Q Series | Mitsubishi | Q00 | Q01 | Q02 | Q06 | Q12 | Q25 | Q17 | Q6 BAT | Q7 BAT | Q7 BAT | Q8 BAT

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Mitsubishi

MELSEC - Q Series Platform

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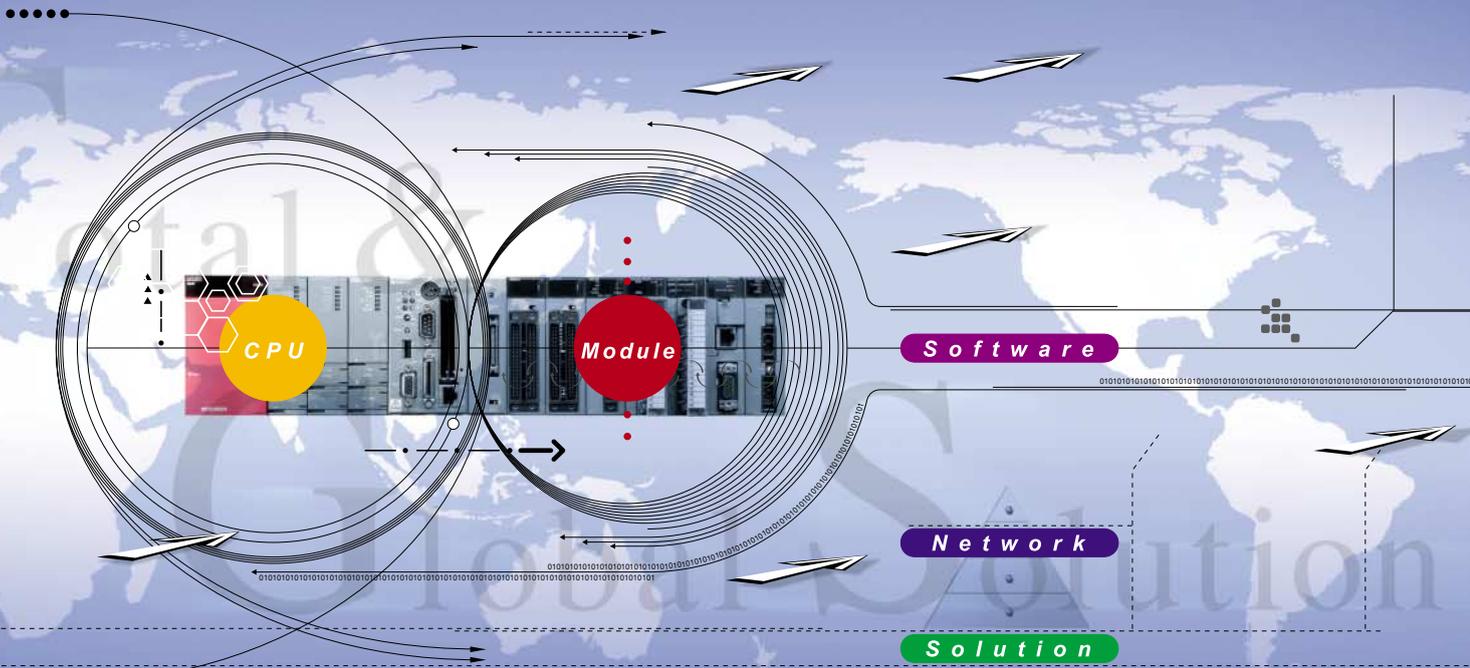
MITSUBISHI ELECTRIC

Mitsubishi Programmable Controllers

Changes for the Better

MELSEC Q Series

CPU

Module

Software

Network

Solution

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

Empowering Industries

MELSOFT

CC-Link

ISO 14001
CERTIFICATION ORGANIZATION FOR ENVIRONMENT AND QUALITY · JAPAN AUDIT AND CERTIFICATION ORGANIZATION
J·A·C·O
EC97J1113

UKAS
ENVIRONMENTAL
MANAGEMENT
051

ISO 9001
BUREAU VERITAS
Certification

BUREAU VERITAS
1828

UKAS
QUALITY
MANAGEMENT
008

Q Series lineup

CPU Modules

◎Programmable Controller CPU

Basic Model QCPU

CPU type	Program capacity	Number of I/O points
Q00JCPU	8k steps	256 points
Q00CPU	8k steps	1024 points
Q01CPU	14k steps	1024 points

High Performance Model QCPU

CPU type	Program capacity	Number of I/O points
Q02CPU	28k steps	4096 points
Q02HCPU	28k steps	4096 points
Q06HCPU	60k steps	4096 points
Q12HCPU	124k steps	4096 points
Q25HCPU	252k steps	4096 points

◎Process CPU

CPU type	Program capacity	Number of I/O points
Q12PHCPU	124k steps	4096 points
Q25PHCPU	252k steps	4096 points

◎Redundant CPU

CPU type	Program capacity	Number of I/O points
Q12PRHCPU	124k steps	4096 points
Q25PRHCPU	252k steps	4096 points

◎Motion CPU

CPU type	Number of control axes
Q172HCPU (-T)	8 axes
Q173HCPU (-T)	32 axes
Q172CPUN (-T)	8 axes
Q173CPUN (-T)	32 axes

Power Supply Modules

Q61SP [Slim type]
100 to 240V AC input
5V DC, 2A output

Q61P
100 to 240V AC input
5V DC, 6A output

Q62P
100 to 240V AC input
5V DC, 3A output
24V DC, 0.6A output

Q63P
24V DC input
5V DC, 6A output

Q64PN
100 to 240V AC input
5V DC, 8.5A output

Q63RP
24V DC input
5V DC, 8.5A output

Q64RP
100 to 120/ 200 to 240V AC input
5V DC, 8.5A output

Memory Cards

SRAM cards
Q2MEM-1MBS
Q2MEM-2MBS

Flash cards
Q2MEM-2MBF
Q2MEM-4MBF

ATA cards
Q2MEM-8MBA
Q2MEM-16MBA
Q2MEM-32MBA

PC card adapter
Q2MEM-ADP

Network/Information Processing Modules

◎MES Interface Module
QJ71MES96

◎Ethernet Modules
QJ71E71-100
QJ71E71-B5
QJ71E71-B2

◎MELSECNET/H Modules
QJ71LP21-25   QJ72LP25-25
QJ71LP21S-25   QJ72LP25G(E)
QJ71LP21G(E)   QJ72BR15
QJ71BR11
MELSECNET/H PC I/F Boards
Q80BD-J71LP21-25
Q80BD-J71LP21S-25
Q80BD-J71LP21G(E)
Q80BD-J71BR11

◎CC-Link Module
QJ61BT11N
CC-Link PC I/F Board
Q80BD-J61BT11N

◎CC-Link/LT Module
QJ61CL12

◎Serial Communication Modules
QJ71C24N
QJ71C24N-R2
QJ71C24N-R4

◎FL-net (OPCN-2) Interface Modules
QJ71FL71-T-F01
QJ71FL71-B5-F01
QJ71FL71-B2-F01

◎AS-i Master Module
QJ71AS92

◎Intelligent Communication Modules
QD51
QD51-R24

Intelligent Function Modules

◎Analog Modules
A/D Converter Modules
Q64AD-GH   Q68AD-G
Q62AD-DGH   Q66AD-DG
Q64AD
Q68ADV
Q68ADI
D/A Converter Modules
Q62DA-FG   Q68DAVN
Q62DAN   Q68DAIN
Q64DAN   Q66DA-G

◎Temperature Control Modules
Q64TCTT
Q64TCTTBW
Q64TCRT
Q64TCRTBW

◎Temperature Input Modules
Q64TDV-GH
Q64TD
Q68TD-G-H01
Q64RD-G
Q64RD

◎Loop Control Module
Q62HLC

◎Positioning Modules
QD75P1   QD75MH1
QD75P2   QD75MH2
QD75P4   QD75MH4
QD75D1   QD75M1
QD75D2   QD75M2
QD75D4   QD75M4
QD70P4
QD70P8
QD70D4
QD70D8

◎Channel Isolated Pulse Input Module
QD60P8-G

◎High Speed Counter Modules
QD62
QD62D
QD62E
QD63P6
QD64D2

QD72P3C3

Accessories

◎Batteries
Q6BAT
Q7BAT (-SE1)
Q8BAT (-SE1)
Q2MEM-BAT (for SRAM memory card)

◎Connectors for I/O Modules
40-pin connector type
A6CON1 (soldering type)
A6CON2 (crimp-contact type)
A6CON3 (IDC type)
A6CON4 (soldering and inclined insertion combination type)
37-pin D-sub connector type
A6CON1E (soldering type)
A6CON2E (crimp-contact type)
A6CON3E (IDC type)

◎DIN Rail Adapter
Q6DIN1
Q6DIN2
Q6DIN3

◎Spring Clamp Terminal Block
Q6TE-18S

◎IDC Terminal Block Adapter, Dedicated Tool
Q6TA32
Q6TA32-TOL

◎Connection Cable
QC30R2

◎Connector Disconnection Prevention Holder
Q6HLD-R2

Input Modules

Points	100 to 120V AC	100 to 240V AC	24V DC (positive common)	48V AC/DC (positive/negative common)	5/12V DC (positive/negative common)	24V DC (negative common)
8 points		QX28	QX48Y57[*1]			
16 points	QX10		QX40 QX40-S1	QX50	QX70	QX80
32 points			QX41 QX41-S1 QH42P[*1] QX41Y41P[*1]		QX71	QX81
64 points			QX42 QX42-S1		QX72	QX82 QX82-S1

*1: Input specifications for I/O composite module

Output Modules

Points	Relay 24V DC, 240V AC	Triac 100 to 240V AC	Transistor 12 to 24V DC (sink)	Transistor 5 to 12V DC (sink/source)	Transistor 5 to 12V DC (sink)	Transistor 12 to 24V DC (source)
7 points			QX48Y57[*2]			
8 points	QY18A			QY68A		
16 points	QY10	QY22	QY40P QY50		QY70	QY80
32 points			QY41P QH42P[*2] QX41Y41P[*2]		QY71	QY81P
64 points			QY42P			

*2: Output specifications for I/O composite module

Base Units, Extension Cables

◎Slim Type Main Base Unit
Main base unit
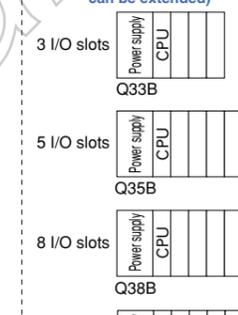(Power supply module required; cannot be extended)
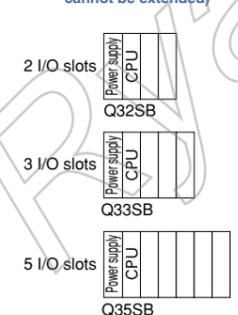
2 I/O slots — Q32SB
3 I/O slots — Q33SB
5 I/O slots — Q35SB

◎Main Base Unit
Main base unit
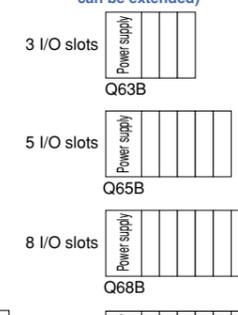(Power supply module required; can be extended)

3 I/O slots — Q33B
5 I/O slots — Q35B
8 I/O slots — Q38B
12 I/O slots — Q312B
8 I/O slots — Q38RB (Redundant power main base)

◎Extension base unit
(Power supply module required; can be extended)
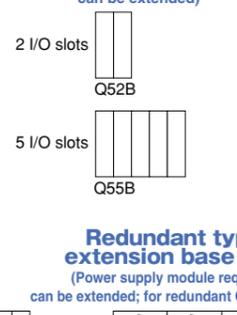
3 I/O slots — Q63B
5 I/O slots — Q65B
8 I/O slots — Q68B
12 I/O slots — Q612B
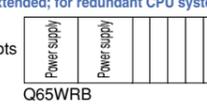8 I/O slots — Q68RB (Redundant type extension base)

◎Extension base unit
(Power supply module not required; can be extended)

2 I/O slots — Q52B
5 I/O slots — Q55B

Redundant type extension base unit
(Power supply module required; can be extended; for redundant CPU system)

5 I/O slots — Q65WRB

◎Extension Cables
QC05B (0.45m)
QC06B (0.6m)
QC12B (1.2m)
QC30B (3.0m)
QC50B (5.0m)
QC100B (10.0m)

◎Tracking Cable
QC10TR (1m)
QC30TR (3m)

* Only the slim type power supply module (Q61SP) can be used.
* This does not support the process CPU or redundant CPU.

