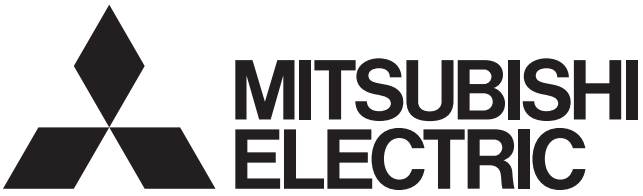


Programmable Controller

MELSEC-Q Series to MELSEC iQ-R Series Migration Guide

SAFETY PRECAUTIONS

(Read these precautions before using Mitsubishi Electric programmable controllers.)
Before using MELSEC iQ-R series programmable controllers, please read the manuals for the product and the relevant manuals introduced in those manuals carefully, and pay full attention to safety to handle the product correctly.
In this manual, the safety precautions are classified into two levels: "⚠WARNING" and "⚠CAUTION".

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences.
Observe the precautions of both levels because they are important for personal and system safety.
Make sure that the end users read this document and then keep the document in a safe place for future reference.

[Design Precautions]

⚠WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
  (2) When the programmable controller detects an abnormal condition, it stops the operation and all outputs are:
    - Turned off if the overcurrent or overvoltage protection of the power supply module is activated.
    - Held or turned off according to the parameter setting if the self-diagnostic function of the CPU module detects an error such as a watchdog timer error.
  (3) All outputs may be turned on if an error occurs in a part, such as an I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller.
  (4) Outputs may remain on or off due to a failure of a component such as a relay and transistor in an output circuit. Configure an external circuit for monitoring output signals that could cause a serious accident.
- In an output circuit, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply. If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to manuals relevant to the network. Incorrect output or malfunction due to a communication failure may result in an accident.
- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.

[Design Precautions]

⚠WARNING

- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
- Do not write any data to the "system area" and "write-protect area" of the buffer memory in the module. Also, do not use any "use prohibited" signals as an output signal from the CPU module to each module. Doing so may cause malfunction of the programmable controller system. For the "system area", "write-protect area", and the "use prohibited" signals, refer to the user's manual for the module used.
- If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Configure an interlock circuit in the program to ensure that the entire system will always operate safely even if communications fail. Incorrect output or malfunction due to a communication failure may result in an accident.
- To maintain the safety of the programmable controller system against unauthorized access from external devices via the network, take appropriate measures. To maintain the safety against unauthorized access via the Internet, take measures such as installing a firewall.

[Precautions for using digital-analog converter modules and high speed digital-analog converter modules]

- Analog outputs may remain on due to a failure of the module. Configure an external interlock circuit for output signals that could cause a serious accident.

[Precautions for using high-speed counter modules]

- Outputs may remain on or off due to a failure of a transistor for external output. Configure an external circuit for monitoring output signals that could cause a serious accident.

[Precautions for using positioning modules]

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) Machine OPR (Original Point Return) is controlled by two kinds of data: an OPR direction and an OPR speed. Deceleration starts when the near-point dog signal turns on. If an incorrect OPR direction is set, motion control may continue without deceleration. To prevent machine damage caused by this, configure an interlock circuit external to the programmable controller.
  (2) When the positioning module detects an error, the motion slows down and stops or the motion suddenly stops, depending on the stop group setting in parameter. Set the parameters to meet the specifications of the positioning control system used. In addition, set the OPR parameters and positioning data within the specified setting range.
  (3) Outputs may remain on or off, or become undefined due to a failure of a component such as an insulation element and transistor in an output circuit, where the positioning module cannot detect any error. In a system where the incorrect outputs could cause a serious accident, configure an external circuit for monitoring output signals.
- An absolute position restoration by the positioning module may turn off the servo-on signal (servo off) for approximately 60ms + scan time, and the motor may run unexpectedly. If this causes a problem, provide an electromagnetic brake to lock the motor during absolute position restoration.

[Design Precautions]

⚠WARNING

[Precautions for using CC-Link IE Controller Network (when optical fiber cables are used)]

- The optical transmitter and receiver of the CC-Link IE Controller Network module use laser diodes (class 1 in accordance with IEC 60825-1). Do not look directly at a laser beam. Doing so may harm your eyes.

[Precautions for using CC-Link system master/local modules]

- To set a refresh device in the module parameters, select the device Y for the remote output (RY) refresh device. If a device other than Y, such as M and L, is selected, the CPU module holds the device status even after its status is changed to STOP. For how to stop data link, refer to the MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application).

[Precautions for using C Controller modules]

- In the settings of refresh parameters, link output (LY) refresh devices and remote output (RY) refresh devices do not allow the specification of Y. Thus, the CPU module holds the device status even after its status is changed to STOP.

[Precautions for using MELSECWinCPU modules]

- The execution of a user application may be delayed on Windows® 10 IoT Enterprise LTSC 2019 due to the effect of operating system scheduling. Do not use this product in a situation that requires a fixed-cycle operation and a high-speed response.
  In addition, the execution of a user application may be delayed when any of the following operations is performed:
  - Connecting or disconnecting an HDMI connector cable
  - Mounting or removing a device to/from a USB connector
  - Inserting an SD memory card into the SD memory card slot
  - Unlocking a Windows lock screen
  - Signing in to Windows
  - Signing out of Windows
  - Remote desktop connection
  - Starting other applications

[Precautions for using products in a Class I, Division 2 environment]

- Products with the CI.I, DIV.2 mark on the rating plate are suitable for use in Class I, Division 2, Groups A, B, C and D hazardous locations, or nonhazardous locations only.
  This mark indicates that the product is certified for use in the Class I, Division 2 environment where flammable gases, vapors, or liquids exist under abnormal conditions. When using the products in the Class I, Division 2 environment, observe the following to reduce the risk of explosion.
  - This device is open-type and is to be installed in an enclosure suitable for the environment and require a tool or key to open.
  - Warning - Explosion Hazard - Substitution of any component may impair suitability for Class I, Division 2.
  - Warning - Explosion Hazard - Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.
  - Do not open the cover of the CPU module and remove the battery unless the area is known to be nonhazardous.
  - All MELSEC iQ-R modules (except base modules) are to be connected to a base module only.

[Design Precautions]

⚠WARNING

[Precautions for using AnyWireASLINK master modules]

- An AnyWireASLINK system has no control function for ensuring safety.

[Precautions for using DeviceNet master/slave modules]

- If a communication failure occurs on a DeviceNet network, faulty nodes will behave as (1) and (2) below. Configure an interlock circuit in the program using the communication status information of slave nodes and provide a safety mechanism external to the slave node to ensure that the entire system will operate safely.
  (1) The master node (RJ71DN91) holds input data which had been received from slave nodes before the communication failure occurred.
  (2) Whether output signals of a slave node are turned off or held is determined by the specifications of slave nodes or the parameter settings of the master node. When the RJ71DN91 is used as a slave node, it holds input data that had been received from the master node before the communication failure occurred.

[Design Precautions]

⚠WARNING

[Precautions for using PROFIBUS-DP modules]

- If a communication failure occurs with a PROFIBUS-DP network, the operating status of each station is as follows:
  (1) The DP-Master holds the input data when the communication failure occurs.
  (2) If the DP-Master goes down, the output status of each DP-Slave depends on the parameter setting of the DP-Master.
  (3) If a DP-Slave goes down, the output status of other DP-Slaves depends on the parameter setting of the DP-Master.

  Check the diagnostic information and configure an interlock circuit in the program to ensure that the entire system will operate safely. Failure to do so may result in an accident due to an incorrect output or malfunction.
- The assignments of I/O signals and buffer memory areas differ depending on whether the RJ71PB91V is used as the DP-Master or a DP-Slave. Configure an interlock circuit in the program to ensure that the program does not run with the incorrect station type.
- If a stop error occurs in the CPU module, the operating status of the DP-Master is as follows.
  In a redundant system, however, the operation is the same as when "CPU Error Output Mode Setting" is set to "Hold" regardless of its setting value.
  (1) When "CPU Error Output Mode Setting" is set to "Clear"
    - I/O data exchanges with DP-Slaves are interrupted.
    - Output data in the buffer memory of the DP-Master are cleared and not sent.
    - Input data which have been received from DP-Slaves when a stop error occurs in the CPU module are held in the buffer memory of the DP-Master.

  (2) When "CPU Error Output Mode Setting" is set to "Hold"
    - I/O data exchanges with DP-Slaves are continued.
    - Output data which have been stored in the buffer memory of the DP-Master when a stop error occurs in the CPU module are held and sent to DP-Slaves.
    - Data in the buffer memory of the DP-Master are updated with input data received from DP-Slaves.
- If a stop error occurs in the CPU module, the operating status of DP-Slaves is as follows:
  (1) When "CPU Error Output Mode Setting" is set to "Clear"
    - Input data to be sent from DP-Slaves to the DP-Master are cleared.
    - Output data which have been received from the DP-Master when a stop error occurs in the CPU module are held in the buffer memory of DP-Slaves.

  (2) When "CPU Error Output Mode Setting" is set to "Hold"
    - Input data to be sent from DP-Slaves to the DP-Master when a stop error occurs in the CPU module are held.
    - Output data which have been received from the DP-Master when a stop error occurs in the CPU module are held in the buffer memory of DP-Slaves.

[Design Precautions]

⚠CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- During control of an inductive load such as a lamp, heater, or solenoid valve, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on. Therefore, use a module that has a sufficient current rating.
- After the CPU module is powered on or is reset, the time taken to enter the RUN status varies depending on the system configuration, parameter settings, and/or program size. Design circuits so that the entire system will always operate safely, regardless of the time.
- Do not power off the programmable controller or reset the CPU module while the settings are being written. Doing so will make the data in the flash ROM and SD memory card undefined. The values need to be set in the buffer memory and written to the flash ROM and SD memory card again. Doing so also may cause malfunction or failure of the module.
- When changing the operating status of the CPU module from external devices (such as the remote RUN/STOP functions), select "Do Not Open by Program" for "Opening Method" of "Module Parameter". If "Open by Program" is selected, an execution of the remote STOP function causes the communication line to close. Consequently, the CPU module cannot reopen the line, and external devices cannot execute the remote RUN function.

[Precautions for using digital-analog converter modules and high speed digital-analog converter modules]

- Power on or off the external power supply while the programmable controller is on. Failure to do so may result in incorrect output or malfunction.
- At on/off of the power or external power supply, or at the output range switching, a voltage may occur or a current may flow between output terminals for a moment. In this case, start the control after analog outputs become stable.

[Precautions for using high-speed counter modules]

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 150mm or more between them. Failure to do so may result in malfunction due to noise.

[Precautions for using MELSECWinCPU modules]

- After the MELSECWinCPU module is powered on or the hardware or a bus is reset, the time taken to enter the READY status varies depending on the system configuration, parameter settings, and/or program size. Design circuits so that the entire system will always operate safely, regardless of the time.

[Security Precautions]

⚠WARNING

- To maintain the security (confidentiality, integrity, and availability) of the programmable controller and the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[Installation Precautions]

⚠WARNING

- Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may result in electric shock or cause the module to fail or malfunction.

[Precautions for using C Controller modules]

- When mounting a C Controller module, make sure to attach the connector cover included in a base unit to the module connector of the second slot to prevent entrance of foreign material such as dust.

[Installation Precautions]

⚠CAUTION

- Use the programmable controller in an environment that meets general specifications. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To mount a module, place the concave part(s) located at the bottom onto the guide(s) of the base unit, and push in the module until the hook(s) located at the top snaps into place. Incorrect interconnection may cause malfunction, failure, or drop of the module.
- To mount a module with no module fixing hook, place the concave part(s) located at the bottom onto the guide(s) of the base unit, push in the module, and fix it with screw(s). Incorrect interconnection may cause malfunction, failure, or drop of the module.
- When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.
- Tighten the screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- When using an extension cable, connect it to the extension cable connector of the base unit securely. Check the connection for looseness. Poor contact may cause malfunction.
- Use the CFast card in an environment that meets the general specifications in the Safety Guidelines included with the base unit. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- When using an SD memory card and CFast card, fully insert them into the card slots. Check that they are inserted completely. Poor contact may cause malfunction.
- Securely insert an extended SRAM cassette into the cassette connector of the CPU module. After insertion, close the cassette cover and check that the cassette is inserted completely. Poor contact may cause malfunction.
- Do not directly touch any conductive parts and electronic components of the module, SD memory card, CFast card, extended SRAM cassette, or connector. Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

⚠WARNING

- Shut off the external power supply (all phases) used in the system before installation and wiring. Failure to do so may result in electric shock or cause the module to fail or malfunction.
- After installation and wiring, attach the included terminal cover to the module before turning it on for operation. Failure to do so may result in electric shock.

[Wiring Precautions]

⚠CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Check the rated voltage and signal layout before wiring to the module, and connect the cables correctly. Connecting a power supply with a different voltage rating or incorrect wiring may cause fire or failure.
- Connectors for external devices must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered. Incomplete connections may cause short circuit, fire, or malfunction.
- Securely connect the connector to the module. Poor contact may cause malfunction.
- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact. Do not clamp the extension cables with the jacket stripped. Doing so may change the characteristics of the cables, resulting in malfunction.
- Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the module and external device.
- Tighten the terminal screws or connector screws within the specified torque range. Undertightening can cause drop of the screw, short circuit, fire, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, fire, or malfunction.
- When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
- Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove the film during wiring. Remove it for heat dissipation before system operation.

[Wiring Precautions]

⚠CAUTION

- Programmable controllers must be installed in control panels. Connect the main power supply to the power supply module in the control panel through a relay terminal block. Wiring and replacement of a power supply module must be performed by qualified maintenance personnel with knowledge of protection against electric shock.
- For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual for the module used. If not, normal data transmission is not guaranteed.

[Precautions for using channel isolated analog-digital converter modules, channel isolated digital-analog converter modules, channel isolated RTD input modules, and temperature control modules]

- Individually ground the shielded cables of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.

[Precautions for using channel isolated thermocouple input modules]

- Individually ground the shielded cables of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
- Do not place the module near a device that generates magnetic noise.

[Precautions for using high-speed counter modules]

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 150mm or more between them. Failure to do so may result in malfunction due to noise.
- Ground the shield cable on the encoder side (relay box) with a ground resistance of 100 ohm or less. Failure to do so may cause malfunction.

[Precautions for using CC-Link IE Controller Network (when optical fiber cables are used)]

- For optical fiber cables to be used in the system, select the ones that meet the specifications in the MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup). If not, normal data transmission is not guaranteed.

[Precautions for using CC-Link system master/local modules]

- Use Ver.1.10-compatible CC-Link dedicated cables in a CC-Link system. If not, the performance of the CC-Link system is not guaranteed. For the station-to-station cable length and the maximum overall cable length, follow the specifications in the MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup). If not, normal data transmission is not guaranteed.

[Precautions for using AnyWireASLINK master modules]

- Do not apply the 24VDC power before wiring the entire AnyWireASLINK system. If the power is applied before wiring, normal data transmission is not guaranteed.
- Connect a 24VDC external power supply to the device(s) in an AnyWireASLINK system.

[Precautions for using MELSECNET/H network modules]

- For optical fiber cables to be used in the system, select the ones that meet the specifications in the MELSEC iQ-R MELSECNET/H Network Module User's Manual (Startup). If not, normal data transmission is not guaranteed.

[Startup and Maintenance Precautions]

⚠WARNING

- Do not touch any terminal while power is on. Doing so will cause electric shock or malfunction.
- Correctly connect the battery connector. Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Also, do not expose it to liquid or strong shock. Doing so will cause the battery to produce heat, explode, ignite, or leak, resulting in injury and fire.
- Shut off the external power supply (all phases) used in the system before cleaning the module or retightening the terminal screws, connector screws, or module fixing screws. Failure to do so may result in electric shock.

[Startup and Maintenance Precautions]

⚠CAUTION

- When connecting an external device with a CPU module or intelligent function module to modify data of a running programmable controller, configure an interlock circuit in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents.
- Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure. To prevent this, configure an interlock circuit in the program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.
- Do not disassemble or modify the modules. Doing so may cause failure, malfunction, injury, or a fire.
- Do not disassemble or modify the CFast cards. Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm away in all directions from the programmable controller. Failure to do so may cause malfunction.
- Shut off the external power supply (all phases) used in the system before mounting or removing the module. Failure to do so may cause the module to fail or malfunction.
- Tighten the screws within the specified torque range. Undertightening can cause drop of the component or wire, short circuit, or malfunction. Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- After the first use of the product, do not mount/remove the module to/from the base unit, and the terminal block to/from the module, and do not insert/remove the extended SRAM cassette to/from the CPU module more than 50 times (IEC 61131-2 compliant) respectively. Exceeding the limit may cause malfunction.
- After the first use of the product, do not insert/remove the SD memory card to/from the CPU module more than 500 times. Exceeding the limit may cause malfunction.
- After the first use of the product, do not insert/remove the CFast card to/from the CPU module more than 10,000 times. Exceeding the limit may cause malfunction.
- Do not touch the metal terminals on the back side of the SD memory card and CFast card. Doing so may cause malfunction or failure of the module.
- Do not touch the integrated circuits on the circuit board of an extended SRAM cassette. Doing so may cause malfunction or failure of the module.

[Startup and Maintenance Precautions]

⚠CAUTION

- Do not drop or apply shock to the battery to be installed in the module. Doing so may damage the battery, causing the battery fluid to leak inside the battery. If the battery is dropped or any shock is applied to it, dispose of it without using.
- Startup and maintenance of a control panel must be performed by qualified maintenance personnel with knowledge of protection against electric shock. Lock the control panel so that only qualified maintenance personnel can operate it.
- Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the module to fail or malfunction.
- Before handling the CFast card, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to discharge the static electricity may cause the CFast card to fail or malfunction.

[Precautions for using positioning modules]

- Before testing the operation, set a low speed value for the speed limit parameter so that the operation can be stopped immediately upon occurrence of a hazardous condition.
- Confirm and adjust the program and each parameter before operation. Unpredictable movements may occur depending on the machine.

[Operating Precautions]

⚠CAUTION

- When changing data and operating status, and modifying program of the running programmable controller from an external device such as a personal computer connected to an intelligent function module, read relevant manuals carefully and ensure the safety before operation. Incorrect change or modification may cause system malfunction, damage to the machines, or accidents.
- Do not power off the programmable controller or reset the CPU module while the setting values in the buffer memory are being written to the flash ROM in the module. Doing so will make the data in the flash ROM and SD memory card undefined. The values need to be set in the buffer memory and written to the flash ROM and SD memory card again. Doing so can cause malfunction or failure of the module.

[Precautions for using positioning modules]

- Note that when the reference axis speed is specified for interpolation operation, the speed of the partner axis (2nd, 3rd, or 4th axis) may exceed the speed limit value.
- Do not go near the machine during test operations or during operations such as teaching. Doing so may lead to injuries.

[Disposal Precautions]

⚠CAUTION

- When disposing of this product, treat it as industrial waste.
- When disposing of batteries, separate them from other wastes according to the local regulations.

[Transportation Precautions]

⚠CAUTION

- When transporting lithium batteries, follow the transportation regulations.
- The halogens (such as fluorine, chlorine, bromine, and iodine), which are contained in a fumigant used for disinfection and pest control of wood packaging materials, may cause failure of the product. Prevent the entry of fumigant residues into the product or consider other methods (such as heat treatment) instead of fumigation. The disinfection and pest control measures must be applied to unprocessed raw wood.

CONDITIONS OF USE FOR THE PRODUCT

(1) MELSEC programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI ELECTRIC SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI ELECTRIC USER'S, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above restrictions, Mitsubishi Electric may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi Electric and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi Electric representative in your region.

(3) Mitsubishi Electric shall have no responsibility or liability for any problems involving programmable controller trouble and system trouble caused by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.

INTRODUCTION

Thank you for purchasing the Mitsubishi Electric MELSEC iQ-R series programmable controllers.
This document describes the system configuration, specifications, installation, wiring, maintenance, and inspection of MELSEC iQ-R series programmable controllers.
Before using this product, please read this document and the relevant manuals carefully and develop familiarity with the functions and performance of the MELSEC iQ-R series programmable controller to handle the product correctly.
When applying the program and circuit examples provided in this document to an actual system, ensure the applicability and confirm that it will not cause system control problems.
Please make sure that the end users read this document.
Specifications are subject to change without notice.

CONTENTS

GENERIC TERMS USED IN THIS MANUAL

Generic term	Description
Basic model QCPU	A generic term for the Q00JCPU, Q00CPU, and Q01CPU
High Performance model QCPU	A generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU
High-speed Universal model QCPU	A generic term for the Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, and Q26UDVCPU
Process CPU	A generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU
QCPU	A generic term for the MELSEC-Q series CPU module
Qn(H)CPU	A generic term for the High Performance model QCPU
QnPHCPU	A generic term for the Process CPU
QnPRHCPU	A generic term for the Redundant CPU
QnU(D)(E)(H)CPU	A generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDECPU, Q04UDHCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU
QnUCPU	A generic term for the Universal model QCPU
QnUDPVCPU	A generic term for the Universal model Process CPU
QnUDVCPU	A generic term for the High-speed Universal model QCPU
RCPU	A generic term for the MELSEC iQ-R series CPU module
Redundant CPU	A generic term for the Q12PRHCPU and Q25PRHCPU
RnCPU	A generic term for the R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, and R120CPU
RnPCPU	A generic term for the R08PCPU, R16PCPU, R32PCPU, and R120PCPU
Universal model Process CPU	A generic term for the Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, and Q26UDPVCPU
Universal model QCPU	A generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDVCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU

1 OVERVIEW

This document describes models to select in migration from the MELSEC-Q series to MELSEC iQ-R series.

1.1 Overview of the MELSEC iQ-R Series

MELSEC iQ-R series modules equipped with the newly developed high-speed system bus significantly reduces the takt time. And with its high-accuracy motion control achieved by the multiple CPU high-speed transmission, the MELSEC iQ-R series is at the core of automation systems, helping to provide solutions to customers.

Revolutionary, next-generation controllers building a new era in automation

To succeed in highly competitive markets, it's important to build automation systems that ensure high productivity and consistent product quality.

The MELSEC iQ-R Series has been developed from the ground up based on common problems faced by customers and rationalizing them into seven key areas: Productivity, Engineering, Maintenance, Quality, Connectivity, Security and Compatibility. Mitsubishi Electric is taking a three-point approach to solving these problems: Reducing TCO[*1], increasing Reliability and Reusability of existing assets.

*1 Total Cost of Ownership

Process: High availability process control in a scalable automation solution

- Extensive visualization and data acquisition
- High availability across multiple levels
- Integrated process control software simplifies engineering

Safety: System design flexibility with integrated safety control

- Integrated generic and safety control
- Consolidated network topology
- Complies with international safety standards

Intelligence: Extensive data handling from shop floor to business process systems

- Direct data collection and analysis
- C/C++ based programming
- Collect factory data in real-time
- Expand features using third party partner applications

Productivity: Improve productivity through advanced performance/functionality

- New high-speed system bus realizing shorter production cycle
- Super-high-accuracy motion control utilizing advanced multiple CPU features
- Inter-modular synchronization resulting in increased processing accuracy

Engineering: Reducing development costs through intuitive engineering

- Intuitive engineering environment covering the product development cycle
- Simple point-and-click programming architecture
- Understanding globalization by multiple language support

Maintenance: Reduce maintenance costs/downtime with easier maintenance features

- Visualize entire plant data in real-time
- Extensive preventative maintenance functions embedded into modules

Quality: Reliable and trusted MELSEC product quality

- Robust design ideal for harsh industrial environments
- Improve and maintain actual manufacturing quality
- Conforms to main international standards

Connectivity: Seamless network reduces system costs

- Seamless connectivity within all levels of manufacturing
- High-speed and large data bandwidth ideal for large-scale control systems
- Easy connection of third-party components utilizing device library

Security: Robust security that can be relied on

- Protect intellectual property
- Unauthorized access protection across distributed control network

Compatibility: Extensive compatibility with existing products

- Utilize existing assets while taking advantage of cutting-edge technology
- Compatible with most existing MELSEC-Q Series I/O

1.2 Differences in System

This section describes the differences between the MELSEC-Q series and the MELSEC iQ-R series in the system configuration.

○: Available, △: Partially available, ×: Not available

Item		MELSEC-Q series	MELSEC iQ-R series
Overall system configuration	Single CPU system	○	○
	Multiple CPU system	○	○
	Redundant system	○	○
Available module	MELSEC iQ-R series module	×	○
	MELSEC-Q series module	○	△*1
	MELSEC-A series module	△*2	×
GOT	Bus connection	○	×*3
Available network	Ethernet	○	○
	CC-Link IE Controller Network	○	○
	CC-Link IE Field Network	○	○
	CC-Link IE Field Network Basic	○	○
	CC-Link	○	○
	MELSECNET/H	○	○
	AnyWire	○	○
Engineering software	GX Works2 GX Developer	○	×
	GX Works3	×	○

*1 The existing MELSEC-Q series system can be used with the use of the RQ extension base unit. When the redundant extension base unit is used, the RQ extension base unit cannot be used. For details, refer to the following manual.
MELSEC iQ-R Module Configuration Manual (SH-081262ENG)

*2 The existing MELSEC-A series system can be used with the use of the QA extension base unit. For details, refer to the following manual.
QCPU User's Manual (Hardware Design, Maintenance and Inspection) (SH-080483ENG)

*3 For GOT which is connectable to the MELSEC iQ-R series system and its connection type, refer to the following.
GOT2000 NEWS Vol.1 (L08301ENG-A)

1.3 How to Migrate the System from the MELSEC-Q Series to MELSEC iQ-R Series

This section describes how to migrate the system from the MELSEC-Q series to MELSEC iQ-R series.

Selecting a model

Select a model to migrate to. For details, refer to the following.

☞ Page 24 CPU MODULE MIGRATION to ☞ Page 354 INFORMATION MODULE MIGRATION

Project conversion

Convert projects used in the MELSEC-Q series so that they can be used in the MELSEC iQ-R series. For details, refer to the following.

☞ Page 395 PROJECT MIGRATION

2 CPU MODULE MIGRATION

2.1 CPU Module Migration Model Lists

This section describes examples of migration to MELSEC iQ-R series CPU modules in accordance with the program capacity, number of I/O points, and functions of the MELSEC-Q series CPU module.
Consider the scope of control by the MELSEC-Q series CPU module used and the system specifications and extensibility after migration to choose a model that best suits your application.

Basic model QCPU

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Basic model QCPU	Q00JCPU	R00CPU	(1) Number of I/O points: 256 → 4096 (2) Number of I/O device points: 2048 → 8192 (3) Program capacity: 8K steps → 10K steps (4) Basic processing speed (LD instruction): 200ns → 31.3ns (5) Program memory capacity: 58K bytes → 40K bytes*2 (6) Peripheral connection ports: RS-232 → USB (miniB), Ethernet (7) Memory card I/F: None (8) Others: Equipped with the 5-slot base unit, power supply module (100 to 240VAC input/3A at 5VDC output) → None*1, battery required → battery not required*3
	Q00CPU	R00CPU	(1) Number of I/O points: 1024 → 4096 (2) Number of I/O device points: 2048 → 8192 (3) Program capacity: 8K steps → 10K steps (4) Basic processing speed (LD instruction): 160ns → 31.3ns (5) Program memory capacity: 94K bytes → 40K bytes*2 (6) Peripheral connection ports: RS-232 → USB (miniB), Ethernet (7) Memory card I/F: None (8) Others: battery required → battery not required*3
	Q01CPU	R01CPU	(1) Number of I/O points: 1024 → 4096 (2) Number of I/O device points: 2048 → 8192 (3) Program capacity: 14K steps → 15K steps (4) Basic processing speed (LD instruction): 100ns → 31.3ns (5) Program memory capacity: 94K bytes → 60K bytes*2 (6) Peripheral connection ports: RS-232 → USB (miniB), Ethernet (7) Memory card I/F: None → SD memory card (8) Others: battery required → battery not required*3

*1 The Q00JCPU is a CPU module that integrates the power supply module and main base unit.
For the power supply module, refer to the following.
☞ Page 166 Q00JCPU (power supply part) and R61P
For the main base unit, refer to the following.
☞ Page 176 Q35B/Q35DB and R35B

*2 The alternative models have less program memory capacity. Use the CPU module with larger capacity as necessary.

*3 For details on the battery, refer to the following.
☞ Page 185 MEMORY AND BATTERY MIGRATION

High Performance model QCPU

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
High Performance model QCPU	Q02CPU	R02CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 (3) Program capacity: 28K steps → 20K steps*1 (4) Basic processing speed (LD instruction): 79ns → 3.92ns (5) Program memory capacity: 112K bytes → 80K bytes*1 (6) Peripheral connection ports: RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card (8) Others: battery required → battery not required*2
		R04CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 28K steps → 40K steps (4) Basic processing speed (LD instruction): 79ns → 0.98ns (5) Program memory capacity: 112K bytes → 160K bytes (6) Peripheral connection ports: RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q02HCPU	R02CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 (3) Program capacity: 28K steps → 20K steps*1 (4) Basic processing speed (LD instruction): 34ns → 3.92ns (5) Program memory capacity: 112K bytes → 80K bytes*1 (6) Peripheral connection ports: USB (Type B), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card (8) Others: battery required → battery not required*2
		R04CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 28K steps → 40K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 112K bytes → 160K bytes (6) Peripheral connection ports: USB (Type B), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q06HCPU	R08CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 60K steps → 80K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 240K bytes → 320K bytes (6) Peripheral connection ports: USB (Type B), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q12HCPU	R16CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 124K steps → 160K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 496K bytes → 640K bytes (6) Peripheral connection ports: USB (Type B), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q25HCPU	R32CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 252K steps → 320K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 1008K bytes → 1280K bytes (6) Peripheral connection ports: USB (Type B), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card

*1 The alternative models have less program capacity and program memory capacity. Use the CPU module with larger capacity as necessary.

*2 For details on the battery, refer to the following.

☞ Page 185 MEMORY AND BATTERY MIGRATION

Universal model QCPU

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Universal model QCPU	Q00UJCPU	R00CPU	(1) Number of I/O points: 256 → 4096 (2) Number of I/O device points: 8192 (3) Program capacity: 10K steps (4) Basic processing speed (LD instruction): 120ns → 31.3ns (5) Program memory capacity: 40K bytes (6) Peripheral connection ports: USB (miniB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: None (8) Others: Equipped with the 5-slot base unit, power supply module (100 to 240VAC input/3A at 5VDC output) → None[*1], battery required → battery not required[*2]
	Q00UCPU	R00CPU	(1) Number of I/O points: 1024 → 4096 (2) Number of I/O device points: 8192 (3) Program capacity: 10K steps (4) Basic processing speed (LD instruction): 80ns → 31.3ns (5) Program memory capacity: 40K bytes (6) Peripheral connection ports: USB (miniB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: None (8) Others: battery required → battery not required[*2]
	Q01UCPU	R01CPU	(1) Number of I/O points: 1024 → 4096 (2) Number of I/O device points: 8192 (3) Program capacity: 15K steps (4) Basic processing speed (LD instruction): 60ns → 31.3ns (5) Program memory capacity: 60K bytes (6) Peripheral connection ports: USB (miniB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: None → SD memory card (8) Others: battery required → battery not required[*2]
	Q02UCPU	R02CPU	(1) Number of I/O points: 2048 → 4096 (2) Number of I/O device points: 8192 (3) Program capacity: 20K steps (4) Basic processing speed (LD instruction): 40ns → 3.92ns (5) Program memory capacity: 80K bytes (6) Peripheral connection ports: USB (miniB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: None → SD memory card (8) Others: battery required → battery not required[*2]
	Q03UDCPU Q03UDECPU	R04CPU	(1) Number of I/O points: 4096 → 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 30K steps → 40K steps (4) Basic processing speed (LD instruction): 20ns → 0.98ns (5) Program memory capacity: 120K bytes → 160K bytes (6) Peripheral connection ports: USB (miniB), RS-232 (Q03UDCPU), Ethernet (Q03UDECPU) → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q04UDHCPU Q04UDEHCPU	R04CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 40K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 160K bytes (6) Peripheral connection ports: USB (miniB), RS-232 (Q04UDHCPU), Ethernet (Q04UDEHCPU) → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q06UDHCPU Q06UDEHCPU	R08CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 60K steps → 80K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 240K bytes → 320K bytes (6) Peripheral connection ports: USB (miniB), RS-232 (Q06UDHCPU), Ethernet (Q06UDEHCPU) → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Universal model QCPU	Q10UDHCPU Q10UDEHCPU	R16CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 100K steps → 160K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 400K bytes → 640K bytes (6) Peripheral connection ports: USB (miniB), RS-232 (Q10UDHCPU), Ethernet (Q10UDEHCPU) → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q13UDHCPU Q13UDEHCPU	R16CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 130K steps → 160K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 520K bytes → 640K bytes (6) Peripheral connection ports: USB (miniB), RS-232 (Q13UDHCPU), Ethernet (Q13UDEHCPU) → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q20UDHCPU Q20UDEHCPU	R32CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 200K steps → 320K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 800K bytes → 1280K bytes (6) Peripheral connection ports: USB (miniB), RS-232 (Q20UDHCPU), Ethernet (Q20UDEHCPU) → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q26UDHCPU Q26UDEHCPU	R32CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 260K steps → 320K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 1040K bytes → 1280K bytes (6) Peripheral connection ports: USB (miniB), RS-232 (Q26UDHCPU), Ethernet (Q26UDEHCPU) → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q50UDEHCPU	R120CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 500K steps → 1200K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 2000K bytes → 4800K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q100UDEHCPU	R120CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 1000K steps → 1200K steps (4) Basic processing speed (LD instruction): 9.5ns → 0.98ns (5) Program memory capacity: 4000K bytes → 4800K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
High-speed Universal model QCPU	Q03UDVCPU	R04CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 30K steps → 40K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 120K bytes → 160K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card
	Q04UDVCPU	R04CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 40K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 160K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card
	Q06UDVCPU	R08CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 60K steps → 80K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 240K bytes → 320K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card
	Q13UDVCPU	R16CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 130K steps → 160K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 520K bytes → 640K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card
	Q26UDVCPU	R32CPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 260K steps → 320K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 1040K bytes → 1280K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card

*1 The Q00UJCPU is a CPU module that integrates the power supply module and main base unit.
For the power supply module, refer to the following.
☞ Page 168 Q00UJCPU (power supply part) and R61P
For the main base unit, refer to the following.
☞ Page 176 Q35B/Q35DB and R35B

*2 For details on the battery, refer to the following.
☞ Page 185 MEMORY AND BATTERY MIGRATION

Process CPU/Redundant CPU/Universal model Process CPU

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Process CPU	Q02PHCPU	R08PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 28K steps → 80K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 112K bytes → 320K bytes (6) Peripheral connection ports: USB (TypeB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q06PHCPU	R08PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 60K steps → 80K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 240K bytes → 320K bytes (6) Peripheral connection ports: USB (TypeB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q12PHCPU	R16PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 124K steps → 160K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 496K bytes → 640K bytes (6) Peripheral connection ports: USB (TypeB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
	Q25PHCPU	R32PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 252K steps → 320K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 1008K bytes → 1280K bytes (6) Peripheral connection ports: USB (TypeB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card
Redundant CPU	Q12PRHCPU	R16PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 124K steps → 160K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 496K bytes → 640K bytes (6) Peripheral connection ports: USB (TypeB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card (8) Others: R6RFM (redundant function module) not required → R6RFM required
	Q25PRHCPU	R32PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 252K steps → 320K steps (4) Basic processing speed (LD instruction): 34ns → 0.98ns (5) Program memory capacity: 1008K bytes → 1280K bytes (6) Peripheral connection ports: USB (TypeB), RS-232 → USB (miniB), Ethernet (7) Memory card I/F: SRAM card, Flash card, ATA card → SD memory card (8) Others: R6RFM (redundant function module) not required → R6RFM required

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Universal model Process CPU	Q04UDPVCPU	R08PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 40K steps → 80K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 160K bytes → 320K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card
	Q06UDPVCPU	R08PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 60K steps → 80K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 240K bytes → 320K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card
	Q13UDPVCPU	R16PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 130K steps → 160K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 520K bytes → 640K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card
	Q26UDPVCPU	R32PCPU	(1) Number of I/O points: 4096 (2) Number of I/O device points: 8192 → 12288 (3) Program capacity: 260K steps → 320K steps (4) Basic processing speed (LD instruction): 1.9ns → 0.98ns (5) Program memory capacity: 1040K bytes → 1280K bytes (6) Peripheral connection ports: USB (miniB), Ethernet (7) Memory card I/F: SD memory card

