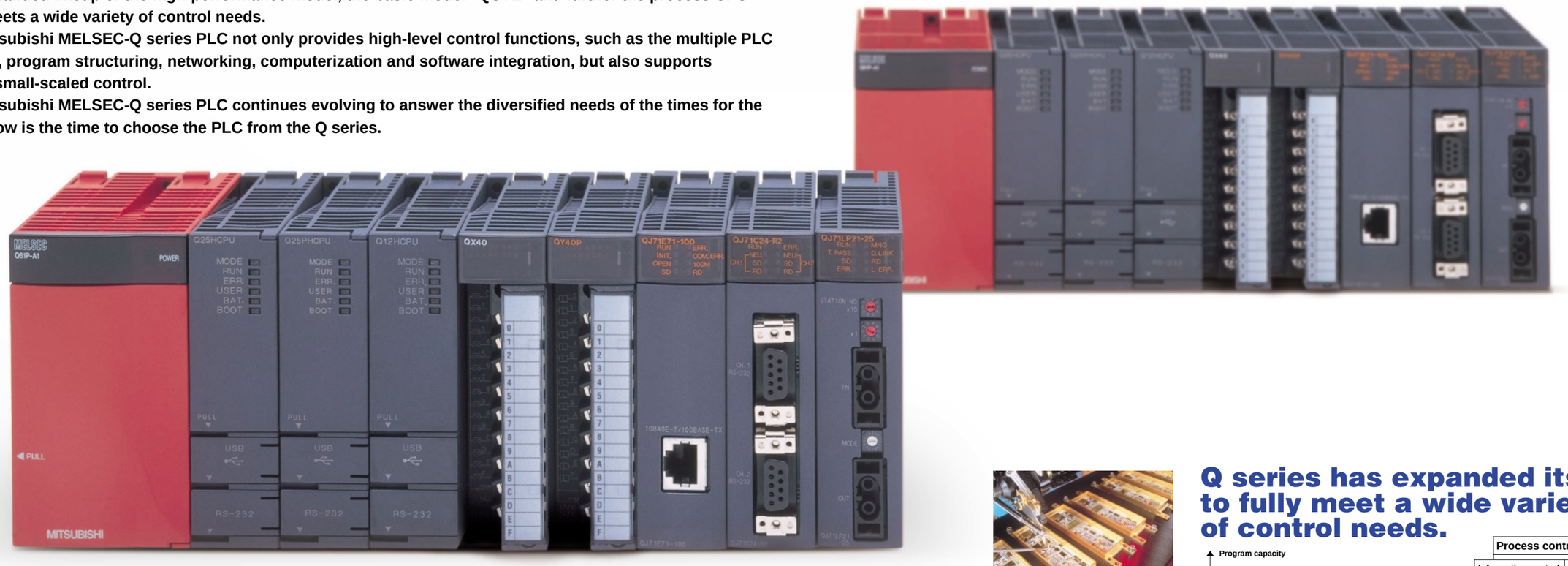
ISO 14001 JACO UKAS ENVIRONMENTAL MANAGEMENT 051

BVQI ISO 9001 UKAS QUALITY MANAGEMENT 008

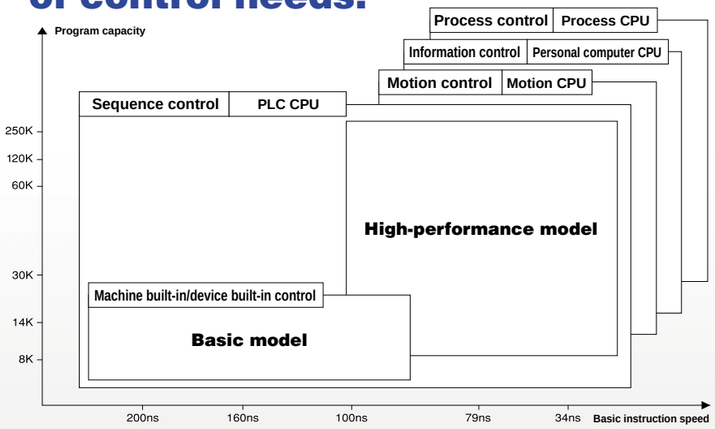
Q represents a continous Quest for control innovation.

Inheriting the DNA of our accumulated technology, the MELSEC-Q series will progress steadily.

Originating from the AnS series, the Mitsubishi MELSEC-Q series PLC is continuously advancing with the addition of functions to give tangible solutions for the requirements of the times.
The expanded lineup of the high-performance model, the basic model "QUTE" and further the process CPU fully meets a wide variety of control needs.
The Mitsubishi MELSEC-Q series PLC not only provides high-level control functions, such as the multiple PLC system, program structuring, networking, computerization and software integration, but also supports handy small-scaled control.
The Mitsubishi MELSEC-Q series PLC continues evolving to answer the diversified needs of the times for the PLC. Now is the time to choose the PLC from the Q series.



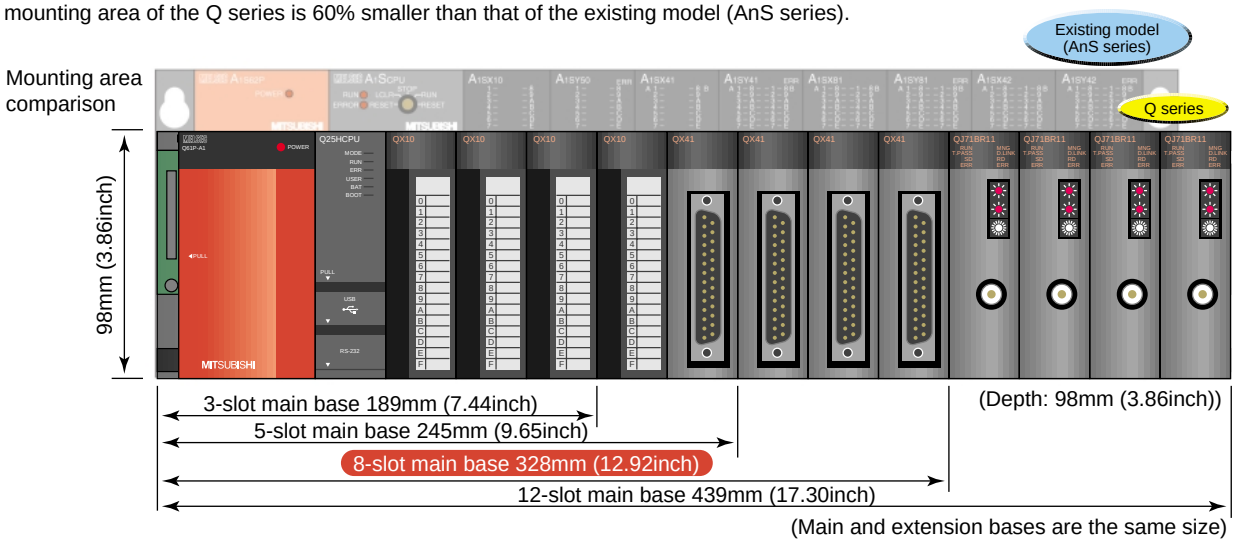
Q series has expanded its lineup to fully meet a wide variety of control needs.



SPACE SAVING AND WIRING SAVING

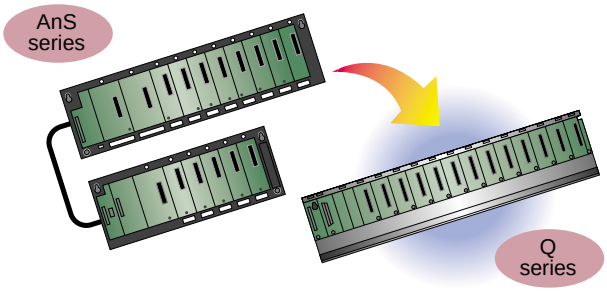
Mounting Area

The mounting area of the Q series is 60% smaller than that of the existing model (AnS series).



Mounting Freedom

The Q series has a wide assortment of 2, 3, 5, 8 and 12-slot bases. The freedom of mounting space ensures the optimum configuration. Extension bases can be connected directly by extension cables without extension base connecting modules. Extension bases that do not require a power supply module save space and costs.



Base unit types (Requiring power supply module)

Number of I/O Slots	Main Base	Extension Base	Mounting Size (mm(inch))
3	Q33B	Q63B	189(7.44)×98(3.86)
5	Q35B	Q65B	245(9.65)×98(3.86)
8	Q38B	Q68B	328(12.92)×98(3.86)
12	Q312B	Q612B	439(17.30)×98(3.86)

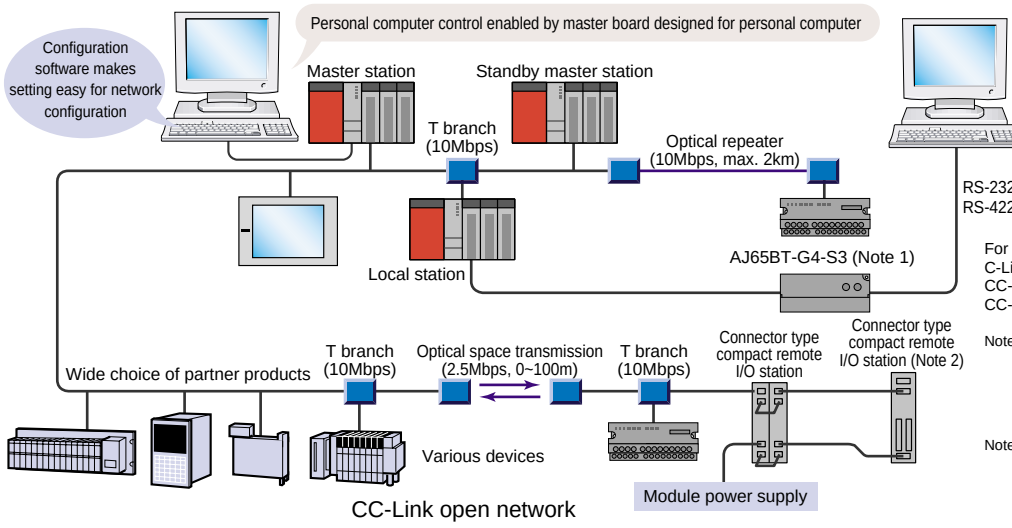
Base unit types (Requiring no power supply module)

Number of I/O Slots	Main Base	Mounting Size (mm(inch))
2	Q52B	106(4.17)×98(3.86)
5	Q55B	189(7.44)×98(3.86)

*The base units are designed for the Q series I/O, intelligent function and network modules. The A and AnS series modules cannot be loaded on the base units given in the above table.

CC-Link Open Network for Wiring Saving

The Q series uses CC-Link open network to reduce wiring, achieving the reduction in the number of wiring processes.



For details of CC-Link products, refer to the C-Link and CC-Link product catalogs and the CC-Link product catalogs published by the CC-Link Partner Association.

Note 1: The AJ65BT-G4-S3 is a unit connected to CC-Link as an intelligent device station and linked to a personal computer loaded with the GX Developer comprehensive programming tool to make communication with CPUs on the master and local stations.

Note 2: The connector type compact remote I/O is a remote I/O module designed for a CC-Link system giving a 33% reduction in cable-connected mounting area as compared to the current compact remote I/O module.

FLEXIBLE SYSTEM CONFIGURATION

Program Capacities and Large Standard RAM Capacities

To construct small to large scaled systems, the Q series has a wide assortment of CPU modules having 8k to 252k step program capacities and up to 128k words, large-capacity standard RAMs, enabling a selection of the CPU modules which matches the machinery/equipment control capabilities.

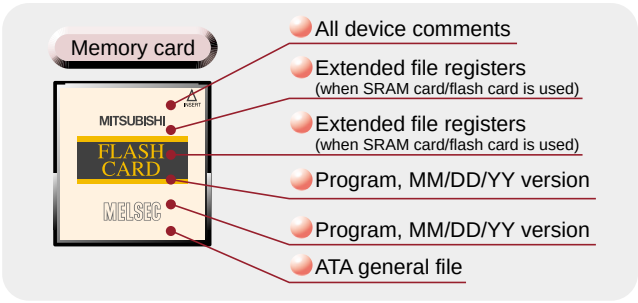
CPU		Program Capacities (Steps)	Device Memory (Words)	Standard RAM (Words)	Memory Card (Number of slots)
Basic model	Q00JCPU	8k	18k	No	No
	Q00CPU			32k	
	Q01CPU	14k			
High-performance model	Q02CPU	28k	29k	32k	1
	Q02HCPU			64k	
	Q06HCPU	60k			
	Q12HCPU	124k		128k	
	Q25HCPU	252k			

Note 3: Memory that stores the data used in sequence programs such as file registers and local devices (with the exception of the basic model CPU).As a built-in type RAM, the sequence program having a lot of file registers and local devices stored in standard RAM can run rapidly.

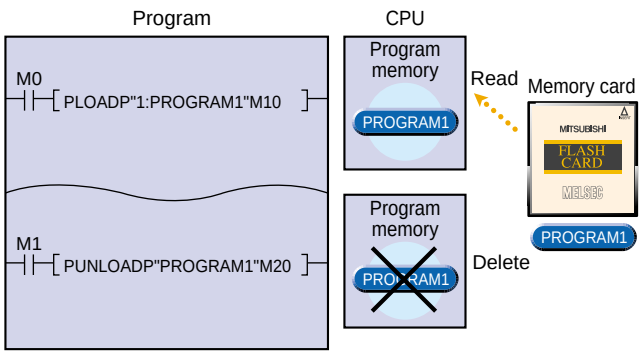
Note 4: Memory which stores the data used in sequence programs such as file registers, local devices etc. As a built-in type RAM, the sequence program having a lot of file registers and local devices stored in standard RAM can run rapidly.

Extended Memory

The high-performance model QCPU is equipped with a small PC card slot to insert an SRAM card (1M/2M bytes), flash card (2M/4M bytes) or ATA card (8M/16M/32MB bytes) extended memory card. By loading large-capacity extended memory, not only large-capacity file management is possible, but also comment settings for all data devices and old programs for correction history can be stored in memory.



Programs can also be stored in the memory card, and can be uploaded from the memory card by the dedicated instruction (PLOAD) and executed. This allows the program memory to be virtually extended.



Number of Control I/O Points

The Q series can control a maximum of 8192 points (input device points) in a remote I/O network such as CC-Link, or a maximum of 4096 points (I/O points) for direct I/O only.

CPU		Number of I/O Points (Note 4)	Number of I/O Device Points (Note 5) (Including remote I/O points)
Basic model	Q00JCPU	256	2048
	Q00CPU	1024	
	Q01CPU		
High-performance model	Q02CPU	4096	8192
	Q02HCPU		
	Q06HCPU		
	Q12HCPU		
	Q25HCPU		

Note 4: Number of I/O points on main and extension bases directly controllable by a CPU module.

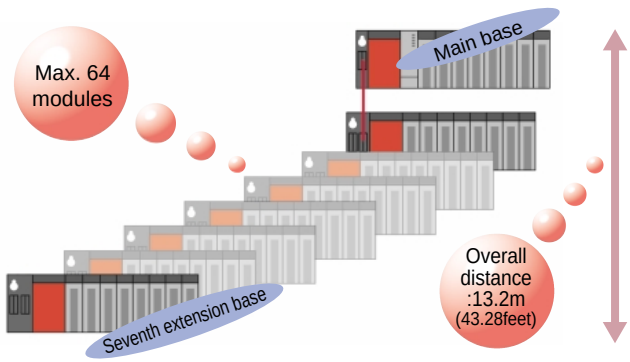
Note 5: Total number of I/O points on main and extension bases directly controllable by a CPU module and I/O points that can be controlled as remote I/O by a remote I/O network.

Up to 7 Extension Bases Connectable

Up to seven extension bases (eight when counting the main base) can be connected to accept up to 64 modules. Also, the overall distance of extension cables is max. 13.2m, enabling high freedom of extension base layout.

CPU		Number of Extension Base Units	Number of Loaded Modules	Overall Extension Cable Length (m)
Basic model	Q00JCPU	2 (max.)	16 (max.)	13.2 (max.)
	Q00CPU	4 (max.)	24 (max.)	
	Q01CPU			
High-performance model	Q02CPU	7 (max.)	64 (max.)	
	Q02HCPU			
	Q06HCPU			
	Q12HCPU			
	Q25HCPU			

*If a 12-slot base is used, the maximum number of I/O, intelligent function and network modules loaded is 16/24/64.



Variable Time Constant of Input Module

The DC input module's input response time can be changed. The response time can be selected according to your application, e.g. response time of 0.1ms for fast response or 70ms for a reliable response (in consideration of noise margin, etc.). (Note 6).

Note 6: QX40-S1 : Select from 0.1, 0.2, 0.4, 0.6 and 1ms.
QX4*, QX7*, QX8* : Select from 1, 5, 10, 20 and 70ms.

COMPACT CONTROL SYSTEM

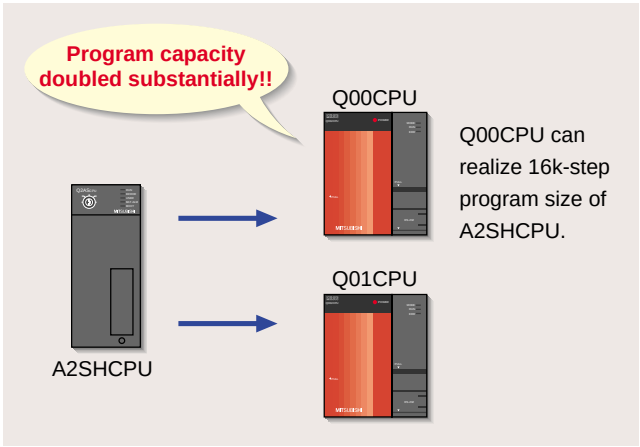
Basic Models (Q00J, Q00, Q01CPUs)

Used with the Q series I/O and intelligent function modules, the basic model QCPU can achieve a compact system of high performance, high functions and excellent cost performance.