* Only Q68RB or Q5□B can be used as a redundant power extension base unit.

* The redundant CPU occupies two slots (CPU slot + I/O slot).

* The slim type power supply module (Q61SP) cannot be mounted.
* Q65WRB for the first extension base stage and Q68RB for the second to seventh extension base stage only.

Other Modules

◎Interrupt Module
QI60

◎Blank Cover
QG60

MELSOFT

GX Developer
MELSEC programmable controller programming software

GX Simulator
MELSEC programmable controller simulation software

GX Explorer
Maintenance tool

GX Converter
Excel/text data converter

GX Configurator
Intelligent function module setting/ monitoring tool

GX Remote Service-I
Remote access tool

PX Developer
Process control FBD software package

MT Developer
Q-motion integrated startup support software

MR Configurator
Servo setup software

MX Component
ActiveX® library for communication

MX Sheet
Excel communication support tool
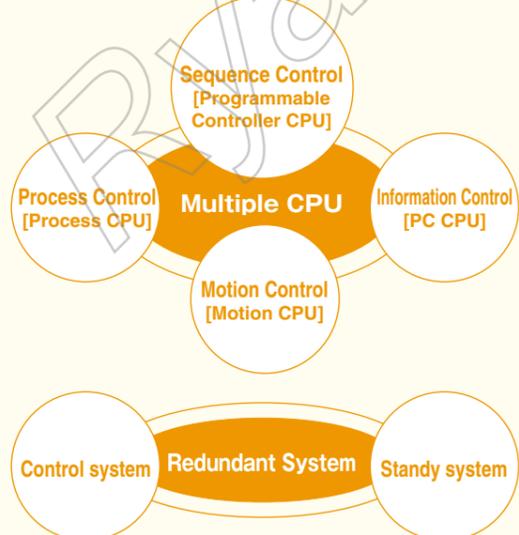
CPU

Combine the CPUs to fit specific application requirements, from basic sequence control to advanced multiple CPU control.

Combine up to 4 CPUs on a single Q Series system to provide the ideal solution for your application.

Programmable Controller CPU

Basic Model QCPU

Q00JCPU • Program capacity: 8k steps • Number of I/O points: 256 points
• Number of I/O device points: 2048 points
• Integrated CPU with power supply and 5 slots

Q00CPU • Program capacity: 8k steps • Number of I/O points: 1024 points
• Number of I/O device points: 2048 points

Q01CPU • Program capacity: 14k steps • Number of I/O points: 1024 points
• Number of I/O device points: 2048 points

High Performance Model QCPU

Q02CPU • Program capacity: 28k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Q02HCPU • Program capacity: 28k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Q06HCPU • Program capacity: 60k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Q12HCPU • Program capacity: 124k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Q25HCPU • Program capacity: 252k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

High performance CPUs with a diverse and powerful process control instruction set.

Process CPU (MELSEC Process Control)

Q12PHCPU • Program capacity: 124k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Q25PHCPU • Program capacity: 252k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Redundant CPUs with robustness

Redundant CPU

Q12PRHCPU • Program capacity: 124k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Q25PRHCPU • Program capacity: 252k steps • Number of I/O points: 4096 points
• Number of I/O device points: 8192 points

Designed for next generation's high-speed motion and multi-axis control.

Motion CPU

Q172HCPU • SSCNET III compatible • For 8-axis control
Q173HCPU • SSCNET III compatible • For 32-axis control
Q172HCPU-T • SSCNET III compatible • For 8-axis control • Teaching module compatible
Q173HCPU-T • SSCNET III compatible • For 32-axis control • Teaching module compatible
Q172CPUN • For 8-axis control
Q173CPUN • For 32-axis control
Q172CPUN-T • For 8-axis control • Teaching module compatible
Q173CPUN-T • For 32-axis control • Teaching module compatible

A fully featured Microsoft™ Windows™ personal computer directly on the Q Series base unit.

Personal Computer CPU

[Partner product]

Offers unlimited open control opportunities while maintaining tight integration with other Q Series system components.

Wide range & Multiple applications

BASIC MODEL
HIGH PERFORMANCE MODEL
PROCESS
MOTION   MOTION
PROCESS   INFORMATION
REDUNDANT   SYSTEM

Q25PRH   Q12PRH

CPU HIGH PERFORMANCE MODEL   MOTION
BASIC MODEL   PROCESS   PERSONAL COMPUTER

Multiple solutions for a vast range of applications

Q Series CPU lineup provides answers for a vast range of application requirements.

The Q Series lineup covers a various range of applications be it, programmable controller, process, motion, or information control.

The basic model QCPU range is designed ideally for small scale applications. With the unique Multiple CPU functionality, each process area of the application can be selectively controlled by different CPUs situated on the same main base unit. Therefore, this lineup provides an ideal solution for each required application.

The redundant CPU system ensures robust operation in the event of trouble.

Sequence Control
[Programmable Controller CPU]

Process Control
[Process CPU]

Multiple CPU

Information Control
[PC CPU]

Motion Control
[Motion CPU]

Control system   **Redundant System**   Standy system

High performance and flexibility on a small footprint

Mounting Area

In the Q Series, 2, 3, 5, 8 and 12 I/O slot main base units are available. The mounting area can be further reduced by using the slim type base unit.

Slim type main base unit

Note) The slim base does not support the process CPU or Q redundant CPU.

2 slots 114mm
3 slots 142mm
5 slots 197.5mm

Redundant power supply base unit

■Mounting Area (Depth: 98mm)

Main base unit

3 slots 189mm
5 slots 245mm
8 slots 328mm
12 slots 439mm

8 slots 439mm
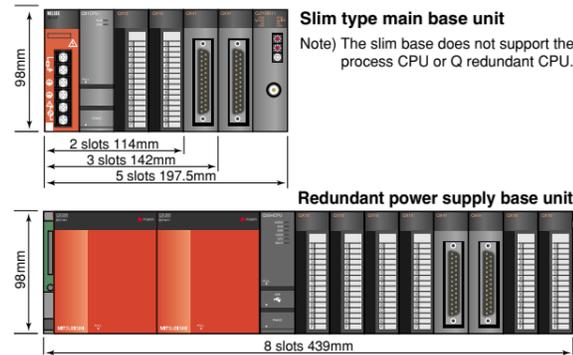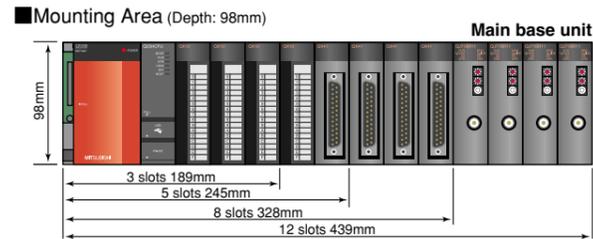
Mounting Freedom

Choose from 2, 3, 5, 8 and 12 I/O slot bases to design the best system for the required application. Connect extension bases directly by using cables alone. Therefore, no need for network modules, adapters, or configuration software to distribute base units over an extended distance. Extension bases that do not require a power supply module are available to further reduce space and costs.

◎Base unit types (power supply module required)

Number of I/O Slots	Main Base	Extension Base	Mounting Dimensions (mm)
3	Q33B	Q63B	189 x 98
5	Q35B	Q65B	245 x 98
8	Q38B	Q68B	328 x 98
12	Q312B	Q612B	439 x 98

◎Power supply redundant base unit

Number of I/O Slots	Redundant Main Base	Redundant Extension Base	Mounting Dimensions (mm)
8	Q38RB	Q68RB	439 x 98

◎Base unit types (Requires no power supply module)

Number of I/O Slots	Extension Base	Mounting Dimensions (mm)
2	Q52B	106 x 98
5	Q55B	189 x 98

◎Types of slim type main base units (power supply module required)

Number of I/O Slots	Main Base	Mounting Dimensions (mm)
2	Q32SB	114 x 98
3	Q33SB	142 x 98
5	Q35SB	197.5 x 98

Note) The slim type main base unit cannot be connected with an extension base. This does not support the process CPU or redundant CPU.

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 for designing the system base layout.

Main base

Max. 64 modules

Seventh extension base

Overall distance: 13.2m
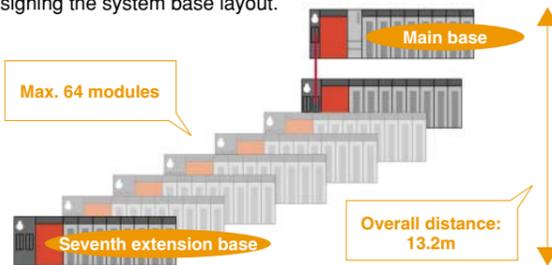
	CPU	Number of Extension Base Units	Number of Loaded Modules	Overall Extension Cable Length (m)
Basic Model	Q00JCPU	2 (max.)	16 (max.) (Note 3)	
	Q00CPU	4 (max.)	24 (max.) (Note 3)	
	Q01CPU			
High Performance Model	Q02CPU	7 (max.)	64 (max.) (Note 3)	13.2 (max.)
	Q02HCPU			
	Q06HCPU			
	Q12HCPU			
	Q25HCPU			
Process CPU	Q12PHCPU			
	Q25PHCPU			
Redundant CPU	Q12PRHCPU	0 (Note 1)	11 (max.) (Note 2)	
	Q25PRHCPU			

Note 1) Non-redundant modules are all mounted on the remote station side. (Up to 64 modules can be mounted on one remote station.)
Note 2) Up to seven power supply redundant modules can be mounted.
Note 3) If a 12-slot base is used, the maximum number of I/O, intelligent function and network modules mounted is 16/24/64 respectively.

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.
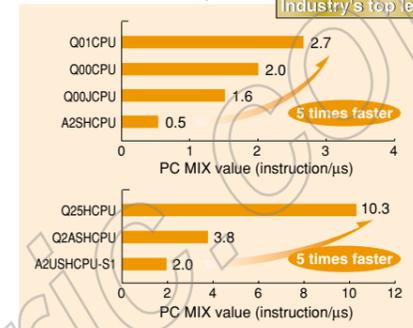
Note 1) Number of I/O points on main and extension bases directly controllable by a CPU module.
Note 2) Total number of I/O points on main and extension bases directly controllable by a CPU module and I/O points that can be controlled as remote I/O by a remote I/O network.

	CPU	Number of I/O Points (Note 1)	Number of I/O Device Points (Including remote I/O points) (Note 2)
Basic Model	Q00JCPU	256	2048
	Q00CPU	1024	
	Q01CPU		
High Performance Model	Q02CPU	4096	8192
	Q02HCPU		
	Q06HCPU		
	Q12HCPU		
	Q25HCPU		
Process CPU	Q12PHCPU		
	Q25PHCPU		
Redundant CPU	Q12PRHCPU		
	Q25PRHCPU		

Increased Operation Processing Speeds

Q Series offers some of the highest processing performance on the market today; basic operation processing speed is 34ns and PC MIX value is 10.3. By Mitsubishi's own "PC-MIX" performance metric, it is about 5 times faster than the A2USHCPU-S1 and about 2.7 times faster than the Q2ASHCPU. The CPU has dramatically increased floating-point operation speeds for PID and other arithmetic functions. The PC-MIX aims to replicate real-word application performance by executing a mixed instruction set.

◎PC MIX value comparison

Industry's top level

Q01CPU 2.7
Q00CPU 2.0
Q00JCPU 1.6
A2SHCPU 0.5

5 times faster

PC MIX value (instruction/μs)

Q25HCPU 10.3
Q2ASHCPU 3.8
A2USHCPU-S1 2.0

5 times faster

PC MIX value (instruction/μs)

◎CPU operation processing speeds

Instruction	CPU Basic Model Q00JCPU	Q00CPU	Q01CPU	Q02CPU	High Performance Model Q02HCPU Q06HCPU Q12HCPU Q25HCPU	Process CPU Q12PHCPU Q25PHCPU	Redundant CPU Q12PRHCPU Q25PRHCPU
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+)	65.5μs	60.5μs	49.5μs	1815ns	782ns		
PC MIX value (Instruction/μs)	1.6	2.0	2.7	4.4	10.3		

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

Program Capacities and Large Standard RAM Capacities

To construct small to large scale systems, the Q Series has a wide variation of CPU modules having 8k to 252k step program capacities and up to 256KB, large-capacity standard RAMs, to meet the application requirements from basic sequence control up to complex multi-discipline applications.

A standard ROM (flash ROM) is built-in to enable ROM operation without a memory card. The efficient use of memory space allows the Q Series CPU to contain substantially more the program than the A Series CPU. (Example: the basic model CPUs contain twice the program of A Series.)