C Controller module

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
C Controller module	Q06CCPU-V	R12CCPU-V	(1) Number of I/O points: 4096 (2) Endian format: Little-endian (3) MPU: SH4 → ARM® Cortex-A9 Dual Core (4) Memory capacity: Work RAM 64M bytes, Standard ROM 6M bytes, Backup RAM 128K bytes → Work RAM 256M bytes, Standard ROM 16M bytes, Backup RAM 4M bytes (5) OS: VxWorks Version 5.4 → VxWorks Version 6.9 (6) Peripheral connection ports: Ethernet (10BASE-T/100BASE-TX) 1ch, RS-232 (9-pin D-sub) → Ethernet (10BASE-T/100BASE-TX/1000BASE-T) 2ch, RS-232 (9-pin D-sub), USB(TypeA) (7) Memory card I/F: CompactFlash card → SD/SDHC memory card
	Q06CCPU-V-B	R12CCPU-V	(1) Number of I/O points: 4096 (2) Endian format: Big-endian → Little-endian (3) MPU: SH4 → ARM® Cortex-A9 Dual Core (4) Memory capacity: Work RAM 64M bytes, Standard ROM 6M bytes, Backup RAM 128K bytes → Work RAM 256M bytes, Standard ROM 16M bytes, Backup RAM 4M bytes (5) OS: VxWorks Version 5.4 → VxWorks Version 6.9 (6) Peripheral connection ports: Ethernet (10BASE-T/100BASE-TX) 1ch, RS-232 (9-pin D-sub) → Ethernet (10BASE-T/100BASE-TX/1000BASE-T) 2ch, RS-232 (9-pin D-sub), USB(TypeA) (7) Memory card I/F: None → SD/SDHC memory card
	Q12DCCPU-V	R12CCPU-V	(1) Number of I/O points: 4096 (2) Endian format: Little-endian (3) MPU: SH4A → ARM® Cortex-A9 Dual Core (4) Memory capacity: Work RAM 128M bytes, Standard ROM 12M bytes, Backup RAM 512 to 3584K bytes → Work RAM 256M bytes, Standard ROM 16M bytes, Backup RAM 4M bytes (5) OS: VxWorks Version 6.4 → VxWorks Version 6.9 (6) Peripheral connection ports: Ethernet (10BASE-T/100BASE-TX) 2ch, RS-232 (Round connector (10-pin)), USB(miniB) → Ethernet (10BASE-T/100BASE-TX/1000BASE-T) 2ch, RS-232 (9-pin D-sub), USB(TypeA) (7) Memory card I/F: CompactFlash card → SD/SDHC memory card
	Q24DHCCPU-V	R12CCPU-V	(1) Number of I/O points: 4096 (2) Endian format: Little-endian (3) MPU: SH4A+Intel® ATOM™ → ARM® Cortex-A9 Dual Core (4) Memory capacity: Work RAM 512M bytes, Standard ROM 382M bytes, Backup RAM 5M bytes maximum → Work RAM 256M bytes, Standard ROM 16M bytes, Backup RAM 4M bytes (5) OS: VxWorks Version 6.8.1 → VxWorks Version 6.9 (6) Peripheral connection ports: Ethernet (10BASE-T/100BASE-TX/1000BASE-T) 2ch, System Ethernet port (10BASE-T/100BASE-TX) 1ch, RS-232 (Round connector (10-pin)), USB(TypeA), USB (Connector type mini-B) → Ethernet (10BASE-T/100BASE-TX/1000BASE-T) 2ch, RS-232 (9-pin D-sub), USB(TypeA) (7) Memory card I/F: SD/SDHC memory card
	Q24DHCCPU-VG	No applicable module	—
	Q24DHCCPU-LS	No applicable module	—
	Q26DHCCPU-LS	No applicable module	—

MELSECWinCPU module

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
MELSECWinCPU module	Q10WCPU-W1-J Q10WCPU-W1-CFJ Q10WCPU-W1-E Q10WCPU-W1-CFE	R102WCPU-W	(1) Number of I/O points: 4096 (2) Endian format: Little-endian (3) MPU: Intel Atom N450 → Intel Atom E3930 (4) Memory capacity: Main memory 1G bytes, built-in SSD 4G bytes → Main memory 4G bytes, built-in SSD 60G bytes (5) OS: Windows® Embedded Standard 2009 → Windows® 10 IoT Enterprise LTSC 2019 (6) Peripheral connection ports: Ethernet (10BASE-T/100BASE-TX/1000BASE-T) 2ch, RS-232 (9-pin D-sub) 1ch, USB (2.0) 5ch → Ethernet (10BASE-T/100BASE-TX/1000BASE-T) 2ch, RS-232 (9-pin D-sub) 1ch, USB (3.0) 1ch, USB (2.0) 3ch (7) Memory card I/F: CompactFlash card → CFast card, SD/SDHC memory card (8) Display I/F: Analog RGB → HDMI

2.2 Comparison of CPU Module Specifications

Basic/High Performance model QCPU

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Function			MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
			Q00J/Q00/Q01CPU	Qn(H)CPU	RnCPU		
Control method			Stored program cyclic operation			○	
I/O control mode			Refresh mode (Direct access I/O is available by specifying direct access I/O (DX, DY).)			○	
Programming language	Sequence control language		*5		*6	△	
Peripheral connection port			RS-232	RS-232, USB (TypeB) (except Q02CPU)	USB(miniB), Ethernet	△	
Memory card interface			None	SRAM card, Flash card, ATA card*1	SD memory card (except R00CPU)	—	
Processing speed	Sequence instruction	LD X0	Q00JCPU: 200ns Q00CPU: 160ns Q01CPU: 100ns	Q02CPU: 79ns Q02H/Q06H/Q12H/Q25HCPU: 34ns	R00/R01CPU: 31.3ns R02CPU: 3.92ns R04/R08/R16/R32CPU: 0.98ns	—	
		MOV D0 D1	Q00JCPU: 700ns Q00CPU: 560ns Q01CPU: 350ns	Q02CPU: 237ns Q02H/Q06H/Q12H/Q25HCPU: 102ns	R00/R01CPU: 62.7ns R02CPU: 7.84ns R04/R08/R16/R32CPU: 1.96ns	—	
Constant scan			1 to 2000ms (Setting available in increments of 1ms)	0.5 to 2000ms (Setting available in increments of 0.5ms)	R00/R01/R02CPU: 0.5 to 2000ms (Setting available in increments of 0.1ms) R04/R08/R16/R32CPU: 0.2 to 2000ms (Setting available in increments of 0.1ms)	—	
Program capacity			Q00J/Q00CPU: 8K steps Q01CPU: 14K steps	Q02/Q02HCPU: 28K steps Q06HCPU: 60K steps Q12HCPU: 124K steps Q25HCPU: 252K steps	R00CPU: 10K steps R01CPU: 15K steps R02CPU: 20K steps R04CPU: 40K steps R08CPU: 80K steps R16CPU: 160K steps R32CPU: 320K steps	○	
Memory capacity	Program memory		Q00JCPU: 58K bytes Q00/Q01CPU: 94K bytes	Q02/Q02HCPU: 112K bytes Q06HCPU: 240K bytes Q12HCPU: 496K bytes Q25HCPU: 1008K bytes	R00CPU: 40K bytes R01CPU: 60K bytes R02CPU: 80K bytes R04CPU: 160K bytes R08CPU: 320K bytes R16CPU: 640K bytes R32CPU: 1280K bytes	○	
	Memory card		—	SRAM card: 4M bytes maximum*2 Flash card: 4M bytes maximum ATA card: 32M bytes maximum	Extended SRAM cassette: 16M bytes maximum (except R00/R01/R02CPU) SD/SDHC memory card: 32G bytes maximum (except R00CPU)	○	

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		Q00J/Q00/Q01CPU	Qn(H)CPU	RnCPU		
Number of storable files	Program memory	6	Q02/Q02HCPU: 28 Q06HCPU: 60 Q12HCPU: 124 Q25HCPU: 252	R00/R01CPU: 48 R02CPU: 96 R04CPU: 188 R08/R16/R32CPU: 380	○	
	Memory card	—	SRAM card: 319[*3] Flash card: 288 ATA card: 512	SD memory card NZ1MEM-2GBSD: 256 NZ1MEM-4GBSD/ 8GBSD/16GBSD: 32767 (except R00CPU)	○	
Number of I/O points		Q00JCPU: 256 points Q00/Q01CPU: 1024 points	4096 points		○	
Number of device points	Input [X]	2048 points	8192 points	R00/R01/R02CPU: 8192 points R04/R08/R16/R32CPU: 12288 points	○	
	Output [Y]	8192 points		R00/R01/R02CPU: 8192 points R04/R08/R16/R32CPU: 12288 points	○	
	Internal relay [M]	8192 points		R00/R01/R02CPU: 8192 points R04/R08/R16/R32CPU: 12288 points	○	*7
	Latch relay [L]	2048 points	8192 points		○	*7
	Link relay [B]	2048 points	8192 points		○	*7
	Timer [T]	512 points	2048 points	R00/R01/R02CPU: 2048 points R04/R08/R16/R32CPU: 1024 points (Timer [T]) + 1024 points (Long timer [LT])	○	*7
	Counter [C]	512 points	1024 points	R00/R01/R02CPU: 1024 points R04/R08/R16/R32CPU: 512 points + 512 points (Long counter [LC])	○	*7
	Data register [D]	11136 points	12288 points	R00/R01/R02CPU: 12282 points R04/R08/R16/R32CPU: 18432 points	○	*7
	Link register [W]	2048 points	8192 points		○	*7
	Annunciator [F]	1024 points	2048 points		○	*7
	Edge relay [V]	1024 points	2048 points		○	*7
	File register [R]	Q00JCPU: Not available Q00/Q01CPU: The number of points specified in the ZR section can be used by switching blocks in increments of 32768 points.	The number of points specified in the ZR section can be used by switching blocks in increments of 32768 points.		○	*7

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		Q00J/Q00/Q01CPU	Qn(H)CPU	RnCPU		
Number of device points	File register [ZR]	Q00JCPU: Not available Standard RAM: Q00/Q01CPU: 65536 points	Standard RAM: Q02CPU: 32768 points Q02H/Q06HCPU: 65536 points Q12H/Q25HCPU: 131072 points SRAM card: 1041408 points maximum Flash card: 1042432 points maximum (The maximum number of points varies depending on the model.)	R00/R01/R02CPU: 98304 points R04/R08/R16/R32CPU: Calculated by a formula.*4 (The maximum number of points varies depending on the model.)	○	*7
	Link special relay [SB]	1024 points	2048 points		○	*7
	Link special register [SW]	1024 points	2048 points		○	*7
	Step relay [S]	2048 points	8192 points	R00/R01/R02CPU: 8192 points R04/R08/R16/R32CPU: 16384 points	○	*7
	Index register [Z]	10 points	16 points	20 points	○	*7
	Pointer [P]	300 points	4096 points	8192 points	○	*7
	Interrupt pointer [I]	128 points	256 points	1024 points	○	
	Special relay [SM]	1024 points	2048 points	4096 points	○	
	Special register [SD]	1024 points	2048 points	4096 points	○	
	Function input [FX]	16 points			○	
	Function output [FY]	16 points			○	
	Function register [FD]	5 points		5 points × 4 words	○	
Link direct device		Specified form: J□\X□, J□\Y□, J□\W□, J□\B□, J□\SW□, J□\SB□			○	
Intelligent function module device		Specified form: U□\G□			○	
Latch (data retention during power failure) range		2048 points	8192 points		○	
RUN/PAUSE contact		One contact can be set up in X0 to 7FF for each of RUN and PAUSE.	One contact can be set up in X0 to 1FFF for each of RUN and PAUSE.	R00/R01/R02CPU: One contact can be set up in X0 to 1FFF for each of RUN and PAUSE. R04/R08/R16/R32CPU: One contact can be set up in X0 to 2FFF for each of RUN and PAUSE.	○	
Internal current consumption (5VDC)		Q00JCPU (including the base unit and power supply module): 0.26A Q00CPU: 0.25A Q01CPU: 0.27A	Q02CPU: 0.60A Q02H/Q06H/Q12H/Q25HCPU: 0.64A	0.67A	—	
External dimensions		Q00JCPU (including the base unit): 98(H) × 244.4(W) × 98(D)mm Q00/Q01CPU: 98(H) × 27.4(W) × 89.3(D)mm	98(H) × 27.4(W) × 89.3(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight		Q00JCPU (including the base unit and power supply module): 0.66kg Q00/Q01CPU: 0.13kg	0.20kg	0.20kg	—	

*1 Q3MEM-8MBS cannot be used.

*2 The maximum capacity is 2M bytes for CPU modules with a serial number "16020" (first five digits) or earlier.

*3 The maximum capacity is 287 files for CPU modules with a serial number "16020" (first five digits) or earlier (with the Q2MEM-2MBS used).

*4 The maximum value of the file register is [α + β].
α: <R**CPU capacity> ** = 04: 160K words, 08: 544K words, 16: 800K words, 32: 1088K words β: Capacity of the extended SRAM cassette
The setting must be in the following range.
File register file storage area $\leq$ [α + β]

*5 Programming languages available for the Q00J/Q00/Q01CPU and Qn(H)CPU are the following:
Relay symbol language, logic symbolic language, MELSAP3 (SFC), MELSAP-L, function block, structured text (ST)

*6 Programming languages available for the RCPU are the following:
Ladder diagram (LD), sequential function chart (SFC), structured text (ST), function block diagram (FBD/LD), function block (FB), label programming (system/local/global).
Note that the relay symbol language is equivalent to the ladder diagram (LD); MELSAP3 (SFC) is equivalent to the sequential function chart (SFC); and the function block is equivalent to the function block (FB).

*7 The number of device points for use in the RCPU can be changed by the engineering tool.

Universal model QCPU

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Function			MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
			QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU		
Control method			Stored program cyclic operation			○	
I/O control mode			Refresh mode (Direct access I/O is available by specifying direct access I/O (DX, DY).)			○	
Programming language	Sequence control language		*1		*2	△	
Peripheral connection port			USB(miniB), RS-232: (Q00UJ, Q00U, Q01U, Q02U, Q03UD, Q04UDH, Q06UDH, Q10UDH, Q13UDH, Q20UDH, Q26UDHCPU only), Ethernet: (Q03UDE, Q04UDEH, Q06UDEH, Q10UDEH, Q13UDEH, Q20UDEH, Q26UDEH, Q50UDEH, Q100UDEHCPU only)	USB(miniB), Ethernet		△	
Memory card interface			SRAM card, Flash card, ATA card (Not available for the Q00UJ, Q00U, and Q01UCPU)	SD memory card	SD memory card (except R00CPU)	—	
Processing speed	Sequence instruction	LD X0	Q00UJCPU: 120ns Q00UCPU: 80ns Q01UCPU: 60ns Q02UCPU: 40ns Q03UD(E)CPU: 20ns Q04UD(E)H/ Q06UD(E)H/ Q10UD(E)H/ Q13UD(E)H/ Q20UD(E)H/ Q26UD(E)H/ Q50UDEH/ Q100UDEHCPU: 9.5ns	1.9ns	R00/R01CPU: 31.3ns R02CPU: 3.92ns R04/R08/R16/R32/ R120CPU: 0.98ns	—	
		MOV D0 D1	Q00UJCPU: 240ns Q00UCPU: 160ns Q01UCPU: 120ns Q02UCPU: 80ns Q03UD(E)CPU: 40ns Q04UD(E)H/ Q06UD(E)H/ Q10UD(E)H/ Q13UD(E)H/ Q20UD(E)H/ Q26UD(E)H/ Q50UDEH/ Q100UDEHCPU: 19ns	3.9ns	R00/R01CPU: 62.7ns R02CPU: 7.84ns R04/R08/R16/R32/ R120CPU: 1.96ns	—	
Constant scan			0.5 to 2000ms (Setting available in increments of 0.5ms)		R00/R01/R02CPU: 0.5 to 2000ms (Setting available in increments of 0.1ms) R04/R08/R16/R32/ R120CPU: 0.2 to 2000ms (Setting available in increments of 0.1ms)	—	

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU		
Program capacity		Q00UJ/Q00UCPU: 10K steps Q01UCPU: 15K steps Q02UCPU: 20K steps Q03UD(E)CPU: 30K steps Q04UD(E)HCPU: 40K steps Q06UD(E)HCPU: 60K steps Q10UD(E)HCPU: 100K steps Q13UD(E)HCPU: 130K steps Q20UD(E)HCPU: 200K steps Q26UD(E)HCPU: 260K steps Q50UDEHCPU: 500K steps Q100UDEHCPU: 1000K steps	Q03UDVCPU: 30K steps Q04UDVCPU: 40K steps Q06UDVCPU: 60K steps Q13UDVCPU: 130K steps Q26UDVCPU: 260K steps	R00CPU: 10K steps R01CPU: 15K steps R02CPU: 20K steps R04CPU: 40K steps R08CPU: 80K steps R16CPU: 160K steps R32CPU: 320K steps R120CPU: 1200K steps	○	
Memory capacity	Program memory	Q00UJ/Q00UCPU: 40K bytes Q01UCPU: 60K bytes Q02UCPU: 80K bytes Q03UD(E)CPU: 120K bytes Q04UD(E)HCPU: 160K bytes Q06UD(E)HCPU: 240K bytes Q10UD(E)HCPU: 400K bytes Q13UD(E)HCPU: 520K bytes Q20UD(E)HCPU: 800K bytes Q26UD(E)HCPU: 1040K bytes Q50UDEHCPU: 2000K bytes Q100UDEHCPU: 4000K bytes	Q03UDVCPU: 120K bytes Q04UDVCPU: 160K bytes Q06UDVCPU: 240K bytes Q13UDVCPU: 520K bytes Q26UDVCPU: 1040K bytes	R00CPU: 40K bytes R01CPU: 60K bytes R02CPU: 80K bytes R04CPU: 160K bytes R08CPU: 320K bytes R16CPU: 640K bytes R32CPU: 1280K bytes R120CPU: 4800K bytes	○	
	Memory card	SRAM card: 8M bytes maximum Flash card: 4M bytes maximum ATA card: 32M bytes maximum (Not available for the Q00UJ, Q00U, and Q01UCPU)	Extended SRAM cassette: 8M bytes maximum SD/SDHC memory card: 32G bytes maximum	Extended SRAM cassette: 16M bytes maximum (except R00/R01/R02CPU) SD/SDHC memory card: 32G bytes maximum (except R00CPU)	○	

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU		
Number of storable files	Program memory	Q00UJ/Q00U/ Q01UCPU: 32 Q02UCPU: 64 Q03UD(E)/ Q04UD(E)H/ Q06UD(E)HCPU: 124 Q10UD(E)H/ Q13UD(E)H/ Q20UD(E)H/ Q26UD(E)H/ Q50UDEH/ Q100UDEHCPU: 252	Q03UDV/Q04UDV/ Q06UDVCPU: 124 Q13UDV/ Q26UDVCPU: 252	R00/R01CPU: 48 R02CPU: 96 R04CPU: 188 R08/R16/R32/R120CPU: 380	○	
	Memory card	SRAM card: 319 Flash card: 288 ATA card: 511	SD memory card: 512 SDHC memory card: 65535	SD memory card NZ1MEM-2GBSD: 256 NZ1MEM-4GBSD/ 8GBSD/16GBSD: 32767 (except R00CPU)	○	
Number of I/O points		Q00UJCPU: 256 points Q00U/Q01UCPU: 1024 points Q02UCPU: 2048 points Q03UD(E)/ Q04UD(E)H/ Q06UD(E)H/ Q10UD(E)H/ Q13UD(E)H/ Q20UD(E)H/ Q26UD(E)H/ Q50UDEH/ Q100UDEHCPU: 4096 points	4096 points		○	
Number of device points	Input [X]	8192 points		R00/R01/R02CPU: 8192 points R04/R08/R16/R32/ R120CPU: 12288 points	○	
	Output [Y]	8192 points		R00/R01/R02CPU: 8192 points R04/R08/R16/R32/ R120CPU: 12288 points	○	
	Internal relay [M]	8192 points	Q03UDVCPU: 9216 points Q04UDV/ Q06UDVCPU: 15360 points Q13UDV/ Q26UDVCPU: 28672 points	R00/R01/R02CPU: 8192 points R04/R08/R16/R32/ R120CPU: 12288 points	○	*3
	Latch relay [L]	8192 points			○	*3
	Link relay [B]	8192 points			○	*3
	Timer [T]	2048 points		R00/R01/R02CPU: 2048 points R04/R08/R16/R32/ R120CPU: 1024 points (Timer [T]) + 1024 points (Long timer [LT])	○	*3
	Counter [C]	1024 points		R00/R01/R02CPU: 1024 points R04/R08/R16/R32/ R120CPU: 512 points (Counter [C]) + 512 points (Long counter [LC])	○	*3

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU		
Number of device points	Data register [D]	12288 points	Q03UDVCPU: 13312 points Q04UDV/ Q06UDVCPU: 22528 points Q13UDV/ Q26UDVCPU: 41984 points	R00/R01/R02CPU: 12282 points R04/R08/R16/R32/ R120CPU: 18432 points	○	*3
	Link register [W]	8192 points			○	*3
	Annunciator [F]	2048 points			○	*3
	Edge relay [V]	2048 points			○	*3
	File register [R]	Q00UJCPU: Not available Q00U/Q01U/Q02U/ Q03UD(E)/ Q04UD(E)H/ Q06UD(E)H/ Q10UD(E)H/ Q13UD(E)H/ Q20UD(E)H/ Q26UD(E)H/ Q50UDEHCPU/ Q100UDEHCPU: The number of points specified in the ZR section can be used by switching blocks in increments of 32768 points.	The number of points specified in the ZR section can be used by switching blocks in increments of 32768 points.		○	*3

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU		
Number of device points	File register [ZR]	Q00UJCPU: Not available Standard RAM: Q00U/Q01U/ Q02UCPU: 65536 points Q03UD(E)CPU: 98304 points Q04UD(E)HCPU: 131072 points Q06UD(E)HCPU: 393216 points Q10UD(E)H/ Q13UD(E)HCPU: 524288 points Q20UD(E)H/ Q26UD(E)HCPU: 655360 points Q50UDEHCPU: 786432 points Q100UDEHCPU: 917504 points SRAM card: 4184064 points maximum Flash card: 2087936 points maximum (The maximum number of points varies depending on the model.)	Q03UDVCPU: Extended SRAM cassette not used: 98304 points, Extended SRAM cassette used: 4292608 points maximum, Q04UDVCPU: Extended SRAM cassette not used: 131072 points, Extended SRAM cassette used: 4325376 points maximum Q06UDVCPU: Extended SRAM cassette not used: 393216 points, Extended SRAM cassette used: 4587520 points maximum Q13UDVCPU: Extended SRAM cassette not used: 524288 points, Extended SRAM cassette used: 4718592 points maximum, Q26UDVCPU: Extended SRAM cassette not used: 655360 points, Extended SRAM cassette used: 4849664 points maximum,	R00/R01/R02CPU: 98304 points R04/R08/R16/R32/ R120CPU: Calculated by a formula.*4 (The maximum number of points varies depending on the model.)	○	*3
	Link special relay [SB]	2048 points			○	*3
	Link special register [SW]	2048 points			○	*3
	Step relay [S]	8192 points		R00/R01/R02CPU: 8192 points R04/R08/R16/R32/ R120CPU: 16384 points	○	*3
	Index register [Z]	20 points			○	*3
	Pointer [P]	Q00UJ/Q00U/ Q01UCPU: 512 points Q02U/Q03UD(E)/ Q04UD(E)H/ Q06UD(E)H/ Q10UD(E)H/ Q13UD(E)H/ Q20UD(E)H/ Q26UD(E)HCPU: 4096 points Q50UDEH/ Q100UDECPU: 8192 points	4096 points	8192 points	○	*3

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU		
Number of device points	Interrupt pointer [I]	Q00UJ/Q00U/ Q01UCPU: 128 points Q02U/Q03UD(E)/ Q04UD(E)H/ Q06UD(E)H/ Q10UD(E)H/ Q13UD(E)H/ Q20UD(E)H/ Q26UD(E)H/ Q50UDEH/ Q100UDEHCPU: 256 points	256 points	1024 points	○	
	Special relay [SM]	2048 points		4096 points	○	
	Special register [SD]	2048 points		4096 points	○	
	Function input [FX]	16 points			○	
	Function output [FY]	16 points			○	
	Function register [FD]	5 points		5 points × 4 words	○	
Link direct device		Specified form: J□\X□, J□\Y□, J□\W□, J□\B□, J□\SW□, J□\SB□			○	
Intelligent function module device		Specified form: U□\G□			○	
Latch (data retention during power failure) range		8192 points			○	
RUN/PAUSE contact		One contact can be set up in X0 to 1FFF for each of RUN and PAUSE.		R00/R01/R02CPU: One contact can be set up in X0 to 1FFF for each of RUN and PAUSE. R04/R08/R16/R32/ R120CPU: One contact can be set up in X0 to 2FFF for each of RUN and PAUSE.	○	
Internal current consumption (5VDC)		Q00UJCPU (including the base unit and power supply module): 0.37A, Q00U/Q01U/ Q03UDCPU: 0.33A Q02UCPU: 0.23A Q03UDECPU: 0.46A Q04UDH/Q06UDH/ Q10UDH/Q13UDH/ Q20UDH/ Q26UDHCPU: 0.39A Q04UDEH/Q06UDEH/ Q10UDEH/Q13UDEH/ Q20UDEH/ Q26UDEHCPU: 0.49A Q50UDEH/ Q100UDEHCPU: 0.50A	0.58A, With an extended SRAM cassette: 0.60A	0.67A	—	

Function	MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
	QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU		
External dimensions	Q00UJCPU (including the base unit and power supply module): 98(H) × 244.4(W) × 98(D)mm Q00U/Q01U/02U/ Q03UD/Q04UDH/ Q06UDH/Q10UDH/ Q13UDH/Q20UDH/ Q26UDHCPU: 98(H) × 27.4(W) × 89.3(D)mm Q03UDE/Q04UDEH/ Q06UDEH/Q10UDEH/ Q13UDEH/Q20UDEH/ Q26UDEH/Q50UDEH/ Q100UDEHCPU: 98(H) × 27.4(W) × 115(D)mm	98(H) × 27.4(W) × 115(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight	Q00UJCPU (including the base unit and power supply module): 0.70kg Q00UCPU, Q01UCPU: 0.15kg Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU: 0.20kg Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU: 0.22kg Q50UDEHCPU, Q100UDEHCPU: 0.24kg	0.20kg	0.20kg	—	

*1 Programming languages available for the QnU(D)(E)(H)CPU and QnUDVCPU are the following:
Relay symbol language, logic symbolic language, MELSAP3 (SFC), MELSAP-L, function block, and structured text (ST).
Note that the logic symbolic language cannot be used in the QnUDVCPU because it is not supported by GX Works2.

*2 Programming languages available for the RCPU are the following:
Ladder diagram (LD), sequential function chart (SFC), structured text (ST), function block diagram (FBD/LD), function block (FB), and label programming (system/local/global).
Note that the relay symbol language is equivalent to the ladder diagram (LD); MELSAP3 (SFC) is equivalent to the sequential function chart (SFC); and the function block is equivalent to the function block (FB).

*3 The number of device points for use in the RCPU can be changed by the engineering tool.

*4 The maximum value of the file register is [α + β].
α: <R**CPU capacity> ** = 04: 160K words, 08: 544K words, 16: 800K words, 32: 1088K words, 120: 1600K words β: Capacity of the extended SRAM cassette
The setting must be in the following range.
File register file storage area ≤ [α + β]

Process CPU/Redundant CPU/Universal model Process CPU

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Function			MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
			QnPH/QnPRHCPU	QnUDPVCPU	RnPCPU		
Control method			Stored program cyclic operation			○	
I/O control mode			Refresh mode (Direct access I/O is available by specifying direct access I/O (DX, DY).)			○	
Programming language	Sequence control language		*1		*2	△	
	Process control language		FBD for process control (PX Developer)		FBD/LD program for process control (GX Works3)	△	
Peripheral connection port			RS-232, USB (TypeB)	USB (miniB), Ethernet		△	
Memory card interface			SRAM card, Flash card, ATA card*3	SD memory card		—	
Processing speed	Sequence instruction	LD X0	34ns	1.9ns	0.98ns	—	
		MOV D0 D1	102ns	3.9ns	1.96ns	—	
Constant scan			0.5 to 2000ms (Setting available in increments of 0.5ms)	0.5 to 2000ms (Setting available in increments of 0.1ms)	0.2 to 2000ms (Setting available in increments of 0.1ms)	—	
Program capacity			Q02PHCPU: 28K steps Q06PHCPU: 60K steps Q12P(R)HCPU: 124K steps Q25P(R)HCPU: 252K steps	Q04UDPVCPU: 40K steps Q06UDPVCPU: 60K steps Q13UDPVCPU: 130K steps Q26UDPVCPU: 260K steps	R08PCPU: 80K steps R16PCPU: 160K steps R32PCPU: 320K steps	○	
Memory capacity	Program memory		Q02PHCPU: 112K bytes Q06PHCPU: 240K bytes Q12P(R)HCPU: 496K bytes Q25P(R)HCPU: 1008K bytes	Q04UDPVCPU: 160K bytes Q06UDPVCPU: 240K bytes Q13UDPVCPU: 520K bytes Q26UDPVCPU: 1040K bytes	R08PCPU: 320K bytes R16PCPU: 640K bytes R32PCPU: 1280K bytes	○	
	Memory card		SRAM card: 4M bytes maximum*4 Flash card: 4M bytes maximum ATA card: 32M bytes maximum	Extended SRAM cassette: 8M bytes maximum SD/SDHC memory card: 32G bytes maximum	Extended SRAM cassette: 8M bytes maximum SD/SDHC memory card: 32G bytes maximum	○	
Number of storable files	Program memory		Q02PHCPU: 28 Q06PHCPU: 60 Q12P(R)HCPU: 124 Q25P(R)HCPU: 252	Q04UDPV/ Q06UDPVCPU: 124 Q13UDPV/ Q26UDPVCPU: 252	Program file: 252 FB file: 128 (One FB file can store 64 function blocks.)	○	
	Memory card		SRAM card: 319*5 Flash card: 288 ATA card: 512	SD memory card: 512 SDHC memory card: 65535	SD memory card NZ1MEM-2GBSD: 256 NZ1MEM-4GBSD/ 8GBSD/16GBSD: 32767	○	
Number of I/O points			4096 points			○	

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		QnPH/QnPRHCPU	QnUDPVCPU	RnPCPU		
Number of device points	Input [X]	8192 points		12288 points	○	
	Output [Y]	8192 points		12288 points	○	
	Internal relay [M]	8192 points	Q04UDPV/ Q06UDPVCPU: 15360 points Q13UDPV/ Q26UDPVCPU: 28672 points	12288 points	○	*6
	Latch relay [L]	8192 points			○	*6
	Link relay [B]	8192 points			○	*6
	Timer [T]	2048 points		1024 + 1024 points (Long timer [LT])	○	*6
	Counter [C]	1024 points		512 + 512 points (Long counter [LC])	○	*6
	Data register [D]	12288 points	Q04UDPV/ Q06UDPVCPU: 22528 points Q13UDPV/ Q26UDPVCPU: 41984 points	18432 points	○	*6
	Link register [W]	8192 points			○	*6
	Annunciator [F]	2048 points			○	*6
	Edge relay [V]	2048 points			○	*6
	File register [R]	The number of points specified in the ZR section can be used by switching blocks in increments of 32768 points.			○	*6
	File register [ZR]	Standard RAM: Q02PH/Q06PHCPU: 65536 points Q12P(R)H/ Q25P(R)HCPU: 131072 points SRAM card: 1041408 points maximum Flash card: 1042432 points maximum (The maximum number of points varies depending on the model.)	Q04UDPVCPU: Extended SRAM cassette not used: 131072 points, Extended SRAM cassette used: 4325376 points maximum Q06UDPVCPU: Extended SRAM cassette not used: 393216 points, Extended SRAM cassette used: 4587520 points maximum Q13UDPVCPU: Extended SRAM cassette not used: 524288 points, Extended SRAM cassette used: 4718592 points maximum Q26UDPVCPU: Extended SRAM cassette not used: 655360 points, Extended SRAM cassette used: 4849664 points maximum	Calculated by a formula.*7 (The maximum number of points varies depending on the model.)	○	*6
	Link special relay [SB]	2048 points			○	*6
	Link special register [SW]	2048 points			○	*6
	Step relay [S]	8192 points		16384 points	○	*6
	Index register [Z]	16 points	20 points		○	*6
	Pointer [P]	4096 points		8192 points	○	*6

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		QnPH/QnPRHCPU	QnUDPVCPU	RnPCPU		
Number of device points	Interrupt pointer [I]	256 points		1024 points	○	
	Special relay [SM]	2048 points		4096 points	○	
	Special register [SD]	2048 points		4096 points	○	
	Function input [FX]	16 points			○	
	Function output [FY]	16 points			○	
	Function register [FD]	5 points		5 points × 4 words	○	
Link direct device		Specified form: J□\X□, J□\Y□, J□\W□, J□\B□, J□\SW□, J□\SB□			○	
Intelligent function module device		Specified form: U□\G□			○	
Latch (data retention during power failure) range		8192 points			○	
RUN/PAUSE contact		One contact can be set up in X0 to 1FFF for each of RUN and PAUSE.		One contact can be set up in X0 to 2FFF for each of RUN and PAUSE.	○	
Number of device tracking words		100K words maximum	—	1024K words maximum	○	
Internal current consumption (5VDC)		QnPHCPU: 0.64A QnPRHCPU: 0.88A	0.58A (CPU module only) 0.6A (With an extended SRAM cassette)	RnPCPU: 0.76A R6RFM: 0.88A	—	*8
External dimensions		QnPHCPU: 98(H) × 27.4(W) × 89.3(D)mm QnPRHCPU: 98(H) × 55.2(W) × 89.3(D)mm	98(H) × 27.4(W) × 115(D)mm	RnPCPU: 106(H) × 27.8(W) × 110(D)mm R6RFM: 106(H) × 27.8(W) × 110(D)mm	—	*8
Weight		QnPHCPU: 0.20kg QnPRHCPU: 0.30kg	0.20kg	RnPCPU: 0.20kg R6RFM: 0.18kg	—	*8

*1 Programming languages available for the QnPHCPU and QnUDPVCPU are the following:
Relay symbol language, logic symbolic language, MELSAP3 (SFC), MELSAP-L, function block, structured text (ST).
Note that the logic symbolic language cannot be used in the QnUDPVCPU because it is not supported by GX Works2.

*2 Programming languages available for the RnPCPU are the following:
Ladder diagram (LD), sequential function chart (SFC), structured text (ST), function block diagram (FBD/LD), function block (FB), label programming (system/local/global).
Note that the relay symbol language is equivalent to the ladder diagram (LD); MELSAP3 (SFC) is equivalent to the sequential function chart (SFC); and the function block is equivalent to the function block (FB).

*3 Q3MEM-8MBS cannot be used.

*4 The maximum capacity is 2M bytes for CPU modules with a serial number "16020" (first five digits) or earlier.

*5 The maximum capacity is 287 files for CPU modules with a serial number "16020" (first five digits) or earlier (with the Q2MEM-2MBS used).

*6 The number of device points for use in the RCPU can be changed by the engineering tool.

*7 The maximum value of the file register is [α + β].
α: <Capacity of the R**CPU> (R08CPU: 544K words, R16CPU: 800K words, R32CPU: 1088K words), β: Capacity of the extended SRAM cassette
The value must be in the following range.
File register file storage area ≤ [α + β]

*8 When a redundant system is configured, the R6RFM is required.