Features

■Compact PLC having high-level functions

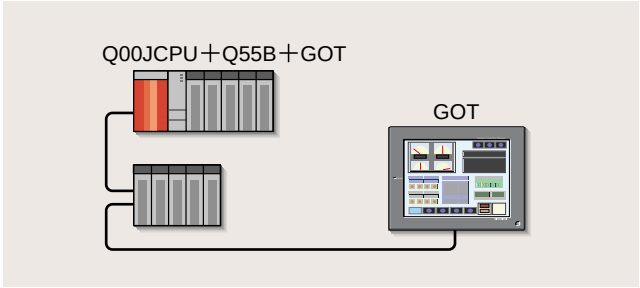
1.The maximum number of direct I/O points is 1024, and the maximum number of I/O points including remote I/O points is 2048. A system having up to four extension bases can be configured.
2.18k-word device memory and 32k-word file registers (Q00/Q01CPU only) are equipped as standard.
3.With built-in flash ROM. ROM operation can be performed by the CPU without a memory card being used.
4.With compact instruction codes used, the program capacity is twice as large compared to the AnSH.
5.Processing speed is five times faster than the AnSH in terms of PC MIX value. LD instruction 0.10µs or more, MOV instruction 0.35µs or more.
6.The high-speed system bus enables fast data exchange with the intelligent function and network modules.



■Compact, space-saving unit

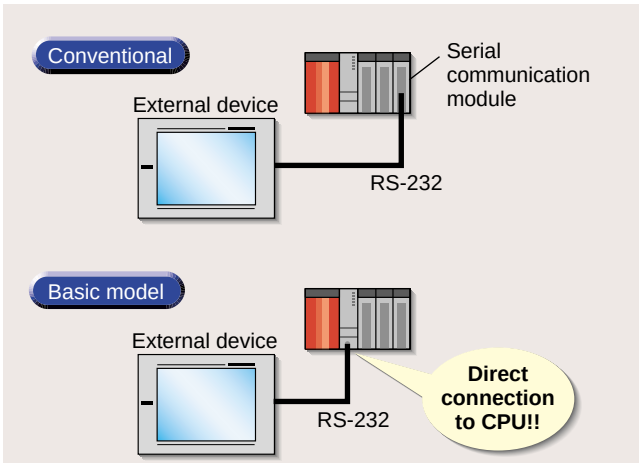
1.The Q00JCPU is a unit consisting of a CPU module, a power supply module and a main base unit (5 slots).
2.A compact system can be configured by connecting the Q5_B extension base (Requires no power supply module) to the Q00JCPU.
3.The Q00JCPU can be used to configure a system consisting of a main base, an extension base and a GOT (bus connection).

*The main base of the Q00JCPU does not accept the bus extension connector box (A9GT-QCNB).



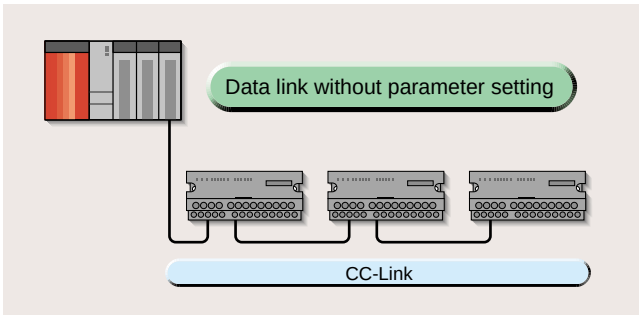
■Serial communication function built in the CPU

The RS-232 port of the CPU module is included as standard with the serial communication function (MC protocol) (Q00/Q01CPU only).
This enables direct connection of a personal computer, display, monitor or similar external device.



■Improved usability of CC-Link

With an automatic CC-Link start, you can start CC-Link and refresh data without setting parameters.
Therefore reducing the time for setting up.

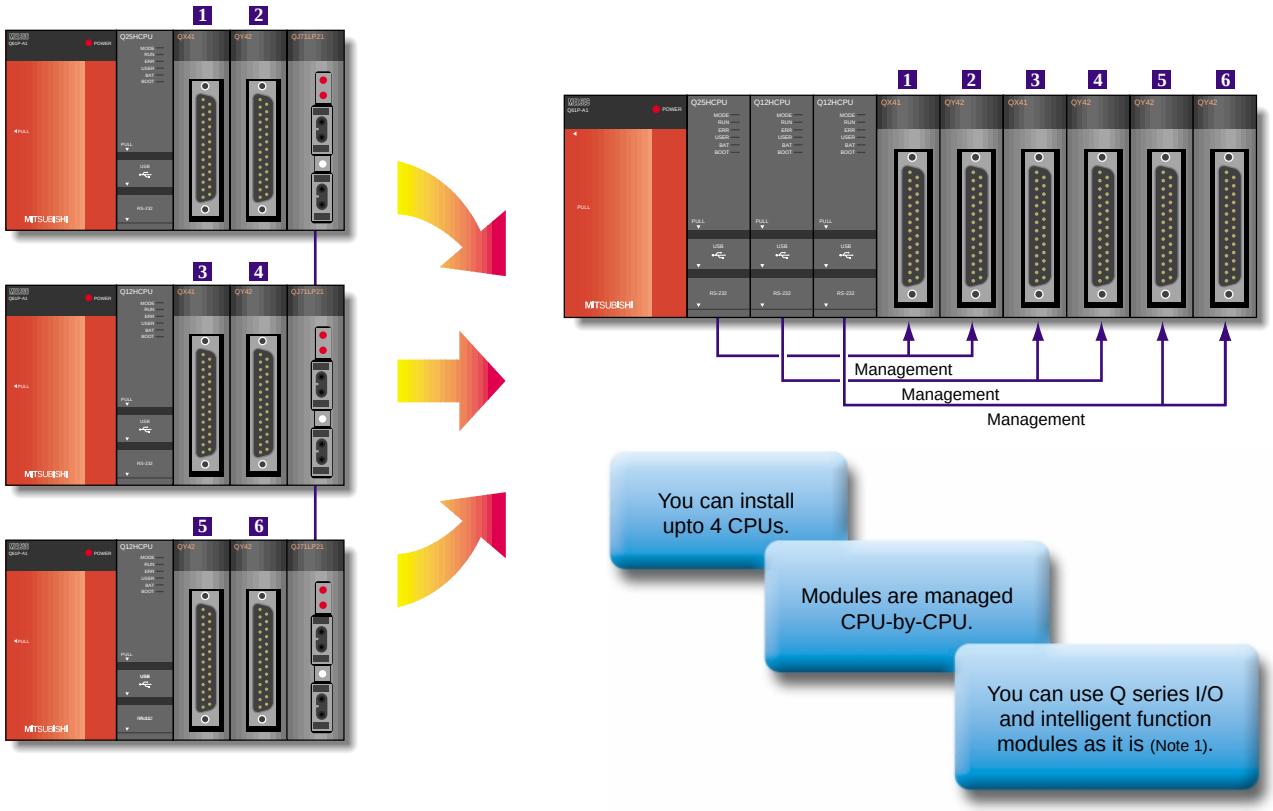


*The basic model CPU does not accept the A/AnS series modules for extension.

HIGHLY DEVELOPED CONTROL ❶

Multiple PLC System Configuration

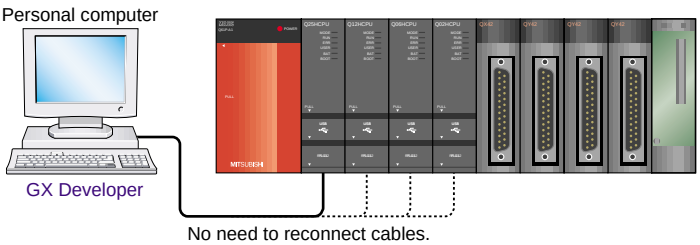
The Q series can utilize a multiple PLC system where multiple high-performance CPUs are loaded on the same main base to manage I/O and intelligent function modules CPU-by-CPU in a control system. In the multiple PLC system, you can choose CPUs according to your application. With the multi-CPU system, inter-CPU communication uses two methods, cyclic communication, which uses automatic refreshing for periodic communication, and transient communication, which uses dedicated instructions for communications. This system allows the sequence control and data processing that were conventionally performed by a single CPU to be shared by multiple dedicated CPUs, improving speed and performance in the whole system and expanding its application range.

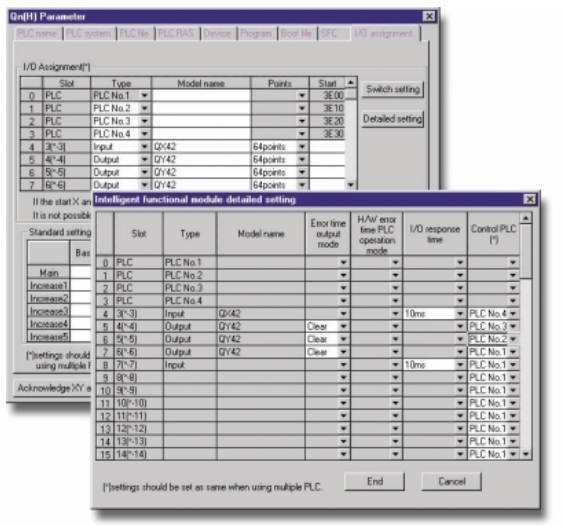


Note 1: There are restrictions on the number and versions for intelligent function modules. Check details in the Q series data book.

Access to Multiple CPUs with GX Developer

Configuration of the multiple PLC system is easier by using GX Developer to set the parameters.
By merely linking the personal computer installed with GX Developer to one CPU, you can execute programming/monitoring function on other CPUs without swapping cables. (Note 2)



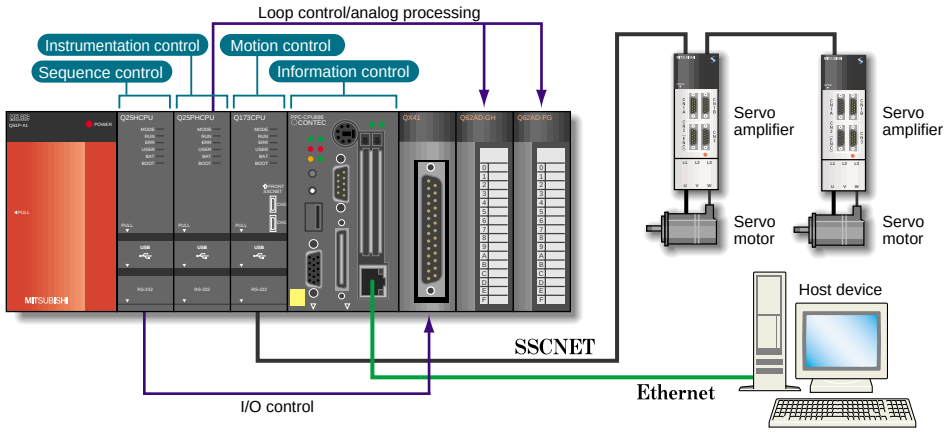


Note 2: You must set the parameters which define the multiple PLC system configuration. Check details in the Q series data book.

HIGHLY DEVELOPED CONTROL ❷

Integration of Process CPU, Motion CPU, and Personal Computer CPU

The Q series has the multiple PLC system function that also permits PLC, process, motion, and personal computer CPUs to be loaded together, enabling utilization of their respective strong points and construction of an optimal system. A single process CPU can perform both fast loop control and sequence control simultaneously.
The motion CPU uses SSCNET that rapidly controls up to 96 axes in a single system and saves wiring. A personal computer CPU can access I/O and intelligent function modules from a C-written application program. It can also communicate with higher level devices from an Ethernet communication port.



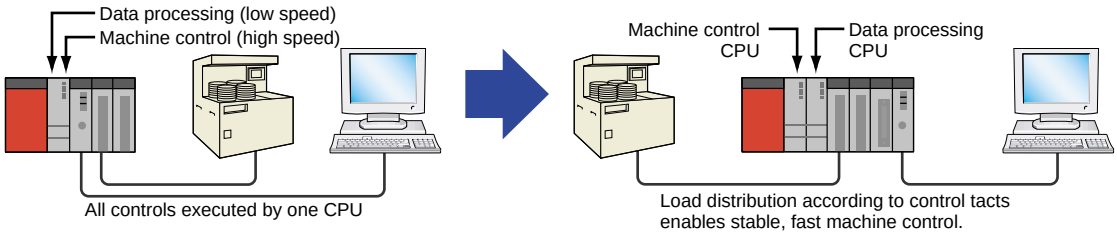
*SSCNET is a network where the motion CPU and servo amplifiers are connected with minimum wiring by high-speed serial communication.

- The process CPU includes process control instructions that achieve high-level loop control, e.g. two-degree-of-freedom PID, sample PI and auto tuning instructions. (For details, refer to the MELSEC process control manual.)

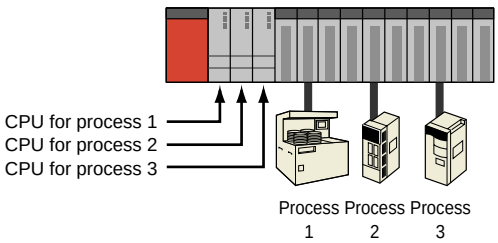
- A motion CPU is good at advanced, complex motion control. It can speed up motion operation cycles and control up to 32-axis per CPU. The Q173CPU (32-axis) and Q172CPU (8-axis) are available. (For details, refer to the Q series motion controller manual.)

Combined Use of multiple PLC CPUs (Load distribution)

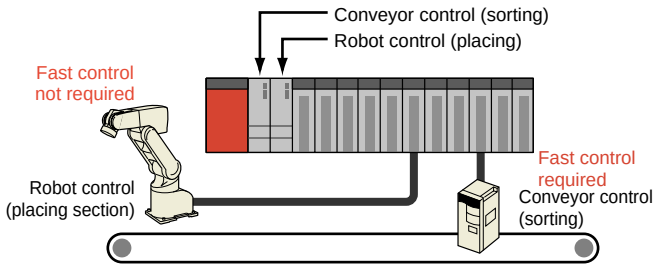
Multiple Q series PLC CPUs can be used together to allow a single system to exercise controls different in tact time, e.g. sequence control and data processing.



- If load in excess of a CPU's processing capability is applied to a large scaled system due to a large program size, using multiple CPUs to distribute the load improves the overall performance of the system.



- When one process requires fast processing and the other does not, they can be handled respectively by two CPUs, providing stable (unaffected by the other process) and rapid control.



GOT Connection

The GOT-A900/F900 series can be connected by the CPU RS-232 port.
Connected with a serial communication module, Ethernet or further a Q series high-speed bus, the GOT-A900 series can achieve fast response.
The GOT-A900 series is also compatible with a multiple PLC system. By specifying the CPU No. at the time of monitor device setting, you can monitor the data of each CPU on a single screen. You can also monitor the ladder of each CPU.

HIGHLY DEVELOPED CONTROL ❸

MELSEC Process Control

NEW

The Q series PLC achieves analog processing, loop control and simple engineering necessary for Process Control.

Features
1. A single high-reliability process CPU includes fast loop and fast sequence control functions.
2. The high-function analog module includes channel isolation, high accuracy, high resolution and wire disconnection detection functions.
3. The channel-isolated pulse input module (QD60P8-G) enables precision counting. (Refer to page 14.)

■Process CPU

1.The process control instructions (52 types), which achieve high-level loop control such as the two-degree-of-freedom PID, sample PI, blend PI and auto tuning instructions, are available.
2.The fast processing of PID loop operation enables max. 10ms control cycles. This increases the number of loops that can be executed simultaneously (practically up to 200 loops). This processing is also applicable to applications that require fast control cycles, extending the range of applied

Type		Q12PHCPU	Q25PHCPU
Number of I/O device points (Note 1)		8192 points	
Number of I/O points		4096 points	
Number of CPUs installed in multiple PLC system		Max. 4	
Max. number of I/O slots		64	
Program capacity		124K steps	252K steps
Processing speed (Process control instruction: Loop processing time)	Basic PID	350μs	
	2-degree-of-freedom PID	400μs	
Device memory capacity		Device memory: 29k words File registers (built-in): 128K words, extended file registers: max. 1018k words (memory card required) (Note 2)	
Number of control loops		There is no limit to the number of control loops depending on the combination of the device memory capacity and control cycle (128 words/loop used)	
Control cycle		10ms or more/control loop. Setting can be varied for each loop.	
Instruction types		Basic/application sequence instructions, process control instructions Process control instruction types ... Control operation, I/O control, compensation operation, arithmetic operation, comparison operation, auto tuning instructions	
Functions		Cascade control, auto tuning, feed forward, 2-degree-of-freedom PID control, online module change, remote master station multiplexing for simplified redundancy	

Note 1: Total number of I/O points on the main and extension bases controlled directly by the CPU module and I/O points that are controlled as remote I/O by the remote I/O network.
Note 2: When SRAM card is used: 1017k words for Q2MEM-2MBS, 505k words for Q2MEM-1MBS.
When flash card is used: 1018k words for Q2MEM-4MBF, 1017k words for Q2MEM-2MBF.
Note 3: The A series-compatible modules are not usable with the Q12PHCPU and Q25PHCPU.

■High-Function Analog Modules

1. The channel-isolated analog modules enable direct wiring of sensors (flow meters, pressure gauges, other sensors) and control devices (control valves). (An external isolating amplifier is not required between the analog modules and the external devices.)
This reduces total hardware and working costs.
2. Channel-isolated thermocouple input modules (Q64TDV-GH, Q64TD) are also available. The Q64TDV-GH also supports micro voltage input.

*The high-function analog modules is available with the basic model and high-performance model QCPUs.

Channel-isolated analog input

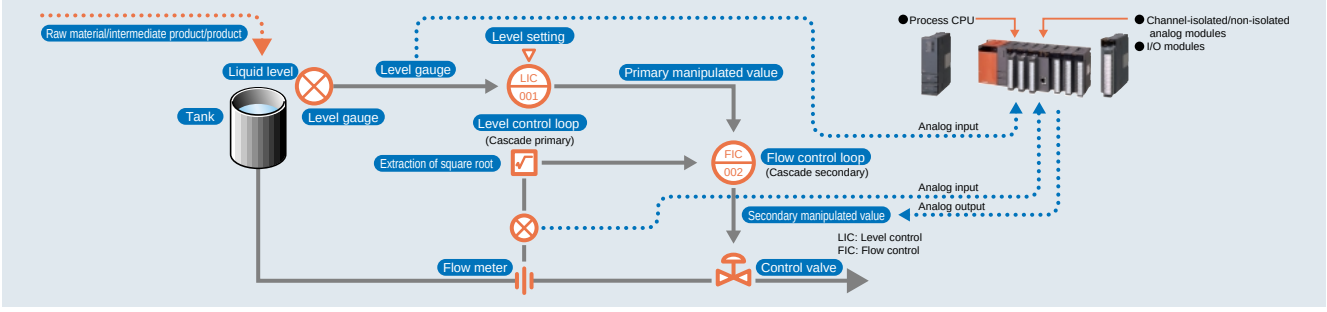
Type	Q64AD-GH	Q62AD-DGH
Analog input range	Voltage (0 to 10V/0 to 5V/1 to 5V/-10 to 10VDC) Current (0 to 20mA/4 to 20mA), user range	2-wire type transmitter (4 to 20mA, user range)
Number of channels	4	2
Resolution	Voltage (0 to 10V/0 to 5V/1 to 5VDC): 0 to 64000 (16 bits) Voltage (-10 to 10VDC): -64000 to 64000 (17 bits) Current: 0 to 64000 (16 bits)	Current: 0 to 64000 (16 bits)
Accuracy	Reference accuracy: ±0.05% (±32 digits, ±16 digits) (Note 4), temperature coefficient: ±71.4ppm/℃	
Conversion speed	10ms/4 channels	10ms/2 channels
Isolation specifications/ Dielectric Withstand voltage	Across channels: Transformer isolated Across analog input and PLC base: Photocoupler isolated 1780VAC (altitude 2000m)	Across channels: Transformer isolated Across analog input and PLC base: Photocoupler isolated Across external supply power and analog input: Transformer isolated Across external supply power and PLC base: Transformer isolated 1780VAC (altitude 2000m)
Distributor	———	Supply voltage 26±2V, max. supply current 24mA

Note 4: ±32 bits in 32-bit format of digital output, ±16 digits in 16-bit format.