	CPU	Program Capacity (Steps)	Device Memory (Words)	Standard RAM (Bytes) (Note)	Standard ROM (Bytes)	Memory Card (Number of slots)
Basic Model	Q00JCPU	8k	18k	No	58k	No
	Q00CPU	8k		128k	94k	
	Q01CPU	14k				
High Performance Model	Q02CPU	28k	29k	64k	112k	1
	Q02HCPU	28k		128k	112k	
	Q06HCPU	60k			240k	
	Q12HCPU	124k			496k	
	Q25HCPU	252k			1008k	
Process CPU	Q12PHCPU	124k		256k	496k	
	Q25PHCPU	252k			1008k	
Redundant CPU	Q12PRHCPU	124k			496k	
	Q25PRHCPU	252k			1008k	

Note) Memory that stores the data used in sequence programs such as file registers and local devices (with the exception of 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.
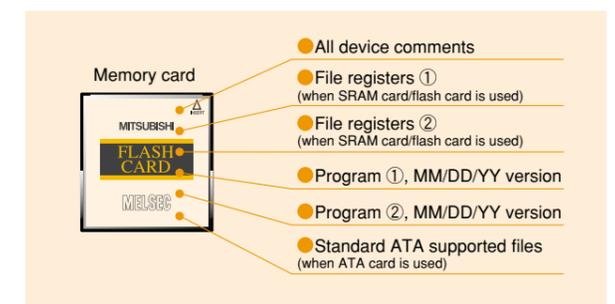
Extended Memory

The high performance model QCPU, process CPU and redundant CPU are equipped with a small PC card I/F into which the following extension memory can be mounted: SRAM card: 1M/2MB, Flash card: 2M/4MB, ATA card: 8M/16M/32MB. This large capacity extension memory facilitates management of large files. The extension memory allows massive system documentation to reside in the controllers. Storage for file register data, device comments and program histories is also possible.

◎Memory capacity

Type	Model	Capacity	Number of Storable Files
SRAM card	Q2MEM-1MBS	1011.5KB (Note)	256
	Q2MEM-2MBS	2034KB (Note)	
FLASH card	Q2MEM-2MBF	2035KB	288
	Q2MEM-4MBF	4079KB	
ATA card	Q2MEM-8MBA	7940KB (Note)	512
	Q2MEM-16MBA	15932KB (Note)	
	Q2MEM-32MBA	31854KB (Note)	

Note) The SRAM card and ATA card memory capacity is the value after formatting.

Memory card

MITSUBISHI
FLASH CARD
MELSEC

● All device comments
● File registers ① (when SRAM card/flash card is used)
● File registers ② (when SRAM card/flash card is used)
● Program ①, MM/DD/YY version
● Program ②, MM/DD/YY version
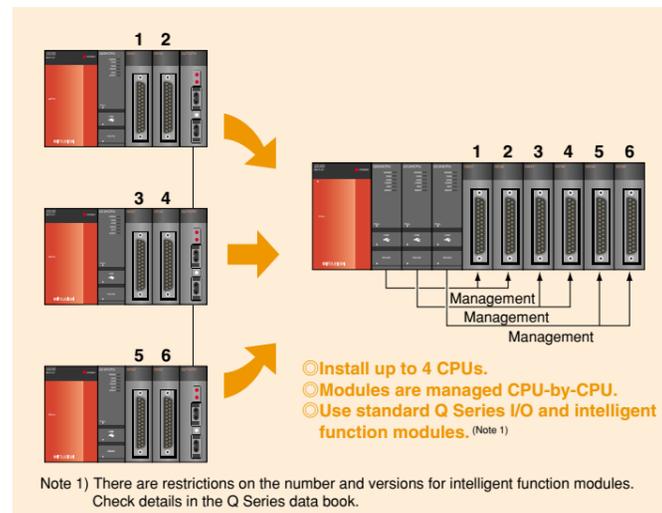● Standard ATA supported files (when ATA card is used)

Multi CPUs break through the limitation of programmable controller.

Multiple CPU System Configuration

The Q Series can combine multiple CPUs together on the same system to build the required application configuration. Control of I/O modules can be segmented between different CPUs. CPUs communicate with each other via shared memory, and can increase system performance by distributing tasks between different CPUs. A variety of methods exist for controlling the methods by which CPUs communicate, but in each case the development effort is simplified by available software tools.

* The redundant CPU does not support the multiple CPU.

○Install up to 4 CPUs.
○Modules are managed CPU-by-CPU.
○Use standard Q Series I/O and intelligent function modules. (Note 1)

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

Integration of Process CPU, Motion CPU, and PC CPU

The Q Series multiple CPU system function allows programmable controller CPU, process, motion, and personal computer CPUs to be mounted together, enabling utilization of their respective strong points and design of an optimal system.

Note) Only the following combinations can be used with the Basic Model.
· Basic Model CPU + Motion CPU
· Basic Model CPU + PC CPU
· Basic Model CPU + Motion CPU + PC CPU

* SSCNET is a high-speed serial communication network that links motion CPUs and servo amplifiers with less wiring. SSCNET & SSCNETII are metal cable types, and SSCNETIII is a fiber optic cable type.
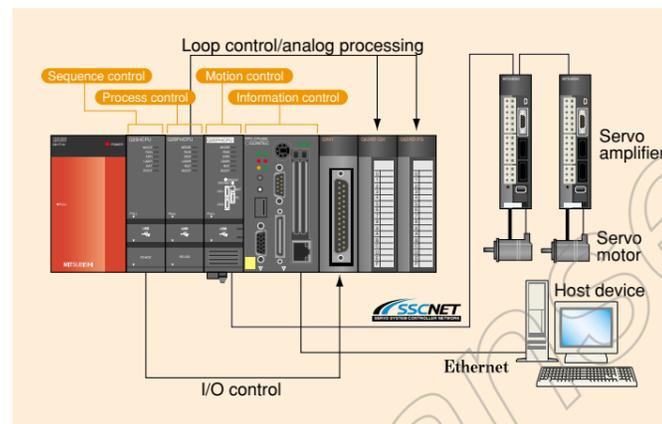
# The broader line-up of CPU provide solution for diverse area of control.

Process Control

Process CPU

Q Series offers a feature that rivals those of costly DCS systems at a fraction of the cost. Q Series is adept at the automation of process systems with the simple addition of one or more process CPUs to the controller. The process CPUs are complemented by a range of channel isolated high resolution analog I/O modules with online change (hot-swap) capability, and the PX Developer function block programming software environment. (Refer to the "MELSEC PROCESS CONTROL/REDUNDANT SYSTEM" brochure for more information on the process CPU.)

• The "Process CPU" builds on the capability of the equivalent sequence CPU with the addition of an array of powerful process instructions.
• "Channel isolated high resolution analog module" further enhances process control using the programmable controller.
• A highly specialized process control system can be easily built using the engineering environment provided by the PX Developer process control software.
• Easy maintenance and high reliability are possible due to features which permit online module changes, etc.
• Combine the Process CPUs with the redundant network capabilities of the MELSECNET/H control level network. This offers high performance, robust, and deterministic communications between multiple Q Series systems, regardless of their assigned control tasks.
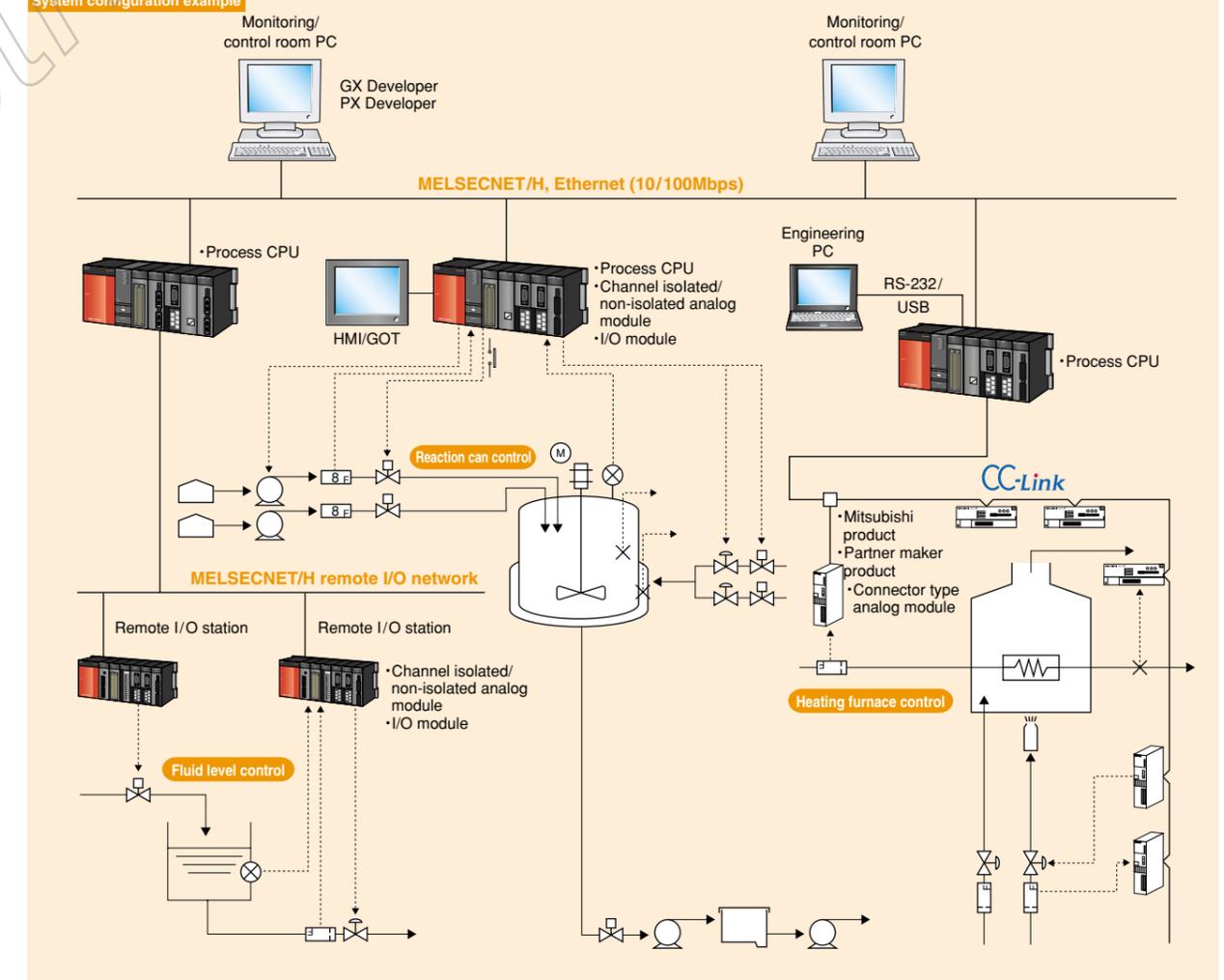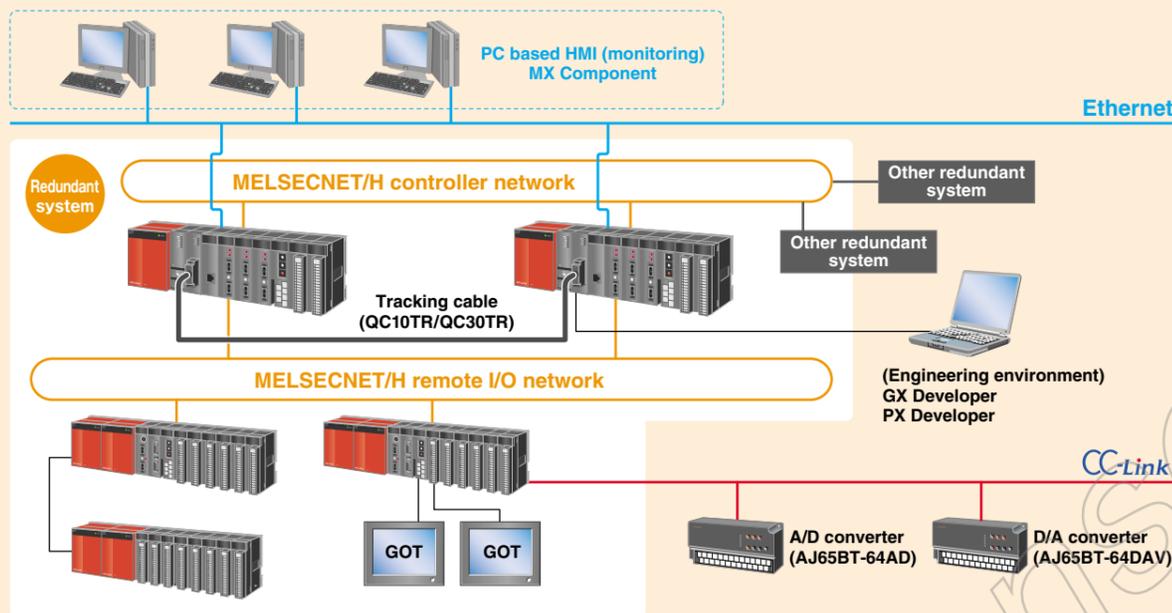
Redundant CPU system

Redundant CPU

The redundant system prevents the sudden fault. An entire system including the power supply module, CPU and base unit is designed with redundancy. It provides the suitable system for diverse area of automation.