C Controller module

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Function			MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
			Q06CCPU-V(-B)	Q12DCCPU-V Q24DHCCPU-V	R12CCPU-V		
Hardware	Endian format		Q06CCPU-V: Little-endian Q06CCPU-V-B: Big-endian	Little-endian		△	
	MPU		SH4	Q12DCCPU-V: SH4A Q24DHCCPU-V: SH4A+Intel® ATOM™	ARM® Cortex-A9 Dual Core	—	
	Memory capacity	Standard RAM	—	Q12DCCPU-V: 3M bytes Q24DHCCPU-V: 0 to 4M bytes*1	—		
		Standard ROM	6M bytes	Q12DCCPU-V: 12M bytes (extended mode only) Q24DHCCPU-V: 382M bytes	16M bytes	○	
		Memory card	Depending on the CompactFlash card Q06CCPU-V: 1G byte maximum, Q06CCPU-V-B: Not available	Depending on the CompactFlash card/ memory card Q12DCCPU-V: 8G bytes maximum Q24DHCCPU-V: 16G bytes maximum	Depending on the memory card 16G bytes maximum	○	
	Work RAM		64M bytes	Q12DCCPU-V: 128M bytes Q24DHCCPU-V: 512M bytes	256M bytes	○	
	Battery backup RAM		128K bytes	Q12DCCPU-V: 512 to 3584K bytes*2 Q24DHCCPU-V: 1 to 5M bytes*3	4MB	○	
Software	OS		VxWorks Version 5.4	Q12DCCPU-V: VxWorks Version 6.4 Q24DHCCPU-V: VxWorks Version 6.8.1	VxWorks Version 6.9	○	
	Programming language		C language (C/C++)			○	
Ethernet port	Number of channels		1 channel	Q12DCCPU-V: 2 channels Q24DHCCPU-V: User Ethernet 2 channels, System Ethernet 1 channel	2 channels	○	
	Interface		10BASE-T/100BASE-TX	Q12DCCPU-V: 10BASE-T/ 100BASE-TX Q24DHCCPU-V: User Ethernet 10BASE-T/ 100BASE-TX/ 1000BASE-T, System Ethernet 10BASE-T/ 100BASE-TX	10BASE-T/100BASE-TX/ 1000BASE-T	○	
	Communication method		Full-duplex/half-duplex			○	
	Flow control		Full-duplex: None Half-duplex: Back pressure congestion control	Full-duplex: IEEE802.3x Half-duplex: Back pressure congestion control	Full-duplex: None Half-duplex: Back pressure congestion control	△	

Function			MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
			Q06CCPU-V(-B)	Q12DCCPU-V Q24DHCCPU-V	R12CCPU-V		
Ethernet port	Data transmission speed		10Mbps(10BASE-T)/ 100Mbps(100BASE-TX)	Q12DCCPU-V: 10Mbps(10BASE-T)/ 100Mbps(100BASE-TX) Q24DHCCPU-V: User Ethernet 10Mbps (10BASE-T)/ 100Mbps (100BASE-TX)/1000Mbps (1000BASE-T), System Ethernet 10Mbps (10BASE-T)/ 100Mbps (100BASE-TX)	10Mbps(10BASE-T)/ 100Mbps(100BASE-TX)/ 1000Mbps(1000BASE-T)	○	
	Transmission method		Base band			○	
	Number of cascade connections*4		4 levels maximum (10BASE-T)/2 levels maximum (100BASE-TX)			○	
	Maximum segment length		100m			○	
	Connector for external wiring		RJ45			○	
	Supported function		Auto negotiation function (automatic recognition of communication speed/communication method)	Auto negotiation function (automatic recognition of communication speed/communication method) Auto-MDI/MDI-X (automatic recognition of a straight/crossing cable)		○	
RS-232 connector	Number of channels		1 channel			○	
	Interface		Compliant with RS-232			○	
	Communication method		Full-duplex/half-duplex			○	
	Synchronization method		Asynchronous method			○	
	Transmission speed		9600, 14400, 19200, 28800, 38400, 57600, 115200bps			○	
	Transmission distance		15m maximum			○	
	Data format	Start bits	1			○	
		Data bits	7/8			○	
		Parity bits	1/None			○	
		Stop bits	1/2			○	
	Parity check		Yes (Even/Odd)/No			○	
	Sum check code		Yes/No			○	
	Transmission control		Flow control (RS/CS control)			○	
	Connector for external wiring		9-pin D-sub (male) screw type	Round connector (10-pin)	9-pin D-sub (male) screw type	—	

Function		MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
		Q06CCPU-V(-B)	Q12DCCPU-V Q24DHCCPU-V	R12CCPU-V		
USB connector	Interface	—	USB2.0 ready		—	
	Connector	—	Q12DCCPU-V: USB(miniB) Q24DHCCPU-V: USB(TypeA), USB(miniB)	USB(TypeA)		
	Transmission speed	—	Q12DCCPU-V: 12Mbps (Full Speed) Q24DHCCPU-V: USB(TypeA) 480Mbps (High Speed), USB(miniB) 12Mbps (Full Speed)	480Mbps(High Speed)		
	Power supply	—	Q12DCCPU-V: Self-Powered Q24DHCCPU-V: USB(TypeA) Bus power +5VDC, 500mA maximum[*5], USB(miniB) Self-Powered	Bus power +5VDC, 500mA maximum[*5]		
CompactFlash card	Supply power voltage	3.3V±5% (Q06CCPU-V-B, Q24DHCCPU-V: None)		—	—	
	Supply power capacity	150mA maximum (Q06CCPU-V-B, Q24DHCCPU-V: None)				
	Card size	TYPE Ⅰ card, TYPE Ⅱ card is not allowed. I/O cards, such as a modem card are not allowed. (Q06CCPU-V-B, Q24DHCCPU-V: None)				
	Number of loadable cards	1 (Q06CCPU-V-B, Q24DHCCPU-V: None)				
SD memory card slot	Interface	—	SD/SDHC memory card (16G bytes maximum) (Q12DCCPU-V: None)		—	
	Power supply		+3.3VDC, 200mA maximum (Q12DCCPU-V: None)			
	Number of loadable cards		1 (Q12DCCPU-V: None)			
Number of I/O points		4096 points			○	
Clock function	Displayed information	Year, month, day, hour, minute, second, day of week (automatic leap year detection)			○	
	Accuracy	During power-on: Accuracy of VxWorks POSIX Clock (Accuracy may vary by the operation program.) During power-off: Daily error: -10.89 to +8.64 seconds (0 to 55℃), Daily error: -4.32 to +5.25 seconds (25℃). An additional error of -0.5 to +0.5 seconds may occur when the power is turned on.		Daily error: -5.86 to +3.35 (0 to 55℃), Daily error: -1.71 to +3.35 seconds (25℃)	○	
Allowable momentary power failure time		Depends on the power supply module			○	
Number of occupied slots		1	Q12DCCPU-V: 1 Q24DHCCPU-V: 3	2	×	
Internal current consumption (5VDC)		Q06CCPU-V: 0.75A Q06CCPU-V-B: 0.71A	Q12DCCPU-V: 0.97A Q24DHCCPU-V: 2.8A	1.26A	—	
External dimensions		98(H) × 27.4(W) × 89.3(D)mm	Q12DCCPU-V: 98(H) × 27.4(W) × 115(D)mm Q24DHCCPU-V: 98(H) × 83(W) × 115(D)mm	106(H) × 56(W) × 110(D)mm	—	

Function	MELSEC-Q series		MELSEC iQ-R series	Compatibility	Precautions
	Q06CCPU-V(-B)	Q12DCCPU-V Q24DHCCPU-V	R12CCPU-V		
Weight	0.17kg	Q12DCCPU-V: 0.24kg Q24DHCCPU-V: 0.63kg	0.35kg	—	

*1 The area for standard RAM is created by specifying the memory capacity in the battery backup RAM with parameters.

*2 The maximum capacity is 128K bytes for the Q12DCCPU-V with a serial number "12041" (first five digits) or earlier.

*3 When the area for standard RAM is created, the memory specified for standard RAM is occupied, therefore, the battery backup RAM area will be decreased.

*4 This applies when a repeater hub is used. For the number of levels that can be constructed when a switching hub is used, consult the manufacturer of the switching hub used.

*5 Select an appropriate USB Mass Storage Class-compliant device to be connected to observe the current consumption limit.

MELSECWinCPU module

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Function			MELSEC-Q series	MELSEC iQ-R series	Compatibility	Precautions
			Q10WCPU-W1-J Q10WCPU-W1-CFJ Q10WCPU-W1-E Q10WCPU-W1-CFE	**R102WCPU-W**		
Hardware	Endian format		Little-endian		○	
	MPU		Intel Atom® N450	Intel Atom® E3930	—	
	Memory capacity	Main memory	1G bytes	4G bytes	○	
		Built-in SSD	Built-in flash drive 4G bytes	CFast card 60G bytes	○	
		Memory card	Depending on the CompactFlash card 8G bytes maximum (-CFJ, -CFE models have a CFcard of 4G bytes.)	Depending on the memory card CFast card: 64G bytes maximum SD memory card: 16G bytes maximum	○	
Software	OS		Windows® Embedded Standard 2009	Windows® 10 IoT Enterprise LTSC 2019	—	
	Programming language		C/C++, Visual Basic	C/C++, Visual Basic, C#	○	
Ethernet port	Number of channels		2 channels		○	
	Interface		10BASE-T/100BASE-TX/1000BASE-T		○	
	Communication method		Full-duplex/half-duplex		○	
	Transmission method		Base band		○	
	Number of cascade connections*1		4 levels maximum (10BASE-T)/2 levels maximum (100BASE-TX)		○	
	Maximum segment length		100m		○	
	Connector for external wiring		RJ45		○	
	Supported function		Auto negotiation function (automatic recognition of communication speed/communication method), Auto-MDI/MDIX function (automatic recognition of a straight/crossover cable)		○	
RS-232 connector	Number of channels		1 channel		○	
	Interface		Compliant with RS-232		○	
	Communication method		Full-duplex/half-duplex		○	
	Synchronization method		Asynchronous method		○	
	Transmission speed		9600, 14400, 19200, 28800, 38400, 57600, 115200bps		○	
	Transmission distance		15m maximum		○	
	Data format	Start bits	1		○	
		Data bits	7/8		○	
		Parity bits	1/None		○	
		Stop bits	1/2		○	
	Parity check		Yes (Even/Odd)/No		○	
	Sum check code		Yes/No		○	
	Transmission control		Flow control (RS/CS control)		○	
	Connector for external wiring		9-pin D-Sub connector		○	
USB connector	Interface		USB2.0 5ch	USB3.0 1ch, USB2.0 3ch	○	
	Connector		USB (Type A)			
	Transmission speed		USB2.0: 480 Mbps	USB3.0: 5 Gbps, USB2.0: 480 Mbps		
	Power supply		Bus power +5VDC, 500mA maximum*2	Bus power +5VDC, USB3.0: 900mA maximum, USB2.0: 500mA maximum*3		

Function		MELSEC-Q series	MELSEC iQ-R series	Compatibility	Precautions
		Q10WCPU-W1-J Q10WCPU-W1-CFJ Q10WCPU-W1-E Q10WCPU-W1-CFE	R102WCPU-W		
Display interface	Interface	Analog RGB	HDMI 1.4b	×	Use a monitor with HDMI instead.
	Number of ports	1	1		
	Resolution	Up to 1400 × 1050 @ 60 Hz	Up to 3840 × 2160 @ 30Hz		
	Connector	15-pin D-Sub connector (mini)	HDMI TypeA connector		
Extension storage	Interface	CF CARD Type I	CFast (SATAⅢ)	×	Use CFast cards or SD memory cards instead.
	Number of loadable cards	1	1		
	Power supply	3.3V±5%, 150mA maximum	+3.3VDC, 0.5A maximum		
SD memory card slot	Interface	—	SDHC High Speed	—	
	Power supply		+3.3VDC, 220mA maximum		
	Number of loadable cards		1		
Number of I/O points		4096 points		○	
Clock function	Displayed information	Year, month, day, hour, minute, second, day of week (automatic leap year detection)		○	
	Accuracy	Monthly error: Within ±3 minutes (at 25℃)	Daily error: -24.72 to +2.78 seconds (0 to 55℃) Daily error: -2.60 to +2.78 seconds (25℃)	○	
Number of occupied slots		2	3	×	
Internal current consumption (5VDC)		3.0A	4.4A	—	
External dimensions		98(H) × 55.2(W) × 115(D)mm	112(H) × 84.2(W) × 131(D)mm	—	
Weight		0.44kg	0.63kg	—	

*1 This applies when a repeater hub is used. For the number of levels that can be constructed when a switching hub is used, consult the manufacturer of the switching hub used.

*2 The power capacity is the maximum capacity that can be supplied from the connector.
Note that the capacity may become lower than 0.5A because the actual capacity is limited to the range where the current consumption of the entire system does not exceed the capacity of the power supply module.

*3 The power capacity is the maximum capacity that can be supplied from the connector.
Note that the capacity may become lower than the listed value because the actual capacity is limited to the range where the current consumption of the module does not exceed the rating.

2.3 Comparison of CPU Module Functions

Basic/High Performance model QCPU

○: Compatible/function available △: Partly changed ×: Incompatible —: Not applicable

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU	Qn(H)CPU	RnCPU	
Constant scan	Executes a program in a set time interval regardless of its scan time.	○	○	○	
Latch function	Holds the device data even when the CPU module is powered off and on or reset.	○	○	○	
Output status selection when the status changed from STOP to RUN	Selects the output (Y) status (outputting the same status prior to STOP or clearing the status) when the operating status of the CPU module is switched from STOP to RUN.	○	○	○	
Clock function	Reads the internal clock data of the CPU module to use it for time management.	○	○	○	
Remote RUN/STOP	Runs or stops the program operations in the CPU module externally.	○	○	○	
Remote PAUSE	Stops the program operations in the CPU module externally, holding the status of outputs (Y).	○	○	○	
Remote RESET	Resets the CPU module externally when the CPU module is in the STOP status.	○	○	○	
Remote latch clear	Clears the latch data in the CPU module when the CPU module is in the STOP status.	○	○	○	
Input response time selection	Selects input response time values for the input modules, I/O combined modules, high-speed input modules, and interrupt modules.	○	○	○	
Error time output mode setting	Sets whether to clear or retain the output to the output modules, I/O combined modules, intelligent function modules, and interrupt modules at the time of a stop error of the CPU module.	○	○	○	
H/W error time PLC operation mode setting	Sets whether to stop or continue operations in the CPU module when a hardware error has occurred in an intelligent function module or interrupt module.	○	○	○	
Intelligent function module switch setting	Makes settings for the intelligent function modules and interrupt modules.	○	○	○	For the RCPU, set the module parameters of the intelligent function module used.
Monitor function	Reads the status of programs and devices in the CPU module using an engineering tool.	○	○	○	
Monitor condition setting	Specifies the monitoring timing of the CPU module with device condition or step number.	×	○	×	
Local device monitor/test	Monitors and/or tests the local devices of the specified program using an engineering tool.	×	○	○	
External input/output forced on/off function	Forcibly turns on/off the external input/output of the CPU module using an engineering tool.	×	○*1	○*7	
Online change	Writes programs when the CPU module is in the RUN status.	○*2	○	○	
Program monitor list	Displays the scan time and execution status of the program being executed.	○	○	○	
Interrupt program monitor list	Displays the number of executions of interrupt programs.	○	○	○	
Scan time measurement	Measures the execution time of the area specified by the steps in a program.	×	○	×	
Sampling trace function	Continuously samples the specified device data at a preset timing.	×	○	×	

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU	Qn(H)CPU	RnCPU	
Debug function from multiple engineering tools	Enables simultaneous debugging by multiple engineering tools.	○	○	△	When using a label, ensure that there is no conflict between engineering tools.
Watchdog timer	Monitors operational delays caused by hardware failure or program error of the CPU module.	○	○	○	
Self-diagnostic function	Self-diagnoses the CPU module to see whether an error exists or not.	○	○	○	
Error history	Stores the result of self-diagnostics to the memory as error history data.	○	○	○	For the RCPU, the result is stored as event history data.
System protection	Prevents the programs from being modified from an engineering tool, an Ethernet module, and a serial communication module.	○*3	○	○	
Password registration	Prohibits reading/writing data from/to each file in the CPU module using an engineering tool.	○	○	○	
Remote password	Prevents unauthorized access from external devices.	○*4	○*1	○	
System display	Monitors the system configuration using an engineering tool.	○	○	○	
LED indication	Displays the operating status of the CPU module with LEDs on the front of the module.	○	○	○	
LED indication priority	Sets priorities for error messages that are stored in the LED display data (SD220 to SDS227) when errors occur. This function can also disable LED indication.	○	○	×	
High-speed interrupt function	Executes an interrupt program at fixed intervals of 0.2 to 1.0ms using the interrupt pointer (I49).	×	○*5	○	
Interrupt from intelligent function module	Executes an interrupt program at the time of interrupt request from the intelligent function module.	○*4	○	○	
Serial communication function	Connects the RS-232 interface of the CPU module and the personnel computer or HMI with RS-232 cable and communicates in the MC protocol.	○*6	×	×	
Module service interval time read	Monitors the service interval time (time taken from CPU module's acceptance of one access to its acceptance of next access) of the intelligent function module, network module, or engineering tools.	○	○	×	
Initial device value	Registers data used in a program to the device or the buffer memory of the intelligent function module and special function module without a program.	○*4	○	○	

*1 Only products with a serial number "02092" (first five digits) or later supports this function.
*2 The online change (files) is not available.
*3 System protection using DIP switches is not available.
*4 Only products with a serial number "04122" (first five digits) or later supports this function.
*5 This function is not available for the Q02CPU.
*6 This function is not available for the Q00JCPU.
*7 Availability depends on the version of the CPU module. For details, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

Universal model QCPU

○: Compatible/function available △: Partly changed ×: Incompatible —: Not applicable

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU	
Boot operation	Transfers and boots data stored in a memory card or SD memory card to the program memory or the standard ROM at power-on or reset.	○*1	○	○*7	
Constant scan	Executes a program in a set time interval regardless of its scan time.	○	○	○	
Latch function	Holds the device data even when the CPU module is powered off and on or reset.	○	○	○	
Output status selection when the status changed from STOP to RUN	Selects the output (Y) status (outputting the same status prior to STOP or clearing the status) when the operating status of the CPU module is switched from STOP to RUN.	○	○	○	
Clock function	Reads the internal clock data of the CPU module to use it for time management.	○	○	○	
Remote RUN/STOP	Runs or stops the program operations in the CPU module externally.	○	○	○	
Remote PAUSE	Stops the program operations in the CPU module externally, holding the status of outputs (Y).	○	○	○	
Remote RESET	Resets the CPU module externally when the CPU module is in the STOP status.	○	○	○	
Remote latch clear	Clears the latch data in the CPU module when the CPU module is in the STOP status.	○	○	○	
Input response time selection	Selects input response time values for the input modules, I/O combined modules, high-speed input modules, and interrupt modules.	○	○	○	
Error time output mode setting	Sets whether to clear or retain the output to the output modules, I/O combined modules, intelligent function modules, and interrupt modules at the time of a stop error of the CPU module.	○	○	○	
H/W error time PLC operation mode setting	Sets whether to stop or continue operations in the CPU module when a hardware error has occurred in an intelligent function module or interrupt module.	○	○	○	
Intelligent function module switch setting	Makes settings for the intelligent function modules and interrupt modules.	○	○	○	For the RCPU, set the module parameters of the intelligent function module used.
Monitor function	Reads the status of programs and devices in the CPU module using an engineering tool.	○	○	○	
Monitor condition setting	Specifies the monitoring timing of the CPU module with device condition or step number.	○*1*2	○	×	
Local device monitor/test	Monitors and/or tests the local devices of the specified program using an engineering tool.	○*2*3	○	○	
External input/output forced on/off	Forcibly turns on/off the external input/output of the CPU module using an engineering tool.	○*2	○	○*10	
Executional conditioned device test	Changes a device value within the specified step of a sequence program.	○*2	○	○*10	
Online change	Writes programs when the CPU module is in the RUN status.	○	○	○	
Program monitor list	Displays the scan time and execution status of the program being executed.	○	○	○	
Interrupt program monitor list	Displays the number of executions of interrupt programs.	○	○	○	
Scan time measurement	Measures the execution time of the area specified by the steps in a program.	○*2	○	×	

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU	
Sampling trace function	Continuously samples the specified device data at a preset timing.	○*3	○	×	
Debug function from multiple engineering tools	Enables simultaneous debugging by multiple engineering tools.	○	○	△	When using a label, ensure that there is no conflict between engineering tools.
Watchdog timer	Monitors operational delays caused by hardware failure or program error of the CPU module.	○	○	○	
Self-diagnostic function	Self-diagnoses the CPU module to see whether an error exists or not.	○	○	○	
Error history	Stores the result of self-diagnostics to the memory as error history data.	○	○	○	For the RCPU, the result is stored as event history data.
Security function	Protects data in the CPU module against tampering and theft by unauthorized persons.	○	○	○	
Password registration	Prohibits reading/writing data from/to each file in the CPU module using an engineering tool.	○	○	○	
File password 32	Prohibits reading/writing data from/to each file in the CPU module using an engineering tool. Sets a read password and write password for each file stored in the CPU module.	×	○	○	
File access control by security key	Prevents unauthorized access to the files in the CPU module by writing a security key to the module. (The CPU module is locked with a security key.)	×	○	○	
Remote password	Prevents unauthorized access from external devices.	○	○	○	
Block password	Prevents access to program contents by setting a block password for each POU.	○	○	○	
LED indication	Displays the operating status of the CPU module with LEDs on the front of the module.	○	○	○	
LED indication priority	Sets whether to indicate an error with LED according to the priority of each error.	○	○	×	
High-speed interrupt function	Executes an interrupt program at fixed intervals of 0.1 to 1.0ms using the high-speed interrupt pointer (I49).	×	○	○	
Interrupt from intelligent function module	Executes an interrupt program at the time of interrupt request from the intelligent function module.	○	○	○	
Serial communication function	Communicates data using the MC protocol by connecting the RS-232 interface of the CPU module and a personal computer or HMI from other companies using an RS-232 cable.	○*2*4	×	×	
Service processing setting	Specifies the service processing count or time to be executed in END processing.	○	○	○	
Initial device value	Registers data used in a program to the device or the buffer memory of the intelligent function module and special function module without a program.	○	○	○	
Battery life-prolonging function	Extends the life of a battery by holding only clock data using the battery.	○	×	×	
Program cache memory auto recovery function	Restores the error location automatically by using data in the program memory, which are stored in the flash ROM, when the memory check function detects an error in the program cache memory.	○*2	○	○	
Latch data backup to standard ROM	Backs up latch data such as device data and error history to the standard ROM without using a battery.	○	○	×	

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU	
Writing/reading device data to/from standard ROM	Writes/reads device data to/from the standard ROM.	○	○	○	
CPU module change function with memory card	Backs up all the data (only the file register files and latch-target device data) in a CPU module to a memory card or SD memory card. The data backed up can be restored to a replaced CPU module.	○*1*2	○	○*7	
CPU module data backup/restoration function	Backs up data such as program files, a parameter file, and device data including file register in a CPU module to an SD memory card. The data backed up can be restored as needed.	×	○*2	○*8	
Module model name read	Reads the model name of a module on a base unit.	○*2	○	○	
Module error collection	Collects errors that occurred in the connected intelligent function modules in the CPU module.	○*2	○	○	
Local device batch read function	Batch-reads local device data in the CPU module and stores them in a CSV file.	○*2*3	○	○	
Send points extension function (CC-Link IE Controller Network module)	Extends the maximum number of link points per station of CC-Link IE Controller Network module.	○*2	○	○	
Write-protect function for device data (from outside the CPU module)	Prohibits writing data to devices (including file register) from outside the CPU module (such as engineering tools, GOT, SLMP/MC protocol, and FTP). This function is applied to areas that are specified in the parameter as write-protect ranges.	×	○*2	×	
Operation history function	Stores operation information in the CPU module as operation history files, and displays them using an engineering tool. Operation information mentioned here are information on data writing to devices or files, from outside the CPU module (such as engineering tools, GOT, FTP, and SLMP/MC protocol).	×	○*2	△	Operation history to be stored varies depending on the series of CPU modules.
Built-in Ethernet function	Enables MC protocol communications by using built-in Ethernet ports.	○*5	○	○	
File transfer function (FTP)	Enables the use of FTP server function, which transfers files between the CPU module and external devices. External devices with an FTP client function can directly access to the files in the CPU module.	○*5	○	○*9	
Predefined protocol function	Sends and receives packets predefined by using an engineering tool, enabling easy communications with external devices (such as measuring instruments and bar code readers).	×	○*2	○	
Socket communication function	Communicates data (using TCP/UDP) with external devices connected on the Ethernet network by using dedicated instructions.	○*2*5	○	○	
Simple PLC communication function	Sends and receives a specified device at a specified timing by simply configuring settings using a programming tool.	×	○*2	○*9	
IP address change function	Changes an IP address of a built-in Ethernet port by storing it in the special relay and special register, not in the built-in Ethernet port setting parameter.	○*2*5	○	○	

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnU(D)(E)(H)CPU	QnUDVCPU	RnCPU	
IP packet transfer function	Communicates with the following devices that correspond to IP address specified via a CC-Link IE Controller Network module or CC-Link IE Field Network module, using a protocol such as the FTP or HTTP via a built-in Ethernet port from an Ethernet device such as a personal computer. • External devices on the CC-Link IE Controller Network or CC-Link IE Field Network • External devices on the Ethernet network, which are connected through the built-in Ethernet ports	○*2*5	○	○	
Reading/writing device data from/to the CPU module on another station by specifying an IP address	Reads/writes device data from/to the CPU module on another station by using the dedicated instructions.	×	○*2	○	
SLMP frame send instruction	Sends MC protocol messages (QnA-compatible 3E frame and 4E frame) from the CPU module to external devices connected on the Ethernet network.	×	○*2	○	
Writing/reading data to/from refresh devices with the specified station number	Writes/reads data by specifying the station number of the target station, without considering the assignment of refresh devices.	○*6	○*2	○	
Data logging function	Collects data from the specified device of a CPU module at a specified timing. The data logging file can be transferred from a CPU module to the FTP server using the data logging file transfer function.	×	○	○*7	
iQ Sensor Solution function Automatic detection of connected device	Detects devices supporting iQ Sensor Solution connected to the CPU module, and automatically displays them on "List of devices" and "Device map area" using an engineering tool.	×	○*2	○	
iQ Sensor Solution function System configuration check	Compares the system configuration information displayed on an engineering tool with the actual system configuration, and checks if they match.	×	○*2	○	
iQ Sensor Solution function Communication setting reflection	Reflects the communication settings (such as IP addresses) of devices supporting iQ Sensor Solution on "Device map area" to the devices connected over Ethernet in the system.	×	○*2	○	
iQ Sensor Solution function Sensor parameter read/write	Reads/writes parameters (operation parameters for devices supporting iQ Sensor Solution) from/to devices supporting iQ Sensor Solution.	×	○*2	○	
iQ Sensor Solution function Monitoring	Monitors the current values (such as measurement values and input/output values), status (error existence), and error information of devices supporting iQ Sensor Solution graphically using an engineering tool.	×	○*2	○	
iQ Sensor Solution function Data backup/restoration	Backs up setting data (such as parameters) in a device supporting iQ Sensor Solution to an SD memory card. The data backed up can be restored as needed.	×	○*2	○*7	
CC-Link IE Field Network Basic function	A set of functions that can be used in CC-Link IE Field Network Basic	×	○*2	○	

*1 This function is not available for the Q00UJCPU, Q00UCPU, and Q01UCPU.
*2 Availability depends on the version of the CPU module. For details, refer to the following.
QnUCPU User's Manual (Function Explanation, Program Fundamentals)
*3 This function is not available for the Q00UJCPU.
*4 This function is not available for the QnUDE(H)CPU.
*5 This function is available only for the QnUDE(H)CPU.
*6 This function is available only for the QnUD(E)(H)CPU.

*7 This function is not available for the R00CPU.
*8 This function is not available for the R00CPU, R01CPU, and R02CPU.
*9 Availability depends on the version of the CPU module. For details, refer to the following.
MELSEC iQ-R Ethernet User's Manual (Application)
*10 Availability depends on the version of the CPU module. For details, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

Process CPU/Redundant CPU/Universal model Process CPU

○: Compatible/function available △: Partly changed ×: Incompatible —: Not applicable

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnPH/ QnPRHCPU	QnUDPVCPU	RnPCPU	
Boot operation	Transfers and boots data stored in a memory card or SD memory card to the program memory or the standard ROM at power-on or reset.	○	○	○	
Constant scan	Executes a program in a set time interval regardless of its scan time.	○	○	○	
Latch function	Holds the device data even when the CPU module is powered off and on or reset.	○	○	○	
Output status selection when the status changed from STOP to RUN	Selects the output (Y) status (outputting the same status prior to STOP or clearing the status) when the operating status of the CPU module is switched from STOP to RUN.	○	○	○	
Clock function	Reads the internal clock data of the CPU module to use it for time management.	○	○	○	
Remote RUN/STOP	Runs or stops the program operations in the CPU module externally.	○	○	○	
Remote PAUSE	Stops the program operations in the CPU module externally, holding the status of outputs (Y).	○	○	○	
Remote RESET	Resets the CPU module externally when the CPU module is in the STOP status.	○	○	○	
Remote latch clear	Clears the latch data in the CPU module when the CPU module is in the STOP status.	○	○	○	
Input response time selection	Selects input response time values for the input modules, I/O combined modules, high-speed input modules, and interrupt modules.	○	○	○	
Error time output mode setting	Sets whether to clear or retain the output to the output modules, I/O combined modules, intelligent function modules, and interrupt modules at the time of a stop error of the CPU module.	○	○	○	
H/W error time PLC operation mode setting	Sets whether to stop or continue operations in the CPU module when a hardware error has occurred in an intelligent function module or interrupt module.	○	○	○	
Intelligent function module switch setting	Makes settings for the intelligent function modules and interrupt modules.	○	○	○	For the RnPCPU, set the module parameters of the intelligent function module used.
Monitor function	Reads the status of programs and devices in the CPU module using a programming tool.	○	○	○	
Monitor condition setting	Specifies the monitoring timing of the CPU module with device condition or step number.	○	○	×	
Local device monitor/ test	Monitors and/or tests the local devices of the specified program using a programming tool.	○	○	○	
External input/output forced on/off function	Forcibly turns on/off the external input/output of the CPU module using a programming tool.	○	○	○*2	
Executional conditioned device test	Changes a device value within the specified step of a sequence program.	×	○	○*2	
Online change	Writes programs when the CPU module is in the RUN status.	○	○	○	
Program monitor list	Displays the scan time and execution status of the program being executed.	○	○	○	
Interrupt program monitor list	Displays the number of executions of interrupt programs.	○	○	○	
Scan time measurement	Measures the execution time of the area specified by the steps in a program.	○	○	×	

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnPH/ QnPRHCPU	QnUDPVCPU	RnPCPU	
Sampling trace function	Continuously samples the specified device data at a preset timing.	○	○	×	
Debug function from multiple programming tools	Enables simultaneous debugging by multiple programming tools.	○	○	○	When using a label, ensure that there is no conflict between programming tools.
Watchdog timer	Monitors operational delays caused by hardware failure or program error of the CPU module.	○	○	○	
Self-diagnostic function	Self-diagnoses the CPU module to see whether an error exists or not.	○	○	○	
Error history	Stores the result of self-diagnostics to the memory as error history data.	○	○	○	For the RnPCPU, the result is stored as event history data.
Security function	Protects data in the CPU module against tampering and theft by unauthorized persons.	○	○	○	
Password registration	Prohibits reading/writing data from/to each file in the CPU module using a programming tool.	○	○	○	
File password 32	Prohibits reading/writing data from/to each file in the CPU module using a programming tool. Sets a read password and write password for each file stored in the CPU module.	×	○	○	
File access control by security key	Prevents unauthorized access to the files in the CPU module by writing a security key to the module. (The CPU module is locked with a security key.)	×	○	○	
Remote password	Prevents unauthorized access from external devices.	○	○	○	
Block password	Prevents access to program contents by setting a block password for each POU.	○	○	○	
LED indication	Displays the operating status of the CPU module with LEDs on the front of the module.	○	○	○	
LED indication priority	Sets whether to indicate an error with LED according to the priority of each error.	○	○	×	
High-speed interrupt function	Executes an interrupt program at fixed intervals of 0.1 to 1.0ms using the interrupt pointer (I49).	×	○	○	
Interrupt from intelligent function module	Executes an interrupt program at the time of interrupt request from the intelligent function module.	○	○	○	
Module service interval time read	Monitors the service interval time (time taken from CPU module's acceptance of one access to its acceptance of next access) of the intelligent function module, network module, or programming tools.	○	×	×	
Service processing setting	Specifies the service processing count or time to be executed in END processing.	○	○	○	For the QnPHCPU, use the special register for the setting. For the QnUDPVCPU/ RnPCPU, use the parameter for the setting.
Initial device value	Registers data used in a program to the device or the buffer memory of the intelligent function module and special function module without a program.	○	○	○	
Online module change	Enables a module change without the system being stopped.	○	×	△	For the RnPCPU, modules can be changed without the use of the engineering tool.

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnPH/ QnPRHCPU	QnUDPVCPU	RnPCPU	
Auto tuning function	Sets an initial value of PID constants. In addition, this function is used in a process where responses are relatively slow (such as temperature control), in a loop using the S.PID instruction or the S.2PID instruction.	○	○	○	
Program cache memory auto recovery function	Restores the error location automatically by using data in the program memory, which are stored in the flash ROM, when the memory check function detects an error in the program cache memory.	×	○	○	
Latch data backup to standard ROM	Backs up latch data such as device data and error history to the standard ROM without using a battery.	×	○	×	
Writing/reading device data to/from standard ROM	Writes/reads device data to/from the standard ROM.	×	○	○	
CPU module change function with memory card	Backs up all the data (only the file register files and latch-target device data) in a CPU module to a memory card or SD memory card. The data backed up can be restored to a replaced CPU module.	×	○	○	
CPU module data backup/restoration function	Backs up data such as program files, a parameter file, and device data including file register in a CPU module to an SD memory card. The data backed up can be restored as needed.	×	○*1	○*2	
Module model name read	Reads the model name of a module on a base unit.	×	○	○	
Module error collection	Collects errors that occurred in the connected intelligent function modules in the CPU module.	×	○	△	Errors can be checked with the event history.
Local device batch read function	Batch-reads local device data in the CPU module and stores them in a CSV file.	×	○	○	
Send points extension function (CC-Link IE Controller Network module)	Extends the maximum number of link points per station of CC-Link IE Controller Network module.	×	○	○	
Write-protect function for device data (from outside the CPU module)	Prohibits writing data to devices (including file register) from outside the CPU module (such as engineering tools, GOT, SLMP/MC protocol, and FTP). This function is applied to areas that are specified in the parameter as write-protect ranges.	×	○*1	×	
Operation history function	Stores operation information in the CPU module as operation history files, and displays them using an engineering tool. Operation information mentioned here are information on data writing to devices or files, from outside the CPU module (such as engineering tools, GOT, FTP, and SLMP/MC protocol).	×	○*1	△	Operation history to be stored varies depending on the series of CPU modules.
Built-in Ethernet function	Enables MC protocol communications by using built-in Ethernet ports.	×	○	○	
File transfer function (FTP)	Enables the use of FTP server function, which transfers files between the CPU module and external devices. External devices with an FTP client function can directly access to the files in the CPU module.	×	○	○	
Predefined protocol function	Sends and receives packets predefined by using an engineering tool, enabling easy communications with external devices (such as measuring instruments and bar code readers).	×	○*1	○	
Socket communication function	Communicates data (using TCP/UDP) with external devices connected on the Ethernet network by using dedicated instructions.	×	○	○	
Simple PLC communication function	Sends and receives a specified device at a specified timing by simply configuring settings using a programming tool.	×	○*1	×	

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnPH/ QnPRHCPU	QnUDPVCPU	RnPCPU	
IP address change function	Changes an IP address of a built-in Ethernet port by storing it in the special relay and special register, not in the built-in Ethernet port setting parameter.	×	○	○	
IP packet transfer function	Communicates with the following devices that correspond to IP address specified via a CC-Link IE Controller Network module or CC-Link IE Field Network module, using a protocol such as the FTP or HTTP via a built-in Ethernet port from an Ethernet device such as a personal computer. • External devices on the CC-Link IE Controller Network or CC-Link IE Field Network • External devices on the Ethernet network, which are connected through the built-in Ethernet ports	×	○	○	
Reading/writing device data from/to the CPU module on another station by specifying an IP address	Reads/writes device data from/to the CPU module on another station by using the dedicated instructions.	×	○*1	○	
SLMP frame send instruction	Sends MC protocol messages (QnA-compatible 3E frame and 4E frame) from the CPU module to external devices connected on the Ethernet network.	×	○*1	○	
Writing/reading data to/from refresh devices with the specified station number	Writes/reads data by specifying the station number of the target station, without considering the assignment of refresh devices.	×	○*1	○	
Data logging function	Collects data from the specified device of a CPU module at a specified timing. The data logging file can be transferred from a CPU module to the FTP server using the data logging file transfer function.	×	○	○	
iQ Sensor Solution function Automatic detection of connected device	Detects devices supporting iQ Sensor Solution connected to the CPU module, and automatically displays them on "List of devices" and "Device map area" using an engineering tool.	×	○*1	○	
iQ Sensor Solution function System configuration check	Compares the system configuration information displayed on an engineering tool with the actual system configuration, and checks if they match.	×	○*1	○	
iQ Sensor Solution function Communication setting reflection	Reflects the communication settings (such as IP addresses) of devices supporting iQ Sensor Solution on "Device map area" to the devices connected over Ethernet in the system.	×	○*1	○	
iQ Sensor Solution function Sensor parameter read/write	Reads/writes parameters (operation parameters for devices supporting iQ Sensor Solution) from/to devices supporting iQ Sensor Solution.	×	○*1	○	
iQ Sensor Solution function Monitoring	Monitors the current values (such as measurement values and input/output values), status (error existence), and error information of devices supporting iQ Sensor Solution graphically using an engineering tool.	×	○*1	○	
iQ Sensor Solution function Data backup/ restoration	Backs up setting data (such as parameters) in a device supporting iQ Sensor Solution to an SD memory card. The data backed up can be restored as needed.	×	○*1	×	
CC-Link IE Field Network Basic function	A set of functions that can be used in CC-Link IE Field Network Basic	×	○*1	×	
Redundant system function	Configures a redundant system with CPU modules, power supply modules, network modules, and main base units.	○*4	×	○*5	

Function		MELSEC-Q series		MELSEC iQ-R series	Precautions
		QnPH/ QnPRHCPU	QnUDPVCPU	RnPCPU	
System switching function (switching between the control system and standby system)	Switches the systems between the control system and the standby system. The systems can be switched either by the system or by the user.	○*4	×	○*5	
Operation mode change	Switches the operation mode between the separate mode and the backup mode.	○*4	×	○*5	
Debug mode setting	The debug mode is for debugging with a system configuration of only either system.	○*4	×	○*5	For the RnPCPU, to debug either of the two systems, start up only one system and perform a certain operation (the switch operation of the CPU module (RUN → STOP → RUN), online operation from the engineering tool, or operation with the input (X)).
Tracking function	Transfers the data in the CPU module of the control system to the CPU module of the standby system to maintain the consistency of the data between two systems. Control can be continued with the same data even after the systems are switched due to a failure or an error in the control system.	○*4	×	○*5	
Online program change for redundancy	Transfers data written to the CPU module of the control system by using the write to PLC function or the online change function to the CPU module of the standby system.	○*4	×	○*5	
Memory copy from control system to standby system	Transfers the data such as parameters and programs of the CPU module of the control system to the CPU module of the standby system to maintain the consistency of the memory in the two CPU modules.	○*4	×	○*5	

*1 Availability depends on the version of the CPU module. For details, refer to the following.
📖 QnUCPU User's Manual (Function Explanation, Program Fundamentals)

*2 Availability depends on the version of the CPU module. For details, refer to the following.
📖 MELSEC iQ-R CPU Module User's Manual (Application)

*3 Availability depends on the version of the CPU module. For details, refer to the following.
📖 MELSEC iQ-R Ethernet User's Manual (Application)

*4 These functions can be used in the QnPRHCPU only.

*5 To use these functions, the R6RFM (redundant function module) is required.