Channel-isolated analog output (with output monitor)

Type	Q62DA-FG
Analog output range	Voltage (0 to 5V/1 to 5V/-10 to 10VDC), current (0 to 20mA/4 to 20mA), user range (Note 5)
Number of channels	2
Resolution	1/12000 (Note 6)
Accuracy	Reference accuracy: ±0.1% (voltage ±10mV, current ±20(A), coefficient: ±80ppm/℃
Conversion speed	10ms/2 channels
Isolation specifications/ Dielectric Withstand voltage	Across channels: Transformer isolated, Across analog output and PLC base: Photocoupler isolated Across external supply power and analog output: Transformer isolated Across external supply power and PLC base: Transformer isolated 1780VAC (altitude 2000m)

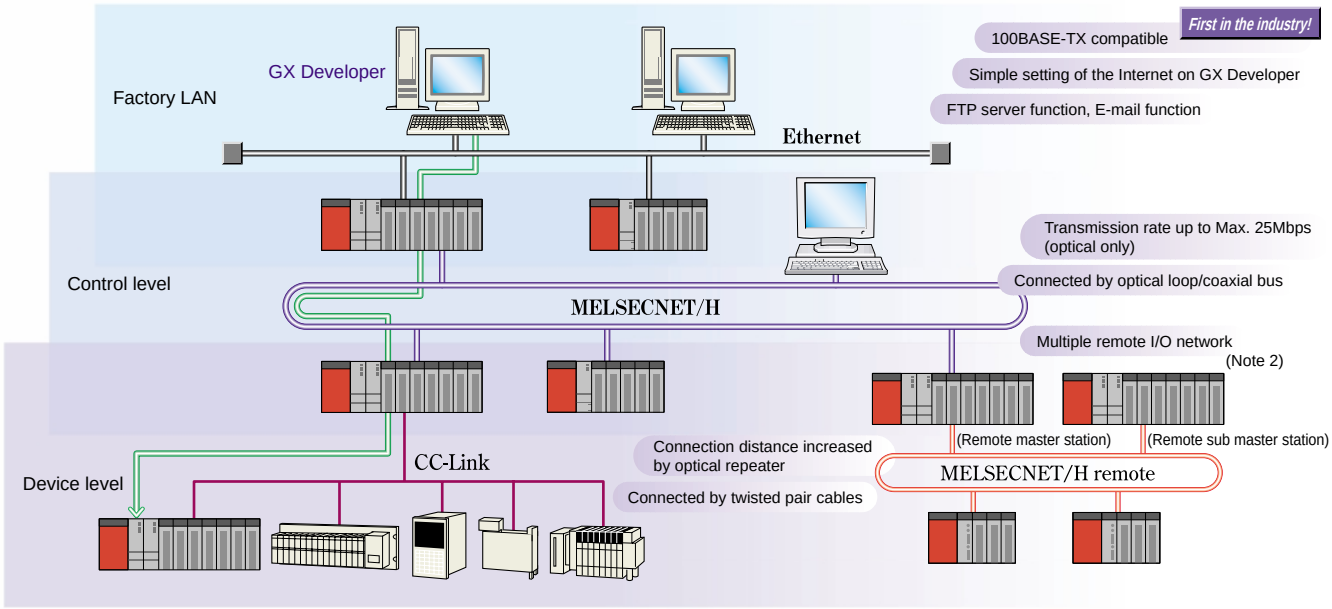
Note 5: Voltage -12 to 12V and current 0 to 22mA can be set in the user-set ranges.
Note 6: ±1/16,000 in the input range of ±10V.



ENHANCED INFORMATION OF FACTORY AUTOMATION 1

Seamless Communication

The Q series Ethernet, MELSECNET/H and CC-Link have achieved seamless access beyond the differences in network type and network hierarchy. Data can be transferred between any networked PLCs and monitored/programmed with the GX Developer-installed personal computer connected to the PLC. (Note 1)

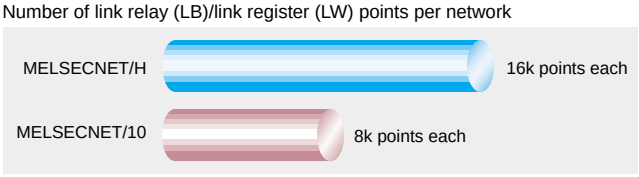


Note 1: Accessible to a PLC on a network located beyond (max. 7) PLCs serving as gateways connected between two networks.
Note 2: By adding a remote sub master station in a remote I/O network system, the remote sub master station takes over operation to continue controlling the remote I/O, without the system being stopped, if the remote

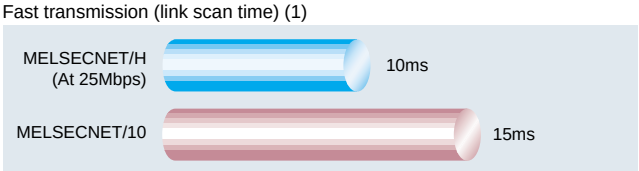
Fast Network

In addition to 10Mbps compatible with the conventional MELSECNET/10, the MELSECNET/H has a choice of two operation modes: the MELSECNET/H mode having Max. 25Mbps transmission rate; and the MELSECNET/10 mode compatible with the conventional A/QnA series. In the MELSECNET/H mode, link scan time is as short as 10ms on a network of a total of 8 stations having 2k link relay points and 2k link register points.

Number of link relay (LB)/link register (LW) points per network

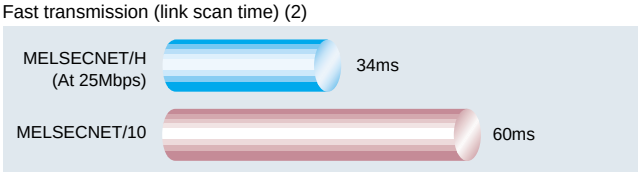


Fast transmission (link scan time) (1)



*When 2k points of link relays (LB) and registers (LW) are assigned to 8 stations, respectively

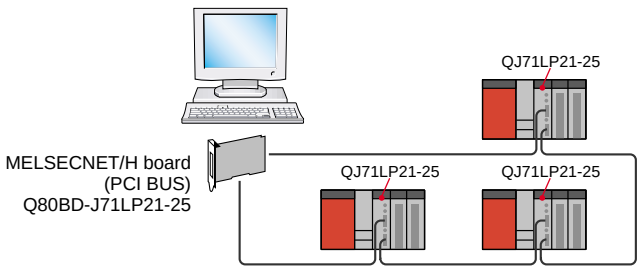
Fast transmission (link scan time) (2)



*When 2k points of link relays (LB) and registers (LW) are assigned to 64 stations, respectively

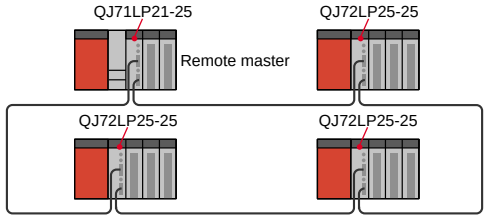
MELSECNET/H Boards for Personal Computer

The Q series has a wide assortment of personal computer boards compatible with the MELSECNET/H network system. These boards maintain the upward compatibility of the conventional MELSECNET/10 board, and use the dedicated software package for board setting to simplify troublesome work. Furthermore, the RAS functions installed ensure ease of error detection.



MELSECNET/H Remote I/O Network

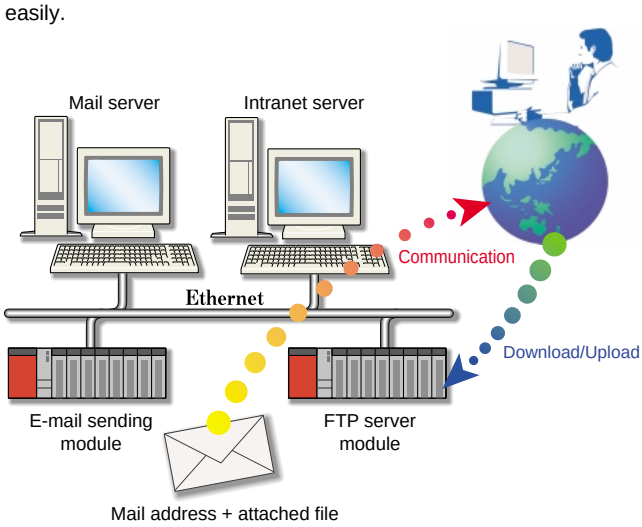
The high-performance model QCPU can configure a remote I/O network using the Q series I/O for large-scale, large-capacity, centralized management and distributed control. It can also configure a multiple remote I/O network.



ENHANCED INFORMATION OF FACTORY AUTOMATION ❷

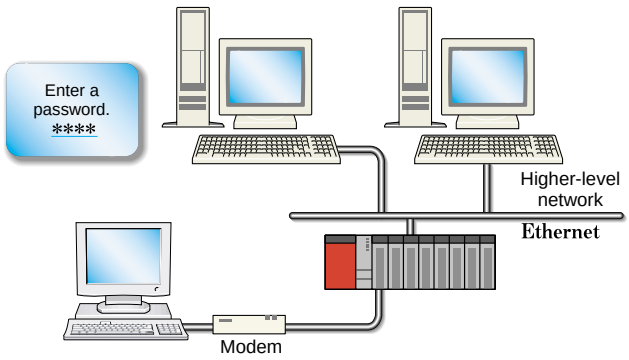
Utilization of the Internet and Intranet

The Q series Ethernet modules include the E-mail communication function as standard. You can transfer production information to/from anywhere in the world and configure a remote monitoring/controlling system easily. For the Intranet, the FTP server function and MC protocol perform program download/upload easily.



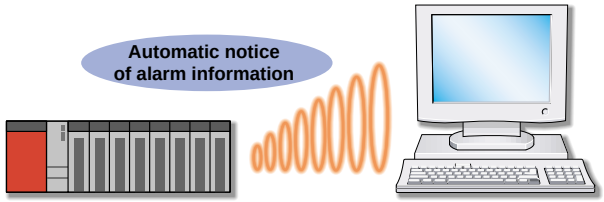
Security Function

The high-performance model QCPU has introduced a remote password function to provide security for remote operations.
A remote password is changed/deleted from a local CPU.



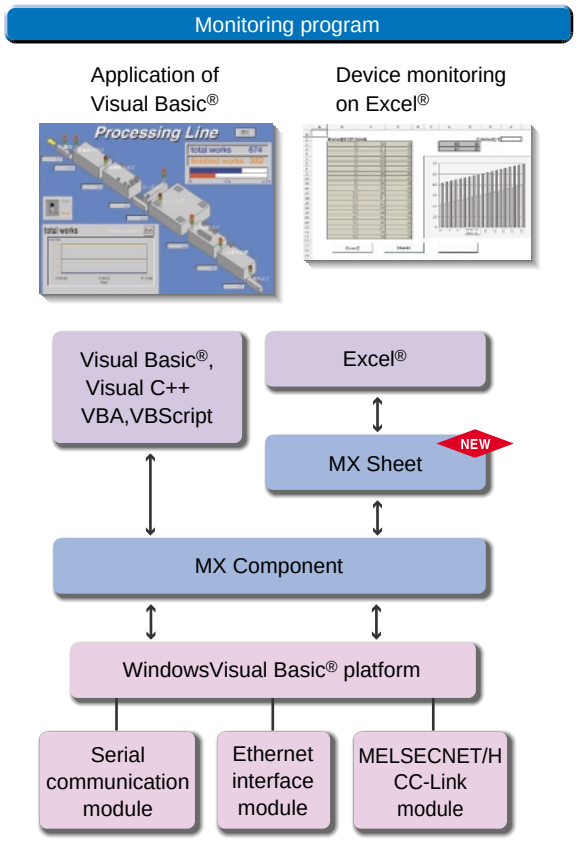
Automatic Notice

A serial communication module (RS-232/422) connected to a personal computer has a function to automatically send data from the PLC to the personal computer when a given condition holds. Also, on Ethernet, this function can be used for E-mail transmission. Use of this function permits rapid transmission of alarm occurrence information, etc., without waiting for polling from the personal computer.



Communication Support Software Packages

The MX series communication support software packages are software tools for Windows® for easy connection of a host monitoring/controlling personal computer to the Q series (connection to QnA, A or FX series also possible). You can easily create a monitoring/control application on Visual Basic®, Visual C++® or Excel® , without being conscious of the different complicated communication protocols of Ethernet,MELSECNET/H, CC-Link, RS-232 serial communication or CPU programming port (RS-232 or USB).
Supporting the VBScript language, MX Component (Ver. 2 or later) can configure a remote monitoring/operating system via the Internet/intranet using Internet Explorer®. For example, when the Web pages using VBScript are made available by a factory, specifying the URL of that factory from a remote location enables remote monitoring/operation to be performed to the factory via the Internet/intranet.



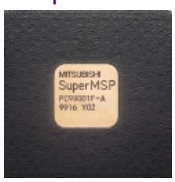
Note: VBA (Excel® 2000/Access® 2000) and VBScript are supported by MX Component Ver. 2 or later.

INCREASED PERFORMANCE AND ACCURACY OF FACILITIES

Concurrent Processing of CPU and Sequence-Dedicated Processor

Having a built-in Super MSP (MELSEC Sequence Processor) processor which exercises optimal sequence control, high-performance model QCPUs have been improved substantially in sequence program code conversion efficiency and processing speed. For example, index qualification (useful for program structuring) will not cause a delay of processing time and in a large-scaled system, the CPU can rapidly run a structured program which uses index qualification many times. Also, concurrent execution of information communication processing and control ensures fast and stable control.

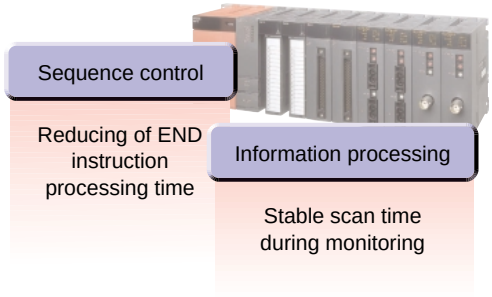
Super MSP



1 High code conversion efficiency of sequence program

2 Rapid processing of sequence program

2 Fast execution of index qualification



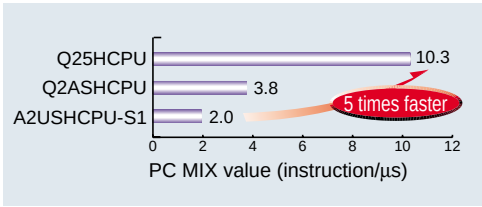
Operation Processing Speeds

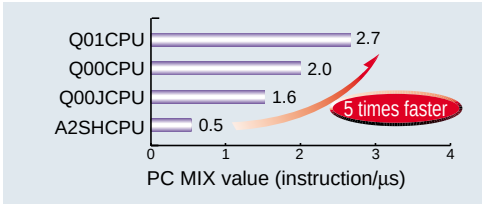
The high-speed type CPU in Q series family has high processing speed: basic instruction processing time is 34ns and PC MIX value is 10.3 (Note 1). It is about 5 times faster than A2USHCPU-S1CPU and about 2.7 times faster than the Q2ASHCPU.
The CPU has dramatically increased floating-point operation speeds for PID and other arithmetic functions.

CPU operation processing speeds

Instruction \ CPU	Basic Model			High-performance Model	
	Q00JCPU	Q00CPU	Q01CPU	Q02CPU	Q02HCPU Q06HCPU Q12HCPU Q25HCPU
LD (LD X0)	200ns	160ns	100ns	79ns	34ns
OUT (OUT Y0)	200ns	160ns	100ns	158ns	68ns
Timer (OUT T0 K5)	1100ns	880ns	550ns	632ns	272ns
Transfer (MOV D0 D1)	700ns	560ns	350ns	237ns	102ns
Addition (+ D0 D1)	1000ns	800ns	500ns	395ns	170ns
Floating-point addition (E+)	—	—	—	1815ns	782ns
PC MIX value (Instruction/µs)	1.6	2.0	2.7	4.4	10.3

PC MIX value comparison

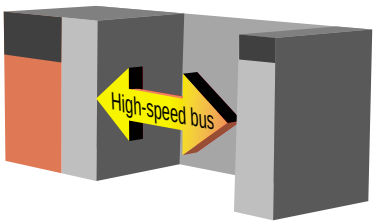




* The PC MIX value is the average number of instructions such as the basic and data processing instructions executed in 1µs. A larger value indicates a higher processing speed.

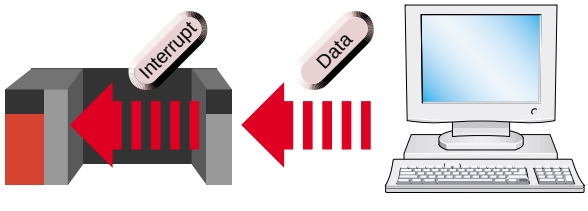
Improved Bus Performance

The system bus speed has been increased to shorten the total transmission time even while communication data capacity increases. The data transfer speed between CPU and network modules is about 4 to 8 times higher than that of the conventional QnA series. This increased speed can minimize the influence of large-capacity data communication on the CPU scan time.