● Even if a failure occurs in the control system, the standby system takes over the control to continue the system operation.
● The Q Series products, such as I/O, intelligent and network modules, can be used without any changes (except for some modules*).
● The remote I/O reduces risks with decentralized control.
● GX Developer and PX Developer offer simple engineering environment for redundant system settings with the original operability.

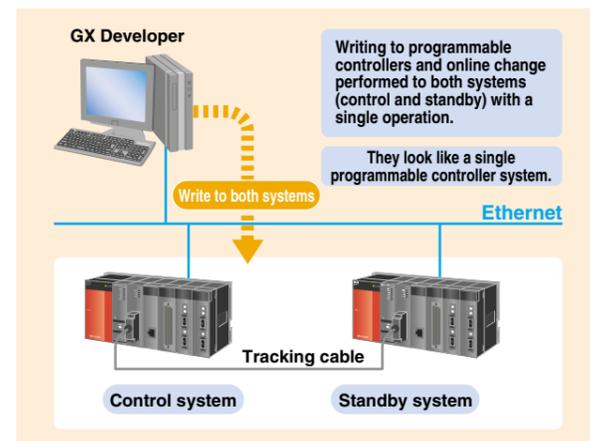*There are restrictions on the usable version when configuring a redundant system.

System configuration example

PC based HMI (monitoring)
MX Component

Ethernet

Redundant system

MELSECNET/H controller network

Other redundant system

Other redundant system

Tracking cable
(QC10TR/QC30TR)

MELSECNET/H remote I/O network

(Engineering environment)
GX Developer
PX Developer

CC-Link

GOT GOT

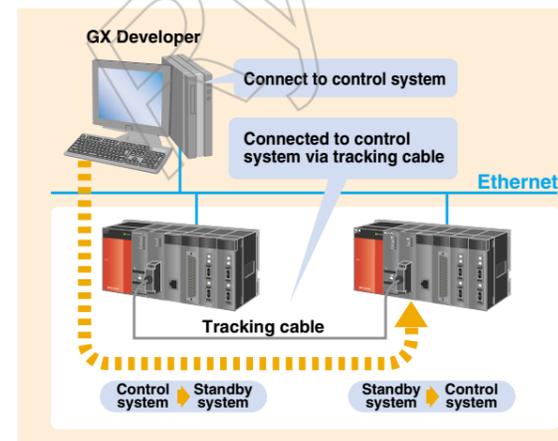A/D converter
(AJ65BT-64AD)

D/A converter
(AJ65BT-64DAV)

Easy program modification for both control and standby systems

◎ Write programs and parameter files to programmable controllers
◎ Online change while editing a program

GX Developer

Writing to programmable controllers and online change performed to both systems (control and standby) with a single operation.

They look like a single programmable controller system.

Write to both systems

Ethernet

Tracking cable

Control system   Standby system

Continue operations even at system switching

If system switching occurs due to a stop error inside the CPU, the access target is automatically switched to the other system via the network. This enables continuous operation so that the user need not pay attention to system switching.

GX Developer

Connect to control system

Connected to control system via tracking cable

Ethernet

Tracking cable

Control system ► Standby system   Standby system ► Control system
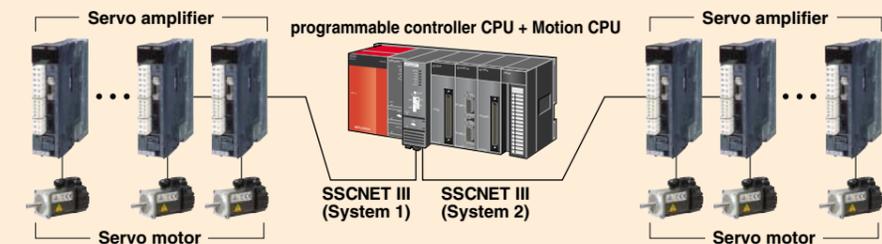
Motion Control

Motion CPU

Mitsubishi Electric motion controller realizes high-speed control of up to 32 axes (96 axes when using the maximum three multiple CPUs) with one CPU having the same size as the Q Series programmable controller. This offers large cost savings, especially when complex wiring is eliminated due to the "daisy-chain" connection of Mitsubishi intelligent digital servos. (Refer to the "Motion Controller Catalog" for more information on the Motion CPU.)

• Offers a minimum motion operation cycle time of 0.44ms (when using Q172HCPU/Q173HCPU), faster cam operation, and a shorter operation tact.
• Together with the shortened communication cycle time (0.44ms), the synchronization performance and speed/positioning control accuracy is substantially improved.
• Motion CPU can be used together with any type of Q Series CPU as required.
• Via Mitsubishi's high performance SSCNET motion network technology, Q Series offers significant engineering and operation benefits for motion control.

* SSCNET is a high-speed serial communication network that connects the motion CPU and servo amplifier.
SSCNET is available with a metal cable (SSCNET/SSCNET II) or a fiber optic cable (SSCNET III).

System configuration example

Servo amplifier

programmable controller CPU + Motion CPU

Servo amplifier

SSCNET III
(System 1)   SSCNET III
(System 2)

Servo motor   Servo motor

Information Control

PC CPU

Q Series is unique in being able to mount a full-featured Windows™ PC in a robust industrial format directly on the Q Series base unit. This offers the potential to combine it with other Q Series CPU types, therefore fully integrating it into the Q I/O system to give complete access to all I/O modules and networking, allowing maximum design flexibility.

• Industrial specification level environmental and noise performance specifications.
• Choose HDD or silicon disk mass storage depending on the operating environment.
• Utilize third party PC applications available for Microsoft™ Windows™, offering a virtually unlimited application scope.
• Includes a wide variety of ports and connections to add third party hardware devices.

Note) The PC CPU is manufactured by CONTEC, Co., Ltd. Refer to the "Partner Products" on pages 45 and 46 for more information.

CPU module performance specifications

Programmable Controller CPU

Item		Q00JCPU	Q00CPU	Q01CPU	Q02CPU	Q02HCPU	Q06HCPU	Q12HCPU	Q25HCPU
		Basic Model			**High Performance Model**				
Control method		Sequence program control method							
I/O control mode		Refresh							
Programming language (sequence control language)		* Relay symbol language (ladder) * Logic symbolic language (list) * MELSAP3 (SFC), MELSAP-L * Structured text (ST)			* Relay symbol language (ladder) * Logic symbolic language (list) * MELSAP3 (SFC), MELSAP-L * Structured text (ST)				
Processing speed (Sequence instruction) (Note 1)	LD instruction	200ns	160ns	100ns	79ns	34ns			
	MOV instruction	700s	560ns	350ns	237ns	102ns			
	PC MIX value (instruction/μs) (Note 2)	1.6	2.0	2.7	4.4	10.3			
	Floating-point addition	65.5μs	60.5μs	49.5μs	1815ns	782ns			
Total number of instructions (Note 3)		318	327		381				
Operation (floating point calculation) instruction		Yes			Yes				
Character string processing instruction		Yes (Note 6)			Yes				
PID instruction		Yes			Yes				
Special function instruction (Trigonometric function, square root, exponential operation, etc.)		Yes			Yes				
Constant scan (Function for keeping regular scan time)		1 to 2000ms (set in 1ms units)			0.5 to 2000ms (set in 0.5ms units)				
Program capacity		8k steps	14k steps		28k steps	60k steps		124k steps	252k steps
Number of I/O device points [X/Y]		2048 points			8192 points				
Number of I/O points [X/Y]		256 points	1024 points		4096 points				
Internal relay [M]		8192 points			8192 points				
Latch relay [L]		2048 points			8192 points				
Link relay [B]		2048 points			8192 points				
Timer [T]		512 points			2048 points				
Retentive timer [ST] (Note 4)		0 points			0 points				
Counter [C]		512 points			1024 points				
Data register [D]		11136 points			12288 points				
Link register [W]		2048 points			8192 points				
Annunciator [F]		1024 points			2048 points				
Edge relay [V]		1024 points			2048 points				
File register [R, ZR]		No	65536 points		32768 points (Note 5)	65536 points (Note 5)		131072 points (Note 5)	
Special link relay [SB]		1024 points			2048 points				
Special link register [SW]		1024 points			2048 points				
Step relay [S]		2048 points			8192 points				
Index register [Z]		10 points			16 points				
Pointer [P]		300 points			4096 points				
Interrupt pointer [I]		128 points			256 points				
Special relay [SM]		1024 points			2048 points				
Special register [SD]		1024 points			2048 points				
Function input [FX]		16 points			16 points				
Function output [FY]		16 points			16 points				
Function register [FD]		5 points			5 points				
Local device		No			Yes				
Device initial values		Yes			Yes				

Note 1) The processing time will not be delayed if the devices are indexed.
Note 2) The PC MIX value is the average number of instructions, such as basic instructions or data processing instructions, which can be executed in 1μs. The processing speed will rise as the value increases.
Note 3) The intelligent function module dedicated instructions are not included.
Note 4) Indicates the number of points in the default state. This can be changed with the parameters.
Note 5) Indicates the number of points when using the built-in memory (standard RAM).
This can be expanded with the SRAM card or Flash card. (Writing from the program is not possible when using the Flash card.)
Up to 1041408 points can be used when using the SRAM card.
Note 6) The character strings can be used only with the character string data transfer instruction ($MOV).

Process CPU

Item		Q12PHCPU	Q25PHCPU
		Process CPU	
Control method		Sequence program control method	
I/O control mode		Refresh	
Programming language	Sequence control language	* Relay symbol language (ladder) * Logic symbolic language (list) * MELSAP3 (SFC), MELSAP-L * Structured text (ST)	
	Language for process control	Process control FBD (Note 2)	
Processing speed (Sequence instruction) (Note 1)	LD instruction	34ns	
	MOV instruction	102ns	
	PC MIX value (instruction/μs) (Note 3)	10.3	
	Floating-point addition	782ns	
Total number of instructions (Note 4)		415	
Operation (floating point calculation) instruction		Yes	
Character string processing instruction		Yes	
Processing instruction		Yes	
Special function instruction (Trigonometric function, square root, exponential operation, etc.)		Yes	
Constant scan (Function for keeping regular scan time)		0.5 to 2000ms (set in 0.5ms units)	
Program capacity		124k steps	252k steps
Loop control specifications	Instructions for process control	52 types	
	Number of control loops (Note 4)	No limit (Note 4)	
	Control cycle	10ms or more/control loop Setting available per loop	
	Main functions	2-degree of freedom PID control, cascade control, auto-tuning function, feed forward control	
Number of I/O device points [X/Y]		8192 points	
Number of I/O points [X/Y]		4096 points	
Internal relay [M]		8192 points	
Latch relay [L]		8192 points	
Link relay [B]		8192 points	
Time [T]		2048 points	
Retentive timer [ST] (Note 6)		0 points	
Counter [C]		1024 points	
Data register [D]		12288 points	
Link register [W]		8192 points	
Annunciator [F]		2048 points	
Edge relay [V]		2048 points	
File register [R, ZR]		131072 points (Note 7)	
Special link relay [SB]		2048 points	
Special link register [SW]		2048 points	
Step relay [S]		8192 points	
Index register [Z]		16 points	
Pointer [P]		4096 points	
Interrupt pointer [I]		256 points	
Special relay [SM]		2048 points	
Special register [SD]		2048 points	
Function input [FX]		16 points	
Function output [FY]		16 points	
Function register [FD]		5 points	
Local device		Yes	
Device default values		Yes	

Note 1) The processing time will not be delayed if the devices are indexed.
Note 2) PX Developer is required for programming by FBD.
Note 3) The PC MIX value is the average number of instructions, such as basic instructions or data processing instructions, which can be executed in 1μs. The processing speed will rise as the value increases.
Note 4) The intelligent function module dedicated instructions are not included.
Note 5) The number of control loops is restricted by the combination of the device memory capacity (128 words/loop used) and the control cycle.
Note 6) Indicates the number of points in the default state. This can be changed with the parameters.
Note 7) Indicates the number of points when using the built-in memory (standard RAM).
This can be expanded with the SRAM card or Flash card. (Writing from the program is not possible when using the Flash card.)
Up to 1041408 points can be used when using the SRAM card.