C Controller module

○: Compatible/function available △: Partly changed ×: Incompatible —: Not applicable

Function		MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q06CCPU-V(-B) Q12DCCPU-V Q24DHCCPU-V	R12CCPU-V	
I/O module access function	Controls I/O modules or intelligent function modules from the user program of the C Controller module.	○	○	
Intelligent function module access function				
Remote operation function	Controls the execution status of the C Controller module from its user program or development environment.	○	○	
Device function	Creates a device such as a programmable controller CPU in work RAM of the C Controller module.	○ *1	○	
Self-diagnostic function	Monitors the operating status of each module, and when an error has occurred, displays error information.	○*2	○	
Hardware selfdiagnostic function	Performs the specified hardware self-diagnostics in the hardware self-diagnostic mode.	○*2	○	
Output (Y) setting for switching from STOP to RUN	Sets the output status (Y) for the case where the STOP status is switched to the RUN status.	○	○	
Clock function	Reads clock data in the C Controller module by the user program, and uses them for time control.	○	○	
Multiple CPU clock synchronization function	Allows clock data synchronization with CPU No.1 when the C Controller module is set as CPU No.2, No.3 or No.4 in a multiple CPU system.	○*1	○	
Input response time selection	Allows selection of the response time for the Q series input modules, I/O combined modules, high-speed input modules, and interrupt modules.	○	○	
Error time output mode setting	Sets whether to clear or hold the outputs to output modules, I/O combined modules, and intelligent function modules when a stop error occurs in the C Controller module.	○	○	
Hardware error time CPU operating mode setting	Sets whether to stop or run the C Controller module when a hardware error occurs in an intelligent function module.	○	○	
Intelligent function module and interrupt module switch setting	Configures the settings for intelligent function modules and interrupt modules. (For details, refer to the manual for each module.)	○	○	
Watchdog timer (WDT)	Detects a hardware error or a user program error of the C Controller module.	○	○	
Connection between C Controller module and GOT (microcomputer connection)	Accesses a GOT through the RS-232 interface of the C Controller module.	○	○	
Telnet function	From the Telnet tool of the development environment (personal computer), allows simple remote debugging (task information display, memory dumping, etc.) of the C Controller. Without using Workbench or Tornado, simple remote debugging is available.	○	○	
Communication function with peripheral devices through an Ethernet port	Connects a peripheral device (such as the engineering tool) to the Ethernet port on the C Controller module with an Ethernet cable to perform communications.	○*1	○	
Unmounting CompactFlash card	CompactFlash card can be unmounted with the RESET/SELECT switch on the C Controller module.	○*3	○	The R12CCPU-V supports an SD memory card instead of a CompactFlash card
Login user access restriction	Restricts parameter writing from FTP or each utility and use of the Telnet function, by setting (adding/deleting) login users for the C Controller module.	○	○	

Function			MELSEC-Q series	MELSEC iQ-R series	Precautions
			Q06CCPU-V(-B) Q12DCCPU-V Q24DHCCPU-V	R12CCPU-V	
Multiple CPU system	Data communications by MELSEC data link functions	Accesses device data of a programmable controller CPU from the C Controller module's user program, which is created with MELSEC data link functions.	○*3	○	
	Event notification	Issues an event to the standby status user program in a C Controller module to resume the user program that was waiting for an interrupt event. The event is issued from either of the following. • Sequence program of programmable controller CPU • User program of C Controller module	○	○	
	Multiple CPU synchronous interrupt function	By registering a routine corresponding to a multiple CPU synchronous interrupt by the QBF_EntryMultiCPUSyncInt function, the created program can be executed in synchronization with a Motion CPU (Q172DCPU or Q173DCPU).	○*1	○	
	Data communications using CPU shared memory	Transfers data via the CPU shared memory among the C Controller module, programmable controller CPUs, and Motion CPUs.	○	○	
	Data communications using multiple CPU high speed transmission area	Transfers data via the multiple CPU high speed transmission area in the CPU shared memory among the C Controller module, programmable controller CPUs, and Motion CPUs.	○*1	○	
	Programmable controller remote control function	From the user program of the C Controller module, controls the execution status of a programmable controller CPU.	○*3	○	
	Sequence program control function	From the user program of the C Controller module, controls the execution type of the sequence program.	○	×	
	Interrupt issue to Motion CPU	From the user program of the C Controller module, issues an interrupt to a Motion CPU.	○*2	○	
	Motion CPU control instruction	From the user program of the C Controller module, starts a Motion CPU's SFC program or servo program or changes the set or present values of the servo.	○*2	○	
	Motion CPU device access	From the user program of the C Controller module, reads data from or writes data to Motion CPU's devices.	○*2	○	

*1 This function is not available for the Q06CCPU-V(-B).

*2 The Q06CCPU-V(-B) does not support some functions. For details, refer to the following.
C Controller Module User's Manual (Hardware Design, Function Explanation)

*3 This function is not available for the Q06CCPU-V-B.

MELSECWinCPU module

○: Compatible/function available △: Partly changed ×: Incompatible —: Not applicable

Function			MELSEC-Q series	MELSEC iQ-R series	Precautions
			Q10WCPU-W1-J Q10WCPU-W1-CFJ Q10WCPU-W1-E Q10WCPU-W1-CFE	R102WCPU-W	
MELSEC functions	Programmable controller device memory function	Enables access to devices and buffer memory of this product from Windows applications in this product and external devices via a bus and Ethernet.	—	○	
	Bus access function	Links with another module using the bus driver of this product.	○	○	
	Time synchronization function	Synchronizes time between this product (Windows) and the CPU module (CPU No.1) when a multiple CPU system is configured.	—	○	
	Multiple CPU system function	Allows each CPU module on a base unit to control an I/O module and an intelligent function module.	○	○	
	Network module access function	Communicates data with devices on a network via a network module controlled by this product.	○	○	
	Label communication function	Reads/writes data from/to labels stored in a CPU module on another station.	—	○	
	Fixed cycle processing function	Refreshes with a network module and performs data communication with an external device.	△	○	The Q10WCPU-W1-J can use the MELSECNET/H link refresh only.
Module operation functions	Remote operation function	Changes the operating status of this product by changing the Y output status and resetting a bus with peripheral devices and user programs.	—	○	
	Hardware reset function	Resets hardware.	○	○	
	Individual reset function	Resets (restarts) Windows and the bus control in this product individually.	△	○	The Q10WCPU-W1-J can reset a bus interface driver and all modules on the bus only.
	Windows shutdown function	Shuts down Windows in this product by using a switch or input of an I/O module.	△	○	The Q10WCPU-W1-J can use a terminal block (input of an I/O module) only for shutdown.
	Windows forced restart at error function	Restarts Windows in this product automatically when the Windows freezes or a system error occurs in the Windows.	—	○	
	Y output control function	Controls the Y output status (Y STOP/Y OUT/PAUSE) with the BUS RESET/Y STOP/Y OUT switch or a MELSEC data link function.	△	○	The Q10WCPU-W1-J can use a switch only for the control.
	INFORMATION LED operation function	Operates the display status of the INFORMATION LED from a user program.	—	○	

Function			MELSEC-Q series	MELSEC iQ-R series	Precautions
			Q10WCPU-W1-J Q10WCPU-W1-CFJ Q10WCPU-W1-E Q10WCPU-W1-CFE	R102WCPU-W	
Diagnostics and maintenance functions	Bus access diagnostics function	Diagnoses whether there are failures in hardware used for the bus access function of this product.	—	○	
	Watchdog timer function	Monitors and detects a bus control failure with the watchdog timer (WDT), which is an internal timer of this product, and notifies an error if the failure occurs.	○	○	
	Self-diagnostic function	Diagnoses whether there are any errors in this product.	○	○	
	Error clear function	Clears all the continuation errors in this product.	—	○	
	Event history function	Collects and saves the following information: errors detected by this product, operations performed for this product, and errors that occurred on a network.	—	○	
	Parameter/event history initialization function	Returns this product to the factory default state by initializing the parameters and bus control event history of this product.	—	○	

2.4 Precautions for CPU Module Migration

Programmable controller CPU/Process CPU module

Parameters

Set parameters, such as the program setting, that is specific to each CPU module in the CPU parameter. In addition, set the module parameter to use the built-in Ethernet function of the CPU module, and set the memory card parameter to perform boot operation.

Sampling trace function

The RCPU does not support the sampling trace function.
Use the trigger logging of the data logging function instead. Note that, depending on the versions of CPU modules and engineering tools, an SD memory card is required to store the data because the CPU built-in memory cannot be used as data storage destination. For the versions, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)

Latch data backup to standard ROM

The RCPU does not support the latch data backup to standard ROM function.
Use the CPU module data backup/restoration function instead. Or, read data by using GX Works3 and store the data or write the data back again to the CPU module. The R00/R01/R02CPU does not support the data backup/restoration function.

CPU module change function with memory card

The RCPU does not support the CPU module change function with memory card.
Use the CPU module data backup/restoration function instead. Or, read data by using GX Works3 and store the data or write the data back again to the CPU module.

File password and remote password

The number of characters in a password differs between the QCPU and the RCPU. Set a password within the range of 6 to 32 characters for the R series CPU module.
Also, change the number of characters in a password of an external device when an external device such as an FTP client accesses the programmable controller.

File transfer function (FTP)

Note that some of the files stored in drive 0 (program memory) in the QCPU are stored in drive 4 (data memory) in the RCPU.

Debug mode of the redundant system

In the RnPCPU (redundant mode), the debug mode cannot be used. To start up one system as the control system, perform one of the following operations to the CPU module that is waiting for the other system to start.

• Online operation

Perform the following operation on the engineering tool.

[Online] ⇨ [Redundant PLC Operation] ⇨ [Redundant Operation]

Select "Forced Start of Control System while Waiting for Other System to Start" and click the [Execute] button.

• Switch operation

Set the RUN/STOP/RESET switch of the CPU module to RUN → STOP → RUN.

Set "Control System Start-up Setting (Switch Operation)" to "Enable" in the CPU parameter in advance.

• Operation with the input (X)

Turn on the input (X) set in the parameter.

Set "Control System Start-up Setting (Input (X))" to "Enable" in the CPU parameter in advance.

System A/B setting in the redundant system

In the RnPCPU, the system A or the system B is determined by the settings of GX Works3, while in the QnPRHCPU, they are determined by the connection of the tracking cable.

Point

For details on these precautions, refer to the following.

MELSEC iQ-R Module Configuration Manual

MELSEC iQ-R CPU Module User's Manual (Startup)

MELSEC iQ-R CPU Module User's Manual (Application)

C Controller module

Supported software packages

The following table shows the supported versions of main software packages related to C Controller modules.

—: Not supported

Software package			Q06CCPU-V	Q06CCPU-V-B	Q12DCCPU-V	Q24DHCCPU-V	R12CCPU-V
Setting/monitoring tool	CW Configurator	SW1DND-RCCPU-J/E	—	—	—	—	Version 1.00A or later
	Setting/monitoring tools for the C Controller	SW4PVC-CCPU-J/E	—	—	Version 4.04E or later	Version 4.00A or later	—
		SW3PVC-CCPU-J/E	Version 3.00A or later	Version 3.01B or later	—	—	—
Engineering tool	CW Workbench	SW1DND-CWWR-E/EZ/EVZ	—	—	—	—	Version 1.00A or later
		SW1DND-CWWLQ24-E/EZ	—	—	—	Version 1.00A or later	—
		SW1DND-CWWLQ12-E/EZ	—	—	Version 1.00A or later	—	—
VxWorks simulator for CW Workbench	CW-Sim	SW1DND-CWSIMR-EZ	—	—	—	—	Version 1.00A or later
		SW1DNC-CWSIM-EZ	—	—	Version 1.00A or later	Version 1.00A or later	—
	CW-Sim Standalone	SW1DNC-CWSIMSAR-E	—	—	—	—	Version 1.00A or later
		SW1DNC-CWSIMSA-E	—	—	Version 1.00A or later	Version 1.00A or later	—
Wind River Workbench		—	—	—	Version 2.6.1	Version 3.2	Version 3.3
Tornado		—	Version 2.6.0	Version 2.6.0	—	—	—

Functions

For the differences of functions, refer to the following manual.

MELSEC iQ-R C Controller Module Programming Manual

Parameters

In CW Configurator, parameters of a programmable controller can be set on a module configuration diagram, as if to configure the actual system.

When it is possible to connect the actual system configuration, parameters can be set by reading the configuration.

Parameters also can be set in the Navigation window in the same way as Setting/monitoring tools for the C Controller module.

Parameters of functions in common with a CPU module are set by using an interface equivalent to GX Works2/GX Works3 in Setting/monitoring tools for the C Controller module/CW Configurator.

For details on the parameter configuration, refer to the following.

Page 444 Parameter Migration

Device

There is no change in I/O devices and link direct devices.

For other devices, available points increase in MELSEC iQ-R series C Controller modules.

The following table shows devices which their names were changed to or which are newly available.

MELSEC-Q series	MELSEC iQ-R series
Intelligent function module device (Un\G)	Module access device (Un\G)
Cyclic transmission area device (U3En\G)	CPU buffer memory access device (U3En\G)
Not supported	CPU buffer memory access device (fixed scan communication area) (U3En\HG) File register (ZR) Interrupt pointer (I)

Some of the SM/SD number assignments differ. Also, some SM/SD areas are used for different purposes. If SM/SD is used in the MELSEC-Q series program, the program needs to be corrected for MELSEC iQ-R series. For details, refer to the user's manual of a CPU module used.

Project replacement

Import a project of the Q12DCCPU-V by using the import function of CW Workbench (SW1DND-CWWR-E/EZ/EVZ). Select "Build Support and Specs" tab in "Properties" window of imported project and change into "ARMARCH7gnu_SMP" on "Active build spec". Select "Tools" tab and input "-mlong-calls" on "Tool Flags" and "-fsigned-char" on [Debug mode] and [Non Debug mode] of "Debug mode flags".

For importing the project and changing items on "Properties" window, refer to the following.

CW Workbench/CW-Sim Operating Manual

VxWorks standard API functions migration

Operating system of the R12CCPU-V is upgraded than that of the Q12DCCPU-V. (VxWorks 6.4→VxWorks 6.9)

For VxWorks standard API functions migration, check "MIGRATION GUIDE" of VxWorks.

PDF file "MIGRATION GUIDE" of VxWorks is included in CW Workbench.

Device type

Some device types of the bus interface function and MELSEC data link function are deleted from the R12CCPU-V.

When they are used in the user program, change the processing described in the alternative method.

For the alternative method, refer to the following.

MELSEC iQ-R C Controller Module Programming Manual

Point

For details on these precautions, refer to the following.

MELSEC iQ-R C Controller Module User's Manual (Startup)
MELSEC iQ-R C Controller Module User's Manual (Application)
MELSEC iQ-R C Controller Module Programming Manual

MELSECWinCPU module

Project replacement

For details on upgrading programming development environment, refer to manuals corresponding to the Microsoft Corporation product or consult Microsoft Corporation.

Q10WCPU-W1-J Q10WCPU-W1-CFJ Q10WCPU-W1-E Q10WCPU-W1-CFE	R102WCPU-W
Microsoft Visual Studio 2010 (Visual C++, Visual Basic) Microsoft Visual Studio 2008 (Visual C++, Visual Basic)	Microsoft Visual Studio 2019 (Enterprise, Professional) Microsoft Visual Studio 2017 (Enterprise, Professional)

Library files and header files replacement

Replace a library file and header file with the one shown in the following table.

Programming language	Library name	Q10WCPU-W1-J Q10WCPU-W1-CFJ Q10WCPU-W1-E Q10WCPU-W1-CFE	R102WCPU-W
C++	MELSEC data link function	• Mdfunc.h • MdFunc32.lib	• MDFuncWinCPU.h • MDFuncWinCPU32.lib
	Bus interface function	• QbfFunc32.h • QBFFunc32.lib	• MDFuncWinCPU.h • CCPUFuncWinCPU.h • MDFuncWinCPU32.lib • CCPUFuncWinCPU32.lib
Visual Basic	MELSEC data link function	Mdfunc.vb	MDFuncWinCPU.vb
	Bus interface function	QbfFunc32.vb	• MDFuncWinCPU.vb • CCPUFuncWinCPU.vb

Functions replacement

For functions which cannot be used in a MELSEC iQ-R MELSECWinCPU module, replace them with the ones shown in the following tables.

MELSEC data link functions

Functions of Q10WCPU-W1-J, Q10WCPU-W1-CFJ, Q10WCPU-W1-E, Q10WCPU-W1-CFE	Availability in the R102WCPU-W	Replaced with*1
mdOpen	○	—
mdClose	○	—
mdSend	×	mdSendEx function, mdBdSendEx function, or mdBdWriteLinkDeviceEx function
mdReceive	×	mdReceiveEx function, mdBdReceiveEx function, or mdBdReadLinkDeviceEx function
mdRandW	×	mdRandWEx function or mdBdRandWEx function
mdRandR	×	mdRandREx function or mdBdRandREx function
mdDevSet	×	mdDevSetEx function or mdBdDevSetEx function
mdDevRst	×	mdDevRstEx function or mdBdDevRstEx function
mdTypeRead	○	—
mdControl	○	—
mdInit	×	—
mdBdModSet	×	—
mdBdModRead	×	—
mdBdLedRead	×	—
mdBdSwRead	×	—
mdBdVerRead	×	—
mdSendEx	○	—*2
mdReceiveEx	○	—*2
mdRandWEx	○	—*2
mdRandREx	○	—*2
mdDevSetEx	○	—
mdDevRstEx	○	—

*1 Check the specifications of the function before replacement since changing arguments may be required for the replacement in some cases.

*2 To access own station devices or buffer memory, use a function whose name starts with 'mdBd'.

Bus interface functions

Functions of Q10WCPU-W1-J, Q10WCPU-W1-CFJ, Q10WCPU-W1-E, Q10WCPU-W1-CFE	Availability in the R102WCPU-W	Replaced with*1
QBF_Open	×	—
QBF_Close	×	—
QBF_X_In_Bit	×	—*2
QBF_X_In_Word	×	—*2
QBF_X_In	×	—*2
QBF_Y_Out_Bit	×	—*2
QBF_Y_Out_Word	×	—*2
QBF_Y_Out	×	—*2
QBF_Y_In_Bit	×	—*2
QBF_Y_In_Word	×	—*2
QBF_Y_In	×	—*2
QBF_ToBuf	×	—*2
QBF_FromBuf	×	—*2
QBF_UnitInfo	×	CCPU_GetUnitInfo function
QBF_StartWDT	×	—
QBF_ResetWDT	×	—
QBF_StopWDT	×	—
QBF_ReadStatus	×	—
QBF_ReadStatusEx	×	—
QBF_ControlLED	×	—
QBF_Reset	×	CCPU_Reset function
QBF_WaitEvent	×	CCPU_WaitEvent function
QBF_WaitUnitEvent	×	CCPU_WaitUnitEvent function
QBF_ControlProgram	×	—

*1 Check the specifications of the function before replacement since changing arguments may be required for the replacement in some cases.

*2 To access own station devices or buffer memory, use a function whose name starts with 'mdBd'.

Device types replacement

The following shows device types that cannot be used for a MELSEC iQ-R MELSECWinCPU module, and replacement methods.

To use any of the following device types in user programs, replace them in accordance with replacement methods.

MELSEC data link functions

■Common device types

Device type not available for a MELSEC iQ-R MELSECWinCPU module		Replacement method
Device name	Device name	
Extension file register	DevER0 to 256	Access devices by replacing the block number with ZR devices in increments of 32K points. ■Before replacement • Device type: DevERnnn (nnn = 0 to 256) • Start device number: mmm ■After replacement • Device type: DevZR • Start device number: (nnn × 32768) + mmm
Timer setting value main	DevTM	These devices cannot be used in an access target CPU (this product). Access the devices after replacing them with other devices.
Timer setting value sub1	DevTS	
Timer setting value sub2	DevTS2	
Timer setting value sub3	DevTS3	
Counter setting value main	DevCM	
Counter setting value sub1	DevCS	
Counter setting value sub2	DevCS2	
Counter setting value sub3	DevCS3	
Accumulator	DevA	
Index register	DevV	

The following shows examples for replacing an extension file register.

Example: DevER0 with the start device number 0

- Start device: DevZR
- Start device number: (0 × 32768) + 0 = 0

Example: DevER0 with the start device number 256

- Start device: DevZR
- Start device number: (0 × 32768) + 256 = 256

Example: DevER1 with the start device number 0

- Start device: DevZR
- Start device number: (1 × 32768) + 0 = 32768

Example: DevER10 with the start device number 5

- Start device: DevZR
- Start device number: (10 × 32768) + 5 = 327685

■Device types for CC-Link modules

Device type not available for a MELSEC iQ-R MELSECWinCPU module		Replacement method
Device name (device)	Device name	
Own station remote input (RX)	DevX	For details, refer to the following. 📖 MELSEC iQ-R MELSECWinCPU Module Programming Manual
Own station remote output (RY)	DevY	
Own station link register (for sending) (—)	DevWw	
Own station link register (for receiving) (—)	DevWr	
Own station link special relay (SB)	DevSM	
	DevQSB	
Own station link special register (SW)	DevSD	
	DevQSW	
Own station random access buffer (—)	DevMRB	
Own station buffer memory (—)	DevSPB	
Other station buffer memory (—)	DevRBM	
Other station random access buffer (—)	DevRAB	
Other station remote input (RX)	DevRX	
Other station remote output (RY)	DevRY	
Other station link register (—)	DevRW	
Other station link special relay (SB)	DevSB	
Other station link special register (SW)	DevSW	

Replacement methods

■Refreshing devices

Access target	Replacement method
When accessing a network module on the own station	Configure the refresh setting so that link devices (M, B, D, and W) of a MELSECWinCPU module are refreshed by link devices of a network module.
	Access devices (M, B, D, and W) of a MELSECWinCPU module with a MELSEC data link function.
When accessing a network module on other stations	Configure the refresh setting for a CPU module on other stations so that devices of the CPU module are refreshed by link devices of a network module.
	Specify another station to the network number and station number of a MELSEC data link function to access devices of a CPU module on other stations.

■Specifying a module access device

Access target	Replacement method
When accessing a network module on the own station	Open a communication line by specifying 'bus interface' to the mdOpen function channel.
	Specify the module access device (DevSPG) for the device type of MELSEC data link function and access the areas*1 to which link devices are assigned in the buffer memory of a network module.
When accessing a network module on other stations	Open a communication line by specifying 'bus interface' to the mdOpen function channel.
	Specify another station to the network number and station number of a MELSEC data link function.
	Specify the module access device (DevSPG) for the device type of MELSEC data link function and access the areas*1 to which link devices are assigned in the buffer memory of a network module.

*1 For the buffer memory addresses to which link devices are assigned, refer to the manual for an access target network module.

■Using the mdBdReadLinkDeviceEx function or the mdBdWriteLinkDeviceEx function

Access own station link devices of a network module with the mdBdReadLinkDeviceEx function or the mdBdWriteLinkDeviceEx function. For details, refer to the following.

📖 MELSEC iQ-R MELSECWinCPU Module Programming Manual

Point

For details on these precautions, refer to the following.

📖 MELSEC iQ-R MELSECWinCPU Module User's Manual

📖 MELSEC iQ-R MELSECWinCPU Module Programming Manual

📖 CW Configurator Operating Manual

3 I/O MODULE MIGRATION

3.1 I/O Module Migration Model List

This section describes examples of migration to MELSEC iQ-R series I/O modules in accordance with the MELSEC-Q series I/O module specifications.

Consider the specifications of your MELSEC-Q series I/O module to choose a model that best suits your application.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Input module	QX10	RX10	(1) Number of input points: 16 (2) Rated input voltage: 100 to 120VAC (3) Rated input current: Approx. 8mA (100VAC, 60Hz)/approx. 7mA (100VAC, 50Hz) → 8.2mA (100VAC, 60Hz)/6.8mA (100VAC, 50Hz) (4) Response time: 20ms (5) Common terminal arrangement: 16 points/common (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)
	QX10-TS	RX10	(1) Number of input points: 16 (2) Rated input voltage: 100 to 120VAC (3) Rated input current: Approx. 8mA (100VAC, 60Hz)/approx. 7mA (100VAC, 50Hz) → 8.2mA (100VAC, 60Hz)/6.8mA (100VAC, 50Hz) (4) Response time: 20ms (5) Common terminal arrangement: 16 points/common (6) External interface: Two-piece spring clamp terminal block → 18-point screw terminal block (M3 screws)) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)
	QX28	RX28	(1) Number of input points: 8 (2) Rated input voltage: 100 to 240VAC (3) Rated input current: Approx. 17mA (200VAC, 60Hz)/approx. 14mA (200VAC, 50Hz)/approx. 8mA (100VAC, 60Hz)/approx. 7mA (100VAC, 50Hz) → 16.4mA (200VAC, 60Hz)/13.7mA (200VAC, 50Hz)/8.2mA (100VAC, 60Hz)/6.8mA (100VAC, 50Hz) (4) Response time: 20ms (5) Common terminal arrangement: 8 points/common (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)
	QX40	RX40C7	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA → 7mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 16 points/common, positive common type → 16 points/common, positive common/negative common shared type (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)
	QX40-S1	RX40C7	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 6mA → 7mA (4) Response time: 0.1/0.2/0.4/0.6/1ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 16 points/common, positive common type → 16 points/common, positive common/negative common shared type (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)
	QX40-TS	RX40C7	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA → 7mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 16 points/common, positive common type → 16 points/common, positive common/negative common shared type (6) External interface: Two-piece spring clamp terminal block → 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Input module	QX40H	RX40PC6H	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 6mA (4) Response time: 0/0.1/0.2/0.4/0.6/1ms → No setting/20/50μs, 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 8 points/common, positive common type (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: High-speed input 16 points/interrupt 16 points) → 16 (I/O assignment: Input 16 points)
	QX41	RX41C4	(1) Number of input points: 32 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common type → 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector (7) Number of occupied I/O points: 32 (I/O assignment: Input 32 points)
	QX41-S1	RX41C4	(1) Number of input points: 32 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 0.1/0.2/0.4/0.6/1ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common type → 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector (7) Number of occupied I/O points: 32 (I/O assignment: High-speed input 32 points) → 32 (I/O assignment: Input 32 points)
	QX41-S2	RX41C6HS	(1) Number of input points: 32 (2) Rated input voltage: 24VDC (3) Rated input current: 6mA (4) Response time: 1/5/10/20/70ms → No setting/10/20/50μs, 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common type → 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector (7) Number of occupied I/O points: 32 (I/O assignment: Input 32 points)
	QX42	RX42C4	(1) Number of input points: 64 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common type → 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector × 2 (7) Number of occupied I/O points: 64 (I/O assignment: Input 64 points)
	QX42-S1	RX42C4	(1) Number of input points: 64 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 0.1/0.2/0.4/0.6/1ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common type → 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector × 2 (7) Number of occupied I/O points: 64 (I/O assignment: High-speed input 64 points) → 64 (I/O assignment: Input 64 points)
	QX50	No applicable module	Connect the RQ extension base unit (RQ6□B) to use the Q series modules.
	QX70	RX70C4	(1) Number of input points: 16 (2) Rated input voltage: 5/12VDC (3) Rated input current: 1.2mA at 5VDC/3.3mA at 12VDC → 1.7mA at 5VDC/4.8mA at 12VDC (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 16 points/common, positive common/negative common shared type (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Input module	QX70H	RX61C6HS	(1) Number of input points: 16 → 32 (2) Rated input voltage: 5VDC (3) Rated input current: 6mA (4) Response time: 0/0.1/0.2/0.4/0.6/1ms → No setting/10//20/50μs, 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 8 points/common, positive common type → 32 points/common, positive common/negative common shared type (6) External interface: 18-point screw terminal block (M3 screws) → 40-pin connector (7) Number of occupied I/O points: 16 (I/O assignment: High-speed input 16 points/interrupt 16 points) → 32 (I/O assignment: Input 32 points)
	QX71	RX71C4	(1) Number of input points: 32 (2) Rated input voltage: 5/12VDC (3) Rated input current: 1.2mA at 5VDC/3.3mA at 12VDC → 1.7mA at 5VDC/4.8mA at 12VDC (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector (7) Number of occupied I/O points: 32 (I/O assignment: Input 32 points)
	QX72	RX72C4	(1) Number of input points: 64 (2) Rated input voltage: 5/12VDC (3) Rated input current: 1.2mA at 5VDC/3.3mA at 12VDC → 1.7mA at 5VDC/4.8mA at 12VDC (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector × 2 (7) Number of occupied I/O points: 64 (I/O assignment: Input 64 points)
	QX80	RX40C7	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA → 7mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 16 points/common, negative common type → 16 points/common, positive common/negative common shared type (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)
	QX80-TS	RX40C7	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA → 7mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 16 points/common, negative common type → 16 points/common, positive common/negative common shared type (6) External interface: Two-piece spring clamp terminal block → 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Input 16 points)
	QX80H	RX40NC6H	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 6mA (4) Response time: 0/0.1/0.2/0.4/0.6/1ms → No setting/20/50μs, 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 8 points/common, negative common type (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: High-speed input 16 points/interrupt 16 points) → 16 (I/O assignment: Input 16 points)
	QX81	RX41C4	(1) Number of input points: 32 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, negative common type → 32 points/common, positive common/negative common shared type (6) External interface: 37-pin D-sub connector → 40-pin connector (7) Number of occupied I/O points: 32 (I/O assignment: Input 32 points)
	QX81-S2	RX41C6HS	(1) Number of input points: 32 (2) Rated input voltage: 24VDC (3) Rated input current: 6mA (4) Response time: 1/5/10/20/70ms → No setting/10/20/50μs, 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, negative common type → 32 points/common, positive common/negative common shared type (6) External interface: 37-pin D-sub connector → 40-pin connector (7) Number of occupied I/O points: 32 (I/O assignment: Input 32 points)

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Input module	QX82	RX42C4	(1) Number of input points: 64 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, negative common type → 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector × 2 (7) Number of occupied I/O points: 64 (I/O assignment: Input 64 points)
	QX82-S1	RX42C4	(1) Number of input points: 64 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 0.1/0.2/0.4/0.6/1ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, negative common type → 32 points/common, positive common/negative common shared type (6) External interface: 40-pin connector × 2 (7) Number of occupied I/O points: 64 (I/O assignment: High-speed input 64 points) → 64 (I/O assignment: Input 64 points)
	QX90H	RX61C6HS	(1) Number of input points: 16 → 32 (2) Rated input voltage: 5VDC (3) Rated input current: 6mA (4) Response time: 0/0.1/0.2/0.4/0.6/1ms → No setting/10//20/50μs, 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 8 points/common, negative common type → 32 points/common, positive common/negative common shared type (6) External interface: 18-point screw terminal block (M3 screws) → 40-pin connector (7) Number of occupied I/O points: 16 (I/O assignment: High-speed input 16 points/interrupt 16 points) → 32 (I/O assignment: Input 32 points)
Output module	QY10	RY10R2	(1) Output type: Contact output (2) Number of output points: 16 (3) Rated switching voltage/current: 24VDC/240VAC, 2A/point, 8A/common (4) Response time: 12ms (5) Common terminal arrangement: 16 points/common (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Output 16 points)
	QY10-TS	RY10R2	(1) Output type: Contact output (2) Number of output points: 16 (3) Rated switching voltage/current: 24VDC/240VAC, 2A/point, 8A/common (4) Response time: 12ms (5) Common terminal arrangement: 16 points/common (6) External interface: Two-piece spring clamp terminal block → 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Output 16 points)
	QY18A	RY18R2A	(1) Output type: Contact output (2) Number of output points: 8 (3) Rated switching voltage/current: 24VDC/240VAC, 2A/point, 8A/module (4) Response time: 12ms (5) Common terminal arrangement: All points independent common (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Output 16 points)
	QY22	RY20S6	(1) Output type: Triac output (2) Number of output points: 16 (3) Rated load voltage: 100 to 240VAC (4) Maximum load current: 0.6A/point, 4.8A/common (5) Response time: 1ms and 0.5 cycles (6) Common terminal arrangement: 16 points/common (7) External interface: 18-point screw terminal block (M3 screws) (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) (9) Protection function: CR absorber

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Output module	QY40P	RY40NT5P	(1) Output type: Transistor output (2) Number of output points: 16 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.1A/point, 1.6A/common → 0.5A/point, 5A/common (5) Response time: 1ms (6) Common terminal arrangement: 16 points/common, sink type (7) External interface: 18-point screw terminal block (M3 screws) (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) (9) Protection function: Zener diode, overheat protection function, overload protection function
	QY40P-TS	RY40NT5P	(1) Output type: Transistor output (2) Number of output points: 16 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.1A/point, 1.6A/common → 0.5A/point, 5A/common (5) Response time: 1ms (6) Common terminal arrangement: 16 points/common, sink type (7) External interface: Two-piece spring clamp terminal block → 18-point screw terminal block (M3 screws) (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) (9) Protection function: Zener diode, overheat protection function, overload protection function
	QY41H	RY41NT2H	(1) Output type: Transistor output (2) Number of output points: 32 (3) Rated load voltage: 5 to 24VDC (4) Maximum load current: 0.2A/point, 2A/common (5) Response time: 2μs (6) Common terminal arrangement: 32 points/common, sink type (7) External interface: 40-pin connector (8) Number of occupied I/O points: 32 (I/O assignment: Output 32 points) (9) Protection function: Zener diode
	QY41P	RY41NT2P	(1) Output type: Transistor output (2) Number of output points: 32 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.1A/point, 2A/common → 0.2A/point, 2A/common (5) Response time: 1ms (6) Common terminal arrangement: 32 points/common, sink type (7) External interface: 40-pin connector (8) Number of occupied I/O points: 32 (I/O assignment: Output 32 points) (9) Protection function: Zener diode, overheat protection function, overload protection function
	QY42P	RY42NT2P	(1) Output type: Transistor output (2) Number of output points: 64 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.1A/point, 2A/common → 0.2A/point, 2A/common (5) Response time: 1ms (6) Common terminal arrangement: 32 points/common, sink type (7) External interface: 40-pin connector × 2 (8) Number of occupied I/O points: 64 (I/O assignment: Output 64 points) (9) Protection function: Zener diode, overheat protection function, overload protection function
	QY50	RY40NT5P	(1) Output type: Transistor output (2) Number of output points: 16 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.5A/point, 4A/common → 0.5A/point, 5A/common (5) Response time: 1ms (6) Common terminal arrangement: 16 points/common, sink type (7) External interface: 18-point screw terminal block (M3 screws) (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) (9) Protection function: Zener diode, fuse → Zener diode, overheat protection function, overload protection function
	QY68A	RY18R2A	(1) Output type: Transistor output → Contact output (2) Number of output points: 8 (3) Rated load voltage: 5 to 24VDC → 24VDC/240VAC (4) Maximum load current: 2A/point, 8A/module (5) Response time: 10ms → 12ms (6) Common terminal arrangement: All points independent common (7) External interface: 18-point screw terminal block (M3 screws) (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) (9) Protection function: Zener diode → None

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Output module	QY70	RY41NT2H	(1) Output type: Transistor output (2) Number of output points: 16 → 32 (3) Rated load voltage: 5 to 12VDC → 5/12/24VDC (4) Maximum load current: 16mA/point, 256mA/common → 0.2A/point, 2A/common (5) Response time: 0.5ms → 2μs (6) Common terminal arrangement: 16 points/common, sink type → 32 points/common, sink type (7) External interface: 18-point screw terminal block (M3 screws) → 40-pin connector (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) → 32 (I/O assignment: Output 32 points) (9) Protection function: Fuse → Zener diode
	QY71	RY41NT2H	(1) Output type: Transistor output (2) Number of output points: 32 (3) Rated load voltage: 5 to 12VDC → 5/12/24VDC (4) Maximum load current: 16mA/point, 512mA/common → 0.2A/point, 2A/common (5) Response time: 0.5ms → 2μs (6) Common terminal arrangement: 32 points/common, sink type (7) External interface: 40-pin connector (8) Number of occupied I/O points: 32 (I/O assignment: Output 32 points) (9) Protection function: Fuse → Zener diode
	QY80	RY40PT5P	(1) Output type: Transistor output (2) Number of output points: 16 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.5A/point, 4A/common → 0.5A/point, 5A/common (5) Response time: 1ms (6) Common terminal arrangement: 16 points/common, source type (7) External interface: 18-point screw terminal block (M3 screws) (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) (9) Protection function: Zener diode, fuse → Zener diode, overheat protection function, overload protection function
	QY80-TS	RY40PT5P	(1) Output type: Transistor output (2) Number of output points: 16 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.5A/point, 4A/common → 0.5A/point, 5A/common (5) Response time: 1ms (6) Common terminal arrangement: 16 points/common, source type (7) External interface: Two-piece spring clamp terminal block → 18-point screw terminal block (M3 screws) (8) Number of occupied I/O points: 16 (I/O assignment: Output 16 points) (9) Protection function: Zener diode, fuse → Zener diode, overheat protection function, overload protection function
	QY81P	RY41PT1P	(1) Output type: Transistor output (2) Number of output points: 32 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.1A/point, 2A/common (5) Response time: 1ms (6) Common terminal arrangement: 32 points/common, source type (7) External interface: 37-pin D-sub connector → 40-pin connector (8) Number of occupied I/O points: 32 (I/O assignment: Output 32 points) (9) Protection function: Zener diode, overheat protection function, overload protection function
	QY82P	RY42PT1P	(1) Output type: Transistor output (2) Number of output points: 64 (3) Rated load voltage: 12 to 24VDC (4) Maximum load current: 0.1A/point, 2A/common (5) Response time: 1ms (6) Common terminal arrangement: 32 points/common, source type (7) External interface: 40-pin connector × 2 (8) Number of occupied I/O points: 64 (I/O assignment: Output 64 points) (9) Protection function: Zener diode, overheat protection function, overload protection function

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
I/O combined module	QH42P	RH42C4NT2P	■Input specifications (1) Number of input points: 32 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common type → 32 points/common, positive common/negative common shared type ■Output specifications (6) Output type: Transistor output (7) Number of output points: 32 (8) Rated load voltage: 12 to 24VDC (9) Maximum load current: 0.1A/point, 2A/common → 0.2A/point, 2A/common (10)Response time: 1ms (11)Common terminal arrangement: 32 points/common, sink type (12)Protection function: Zener diode, overheat protection function, overload protection function ■Common specifications (13)External interface: 40-pin connector × 2 (14)Number of occupied I/O points: 32 (I/O assignment: I/O combined 32 points)
	QX41Y41P	RH42C4NT2P	■Input specifications (1) Number of input points: 32 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 32 points/common, positive common type → 32 points/common, positive common/negative common shared type ■Output specifications (6) Output type: Transistor output (7) Number of output points: 32 (8) Rated load voltage: 12 to 24VDC (9) Maximum load current: 0.1A/point, 2A/common → 0.2A/point, 2A/common (10)Response time: 1ms (11)Common terminal arrangement: 32 points/common, sink type (12)Protection function: Zener diode, overheat protection function, overload protection function ■Common specifications (13)External interface: 40-pin connector × 2 (14)Number of occupied I/O points: 64 (I/O assignment: I/O combined 64 points) → 32 (I/O assignment: I/O combined 32 points)
	QX48Y57	RX40C7 + RY40NT5P	■Input specifications (1) Number of input points: 8 → 16 (2) Rated input voltage: 24VDC (3) Rated input current: 4mA → 7mA (4) Response time: 1/5/10/20/70ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 8 points/common, positive common type → 16 points/common, positive common/negative common shared type ■Output specifications (6) Output type: Transistor output (7) Number of output points: 7 → 16 (8) Rated load voltage: 12 to 24VDC (9) Maximum load current: 0.5A/point, 2A/common → 0.5A/point, 5A/common (10)Response time: 1ms (11)Common terminal arrangement: 7 points/common, sink type → 16 points/common, sink type (12)Protection function: Zener diode, fuse → Zener diode, overheat protection function, overload protection function ■Common specifications (13)External interface: 18-point screw terminal block (M3 screws) → 18-point screw terminal block (M3 screws) × 2 (14)Number of occupied I/O points: 16 (I/O assignment: I/O combined 16 points) → 16 (I/O assignment: Input 16 points) +16 (I/O assignment: Output 16 points)
Interrupt module	QI60	RX40C7	(1) Number of input points: 16 (2) Rated input voltage: 24VDC (3) Rated input current: 6mA → 7mA (4) Response time: 0.1/0.2/0.4/0.6/1ms → 0.1/0.2/0.4/0.6/1/5/10/20/70ms (5) Common terminal arrangement: 16 points/common, positive common type → 16 points/common, positive common/negative common shared type (6) External interface: 18-point screw terminal block (M3 screws) (7) Number of occupied I/O points: 16 (I/O assignment: Interrupt 16 points) → 16 (I/O assignment: Input 16 points)
Blank cover module	QG60	RG60	None in particular

3.2 Comparison of I/O Module Specifications

Input module

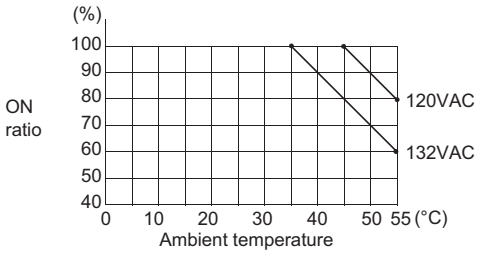
QX10 and RX10

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

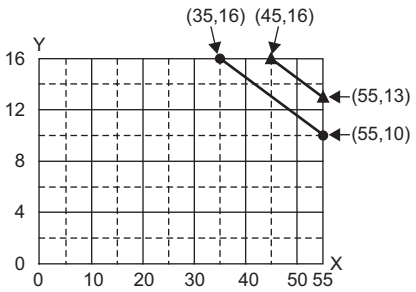
Item		Specifications		Compatibility	Precautions
		QX10	RX10		
Input type		AC input		○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage, frequency		100 to 120VAC (+10/-15%) 50/60Hz (±3Hz)		○	
Input voltage distortion		Within 5%		○	
Rated input current		Approx. 8mA (100VAC, 60Hz) Approx. 7mA (100VAC, 50Hz)	8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	○	
Input derating		Refer to the derating chart.*1		△	Use the module within the range shown in the derating chart.
Inrush current		200mA maximum, within 1ms		○	
ON voltage/ON current		80VAC or higher/5mA or higher (50Hz, 60Hz)		○	
OFF voltage/OFF current		30VAC or lower/1.7mA or lower (50Hz, 60Hz)		○	
Input impedance		Approx. 12kΩ (60Hz), approx. 15kΩ (50Hz)	12.2kΩ (60Hz), 14.6kΩ (50Hz)	○	
Response time	OFF to ON	15ms or less (100VAC 50Hz, 60Hz)		○	
	ON to OFF	20ms or less (100VAC 50Hz, 60Hz)		○	
Dielectric withstand voltage		1780VAC rms/3 cycles	1400VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP1X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		50mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
Weight		0.17kg	0.18kg	—	

*1 The following figures show derating charts.