Event Interrupt

The high-performance model QCPU allows a CPU interrupt program to be started up from a network or intelligent function module. With this function, the CPU can rapidly respond to an event that occurs asynchronously with the program scan of the PLC, e.g. data receiving from a network or value compare of a high-speed counter.



INCREASED NEW POSSIBILITIES OF FACTORY AUTOMATION 1

Positioning Modules

■Open collector output/differential output

Open collector and differential driver systems are available as command outputs to enable selection according to applications.
Many functions, e.g. preread starting function for reduction of positioning starting time, are available to ensure fast, multi-application positioning.
GX Configurator-QP (positioning module setting/monitoring tool designed for QD75P/D) facilitates positioning parameter setting, positioning data creation and monitoring.

Type	QD75D1	QD75D2	QD75D4	QD75P1	QD75P2	QD75P4
Number of control axes	1	2	4	1	2	4
Pulse output system	Differential output			Open collector output		
Positioning range	-2,147,483,648 to 2,147,483,647 (μm, inch or degree may also be used for setting)					
Max. output pulses	1,000,000 pulses/s			200,000 pulses/s		
Control system	PTP control, track control, speed control, speed-position switching control, position-speed switching control					
Interpolation control	———	2-axis linear 2-axis circular	2-, 3-, 4-axis linear 2-axis circular	———	2-axis linear 2-axis circular	2-, 3-, 4-axis linear 2-axis circular

■Pulse train output/multi-axis compatibility

The Q series pulse train output/multi-axis compatible positioning modules are fit for multi-axis system that do not need complicated control.They are effective for driving many motors at low costs.
There are 4- and 8-axis compatible modules, which can be selected to meet your system.

Features

1. 1-axis control starts as fast as 0.1ms.
2. Tact time is reduced because of high speed tracking control using stepping motors has reduced the chance of out-of-synchronization to occur.
3. GX Configurator-QP (positioning module setting/monitoring tool designed for QD70) facilitates positioning parameter setting, positioning data creation and monitoring.

*The QD70P4/P8 is not compatible with the A/A1SD70 (analog output).

Type	QD70P4	QD70P8
Number of control axes	4	8
Pulse output system	Open collector output	
Positioning range	-2,147,483,648 to 2,147,483,647 (only pulse may be used for setting)	
Max. output pulses	200,000 pulses/s	
Control system	PTP control, track control (linear only), speed control, speed-position switching control	
Interpolation control	No	
Starting time	For start of 1 axis	0.1ms
	For simultaneous start of 4 axes	0.2ms
	For simultaneous start of 8 axes	0.4ms

INCREASED NEW POSSIBILITIES OF FACTORY AUTOMATION ❷

Temperature Input Modules

Connected with thermocouples/platinum temperature measuring resistors, the Q series temperature input module can import temperature data.
Using GX Configurator-TI (temperature input module setting/monitoring tool), you can make initial settings and automatic refresh settings on the screen, reducing programs.

Features

1. The Q64TDV-GH and Q64TD are channel-isolated.
   The Q64TDV-GH is a module that supports thermocouple temperature data input and micro voltage input.
2. Detected temperature measurement values can be converted into scaling values (%).
3. Temperature sensors conforming to the JIS Standards are usable.
4. Includes wire break detection for temperature sensor/conductor per channel.

Type		Q64TDV-GH NEW	Q64TD	Q64RD
Usable thermocouple		B,R,S,E,K,J,T,N		———
Usable platinum temperature measuring resistor		———		Pt100,JPt100 4-wire type and 3-wire type
Voltage input range		-100mV to +100mV		———
Number of channels		4 + cold junction compensation		4
Output	Temperature conversion value	-2700 to18200 (First decimal place ×10 times)		-2000 to 8500 (First decimal place ×10 times) -200000 to 850000 (Third decimal place ×1000 times)
	Scaling value	16-bit signed binary		
Wire break detection		Yes (channels independent)		
Resolution		B:0.7˚C,R,S:0.8˚C,K,T:0.3˚C,E:0.2˚C, J: 0.1˚C, N: 0.4˚C, micro voltage input: 4μV	B,R,S,N: 0.3℃ K,E,J,T: 0.1℃	0.025˚C
Accuracy		Conversion accuracy + temperature characteristic ×Operating ambient temperature variation value + cold junction guaranteed accuracy (Note 1)	Ambient temperature: 25±5˚C Within ±0.08% 0 to 55˚C Within ±0.25%	
Conversion speed (Note 2)		Sampling cycle×3	40ms/channel	
Sampling period		20ms/channel		———
Isolation system		Across thermocouple input and PLC base: Transformer isolated Across channels: Transformer isolated Across cold junction compensation input and PLC base: Non-isolated		———

Note 1: Refer to the Q64TD manual for details.
Note 2: Time from when the temperature/micro voltage is input until the conversion value is stored into the buffer memory.

Temperature Control Modules

The Q series temperature control modules offer a choice of optimum temperature adjustment control.
Using GX Configurator-TC (temperature control module setting/monitoring tool), you can make initial settings and automatic refresh settings on the screen therefore reducing the program.

Features

1. Direct connection of a thermocouple/platinum temperature-measuring resistor achieves the optimum temperature adjustment control (PID control).
2. Max. four loops temperature adjustment control can be exercised simultaneously.
3. The Q64TCTTBW and Q64TCRTBW can detect the wire disconnection of the heater.

Type	Q64TCTT	Q64TCRT	Q64TCTTBW	Q64TCRTBW
Control output	Transistor output			
Number of temperature inputs	4 channels/module			
Accuracy	Ambient temperature 25˚C ±5˚C, input range width X (± 0.3%) Ambient temperature 0˚C to 55˚C, input range width X (±0.7%)			
Sampling period	0.5s (constant regardless of the number of channels used)			
Number of I/O points occupied	16 points, 1 slot (I/O assignment: 16 intelligent points)		32 points, 2 slots (Default I/O assignment: 16 free points + 16 intelligent points)	

Channel-Isolated Pulse Input Module NEW

The Q series pulse input module realizes precision counting by setting the optimum input filter according to the rise/fall time of the input pulses that are to be counted. Using GX Configurator-CT (counter setting/monitoring tool), you can make initial settings and automatic refresh settings on the screen, reducing sequence programs.

Features

1. Channel-isolated. (Dielectric withstand voltage: 1780VAC for 1 minute)
2. A system can be configured at low cost since a single module includes eight pulse inputs channels.
3. An input pulse count is multiplied by user defined factor to convert the pulse count. (Pre-scale function)

Type	QD60P8-G							
Number of channels	8							
Input system	5VDC/12 to 24VDC							
Input type	1 phase							
Input filter setting	30k	10k	1k	100	50	10	1	0.1
Minimum count pulse width (Duty ratio 50%)	33.4μs	100μs	1ms	10ms	20ms	100ms	1s	10s
Counting range	Frequency counter (number of sampling pulses): 16-bit binary (0 to 32767) Totalizing counter: 0 to 99999999							
Counter type	Linear counter system, ring counter system							

Ethernet Interface Modules (100BASE-TX Compatible)

A 100Mbps-compatible Ethernet interface module is available for the first time in the industry. You can make selection according to the system and the device on the other end.

Features (QJ71E71-100 only)

1. The module is compatible with 100BASE-TX to increase the transmission speed.
2. HTTP communication enables communication to be made using a commercially available Web browser on a personal computer.
   You can download the communication library and sample screens that will operate on the personal computer (Web).
3. Multiple GX Developers can be connected to improve debugging efficiency.
4. Using FTP, you can make file access to a multiple PLC system.

Type	QJ71E71-100	QJ71E71	QJ71E71-B2
Communication speed	100Mbps First in the industry!	10Mbps	
Transmission path	100BASE-TX 10BASE-T	10BASE-5 10BASE-T	10BASE-2
Number of logical ports	16		
Send/receive buffer	Fixed: 1kW Random: 6kW E-mail: 6kW		
Event interrupt	Yes (high-performance model QCPU only)		
Remote password function	Remote password registration for prevention of illegal access		
Compatibility	Compatible with A1SJ71E71/A1SJ71QE71 communication protocol		

B/NET Interface Module

The B/NET is a network designed to perform centralized management or control of power distribution equipment dispersed in a building, plant or the like. This module enables connection of the Q series to the B/NET.

Type	B-QIF
Number of stations connected	63 stations per module
Transmission distance	Max. wiring length = 1km, overall wiring length = 2km
Used cable	CPEV-S *1.2 (twisted pair cable) or equivalent
Compatible address range	1 to 255 addresses

INCREASED NEW POSSIBILITIES OF FACTORY AUTOMATION ❸

Personal Computer CPU Modules

Partner Products

A personal computer CPU module can be loaded on a Q series PLC base (2 slots occupied) to achieve the PC/AT compatible functions.

Features

1. The module can achieve the personal computer functions on a PLC base, downsizing a device/control box.
2. Environmental resistance and noise resistance are on Factory Automation levels. The use of an ATA flash card and silicon disk drive has resolved the problems of HDD life and vibration resistance. You can replace your FA personal computer or personal computer worry-free.
3. Sequence control can be exercised by the PLC CPU and information processing performed by the personal computer CPU to achieve integration of control and information processing, configuring an optimum system.
4. The introduction of MX Component, Soft GOT, Windows® compatible commercially available software and user application software configures a highly free system.
5. The built-in Ethernet communication port helps you configure a system that utilizes the Internet/intranet technology such as E-mail and Web access.
6. A PC card available on the market can be used for flexible system expansion.
7. The built-in USB port allows you to connect a commercially available USB device easily.
8. Using the bus interface driver software enables access to almost all I/O and intelligent function modules from a C-written application program.(However, some modules have restrictions.)
9. The personal computer CPU module only operates in a multiple PLC configuration with PLC CPU and motion CPU, but also as a stand alone personal computer.
10. Because of its fan-free structure, the module has improved in maintenance performance, eliminating such problems as whirled dust particles. You can use the module worry-free in a clean room.

Type		PPC-CPU686(MS)-64	PPC-CPU686(MS)-128
MPU		Mobile Celeron Processor _LP 400MHz	
Memory		64MB	128MB
Video memory		2MB	
IF	USB	2 channels (1 channel as extra connector)	
	Serial	2 channels (D-SUB 9P) (1 channel as extra connector)	
	Parallel	1 channel (extra connector)	
	PS2 mouse/keyboard	Mini DIN 6P Can be used simultaneously by conversion cable.	
	LAN	100BASE-TX/10BASE-T	
	Display	Analog RGB H-Dsub 15P	
	FDD	26P half connector (for connection of Contec make FDD)	
	PC card	PCMCIA, CardBus TypeⅠ,Ⅱ×2 or TypeⅢ×1	
Silicon disk module		Separate module (PCC-SDD(MS)-32/64/128/192/320/500/1000) 1 slot occupied	
Hard disk module		Separate module (PCC-HDD(MS)-5) 5GB 1 slot occupied	
OS		Windows® NT4.0, Windows® 2000, Windows® NT4.0Embedded	

INCREASED NEW POSSIBILITIES OF FACTORY AUTOMATION 4

GP-IB Module

Partner Products

The GP-IB module is mounted on the Q series PLC base to communicate with measuring devices through GP-IB line.

Features

1. The text length that can be communicated at one time for send and receive combined is as large as 63422 bytes.
2. This module has a master/slave function.
   When the master function is selected, the module operates as a system controller and can send address, universal and other commands. When the slave function is selected, the module communicates data under the command of the system controller.

Type	EQGPIB
Number of connectable units	Max. 15 units (including this module)
Connection cable length	Between module and device, between devices: Within 2m (Within a total of 20m in a single system)
Max. text length	63422 bytes for send and receive combined
Data transfer speed	Transfer speed of the slowest device among the connected devices
Access from program	Intelligent function module direct device (or FROM/TO instruction) and I/O instruction
Number of occupied I/O points	16 points per slot

PLC peripheral devices

Partner Products

● Peripheral device designed for field : The EHGP10 handy graphic programmer is a Peripheral device designed for field compatible with the MELSEC-QCPU as well as the QnA and A PLC CPUs. It also has high resistance to environment, and can be operated easily with the touch panel. (For the QCPU, this peripheral device is usable with the high-performance model only.)

● Programming unit : The EPU01 programming unit is compatible with the MELSEC-QCPU as well as the QnA and A PLC CPUs, and can edit programs in the CPU, test devices, and monitor devices. (For the QCPU, this programming unit is usable with the high-performance model only.)

EHGP10 handy graphic programmer

Factory Automation Goods

Partner Products

The Q series has a wide assortment of useful goods to further expand PLC applications.

● Interface terminal units: Available in various output modules, i.e. relay, triac and transistor, and in various connection systems, i.e. one-wire, two-wire and independent common types, to support a wide range of output applications.

Interface terminal units

● Product list

Class	Product	Type	Outline
CPU module-compatible communication module, intelligent module compatible	Connection cable	FA-CBLQC***R2	RS-232C cable for connection of personal computer and CPU (Mini-DIN 6P male)-(D-Sub 9P female) (3, 5, 15m)
		FA-CBL30USB	USB cable for connection of personal computer and CPU (3m)
		FA-CBL25P6P***	RS-232C cable for connection of personal computer, display or like and CPU (Mini-DIN 6P male)-(D-Sub 25P male) (3, 5, 14m)
		FA-CBL9S9P***	RS-232C cable for connection of personal computer and intelligent module (D-Sub 9P male)-(D-Sub 9P female) (3, 5, 15m)
	Optical converter	FA-OPT232**	Optical converter for connection of RS-232 device
	Conversion cable	FA-CBL25S***	Conversion cable for connection of optical converter (0.2m)
	Conversion adaptor	FA-A25S***	Conversion adaptor for connection of optical converter
	Fiber-optic cable	FA-FB*****M	Fiber-optic cable for connection of optical converter (within enclosure, indoors, portable, outdoors)
DC: Input, output module (connector type) compatible	Quick connector type distributed module	FA-CB**XY*	Quick connector type 8- or 16-point distributed module for DC
	Connector/terminal block conversion module	FA-TB**XY*	Terminal block type 8- or 16-point distributed module or 32-point terminal block module for DC
	Connection cable	FA-CBL***FMV	Cable for connection of input or output module and quick connector type distributed module or connector/terminal block conversion module
		FA-(F)CBL***MMH	Cable for connection of quick connector type distributed modules or terminal block type distributed modules
AC/DC: Input, output module (terminal block type) compatible	PLC/terminal block conversion module	FA-TB161AC**	Terminal block conversion module for AC/DC, 16 points/common, 1- or 2-wire type
	Connection cable	FA-CBL**TD	Cable for connection of input or output module and PLC/terminal block conversion module
DC: Output module (connector type) compatible	Interface terminal unit	FA-TH16Y*****	Relay, triac or transistor output terminal unit (16 points)
	Connection cable	FA-CBL***FM2V	Cable for connection of interface terminal unit, 40 cores
		FA-CBL***MMH20	Cable for connection of interface terminal unit, 42 cores
Positioning module compatible	Connection cable	FA-CBLQ75*****	Cable for connection of positioning module and servo amplifier (for QD75)
		FA-CBLQ70*****	Cable for connection of positioning module and servo amplifier (for QD70)
Thermocouple input module compatible	Converter module	FA-TB20TD	Terminal block module for Q64TD
	Connection cable	FA-CBLQ64TD**	Cable for connection of Q64TD terminal block module

Note:Please contact your local distributer.

WIDE ASSORTMENT OF HIGH-PERFORMANCE MODULES

Interrupt Module

Type	QI60
Input type	DC input positive common
Number of input points	16 points (interrupt processing condition setting in units of 1 point)
Rated input voltage/current	24VDC/approx. 6mA
Max. number of simultaneous input points	100% simultaneously ON
ON voltage/ON current	19V or higher 4mA or higher
OFF voltage/OFF current	11V or higher 1.7mA or higher
Response time	0.1/0.2/0.4/0.6/1ms (Note 1)
Common system	16 points/common

Note 1: Supported by CPU module product information "021120000000000-B" or later and GX Developer Ver. 6 or later.

High-Speed, Precision Analog-to-Digital Converter Modules

Type		Q64AD	Q68ADV	Q68ADI
Analog input system		Voltage/current	Voltage	Current
Analog input range		Voltage: 0-5, 1-5, 0-10, ±10V, Current: 0-20, 4-20mA		
Number of channels		4	8	8
Resolution		1/16,000 (0~10V) (Note 2)		
Accuracy	Temperature drift compensation / Ambient temperature	25±5˚C	0~55˚C	
	Yes	±0.1%	±0.3%	
	No		±0.4%	
Conversion speed		80µs/channel (+160µs when temperature drift compensation is made)		

Note 2: ±1/16,000 in the input range of ±10V, 1/12,000 in other input ranges.

High-Speed, Precision Digital-to-Analog Converter Modules

Type		Q62DA	Q64DA	A68DAV	A68DAI
Analog output system		Voltage/current	Voltage/current	Voltage	Current
Analog output range		Voltage: 0-5, 1-5, ±10V, Current: 0-20, 4-20mA			
Number of channels		2	4	8	8
Resolution		1/12,000 (Note 3)			
Accuracy	Ambient temperature	25±5˚C	Within 0.1% (voltage: ±10mV, voltage: ±20µA)		
		0 to 55˚C	Within 0.3% (voltage: ±30mV, voltage: ± 60µA)		
Conversion speed		80µs/ch			

Note 3: ±1/16,000 in the output range of ±10V

High-Speed Counter Modules

Type	QD62	QD62D	QD62E
Number of channels	2		
Input system	5/12/24VDC	Differential	5/12/24VDC
Input type	Single phase, two phases, CW/CCW		
Max. counting speed	200kpps	500kpps	200kpps
Counting range	32bit (-2,147,483,648~2,147,483,647)		
Number of output points	2 points/channel		
Output system	Tr. sink 12/24VDC	Tr. sink 12/24VDC	Tr. source 12/24VDC
Event interrupt function	Yes (high-performance model QCPU only)		

Intelligent Communication Modules

Type		QD51	QD51-R24
Programming language		AD51H-BASIC	
Memory	Program memory	64k bytes/2 tasks	
	Common memory	8k bytes	
	Extended registers	1k words	
	Extended relays	1k points	
	Buffer memory	3k words	
	Communication specifications	Conforming to RS-232, D-Sub 9 pin, 2 channels	Conforming to RS-232, D-Sub 9 pin, 1 channel Conforming to RS-422/485, terminal block, 1 channel
General I/O		27 input points:17 output points	
Max. baudrate		for 2 channels: 38400bps	

MELSECNET/H Interface Modules

Type	QJ71LP21-25	QJ71BR11
Communication speed	25Mbps/10Mbps	10Mbps
Transmission path	Optical SI/QSI-200/250, H-PCF-200/250 duplex loop	Coaxial 75Ω, simplex bus
Transmission distance	At 25Mbps: Interstation 1km (QSI, broad-band H-PCE) /400m (H-PCF)/ 200m (SI) At 10Mbps: Interstation 1km (QSI, broad-band H-PCE) /1km (H-PCF)/ 500m (SI)	Overall distance 500m (5C-2V)
Number of stations connected	64	32
Compatible mode	MELSECNET/H mode, MELSECNET/10 mode	
Number of cyclic points per network	MELSECNET/H mode: LB:16k bit, LW:16kw, LX/LY:8k bit MELSECNET/10 mode: LB:8k bit, LW:8kw, LX/LY:8k bit	
Event interrupt function	Yes (high-performance model QCPU only)	
Compatibility	Connectable with Q/QnA/AnU series MELSECNET/10 in MELSECNET/10 mode; Connectable with Q series MELSECNET/10 in MELSECNET/H mode.	