Redundant CPU

Item		Redundant CPU	
		Q12PRHCPU	Q25PRHCPU
Control system		Sequence program control method	
I/O control		Refresh mode	
Programming language	Sequence control language	• Relay symbol language (ladder) • Logic symbolic language (list) • MELSAP3 (SFC) • Structured text (ST)	
	Process control language	• Process control FBD (Note 1)	
Instruction types		Sequence, basic, application and process control instructions (Process control instruction types: Control/Operation instructions, I/O control instructions, compensation operation instructions, arithmetic operation instructions, comparison operation instructions, auto-tuning instructions)	
Loop control specifications	Control cycle	10ms or more/control loop (Setting available per loop)	
	Number of control loops	No limit (Note 2)	
	Main functions	2 degree of freedom PID control, cascade control, auto-tuning function, feed forward control	
RAS	Online module replacement	The I/O, analog, temperature input, temperature control, and pulse input modules can be replaced (on a remote I/O station).	
	Output in case of error stop	Clear or output retention can be designated for each module.	
Functions compatible with redundant system		• Redundant configuration of the entire system, including the CPU, the power supply, and the base unit ----- Hot standby system for the control and standby systems online module change, selection of backup and separate modes available • Large-capacity data tracking ----- Large-capacity device data transfer (100k words) from the control system to the standby system • Network system compatible with redundant system ----- Switchover in case of MELSECNET/H or Ethernet module malfunction or network wire disconnection • Engineering environment (GX Developer) Communication with programming tools ----- The control or standby system can be designated by direct CPU connection or connection via a network Online program change function ----- Programmable controller write, online program change, online multi-block change Memory copy function ----- Copying memory data from the control system to the standby system (Note 4) Redundant system setting ----- The tracking device and network pairing can be set with parameters.	
Communication port		USB, RS-232	
Modules that can be mounted on the main base unit		Q Series network module (Ethernet, MELSECNET/H, CC-Link only), input/output module can be mounted.	
Programming software		GX Developer	
		PX Developer	
Program capacity	Number of steps	124k steps	252k steps
	Number of programs	124	252 (Note 3)
Device memory capacity (Note 5)		Device memory: 29k words / File register (internal): 128k words (It can be expanded up to 1017k words by adding a memory card [2MB].)	
Number of I/O device points (Note 6)		8192 points	
Number of I/O points (Note 7)		4096 points	
Number of CPUs mounted		1 (Multiple CPU configuration is not available)	
Number of mountable modules		11 on the main base unit (7 when the power supply is redundant type)	
Number of extension base		0 (All non-redundant modules are mounted on the remote I/O station [the maximum number of modules that can be mounted on a remote station is 64].)	
Number of remote I/O points		8192 points (up to 2048 points per station)	

Note 1) PX Developer is required for programming by FBD.
Note 2) The number of control loops is restricted by the combination of the device memory capacity (128k words/loop used) and the control cycle.
Note 3) The maximum number of files that can be executed is 124. It is impossible to execute 125 or more files. Two SFC/MELSAP-Ls are available, one of which is a program execution control SFC.
Note 4) The standard RAM, standard ROM and program memory can be copied from the control system to the standby system. The memory card cannot be copied.
Note 5) Each number of device points in the data memory can be changed within 29k words, depending on the parameters.
Note 6) Total number of the I/O points on the main base unit, which are directly controlled from the CPU module, and the I/O points controlled as remote I/O by the remote I/O network.
Note 7) The number of I/O points on the main base unit, which are directly controlled from the CPU module.

Motion CPU

Item		Q173HCPU (-T)	Q172HCPU (-T)	Q173CPUN (-T)	Q172CPUN (-T)
Number of control axes	SV13/SV22/SV43	32 axes	8 axes	32 axes (Max. of 16 axes × 2 per system)	8 axes
	SV54	—	—	16 axes (Max. of 4 axes per machine)	8 axes (Max. of 4 axes per machine)
Operation (Note 1) cycle (default)	SV13	0.44ms / 1 to 3 axes 0.88ms / 4 to 10 axes 1.77ms / 11 to 20 axes 3.55ms / 21 to 32 axes	0.44ms / 1 to 3 axes 0.88ms / 4 to 8 axes	0.88ms / 1 to 8 axes 1.77ms / 9 to 16 axes 3.55ms / 17 to 32 axes	0.88ms / 1 to 8 axes
	SV22/SV43	0.88ms / 1 to 5 axes 1.77ms / 6 to 14 axes 3.55ms / 15 to 28 axes 7.11ms / 29 to 32 axes	0.88ms / 1 to 5 axes 1.77ms / 6 to 8 axes	0.88ms / 1 to 4 axes 1.77ms / 5 to 12 axes 3.55ms / 13 to 24 axes 7.11ms / 25 to 32 axes	0.88ms / 1 to 4 axes 1.77ms / 5 to 8 axes
	SV54	—	—	3.55ms / 1 to 8 axes 7.11ms / 9 to 16 axes	3.55ms / 1 to 8 axes
Interpolation functions	SV13/SV22/SV43	Linear interpolation (Up to 4 axes), Circular interpolation (2 axes), Helical interpolation (3 axes)			
	SV54	3D linear interpolation (max. 4 axes), joint interpolation (max. 4 axes), 3D circular interpolation (max. 4 axes)			
Control method	SV13/SV22	PTP (Point To Point) control, Speed control, Speed/position switching control, Fixed-pitch feed, Constant-speed control, Position follow-up control, Prescribed position stop speed control (Q173HCPU(-T) / Q172HCPU(-T)), Speed switching control, High-speed oscillation control, Synchronous control (SV22)			
	SV43	PTP (Point To Point) control, Constant-speed positioning, High-speed oscillation control			
	SV54	PTP (Pose To Pose) control, CP (Configuraus Path) control			
Acceleration/deceleration control		Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration, Post-interpolation acceleration/deceleration (SV54)			
Compensation function		Backlash compensation, Electronic gear, Phase compensation (SV22)		Backlash compensation, Electronic gear	
Programming tool	SV13/SV22	Motion SFC, Dedicated instruction, Mechanical support language (SV22)			
	SV43	EIA language (G-code)			
	SV54	Robot language (MELFA-BASIC IV [Lite])			
Servo program capacity (dedicated instruction)	SV13/SV22	14k steps			
	SV43	248KB			
	SV54	Capacity of 1 program file: Max. 64KB Total capacity of all program files: Max. 339KB			

Item		Q173HCPU (-T)	Q172HCPU (-T)	Q173CPUN (-T)	Q172CPUN (-T)
Number of programs (SV54)		Max. 255			
Number of positioning points	SV13/SV22	3200 points (positioning data dan be set indirectly)			
	SV43	Approx. 10600 points (indirect setting possible)			
	SV54	Internal variables: 1022 points / program External variables: 40 points (Indirect setting possible; position type [pose], or joint type [Joint] format)			
Programming tool		IBM PC/AT			
Peripheral I/F		USB / SSCNET		USB / RS-232 / SSCNET	
Teaching function		Provided (when using Q17□HCPU-T / Q17□CPUN-T, SV13/SV54)			
Home position return function		Proximity dog type (2 types), Count type (3 types), Data set type (2 types), Dog cradle type, Stopper type (2 types), Limit switch combined type			
Jog operation function		Function present (with incremental feed function [SV54])			
Manual pulse generator operation function		Possible to connect 3 modules			
Synchronous encoder operation function		Possible to connect 12 modules (SV22 use)	Possible to connect 8 modules (SV22 use)	Possible to connect 12 modules (SV22 use)	Possible to connect 8 modules (SV22 use)
M-code function		M-code output function provided, M-code completion wait function provided			
Limit switch output function		Number of output points: 32 points Watch data: Motion control data/Word device			
ROM function		Yes		No	
Absolute position system		• Made compatible by setting battery to servo amplifier (Possible to select the absolute/incremental data method for each axis)			
Number of controlled machines (SV54)	Axis control machines	8 machines			
	Management machines	8 machines			
WAIT function (SV54)		With "Waiting for WAIT status" function, and "Device type/No. specific output during WAIT" function			
Number of Motion related modules		Q172LX: 4 modules Q172EX-S2: 6 modules (Note 2) Q173PX: 4 modules (Note 3)	Q172LX: 1 module Q172EX: 4 modules (Note 1) Q173PX: 3 modules (Note 2)	Q172LX: 4 modules Q172EX: 6 modules (Note 1) Q173PX: 4 modules (Note 2)	Q172LX: 1 module Q172EX: 4 modules (Note 1) Q173PX: 3 modules (Note 2)
Program capacity	Code total (Motion SFC diagram + Operation control + Transition)	543KB		287KB	
	Test total (Operation control + Transition)	484KB		224KB	
Number of I/O (X/Y) points		8192 points			
Number of real I/O (PX/PY) points		256 points			
Number of devices	Internal relays (M)	Total (M+L): 8192 points			
	Latch relays (L)				
	Link relays (B)	8192 points			
	Annunciators (F)	2048 points			
	Special relay (M)	256 points			
	Data registers (D)	8192 points			
	Link registers (W)	8192 points			
	Special register (D)	256 points			
	Motion registers (#)	8192 points			
	Coasting timers (FT)	1 point（888μs）			

Note 1) SV43 is not used at Q172EX and Q172EX-S2.
Note 2) The incremental synchronous encoder use (SV22). When connecting the manual pulse generator, you can use only one module.

GENERAL SPECIFICATIONS

General specifications indicate the environmental specifications in which this product can be installed and operated. Unless otherwise specified, the general specifications apply to all products of the Q Series. Install and operate the Q Series products in the environment indicated in the general specifications.
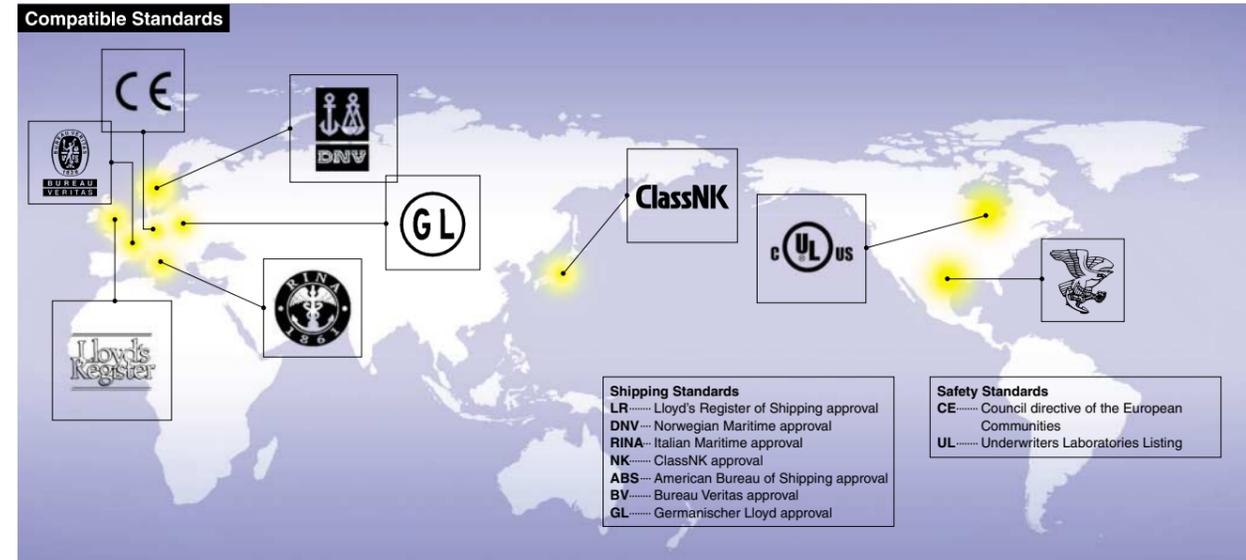
Item	Specifications			
Operating ambient temperature	0 to 55℃			
Storage ambient temperature	-25 to 75℃ (Note 3)			
Operating ambient humidity	5 to 95%RH (Note 4), non-condensing			
Storage ambient humidity	5 to 95%RH (Note 4), non-condensing			
Vibration resistance	Conforms to JIS B 3502, IEC61131-2	Under intermittent vibration		Sweep count
		Frequency	Acceleration	Amplitude	
		5 to 9 Hz	—	3.5mm (0.14 in.)	
		9 to 150 Hz	9.8m/s²	—	10 times each in X, Y, Z directions (for 80 min.)
		Under continuous vibration			
		Frequency	Acceleration	Amplitude	
		5 to 9 Hz	—	1.75mm (0.069 in.)	
		9 to 150 Hz	4.9m/s²	—	
Shock resistance	Conforms to JIS B 3502, IEC61131-2 (147m/s², 3 times in each of 3 directions X, Y, Z)			
Operating atmosphere (Note 5)	No corrosive gases			
Operating altitude	2000m (6565 ft.) or less			
Installation location	Inside control panel			
Overvoltage category (Note 1)	II or less			
Pollution degree (Note 2)	2 or less			
Equipment class	Class I			

Note 1) 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 2) This index indicates the degree to which conductive material is generated in the environment where the equipment is used. In pollution degree 2, only non-conductive pollution occurs. However, a temporary conductivity caused by condensation is to be expected.
Note 3) The storage ambient temperature is -20 to 75℃ if the system includes the A/AnS Series modules.
Note 4) The operating ambient humidity and storage ambient humidity are 10 to 90%RH if the system includes the A/AnS Series modules.
Note 5) Do not use or store the programmable controller under pressure higher than the atmospheric pressure of altitude 0 m. Doing so can cause a malfunction. When using the programmable controller under pressure, please consult your local Mitsubishi sales office or representative.