QX10



RX10



▲: Input voltage 120VAC
●: Input voltage 132VAC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

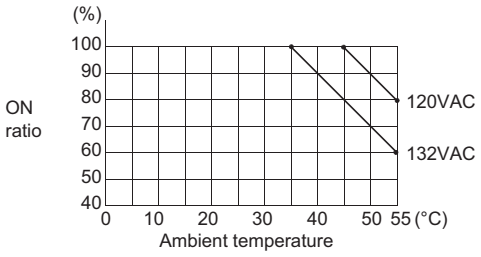
QX10-TS and RX10

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

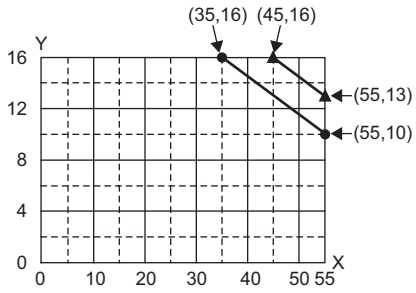
Item		Specifications		Compatibility	Precautions
		QX10-TS	RX10		
Input type		AC input		○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage, frequency		100 to 120VAC (+10/-15%) 50/60Hz (±3Hz)		○	
Input voltage distortion		Within 5%		○	
Rated input current		Approx. 8mA (100VAC, 60Hz) Approx. 7mA (100VAC, 50Hz)	8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	○	
Input derating		Refer to the derating chart.*1		△	Use the module within the range shown in the derating chart.
Inrush current		200mA maximum, within 1ms		○	
ON voltage/ON current		80VAC or higher/5mA or higher (50Hz, 60Hz)		○	
OFF voltage/OFF current		30VAC or lower/1.7mA or lower (50Hz, 60Hz)		○	
Input impedance		Approx. 12kΩ (60Hz), approx. 15kΩ (50Hz)	12.2kΩ (60Hz), 14.6kΩ (50Hz)	○	
Response time	OFF to ON	15ms or less (100VAC 50Hz, 60Hz)		○	
	ON to OFF	20ms or less (100VAC 50Hz, 60Hz)		○	
Dielectric withstand voltage		1780VAC rms/3 cycles	1400VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP1X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		Two-piece spring clamp terminal block	18-point terminal block (M3 × 6 screws)	×	When the existing wiring is used, use the Q series spring clamp terminal blocks in the existing system or the Q6TE-18SN.*2*3 For the RX10-TS, an input module with spring clamp terminal block, the existing solderless terminals cannot be used and rework is required.
Applicable wire size		0.3 to 2.0mm² core (22 to 15 AWG)	0.3 to 0.75mm² core (2.8mm OD maximum)		
Applicable solderless terminal		Refer to the list of reference products.*3	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		
Internal current consumption (5VDC)		50mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
Weight		0.17kg	0.18kg	—	

*1 The following figures show derating charts.

QX10-TS



RX10



▲: Input voltage 120VAC
●: Input voltage 132VAC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The Q6TE-18SN does not have a connection check indicator. Tools are required to connect cables.
The applicable wire size for the Q6TE-18SN is 0.3 to 1.5mm² core (22 to 16 AWG).

*3 The following tables list the applicable solderless terminals as reference products.

QX10-TS

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—
PHOENIX CONTACT GmbH & Co. KG	Bar solderless terminal	AI 0.34-8TQ	0.34mm²
		AI 0.5-8WH AI 0.5-10WH	0.5mm²
		AI 0.75-8GY AI 0.75-10GY	0.75mm²
		AI 1-8RD AI 1-10RD	1.0mm²
		AI 1.5-8BK AI 1.5-10BK	1.5mm²
		AI 2.5-8BU AI 2.5-10BU	2.0 to 2.5mm²
	Bar solderless terminal tool	CRIMPFOX ZA 3	—

Q6TE-18SN

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—

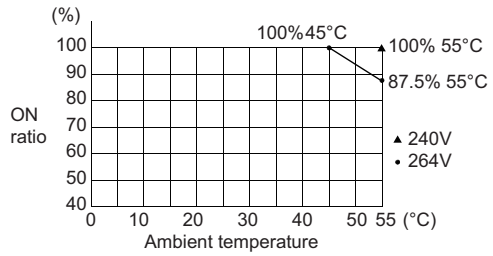
QX28 and RX28

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

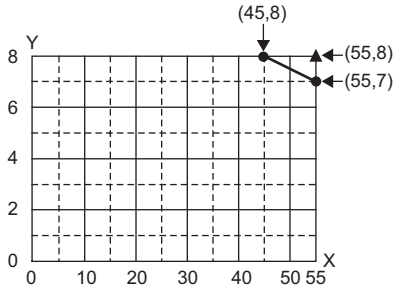
Item		Specifications		Compatibility	Precautions
		QX28	RX28		
Input type		AC input		○	
Number of input points		8 points		○	
Isolation method		Photocoupler		○	
Rated input voltage, frequency		100 to 240VAC (+10/-15%), 50/60Hz (±3Hz)		○	
Input voltage distortion		Within 5%		○	
Rated input current		Approx. 17mA (200VAC, 60Hz) Approx. 14mA (200VAC, 50Hz) Approx. 8mA (100VAC, 60Hz) Approx. 7mA (100VAC, 50Hz)	16.4mA (200VAC, 60Hz) 13.7mA (200VAC, 50Hz) 8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
Inrush current		950mA maximum within 1ms (at 264VAC)		○	
ON voltage/ON current		80VAC or higher/5mA or higher (50Hz, 60Hz)		○	
OFF voltage/OFF current		30VAC or lower/1.7mA or lower (50Hz, 60Hz)		○	
Input impedance		Approx. 12kΩ (60Hz), approx. 15kΩ (50Hz)	12.1kΩ (60Hz), 14.5kΩ (50Hz)	○	
Response time	OFF to ON	10ms or less (200VAC 50Hz, 60Hz)		○	
	ON to OFF	20ms or less (200VAC 50Hz, 60Hz)		○	
Dielectric withstand voltage		2830VAC rms/3 cycles	2300VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP1X		○	
Common terminal arrangement		8 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		50mA (TYP. all points ON)	90mA (TYP. all points ON)	—	
Weight		0.20kg	0.18kg	—	

*1 The following figures show derating charts.

QX28



RX28



▲: Input voltage 240VAC
●: Input voltage 264VAC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

QX40 and RX40C7

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX40	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	7mA TYP. (at 24VDC)	○	
Input derating		None		○	
ON voltage/ON current		19V or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*2
OFF voltage/OFF current		11V or lower/1.7mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after migration.*2
Input resistance		Approx. 5.6kΩ	3.3kΩ	△	The input resistance is decreased after migration.*2
Response time	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		50mA (TYP. all points ON)	120mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

*1 The following table shows the input response times.

QX40

1ms/5ms/10ms/20ms/70ms

RX40C7

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.35ms	0.4ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX40C7.

QX40-S1 and RX40C7

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX40-S1	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	7mA TYP. (at 24VDC)	○	
Input derating		None		○	
ON voltage/ON current		19V or higher/4mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*2
OFF voltage/OFF current		11V or lower/1.7mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after migration.*2
Input resistance		Approx. 3.9kΩ	3.3kΩ	△	The input resistance is decreased after migration.*2
Response time	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: High-speed input 16 points)	16 points (I/O assignment: Input 16 points)	○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75㎟ core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		60mA (TYP. all points ON)	120mA (TYP. all points ON)	—	
Weight		0.20kg	0.16kg	—	

*1 The following tables show the input response times.

QX40-S1

Set value		0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms
	MAX.	0.10ms	0.20ms	0.40ms	0.60ms	1.20ms
ON to OFF	TYP.	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms
	MAX.	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms

RX40C7

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.35ms	0.4ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX40C7.

QX40-TS and RX40C7

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX40-TS	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	7mA TYP. (at 24VDC)	○	
Input derating		None		○	
ON voltage/ON current		19V or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*4
OFF voltage/OFF current		11V or lower/1.7mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after migration.*4
Input resistance		Approx. 5.6kΩ	3.3kΩ	△	The input resistance is decreased after migration.*4
Response time	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		Two-piece spring clamp terminal block	18-point terminal block (M3 × 6 screws)	×	When the existing wiring is used, use the Q series spring clamp terminal blocks in the existing system or the Q6TE-18SN.*2*3 For the RX40C7-TS, an input module with spring clamp terminal block, the existing solderless terminals cannot be used and rework is required.
Applicable wire size		0.3 to 2.0mm² core (22 to 15 AWG)	0.3 to 0.75mm² core (2.8mm OD maximum)		
Applicable solderless terminal		Refer to the list of reference products.*3	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		
Internal current consumption (5VDC)		50mA (TYP. all points ON)	120mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

*1 The following table shows the input response times.

QX40-TS

1ms/5ms/10ms/20ms/70ms

RX40C7

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.35ms	0.4ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 The Q6TE-18SN does not have a connection check indicator. Tools are required to connect cables. The applicable wire size for the Q6TE-18SN is 0.3 to 1.5mm² core (22 to 16 AWG).

*3 The following tables list the applicable solderless terminals as reference products.

QX40-TS

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—
PHOENIX CONTACT GmbH & Co. KG	Bar solderless terminal	AI 0.34-8TQ	0.34mm²
		AI 0.5-8WH AI 0.5-10WH	0.5mm²
		AI 0.75-8GY AI 0.75-10GY	0.75mm²
		AI 1-8RD AI 1-10RD	1.0mm²
		AI 1.5-8BK AI 1.5-10BK	1.5mm²
		AI 2.5-8BU AI 2.5-10BU	2.0 to 2.5mm²
	Bar solderless terminal tool	CRIMPFOX ZA 3	—

Q6TE-18SN

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—

*4 Check the specifications of sensors and switches connected to the RX40C7.

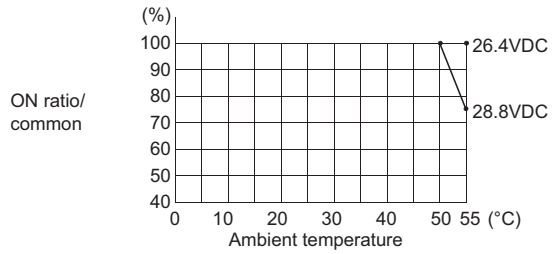
QX40H and RX40PC6H

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

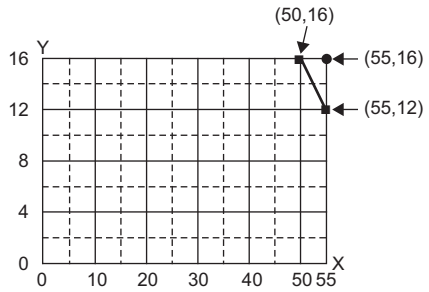
Item		Specifications		Compatibility	Precautions
		QX40H	RX40PC6H		
Input type		DC input (positive common type)		○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	6mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		13V or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*3
OFF voltage/OFF current		8V or lower/1.6mA or lower	8V or lower/1.7mA or lower	△	The OFF current is changed after migration.*3
Input resistance		Approx. 3.9kΩ	3.9kΩ	○	
Response time and function setting	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)		○	
Number of occupied I/O points		16 points (I/O assignment: High-speed input 16 points/interrupt 16 points)	16 points (I/O assignment: Input 16 points)	○	Interrupt settings can be configured in the parameter setting of GX Works3.
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		80mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

*1 The following figures show derating charts.

QX40H



RX40PC6H



●: Input voltage 26.4VDC
■: Input voltage 28.8VDC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following tables show the input response times.

QX40H

SW1 (noise filter)		OFF	ON				
Set value		Invalid	0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
ON to OFF	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
SW2		Off: Interrupt/On: High-speed input					

RX40PC6H

Timing	Set value											
	No Setting	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	5μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	10μs	25μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX40PC6H.

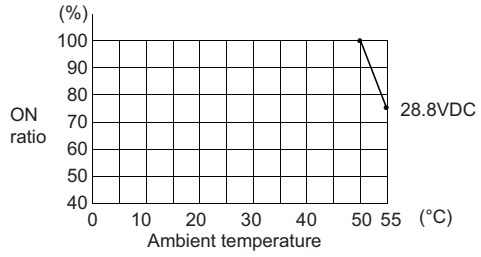
QX41 and RX41C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

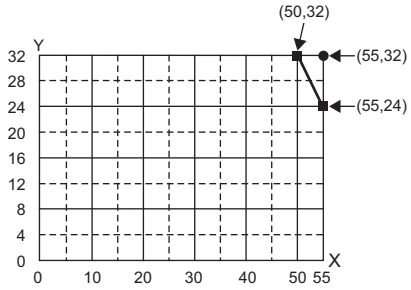
Item		Specifications		Compatibility	Precautions
		QX41	RX41C4		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		32 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher	19V or higher/3mA or higher	○	
OFF voltage/OFF current		11V or lower/1.7mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: B01, B02)		○	
Number of occupied I/O points		32 points (I/O assignment: Input 32 points)		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		75mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.15kg	0.11kg	—	

*1 The following figures show derating charts.

QX41



RX41C4



●: Input voltage 26.4VDC
■: Input voltage 28.8VDC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QX41

1ms/5ms/10ms/20ms/70ms

RX41C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX41C4.

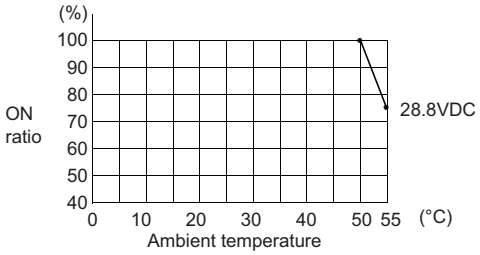
QX41-S1 and RX41C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

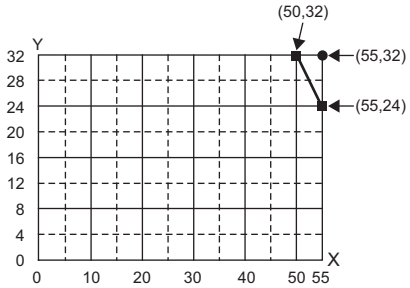
Item		Specifications		Compatibility	Precautions
		QX41-S1	RX41C4		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		32 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher	19V or higher/3mA or higher	○	
OFF voltage/OFF current		9.5V or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: B01, B02)		○	
Number of occupied I/O points		32 points (I/O assignment: High-speed input 32 points)	32 points (I/O assignment: Input 32 points)	○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		75mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.15kg	0.11kg	—	

*1 The following figures show derating charts.

QX41-S1



RX41C4



●: Input voltage 26.4VDC
■: Input voltage 28.8VDC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following tables show the input response times.

QX41-S1

Set value		0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms
	MAX.	0.12ms	0.20ms	0.40ms	0.60ms	1.20ms
ON to OFF	TYP.	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms
	MAX.	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms

RX41C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX41C4.

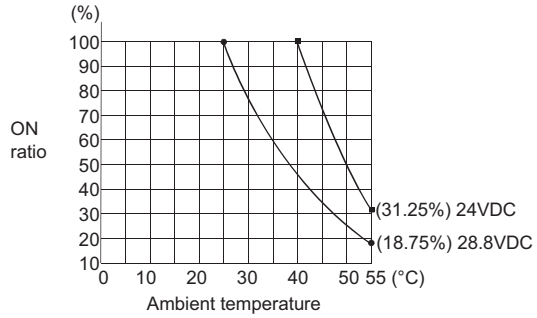
QX41-S2 and RX41C6HS

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

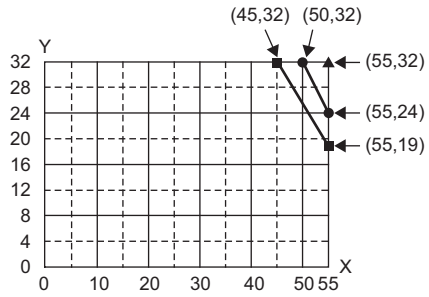
Item		Specifications		Compatibility	Precautions
		QX41-S2	RX41C6HS		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		32 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	6mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		△	Use the module within the range shown in the derating chart.
ON voltage/ON current		15V or higher/3mA or higher	19V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*3
OFF voltage/OFF current		5V or lower/1.7mA or lower	6V or lower/1.7mA or lower	△	The OFF voltage is changed after migration.*3
Input resistance		Approx. 3.6kΩ	4kΩ	△	The input resistance is larger.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: B01, B02)		○	
Number of occupied I/O points		32 points (I/O assignment: Input 32 points)		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		75mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.15kg	0.12kg	—	

*1 The following figures show derating charts.

QX41-S2



RX41C6HS



▲: Input voltage 24VDC
●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QX41-S2

1ms/5ms/10ms/20ms/70ms

RX41C6HS

Timing	Set value												
	No Setting	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX41C6HS.

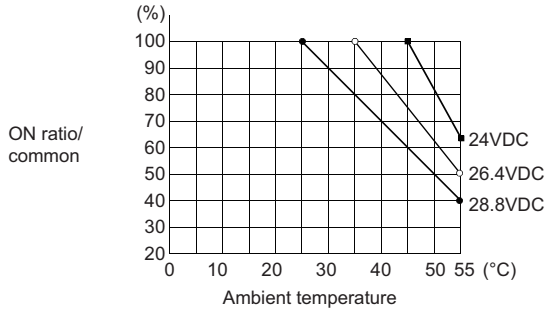
QX42 and RX42C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

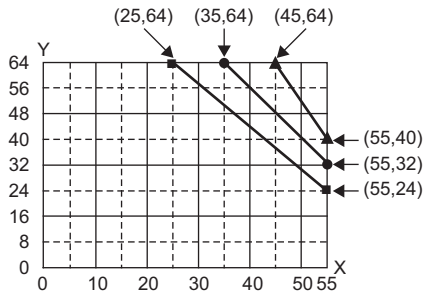
Item		Specifications		Compatibility	Precautions
		QX42	RX42C4		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		64 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		△	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher	19V or higher/3mA or higher	○	
OFF voltage/OFF current		11V or lower/1.7mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)		○	
Number of occupied I/O points		64 points (I/O assignment: Input 64 points)		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		90mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
Weight		0.18kg	0.13kg	—	

*1 The following figures show derating charts.

QX42



RX42C4



▲: Input voltage 24VDC
●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QX42

1ms/5ms/10ms/20ms/70ms

RX42C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX42C4.

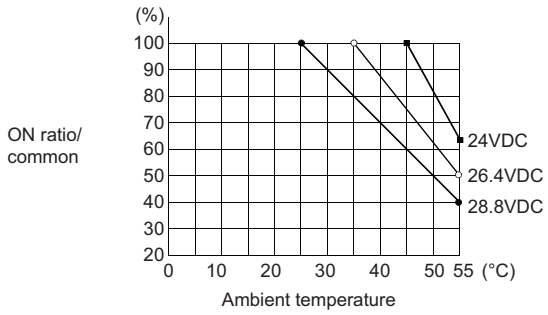
QX42-S1 and RX42C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

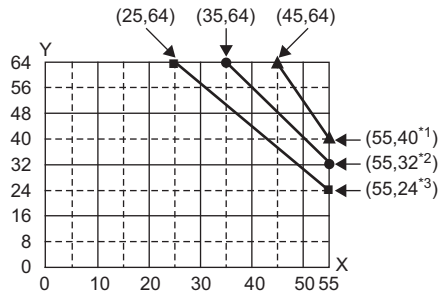
Item		Specifications		Compatibility	Precautions
		QX42-S1	RX42C4		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		64 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		△	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher	19V or higher/3mA or higher	○	
OFF voltage/OFF current		9.5V or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)		○	
Number of occupied I/O points		64 points (I/O assignment: High-speed input 64 points)	64 points (I/O assignment: Input 64 points)	○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		90mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
Weight		0.18kg	0.13kg	—	

*1 The following figures show derating charts.

QX42-S1



RX42C4



▲: Input voltage 24VDC
●: Input voltage 26.4VDC
■: Input voltage 28.8VDC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following tables show the input response times.

QX42-S1

Set value		0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms
	MAX.	0.12ms	0.20ms	0.40ms	0.60ms	1.20ms
ON to OFF	TYP.	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms
	MAX.	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms

RX42C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX42C4.

QX70 and RX70C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX70	RX70C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+20/-15%, ripple ratio within 5%) 12VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 1.2mA (5VDC) Approx. 3.3mA (12VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Input derating		None		○	
ON voltage/ON current		3.5V or higher/1mA or higher		○	
OFF voltage/OFF current		1V or lower/0.1mA or lower		○	
Input resistance		Approx. 3.3kΩ	2.3kΩ	△	The input resistance is decreased after migration.*2
Response time and function setting	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
Weight		0.14kg	0.16kg	—	

*1 The following table shows the input response times.

QX70

1ms/5ms/10ms/20ms/70ms

RX70C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.2ms	0.3ms	0.4ms	0.5ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.41ms	0.5ms	0.6ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX70C4.

QX70H and RX61C6HS

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX70H	RX61C6HS		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points	32 points	○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	6mA TYP. (at 5VDC)	○	
Input derating		None		○	
ON voltage/ON current		3.5V or higher/3mA or higher	3.5V or higher/3mA or higher	○	
OFF voltage/OFF current		1V or lower/1mA or lower	1V or lower/1mA or lower	○	
Input resistance		Approx. 470Ω	600Ω	△	The input resistance is larger.*2
Response time and function setting	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	32 points/common (common terminal: B01, B02)	△	The number of commons per module has decreased.
Number of occupied I/O points		16 points (I/O assignment: High-speed input 16 points/interrupt 16 points)	32 points (I/O assignment: Input 32 points)	△	Interrupt settings can be configured in the parameter setting of GX Works3. The number of occupied I/O points is increased after migration.
External interface		18-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after migration.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)	0.088 to 0.3mm²	×	The applicable wire size is smaller after migration.
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)	—	—	
Internal current consumption (5VDC)		80mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.14kg	0.12kg	—	

*1 The following tables show the input response times.

QX70H

SW1 (noise filter)		OFF	ON				
Set value		Invalid	0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
ON to OFF	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
SW2		Off: Interrupt/On: High-speed input					

RX61C6HS

Timing	Set value												
	No Setting	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX61C6HS.

QX71 and RX71C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX71	RX71C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		32 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+20/-15%, ripple ratio within 5%) 12VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 1.2mA (5VDC) Approx. 3.3mA (12VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Input derating		None		○	
ON voltage/ON current		3.5V or higher/1mA or higher		○	
OFF voltage/OFF current		1V or lower/0.1mA or lower		○	
Input resistance		Approx. 3.3kΩ	2.3kΩ	△	The input resistance is decreased after migration.*2
Response time and function setting	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: B01, B02)		○	
Number of occupied I/O points		32 points (I/O assignment: Input 32 points)		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		70mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
Weight		0.12kg	0.12kg	—	

*1 The following table shows the input response times.

QX71

1ms/5ms/10ms/20ms/70ms

RX71C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.2ms	0.3ms	0.5ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.21ms	0.3ms	0.5ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX71C4.

QX72 and RX72C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX72	RX72C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		64 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+20/-15%, ripple ratio within 5%) 12VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 1.2mA (5VDC) Approx. 3.3mA (12VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Input derating		None		○	
ON voltage/ON current		3.5V or higher/1mA or higher		○	
OFF voltage/OFF current		1V or lower/0.1mA or lower		○	
Input resistance		Approx. 3.3kΩ	2.3kΩ	△	The input resistance is decreased after migration.*2
Response time and function setting	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)		○	
Number of occupied I/O points		64 points (I/O assignment: Input 64 points)		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		85mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.13kg	0.14kg	—	

*1 The following table shows the input response times.

QX72

1ms/5ms/10ms/20ms/70ms

RX72C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.2ms	0.3ms	0.5ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.21ms	0.3ms	0.5ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX72C4.

QX80 and RX40C7

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX80	RX40C7		
Input type		DC input (negative common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	7mA TYP. (at 24VDC)	○	
Input derating		None		○	
ON voltage/ON current		19V or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.
OFF voltage/OFF current		11V or lower/1.7mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after migration.*2
Input resistance		Approx. 5.6kΩ	3.3kΩ	△	The input resistance is decreased after migration.*2
Response time	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB18)	16 points/common (common terminal: TB17)	△	The common terminal numbers are different.
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The terminal blocks in the existing system can be used. However, change of the wiring is required, since the common terminal numbers are different.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		50mA (TYP. all points ON)	120mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

*1 The following table shows the input response times.

QX80

1ms/5ms/10ms/20ms/70ms

RX40C7

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.35ms	0.4ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX40C7.

QX80-TS and RX40C7

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX80-TS	RX40C7		
Input type		DC input (negative common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	7mA TYP. (at 24VDC)	○	
Input derating		None		○	
ON voltage/ON current		19V or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.
OFF voltage/OFF current		11V or lower/1.7mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after migration.*4
Input resistance		Approx. 5.6kΩ	3.3kΩ	△	The input resistance is decreased after migration.*4
Response time	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB18)	16 points/common (common terminal: TB17)	△	The common terminal numbers are different.
Number of occupied I/O points		16 points (I/O assignment: Input 16 points)		○	
External interface		Two-piece spring clamp terminal block	18-point terminal block (M3 × 6 screws)	×	When the existing wiring is used, use the Q series spring clamp terminal blocks in the existing system or the Q6TE-18SN. Since the common terminal numbers are different, wiring change is required.*2*3 For the RX40C7-TS, an input module with spring clamp terminal block, the existing solderless terminals cannot be used and rework is required.
Applicable wire size		0.3 to 2.0mm² core (22 to 15 AWG)	0.3 to 0.75mm² core (2.8mm OD maximum)		
Applicable solderless terminal		Refer to the list of reference products.*3	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		
Internal current consumption (5VDC)		50mA (TYP. all points ON)	120mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

*1 The following table shows the input response times.

QX80-TS

1ms/5ms/10ms/20ms/70ms

RX40C7

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.35ms	0.4ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 The Q6TE-18SN does not have a connection check indicator. Tools are required to connect cables.
The applicable wire size for the Q6TE-18SN is 0.3 to 1.5mm² core (22 to 16 AWG).

*3 The following tables list the applicable solderless terminals as reference products.

QX80-TS

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—
PHOENIX CONTACT GmbH & Co. KG	Bar solderless terminal	AI 0.34-8TQ	0.34mm²
		AI 0.5-8WH AI 0.5-10WH	0.5mm²
		AI 0.75-8GY AI 0.75-10GY	0.75mm²
		AI 1-8RD AI 1-10RD	1.0mm²
		AI 1.5-8BK AI 1.5-10BK	1.5mm²
		AI 2.5-8BU AI 2.5-10BU	2.0 to 2.5mm²
	Bar solderless terminal tool	CRIMPFOX ZA 3	—

Q6TE-18SN

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—

*4 Check the specifications of sensors and switches connected to the RX40C7.

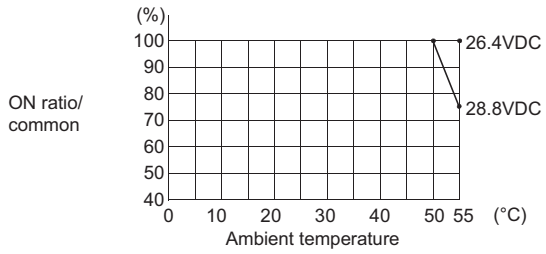
QX80H and RX40NC6H

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

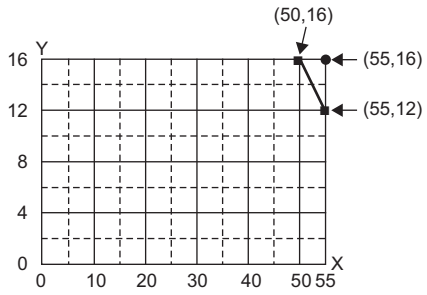
Item		Specifications		Compatibility	Precautions
		QX80H	RX40NC6H		
Input type		DC input (negative common type)		○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	6mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		13V or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*3
OFF voltage/OFF current		8V or lower/1.6mA or lower	8V or lower/1.7mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 3.9kΩ	3.9kΩ	○	
Response time and function setting	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)		○	
Number of occupied I/O points		16 points (I/O assignment: High-speed input 16 points/interrupt 16 points)	16 points (I/O assignment: Input 16 points)	○	Interrupt settings can be configured in the parameter setting of GX Works3.
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		80mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

*1 The following figures show derating charts.

QX80H



RX40NC6H



●: Input voltage 26.4VDC
■: Input voltage 28.8VDC
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following tables show the input response times.

QX80H

SW1 (noise filter)		OFF	ON				
Set value		**Invalid**	**0.1**	**0.2**	**0.4**	**0.6**	**1**
OFF to ON	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
ON to OFF	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
SW2		Off: Interrupt/On: High-speed input					

RX40NC6H

Timing	Set value											
	No Setting	**20μs**	**50μs**	**0.1ms**	**0.2ms**	**0.4ms**	**0.6ms**	**1ms**	**5ms**	**10ms**	**20ms**	**70ms**
OFF to ON (MAX.)	5μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	10μs	25μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX40NC6H.

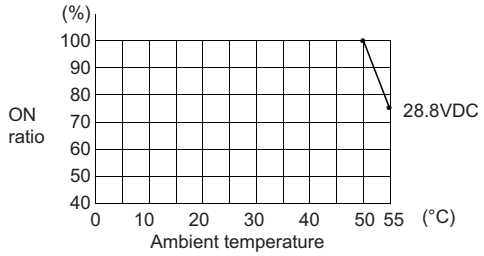
QX81 and RX41C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

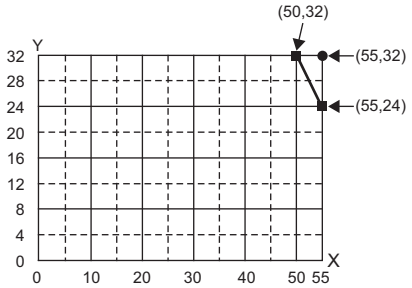
Item		Specifications		Compatibility	Precautions
		QX81	RX41C4		
Input type		DC input (negative common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		32 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher	19V or higher/3mA or higher	○	
OFF voltage/OFF current		11V or lower/1.7mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 17, 18, 36)	32 points/common (common terminal: B01, B02)	△	The common terminal numbers are different.
Number of occupied I/O points		32 points (I/O assignment: Input 32 points)		○	
External interface		37-pin D-sub connector (A6CON1E/2E/3E)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after migration. By using the upgrade tool conversion adapter (ERNT-ASLCXY81), the existing external wiring and connectors in the existing system can be used.*4
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		75mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.16kg	0.11kg	—	

*1 The following figures show derating charts.

QX81



RX41C4



▲: Input voltage 24VDC
●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QX81

1ms/5ms/10ms/20ms/70ms

RX41C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX41C4.

*4 For an upgrade tool, please consult your local Mitsubishi Electric representative.

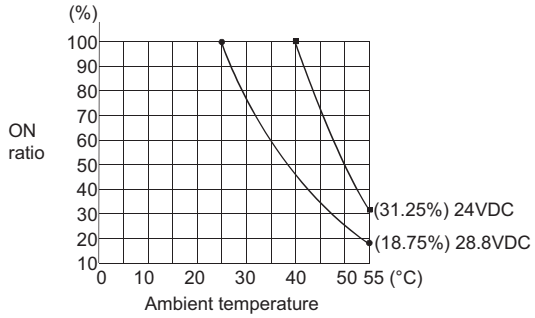
QX81-S2 and RX41C6HS

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

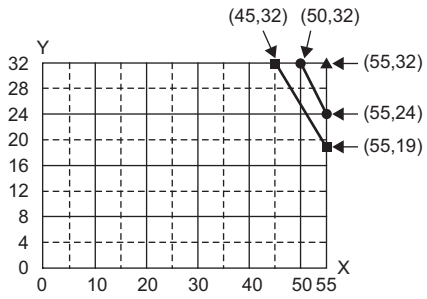
Item		Specifications		Compatibility	Precautions
		QX81-S2	RX41C6HS		
Input type		DC input (negative common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		32 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	6mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		15V or higher/3mA or higher	19V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*3
OFF voltage/OFF current		5V or lower/1.7mA or lower	6V or lower/1.7mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 3.6kΩ	4kΩ	△	The input resistance is larger.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 17, 18, 36)	32 points/common (common terminal: B01, B02)	△	The common terminal numbers are different.
Number of occupied I/O points		32 points (I/O assignment: Input 32 points)		○	
External interface		37-pin D-sub connector (A6CON1E/2E/3E)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after migration. By using the upgrade tool conversion adapter (ERNT-ASLCXY81), the existing external wiring and connectors in the existing system can be used.*4
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		75mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.16kg	0.12kg	—	

*1 The following figures show derating charts.