CC-Link Interface Module

Type	QJ61BT11
Transmission speed /distance (Ver.1.10)	10Mbps/100m, 5Mbps/160m, 2.5Mbps/400m, 625kbps/900m, 156kbps/1200m
Number of modules connected	64 modules
Number of cyclic points per network	Remote I/O: 2048 points Remote register: 256+256 points
Event interrupt function	Yes (high-performance model QCPU only)
Transmission system	Broadcast polling system
Synchronization system	Frame synchronization system
Transmission path type	Bus type (EIA RS485 compliant)

Serial communication modules

Type	QJ71C24	QJ71C24-R2
Transmission path	RS-232 1Ch. RS422/485 1Ch.	RS-232 2Ch. (Note 4)
Transmission speed	50/300/600/1200/4800/9600/ 14.4k/19.2k/38.4k/57.6k/115.2kbps	
Synchronous system	Asynchronous mode	
Protocol	Dedicated, TTY, bidirectional	
CPU interrupt function	Yes (high-performance model QCPU only)	
Compatibility	Compatible with A1SJ71UC24/A1SJ71QC24 communication protocol	
Callback function	Enabled for modem communication Updated	

Note 4: 2 channels of peripheral devices can be connected together.

AS-i master module

NEW

Type	QJ71AS92
Max. number of system slaves	62 (A-Slaves: 31, B-Slaves: 31)
Max. number of I/O points	248 points/248 points (1 point = 1 bit)
Max. number of analog I/O points	124 points/124 points (1 point = 16 bits)
Connection type	Bus network type (any of star, line, tree and ring)
Transmission distance	Max. length 100m (max. length 300m when two repeaters are used)

*Compatible with the AS-i Standard Ver. 2.11. Cannot be used with the A mode model QCPU.

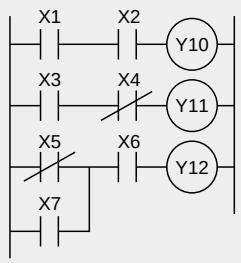
IMPROVEMENT IN PROGRAM PRODUCTIVITY 1

Program Structuring/Standardization

The high-performance model QCPU allows multiple programs designed for different machinery/equipment operating function basis to be created and executed, therefore making program's easy to be appropriated and understood, therefore, making programs easy to be appropriated and understood. The variable execution type programs can be applied different on type operations. The GX Developer comprehensive programming tool enables SFC, Label or Function Block (FB) programming that is more suitable for structuring and standardization, in addition to ladder and list programming.

(Ladder (circuit representation))

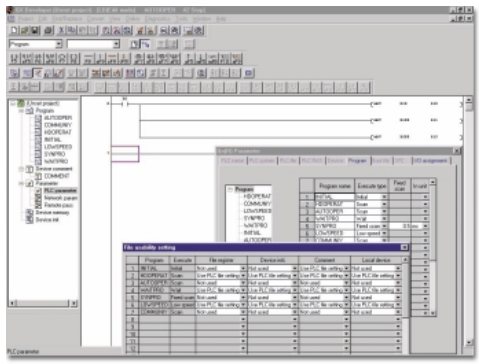
Manual operation program



(Ladder (list representation))

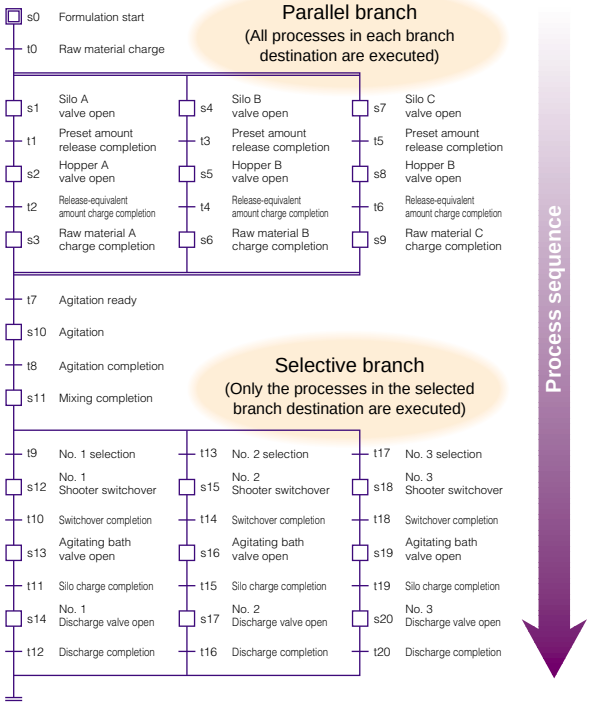
Communication processing program

```
LD X50
MOVP K1 D0
MOVP K4 D3
MOVP H3412 D10
MOVP HBC5A D11
MOVP HF0DE D12
MOVP H0A0D D13
GP.BIDOUT U8 DO D10 M0
```



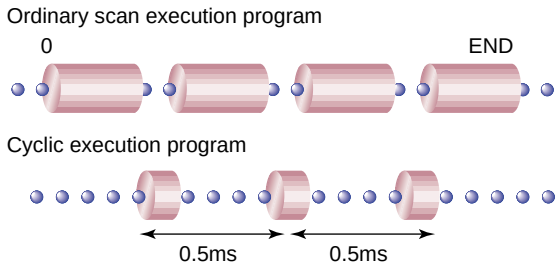
Compatibility with SFC (Sequential Function Chart)

The high-performance model QCPU exploits of SFC programs which are frequently used in process-based control. Representing automatic operation processes, an SFC program is structured, easy to create and excellent in descriptive performance. SFC-specific functions ensure ease of creating semi-automatic and manual programs.



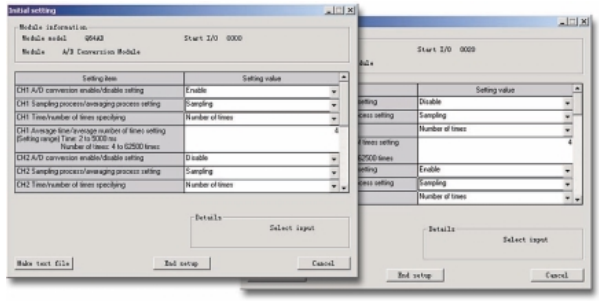
Program-free Initial Settings

A cyclic execution program is started and run at predetermined time intervals. High accuracy can be provided if you use this program in the processing of areas that will particularly influence machining accuracy. The cyclic time intervals can be set to 0.5ms-60s. (High-performance model QCPUs only)
Additionally, the cyclic execution programs of the Q02H/Q06H/Q12H/Q25HCPU can use the 0.2ms high-speed interrupt function.



Cyclic Execution Program

The GX Configurator data setting/monitoring software is available for various intelligent function modules of the Q series. These programs are designed to set the channels used by an analog module and the transmission control and others of a serial communication module, eliminating the need for initial setting sequence programs and reducing program development burdens. Making automatic refresh settings, refreshes the digital values of an analog module and the current feed values and others of a positioning module to the specified devices, eliminating the need for the FROM/TO instructions.



IMPROVEMENT IN PROGRAM PRODUCTIVITY ❷

Label Programming/Function Block (FB)

You can do label programming.

Using labels

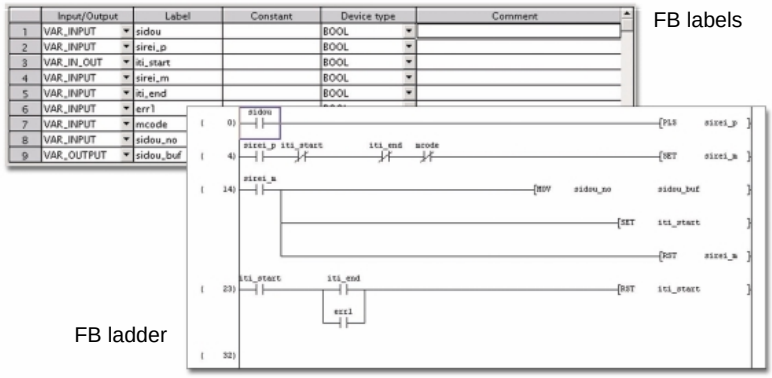
You can create function blocks(FB).

Utilization of components

Incorporate Function Blocks (FBs) into sequence program

By labeling devices for programming, you can create programs before configuring a system without being conscious of device names and device numbers. (Note 1)
Using labeled programs as general programs allows you to assign devices according to the configuration, improving program development efficiency.

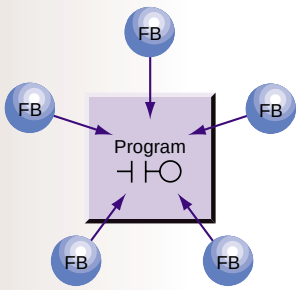
Labels can be used to convert programs into components as function blocks (FBs), such as a ladder program that is used frequently, i.e. a program for communication with an external device using a serial communication module, a positioning initialisation program, etc. (Note 2)

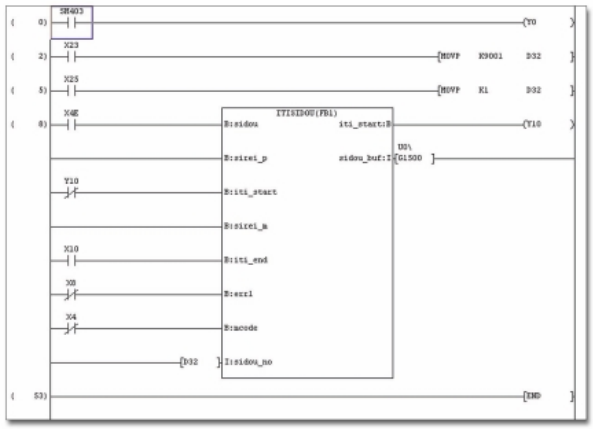


FB labels

FB ladder

You can incorporate a function block (FB) easily into a sequence program by "drag and drop". Function blocks (FBs) can also be copied from one project to another project, thus preventing coding mistakes at the time of utilization, thus preventing coding mistakes at the time of utilization.
A program displayed as a block on GX Developer, improves in readability, ensuring ease of editing and debugging.





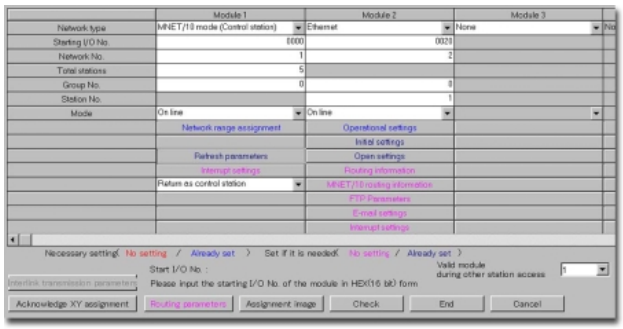
By creating application-based programs as function blocks (FBs) to convert the programs into components, you can combine the components into a program of high readability, reducing program development time.

Note 1: Supported by GX Developer Ver. 6 or later.
Note 2: Supported by GX Developer Ver. 7 or later.
Soon to be supported by QCPU basic models.

IMPROVEMENT IN PROGRAM PRODUCTIVITY ❸

Network Parameter Setting

GX Developer includes Ethernet, MELSECNET/H and CC-Link network parameter setting screens. The Ethernet and CC-Link network settings, which previously had to be made in sequence programs, can now be done using the parameter set-up screen, leading to sharp program reduction and improved setting viewability.

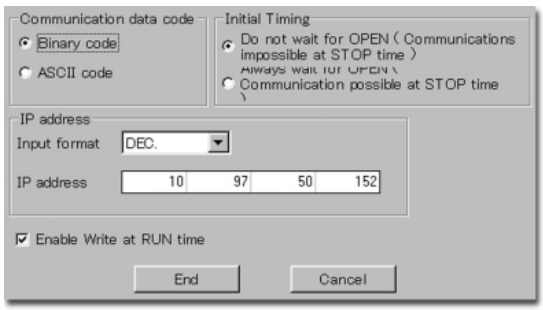


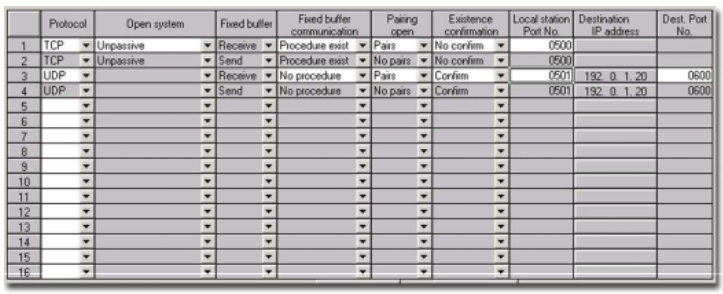
■MELSECNET/H parameter set-up

You can set network range assignment and refresh parameters as previously.

■Ethernet parameter set-up

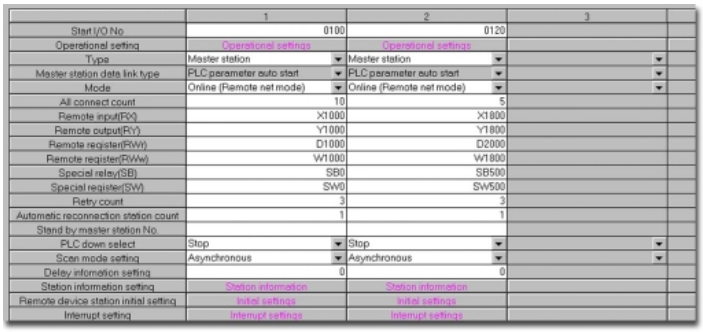
You can set the host IP address, TCP/IP communication timer, DNS server, connection opening processing, router-relayed communication, etc. easily on-screen. You can also set on the network parameter screen the mail server, other-end mail address and automatic notification function for sending and receiving E-mail.





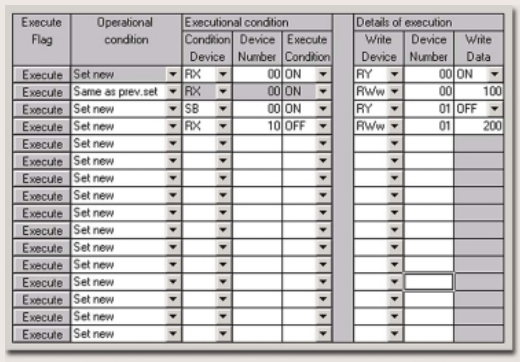
■CC-Link parameter set-up

You can set the number of connected remote stations, retry count, number of automatically returning stations, automatic refresh setting, station information and so on.Automatic refresh setting, which automatically refreshes the information of remote inputs/outputs/registers for the CPU devices, eliminates the need for the sequence program that uses the FROM/TO instructions.



●"Station information" can be set easily by clicking the mouse.

●In the "initial setting of a remote device station", the initial setting that had been made in a sequence program can be registered in the parameters and executed.
(QCPU high-performance models only)



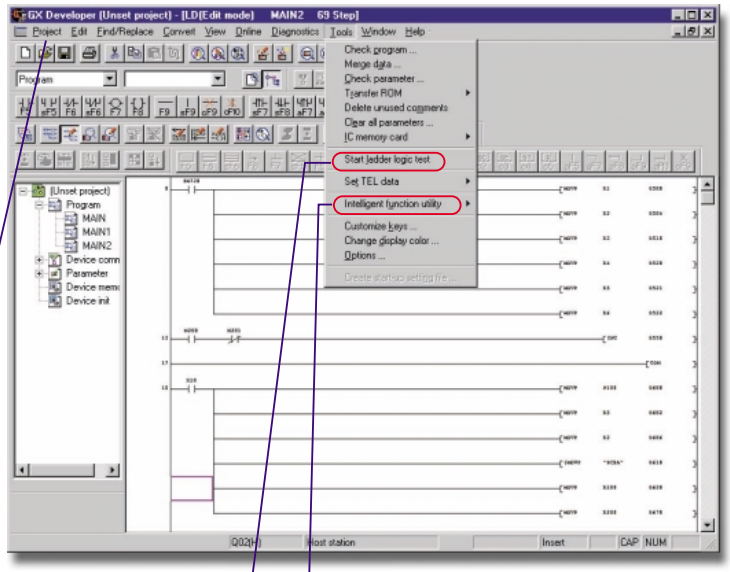
PROGRAM DEVELOPMENT/DEBUGGING EFFICIENCY IMPROVEMENT 1

Overall Factory Automatic Development/Debugging Environment

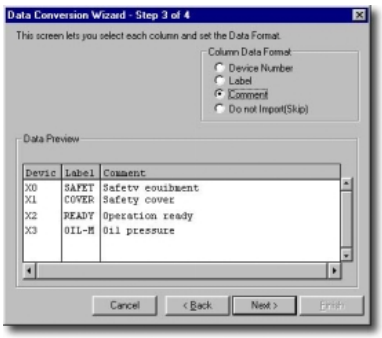
Advanced machinery/equipment and increased programs lead to an increased number of program development processes. The Q series not only provides user-friendly, software products which support programming, monitoring, maintenance, system design, etc. but also enhance their connections, to offer user-friendly, integrated development and debugging

MELSOFT is a generic name for Mitsubishi Electric co.'s integrated Factory Automation software products which take active parts in every scene of design, operation and maintenance.
The MELSOFT products include the GX series programming tools designed to improve the productivity of PLC design and maintenance work and the MX series middleware which directly links FA data to your office to accelerate daily operations.