Ensuring an extensive global support network meeting diverse support for today's needs

Complying with international quality assurance standards.

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

Compatible Standards

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

Safety Standards
CE------- Council directive of the European Communities
UL------- Underwriters Laboratories Listing

Global FA centers

"Mitsubishi Global FA Centers" are located throughout North America, Europe, and Asia to develop products complying with international standards and to provide attentive services.

◎North American FA Center
MITSUBISHI ELECTRIC AUTOMATION, INC.
500 Corporate Woods Parkway, Vernon Hills, IL 60061, USA
Tel: +1-847-478-2100 / Fax: +1-847-478-0327
Area covered: North America, Mexico, Chile, Brazil

◎European FA Center
MITSUBISHI ELECTRIC EUROPE B.V. GERMAN BRANCH (Industrial Automation Division)
Gothaer Strasse 8, D-40880 Ratingen, Germany
Tel: +49-2102-486-0 / Fax: +49-2102-486-1120
Area covered: Europe

◎UK FA Center
MITSUBISHI ELECTRIC EUROPE B.V. UK BRANCH (Customer Technology Center)
Travellers Lane, Hartfield, Hertfordshire, AL10 8XB, UK
Tel: +44-1707-276100 / Fax: +44-1707-278695
Area covered: UK, Ireland

◎Central and Eastern Europe FA Center
MITSUBISHI ELECTRIC EUROPE B.V. CZECH BRANCH
Radlická 714/113a,15800 Praha 5, Czech Republic
Tel: +420-251-551-470 / Fax: 420-251-551-471
Area covered: Czech Republic, Poland, Hungary,Slovakia

◎Korean FA Center
MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD.
B1F, 2F, 1480-6, Gayang-Dong, Gangseo-Ku, Seoul, 157-200, Korea
Tel: +82-2-3660-9607 / Fax: +82-2-3664-0475
Area covered: Korea

◎Hong Kong FA Center
MITSUBISHI ELECTRIC AUTOMATION (HONG KONG) LTD.
10/F, Manulife Tower, 169 Electric Road, North Point, Hong Kong
Tel: +852-2887-8870 / Fax: +852-2887-7984
Area covered: China

◎Shanghai FA Center
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*Always refer to user's manuals for information on usable modules, restrictions, etc. before using.
*Contact your local Mitsubishi sales office or representative for the latest information on the MELSOFT versions and compatible OS.

🔲 Usable with basic model　　🔲 Usable with process CPU　　🔲 Usable with MELSECNET/H remote I/O
🔲 Usable with high performance model　　🔲 Usable with redundant CPU

CPU, base, power supply

Product		Model	Outline
CPU	Basic model	Q00JCPU	No. of I/O points: 256 points, no. of I/O device points: 2048 points, program capacity: 8 k steps, basic instruction processing speed (LD instruction): 0.20 μs, program memory capacity: 58 KB, 5 slots, 100 to 240 V AC input/5 V DC 3A output power supply
		Q00CPU	No. of I/O points: 1024 points, no. of I/O device points: 2048 points, program capacity: 8 k steps, basic instruction processing speed (LD instruction): 0.16 μs, program memory capacity: 94 KB
		Q01CPU	No. of I/O points: 1024 points, no. of I/O device points: 2048 points, program capacity: 14 k steps, basic instruction processing speed (LD instruction): 0.10 μs, program memory capacity: 94 KB
	High performance model	Q02CPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 28 k steps, basic instruction processing speed (LD instruction): 0.079 μs, program memory capacity: 112 KB
		Q02HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 28 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 112 KB
		Q06HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 60 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 240 KB
		Q12HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 124 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 496 KB
		Q25HCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 252 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 1008 KB
	Process CPU	Q12PHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 124 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 496 KB
		Q25PHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 252 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 1008 KB
	Redundant CPU	Q12PRHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 124 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 496 KB
		Q25PRHCPU	No. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 252 k steps, basic instruction processing speed (LD instruction): 0.034 μs, program memory capacity: 1008 KB
	Motion CPU	Q172CPUN	For 8-axis control
		Q172CPUN-T	For 8-axis control, teaching module supported
		Q173CPUN	For 32-axis control
		Q173CPUN-T	For 32-axis control, teaching module supported
		Q172HCPU	For 8-axis control, SSCNET III connectivity
		Q172HCPU-T	For 8-axis control, SSCNET III connectivity, teaching module supported
		Q173HCPU	For 32-axis control, SSCNET III connectivity
		Q173HCPU-T	For 32-axis control, SSCNET III connectivity, teaching module supported
	Battery	Q6BAT	Replacement battery
		Q7BAT	Replacement large-capacity battery
		Q7BAT-SET	Large-capacity battery with battery holder for mounting CPU
		Q8BAT	Replacement large-capacity battery module
		Q8BAT-SET	Large-capacity battery module with CPU connection cable
	Memory card	Q2MEM-1MBS	SRAM memory card, capacity: 1 MB
		Q2MEM-2MBS	SRAM memory card, capacity: 2 MB
		Q2MEM-2MBF	Linear Flash memory card, capacity: 2 MB
		Q2MEM-4MBF	Linear Flash memory card, capacity: 4 MB
		Q2MEM-8MBA	ATA card, capacity: 8 MB
		Q2MEM-16MBA	ATA card, capacity: 16 MB
		Q2MEM-32MBA	ATA card, capacity: 32 MB
	Memory card adapter	Q2MEM-ADP	Adapter for Q2MEM memory card's standard PCMCIA slot
	SRAM card battery	Q2MEM-BAT	Replacement battery for Q2MEM-1MBS and Q2MEM-2MBS
	Connection cable	QC30R2	RS-232 cable for connecting personal computer and CPU, 3 m (between mini-DIN6P and Dsub9P)
	Tracking cable	QC10TR	1 m cable for tracking
		QC30TR	3 m cable for tracking
	Cable disconnection prevention holder	Q6HLD-R2	Holder for preventing RS-232 cable (programmable controller CPU connection) disconnection

CPU, base, power supply

Product		Model	Outline
Base	Main base	Q33B	3 slots, 1 power supply module required, for Q Series modules
		Q35B	5 slots, 1 power supply module required, for Q Series modules
		Q38B	8 slots, 1 power supply module required, for Q Series modules
		Q312B	12 slots, 1 power supply module required, for Q Series modules
	Slim type base	Q32SB	2 slots, 1 slim type power supply module required, for Q Series modules
		Q33SB	3 slots, 1 slim type power supply module required, for Q Series modules
		Q35SB	5 slots, 1 slim type power supply module required, for Q Series modules
	Redundant power main base	Q38RB	8 slots, 2 redundant power supply modules required, for Q Series modules
	Extension base	Q63B	3 slots, 1 power supply module required, for Q Series modules
		Q65B	5 slots, 1 power supply module required, for Q Series modules
		Q68B	8 slots, 1 power supply module required, for Q Series modules
		Q612B	12 slots, 1 power supply module required, for Q Series modules
		Q52B	2 slots, power supply module not required, for Q Series modules
		Q55B	5 slots, power supply module not required, for Q Series modules
		QA1S65B (Note 1)	5 slots, 1 AnS Series power supply module required, for AnS Series modules
		QA1S68B (Note 1)	8 slots, 1 AnS Series power supply module required, for AnS Series modules
		QA65B (Note 1)	5 slots, 1 A Series power supply module required, for A Series modules
		QA68B (Note 1)	8 slots, 1 A Series power supply module required, for A Series modules
	Redundant power extension base	Q68RB	8 slots, 2 redundant power supply modules required, for Q Series modules
	Redundant type extension base	Q65WRB	5 slots, 2 redundant power supply modules required, for Q Series modules
	Extension cable	QC05B	0.45 m cable for connecting extension base unit
		QC06B	0.6 m cable for connecting extension base unit
		QC12B	1.2 m cable for connecting extension base unit
		QC30B	3 m cable for connecting extension base unit
		QC50B	5 m cable for connecting extension base unit
		QC100B	10 m cable for connecting extension base unit
	Adapter	Q6DIN1	DIN rail mounting adapter for Q38B, Q312B, Q68B, Q612B, Q38RB, Q68RB, Q65WRB, Q38DB, and Q312DB
		Q6DIN2	DIN rail mounting adapter for Q35B, Q65B, and Q00JCPU
		Q6DIN3	DIN rail mounting adapter for Q32SB, Q33SB, Q35SB, Q33B, Q52B, Q55B, and Q63B
		Q6DIN1A	DIN rail mounting adapter (with vibration-proofing bracket set) for Q3□B, Q5□B, Q6□B, Q38RB, Q68RB, and Q65WRB
	Blank cover	QG60	Blank cover for I/O slot
Power supply		Q61P	Input voltage: 100 to 240 V AC, output voltage: 5 V DC, output current: 6 A
		Q61P-A1	Input voltage: 100 to 120 V AC, output voltage: 5 V DC, output current: 6 A
		Q61P-A2	Input voltage: 200 to 240 V AC, output voltage: 5 V DC, output current: 6 A
		Q62P	Input voltage: 100 to 240 V AC, output voltage: 5/24 V DC, output current: 3/0.6 A
		Q63P	Input voltage: 24 V DC, output voltage: 5 V DC, output current: 6 A
		Q64PN (New)	Input voltage: 100 to 240 V AC, output voltage: 5 V DC, output current: 8.5 A
Slim type power supply		Q61SP	Input voltage range: 100 to 240 V AC, output voltage: 5 V DC, output current: 2 A
Redundant power supply		Q63RP	Input voltage: 24 V DC, output voltage: 5 V DC, output current: 8.5 A
		Q64RP	Input voltage: 100 to 120/200 to 240 V AC, output voltage: 5 V DC, output current: 8.5 A

Usable at the second to seventh extension base stage.