QX81-S2



RX41C6HS



▲: Input voltage 24VDC
●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QX81-S2

1ms/5ms/10ms/20ms/70ms

RX41C6HS

Timing	Set value												
	No Setting	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX41C6HS.

*4 For an upgrade tool, please consult your local Mitsubishi Electric representative.

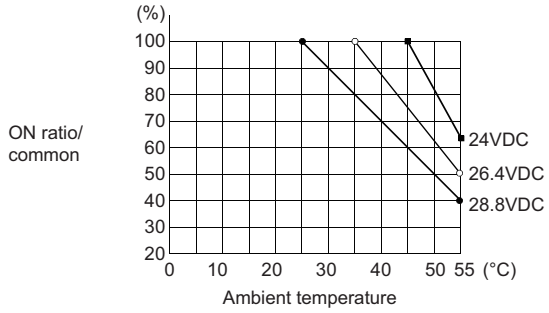
QX82 and RX42C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

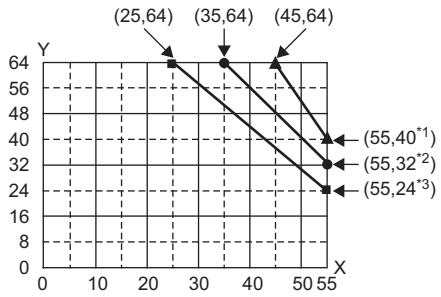
Item		Specifications		Compatibility	Precautions
		QX82	RX42C4		
Input type		DC input (negative common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		64 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		△	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher	19V or higher/3mA or higher	○	
OFF voltage/OFF current		11V or lower/1.7mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)		○	
Number of occupied I/O points		64 points (I/O assignment: Input 64 points)		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		90mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
Weight		0.18kg	0.13kg	—	

*1 The following figures show derating charts.

QX82



RX42C4



▲: Input voltage 24VDC
●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QX82

1ms/5ms/10ms/20ms/70ms

RX42C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX42C4.

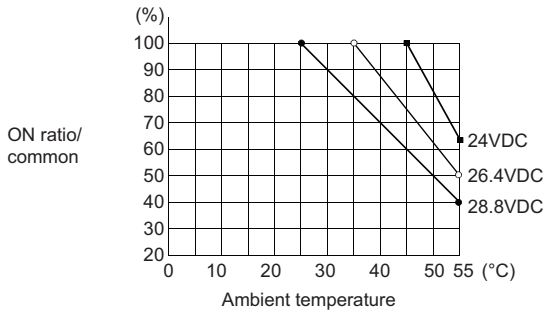
QX82-S1 and RX42C4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

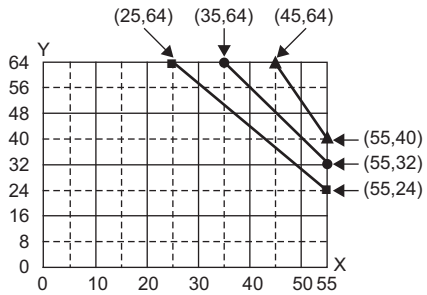
Item		Specifications		Compatibility	Precautions
		QX82-S1	RX42C4		
Input type		DC input (negative common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		64 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		△	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher	19V or higher/3mA or higher	○	
OFF voltage/OFF current		9.5V or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)		○	
Number of occupied I/O points		64 points (I/O assignment: High-speed input 64 points)	64 points (I/O assignment: Input 64 points)	○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		90mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
Weight		0.18kg	0.13kg	—	

*1 The following figures show derating charts.

QX82-S1



RX42C4



▲: Input voltage 24VDC
●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following tables show the input response times.

QX82-S1

Set value		0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms
	MAX.	0.12ms	0.20ms	0.40ms	0.60ms	1.20ms
ON to OFF	TYP.	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms
	MAX.	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms

RX42C4

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RX42C4.

QX90H and RX61C6HS

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX90H	RX61C6HS		
Input type		DC input (negative common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points	32 points	○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	6mA TYP. (at 5VDC)	○	
Input derating		None		○	
ON voltage/ON current		3.5V or higher/3mA or higher	3.5V or higher/3mA or higher	○	
OFF voltage/OFF current		1V or lower/1mA or lower	1V or lower/1mA or lower	○	
Input resistance		Approx. 470Ω	600Ω	△	The input resistance is larger.*2
Response time and function setting	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	32 points/common (common terminal: B01, B02)	△	The number of commons per module has decreased.
Number of occupied I/O points		16 points (I/O assignment: High-speed input/interrupt 16 points)	32 points (I/O assignment: Input 32 points)	△	Interrupt settings can be configured in the parameter setting of GX Works3. The number of occupied I/O points is increased after migration.
External interface		18-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after migration.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)	0.088 to 0.3mm²	×	The applicable wire size is larger after migration.
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)	—	×	
Internal current consumption (5VDC)		80mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
Weight		0.14kg	0.12kg	—	

*1 The following tables show the input response times.

QX90H

SW1 (noise filter)		OFF	ON				
Set value		Invalid	0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
ON to OFF	TYP.	0ms	0.04ms	0.10ms	0.25ms	0.50ms	0.95ms
	MAX.	—	0.05ms	0.15ms	0.30ms	0.60ms	1.00ms
SW2		Off: Interrupt/On: High-speed input					

RX61C6HS

Timing	Set value												
	No Setting	**10μs**	**20μs**	**50μs**	**0.1ms**	**0.2ms**	**0.4ms**	**0.6ms**	**1ms**	**5ms**	**10ms**	**20ms**	**70ms**
OFF to ON (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	1μs	10μs	20μs	50μs	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX61C6HS.

Output module

QY10 and RY10R2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY10	RY10R2		
Output type		Contact output		○	
Number of output points		16 points		○	
Isolation method		Relay		○	
Rated switching voltage, current		24VDC 2A (resistive load)/point, 8A/common 2A at 240VAC (COSθ = 1)/point, 8A/common		○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		264VAC, 125VDC		○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		○	
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		None		○	
Fuse		None		○	
Dielectric withstand voltage		2830VAC rms/3 cycles	2300VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP1X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		430mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
Weight		0.22kg	0.22kg	—	

*1 The following table shows the life data.

QY10, RY10R2

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 100 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 100 thousand times or more 0.4A at 200VAC, 0.3A at 240VAC (COSϕ = 0.7) 300 thousand times or more
	1A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 100 thousand times or more 0.3A at 200VAC, 0.15A at 240VAC (COSϕ = 0.35) 300 thousand times or more
	1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 100 thousand times or more 0.3A at 24VDC, 0.03A at 100VDC (L/R = 7ms) 300 thousand times or more

QY10-TS and RY10R2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY10-TS	RY10R2		
Output type		Contact output		○	
Number of output points		16 points		○	
Isolation method		Relay		○	
Rated switching voltage, current		24VDC 2A (resistive load)/point, 8A/common 2A at 240VAC (COSθ = 1)/point, 8A/common		○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		264VAC, 125VDC		○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		○	
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		None		○	
Fuse		None		○	
Dielectric withstand voltage		2830VAC rms/3 cycles	2300VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP1X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		Two-piece spring clamp terminal block	18-point terminal block (M3 × 6 screws)	×	When the existing wiring is used, use the Q series spring clamp terminal blocks in the existing system or the Q6TE-18SN.*2*3 For the RY10R2-TS, an output module with spring clamp terminal block, the existing solderless terminals cannot be used and rework is required.
Applicable wire size		0.3 to 2.0mm² core (22 to 15 AWG)	0.3 to 0.75mm² core (2.8mm OD maximum)		
Applicable solderless terminal		Refer to the list of reference products.*3	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		
Internal current consumption (5VDC)		430mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
Weight		0.22kg	0.22kg	—	

*1 The following table shows the life data.

QY10-TS, RY10R2

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 100 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 100 thousand times or more 0.4A at 200VAC, 0.3A at 240VAC (COSϕ = 0.7) 300 thousand times or more
	1A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 100 thousand times or more 0.3A at 200VAC, 0.15A at 240VAC (COSϕ = 0.35) 300 thousand times or more
	1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 100 thousand times or more 0.3A at 24VDC, 0.03A at 100VDC (L/R = 7ms) 300 thousand times or more

*2 The Q6TE-18SN does not have a connection check indicator. Tools are required to connect cables.
The applicable wire size for the Q6TE-18SN is 0.3 to 1.5mm² core (22 to 16 AWG).

*3 The following tables list the applicable solderless terminals as reference products.

QY10-TS

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—
PHOENIX CONTACT GmbH & Co. KG	Bar solderless terminal	AI 0.34-8TQ	0.34mm²
		AI 0.5-8WH AI 0.5-10WH	0.5mm²
		AI 0.75-8GY AI 0.75-10GY	0.75mm²
		AI 1-8RD AI 1-10RD	1.0mm²
		AI 1.5-8BK AI 1.5-10BK	1.5mm²
		AI 2.5-8BU AI 2.5-10BU	2.0 to 2.5mm²
	Bar solderless terminal tool	CRIMPFOX ZA 3	—

Q6TE-18SN

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—

QY18A and RY18R2A

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY18A	RY18R2A		
Output type		Contact output		○	
Number of output points		8 points		○	
Isolation method		Relay		○	
Rated switching voltage, current		24VDC 2A (resistive load)/point, 8A/module 2A at 240VAC (COSθ = 1)/point, 8A/module		○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		264VAC, 125VDC		○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		○	
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		None		○	
Fuse		None		○	
Dielectric withstand voltage		2830VAC rms/3 cycles	2300VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP1X		○	
Common terminal arrangement		No common (all points independent)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		240mA (TYP. all points ON)	260mA (TYP. all points ON)	—	
Weight		0.22kg	0.19kg	—	

*1 The following table shows the life data.

QY18A, RY18R2A

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 100 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 100 thousand times or more 0.4A at 200VAC, 0.3A at 240VAC (COSϕ = 0.7) 300 thousand times or more
	1A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 100 thousand times or more 0.3A at 200VAC, 0.15A at 240VAC (COSϕ = 0.35) 300 thousand times or more
	1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 100 thousand times or more 0.3A at 24VDC, 0.03A at 100VDC (L/R = 7ms) 300 thousand times or more

QY22 and RY20S6

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY22	RY20S6		
Output type		Triac output		○	
Number of output points		16 points		○	
Isolation method		Photocoupler		○	
Rated load voltage, frequency		100 to 240VAC 50/60Hz±5%	100 to 240VAC (+10%/-15%), 50/60Hz (±3Hz)	○	
Maximum load current		0.6A/point, 4.8A/common		○	
Load voltage distortion rate		Within 5%		○	
Maximum load voltage		264VAC		○	
Minimum load voltage/current		100mA at 24VAC, 25mA at 100VAC, 25mA at 240VAC		○	
Maximum inrush current		20A/cycle or lower		○	
Leakage current at OFF		3mA or lower (at 240V, 60Hz), 1.5mA or lower (at 120V, 60Hz)		○	
Maximum voltage drop at ON		1.5V or lower		○	
Response time	OFF to ON	Total of 1ms and 0.5 cycles or less		○	
	ON to OFF	Total of 1ms and 0.5 cycles or less (rated load, resistive load)		○	
Surge suppressor		CR absorber		○	
Fuse		None		○	
Dielectric withstand voltage		2830VAC rms/3 cycles	2300VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP1X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		250mA (TYP. all points ON)	280mA (TYP. all points ON)	—	
Weight		0.40kg	0.24kg	—	

QY40P and RY40NT5P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY40P	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, 1.6A/common	0.5A/point, Pilot Duty, 5A/common	○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	10mA maximum (at 24VDC, all points ON)	4mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB18)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Protection function		Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		65mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

QY40P-TS and RY40NT5P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY40P-TS	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, 1.6A/common	0.5A/point, Pilot Duty, 5A/common	○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	10mA maximum (at 24VDC, all points ON)	4mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB18)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Protection function		Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)		○	
External interface		Two-piece spring clamp terminal block	18-point terminal block (M3 × 6 screws)	×	When the existing wiring is used, use the Q series spring clamp terminal blocks in the existing system or the Q6TE-18SN.*1*2 For the RY40NT5P-TS, an output module with spring clamp terminal block, the existing solderless terminals cannot be used and rework is required.
Applicable wire size		0.3 to 2.0mm² core (22 to 15 AWG)	0.3 to 0.75mm² core (2.8mm OD maximum)		
Applicable solderless terminal		Refer to the list of reference products.*2	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		
Internal current consumption (5VDC)		65mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
Weight		0.16kg	0.16kg	—	

*1 The Q6TE-18SN does not have a connection check indicator. Tools are required to connect cables.
The applicable wire size for the Q6TE-18SN is 0.3 to 1.5mm² core (22 to 16 AWG).

*2 The following tables list the applicable solderless terminals as reference products.

QY40P-TS

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—
PHOENIX CONTACT GmbH & Co. KG	Bar solderless terminal	AI 0.34-8TQ	0.34mm²
		AI 0.5-8WH AI 0.5-10WH	0.5mm²
		AI 0.75-8GY AI 0.75-10GY	0.75mm²
		AI 1-8RD AI 1-10RD	1.0mm²
		AI 1.5-8BK AI 1.5-10BK	1.5mm²
		AI 2.5-8BU AI 2.5-10BU	2.0 to 2.5mm²
	Bar solderless terminal tool	CRIMPFOX ZA 3	—

Q6TE-18SN

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—

QY41H and RY41NT2H

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY41H	RY41NT2H		
Output type		Transistor output (sink type)		○	
Number of output points		32 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		5/12/24VDC (+20%/-15%)		○	
Maximum load current		0.2A/point, 2A/common		○	
Maximum inrush current		0.7A, 10ms or less		○	
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	0.2A at 0.1VDC (TYP.), 0.2A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	2μs or less	1μs or less	○	
	ON to OFF	2μs or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: A01, A02)		○	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Protection function		None		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		370mA (TYP. all points ON)	420mA (TYP. all points ON)	—	
Weight		0.10kg	0.12kg	—	

QY41P and RY41NT2P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY41P	RY41NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		32 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, 2A/common	0.2A/point, Pilot Duty, 2A/common	○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	20mA (at 24VDC)	16mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: A01, A02)		○	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Protection function		Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		105mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
Weight		0.15kg	0.11kg	—	

QY42P and RY42NT2P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY42P	RY42NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		64 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, 2A/common	0.2A/point, Pilot Duty, 2A/common	○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	20mA (at 24VDC)/common	16mA (at 24VDC)/common	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 1A01, 1A02, 2A01, 2A02)		○	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)		○	
Protection function		Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		150mA (TYP. all points ON)	250mA (TYP. all points ON)	—	
Weight		0.17kg	0.13kg	—	

QY50 and RY40NT5P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY50	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.5A/point, 4A/common	0.5A/point, Pilot Duty, 5A/common	○	
Maximum inrush current		4A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)		○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		6.7A (unchangeable) (fuse capacity: 50A)	None	△	The module after migration has the protection function instead of the fuse.
Protection function		None	Overheat protection (in increments of 1 point), Overload protection (in increments of 1 point)		
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	20mA (24VDC)	4mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB18)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		80mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
Weight		0.17kg	0.16kg	—	

QY68A and RY18R2A

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY68A	RY18R2A		
Output type		Transistor output (all points independent, sink/source type)	Contact output	×	The output type ischanged after migration.
Number of output points		8 points		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after migration.
Rated load voltage		5 to 24VDC (+20%/-10%)	24VDC/240VAC	○	
Maximum load current		2A/point, 8A/module		○	
Maximum inrush current		8A, 10ms or less	—	—	
Leakage current at OFF		0.1mA or lower	—	—	
Maximum voltage drop at ON		2A at 0.3VDC (MAX.)	—	—	
Response time	OFF to ON	3ms or less	10ms or less	△	The response speed becomes slower.
	ON to OFF	10ms or less (rated load, resistive load)	12ms or less	△	
Life		Unlimited electrical life	Refer to the life table.*1	×	The electrical/mechanical life is limited because contact output is used.
Maximum switching frequency		Unlimited mechanical life	3600 times/hour		
Surge suppressor		Zener diode	None	×	The surge suppressor is not built in this model.
Fuse		None		○	
Dielectric withstand voltage		560VAC rms/3 cycles	2300VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	△	
Protection degree		IP2X	IP1X	△	
Common terminal arrangement		No common (all points independent)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75㎟ core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	260mA (TYP. all points ON)	—	
Weight		0.14kg	0.19kg	—	

*1 The following table shows the life data.

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 100 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 100 thousand times or more 0.4A at 200VAC, 0.3A at 240VAC (COSϕ = 0.7) 300 thousand times or more
	1A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 100 thousand times or more 0.3A at 200VAC, 0.15A at 240VAC (COSϕ = 0.35) 300 thousand times or more
	1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 100 thousand times or more 0.3A at 24VDC, 0.03A at 100VDC (L/R = 7ms) 300 thousand times or more

QY70 and RY41NT2H

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY70	RY41NT2H		
Output type		Transistor output (sink type)		○	
Number of output points		16 points	32 points	○	
Isolation method		Photocoupler		○	
Rated load voltage		5 to 12VDC (+25/-10%)	5/12/24VDC (+20%/-15%)	○	
Maximum load current		16mA/point, 256mA/common	0.2A/point, 2A/common	○	
Maximum inrush current		40mA, 10ms or less	0.7A, 10ms or less	○	
Output voltage at OFF		VOH: 3.5VDC (Vcc = 5VDC, IOH = 0.4mA)	—	—	
Maximum voltage drop at ON		VOL: 0.3VDC	0.2A at 0.1VDC (TYP.), 0.2A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	0.5ms or less	1μs or less	○	
	ON to OFF	0.5ms or less (resistive load)	2μs or less (rated load, resistive load)	○	
Surge suppressor		None	Zener diode	○	
Fuse		1.6A (unchangeable) (fuse capacity: 50A)	None	×	No fuse is built in this model.*1
External power supply	Voltage	5 to 12VDC (+25/-10%) (ripple ratio within 5%)	—	○	No external power supply is required.
	Current	90mA maximum (at 12VDC, all points ON)	—	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB18)	32 points/common (common terminal: A01, A02)	○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)	32 points (I/O assignment: Output 32 points)	△	The number of occupied I/O points is increased after migration.
Protection function		None		○	
External interface		18-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after migration.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)	0.088 to 0.3mm²	×	The applicable wire size is smaller.
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)	—	×	
Internal current consumption (5VDC)		150mA (TYP. all points ON)	420mA (TYP. all points ON)	—	
Weight		0.14kg	0.12kg	—	

*1 To prevent burnout or damage of the external devices and modules in the event of a load short circuit, install a fuse for each external terminal. Also, if fuse blown indication is required, configure a relevant external circuit.

QY71 and RY41NT2H

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY71	RY41NT2H		
Output type		Transistor output (sink type)		○	
Number of output points		32 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		5/12/24VDC (+20%/-15%)		○	
Maximum load current		16mA/point, 512mA/common	0.2A/point, 2A/common	○	
Maximum inrush current		40mA, 10ms or less	0.7A, 10ms or less	○	
Output voltage at OFF		VOH: 3.5VDC (Vcc = 5VDC, IOH = 0.4mA)	—	—	
Maximum voltage drop at ON		VOL: 0.3VDC	0.2A at 0.1VDC (TYP.), 0.2A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	0.5ms or less	1μs or less	○	
	ON to OFF	0.5ms or less (resistive load)	2μs or less (rated load, resistive load)	○	
Surge suppressor		None	Zener diode	○	
Fuse		1.6A (unchangeable) (fuse capacity: 50A)	None	×	No fuse is built in this model.*1
External power supply	Voltage	5 to 12VDC (+25/-10%) (ripple ratio within 5%)	—	○	No external power supply is required.
	Current	170mA maximum (at 12VDC, all points ON)	—	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: A01, A02)		○	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Protection function		None		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		150mA (TYP. all points ON)	420mA (TYP. all points ON)	—	
Weight		0.14kg	0.12kg	—	

*1 To prevent burnout or damage of the external devices and modules in the event of a load short circuit, install a fuse for each external terminal. Also, if fuse blown indication is required, configure a relevant external circuit.

QY80 and RY40PT5P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY80	RY40PT5P		
Output type		Transistor output (source type)		○	
Number of output points		16 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.5A/point, 4A/common	0.5A/point, Pilot Duty, 5A/common	○	
Maximum inrush current		4A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)		○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		6.7A (unchangeable) (fuse capacity: 50A)	None	△	The module after migration has the protection function instead of the fuse.
Protection function		None	Overheat protection (in increments of 1 point), Overload protection (in increments of 1 point)		
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	20mA (at 24VDC)	16mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		80mA (TYP. all points ON)	130mA (TYP. all points ON)	—	
Weight		0.17kg	0.16kg	—	

QY80-TS and RY40PT5P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY80-TS	RY40PT5P		
Output type		Transistor output (source type)		○	
Number of output points		16 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.5A/point, 4A/common	0.5A/point, Pilot Duty, 5A/common	○	
Maximum inrush current		4A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)		○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		6.7A (unchangeable) (fuse capacity: 50A)	None	△	The module after migration has the protection function instead of the fuse.
Protection function		None	Overheat protection (in increments of 1 point), Overload protection (in increments of 1 point)		
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	20mA (at 24VDC)	16mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
External interface		Two-piece spring clamp terminal block	18-point terminal block (M3 × 6 screws)	×	When the existing wiring is used, use the Q series spring clamp terminal blocks in the existing system or the Q6TE-18SN.*1*2 For the RY40PT5P-TS, an output module with spring clamp terminal block, the existing solderless terminals cannot be used and rework is required.
Applicable wire size		0.3 to 2.0mm² core (22 to 15 AWG)	0.3 to 0.75mm² core (2.8mm OD maximum)		
Applicable solderless terminal		Refer to the list of reference products.*2	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		
Internal current consumption (5VDC)		80mA (TYP. all points ON)	130mA (TYP. all points ON)	—	
Weight		0.17kg	0.16kg	—	

*1 The Q6TE-18SN does not have a connection check indicator. Tools are required to connect cables.
The applicable wire size for the Q6TE-18SN is 0.3 to 1.5mm² core (22 to 16 AWG).

*2 The following tables list the applicable solderless terminals as reference products.

QY80-TS

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—
PHOENIX CONTACT GmbH & Co. KG	Bar solderless terminal	AI 0.34-8TQ	0.34mm²
		AI 0.5-8WH AI 0.5-10WH	0.5mm²
		AI 0.75-8GY AI 0.75-10GY	0.75mm²
		AI 1-8RD AI 1-10RD	1.0mm²
		AI 1.5-8BK AI 1.5-10BK	1.5mm²
		AI 2.5-8BU AI 2.5-10BU	2.0 to 2.5mm²
	Bar solderless terminal tool	CRIMPFOX ZA 3	—

Q6TE-18SN

Manufacturer	Product	Model	Applicable wire size
Mitsubishi Electric System & Service Co., Ltd.	Spring clamp terminal block tool	KD-5339	—
NICHIFU Co., Ltd.	Bar solderless terminal	TE 0.5-8 TE 0.5-10	0.3 to 0.5mm² (22 AWG)
		TE 0.75-8 TE 0.75-10	0.75mm² (20 AWG)
		TE 1.0-8 TE 1.0-10	1.0mm² (18 AWG)
		TE 1.5-8 TE 1.5-10	1.5mm² (16 AWG)
	Bar solderless terminal tool	NH79	—

QY81P and RY41PT1P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY81P	RY41PT1P		
Output type		Transistor output (source type)		○	
Number of output points		32 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, Pilot Duty, 2A/common		○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)		○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	40mA (at 24VDC)	19mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 17, 18, 36)	32 points/common (common terminal: B01, B02)	○	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Protection function		Overheat protection function (in increments of 2 points), overload protection function (in increments of 1 point)		○	
External interface		37-pin D-sub connector (A6CON1E/2E/3E)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after migration. By using the upgrade tool conversion adapter (ERNT-ASLCXY81), the existing external wiring and connectors in the existing system can be used.*1
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		95mA (TYP. all points ON)	190mA (TYP. all points ON)	—	
Weight		0.15kg	0.11kg	—	

*1 For an upgrade tool, please consult your local Mitsubishi Electric representative.

QY82P and RY42PT1P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QY82P	RY42PT1P		
Output type		Transistor output (source type)		○	
Number of output points		64 points		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, Pilot Duty, 2A/common		○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)		○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	40mA (at 24VDC)	19mA (at 24VDC)	○	
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)		○	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)		○	
Protection function		Overheat protection function (in increments of 2 points), overload protection function (in increments of 1 point)		○	
External interface		40-pin connector (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Internal current consumption (5VDC)		160mA (TYP. all points ON)	290mA (TYP. all points ON)	—	
Weight		0.17kg	0.13kg	—	

QH42P and RH42C4NT2P

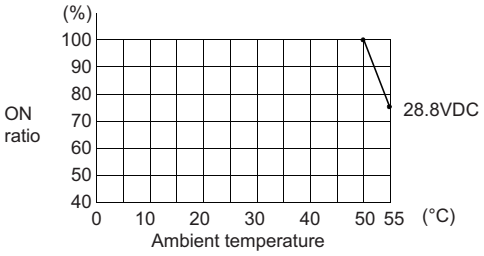
■Input specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

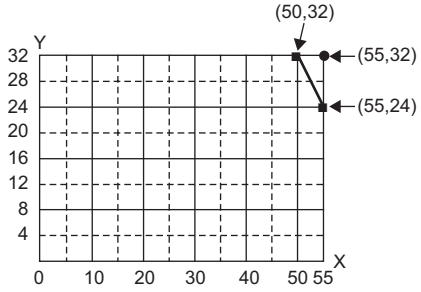
Item		Specifications		Compatibility	Precautions
		QH42P	RH42C4NT2P		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		32 points		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher		○	
OFF voltage/OFF current		11V or lower/1.7mA or lower	6V or lower/1.0mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Input common terminal arrangement		32 points/common (common terminal: 1B01, 1B02)		○	

*1 The following figures show input derating charts.

QH42P



RH42C4NT2P



●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QH42P

1ms/5ms/10ms/20ms/70ms

RH42C4NT2P

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RH42C4NT2P.

■Output specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QH42P	RH42C4NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		32 points		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, 2A/common	0.2A/point, Pilot Duty, 2A/common	○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
Protection function		Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	15mA (at 24VDC)	16mA (at 24VDC)	△	The current consumption of external power supply is larger.
Output common terminal arrangement		32 points/common (common terminal: 2A01, 2A02)		○	

■Common specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	QH42P	RH42C4NT2P		
Isolation method	Photocoupler		○	
Dielectric withstand voltage	560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance	10MΩ or more by insulation resistance tester		○	
Noise immunity	By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree	IP2X		○	
Number of occupied I/O points	32 points (I/O assignment: I/O combined 32 points)		○	
External interface	40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size	0.088 to 0.3mm²		○	
Internal current consumption (5VDC)	130mA (TYP. all points ON)	220mA (TYP. all points ON)	—	
Weight	0.20kg	0.13kg	—	

QX41Y41P and RH42C4NT2P

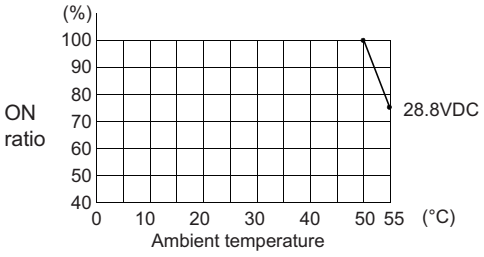
■Input specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

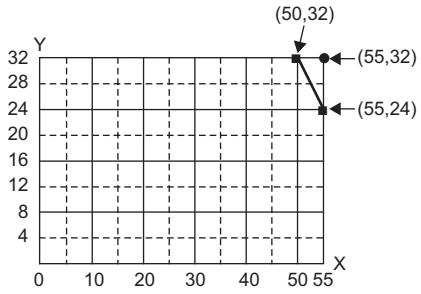
Item		Specifications		Compatibility	Precautions
		QX41Y41P	RH42C4NT2P		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		32 points		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	4mA TYP. (at 24VDC)	○	
Input derating		Refer to the derating chart.*1		○	Use the module within the range shown in the derating chart.
ON voltage/ON current		19V or higher/3mA or higher		○	
OFF voltage/OFF current		11V or lower/1.7mA or lower	6V or lower/1.0mA or lower	△	The OFF voltage and OFF current are changed after migration.*3
Input resistance		Approx. 5.6kΩ	5.3kΩ	△	The input resistance is decreased after migration.*3
Response time	OFF to ON	Configured in the parameter.*2		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*2		△	Refer to the input response time list.
Input common terminal arrangement		32 points/common (common terminal: 1B01, 1B02)		○	

*1 The following figures show input derating charts.

QX41Y41P



RH42C4NT2P



●: Input voltage 26.4VDC
■: Input voltage 28.8V
X: Ambient temperature (℃)
Y: Number of simultaneous on points (point)

*2 The following table shows the input response times.

QX41Y41P

1ms/5ms/10ms/20ms/70ms

RH42C4NT2P

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.2ms	0.3ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*3 Check the specifications of sensors and switches connected to the RH42C4NT2P.

■Output specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX41Y41P	RH42C4NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		32 points		○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.1A/point, 2A/common	0.2A/point, Pilot Duty, 2A/common	○	
Maximum inrush current		0.7A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		None		○	
Protection function		Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)		○	
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	15mA (at 24VDC)	16mA (at 24VDC)	△	The current consumption of external power supply is larger.
Output common terminal arrangement		32 points/common (common terminal: 2A01, 2A02)		○	

■Common specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	QX41Y41P	RH42C4NT2P		
Isolation method	Photocoupler		○	
Dielectric withstand voltage	560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance	10MΩ or more by insulation resistance tester		○	
Noise immunity	By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree	IP2X		○	
Number of occupied I/O points	64 points (I/O assignment: I/O combined 64 points)	32 points (I/O assignment: I/O combined 32 points)	△	The number of occupied I/O points is changed after migration.
External interface	40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size	0.088 to 0.3mm²		○	
Internal current consumption (5VDC)	130mA (TYP. all points ON)	220mA (TYP. all points ON)	—	
Weight	0.20kg	0.13kg	—	

QX48Y57 and RX40C7+RY40NT5P

■Input specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX48Y57	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		8 points	16 points	○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 4mA	7.0mA TYP. (at 24VDC)	○	
Input derating		None		○	
ON voltage/ON current		19V or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*2
OFF voltage/OFF current		11V or lower/1.7mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after migration.*2
Input resistance		Approx. 5.6kΩ	3.3kΩ	△	The input resistance is decreased after migration.*2
Response time	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Input common terminal arrangement		8 points/common (common terminal: TB9)	16 points/common (common terminal: TB17)	○	

*1 The following table shows the input response times.

QX48Y57

1ms/5ms/10ms/20ms/70ms

RX40C7

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.35ms	0.4ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX40C7.

■Output specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QX48Y57	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		7 points	16 points	○	
Rated load voltage		12/24VDC (+20%/-15%)		○	
Maximum load current		0.5A/point, 2A/common	0.5A/point, Pilot Duty, 5A/common	○	
Maximum inrush current		4A, 10ms or less	Current is to be limited by the overload protection function.	△	Carefully select the load to be used because the inrush current value is changed after migration.
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)		○	
Response time	OFF to ON	1ms or less	0.5ms or less	○	
	ON to OFF	1ms or less (rated load, resistive load)		○	
Surge suppressor		Zener diode		○	
Fuse		4A (unchangeable) (fuse capacity: 50A)	None	△	The module after migration has the protection function instead of the fuse.
Protection function		None	Overheat protection (in increments of 1 point), Overload protection (in increments of 1 point)		
External power supply	Voltage	12/24VDC (+20/-15%) (ripple ratio within 5%)		○	
	Current	10mA (at 24VDC)	4mA (at 24VDC)	○	
Output common terminal arrangement		7 points/common (common terminal: TB18)	16 points/common (common terminal: TB18)	○	

■Common specifications

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	QX48Y57	RX40C7+RY40NT5P		
Isolation method	Photocoupler		○	
Dielectric withstand voltage	560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance	10MΩ or more by insulation resistance tester		○	
Noise immunity	By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree	IP2X		○	
Number of occupied I/O points	16 points (I/O assignment: I/O combined 16 points)	16 points (I/O assignment: Input 16 points) + 16 points (I/O assignment: Output 16 points)	×	One input module and one output module need to be used.
External interface	18-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws) × 2	○	
Applicable wire size	0.3 to 0.75㎟ core (2.8mm OD maximum)		○	
Applicable solderless terminal	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)	80mA (TYP. all points ON)	120mA + 140mA (TYP. all points ON)	—	
Weight	0.20kg	0.16kg+0.16kg	—	

Interrupt module

QI60 and RX40C7

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QI60	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/ negative common shared type)	○	
Number of input points		16 points		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)		○	
Rated input current		Approx. 6mA	7mA TYP. (at 24VDC)	○	
Input derating		None		○	
ON voltage/ON current		19V or higher/4mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after migration.*2
OFF voltage/OFF current		11V or lower/1.7mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after migration.*2
Input resistance		Approx. 3.9kΩ	3.3kΩ	△	The input resistance is decreased after migration.*2
Response time	OFF to ON	Configured in the parameter.*1		△	Refer to the input response time list.
	ON to OFF	Configured in the parameter.*1		△	Refer to the input response time list.
Dielectric withstand voltage		560VAC rms/3 cycles	510VAC rms for 1 minute	○	
Insulation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Protection degree		IP2X		○	
Common terminal arrangement		16 points/common (common terminal: TB17)		○	
Number of occupied I/O points		16 points (I/O assignment: Interrupt 16 points)	16 points (I/O assignment: Input 16 points)	○	Interrupt settings can be configured in the parameter setting of GX Works3.
External interface		18-point terminal block (M3 × 6 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² core (2.8mm OD maximum)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Internal current consumption (5VDC)		60mA (TYP. all points ON)	120mA (TYP. all points ON)	—	
Weight		0.20kg	0.16kg	—	

*1 The following tables show the input response times.

QI60

Set value		0.1	0.2	0.4	0.6	1
OFF to ON	TYP.	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms
	MAX.	0.10ms	0.20ms	0.40ms	0.60ms	1.20ms
ON to OFF	TYP.	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms
	MAX.	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms

RX40C7

Timing	Set value								
	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
OFF to ON (MAX.)	0.1ms	0.2ms	0.4ms	0.6ms	1ms	5ms	10ms	20ms	70ms
ON to OFF (MAX.)	0.35ms	0.4ms	0.5ms	0.7ms	1ms	5ms	10ms	20ms	70ms

*2 Check the specifications of sensors and switches connected to the RX40C7.

Blank cover module

QG60 and RG60

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	QG60	RG60		
Number of occupied I/O points	Default: 16 points (Can be changed to 0, 16, 32, 48, 64, 128, 256, 512, or 1024 points by "PLC system" of "PLC parameter".)		○	
Application	Used as a dustproof cover for a slot not loaded with an I/O module (especially a vacant slot between modules).		○	
Weight	0.07kg		—	

3.3 Precautions for I/O Module Migration

Input response time setting

The pulse width that can be taken in as input varies in the input modules of MELSEC-Q series and MELSEC iQ-R series, depending on the input response time setting. For details, refer to the following.

Input response time setting value	1ms	5ms	10ms	20ms	70ms
MELSEC-Q series	0.3ms	3ms	6ms	12ms	45ms
MELSEC iQ-R series	0.3ms	1.5ms	4ms	8ms	35ms

Connector type

The MELSEC-Q series modules (QX81, QX81-S2, and QY81P) with 37-pin D-sub connectors are replaced with the MELSEC iQ-R series modules (RX41C4, RX41C6HS, and RY41PT1P) with 40-pin connectors. Change the connectors accordingly.

Interrupt function (interrupt module)

To use the interrupt function in the MELSEC iQ-R series system, use an input module. Set the interrupt function in the module parameter of the input module used.

Point

For details on these precautions, refer to the following.