GX Developer (Programming software)

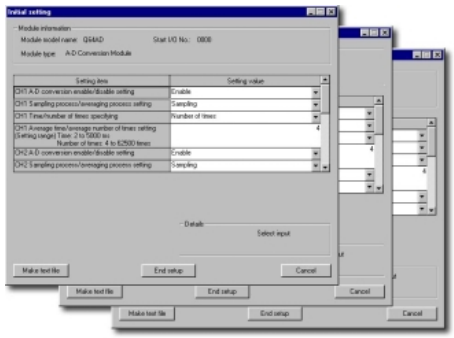


GX Converter
(Word/Excel/text data converter)



GX Simulator
(Simulation software)

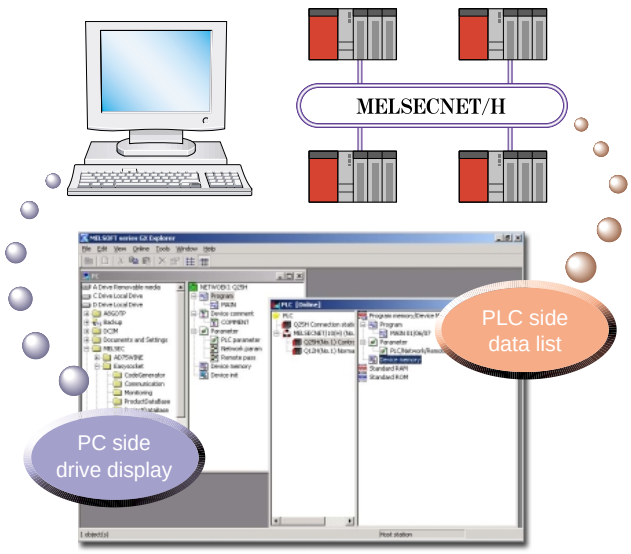
GX Configurator
(Data setting/monitoring software
for various intelligent function modules)



Management of Project Data

Using GX Explorer (project management tool), you can manage project data from both personal computer and PLC simultaneously, whereas before can only be managed separately, in a unified system. Similar to using Windows® Explorer, with GX Explorer you can, start GX Developer, read/write project data to the PLC and perform PLC diagnostics, resulting in improved work efficiency.

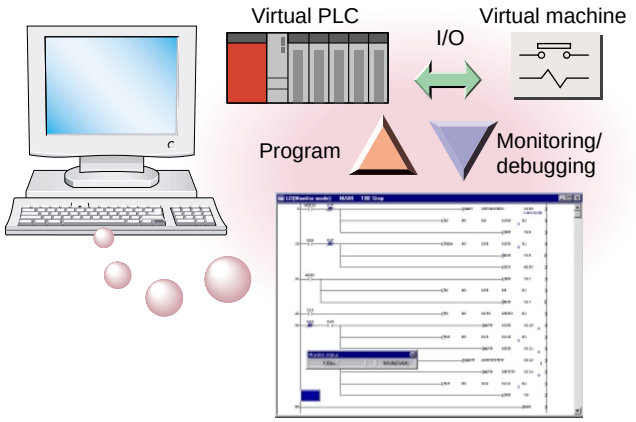
- To start GX Developer, double-click the target data.
- To perform read/write to PLC, drag and drop the target data.
- To make PLC or network diagnostics, right-click the target CPU.



PROGRAM DEVELOPMENT/DEBUGGING EFFICIENCY IMPROVEMENT ❷

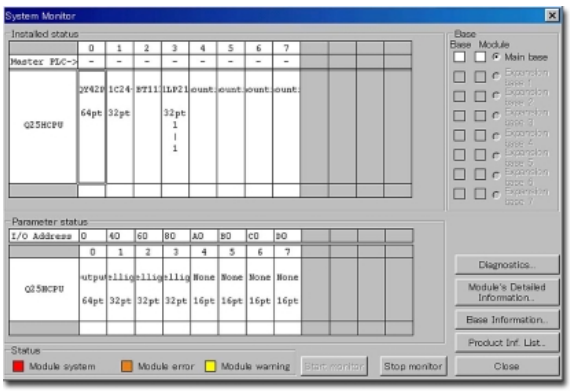
Offline Debugging

GX Simulator (simulation software) is a software tool designed to start a virtual PLC/virtual machine (external I/O) on a personal computer and debug a created sequence program.
You can perform debugging on the personal computer right after designing, without waiting for the completion of PLC I/O wiring. This improves design efficiency.

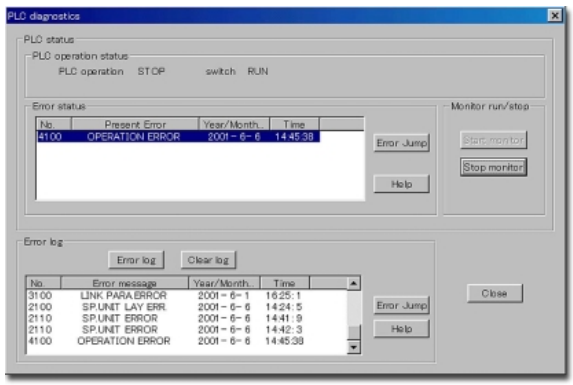


System Monitor

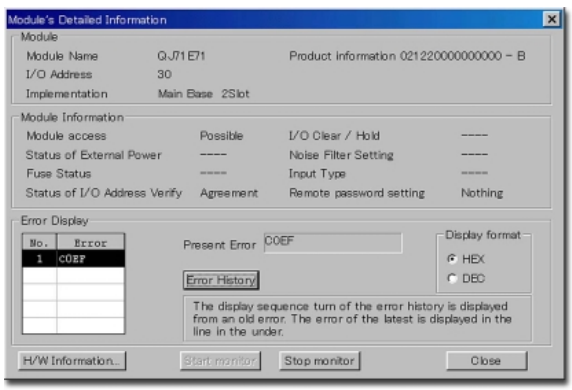
● Checking System Monitor gives you an at-a-glance picture of the PLC system configuration and the error detection status at each module. It supports your recovery operation at occurrence of trouble.



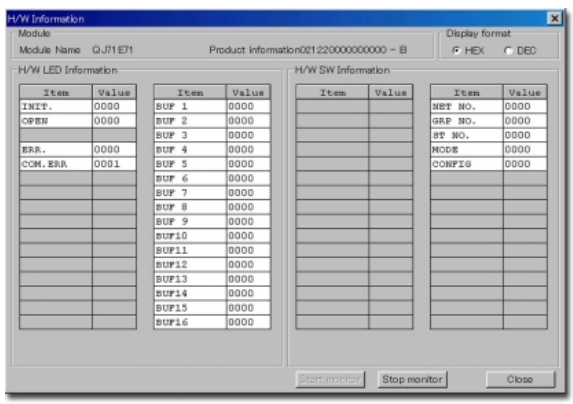
● By choosing the CPU and executing "diagnostics" on the System Monitor screen, you can check for the current error and error history.



● "Module Detail Information" allows you to check I/O and intelligent function modules for the latest error code and error history. You need not monitor the buffer memory's error code storage area to check for errors, ensuring efficient maintenance.



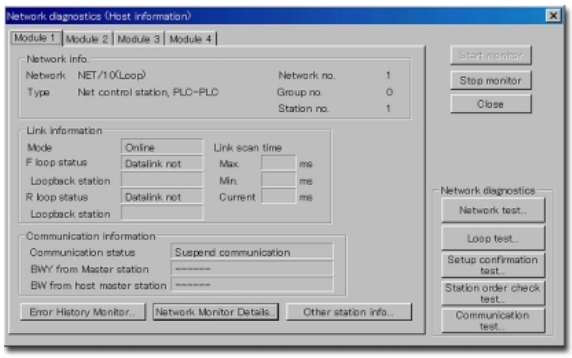
● Hardware Information can be used to check the LED states and switch settings of an intelligent function module. Since you need not go to the worksite to check the LED states of modules, this function is useful for remote program maintenance.



PROGRAM DEVELOPMENT/DEBUGGING EFFICIENCY IMPROVEMENT❸

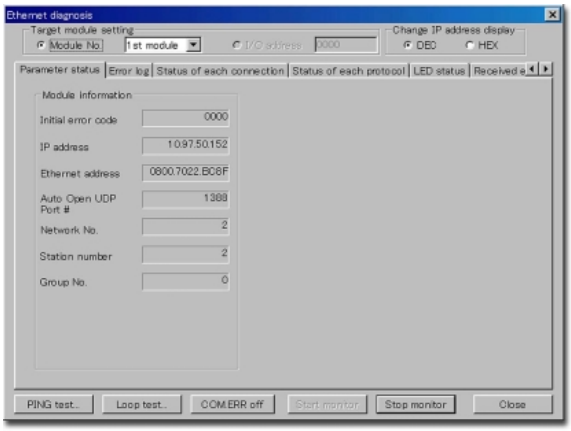
Network Diagnostics

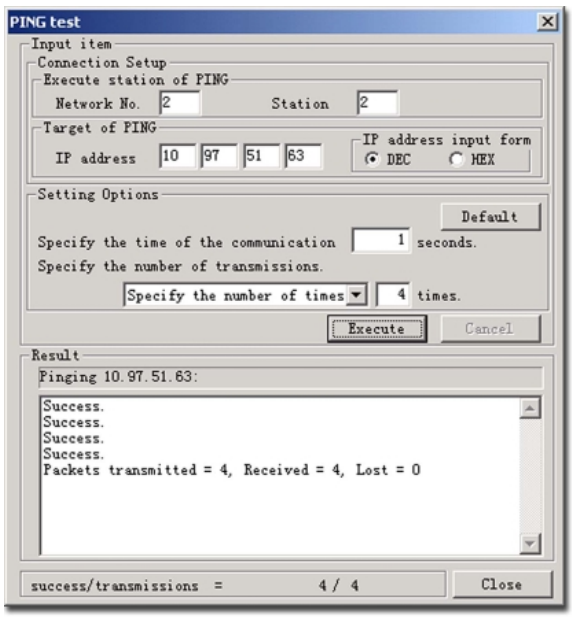
Using Network Diagnostics, you can monitor the network, link and communication information of the host related to the MELSECNET. It also enables network diagnostics such as network and loop tests. "Other Station Information" allows you to monitor the communication, data link and loop states of each station. "Line Monitor Detail" can be used to monitor the control station information, data link information and host's parameter states. "Error History Monitor" allows you to monitor error occurrence conditions.



Ethernet Diagnostics

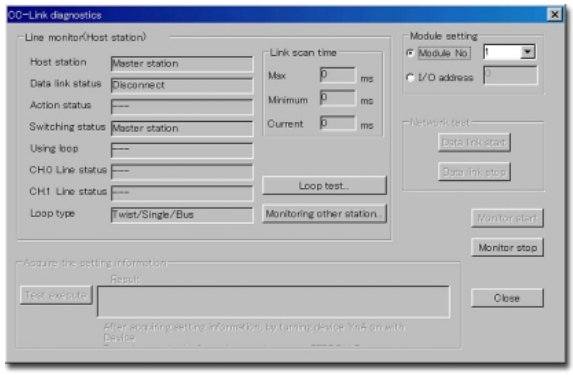
Ethernet Diagnostics can be used to monitor the IP address and other parameter states, error history, connection-based status, LED states, E-mail information and others.
This allows you to know the Ethernet module status and line status easily without monitoring the buffer memory, improving the efficiency of debugging and maintenance. By conducting a "PING Test", you can check for module presence on the Ethernet line from GX Developer. (You need not enter a command in DOS.)





CC-Link Diagnostics

By making CC-Link Diagnostics, you can monitor the data link status, operating status, link scan times and others of the host. "Other Station Monitor" can be used to monitor the data link status, etc. of the other station, and "Line Test" used to check the communication states of connected stations.



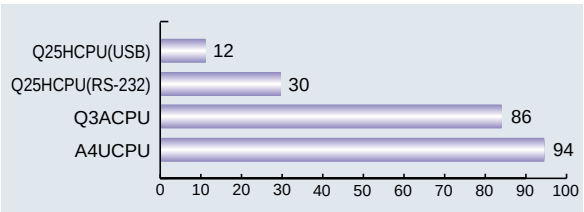
EASY MAINTENANCE

Increased Speed of Programming Port

The Q series CPU modules include an RS-232 port operable at max.115.2kbps as standard. A USB port is also installed which is used with Windows® personal computers (Q00J/Q00/Q01/Q02CPU is equipped with RS-232 only). These high-speed programming ports have achieved much shorter program transfer time and faster monitoring, increasing the adjustment efficiency of machinery/equipment .

Note1: USB is supported by Windows®98/2000/Me only.
Windows®2000/Me is supported by GX Developer Ver. 7 or later.

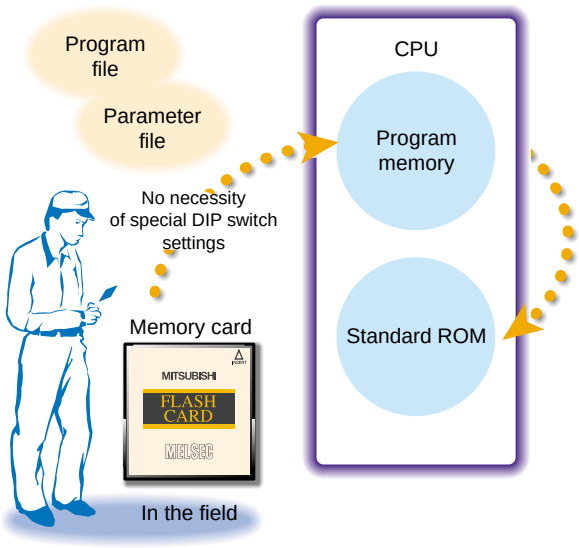
26k-step program and parameter write time (s)



Note2: The time may be longer than above depending on the performance of the personal computer and the conditions of communication with other devices.

Automatic Writing to Standard ROM by PC Card

The high-performance QCPU allows program, parameter and other files stored in a PC card to be transferred automatically to the program memory of a CPU and its contents to be written automatically to the built-in standard ROM. You can send a memory card to a field site, where CPU programs can be modified without using programming software.



Short-Circuit Protection

Some transistor output modules use transistors provided with short-circuit protection to protect the internal circuits of output modules from being burnt out due to a wiring mistake or external device failure.

Built-In Standard ROM

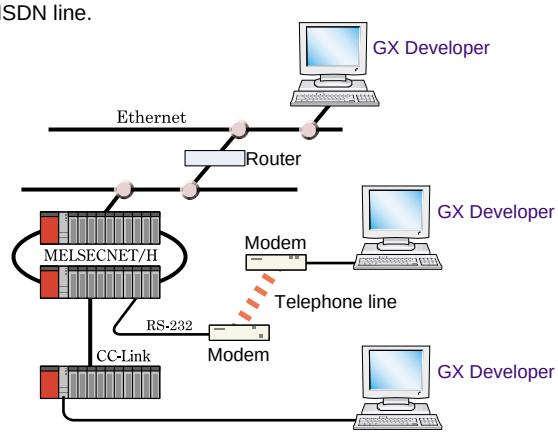
To reduce the risk of program data erasure due to battery failure, built-in flash ROMs are built in all CPU types so there is no need to add a memory card to store programs into ROM.

Online Program Correction

During adjustment of machinery/equipment, partial correction to a program must sometimes be made without stopping sequence processing. The Q series enables online correction to a program (write during RUN). Online program correction can be made to not only the CPU directly connected but also any CPU via a network system (Ethernet, MELSECNET/H, CC-Link). Online rewriting of a program file is also possible (high-performance model QCPUs only), exhibiting the high performance of program correction during adjustment.

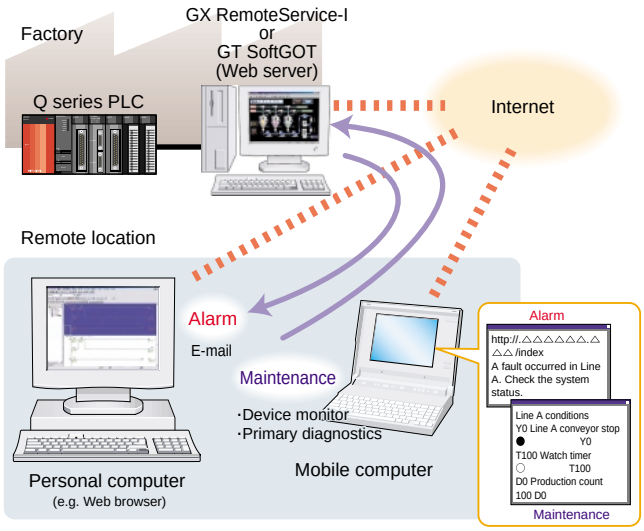
Remote Programming

GX Developer allows online programming and monitoring and testing operations to be performed with the Q series PLCs installed at remote locations. Connections to the Q series PLCs connected to Ethernet can be made via Ethernet, and connections to the PLCs connected with modems can be made via the telephone line/ISDN line.



Remote Maintenance

If a fault occurs in the system, the mobile computer or personal computer is automatically notified of the system status by E-mail. This enables you to monitor the PLC devices with comments and run primary diagnostics if you are at a remote location. The GT SoftGOT HMI software for personal computer or GX Remote Service-I remote maintenance tool has to be installed in the personal computer (Web server), which is connected to the target PLC.

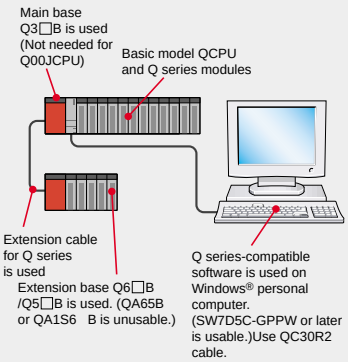
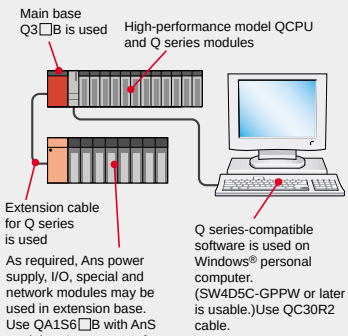
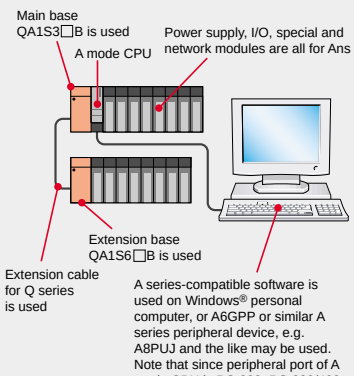


Note 3: GT SoftGOT allows the personal computer to display the same data and perform the same operations as on the GOT900.