I/O module

Product		Model	Outline
Input	AC	QX10	16 points, 100 to 120 V AC, 8 mA (100 V AC, 60 Hz)/7 mA (100 V AC, 50 Hz), response time: 20 ms, 16 points/common, 18-point terminal block
		QX28	8 points, 100 to 240 V AC, 17 mA (200 V AC, 60 Hz)/14 mA (200 V AC, 50 Hz)/8 mA (100 V AC, 60 Hz)/ 7 mA (100 V AC, 50 Hz), response time: 20 ms, 8 points/common, 18-point terminal block
	DC (Positive common) (Note 2)	QX40	16 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 16 points/common, positive common, 18-point terminal block
		QX40-S1	16 points, 24 V DC, 6 mA, response time: 0.1/0.2/0.4/0.6/1 ms, 16 points/common, positive common, 18-point terminal block
		QX41 (Note 3)	32 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 32 points/common, positive common, 40-pin connector
		QX41-S1 (Note 3)	32 points, 24 V DC, 4 mA, response time: 0.1/0.2/0.4/0.6/1 ms, 32 points/common, positive common, 40-pin connector
		QX42 (Note 3)	64 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 32 points/common, positive common, 40-pin connector
		QX42-S1 (Note 3)	64 points, 24 V DC, 4 mA, response time: 0.1/0.2/0.4/0.6/1 ms, 32 points/common, positive common, 40-pin connector
	AC/DC (Note 2)	QX50	16 points, 48 V AC/DC, 4 mA, response time: 20 ms, 16 points/common, positive/negative common, 18-point terminal block
	DC sensor (Note 2)	QX70	16 points, 5/12 V DC, 1.2 mA (5 V DC)/3.3 mA (12 V DC), response time: 1/5/10/20/70 ms, 16 points/common, positive/negative common, 18-point terminal block
		QX71 (Note 3)	32 points, 5/12 V DC, 1.2 mA (5 V DC)/3.3 mA (12 V DC), response time: 1/5/10/20/70 ms, 32 points/common, positive/negative common, 40-pin connector
		QX72 (Note 3)	64 points, 5/12 V DC, 1.2 mA (5 V DC)/3.3 mA (12 V DC), response time: 1/5/10/20/70 ms, 32 points/common, positive/negative common, 40-pin connector
	DC (Negative common) (Note 2)	QX80	16 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 16 points/common, negative common, 18-point terminal block
		QX81 (Note 4)	32 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 32 points/common, negative common, 37-pin D-sub connector
		QX82 (Note 3)	64 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 32 points/common, negative common, 40-pin connector
		QX82-S1 (Note 3)	64 points, 24 V DC, 4 mA, response time: 0.1/0.2/0.4/0.6/1 ms, 32 points/common, negative common, 40-pin connector
Output	Relay	QY10	16 points, 24 V DC/240 V AC, 2 A/point, 8 A/common, response time: 12 ms, 16 points/common, 18-point terminal block
		QY18A	8 points, 24 V DC/240 V AC, 2 A/point, response time: 12 ms, 18-point terminal block, all points independent
	Triac	QY22	16 points; 100 to 240 V AC; 0.6 A/point; 4.8 A/common; minimum load voltage/current: 24 V AC/100 mA, 100 to 240 V AC/25 mA; response time: 1 ms + 0.5 cycle, 16 points/common, 18-point terminal block, with surge suppressor
	Transistor (Sink)	QY40P	16 points, 12 to 24 V DC, 0.1 A/point, 1.6 A/common, response time: 1 ms, 16 points/common, sink type, 18-point terminal block, with thermal and short-circuit protection and surge suppressor
		QY41P (Note 3)	32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type, 40-pin connector, with thermal and short-circuit protection and surge suppressor
		QY42P (Note 3)	64 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type, 40-pin connector, with thermal and short-circuit protection and surge suppressor
		QY50	16 points, 12 to 24 V DC, 0.5 A/point, 4 A/common, response time: 1 ms, 16 points/common, sink type, 18-point terminal block, with surge suppressor and fuse
	Transistor (Independent)	QY68A	8 points, 5 to 24 V DC, 2 A/point, 8 A/module, response time: 10 ms, sink/source type, 18-point terminalblock, with surge suppressor, all points independent
	TTL CMOS	QY70	16 points, 5 to 12 V DC, 16 mA/point, 256 mA/common, response time: 0.5 ms, 16 points/common, sink type, 18-point terminal block, with fuse
		QY71 (Note 3)	32 points, 5 to 12 V DC, 16 mA/point, 512 mA/common, response time: 0.5 ms, 32 points/common, sink type, 40-pin connector, with fuse
	Transistor (Source)	QY80	16 points, 12 to 24 V DC, 0.5 A/point, 4 A/common, response time: 1 ms, 16 points/common, source type, 18-point terminal block, with surge suppressor and fuse
		QY81P (Note 4)	32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, source type, 37-pin D-sub connector, with thermal and short-circuit protection and surge suppressor
I/O	DC input/ transistor output	QH42P (Note 3)	Input: 32 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 32 points/common, positive common; output: 32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type; 40-pin connector, with thermal and short-circuit protection and surge suppressor
		QX48Y57	Input: 8 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 8 points/common, positive common; output: 7 points, 12 to 24 V DC, 0.5 A/common, response time: 1 ms, 7 points/common, sink type; 18 points terminal block, with surge suppressor and fuse
		QX41Y41P (Note 3) (New)	Input: 32 points, 24 V DC, 4 mA, response time: 1/5/10/20/70 ms, 32 points/common, positive common; output: 32 points, 12 to 24 V DC, 0.1 A/point, 2 A/common, response time: 1 ms, 32 points/common, sink type; 40-pin connector, with thermal and short-circuit protection and surge suppressor
Interrupt module		QI60	16 points, 24 V DC, 4 mA, response time: 0.1/0.2/0.4/0.6/1 ms, 16 points/common, 18-point terminal block
Connector		A6CON1	40-pin connector, soldering type
		A6CON2	40-pin connector, crimp-contact type
		A6CON3	40-pin connector, IDC for flat cables
		A6CON4	40-pin connector, soldering type (cable connectable in bidirection)
		A6CON1E	37-pin D-sub connector, soldering type
		A6CON2E	37-pin D-sub connector, crimp-contact type
		A6CON3E	37-pin D-sub connector, IDC for flat cables

I/O module

Product		Model	Outline
Spring clamp terminal block		Q6TE-18S	For 16-point I/O modules, 0.3 to 1.5 mm² (22 to 16 AWG)
Terminal block adapter		Q6TA32	For 32-point I/O modules, 0.5 mm² (20 AWG)
		Q6TA32-TOL	Q6TA32 dedicated tool
Connector/terminal block conversion module		A6TBXY36	For positive common input modules and sink output modules (standard type)
		A6TBXY54	For positive common input modules and sink output modules (2-wire type)
		A6TBX70	For positive common input modules (3-wire type)
		A6TBX36-E	For negative common input modules (standard type)
		A6TBX54-E	For negative common input modules (2-wire type)
		A6TBX70-E	For negative common input modules (3-wire type)
		A6TBY36-E	For source output modules (standard type)
		A6TBY54-E	For source output modules (2-wire type)
	Cable	AC05TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type); 0.5 m
		AC10TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type); 1 m
		AC20TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type); 2 m
		AC30TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type); 3 m
		AC50TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type); 5 m
		AC80TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type); 8 m *Common power supply 0.5 A or lower
		AC100TB	For A6TBXY36, A6TBXY54, and A6TBX70 (positive common/sink type); 10 m *Common power supply 0.5 A or lower
		AC05TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type); 0.5 m
		AC10TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type); 1 m
		AC20TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type); 2 m
		AC30TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type); 3 m
		AC50TB-E	For A6TBX36-E, A6TBY36-E, A6TBX54-E, A6TBY54-E, and A6TBX70-E (negative common/source type); 5 m
Relay terminal module		A6TE2-16SRN	For 40-pin connector 24 V DC transistor output modules (sink type)
	Cable	AC06TE	For A6TE2-16SRN, 0.6 m
		AC10TE	For A6TE2-16SRN, 1 m
		AC30TE	For A6TE2-16SRN, 3 m
		AC50TE	For A6TE2-16SRN, 5 m
		AC100TE	For A6TE2-16SRN, 10 m

Analog I/O module

Product		Model	Outline
Analog input	Voltage input	Q68ADV	8 channels; input: -10 to 10 V DC; output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000; conversion speed: 80 μs/channel; 18-point terminal block
	Current input	Q62AD-DGH	2 channels; input: 4 to 20 mA DC; output (resolution): 0 to 32000, 0 to 64000; conversion speed: 10 ms/2 channels; 18-point terminal block; channel isolated; supplies power to 2-wire transmitter
		Q66AD-DG (Note 6)	6 channels; input: 4 to 20 mA DC (when 2-wire transmitter is connected), 0 to 20 mA DC; output (resolution): 0 to 4000, 0 to 12000; conversion speed: 10 ms/channel; 40-pin connector; channel isolated; supplies power to 2-wire transmitter
		Q68ADI	8 channels; input: 0 to 20 mA DC; output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000; conversion speed: 80 μs/channel; 18-point terminal block
	Voltage/ current input	Q64AD	4 channels; input: -10 to 10 V DC, 0 to 20 mA DC; output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000; conversion speed: 80 μs/channel; 18-point terminal block
		Q64AD-GH	4 channels; input: -10 to 10 V DC, 0 to 20 mA DC; output (resolution): 0 to 32000, -32000 to 32000, 0 to 64000, -64000 to 64000; conversion speed: 10 μs/4 channels; 18-point terminal block, channel isolated
		Q68AD-G (Note 6)	8 channels; input: -10 to 10 V DC, 0 to 20 mA DC; output (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000, -16000 to 16000; conversion speed: 10 ms/channel; 40-pin connector, channel isolated
Analog output	Voltage output	Q68DAVN	8 channels; input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, 0 to 16000 to 16000; output: -10 to 10 V DC; conversion speed: 80 μs/channel; 18-point terminal block, transformer isolation between power supply and output
	Current output	Q68DAIN	8 channels; input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000; output: 0 to 20 mA DC; conversion speed: 80 μs/channel; 18-point terminal block, transformer isolation between power supply and output
	Voltage/ current output	Q62DAN	2 channels; input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, -16000 to 16000; output: -10 to 10 V DC, 0 to 20 mA DC; conversion speed: 80 μs/channel; 18-point terminal block, transformer isolation between power supply and output
		Q62DA-FG	2 channels; input (resolution): 0 to 12000, -12000 to 12000, -16000 to 16000; output: -12 to 12 V DC, 0 to 22 mA DC; conversion speed: 10 ms/2 channels; 18-point terminal block; channel isolated
		Q64DAN	4 channels; input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, -16000 to 16000; output: -10 to 10 V DC, 0 to 20 mA DC; conversion speed: 80 μs/channel; 18-point terminal block; transformer isolation between power supply and output
		Q66DA-G (Note 6)	6 channels; input (resolution): 0 to 4000, -4000 to 4000, 0 to 12000, -12000 to 12000, -16000 to 16000; output: -12 to 12 V DC, 0 to 22 mA DC; conversion speed: 6 ms/channel; 40-pin connector; channel isolated
Temperature input	RTD	Q64RD	4 channels, platinum RTD (Pt100 [JIS C1604-1997, IEC 751 1983], JPt100 [JIS C1604-1981]), conversion speed: 40 ms/channel, 18-point terminal block
		Q64RD-G	4 channels, platinum RTD (Pt100 [JIS C1604-1997, IEC 751 1983], JPt100 [JIS C1604-1981], Ni100Ω [DIN43760 1987]), conversion speed: 40 ms/channel, 18-point terminal block, channel isolated
	Thermocouple	Q64TD	4 channels, thermocouple (JIS C1602-1995), conversion speed: 40 ms/channel, 18-point terminal block
		Q64TDV-GH	4 channels, thermocouple (JIS C1602-1995), micro voltage (-100 to 100 mV), conversion speed: sampling cycle x 3, sampling cycle: 20 ms/channel, 18-point terminal block
		Q68TD-G-H01 (Note 6, 10) New	8 channels, thermocouple (JIS C1602-1995, IEC 60584-1 [1995], IEC 60584-2 [1982]), conversion speed: 320 ms/8 channels, 40-pin connector
Temperature control	Platinum RTD	Q64TCRT	4 channels, platinum RTD (Pt100, JPt100), no heater disconnection detection, sampling cycle: 0.5 s/4 channels, 18-point terminal block
		Q64TCRTBW	4 channels, platinum RTD (Pt100, JPt100), with heater disconnection detection, sampling cycle: 0.5 s/4 channels, two 18-point terminal blocks
	Thermocouple	Q64TCTT	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PLII, W5Re/W26Re), no heater disconnection detection, sampling cycle: 0.5 s/4 channels, 18-point terminal block
		Q64TCTTBW	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PLII, W5Re/W26Re), with heater disconnection detection, sampling cycle: 0.5 s/4 channels, two 18-point terminal blocks
Loop control		Q62HLC	2 channels, input: thermocouple/micro voltage/voltage/current, conversion speed (input): 25 ms/2 channels, sampling cycle: 25 ms/2 channels; output: 4 to 20 mA DC, conversion speed (output): 25 ms/2 channels; 18-point terminal block with 5 PID control modes

*1 Interrupt pointer and intelligent function module dedicated instructions cannot be used.

*3 Mountable on the extension base unit only.