MELSEC iQ-R Module Configuration Manual

MELSEC iQ-R I/O Module User's Manual

I/O Module Type Building Block User's Manual

4 POWER SUPPLY MODULE MIGRATION

4.1 Power Supply Module Migration Model List

This section describes examples of migration to MELSEC iQ-R series power supply modules in accordance with the MELSEC-Q series power supply module specifications.
Consider the specifications of your MELSEC-Q series power supply module to choose a model that best suits your application.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Power supply module	Q61P	R61P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Rated output current 6.0A → 6.5A)
	Q61P-A1	R61P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Input power supply voltage 100 to 120VAC →100 to 240VAC, rated output current 6.0A → 6.5A)
	Q61P-A2	R61P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Input power supply voltage 200 to 240VAC →100 to 240VAC, rated output current 6.0A → 6.5A)
	Q61P-D	R61P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Rated output current 6.0A → 6.5A, life detection function available → not available)
	Q61SP	R61P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Changed (slim type base unit → standard base unit) (3) Specifications: Changed (Rated output current 2.0A → 6.5A)
	Q62P	R62P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (M3.5 screw for +24V, 24G terminals) (2) Slots: Not changed (3) Specifications: Changed (Rated output current 3.0A → 3.5A)
	Q63P	R63P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Rated output current 6.0A → 6.5A)
	Q64P	R64P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Input power supply voltage 100 to 120VAC/200 to 240VAC →100 to 240VAC, rated output current 8.5A → 9.0A)
	Q64PN	R64P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Rated output current 8.5A → 9.0A)
	Q00JCPU (Power supply part)	R61P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Changed (Integrated structure of the main base, CPU, and power supply part → Single power supply module) (3) Specifications: Changed (Contact output section available → not available, rated output current 3.0A → 6.5A)
	Q00UJCPU (Power supply part)	R61P	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Changed (Integrated structure of the main base, CPU, and power supply part → Single power supply module) (3) Specifications: Changed (Contact output section available → not available, rated output current 3.0A → 6.5A)
Redundant power supply module	Q63RP	R63RP	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Power capacity 8.5A → 6.5A)
	Q64RP	R64RP	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Power capacity 8.5A → 9.0A)
	Q64RPN	R64RP	(1) External wiring: Changed (M3.5 screw → M4.0 screw (for screw terminal block)) (2) Slots: Not changed (3) Specifications: Changed (Power capacity 8.5A → 9.0A)

4.2 Comparison of Power Supply Module Specifications

Q61P and R61P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q61P	R61P		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		130VA		○	
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	6A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	6.6A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m), between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		Noise voltage IEC 61000-4-4, 2kV by noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 55.2(W) × 90(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.40kg	0.41kg	—	

Q61P-A1 and R61P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q61P-A1	R61P		
Input power supply voltage		100 to 120VAC (+10%, -15%) (85 to 132VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		105VA	130VA	△	Check the capacity of the UPS when used.
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	6A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	6.6A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 55.2(W) × 90(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.31kg	0.41kg	—	

Q61P-A2 and R61P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q61P-A2	R61P		
Input power supply voltage		200 to 240VAC (+10%, -15%) (170 to 264VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		105VA	130VA	△	Check the capacity of the UPS when used.
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	6A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	6.6A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 55.2(W) × 90(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.31kg	0.41kg	—	

Q61P-D and R61P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q61P-D	R61P		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		130VA		○	
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	6A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	6.6A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (POWER LED, LIFE LED)	LED indication (Normal: On (green), Error: Off)	△	The life detection function is not available.
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact, $\overline{\text{LIFE OUT}}$ contact	$\overline{\text{ERR.}}$ contact	△	The life detection function is not available.
	Rated switching voltage, current	0.5A at 24VDC		○	
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 55.2(W) × 90(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.45kg	0.41kg	—	

Q61SP and R61P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q61SP	R61P		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		40VA	130VA	△	Check the capacity of the UPS when used.
Maximum input power		—		—	
Inrush current		40A within 8ms	20A within 8ms	○	
Rated output current	5VDC	2A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	2.2A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 27.4(W) × 104(D)mm	106(H) × 54.6(W) × 110(D)mm	—	The size is larger. The base that can be installed is regarded as the standard base.
Weight		0.18kg	0.41kg	—	

Q62P and R62P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q62P	R62P		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		105VA	120VA	△	Check the capacity of the UPS when used.
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	3A	3.5A	○	
	24VDC	0.6A		○	
External output voltage		24VDC±10%		—	
Overcurrent protection	5VDC	3.3A or higher	3.8A or higher	○	
	24VDC	0.66A or higher		○	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		65% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0 (M3.5 screw for +24V, 24G terminals)	△	Wiring needs to be changed. (Need not be changed for +24V and 24G terminals)
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal. RAV1.25 - 3.5, RAV2 - 3.5, thickness 0.8mm or less for +24V and 24G terminals. Two solderless terminals can be connected to one terminal.	△	Solderless terminals need to be changed. (Need not be changed for +24V and 24G terminals)

Item	Specifications		Compatibility	Precautions
	Q62P	R62P		
Applicable tightening torque	0.66 to 0.89N·m	1.02 to 1.38N·m (0.66 to 0.89N·m for +24V and 24G terminals)	△	Tighten screws to the applicable tightening torque. (Need not be changed for +24V and 24G terminals)
External dimensions	98(H) × 55.2(W) × 90(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight	0.39kg	0.45kg	—	

Q63P and R63P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q63P	R63P		
Input power supply voltage		24VDC (+30%, -35%) (15.6 to 31.2VDC)		○	
Input frequency		—		—	
Input voltage distortion		—		—	
Maximum input power		45W	50W	○	
Inrush current		100mA, 1ms or less (at 24VDC input)		○	
Rated output current	5VDC	6A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	6.6A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more		○	
Allowable momentary power failure time		Within 10ms (at 24VDC input)		○	
Dielectric withstand voltage		510VAC per minute (altitude 0 to 2000m), between primary terminal and 5VDC terminal		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 55.2(W) × 90(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.33kg	0.41kg	—	

Q64P and R64P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64P	R64P		
Input power supply voltage		100 to 120VAC/200 to 240VAC (+10%, -15%) (85 to 132VAC/170 to 264VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		160VA		○	
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	8.5A	9.0A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	9.9A or higher	10.0A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 55.2(W) × 115(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.40kg	0.46kg	—	

Q64PN and R64P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64PN	R64P		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		160VA		○	
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	8.5A	9.0A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	9.9A or higher	10.0A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		70% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off)		○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 55.2(W) × 115(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.47kg	0.46kg	—	

Q00JCPU (power supply part) and R61P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q00JCPU (power supply part)	R61P		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		105VA	130VA	○	
Maximum input power		—		—	
Inrush current		40A within 8ms	20A within 8ms	○	
Rated output current	5VDC	3A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	3.3A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		65% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off, POWER LED of the CPU part)	LED indication (Normal: On (green), Error: Off)	○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	—	$\overline{\text{ERR.}}$ contact output is available.
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		OFF to ON: 10ms maximum, ON to OFF: 12ms maximum		
	Life		Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current		
	Surge suppressor		None		
	Fuse		None		
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.

Item	Specifications		Compatibility	Precautions
	Q00JCPU (power supply part)	R61P		
External dimensions	98(H) × 244.4(W) × 98(D)mm (including the CPU module and base unit)	106(H) × 54.6(W) × 110(D)mm	—	Single power supply module
Weight	0.66kg (including the CPU module and base unit)	0.41kg	—	Single power supply module

Q00UJCPU (power supply part) and R61P

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q00UJCPU (power supply part)	R61P		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		105VA	130VA	○	
Maximum input power		—		—	
Inrush current		40A within 8ms	20A within 8ms	○	
Rated output current	5VDC	3A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	3.3A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		65% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency IEC 61000-4-4, 2kV		○	
Operation indication		LED indication (Normal: On (green), Error: Off, POWER LED of the CPU part)	LED indication (Normal: On (green), Error: Off)	○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	—	$\overline{\text{ERR.}}$ contact output is available.
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		OFF to ON: 10ms maximum ON to OFF: 12ms maximum		
	Life		Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current		
	Surge suppressor		None		
	Fuse		None		
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.

Item	Specifications		Compatibility	Precautions
	Q00UJCPU (power supply part)	R61P		
External dimensions	98(H) × 244.4(W) × 98(D)mm (including the CPU module and base unit)	106(H) × 54.6(W) × 110(D)mm	—	Single power supply module
Weight	0.70kg (including the CPU module and base unit)	0.41kg	—	Single power supply module

Q63RP and R63RP

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q63RP	R63RP		
Input power supply voltage		24VDC (+30%, -35%) (15.6 to 31.2VDC)	24VDC (+30%, -20%) (19.2 to 31.2VDC)	○	
Input frequency		—		—	
Input voltage distortion		—		—	
Maximum input power		65W	50W	○	
Inrush current		150A within 1ms	100A within 1ms	○	
Rated output current	5VDC	8.5A	6.5A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	9.35A or higher	7.1A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		65% or more	70% or more	○	
Allowable momentary power failure time		Within 10ms (at 24VDC input)		○	
Dielectric withstand voltage		510VAC per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Operation indication		LED indication (Normal: On (green), Failure/Error: On (red) or Off)	LED indication (Normal: On (green), Failure/Error: Off)	○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 83(W) × 115(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.60kg	0.41kg	—	

Q64RP and R64RP

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64RP	R64RP		
Input power supply voltage		100 to 120VAC/200 to 240VAC (+10%, -15%) (85 to 132VAC/170 to 264VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		160VA		○	
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	8.5A	9.0A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	9.35A or higher	10.0A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		65% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		Noise voltage IEC 61000-4-4, 2kV by noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Operation indication		LED indication (Normal: On (green), Failure/Error: On (red) or Off)	LED indication (Normal: On (green), Failure/Error: Off)	○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 83(W) × 115(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.49kg	0.46kg	—	

Q64RPN and R64RP

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64RPN	R64RP		
Input power supply voltage		100 to 240VAC (+10%, -15%) (85 to 264VAC)		○	
Input frequency		50/60Hz±5%		○	
Input voltage distortion		Within 5%		○	
Maximum input apparent power		160VA		○	
Maximum input power		—		—	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	8.5A	9.0A	○	
	24VDC	—		—	
External output voltage		—		—	
Overcurrent protection	5VDC	9.35A or higher	10.0A or higher	○	
	24VDC	—		—	
Overvoltage protection	5VDC	5.5 to 6.5V		○	
	24VDC	—		—	
Efficiency		65% or more	76% or more	○	
Allowable momentary power failure time		Within 20ms		○	
Dielectric withstand voltage		2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"		○	
Insulation resistance		10MΩ or higher by 500VDC insulation resistance tester between the combined "line input/LG terminals" and the "FG terminal and output", the line input and LG terminals, the output and FG terminals		○	
Noise durability		Noise voltage IEC 61000-4-4, 2kV by noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency		○	
Operation indication		LED indication (Normal: On (green), Failure/Error: On (red) or Off)	LED indication (Normal: On (green), Failure/Error: Off)	○	
Fuse		Built-in (user-unchangeable)		○	
Contact output section	Application	$\overline{\text{ERR.}}$ contact		○	
	Rated switching voltage, current	0.5A at 24VDC			
	Minimum switching load	1mA at 5VDC			
	Response time	OFF to ON: 10ms maximum, ON to OFF: 12ms maximum			
	Life	Mechanical: More than 20 million times Electrical: More than 100 thousand times at rated switching voltage, current			
	Surge suppressor	None			
	Fuse	None			
Terminal screw size		M3.5	M4.0	×	Wiring needs to be changed.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	RAV1.25-4, RAV2-4, Thickness 0.8mm or less. Two solderless terminals can be connected to one terminal.	×	Solderless terminals need to be changed.
Applicable tightening torque		0.66 to 0.89N·m	1.02 to 1.38N·m	×	Tighten screws to the applicable tightening torque.
External dimensions		98(H) × 83(W) × 115(D)mm	106(H) × 54.6(W) × 110(D)mm	—	
Weight		0.49kg	0.46kg	—	

4.3 Precautions for Power Supply Module Migration

Rated output current

The current consumption differs between the MELSEC-Q series and MELSEC iQ-R series modules. Calculate the current consumption for the entire system before selecting a power supply module.

Terminal block screw size

The terminal block screw size differs between the MELSEC-Q series and the MELSEC iQ-R series power supply modules (M3.5 → M4.0). Some solderless terminals need to be changed accordingly.
Note that the size of the +24V and 24G terminals of R62P is M3.5.

Power capacity of the supply power

To supply power to the power supply module, select a supply power with enough power capacity.
(As a guide, the recommended capacity is at least two times the usual capacity for the AC power supply module and at least four times the usual capacity for the DC power supply module.)

Point

For details on these precautions, refer to the following.
MELSEC iQ-R Module Configuration Manual

5 MIGRATION OF BASE UNIT, EXTENSION CABLE, AND TRACKING CABLE

5.1 Model Lists for Migration of the Base Unit, Extension Cable, and Tracking Cable

This section describes examples of migration to MELSEC iQ-R series base units, extension cables, and tracking cables in accordance with the specifications of MELSEC-Q series base units, extension cables, and tracking cables.
Consider the specifications of your MELSEC-Q series base units, extension cables, and tracking cables to choose a model that best suits your application.

Base unit

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Main base unit	Q33B	R33B	
	Q35B	R35B	
	Q38B	R38B	
	Q312B	R312B	
Multiple CPU high speed main base unit	Q35DB	R35B	
	Q38DB	R38B	
	Q312DB	R312B	
Slim type main base unit	Q32SB	R33B	Extension base unit: Cannot be connected → Can be connected Number of I/O slots: 2 → 3 The base unit installation hole positions are different.
	Q33SB	R33B	Extension base unit: Cannot be connected → Can be connected The base unit installation hole positions are different.
	Q35SB	R35B	Extension base unit: Cannot be connected → Can be connected The base unit installation hole positions are different.
Extension base unit (Type requiring power supply module)	Q63B	R65B, RQ65B	Number of I/O slots: 3 → 5 The base unit installation hole positions are different.
	Q65B	R65B, RQ65B	
	Q68B	R68B, RQ68B	
	Q612B	R612B, RQ612B	
Extension base unit (Type not requiring power supply module)	Q52B	R65B, RQ65B	Power supply module: Not required → Required Number of I/O slots: 2 → 5 The base unit installation hole positions are different.
	Q55B	R65B, RQ65B	Power supply module: Not required → Required The base unit installation hole positions are different.
Redundant power supply base unit	Q38RB	R310RB	Number of I/O slots: 8 → 10
	Q68RB	R610RB	Number of I/O slots: 8 → 10
	Q65WRB	R68WRB	Number of I/O slots: 5 → 8 Number of extension cable connectors: 2 (IN), 1 (OUT) → 2 (IN), 2 (OUT)

Extension cable and tracking cable

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Extension cable	QC05B	RC06B	Cable length: 0.45m → 0.6m
	QC06B	RC06B	
	QC12B	RC12B	
	QC30B	RC30B	
	QC50B	RC50B	
	QC100B	RC100B	
Tracking cable	QC10TR, QC30TR	Optical fiber cable	Use an optical fiber cable compliant with the following standards (multimode optical fiber (GI)): • IEEE 802.3 (1000BASE-SX) • IEC 60793-2-10 Types A1a.1 • Maximum cable length: 550m

5.2 Comparison of Specifications of the Base Unit, Extension Cable, and Tracking Cable

Comparison of base unit specifications

Q33B and R33B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q33B	R33B		
Number of mountable I/O modules	3		○	
Extendability	Extendable		○	
Internal current consumption (5VDC)	0.11A	0.46A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)		○	
External dimensions	98(H) × 189(W) × 44.1(D)mm	101(H) × 189(W) × 32.5(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.21kg	0.31kg	—	
Accessories	Installation screw M4 × 14		○	
DIN rail mounting adapter type	Q6DIN3	R6DIN1	—	

Q35B/Q35DB and R35B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q35B	Q35DB	R35B		
Number of mountable I/O modules	5			○	
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.11A	0.23A	0.58A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 245(W) × 44.1(D)mm		101(H) × 245(W) × 32.5(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.27kg	0.32kg	0.41kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN2		R6DIN1	—	

Q38B/Q38DB and R35B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q38B	Q38DB	R38B		
Number of mountable I/O modules	8			○	
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.12A	0.23A	0.71A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 328(W) × 44.1(D)mm		101(H) × 328(W) × 32.5(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.36kg	0.41kg	0.55kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN1		R6DIN1	—	

Q312B/Q312DB and R312B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q312B	Q312DB	R312B		
Number of mountable I/O modules	12			○	
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.13A	0.24A	0.88A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 439(W) × 44.1(D)mm		101(H) × 439(W) × 32.5(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.47kg	0.54kg	0.72kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN1		R6DIN1	—	

Q32SB and R33B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q32SB	R33B		
Number of mountable I/O modules	2	3	△	The number of slots increases.
Extendability	Not extendable	Extendable	○	
Internal current consumption (5VDC)	0.09A	0.46A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)		○	
External dimensions	98(H) × 114(W) × 18.5(D)mm	101(H) × 189(W) × 32.5(D)mm	△	The base unit installation hole positions are different.
Weight	0.12kg	0.31kg	—	
Accessories	Installation screw M4 × 14		○	
DIN rail mounting adapter type	Q6DIN3	R6DIN1	—	

Q33SB and R33B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q33SB	R33B		
Number of mountable I/O modules	3		○	
Extendability	Not extendable	Extendable	○	
Internal current consumption (5VDC)	0.09A	0.46A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)		○	
External dimensions	98(H) × 142(W) × 18.5(D)mm	101(H) × 189(W) × 32.5(D)mm	△	The base unit installation hole positions are different.
Weight	0.15kg	0.31kg	—	
Accessories	Installation screw M4 × 14		○	
DIN rail mounting adapter type	Q6DIN3	R6DIN1	—	

Q35SB and R35B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q35SB	R35B		
Number of mountable I/O modules	5		○	
Extendability	Not extendable	Extendable	○	
Internal current consumption (5VDC)	0.10A	0.58A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)		○	
External dimensions	98(H) × 197.5(W) × 18.5(D)mm	101(H) × 245(W) × 32.5(D)mm	△	The base unit installation hole positions are different.
Weight	0.21kg	0.41kg	—	
Accessories	Installation screw M4 × 14		○	
DIN rail mounting adapter type	Q6DIN3	R6DIN1	—	

Q63B and R65B/RQ65B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q63B	R65B	RQ65B		
Number of mountable I/O modules	3	5		△	The number of slots increases.
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.11A	0.70A	0.28A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 189(W) × 44.1(D)mm	101(H) × 245(W) × 32.5(D)mm	98(H) × 245(W) × 44.1(D)mm	△	The base unit installation hole positions are different.
Weight	0.23kg	0.41kg	0.32kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN3	R6DIN1	Q6DIN2	—	

Q65B and R65B/RQ65B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q65B	R65B	RQ65B		
Number of mountable I/O modules	5			○	
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.11A	0.70A	0.28A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 245(W) × 44.1(D)mm	101(H) × 245(W) × 32.5(D)mm	98(H) × 245(W) × 44.1(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.28kg	0.41kg	0.32kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN2	R6DIN1	Q6DIN2	—	

Q68B and R68B/RQ68B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q68B	R68B	RQ68B		
Number of mountable I/O modules	8			○	
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.12A	0.81A	0.31A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 328(W) × 44.1(D)mm	101(H) × 328(W) × 32.5(D)mm	98(H) × 328(W) × 44.1(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.38kg	0.55kg	0.41kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN1	R6DIN1	Q6DIN1	—	

Q612B and R612B/RQ612B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q612B	R612B	RQ612B		
Number of mountable I/O modules	12			○	
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.13A	0.92A	0.32A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 439(W) × 44.1(D)mm	101(H) × 439(W) × 32.5(D)mm	98(H) × 439(W) × 44.1(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.48kg	0.73kg	0.55kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN1	R6DIN1	Q6DIN1	—	

Q52B and R65B/RQ65B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q52B	R65B	RQ65B		
Number of mountable I/O modules	2	5		△	The power supply module needs to be installed. The number of slots increases.
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.08A	0.70A	0.28A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 106(W) × 44.1(D)mm	101(H) × 245(W) × 32.5(D)mm	98(H) × 245(W) × 44.1(D)mm	△	The base unit installation hole positions are different.
Weight	0.14kg	0.41kg	0.32kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN3	R6DIN1	Q6DIN2	—	

Q55B and R65B/RQ65B

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications			Compatibility	Precautions
	Q55B	R65B	RQ65B		
Number of mountable I/O modules	5			△	The power supply module needs to be installed.
Extendability	Extendable			○	
Internal current consumption (5VDC)	0.10A	0.70A	0.28A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)			○	
External dimensions	98(H) × 189(W) × 44.1(D)mm	101(H) × 245(W) × 32.5(D)mm	98(H) × 245(W) × 44.1(D)mm	△	The base unit installation hole positions are different.
Weight	0.23kg	0.41kg	0.32kg	—	
Accessories	Installation screw M4 × 14			○	
DIN rail mounting adapter type	Q6DIN3	R6DIN1	Q6DIN2	—	

Q38RB and R310RB

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q38RB	R310RB		
Number of mountable I/O modules	8	10	△	The number of slots increases.
Extendability	Extendable		○	
Internal current consumption (5VDC)	0.12A	0.82A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)		○	
External dimensions	98(H) × 439(W) × 44.1(D)mm	101(H) × 439(W) × 32.5(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.47kg	0.73kg	—	
Accessories	Installation screw M4 × 14		○	
DIN rail mounting adapter type	Q6DIN1	R6DIN1	—	

Q68RB and R610RB

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68RB	R610RB		
Number of mountable I/O modules	8	10	△	The number of slots increases.
Extendability	Extendable		○	
Internal current consumption (5VDC)	0.12A	0.97A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)		○	
External dimensions	98(H) × 439(W) × 44.1(D)mm	101(H) × 439(W) × 32.5(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.49kg	0.73kg	—	
Accessories	Installation screw M4 × 14		○	
DIN rail mounting adapter type	Q6DIN1	R6DIN1	—	

Q65WRB and R68WRB

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q65WRB	R68WRB		
Number of mountable I/O modules	5	8	△	The number of slots increases.
Extendability	Extendable		○	
Internal current consumption (5VDC)	0.16A	1.50A	—	
Installation hole size	M4 screw hole or ϕ4.5 hole (for M4 screw)		○	
External dimensions	98(H) × 439(W) × 44.1(D)mm	101(H) × 439(W) × 32.5(D)mm	—	The base unit installation hole positions are interchangeable.
Weight	0.52kg	0.76kg	—	
Accessories	Installation screw M4 × 14		○	
DIN rail mounting adapter type	Q6DIN1	R6DIN1	—	

Extension cable and tracking cable

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Type		Compatibility	Precautions
		MELSEC-Q series	MELSEC iQ-R series		
Cable length	0.45m	QC05B	RC06B	△	The cable length is changed from 0.45m to 0.6m.
	0.6m	QC06B	RC06B	○	
	1.2m	QC12B	RC12B	○	
	3.0m	QC30B	RC30B	○	
	5.0m	QC50B	RC50B	○	
	10.0m	QC100B	RC100B	△	This cable can only be used for base units with the 10m mark printed.
Tracking cable		QC10TR, QC30TR	Optical fiber cable	×	Use an optical fiber cable compliant with the following standards (multimode optical fiber (GI)): • IEEE 802.3 (1000BASE-SX) • IEC 60793-2-10 Types A1a.1 • Maximum cable length: 550m

5.3 Precautions for Migration of the Base Unit, Extension Cable, and Tracking Cable

Fixing the extension cables

Extension cables are fixed by lock buttons in the MELSEC iQ-R series system while they are fixed by the fixing screws in the MELSEC-Q series system.

Extension level setting

The extension level setting is not required in the MELSEC iQ-R series system while it needs to be configured with connector pins in the MELSEC-Q series system.

DIN rail mounting adapters

The DIN rail mounting adapter differs between the MELSEC-Q series and the MELSEC iQ-R series.

Extension cable (10m)

For the MELSEC iQ-R series base units, the 10m extension cable (RC100B) can be used on the base units with the 10m mark printed.
Check that the 10m mark is printed on the extension connector cover of the base unit before connecting the RC100B.

Point

For details on these precautions, refer to the following.
MELSEC iQ-R Module Configuration Manual

5.4 RQ Extension Base Unit

To continue to use the MELSEC-Q series modules for the RCPU, use the RQ extension base units (RQ65B, RQ68B, RQ612B).

The following table lists the MELSEC-Q series modules that can be used with the RQ extension base units.

Item		Type
Power supply module		Q61P, Q61P-A1, Q61P-A2, Q62P, Q63P, Q64P, Q64PN, Q61P-D
I/O module	AC input module	QX10, QX10-TS, QX28
	DC input module	QX40, QX40-TS, QX40-S1, QX41, QX41-S1, QX41-S2, QX42, QX42-S1, QX70, QX71, QX72, QX80, QX80-TS, QX81, QX81-S2, QX82, QX82-S1
	DC high-speed input module	QX40H, QX70H, QX80H, QX90H
	DC/AC input module	QX50
	Contact output module	QY10, QY10-TS, QY18A
	Triac output module	QY22
	Transistor output module	QY40P, QY40P-TS, QY41P, QY42P, QY50, QY68A, QY70, QY71, QY80, QY80-TS, QY81P, QY82P
	Transistor high-speed output module	QY41H
	I/O combined module	QH42P, QX48Y57, QX41Y41P
	Interrupt module	QI60
	Blank cover module	QG60
Analog I/O module	Analog—digital converter module	Q64AD, Q68ADV, Q68ADI
	Channel isolated high resolution analog—digital converter module	Q64AD-GH
	Channel isolated high resolution analog-digital converter module (with signal conditioning function)	Q62AD-DGH
	Channel isolated analog—digital converter module	Q68AD-G
	Channel isolated analog-digital converter module (with signal conditioning function)	Q66AD-DG
	High speed analog—digital converter module	Q64ADH
	Digital-analog converter module	Q62DA, Q62DAN, Q64DA, Q64DAN, Q68DAV, Q68DAVN, Q68DAI, 68DAIN
	Channel isolated digital—analog converter module	Q62DA-FG, Q66DA-G
	High speed digital-analog converter module	Q64DAH
	Analog I/O module	Q64AD2DA2
	Load cell input module	Q61LD
	CT input module	Q68CT
	RTD input module	Q64RD
	Channel isolated RTD input module	Q64RD-G, Q68RD3-G
	Thermocouple input module	Q64TD
	Channel isolated thermocouple/micro voltage input module	Q64TDV-GH
	Channel isolated thermocouple input module	Q68TD-G-H01, Q68TD-G-H02
	Temperature control module	Q64TCTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN
	Loop control module	Q62HLC
Positioning module and pulse I/O module	Multichannel high-speed counter module	QD63P6
	4Mpps capable high-speed counter module	QD64D2
	Channel isolated pulse input module	QD60P8-G
	Multifunction counter/timer module	QD65PD2
	Positioning module	QD70P4, QD70P8, QD70D4, QD70D8, QD73A1
	Positioning module with built-in counter function	QD72P3C3

Item		Type
Control network module	CC-Link/LT master module	QJ61CL12
	AnyWire DB A20 master module	QJ51AW12D2
	MELSECNET/H network module	QJ71LP21, QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71BR11, QJ71NT11B
	MODBUS/TCP interface module	QJ71MT91
	MODBUS interface module	QJ71MB91
	FL-net(OPCN-2) interface module	QJ71FL71, QJ71FL71-T, QJ71FL71-B2, QJ71FL71-B5, QJ71FL71-F01, QJ71FL71-T-F01, QJ71FL71-B2-F01, QJ71FL71-B5-F01
	AS-i master module	QJ71AS92
	Intelligent communication module	QD51, QD51-R24
	DeviceNet master-slave module	QJ71DN91
	AnyWireASLINK master module	QJ51AW12AL
Information module	MES interface module	QJ71MES96
	Web server module	QJ71WS96
	Energy measuring module	QE81WH, QE84WH, QE81WH4W, QE83WH4W
	Insulation monitoring module	QE82LG

6 MEMORY AND BATTERY MIGRATION

6.1 Memory and Battery Migration Model List

This section describes examples of migration to MELSEC iQ-R series memory and batteries in accordance with the MELSEC-Q series memory and battery specifications.

Consider the specifications of your MELSEC-Q series memory and battery to choose a model that best suits your application.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
SRAM card	Q2MEM-1MBS	—	Use an SD memory card or an extended SRAM cassette instead of these items.
	Q2MEM-1MBSN	—	
	Q2MEM-2MBS	—	
	Q2MEM-2MBSN	—	
	Q3MEM-4MBS	—	
	Q3MEM-8MBS	—	
Flash card	Q2MEM-2MBF	—	
	Q2MEM-4MBF	—	
ATA card	Q2MEM-8MBA	—	
	Q2MEM-16MBA	—	
	Q2MEM-32MBA	—	
CompactFlash card	QD81MEM-512MBC	—	Use SD memory cards instead.
	QD81MEM-1GBC	—	
	QD81MEM-2GBC	—	
	QD81MEM-4GBC	—	
	QD81MEM-8GBC	—	
SD memory card	L1MEM-2GBSD[*1]		Existing SD memory cards can be used. SD memory cards are not available for the R00CPU.
	L2MEM-4GBSD[*1]		
	NZ1MEM-2GBSD		
	NZ1MEM-4GBSD		
	NZ1MEM-8GBSD		
	NZ1MEM-16GBSD		
CFast card	—	NZ1MEM-16GBCFT	
	—	NZ1MEM-32GBCFT	
	—	NZ1MEM-64GBCFT	
Extended SRAM cassette	Q4MCA-1MBS	NZ2MC-1MBS	Available extended SRAM cassettes are different. Extended SRAM cassettes are not available for the R00/R01/R02CPU. The NZ2MC-2MBSE and NZ2MC-8MBSE are available for the RnPCPU.
	Q4MCA-2MBS	NZ2MC-2MBS	
	Q4MCA-4MBS	NZ2MC-4MBS	
	Q4MCA-8MBS	NZ2MC-8MBS	
Battery[*2*3]	Q6BAT		The existing Q6BAT, Q7BAT, and Q7BATN can be used.
	Q7BAT Q7BATN		
	Q8BAT	Q7BAT, Q7BATN	The Q7BAT and Q7BATN can be used as the alternative to the Q8BAT as their functionality of retaining data during power failure is equivalent to the one the Q8BAT has.

*1 This model had already been discontinued in July 2015. Using the NZ1MEM-□GBSD is recommended.

*2 The R00/R01/R02CPU does not require batteries. However, use the FX3U-32BL if retaining the clock data for 10 days or longer during power failure is required.

*3 For the R04/R08/R16/R32/R120CPU, the battery-less option cassette (NZ1BLC) eliminates the need for batteries. However, the clock data is no longer retained without a battery.

6.2 Precautions for Memory and Battery Migration

Extended SRAM cassette

The extended SRAM cassette differs between the MELSEC-Q series and the MELSEC iQ-R series.

Battery

Batteries used in the MELSEC-Q series system can also be used in the MELSEC iQ-R series system.

Note that only the Q8BAT cannot be used.

Point

For details on these precautions, refer to the following.

MELSEC iQ-R Module Configuration Manual

MELSEC iQ-R CPU Module User's Manual (Startup)

7 ANALOG I/O MODULE MIGRATION

7.1 Analog I/O Module Migration Model List

This section describes examples of migration to MELSEC iQ-R series analog I/O modules in accordance with the MELSEC-Q series analog I/O module specifications and functions.
Consider the scope of control by your MELSEC-Q series analog I/O module and the system specifications and extensibility after migration to choose a model that best suits your application.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Analog input module	Q64AD	R60AD4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some input signals are not available. The resolution (digital output value range) is changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, conversion speed (only for the Q64AD with temperature drift compensation enabled), and number of offset/gain settings are changed. (5) Function specifications: Temperature drift compensation function not available
	Q68ADV	R60ADV8	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some input signals are not available. The resolution (digital output value range) is changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, conversion speed (only for the Q68ADV with temperature drift compensation enabled), and number of offset/gain settings are changed. (5) Function specifications: Temperature drift compensation function not available
	Q68ADI	R60ADI8	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some input signals are not available. The resolution (digital output value range) is changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, conversion speed (only for the Q68ADI with temperature drift compensation enabled), and number of offset/gain settings are changed. (5) Function specifications: Temperature drift compensation function not available
	Q64AD-GH	No applicable module	Check the specification difference and consider replacing the Q series module with the R60AD8-G. If the module cannot be replaced with the R60AD8-G, connect the RQ extension base unit (RQ6□B) to use the Q series module.
	Q62AD-DGH	No applicable module	Connect the RQ extension base unit (RQ6□B) to use the Q series module.
	Q68AD-G	R60AD8-G	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some input signals are not available. The resolution (digital output value range) is changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution and accuracy (temperature coefficient) are changed. (5) Function specifications: Not changed
	Q66AD-DG	R60AD6-DG	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some input signals are not available. The resolution (digital output value range) is changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, accuracy (temperature coefficient), absolute maximum input, and the external power supply specifications are changed. (5) Function specifications: Not changed
	Q64ADH	R60ADH4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Input signal assignment and resolution (digital output value range) are changed. Buffer memory assignment is incompatible. (4) Performance specifications: The resolution, conversion speed, and number of offset/gain settings are changed. (5) Function specifications: The input range extended mode function and the flow amount integration function are not available.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Analog output module	Q62DA	R60DA4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q62DAN	R60DA4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q64DA	R60DA4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q64DAN	R60DA4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q68DAV	R60DAV8	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q68DAVN	R60DAV8	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q68DAI	R60DAI8	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q68DAIN	R60DAI8	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, the number of offset/gain settings, and the external power supply specifications are changed. (5) Function specifications: The synchronous output function is not available. (Consider using the R60DAH4.)
	Q62DA-FG	No applicable module	Check the specification differences and consider using the R60DA8-G. Or, connect the RQ extension base unit (RQ6□B) to use the Q series module.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Analog output module	Q66DA-G	R60DA8-G	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: Some I/O signals and the resolution (digital value range) are changed. Buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) (4) Performance specifications: The resolution, accuracy (temperature coefficient), conversion speed, and the external power supply specifications are changed. (5) Function specifications: Not changed
	Q64DAH	R60DAH4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Buffer memory assignment is incompatible. The resolution (digital value range) is changed. (4) Performance specifications: The external load resistance value, resolution, conversion speed, and number of offset/gain settings are changed. (5) Function specifications: Not changed
Analog I/O module	Q64AD2DA2	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
Load cell input module	Q61LD	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
CT input module	Q68CT	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
Temperature input module	Q64RD	No applicable module	Check the specification difference and consider replacing the Q series module with the R60RD8-G. If the module cannot be replaced with the R60RD8-G, connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	Q64RD-G	No applicable module	Check the specification difference and consider replacing the Q series module with the R60RD8-G. If the module cannot be replaced with the R60RD8-G, connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	Q68RD3-G	R60RD8-G	(1) Number of analog input channels: 8 (2) Usable RTD: Pt100, JPt100, Ni100 → Pt100, JPt100, Ni100, Pt50 (3) Conversion speed: 320ms/8 channels → 10ms/channel (4) External interface: 40-pin connector (5) Function: Channel isolated
	Q64TD	No applicable module	Check the specification difference and consider replacing the Q series module with the R60TD8-G. If the module cannot be replaced with the R60TD8-G, connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	Q64TDV-GH	No applicable module	Check the specification difference and consider replacing the Q series module with the R60TD8-G. If the module cannot be replaced with the R60TD8-G, connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	Q68TD-G-H01	R60TD8-G	(1) Number of analog input channels: 8 (2) Thermocouple compliance standards: IEC 60584-1(1995), IEC 60584-2(1982), JIS C1602-1995 (3) Conversion speed: 320ms/8 channels → 30ms/channel (4) External interface: 40-pin connector (5) Functions: Disconnection monitor function, channel isolated → disconnection detection function, channel isolated
	Q68TD-G-H02	R60TD8-G	(1) Number of analog input channels: 8 (2) Thermocouple compliance standards: IEC 60584-1(1995), IEC 60584-2(1982), JIS C1602-1995 (3) Conversion speed: 640ms/8 channels → 30ms/channel (4) External interface: 40-pin connector (5) Functions: Disconnection detection function, channel isolated

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Temperature control module	Q64TCTT	R60TCTRT2TT2	(1) Number of analog input channels: 4 (2) Usable thermocouples: R, K, J, T, S, B, E, N, U, L, PLII, W5Re/W26Re (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) (5) Functions: Heater disconnection detection not available, channel isolated → Heater disconnection detection not available, channel isolated, heating-cooling control, position proportional control
	Q64TCTTN	R60TCTRT2TT2	(1) Number of analog input channels: 4 (2) Usable thermocouples: R, K, J, T, S, B, E, N, U, L, PLII, W5Re/W26Re (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) (5) Functions: Heater disconnection detection not available, channel isolated, heating-cooling control → Heater disconnection detection not available, channel isolated, heating-cooling control, position proportional control
	Q64TCRT	R60TCRT4	(1) Number of analog input channels: 4 (2) Usable RTD: Pt100, JPt100 (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) (5) Functions: Heater disconnection detection not available, channel isolated → Heater disconnection detection not available, channel isolated, heating-cooling control, position proportional control
	Q64TCRTN	R60TCRT4	(1) Number of analog input channels: 4 (2) Usable RTD: Pt100, JPt100 (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) (5) Functions: Heater disconnection detection not available, channel isolated, heating-cooling control → Heater disconnection detection not available, channel isolated, heating-cooling control, position proportional control
	Q64TCTTBW	R60TCTRT2TT2BW	(1) Number of analog input channels: 4 (2) Usable thermocouples: R, K, J, T, S, B, E, N, U, L, PLII, W5Re/W26Re (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) × 2 (5) Functions: Heater disconnection detection, channel isolated → Heater disconnection detection, channel isolated, heating-cooling control, position proportional control
	Q64TCTTBWN	R60TCTRT2TT2BW	(1) Number of analog input channels: 4 (2) Usable thermocouples: R, K, J, T, S, B, E, N, U, L, PLII, W5Re/W26Re (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) × 2 (5) Functions: Heater disconnection detection, channel isolated, heating-cooling control → Heater disconnection detection, channel isolated, heating-cooling control, position proportional control
	Q64TCRTBW	R60TCRT4BW	(1) Number of analog input channels: 4 (2) Usable RTD: Pt100, JPt100 (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) × 2 (5) Functions: Heater disconnection detection, channel isolated → Heater disconnection detection, channel isolated, heating-cooling control, position proportional control
	Q64TCRTBWN	R60TCRT4BW	(1) Number of analog input channels: 4 (2) Usable RTD: Pt100, JPt100 (3) Sampling cycle: 500ms/4 channels → 250ms/4 channels, 500ms/4 channels (4) External interface: 18-point screw terminal block (M3 screws) × 2 (5) Functions: Heater disconnection detection, channel isolated, heating-cooling control → Heater disconnection detection, channel isolated, heating-cooling control, position proportional control
Loop control module	Q62HLC	No applicable module	Connect the RQ extension base unit (RQ6□B) to use the Q series module.