UTILIZATION OF EXISTING ASSETS

Utilization of Hardware Assets

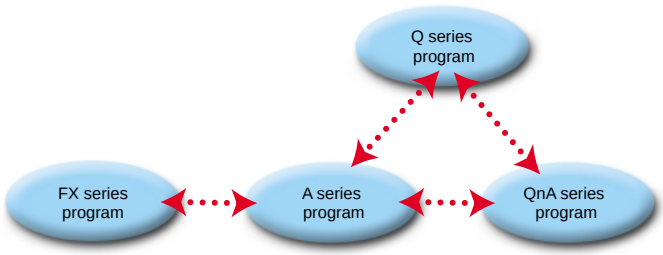
Here are the following two ways to utilize the conventional AnS series hardware.
1) Select the basic model/high-performance model CPU to make the most of the performance and functions of the Q series.
2) Select the A mode model CPU to use the conventional AnS series hardware configuration in order to improve the performance of only the CPU.

	Basic Model	High-performance Model	A Mode
Features	Designed to configure a compact system by combining the basic model QCPU and other Q series modules.	Designed to make the most of the inherent functions and performance capabilities of the Q series by combining the high-performance model QCPU and other Q series modules. If the appropriate module is not available from the Q series, you can use the AnS series module.	Designed for the customer who is using the AnS series to improve only the processing performance of the CPU without changing its programs and hardware. Among the current AnS series hardware, you only need to change the CPU module, bases and extension cables to increase the processing speed.
CPU type	Q00JCPU, Q00CPU, Q01CPU	Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU	Q02CPU-A, Q02HCPU-A, Q06HCPU-A
Usable programs	Q series programs	Q series programs	A series programs
Usable functions	Various functions introduced in this catalog are all usable. (With the exception of the functions indicated "High-performance model")	Various functions introduced in this catalog are all usable.	Only the functions usable in the A series can be used, and various functions introduced in this catalog are not usable with the exception of some functions.
Usable base units	For Q series modules: Q3□B, Q6□B, Q5□B	For Q series modules: Q3□B, Q6□B, Q5□B For A series modules: QA65B, QA1S6□B	QA1S3□B, QA1S6□B
Usable power supply modules	For Q series modules: Q61P-A1/A2, Q6□P	For Q series modules: Q61P-A1/A2, Q6□P For A series modules: A6□P, A1S6□P	A1S6□P
Usable I/O, special, network and other modules	For Q series	For Q series and AnS series (Note 4)	For AnS series
Usable GOT (Note 5)	A900/F900 series GOT Connection method: CPU RS-232, serial communication module, MELSECNET/10, CC-Link, Ethernet, bus	A900/F900 series GOT Connection method: CPU RS-232, serial communication module, MELSECNET/10, CC-Link, Ethernet, bus	A800/900/F900 series GOT Connection method: CPU RS-232, computer link module, MELSECNET/Ⅱ/10/B, CC-Link,Ethernet (bus unconnectable)
Usable peripheral devices	For Q series	For Q series	For A series
System configuration example			

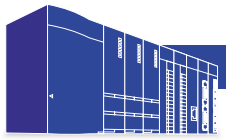
Note 4: Some modules for the AnS series, e.g. MELSECNET/II and MELSECNET/B, are not usable or have operating restrictions. Check details in the Q series data book.
Note 5: Only the RS-232 port may be used for connection with the GOT-F900 series.

Utilization of Software Assets

Q series programs are required to use the Q series. As the conversion tool is available to convert A/QnA series programs into Q series programs, transition to the Q series can be made easily without wasting your program assets. (Note 6)(Note 7)



Note 6: Since some instructions are unusable, refer to the Q series data book for details.
Note 7: The A mode model does not require programs to be converted.



CPU MODULE PERFORMANCE SPECIFICATIONS

1 Basic Models, High-performance Models

Operation mode		Basic model			High performance model				
CPU type		Q00JCPU	Q00CPU	Q01CPU	Q02CPU	Q02HCPU	Q06CPU	Q12HCPU	Q25HCPU
Programming language		Ladder/list			Ladder/list/SFC				
Program standardization and conversion into components		Label, FB (soon to be supported)			Label, FB				
I/O control		Refresh							
Number of I/O device points (Note 1)		2048 points			8192 points				
Number of I/O points (Note 2)		256 points	1024 points		4096 points				
Program capacity (step)		8k		14k	28k		60k	124k	252k
Processing speed	LD instruction	200ns	160ns	100ns	79ns	34ns			
	MOV instruction	700ns	560ns	350ns	237ns	102ns			
	Floating-point addition	—			1.8μs	782ns			
	Index qualification	No delay time							
	PC MIX value	1.6	2.0	2.7	4.4	10.3			
Data memory	Bit device (points)	Internal relay M: 8k Latch relay L: 2k	Link relay B: 2k Edge relay V: 1k Annunciator F: 1k	Special relay SM: 1k Special link relay SB: 1k	Internal relay M: 8k Latch relay L: 8k Step relay S: 8k	Link relay B: 8k Edge relay V: 2k Annunciator F: 2k	Special relay SM: 2k Special link relay SB: 2k		
	Timer/counter (points)	Timer (low/high speed) T: 512k (Low/high speed measuring increments are set in parameters) Retentive timer ST: 0k Counter C: 512			Timer (low/high speed) T: 2k (Low/high speed measuring increments are set in parameters) Retentive timer ST: 0k Counter C: 1k				
	Word device (points)	Data register D: 11136 Special register SD: 1k Index register Z: 10	Link register W: 2k Special link register SW: 1k		Data register D: 12k Link register W: 8k Index register Z: 16	File register (built-in) R: 128k (Note 4) Special register SD: 2k Special link register SW: 2k			
		File register (built-in) R: 32k (Note 3)							
Extended file register R (points)		No			Max. 1018k points (memory card required) (Note 5)				
Pointer, nesting (points)		Pointer P: 300, interrupt pointer I: 128, nesting N: 15			Pointer P: 4096, interrupt pointer I: 256, nesting N: 15				
Constant handled		16-bit integer, 32-bit integer			16-bit integer, 32-bit integer, single-precision real number, character string				
Communication port		RS-232:115.2kbps (Max.)			RS-232:115.2kbps (Max.), USB:12Mbps				
Max. number of I/O slots		16	24		64				

Note 1: Total number of I/O points on basic and extension bases directly controlled from a CPU module and I/O points controlled as remote I/O by a remote I/O network
Note 2: Number of I/O points on basic and extension bases directly controlled from a CPU module
Note 3: None for Q00JCPU, 32k for Q00/Q01CPU
Note 4: 32k for Q02CPU, 64k for Q02H/Q06HCPU, 128k for Q12H/Q25HCPU
Note 5: SRAM card: 1017k for Q2MEM-2MBS, 505k for Q2MEM-1MBS, Flash card: 1018k for Q2MEM-4MBF, 1017k for Q2MEM-2MBF

*The number of points of each device in the Q mode data memory can be changed as desired within the range of 16k words for the Q00J/Q00/Q01CPU or 29k words for the Q02/Q02H/Q06H/Q12H/Q25HCPU.

2 A mode model

Operation mode		A mode		
CPU type		Q02CPU-A	Q02HCPU-A	Q06HCPU-A
Programming language		Ladder/list/SFC		
I/O control		Refresh		
Number of I/O device points (Note 6)		8192 points		
Number of I/O points (Note 7)		4096 points		
Program capacity (step)		28k		30k×2
Processing speed	LD instruction	79ns	34ns	
	MOV instruction	474ns	204ns	
	Floating-point addition	250μs	108μs	
	PC MIX value	2.6	5.6	
Data memory	Bit device (points)	Internal/latch relay M/L: 8k	Link relay B: 8k	Annunciator F: 2k Special relay M: 256k
	Timer/counter (points)	Timer (low speed 100ms, high speed 10ms, retentive 100ms) T: 2k		Counter C: 1k
	Word device (points)	Data register D: 8k File register R: 8k	Link register W: 8k Accumulator A: 2	Index register Z/V: 14 Special register D: 256
Extended file R		Max. 64k points (built-in) + 152k points (memory card required)		
Pointer, nesting		Pointer P: 256, interrupt pointer I: 32, nesting N: 8		
Constant handled		6-bit integer, 32-bit integer		
Communication port		RS-232:115.2kbps (Max.)		
Max. number of I/O slots		64		

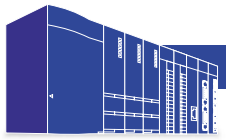
Note 6: Total number of I/O points on basic and extension bases directly controlled from a CPU module and I/O points controlled as remote I/O by a remote I/O network
Note 7: Number of I/O points on basic and extension bases directly controlled from a CPU module

GERERAL 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	Specifications				
Operating ambient temperature	0~55°C (Note 8)				
Storage ambient temperature	-25 to 75°C (Note 8) (Note 9)				
Operating ambient humidity	IEC(EN)61131-2 Level RH-2 (5 to 95%RH: non-condensing) (Note 10)				
Storage ambient humidity	IEC(EN)61131-2 Level RH-2 (5 to 95%RH: non-condensing) (Note 10)				
Vibration resistance	Conforming to IEC 61131-2	Under intermittent vibration			Sweep count
		Frequency	Acceleration	Amplitude	10 times each in X, Y, Z directions (for 80 min.)
		10~57Hz	—	0.075mm	
		57~150Hz	9.8m/s^2	—	
		Under continuous vibration			
		Frequency	Acceleration	Amplitude	
		10~57Hz	—	0.035mm	
		57~150Hz	4.9m/s^2	—	
Shock resistance	Conforming to IEC(EN)61131-2 147 m/s^2, 3 times in each of 3 directions X, Y, Z				
Operating atmosphere	No corrosive gases				
Operating altitude	IEC(EN)61131-2 2000m max. (Note 11)				
Installation location	Inside control box				
Overvoltage category (Note 1)	IEC(EN)61131-2 Category II or less (Note 12)				
Pollution level (Note 2)	IEC(EN)61131-2 Pollution level 2 or less. (Note 13)				

Note 8: The operating/storage ambient temperature satisfies the requirements beyond the requirements in IEC(EN)61131-2.
Note 9: When used with the AnS series modules, the Q series PLC should be stored at -20 to 75°C.
Note 10: When used with the AnS series modules, the Q series PLC should be operated within 10 to 90%RH.
Note 11: The PLC cannot be used under pressure higher than the atmospheric pressure of altitude 0m. Doing so can cause a failure.
Note 12: 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.
Note 13: This index indicates the degree to which conductive material is generated in the environment where the equipment is used. In pollution level 2, only non-conductive pollution occurs but temporary conductivity may be produced due to condensing.



PRODUCT LIST

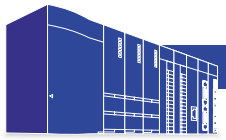
Q Mode Model List

Product		Type	Outline
CPU module for Q mode	Basic model	Q00JCPU	Program step: 8k steps CPU integrated with power supply and base
		Q00CPU	Program step: 8k steps
		Q01CPU	Program step: 14k steps
	High-performance model	Q02CPU Updated	Program step: 28k steps
		Q02HCPU Updated	Program step: 28k steps
		Q06HCPU Updated	Program step: 60k steps
		Q12HCPU Updated	Program step: 124k steps
		Q25HCPU Updated	Program step: 252k steps
Proces CPU module		Q12PHCPU NEW	Program step: 124k steps
		Q25PHCPU NEW	Program step: 252k steps
Motion CPU module		Q172CPU	For 8-axis control
		Q173CPU	For 32-axis control
Battery		Q6BAT	Replacement battery for Q02/Q02H/Q06H/Q12H/Q25HCPU
IC memory card		Q2MEM-1MBS Version Up	SRAM card: 1M bytes
		Q2MEM-2MBS NEW	SRAM card: 2M bytes
		Q2MEM-2MBF	Flash card: 2M bytes (Flash ROM)
		Q2MEM-4MBF	Flash card: 4M bytes (Flash ROM)
		Q2MEM-8MBA	ATA card: 8M bytes (ATA flash ROM)
		Q2MEM-16MBA	ATA card: 16M bytes (ATA flash ROM)
		Q2MEM-32MBA	ATA card: 32M bytes (ATA flash ROM)
SRAM card battery		Q2MEM-BAT	Replacement battery for Q2MEM-1MBS
Base unit	Main	Q33B	Power supply + CPU + 3 I/O slots for Q series modules
		Q35B	Power supply + CPU + 5 I/O slots for Q series modules
		Q38B	Power supply + CPU + 8 I/O slots for Q series modules
		Q312B	Power supply + CPU + 12 I/O slots for Q series modules
	Extension	Q63B	Power supply + 3 I/O slots for Q series modules
		Q65B	Power supply + 5 I/O slots for Q series modules
		Q68B	Power supply + 8 I/O slots for Q series modules
		Q612B	Power supply + 12 I/O slots for Q series modules
		Q52B	2 I/O slots for Q series modules (power supply module unnecessary)
		Q55B	5 I/O slots for Q series modules (power supply module unnecessary)
	Adaptor	Q6DIN1	DIN rail mounting adaptor for Q38B/Q312B/Q68B/Q612B
		Q6DIN2	DIN rail mounting adaptor for Q35B/Q65B
		Q6DIN3	DIN rail mounting adaptor for Q33B/Q63B
Extension cable		QC05B	0.45m (1.48feet)
		QC06B	0.6m (1.96feet)
		QC12B	1.2m (3.93feet)
		QC30B	3m (9.84feet)
		QC50B	5m (16.4feet)
		QC100B	10m (32.8feet)
Power supply module		Q00JCPU (Power supply section)	100-240VAC input/5VDC 3A output (consisting of CPU, power supply and base)
		Q61P-A1	100-120VAC input/5VDC 6A output
		Q61P-A2	200-240VAC input/5VDC 6A output
		Q62P	100-240VAC input/5VDC 3A, 24VDC 0.6A output
		Q63P	24VDC input/5VDC 6A output
		Q64P	100-120/200-240VAC input/5VDC 8.5A output
Input module	AC	QX10	100-120VAC/7 to 8mA, 16 points, response time: 20ms, terminal block
		QX28	240VAC, 8 points, terminal block
	DC (Note 1)	QX40	24VDC/4mA, positive common, 16 points, response time: 1/5/10/20/70ms, terminal block
		QX40-S1	24VDC positive common, 16 points, terminal block, for high-speed input (response time of 0.1/0.2/0.4/0.6/1ms)
		QX41	24VDC/4mA, positive common, 32 points, response time: 1/5/10/20/70ms, connector (Note 3)
		QX42	24VDC/4mA, positive common, 64 points, response time: 1/5/10/20/70ms, connector (Note 3)
	DC sensor (Note 1)	QX70	5-12VDC input shared between positive common and negative common, 16-point terminal block
		QX71	5-12VDC input shared between positive common and negative common, 32-point connector (Note 3)
		QX72	5-12VDC input shared between positive common and negative common, 64-point connector (Note 3)
	DC (Note 1)	QX80	24VDC/4mA, negative common, 16 points, response time: 1/5/10/20/0ms, terminal block
		QX81	24VDC/4mA, negative common, 32 points, response time: 1/5/10/20/0ms, connector (Note 4)
Output module	Contact	QY10	240VAC/24VDC, 2A/point 8A/common, 16 points (16 points/common), output delay: 12ms, without fuse, terminal block
		QY18A	240VAC/24VDC, 2A/point 8 independent contact output points, block, without fuse.
	AC triac	QY22	240VAC/0.6A, 16 points, terminal block, without fuse
	Transistor (Sink)	QY40P	12/24VDC 0.1A/point, 1.6A/common, 16 points (16 points/common), output delay: 1ms, terminal block, with short-circuit protection function
		QY41P	12/24VDC 0.1A/point, 2A/common, 32 points (32 points/common), output delay: 1ms, connector, with short-circuit protection function (Note 3)
		QY42P	12/24VDC 0.1A/point, 2A/common, 64 points (32 points/common), output delay: 1ms, connector, with short-circuit protection function (Note 3)
		QY50	12/24VDC 0.5A/point, 4A/common, 16 points (16 points/common), output delay: 1ms, with fuse, terminal block
	Transistor	QY68A	5-24VDC, 2A/point, 8A/module, 8 points, all points independent, sink/source, terminal block, without fuse
	TTL·CMOS (Sink)	QY70	5/12VDC, 16mA/point, 16 points (16 points/common), output delay: 0.3ms, with fuse, terminal block
		QY71	5/12VDC, 16mA/point, 32 points (32 points/common), output delay: 0.3ms, with fuse, connector (Note 3)
	Transistor (Source)	QY80	12/24VDC 0.5A/point, 4A/common, 16 points (16 points/common), output delay: 1ms, with fuse, terminal block
		QY81P	12/24VDC 0.1A/point, 2A/common, 32 points (32 points/common), output delay: 1ms, connector, with short-circuit protection function (Note 4)