Pulse I/O and positioning module

Product		Model	Outline
Channel isolated pulse input		QD60P8-G	8 channels, 30 kpps/10 kpps/1 kpps/ 100 pps/ 50 pps/ 10 pps/ 1 pps/0.1 pps, count input signal: 5/12 to 24 V DC
High-speed counter		QD62 (Note 3)	2 channels; 200/100/10 kpps; count input signal: 5/12/24 V DC; external input: 5/12/24 V DC; coincidence output: transistor (sink), 12/24 V DC, 0.5 A/point, 2 A/common; 40-pin connector
		QD62D (Note 3)	2 channels; 500/200/100/10 kpps; count input signal: EIA standards RS-422-A (differential line driver), external input: 5/12/24 V DC; coincidence output: transistor (sink), 12/24 V DC, 0.5 A/point, 2 A/common; 40-pin connector
		QD62E (Note 3)	2 channels; 200/100/10 kpps; count input signal: 5/12/24 V DC; external input: 5/12/24 V DC; coincidence output: transistor (source), 12/24 V DC, 0.1 A/point, 0.4 A/common; 40-pin connector
		QD63P6 (Note 5)	6 channels, 200/100/10 kpps, count input signal: 5 V DC, 40-pin connector
		QD64D2 (Note 5) New	2 channels; 4 Mpps; count input signal: EIA standards RS-422-A (differential line driver); external input: 24 V DC; coincidence output: transistor (sink), 12/24 V DC, 0.5 A/point, 2 A/common; 40-pin connector
Positioning	Open collector output (Note 5)	QD75P1	1 axis; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; max. output pulse: 200 kpps; 40-pin connector
		QD75P2	2 axes; 2-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; max. output pulse: 200 kpps; 40-pin connector
		QD75P4	4 axes; 2-/3-/4-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; max. output pulse: 200 kpps; 40-pin connector
		QD70P4	4 axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 200 kpps, 40-pin connector
		QD70P8	8 axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 200 kpps, 40-pin connector
	Differential output (Note 5)	QD75D1	1 axis; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; max. output pulse: 1 Mpps; 40-pin connector
		QD75D2	2 axes; 2-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; max. output pulse: 1 Mpps; 40-pin connector
		QD75D4	4 axes; 2-/3-/4-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; max. output pulse: 1 Mpps; 40-pin connector
		QD70D4	4 axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 4 Mpps, 40-pin connector
		QD70D8	8 axes, control unit: pulse, no. of positioning data: 10/axis, max. output pulse: 4 Mpps, 40-pin connector
	With SSCNET connectivity (Note 3)	QD75M1	1 axis; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; 40-pin connector
		QD75M2	2 axes; 2-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; 40-pin connector
		QD75M4	4 axes; 2-/3-/4-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; 40-pin connector
	With SSCNET III connectivity (Note 3)	QD75MH1	1 axis; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; 40-pin connector; with SSCNET III connectivity
		QD75MH2	2 axes; 2-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; 40-pin connector; with SSCNET III connectivity
		QD75MH4	4 axes; 2-/3-/4-axis linear interpolation, 2-axis circular interpolation; control unit: mm, inch, degree, pulse; no. of positioning data: 600/axis; 40-pin connector; with SSCNET III connectivity
	Open collector output with built-in counter function (Note 5)	QD72P3C3	Positioning: 3 axes, control unit: pulse, no. of positioning data: 1/axis, max. output pulse: 100 kpps, counter: 3 channels, 100 kpps, count input signal: 5/24 V DC, 40-pin connector

*1 Interrupt pointer and intelligent function module dedicated instructions cannot be used.

*3 Mountable on the extension base unit only.

Information module

Product		Model	Outline
MES interface		QJ71MES96	MES interface module *MX MESInterface and CompactFlash card are required.
	Option	GT05-MEM-128MC	128 MB CompactFlash card
		GT05-MEM-256MC	256 MB CompactFlash card
Ethernet		QJ71E71-100	10BASE-T/100BASE-TX
		QJ71E71-B2	10BASE2
		QJ71E71-B5	10BASE5
Serial communication		QJ71C24N	RS-232: 1 channel, RS-422/485: 1 channel, total transmission speed of 2 channels: 230.4 kbps
		QJ71C24N-R2	RS-232: 2 channels, total transmission speed of 2 channels: 230.4 kbps
		QJ71C24N-R4	RS-422/485: 2 channels, total transmission speed of 2 channels: 230.4 kbps
Intelligent communication		QD51	BASIC program execution module, RS-232: 2 channels
		QD51-R24	BASIC program execution module, RS-232: 1 channel, RS-422/485: 1 channel
		SW□IVD-AD51HP (Note 7)	Software package for QD51, AD51H-S3, and A1SD51S

Control network module

Product		Model	Outline
MELSEC NET/H	SI/QSI fiber optic cable	QJ71LP21-25	SI/QSI/H-PCF/ broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station) or remote I/O network (remote mater station)
		QJ71LP21S-25	SI/QSI/H-PCF/ broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station) or remote I/O network (remote mater station), with external power supply function
		QJ72LP25-25	SI/QSI/H-PCF/ broadband H-PCF fiber optic cable, dual loop, remote I/O network (remote I/O station)
	GI-50/125 fiber optic cable	QJ71LP21G	GI-50/125 fiber optic cable, dual loop, controller network (control/normal station) or remote I/O network (remote master station)
		QJ72LP25G	GI-50/125 fiber optic cable, dual loop, remote I/O network (remote I/O station)
	GI-62.5/125 fiber optic cable	QJ71LP21GE	GI-62.5/125 fiber optic cable, dual loop, controller network (control/normal station) or remote I/O network (remote master station)
		QJ72LP25GE	GI-62.5/125 fiber optic cable, dual loop, remote I/O network (remote I/O station)
	Coaxial cable	QJ71BR11	3C-2V/5C-2V coaxial cable, single bus, controller network (control/normal station) or remote I/O network (remote master station)
		QJ72BR15	3C-2V/5C-2V coaxial cable, single bus, remote I/O network (remote I/O station)
CC-Link		QJ61BT11N	Master/local station, CC-Link Ver. 2 compatible
CC-Link/LT		QJ61CL12	Master station
FL-net (OPCN-2)	Ver. 2	QJ71FL71-T-F01	10BASE-T
		QJ71FL71-B2-F01	10BASE-2
		QJ71FL71-B5-F01	10BASE-5
	Ver. 1	QJ71FL71-T	10BASE-T
		QJ71FL71-B2	10BASE-2
		QJ71FL71-B5	10BASE-5
AS-i		QJ71AS92	Master station, AS-Interface Specification Version 2.11 compatible

*1 Interrupt pointer and intelligent function module dedicated instructions cannot be used.

*2 Interrupt pointer, intelligent function module dedicated instructions, and E-mail function cannot be used.

*3 Mountable on the extension base unit only.

*4 Mountable on the main base unit only.

A mode CPU, base

Product		Model	Outline
CPU		Q02CPU-A	For A mode, no. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 28 k steps, basic instruction processing speed (LD instruction): 0.079 µs, program memory capacity: 144 KB
		Q02HCPU-A	For A mode, no. of I/O points: 4096 points, no. of I/O device points: 8192 points, program capacity: 28 k steps, basic instruction processing speed (LD instruction): 0.034 µs, program memory capacity: 144 KB
		Q06HCPU-A	For A mode; no. of I/O points: 4096 points; no. of I/O device points: 8192 points; program capacity: 30 k steps (main), 30 k steps (sub); basic instruction processing speed (LD instruction): 0.034 µs, program memory capacity: 144 KB
Base	Main base	QA1S33B	3 slots, 1 AnS Series power supply module required, for AnS Series modules
		QA1S35B	5 slots, 1 AnS Series power supply module required, for AnS Series modules
		QA1S38B	8 slots, 1 AnS Series power supply module required, for AnS Series modules
	Extension base	QA1S65B	5 slots, 1 AnS Series power supply module required, for AnS Series modules
		QA1S68B	8 slots, 1 AnS Series power supply module required, for AnS Series modules

MELSOFT GX Series

GX Developer	SW☐D5C-GPPW-E	MELSEC progrmmable controller programming software
	SW☐D5C-GPPW-EV	MELSEC programmable controller programming software (upgrade)
GX Simulator	SW☐D5C-LLT-E	MELSEC programmable controller simulation software
	SW☐D5C-LLT-EV	MELSEC programmable controller simulation software (upgrade)
GX Explorer	SW☐D5C-EXP-E	Maintenance tool
GX Converter	SW☐D5C-CNVW-E	Excel/text data converter
GX Configurator-AD (Note 8)	SW☐D5C-QADU-E	MELSEC-Q dedicated analog to digital conversion module setting/monitoring tool
GX Configurator-DA (Note 8)	SW☐D5C-QDAU-E	MELSEC-Q dedicated digital to analog conversion module setting/monitoring tool
GX Configurator-SC (Note 8)	SW☐D5C-QSCU-E	MELSEC-Q dedicated serial communication module setting/monitoring tool
GX Configurator-CT (Note 8)	SW☐D5C-QCTU-E	MELSEC-Q dedicated high-speed counter module setting/monitoring tool
GX Configurator-TC (Note 8)	SW☐D5C-QTCU-E	MELSEC-Q dedicated temperature control module setting/monitoring tool
GX Configurator-TI (Note 8)	SW☐D5C-QTIU-E	MELSEC-Q dedicated temperature input module setting/monitoring tool
GX Configurator-FL (Note 8)	SW☐D5C-QFLU-E	MELSEC-Q dedicated FL-net module setting/monitoring tool
GX Configurator-PT (Note 8)	SW☐D5C-QPTU-E	MELSEC-Q dedicated positioning module QD70 setting/monitoring tool
GX Configurator-AS (Note 8)	SW☐D5C-QASU-E	MELSEC-Q dedicated AS-i master module setting/monitoring tool
GX Configurator-QP (Note 8)	SW☐D5C-QD75P-E	MELSEC-Q dedicated positioning module QD75P/D/M setting/monitoring tool
GX Configurator-CC	SW☐D5C-J61P-E	CC-Link module setting/monitoring tool
GX RemoteService-I	SW☐D5C-RAS-E	Remote access tool
GX Works	SW☐D5C-QSET-E	A set of seven products: GX Developer, GX Simulator, GX Explorer, GX Configurator-AD, DA, SC, CT
	SW☐D5C-GPPLLT-E	A set of three products: GX Developer, GX Simulator, GX Explorer

MELSOFT PX Series

PX Developer (Note 8)	SW☐D5C-FBDQ-E	Process control FBD software package
PX Works	SW☐D5C-FBDGPP-E	A set of six products: PX Developer, GX Developer, GX Configurator-AD, DA, CT, TI

MELSOFT MX Series

MX Component	SW☐D5C-ACT-E	ActiveX library for communication
MX Sheet	SW☐D5C-SHEET-E	Excel communication support tool
MX MESInterface	SW1DNC-MESIF-E	MES interface module QJ71MES96 dedicated information linkage tool
MX Works	SW☐D5C-SHEETSET-E	A set of two products: MX Component, MX Sheet

MELSOFT MT Series

MT Developer	SW☐RNC-GSVPROE	Integrated start-up support software for Q Series motion controllers
	SW☐RNC-GSVSETE	Integrated start-up support software for Q Series motion controllers, A30CD-PCF (SSC I/F card), Q170CDCBL03M cable

MELSOFT MR Series

MR Configurator (Note 9)	MRZJW3-SETUP221	Servo setup software for PC

PC interface board

Product		Model	Outline
MELSEC NET/H (10)	SI/QSI fiber optic cable	Q80BD-J71LP21-25	PCI bus, Japanese/English OS compatible, SI/QSI/H-PCF/broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station)
		Q80BD-J71LP21S-25	PCI bus, Japanese/English OS compatible, SI/QSI/H-PCF/broadband H-PCF fiber optic cable, dual loop, controller network (control/normal station), with external power supply function
	GI-50/125 fiber optic cable	Q80BD-J71LP21G	PCI bus, Japanese/English OS compatible, GI-50/125 fiber optic cable, dual loop, controller network (control/normal station)
	GI-62.5/125 fiber optic cable	Q80BD-J71LP21GE	PCI bus, Japanese/English OS compatible, GI-62.5/125 fiber optic cable, dual loop, controller network (control/normal station)
	Coaxial cable	Q80BD-J71BR11	PCI bus, Japanese/English OS compatible, 3C-2V/5C-2V coaxial cable, single bus, controller network (control/normal station)
CC-Link		Q80BD-J61BT11N	PCI bus, Japanese/English OS compatible, master/local interface board, CC-Link Ver. 2 compatible

Note 1) Compatible with the high performance model only.
Note 2) "Positive common" means using the module by connecting the common terminal to positive DC power; "negative common" means using the module by connecting the common terminal to negative DC power.
Note 3) The connector is not enclosed. Prepare A6CON1, A6CON2, A6CON3, or A6CON4 separately.
Note 4) The connector is not enclosed. Prepare A6CON1E, A6CON2E, or A6CON3E separately.
Note 5) The connector is not enclosed. Prepare A6CON1, A6CON2, or A6CON4 separately.
Note 6) The connector is not enclosed. Prepare A6CON4 separately.
Note 7) Runs in Windows command prompt.
Note 8) Not compatible with the A mode.
Note 9) MRZJW3-SETUP211 does not support MR-J3-500A or later and MR-J3-B. Use MRZJW3-SETUP221 or later.
Note 10) Depending on the combination of the power supply module and base unit, the mounting position (slot) of Q68TD-G-H01 is restricted. Refer to the manual for more details.