Product	Type	Outline
I/O composite module: DC input /transistor output	QH42P	24VDC positive common input: 32 points (response time: 1/5/10/20/70ms) 12-24VDC, 0.1A sink output: 32 points, connector, with short-circuit protection function (note3)
	QX48Y57	24VDC positive common input: 8 points 12-24VDC/0.5A sink output: 7 points, with fuse, terminal block
I/O module connector	A6CON1	Soldering 32-point connector (for QX41/42, QX71/72, QY41P/42P,QY71, QH42P)
	A6CON2	Solderless terminal connection 32-point connector (for QX41/42, QX71/72, QY41P/42P, QY71, QH42P)
	A6CON3	Flat cable pressure-displacement 32-point connector (for QX41/42, QX71/72, QY41P/42P, QY71, QH42P)
	A6CON1E	Soldering 32-point connector (for QX81, QY81P)
	A6CON2E	Crimp-contact connection 32-point connector (for QX81, QY81P)
	A6CON3E	Flat cable pressure-displacement 32-point connector (for QX81, QY81P)
Terminal block adaptor	Q6TE-18S	For 16-point I/O, 0.3 to 1.5mm² (AWG22 to 16)
	Q6TA32 NEW	For 32-point I/O, 0.5mm² (AWG20)
Terminal block adaptor-dedicated tool	Q6TA32-TOL NEW	Tool exclusively used for Q6TA32
Interrupt module (Note 7)	QI60	16 points, response time: 0.1/0.2/0.4/0.6/1ms
Blank cover	QG60	Blank cover for I/O slot
Channel-isolated analog module	Q64AD-GH NEW	4 channels, analog-to-digital conversion: voltage/current input
	Q62AD-DGH NEW	2 channels, digital-to-analog conversion with signal conditioning function
	Q62DA-FG NEW	2 channels, digital-to-analog conversion: voltage/current output (with output monitor)
Channel-isolated thermocouple input module	Q64TDV-GH NEW	4 channels, thermocouple input, micro voltage input
	Q64TD Updated	4 channels, thermocouple input
Analog module (Note 6)	Q64AD Updated	4 channels, analog-to-digital conversion: voltage/current input
	Q68ADV Updated	8 channels, analog-to-digital conversion: voltage input
	Q68ADI Updated	8 channels, analog-to-digital conversion: voltage input
	Q62DA Updated	2 channels, digital-to-analog conversion: voltage/current output
	Q64DA Updated	4 channels, digital-to-analog conversion: voltage/current output
	Q68DAV Updated	8 channels, digital-to-analog conversion: voltage output
	Q68DAI Updated	8 channels, digital-to-analog conversion: current output
Temperature inputmodule	Q64RD Updated	4 channels, platinum temperature measuring resistor input (3/4-wire type)
Temperature control module (Note 6)	Q64TCTT Updated	Thermocouple input-transistor output
	Q64TCTTBW Updated	Thermocouple input-transistor output with wire breakage detection function
	Q64TCRT Updated	Platinum resistance thermometer input-transistor output
	Q64TCRTBW Updated	Platinum resistance thermometer input-transistor output with wire breakage detection function
Channel-isolated pulse input module	QD60P8-G NEW	8 channels, 5/12 to 24VDC input, input filter setting, with pre-scale function
High-speed counter	QD62	2 channels, 200kpps, 5/12/24VDC input, sink transistor output (Note 2)
	QD62D	2 channels, 500kpps, differential input, sink transistor output (Note 2)
	QD62E	2 channels, 200kpps, 5/12/24VDC input, source transistor output (Note 2)
Positioning module (Note 6)	QD75P1	1-axis, open collector output (Note 2)
	QD75P2	2-axis, open collector output (Note 2)
	QD75P4	4-axis, open collector output (Note 2)
	QD75D1	1-axis, differential output (Note 2)
	QD75D2	2-axis, differential output (Note 2)
	QD75D4	4-axis, differential output (Note 2)
	QD70P4	4-axis, pulse output (Note 2)
	QD70P8	8-axis, pulse output (Note 2)
Ethernet module	QJ71E71	For 10BASE-5/10BASE-T
	QJ71E71-B2	For 10BASE-2
	QJ71E71-100	For 10BASE-T/100BASE-TX
MELSECNET/H module	QJ71LP21-25	SI/QSI optical cable, duplex loop, for control, ordinary or master station
	QJ71LP21G	GI optical cable, duplex loop, for control, ordinary or master station
	QJ72LP25-25	SI/QSI optical cable, duplex loop, for remote I/O station
	QJ72LP25G	GI optical cable, duplex loop, for remote I/O station
	QJ71BR11	Coaxial 75Ω cable, simplex bus
	QJ72BR15	Coaxial 75Ω cable, simplex bus for remote I/O station
	Q80BD-J71LP21-25	MELSECNET/H board for personal computer, optical cable specifications, for control or ordinary station
	Q80BD-J71LP21G	MELSEC/H board for personal computer, SI/QSI/H-PC optical cable specifications, for control or ordinary station
	Q80BD-J71BR11	MELSECNET/H board for personal computer, coaxial cable specifications, for control or ordinary station
CC-Link module (Note 6)	QJ61BT11	For master/local
Serial communication module (Note 6)	QJ71C24	RS-232 1 channel, RS-422/485 1 channel
	QJ71C24-R2	RS-232 2 channels
Modem interface module	QJ71CMO	Built-in modem 1 channel/RS-232 1 channel
Intelligent communication module	QD51	RS232 2 channels
	QD51-R24	RS232 1 channel, RS422/485 1 channel
	SW1IDV-AD51HP (Note 5)	QD51 software package (shared between DOS/V personal computer and AD51H-S3/A1SD51S)
	SW1NX-AD51HP (Note 5)	QD51 software package (shared between NEC PC9800 series personal computer and AD51H-S3/A1SD51S)
AS-i master unit	QJ71AS92 NEW	Master module : complies with AS-i standard Ver.2.11.
Extension base unit	QA1S65B	Power supply + 5 I/O slots for AnS series modules
	QA1S68B	Power supply + 8 I/O slots for AnS series modules
	QA65B	Power supply + 5 I/O slots for large A series modules (high-performance model only)

Note 1: "Positive common" indicates that DC power + is connected and used with the common terminal. "Negative common" indicates that DC power - is connected and used with the common terminal.
Note 2: No connector is provided. Please acquire the A6CON1/A6CON2 separately.
Note 3: No connector is provided. Please acquire the A6CON1/A6CON2/A6CON3 separately.
Note 4: No connector is provided. Please acquire the A6CON1E/A6CON2E/A6CON3E separately.
Note 5: These modules require CPU of function version B or later when using the multiple PLC system. Q data book explains more detail.
Note 6: This software package is designed for use in the MS-DOS mode only.
Note 7: Setting the response time on this module requires the CPU module's product information "0211220000000000-B" and GX Developer Version 6 or later.

*1 In addition to the above modules, the AnS series modules can be loaded and used on the QA1S65B/QA1S68B, the A series modules can be loaded and used on the Q65B. Since some modules are unusable or have restrictions on functions, check usable modules in the Q series data book.



A Mode Model List

Product		Type	Outline
CPU module		Q02CPU-A	Program : 28k steps
		Q02HCPU-A	Program : 28k steps
		Q06HCPU-A	Program : 60k steps
Battery		Q6BAT	Replacement battery for Q02/Q02H/Q06HCPU-A
Memory card		Q2MEM-1MBS	SRAM: 1M bytes
		Q2MEM-2MBS NEW	SRAM: 2M bytes
SRAM card battery		Q2MEM-BAT	Replacement battery for Q2MEM-1MBS
Base unit	Main	QA1S33B	Power supply + CPU + 3 I/O slots for AnS series modules
		QA1S35B	Power supply + CPU + 5 I/O slots for AnS series modules
		QA1S38B	Power supply + CPU + 8 I/O slots for AnS series modules
	Extension	QA1S65B	Power supply + 5 I/O slots for AnS series modules
		QA1S68B	Power supply + 8 I/O slots for AnS series modules
Extension cable		QC06B	0.6m
		QC12B	1.2m
		QC30B	3m
		QC50B	5m
		QC100B	10m

Use the power supply, I/O, special and network modules designed for the AnS series. You cannot use the power supply, I/O, special and network modules designed for the Q and Q2AS series. Note that you cannot use the AnS series base units, extension cables and A6SIM-X64Y64. Check details in the Q series data book.
The Q series I/O, intelligent function and network modules other than the above are unusable.

Software, Peripheral Devices

√ : Compatible – : Not compatible

Product	Type	Outline	Compatible Mode A	Compatible Mode Q
GX Developer (Note 3)	SW☐D5C-GPPW-E	MELSEC PLC programming software	√	√
	SW☐D5C-GPPW-EV	MELSEC PLC programming software (Upgrade)	√	√
	SW☐D5C-GPPW-EA	MELSEC PLC programming software (Multiple-license product)	√	√
	SW☐D5C-GPPW-EVA	MELSEC PLC programming software (Multiple-license product upgrade)	√	√
	SW☐D5C-GPPW-EAZ	MELSEC PLC programming software (Additional license product)	√	√
GX Converter	SW☐D5C-CNVW-E	Excel®/text data converter	√	√
GX Configurator-AD	SW☐D5C-QADU-E	MELSEC-Q dedicated analog to digital module setting/monitoring tool	–	√
GX Configurator-DA	SW☐D5C-QDAU-E	MELSEC-Q dedicated digital to analog module setting/monitoring tool	–	√
GX Configurator-SC	SW☐D5C-QSCU-E	MELSEC-Q dedicated serial communication module setting/monitoring tool	–	√
GX Configurator-CT	SW☐D5C-QCTU-E	MELSEC-Q dedicated counter module setting/monitoring tool	–	√
GX Configurator-TI	SW☐D5C-QTIU-E	MELSEC-Q dedicated temperature input module setting/monitoring tool	–	√
GX Configurator-TC	SW☐D5C-QTCU-E	MELSEC-Q dedicated temperature control module setting/monitoring tool	–	√
GX Configurator-PT	SW☐D5C-QPTU-E	QD70P positioning module setting/monitoring tool	–	√
GX Configurator-QP (Note 6)	SW☐D5C-QD75P-E	QD75P/D positioning module setting/monitoring tool	–	√
	SW☐D5C-QD75P-EV	QD75P/D positioning module setting/monitoring tool (Upgrade)	–	√
GX Configurator-AS	SW☐D5C-QASU-E NEW	QJ71AS92 AS-i master module setting/monitoring tool	–	√
	SW☐D5C-QASU-EA NEW	QJ71AS92 AS-i master module setting/monitoring tool (Multiple-license product)	–	√
	SW☐D5C-QASU-EAZ NEW	QJ71AS92 AS-i master module setting/monitoring tool (Additional license product)	–	√
GX Simulator	SW☐D5C-LLT-E	MELSEC PLC simulation software	√	√
	SW☐D5C-LLT-EV	MELSEC PLC simulation software (Upgrade)	√	√
	SW☐D5C-LLT-EA	MELSEC PLC simulation software (Multiple-license product)	√	√
	SW☐D5C-LLT-EAZ	MELSEC PLC simulation software (Additional license product)	√	√
GX Explorer	SW☐D5C-EXP-E	MELSEC PLC project management software	√	√
	SW☐D5C-EXP-EA	MELSEC PLC project management software (Multiple-license product)	√	√
	SW☐D5C-EXP-EAZ	MELSEC PLC project management software (Additional license product)	√	√
GX Remote Service-I	SW☐D5C-RAS-E	Remote maintenance tool	√	√
	SW☐D5C-RAS-EA	Remote maintenance tool (Multiple-license product)	√	√
MX Component	SW☐D5C-ACT-E	Active X library for communication	√	√
	SW☐D5C-ACT-EA	Active X library for communication (Multiple-license product)	√	√
	SW☐D5C-ACT-EAZ	Active X library for communication (Additional license product)	√	√
MX Sheet	SW☐D5C-SHEET NEW	Excel®communication library	√	√
MX Links (Note 4) (Note 5)	SW☐D5F-CSKP-E	DDL library for communication	√	√
MX Chart (Note 4) (Note 5)	SW☐D5F-OLEX-E	Excel®communication OLE library	√	√
MX Monitor (Note 4) (Note 5)	SW☐D5F-XMOP-E	Monitoring tool	√	√
MX Parts	SW☐D5C-PIC-B	Figure data package	√	√
GX Works	SW☐D5C-QSET-E	A set of seven products, GX Developer, GX Simulator, GX Explorer, GX Configurator-AD, DA, SC, CT	(Note 2)	√
	SW☐D5C-GPPLLT-E	A set of three products, GX Developer, GX Simulator, GX Explorer	√	√
MX Works (Note 5)	SW☐D5F-CSOLEX-E	A set of two products, MX Links, MX Chart	√	√
	SW☐D5F-CSXMOP-E	A set of two products, MX Links, MX Chart	√	√
Connection cable	QC30R2	RS-232 cable for connection of personal computer and CPU, 3m (mini-DIN 6P)-(Dsub 9P)	√	√
Peripheral device connection module	AJ65BT-G4-S3	Module for connection with master CPU or local station CPU of CC-Link system	√	√
PC card adapter	Q2MEM-ADP	Adaptor for standard PCMCIA slot of Q2MEM memory card	√	√
Cable disconnection prevention holder	Q6HLD-R2	Holder for prevention of RS-232 cable disconnection	√	√

Note 1: Contact your sales representative for multiple-license, additional license and multiple-license updated products.
Note 2: GX Configurator-** are unusable with the A mode.
Note 3: Supported by SW4 or later, multiple PLC system supported by SW6 or later, Q00J/Q00/Q01CPU supported by SW7 or later.
Note 4: Supported by SW3 or later.
Note 5: Incompatible with the basic models.
Note 6: -EA (multiple-license product), -AZ (additional license product) and -EAZ (additional license product) are also available for GX Converter and GX Configurator-**.
Note 7: To confirm the latest version of the software, visit our MELFANSweb or contact your local Mitsubishi representative.
Note 8: GX Developer Ver. 7.12N or later must be installed into the same personal computer.

*GX series and MX Component are compatible with Windows®95/98/Me/NT®4.0/2000 Professional.
MX series is compatible with Windows®95/98/Me/NT 4.0.

GLOBAL SERVICE NETWORK

Global FA Center			
North America FA Center	Mitsubishi Electric Automation, Inc.	500 Corporate Woods Parkway Vernon Hills, IL 60061	Tel: 1-847-478-2100 Fax: 1-847-478-0328
Europe FA Center	Mitsubishi Electric Europe B.V	Gothaer Strasse 8 D-40880 Ratingen	Tel: 49-2102-486-0 Fax: 49-2102-486-717
UK FA Center	Mitsubishi Electric Europe B.V Customer Technical Center	Travellers Lane Hatfield, Herts., AL10 8XB	Tel: 44-1707-276100 Fax: 44-1707-278695
Korea FA Center	Han Neung Electric Co., Ltd.	2F, Dong Seo Game Channel Bldg., 660-11, Deungchon-dong, Kangseo-Ku, Seoul 157-030, Korea	Tel: 82-2-3663-0471 Fax: 82-2-3663-0475
Beijing FA Center	Ganglling Electric Technology Development (Beijing) Co., Ltd.	Room 954, Office Building, New Century Hotel NO.6 Southern Road, Capital Gym, Beijing, 100044, China	Tel: 86-10-6849-2077 Fax: 86-10-6849-2087
Shanghai FA Center	Keling Electric (Shanghai) Co., Ltd.	2F Block5 Building Automation Instrumentation Plaza 103 Cao Bao Rd. Shanghai 200233, China	Tel: 86-21-6484-9360 Fax: 86-21-6484-9361
Taipei FA Center	Setsuyo Enterprise Co., Ltd.	6F NO.105 Wu-Kung 3rd. RD, Wu-Ku Hsiang Taipei Hsine, Taiwan, R.O.C.	Tel: 886-2-2298-2499 Fax: 886-2-2299-2509
Asean FA Center	Mitsubishi Electric Asia Pte., Ltd.	307 Alexandra Road #05-01/02 Singapore, 159943	Tel: 65-378-0540 Fax: 65-476-7439

In FA centers, we offer the technical advice about our products and meet your demands concerned with repairs, field services and training.

Mitsubishi Programmable Logic Controller

Precautions for Choosing the Products

This catalog explains the typical features and functions of the Q series PLCs and does not provide restrictions and other information on usage and module combinations. When choosing the products, always check the detailed specifications, restrictions, etc. of the products in the Q series data book. When using the products, always read the user's manuals of the products.
Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

⚠ For safe use

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

Country/Region	Sales office	Tel/Fax
U.S.A	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061	Tel : +1-847-478-2100 Fax : +1-847-478-0328
Brazil	MELCO-TEC Rep. Com.e Assessoria Tecnica Ltda. Av. Rio Branco, 123-15 ,and S/1507, Rio de Janeiro, RJ CEP 20040-005, Brazil	Tel : +55-21-221-8343 Fax : +55-21-221-9388
Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8 D-40880 Ratingen, GERMANY	Tel : +49-2102-486-0 Fax : +49-2102-486-717
U.K	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Herts., AL10 8XB,UK	Tel : +44-1707-276100 Fax : +44-1707-278695
Italy	Mitsubishi Electric Europe B.V. Italian Branch Centro Dir. Colleoni, Pal. Perseo - Ingr.2 Via Paracelso 12, 20041 Agrate B., Milano, Italy	Tel : +39-039-60531 Fax : +39-039-6053312
Spain	Mitsubishi Electric Europe B.V. Spanish Branch Carretera de Rubi 76-80 08190 Sant Cugat del Valles, Barcelona, Spain	Tel : +34-935-653135 Fax : +34-935-891579
South Africa	Circuit Breaker Industries LTD Private Bag 2016, Isando 1600, Johannesburg, South Africa	Tel : +27-11-928-2000 Fax : +27-11-392-2354
Hong Kong	Ryoden Automation Ltd. 10th Floor, Manulife Tower, 169 Electric Road, North Point, HongKong	Tel : +852-2887-8870 Fax : +852-2887-7984
China	Ryoden International Shanghai Ltd. 3F Block5 Building Automation Instrumentation Plaza 103 Cao Bao Rd. Shanghai 200233 China	Tel : +86-21-6475-3228 Fax : +86-21-6484-6996
Taiwan	Setsuyo Enterprise Co., Ltd. 6F., No.105 Wu-Kung 3rd.RD, Wu-Ku Hsiang, Taipei Hsine, Taiwan	Tel : +886-2-2299-2499 Fax : +886-2-2299-2509
Korea	HAN NEUNG TECHNO CO., LTD. 1F Dong Seo Game Channel Bldg., 660-11,Deungchon-dong Kangsec-ku, Seoul, Korea	Tel : +82-2-3660-9552 Fax : +82-2-3664-8372
Singapore	Mitsubishi Electric Asia Pte, Ltd. 307 Alexandra Road #05-01/02, Mitsubishi Electric Bulding Singapore 159943	Tel : +65-473-2480 Fax : +65-476-7439
Thailand	F. A. Tech Co.,Ltd. 898/28,29,30 S.V.City Building, Office Tower 2, Floor 17-18 Rama 3 Road, Bangkpongpang, Yannawa, Bangkok 10120	Tel : +66-2-682-6522 Fax : +66-2-682-6020
Indonesia	P.T. Autoteknindo SUMBER MAKMUR Jl. Muara Karang Selatan Blok a Utara No.1 Kav. No.11 Kawasan Industri/Pergudangan Jakarta-Utara 14440	Tel : +62-21-663-0833 Fax : +62-21-663-0832
India	Messung Systems Put,Ltd. Electronic Sadan NO:111 Unit No15, M.I.D.C BHOSARI,PUNE-411026,India	Tel : +91-20-7128927 Fax : +91-20-7128108
Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road, PostalBag, No 2, Rydalmere, N.S.W 2116, Australia	Tel : +61-2-9684-7777 Fax : +61-2-9684-7245

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: 1-8-12,OFFICE TOWER Z 14F HARUMI CHUO-KU 104-6212,JAPAN
NAGOYA WORKS: 1-14,YADA-MINAMI 5,HIGASHI-KU,NAGOYA,JAPAN

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