7.2 Comparison of Analog I/O Module Specifications

Analog input module

Q64AD and R60AD4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q64AD	R60AD4		
Number of analog input channels	4 channels		○	
Analog input voltage	-10 to 10VDC (input resistance: 1MΩ)		○	
Analog input current	0 to 20mADC (input resistance 250Ω)		○	
Digital output value	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q64AD. Converted values are stored in the buffer memory area 'Digital operation value'.
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q64AD. Converted values are stored in the buffer memory area 'Digital operation value'.
Accuracy (in respect to maximum digital output value)	*3	Ambient temperature 25±5℃ : Within ±0.1% (±32 digit) Ambient temperature 0 to 55℃ : Within ±0.3% (±96 digit)	○	
Conversion speed	80μs/channel (When the temperature drift correction is used, the time calculated by adding 160μs will be used regardless of the number of channels used)	80μs/channel	○	
Absolute maximum input	Voltage: ±15V, current: 30mA		○	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-insulation		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply: 500VAC for 1 minute		○	
Insulation resistance	Between the I/O terminal and programmable controller power supply: 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply: 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75㎟ (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption (5VDC)	0.63A	0.22A	—	
Weight	0.18kg	0.12kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q64AD.

Analog input range		Normal resolution mode		High resolution mode	
		Digital output value	Resolution	Digital output value	Resolution
Voltage	0 to 10V	0 to 4000	2.5mV	0 to 16000	0.625mV
	0 to 5V		1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.375mV	-12000 to 12000	0.333mV
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.37μA	-12000 to 12000	1.33μA

*2 The following table lists the I/O characteristics and resolution values of the R60AD4.

Analog input range		Digital output value	Resolution
Voltage	0 to 10V	0 to 32000	312.5μV
	0 to 5V		156.3μV
	1 to 5V		125.0μV
	1 to 5V (extended mode)	-8000 to 32000	125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		47.7μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	4 to 20mA (extended mode)	-8000 to 32000	500.0nA
	User range setting	-32000 to 32000	190.7nA

*3 The following table lists the accuracy of the Q64AD.

Analog input range		Normal resolution mode			High resolution mode		
		Ambient temperature 0 to 55℃		Ambient temperature 25±5℃	Ambient temperature 0 to 55℃		Ambient temperature 25±5℃
		With temperature drift correction	Without temperature drift correction		With temperature drift correction	Without temperature drift correction	
Voltage	0 to 10V	Within ±0.3% (±12 digit)	Within ±0.4% (±16 digit)	Within ±0.1% (±4 digit)	Within ±0.3% (±48 digit)	Within ±0.4% (±64 digit)	Within ±0.1% (±16 digit)
	-10 to 10V						
	0 to 5V				Within ±0.3% (±36 digit)	Within ±0.4% (±48 digit)	Within ±0.1% (±12 digit)
	1 to 5V						
	User range setting						
Current	0 to 20mA						
	4 to 20mA						
	User range setting						

Q68ADV and R60ADV8

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68ADV	R60ADV8		
Number of analog input channels	8 channels		○	
Analog input voltage	-10 to 10VDC (input resistance: 1MΩ)		○	
Analog input current	—		—	
Digital output value	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q68ADV. Converted values are stored in the buffer memory area 'Digital operation value'.
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q68ADV. Converted values are stored in the buffer memory area 'Digital operation value'.
Accuracy (in respect to maximum digital output value)	*3	Ambient temperature 25±5℃ : Within ±0.1% (±32 digit) Ambient temperature 0 to 55℃ : Within ±0.3% (±96 digit)	○	
Conversion speed	80μs/channel (When the temperature drift correction is used, the time calculated by adding 160μs will be used regardless of the number of channels used)	80μs/channel	○	
Absolute maximum input	Voltage: ±15V		○	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-insulation		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption (5VDC)	0.64A	0.23A	—	
Weight	0.19kg	0.12kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q68ADV.

Analog input range		Normal resolution mode		High resolution mode	
		Digital output value	Resolution	Digital output value	Resolution
Voltage	0 to 10V	0 to 4000	2.5mV	0 to 16000	0.625mV
	0 to 5V		1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.375mV	-12000 to 12000	0.333mV

*2 The following table lists the I/O characteristics and resolution values of the R60ADV8.

Analog input range		Digital output value	Resolution
Voltage	0 to 10V	0 to 32000	312.5μV
	0 to 5V		156.3μV
	1 to 5V		125.0μV
	1 to 5V (extended mode)	-8000 to 32000	125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		47.7μV

*3 The following table lists the accuracy of the Q68ADV.

Analog input range		Normal resolution mode			High resolution mode		
		Ambient temperature 0 to 55℃		Ambient temperature 25±5℃	Ambient temperature 0 to 55℃		Ambient temperature 25±5℃
		With temperature drift correction	Without temperature drift correction		With temperature drift correction	Without temperature drift correction	
Voltage	0 to 10V	Within ±0.3% (±12 digit)	Within ±0.4% (±16 digit)	Within ±0.1% (±4 digit)	Within ±0.3% (±48 digit)	Within ±0.4% (±64 digit)	Within ±0.1% (±16 digit)
	-10 to 10V						
	0 to 5V				Within ±0.3% (±36 digit)	Within ±0.4% (±48 digit)	Within ±0.1% (±12 digit)
	1 to 5V						
	User range setting						

Q68ADI and R60ADI8

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68ADI	R60ADI8		
Number of analog input channels	8 channels		○	
Analog input voltage	—		—	
Analog input current	0 to 20mADC (input resistance 250Ω)		○	
Digital output value	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q68ADI. Converted values are stored in the buffer memory area 'Digital operation value'.
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q68ADI. Converted values are stored in the buffer memory area 'Digital operation value'.
Accuracy (in respect to maximum digital output value)	*3	Ambient temperature 25±5℃ : Within ±0.1% (±32 digit) Ambient temperature 0 to 55℃ : Within ±0.3% (±96 digit)	○	
Conversion speed	80μs/channel (When the temperature drift correction is used, the time calculated by adding 160μs will be used regardless of the number of channels used)	80μs/channel	○	
Absolute maximum input	Current: 30mA		○	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-insulation		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption (5VDC)	0.64A	0.22A	—	
Weight	0.19kg	0.12kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q68ADI.

Analog input range		Normal resolution mode		High resolution mode	
		Digital output value	Resolution	Digital output value	Resolution
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.37μA	-12000 to 12000	1.33μA

*2 The following table lists the I/O characteristics and resolution values of the R60ADI8.

Analog input range		Digital output value	Resolution
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	4 to 20mA (extended mode)	-8000 to 32000	500.0nA
	User range setting	-32000 to 32000	190.7nA

*3 The following table lists the accuracy of the Q68ADI.

Analog input range		Normal resolution mode			High resolution mode		
		Ambient temperature 0 to 55℃		Ambient temperature 25±5℃	Ambient temperature 0 to 55℃		Ambient temperature 25±5℃
		With temperature drift correction	Without temperature drift correction		With temperature drift correction	Without temperature drift correction	
Current	0 to 20mA	Within ±0.3% (±12 digit)	Within ±0.4% (±16 digit)	Within ±0.1% (±4 digit)	Within ±0.3% (36 digit)	Within ±0.4% (48 digit)	Within ±0.1% (12 digit)
	4 to 20mA						
	User range setting						

Q68AD-G and R60AD8-G

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68AD-G	R60AD8-G		
Number of analog input channels	8 channels		○	
Analog input voltage	-10 to 10VDC (input resistance: 1MΩ)		○	
Analog input current	0 to 20mADC (input resistance 250Ω)		○	
Digital output value	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383 Using scaling function : -32768 to 32767	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q68AD-G. Converted values are stored in the buffer memory area 'Digital operation value'.
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q68AD-G. Converted values are stored in the buffer memory area 'Digital operation value'.
Accuracy (in respect to maximum digital output value)	Reference accuracy: ±0.1% Normal resolution mode: ±4 digit High resolution mode (0 to 10V, -10 to 10V): ±16 digit High resolution mode (other than the above) : ±12 digit Temperature coefficient : ±71.4ppm/℃ (0.00714%/℃)	Reference accuracy : Within ±0.1% (±32 digit) Temperature coefficient : ±35ppm/℃ (0.0035%/℃)	○	
Common mode characteristics	Common mode voltage between input and common ground (input voltage 0V): 500VAC Common mode voltage rejection ratio (VCM < 500V): 60Hz 107dB, 50Hz 106dB		○	
Sampling cycle (conversion speed)	10ms/channel		○	
Response time	20ms		○	
Absolute maximum input	Voltage: ±15V, current: 30mA		○	
Isolation method	Between I/O terminals and programmable controller power supply: Transformer Between analog input channels: Transformer		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply: 500VAC rms for 1 minute Between analog input channels: 1000VAC rms for 1 minute		○	
Insulation resistance	Between the I/O terminal and programmable controller power supply: 500VDC 10MΩ or more Between analog input channels: 500VDC 10MΩ or more		○	
Maximum number of writes to flash memory	50000 times maximum		○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	40-pin connector (A6CON1/2/4)		○	Existing external wiring can be used.
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Internal current consumption (5VDC)	0.46A	0.33A	—	
Weight	0.16kg	0.19kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q68AD-G.

Input	Analog input range	Normal resolution mode		High resolution mode	
		Digital output value	Resolution	Digital output value	Resolution
Voltage	0 to 10V	0 to 4000	2.5mV	0 to 16000	0.625mV
	0 to 5V		1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	1 to 5V (extended mode)	-1000 to 4500	1.0mV	-3000 to 13500	0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.375mV	-12000 to 12000	0.333mV
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	4 to 20mA (extended mode)	-1000 to 4500	4μA	-3000 to 13500	1.33μA
	User range setting	-4000 to 4000	1.37μA	-12000 to 12000	1.33μA

*2 The following table lists the I/O characteristics and resolution values of the R60AD8-G.

Analog input range		Digital output value	Resolution
Voltage	0 to 10V	0 to 32000	312.5μV
	0 to 5V		156.3μV
	1 to 5V		125.0μV
	1 to 5V (extended mode)	-8000 to 32767 (-8000 to 36000)	125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		29.2μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	4 to 20mA (extended mode)	-8000 to 32767 (-8000 to 36000)	500.0nA
	User range setting	-32000 to 32000	115.5nA

Q66AD-DG and R60AD6-DG

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q66AD-DG	R60AD6-DG		
Number of analog input channels		6 channels		○	
Input specifications	With 2-wire transmitter	4 to 20mADC (input resistance 250Ω)		○	
	Without 2-wire transmitter	0 to 20mADC (input resistance 250Ω)		○	
Power supply part for 2-wire transmitter	Supply voltage	26±2VDC		○	
	Maximum supply current	24mADC		○	
	Short-circuit protection	Available (limit current: 25 to 35mA)		○	
	Check terminals	Available		○	
Digital output value		16-bit signed binary Normal resolution mode: -96 to 4095 High resolution mode: -288 to 12287 Using scaling function : -32768 to 32767	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q66AD-DG. Converted values are stored in the buffer memory area 'Digital operation value'.
I/O characteristics, resolution		Refer to *1.	Refer to *2.	△	Use the scaling function to convert values to the same range as the Q66AD-DG. Converted values are stored in the buffer memory area 'Digital operation value'.
Accuracy (in respect to maximum digital output value)		Reference accuracy: ±0.1% Normal resolution mode: ±4 digit High resolution mode: ±12 digit Temperature coefficient : ±71.4ppm/℃ (0.00714%/℃)	Reference accuracy : Within ±0.1% (±32 digit) Temperature coefficient : ±35ppm/℃ (0.0035%/℃)	○	
Sampling cycle (conversion speed)		10ms/channel		○	
Response time		20ms		○	
Absolute maximum input		±30mA	-22mA/+35mA	△	The absolute maximum input range is changed after migration.
Isolation method		Between I/O terminals and programmable controller power supply: Transformer Between analog input channels: Transformer Between external power supply and analog input: Transformer		○	
Dielectric withstand voltage		Between the I/O terminal and programmable controller power supply: 500VAC rms for 1 minute Between analog input channels: 1000VAC rms for 1 minute Between external power supply and analog input: 500VAC rms for 1 minute		○	
Insulation resistance		Between the I/O terminal and programmable controller power supply: 500VDC 10MΩ or more Between analog input channels: 500VDC 10MΩ or more Between external power supply and analog input: 500VDC, 10MΩ or more		○	
Maximum number of writes to flash memory		50000 times maximum		○	
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)		○	
External interface		40-pin connector (A6CON1/2/4)		○	Existing external wiring can be used.
Applicable wire size		For A6CON1/4: 0.088 to 0.3㎟ (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24㎟ (28 to 24 AWG) (stranded wire)		○	

Item	Specifications		Compatibility	Precautions
	Q66AD-DG	R60AD6-DG		
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 400μs Current consumption: 0.36A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.5A, within 550μs Current consumption: 0.27A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.42A	0.36A	—	
Weight	0.22kg	0.20kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q66AD-DG.

Analog input range	Normal resolution mode		High resolution mode	
	Digital output value	Resolution	Digital output value	Resolution
0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
4 to 20mA		4μA		1.33μA
4 to 20mA (extended mode)	-1000 to 4500	4μA	-3000 to 13500	1.33μA
User range setting	0 to 4000	1.37μA	0 to 12000	1.33μA

*2 The following table lists the I/O characteristics and resolution values of the R60AD6-DG.

Analog input range		Digital output value	Resolution
2-wire transmitter range	4 to 20mA	0 to 32000	500.0nA
	4 to 20mA (extended mode)	-8000 to 32767 (-8000 to 36000)	500.0nA
	User range setting	0 to 32000	466.0nA
Current input range	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	4 to 20mA (extended mode)	-8000 to 32767 (-8000 to 36000)	500.0nA
	User range setting	0 to 32000	466.0nA

Q64ADH and R60ADH4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q64ADH	R60ADH4		
Number of analog input channels	4 channels		○	
Analog input voltage	-10 to 10VDC (input resistance: 1MΩ)		○	
Analog input current	0 to 20mADC (input resistance 250Ω)		○	
Digital output value	16-bit signed binary : -20480 to 20479 Using scaling function : -32768 to 32767	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q64ADH. Converted values are stored in the buffer memory area 'Digital operation value'.
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q64ADH. Converted values are stored in the buffer memory area 'Digital operation value'.
Accuracy (in respect to maximum digital output value)	Ambient temperature 25±5℃ : Within ±0.1% (±20 digit) Ambient temperature 0 to 55℃ : Within ±0.2% (±40 digit)	Ambient temperature 25±5℃ : Within ±0.1% (±32 digit) Ambient temperature 0 to 55℃ : Within ±0.2% (±64 digit)	○	
Conversion speed	High speed: 20μs/channel Medium speed: 80μs/channel Low speed: 1ms/channel	Simultaneous conversion mode: 5μs/4 channels, normal mode (medium speed) : 10μs/channel Normal mode (low speed) : 20μs/channel	○	The conversion speed is faster than the low and medium speeds of the Q64ADH. Therefore, some noise may be retrieved as analog signals which is not the case with the Q64ADH. In this case, use the averaging processing function to eliminate noise effect.
Absolute maximum input	Voltage: ±15V, current: 30mA		○	
Number of offset/gain settings	50000 times maximum	10000 times maximum	△	The maximum number of settings is different.
Isolation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-insulation		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply: 500VAC rms for 1 minute		○	
Insulation resistance	Between the I/O terminal and programmable controller power supply: 500VDC 10MΩ or more		○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	The existing external wiring and terminal blocks in the existing system can be used.
External interface	18-point terminal block (M3 screws)		○	
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption (5VDC)	0.52A	0.73A	—	
Weight	0.18kg	0.20kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q64ADH.

Analog input range		Digital output value	Resolution
Voltage	0 to 10V	0 to 20000	500μV
	0 to 5V		250μV
	1 to 5V		200μV
	-10 to 10V	-20000 to 20000	500μV
	1 to 5V (extended mode)	-5000 to 22500	200μV
	User range setting	-20000 to 20000	219μV
Current	0 to 20mA	0 to 20000	1000nA
	4 to 20mA		800nA
	4 to 20mA (extended mode)	-5000 to 22500	800nA
	User range setting	-20000 to 20000	878nA

*2 The following table lists the I/O characteristics and resolution values of the R60ADH4.

Analog input range		Digital output value	Resolution
Voltage	0 to 10V	0 to 32000	312.5μV
	0 to 5V		156.3μV
	1 to 5V		125.0μV
	1 to 5V (extended mode)	-8000 to 32000	125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		125.0μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	4 to 20mA (extended mode)	-8000 to 32000	500.0nA
	User range setting	-32000 to 32000	500.0nA

Analog output module

Q62DA and R60DA4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q62DA	R60DA4		
Number of analog output channels	2 channels	4 channels	○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q62DA.
Analog output voltage	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ or more) 0 to 5VDC (External load resistance value 500Ω or more)	○	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω)		○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q62DA.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±10mV, Current: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV, Current: ±60μA)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Voltage: ±12V, current: 21mA	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Non-insulation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer	○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	

Item	Specifications		Compatibility	Precautions
	Q62DA	R60DA4		
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 1.9A, within 300μs Current consumption: 0.12A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 690μs Current consumption: 0.14A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.33A	0.16A	—	
Weight	0.19kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q62DA.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Voltage	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.75mV	-12000 to 12000	0.333mV
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.5μA	-12000 to 12000	0.83μA

*2 The following table lists the I/O characteristics and resolution values of the R60DA4.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting (voltage)		312.5μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	User range setting (current)	-32000 to 32000	350.9nA

Q62DAN and R60DA4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q62DAN	R60DA4		
Number of analog output channels	2 channels	4 channels	○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q62DAN.
Analog output voltage	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ or more) 0 to 5VDC (External load resistance value 500Ω or more)	○	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω)		○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q62DAN.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±10mV, Current: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV, Current: ±60μA)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Voltage: ±12V, current: 21mA	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 2.5A, within 250μs Current consumption: 0.15A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 690μs Current consumption: 0.14A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.33A	0.16A	—	
Weight	0.19kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q62DAN.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Voltage	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.75mV	-12000 to 12000	0.333mV
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.5μA	-12000 to 12000	0.83μA

*2 The following table lists the I/O characteristics and resolution values of the R60DA4.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		312.5μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	User range setting	-32000 to 32000	350.9nA

Q64DA and R60DA4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q64DA	R60DA4		
Number of analog output channels	4 channels		○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q64DA.
Analog output voltage	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ or more) 0 to 5VDC (External load resistance value 500Ω or more)	○	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω)		○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q64DA.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±10mV, Current: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV, Current: ±60μA)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Voltage: ±12V, current: 21mA	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Non-insulation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer	○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 3.1A, within 300μs Current consumption: 0.18A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 690μs Current consumption: 0.14A	△	Check the specifications of the external power supply used before migration.

Item	Specifications		Compatibility	Precautions
	Q64DA	R60DA4		
Internal current consumption (5VDC)	0.34A	0.16A	—	
Weight	0.19kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q64DA.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Voltage	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.75mV	-12000 to 12000	0.333mV
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.5μA	-12000 to 12000	0.83μA

*2 The following table lists the I/O characteristics and resolution values of the R60DA4.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		312.5μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	User range setting	-32000 to 32000	350.9nA

Q64DAN and R60DA4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q64DAN	R60DA4		
Number of analog output channels	4 channels		○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q64DAN.
Analog output voltage	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ or more) 0 to 5VDC (External load resistance value 500Ω or more)	○	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω)		○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q64DAN.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±10mV, Current: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV, Current: ±60μA)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Voltage: ±12V, current: 21mA	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 2.5A, within 250μs Current consumption: 0.24A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 690μs Current consumption: 0.14A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.34A	0.16A	—	
Weight	0.20kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q64DAN.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Voltage	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.75mV	-12000 to 12000	0.333mV
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.5μA	-12000 to 12000	0.83μA

*2 The following table lists the I/O characteristics and resolution values of the R60DA4.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		312.5μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	User range setting	-32000 to 32000	350.9nA

Q68DAV and R60DAV8

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68DAV	R60DAV8		
Number of analog output channels	8 channels		○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q68DAV.
Analog output voltage	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ or more) 0 to 5VDC (External load resistance value 500Ω or more)	○	
Analog output current	—		—	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q68DAV.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±10mV) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Voltage: ±12V	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Non-insulation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer	○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	FG terminal: R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A Terminal other than FG terminal: R1.25-3 (A solderless terminal with sleeve cannot be used.)	R1.25-3 (A solderless terminal with sleeve cannot be used.)	○	

Item	Specifications		Compatibility	Precautions
	Q68DAV	R60DAV8		
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 3.3A, within 70μs Current consumption: 0.19A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 670μs Current consumption: 0.16A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.39A	0.16A	—	
Weight	0.18kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q68DAV.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Voltage	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.75mV	-12000 to 12000	0.333mV

*2 The following table lists the I/O characteristics and resolution values of the R60DAV8.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		312.5μV

Q68DAVN and R60DAV8

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68DAVN	R60DAV8		
Number of analog output channels	8 channels		○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q68DAVN.
Analog output voltage	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ or more) 0 to 5VDC (External load resistance value 500Ω or more)	○	
Analog output current	—		—	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q68DAVN.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±10mV) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Voltage: ±12V	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	FG terminal: R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A Terminal other than FG terminal: R1.25-3 (A solderless terminal with sleeve cannot be used.)	R1.25-3 (A solderless terminal with sleeve cannot be used.)	○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 2.5A, within 230μs Current consumption: 0.20A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 670μs Current consumption: 0.16A	△	Check the specifications of the external power supply used before migration.

Item	Specifications		Compatibility	Precautions
	Q68DAVN	R60DAV8		
Internal current consumption (5VDC)	0.38A	0.16A	—	
Weight	0.20kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q68DAVN.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Voltage	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	User range setting		0.75mV	-12000 to 12000	0.333mV

*2 The following table lists the I/O characteristics and resolution values of the R60DAV8.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting		312.5μV

Q68DAI and R60DAI8

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68DAI	R60DAI8		
Number of analog output channels	8 channels		○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q68DAI.
Analog output voltage	—		—	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω)		○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q68DAI.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±60μA)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Current: 21mA	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Non-insulation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer	○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75㎟ (22 to 18 AWG)		○	
Applicable solderless terminal	FG terminal: R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A Terminal other than FG terminal: R1.25-3 (A solderless terminal with sleeve cannot be used.)	R1.25-3 (A solderless terminal with sleeve cannot be used.)	○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 3.1A, within 75μs Current consumption: 0.28A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 700μs Current consumption: 0.26A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.38A	0.16A	—	
Weight	0.18kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q68DAI.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.5μA	-12000 to 12000	0.83μA

*2 The following table lists the I/O characteristics and resolution values of the R60DAI8.

Analog output range		Digital output value	Resolution
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	User range setting	-32000 to 32000	350.9nA

Q68DAIN and R60DAI8

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q68DAIN	R60DAI8		
Number of analog output channels	8 channels		○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q68DAIN.
Analog output voltage	—		—	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω)		○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q68DAIN.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±60μA)		○	
Conversion speed	80μs/channel		○	
Absolute maximum output	Current: 21mA	—	—	
Number of offset/gain settings	100000 times maximum	50000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply : 500VAC for 1 minute Between external power supply and analog output : 500VAC for 1 minute	Between the I/O terminal and programmable controller power supply : 500VAC rms for 1 minute Between external power supply and analog output : 500VAC rms for 1 minute	○	
Insulation resistance	Between the I/O terminal and programmable controller power supply : 500VDC 20MΩ or more Between external power supply and analog output : 500VDC 20MΩ or more	Between the I/O terminal and programmable controller power supply : 500VDC 10MΩ or more	○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	FG terminal: R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A Terminal other than FG terminal: R1.25-3 (A solderless terminal with sleeve cannot be used.)	R1.25-3 (A solderless terminal with sleeve cannot be used.)	○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 2.5A, within 230μs Current consumption: 0.27A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 700μs Current consumption: 0.26A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.38A	0.16A	—	
Weight	0.20kg	0.14kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q68DAIN.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	User range setting	-4000 to 4000	1.5μA	-12000 to 12000	0.83μA

*2 The following table lists the I/O characteristics and resolution values of the R60DAI8.

Analog output range		Digital output value	Resolution
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	User range setting	-32000 to 32000	350.9nA

Q66DA-G and R60DA8-G

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q66DA-G	R60DA8-G		
Number of analog output channels	6 channels	8 channels	○	
Digital input	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q66DA-G.
Analog output voltage	-12 to 12VDC (external load resistance value 1kΩ to 1MΩ)		○	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω) 0 to 22mADC (external load resistance value[*3])		○	
I/O characteristics, resolution	[*1]	[*2]	△	Use the scaling function to convert values to the same range as the Q66DA-G.
Accuracy (in respect to maximum analog output value)	Reference accuracy: ±0.1% (Voltage: ±10mV, Current: ±20μA) Temperature coefficient: ±80ppm/℃ (0.008%/℃)	Reference accuracy: ±0.1% (Voltage: ±10mV, Current: ±20μA) Temperature coefficient: ±50ppm/℃ (0.005%/℃)	○	
Conversion speed	6ms/channel	1ms/channel	○	
Absolute maximum output	Voltage: ±13V, current: 23mA	—	—	
Maximum number of writes to flash memory	50000 times maximum		○	
Output short circuit protection	Available		○	
Isolation method	Between the output terminal and programmable controller power supply: Transformer Between analog output channels: Transformer Between external power supply and analog output channel: Transformer		○	
Dielectric withstand voltage	Between the output terminal and programmable controller power supply: 500VAC rms for 1 minute Between analog output channels: 1000VAC rms for 1 minute Between external power supply and analog output channel: 500VAC rms for 1 minute		○	
Insulation resistance	Between the output terminal and programmable controller power supply: 500VDC, 10MΩ or more Between analog output channels: 500VDC,10MΩ or more Between external power supply and analog output channel: 500VDC, 10MΩ or more		○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	40-pin connector (A6CON1/2/4)		○	Existing external wiring can be used.
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 4.8A, within 400μs Current consumption: 0.26A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 4.2A, within 540μs Current consumption: 0.36A	△	Check the specifications of the external power supply used before migration.
Internal current consumption (5VDC)	0.62A	0.18A	—	
Weight	0.22kg	0.21kg	—	

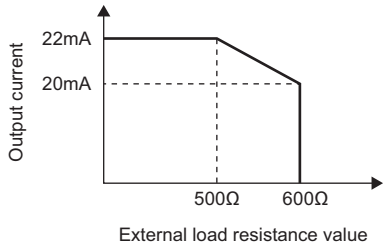
*1 The following table lists the I/O characteristics and resolution values of the Q66DA-G.

Analog output range		Normal resolution mode		High resolution mode	
		Digital input value	Resolution	Digital input value	Resolution
Voltage	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
	1 to 5V		1.0mV		0.333mV
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
	1 to 5V (extended mode)	-1000 to 4500	1.0mV	-3000 to 13500	0.333mV
	User range setting 2	-4000 to 4000	0.75mV	-12000 to 12000	0.400mV
	User range setting 3		0.375mV		0.210mV
Current	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66μA
	4 to 20mA		4μA		1.33μA
	4 to 20mA (extended mode)	-1000 to 4500	4μA	-3000 to 13500	1.33μA
	User range setting 1	-4000 to 4000	1.5μA	-12000 to 12000	0.95μA

*2 The following table lists the I/O characteristics and resolution values of the R60DA8-G.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	-12 to 12V		378.4μV
	1 to 5V (extended mode)	-8000 to 36000	125.0μV
	User range setting 2	-32000 to 32000	378.4μV
	User range setting 3		312.0μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	4 to 20mA (extended mode)	-8000 to 36000	500.0nA
	User range setting 1	-32000 to 32000	360.1nA

*3 For an output current of 20mA or higher, the corresponding external load resistance value is plotted as shown below.



Q64DAH and R60DAH4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	Q64DAH	R60DAH4		
Number of analog output channels	4 channels		○	
Digital input	16-bit signed binary : -20480 to 20479 Using scaling function : -32768 to 32767	16-bit signed binary : -32768 to 32767	△	Use the scaling function to convert values to the same range as the Q64DAH.
Analog output voltage	-10 to 10VDC (External load resistance value 1kΩ to 1MΩ)	-10 to 10VDC (External load resistance value 1kΩ or more) 0 to 5VDC (External load resistance value 500Ω or more)	○	
Analog output current	0 to 20mADC (External load resistance value 0 to 600Ω)	0 to 20mADC (External load resistance value 50 to 600Ω)	△	The external load should be 50Ω or more.
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the Q64DAH.
Accuracy (in respect to maximum analog output value)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±10mV, Current: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV, Current: ±60μA)		○	
Conversion speed	Normal output mode: 20μs/channel Wave output mode: 50μs/channel, 80μs/channel	High-speed output mode: 1μs/channel Normal output mode: 10μs/channel Wave output mode: 20μs/channel	△	*3
Number of offset/gain settings	50000 times maximum	10000 times maximum	△	The maximum number of settings is different.
Output short circuit protection	Available		○	
Insulation method	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-insulation Between external power supply and analog output: Transformer		○	
Dielectric withstand voltage	Between the I/O terminal and programmable controller power supply: 500VAC rms for 1 minute Between external power supply and analog output: 500VAC rms for 1 minute		○	
Insulation resistance	Between the I/O terminal and programmable controller power supply: 500VDC 10MΩ or more		○	
Number of occupied I/O points	16 points (I/O assignment: Intelligent 16 points)		○	
External interface	18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
External power supply	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 4.3A, 1000μs or shorter Current consumption: 0.18A	24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 3.8A, 700μs or shorter Current consumption: 0.13A	○	
Internal current consumption (5VDC)	0.12A	0.27A	—	
Weight	0.19kg	0.20kg	—	

*1 The following table lists the I/O characteristics and resolution values of the Q64DAH.

Analog output range		Digital value	Resolution
Voltage	0 to 5V	0 to 20000	250μV
	1 to 5V		200μV
	-10 to 10V	-20000 to 20000	500μV
	User range setting		333μV
Current	0 to 20mA	0 to 20000	1000nA
	4 to 20mA		800nA
	User range setting	-20000 to 20000	700nA

*2 The following table lists the I/O characteristics and resolution values of the R60DAH4.

Analog output range		Digital output value	Resolution
Voltage	0 to 5V	0 to 32000	156.3μV
	1 to 5V		125.0μV
	-10 to 10V	-32000 to 32000	312.5μV
	User range setting (voltage)		312.5μV
Current	0 to 20mA	0 to 32000	625.0nA
	4 to 20mA		500.0nA
	User range setting (current)	-32000 to 32000	360.0nA

*3 Because the conversion speed is faster than that of the Q64DAH, the analog output time per wave data point in wave output mode is shorter.
Adjust the analog output time by using any of the following methods.
· Set the "CH□ Constant for wave output conversion cycle" and adjust the analog output time per wave data point.
· Modify the wave data according to the conversion speed of the R60DAH4.

Temperature input module

Q68RD3-G and R60RD8-G

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q68RD3-G	R60RD8-G		
Number of channels		8 channels		○	
Output	Measured temperature value	16-bit signed binary (-2000 to 8500)		○	
	Scaling value	16-bit signed binary		○	
Usable RTD	Pt100	○(IEC 751 1983, JIS C 1604-1997)	○(IEC 751 1983, JIS C 1604-2013)	○	
	JPt100	○(JIS C 1604-1981)		○	
	Ni100	○(DIN 43760 1987)		○	
	Pt50	—	○(JIS C 1604-1981)	—	
Temperature measurement range	Pt100	-200 to 850℃		○	
	JPt100	-180 to 600℃		○	
	Ni100	-60 to 180℃	-60 to 250℃	○	
	Pt50	—	-200 to 650℃	—	
Temperature detecting output current		1.0mA or lower		○	
Conversion accuracy	Pt100	-200 to 850℃: ±0.8℃ (Ambient temperature: 25 ±5℃), ±2.4℃ (Ambient temperature: 0 to 55℃) -20 to 120℃: ±0.3℃ (Ambient temperature: 25 ±5℃), ±1.1℃ (Ambient temperature: 0 to 55℃) 0 to 200℃: ±0.4℃ (Ambient temperature: 25 ±5℃), ±1.2℃ (Ambient temperature: 0 to 55℃)		○	
	JPt100	-180 to 600℃: ±0.8℃ (Ambient temperature: 25 ±5℃), ±2.4℃ (Ambient temperature: 0 to 55℃) -20 to 120℃: ±0.3℃ (Ambient temperature: 25 ±5℃), ±1.1℃ (Ambient temperature: 0 to 55℃) 0 to 200℃: ±0.4℃ (Ambient temperature: 25 ±5℃), ±1.2℃ (Ambient temperature: 0 to 55℃)		○	
	Ni100	-60 to 180℃: ±0.4℃ (Ambient temperature: 25 ±5℃), ±1.2℃ (Ambient temperature: 0 to 55℃)	-60 to 250℃: ±0.4℃ (Ambient temperature: 25 ±5℃), ±1.2℃ (Ambient temperature: 0 to 55℃)	○	
	Pt50	—	-200 to 650℃ ±0.8℃ (Ambient temperature: 25 ±5℃), ±2.4℃ (Ambient temperature: 0 to 55℃)	—	
Resolution		0.1℃		○	
Conversion speed		320ms/8 channels	10ms/channel	△	The conversion speed is increased.
Number of analog input channels		8 channels		○	
Isolation method		Between RTD input channel and programmable controller power supply: Transformer Between RTD input channels: Transformer		○	
Dielectric withstand voltage		Between RTD input channel and programmable controller power supply: 500VAC rms for 1 minute Between RTD input channels: 1000VAC rms for 1 minute		○	
Isolation resistance		500VDC 10MΩ or more		○	
Disconnection detection		Available		○	
Maximum number of writes to flash memory		50000 times		○	
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)		○	

Item	Specifications		Compatibility	Precautions
	Q68RD3-G	R60RD8-G		
External interface	40-pin connector (A6CON1/2/4)		○	Existing external wiring can be used.
Applicable wire size	For A6CON1/4: 0.088 to 0.3㎟ (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24㎟ (28 to 24 AWG) (stranded wire)		○	
Internal current consumption (5VDC)	0.54A	0.35A	—	
Weight	0.20kg	0.19kg	—	

Q68TD-G-H01 and R60TD8-G

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q68TD-G-H01	R60TD8-G		
Number of channels		8 channels		○	
Output	Measured temperature value	16-bit signed binary (-2700 to 18200)		○	
	Scaling value	16-bit signed binary		○	
Thermocouple compliance standards		IEC 60584-1(1995), IEC 60584-2(1982), JIS C1602-1995		○	
Cold junction compensation accuracy		±1.0℃		○	
Accuracy		(Conversion accuracy) + (Temperature characteristics) × (Operating ambient temperature variation) + (Cold junction compensation accuracy)		○	
Resolution		B, R, S, N: 0.3℃ K, E, J, T: 0.1℃		○	
Conversion speed		320ms/8 channels	30ms/channel	△	The conversion speed is increased.
Sampling cycle		320ms/8 channels	—		
Number of analog input channels		8 channels + Cold junction compensation channels/ 1 module		○	
Isolation method		Between thermocouple input channel and programmable controller power supply: Transformer Between thermocouple input channels: Transformer Between cold junction compensation channel and programmable controller power supply: No isolation		○	
Dielectric withstand voltage		Between thermocouple input channel and programmable controller power supply: 500VAC rms for 1 minute Between thermocouple input channels: 1000VAC rms for 1 minute		○	
Isolation resistance		Between thermocouple input channel and programmable controller power supply: 500VDC, 10MΩ or more Between thermocouple input channels: 500VDC, 10MΩ or more		○	
Disconnection detection		Not available	Available	—	
Maximum number of writes to flash memory		50000 times		○	
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)		○	
External interface		40-pin connector (A6CON1/2/4)		○	Existing external wiring can be used.
Applicable wire size		For A6CON1/4: 0.088 to 0.3㎟ (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24㎟ (28 to 24 AWG) (stranded wire)		○	
Internal current consumption (5VDC)		0.49A	0.36A	—	
Weight		0.18kg	0.19kg	—	

Q68TD-G-H02 and R60TD8-G

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q68TD-G-H02	R60TD8-G		
Number of channels		8 channels		○	
Output	Measured temperature value	16-bit signed binary (-2700 to 18200)		○	
	Scaling value	16-bit signed binary		○	
Thermocouple compliance standards		IEC 60584-1(1995), IEC 60584-2(1982), JIS C1602-1995		○	
Cold junction compensation accuracy		±1.0℃		○	
Accuracy		(Conversion accuracy) + (Temperature characteristics) × (Operating ambient temperature variation) + (Cold junction compensation accuracy)		○	
Resolution		B, R, S, N: 0.3℃ K, E, J, T: 0.1℃		○	
Conversion speed		640ms/8 channels	30ms/channel	△	The conversion speed is increased.
Sampling cycle		320ms/8 channels	—		
Number of analog input channels		8 channels + Cold junction compensation channels/ 1 module		○	
Isolation method		Between thermocouple input channel and programmable controller power supply: Transformer Between thermocouple input channels: Transformer Between cold junction compensation channel and programmable controller power supply: No isolation		○	
Dielectric withstand voltage		Between thermocouple input channel and programmable controller power supply: 500VAC rms for 1 minute Between thermocouple input channels: 1000VAC rms for 1 minute		○	
Isolation resistance		Between thermocouple input channel and programmable controller power supply: 500VDC, 10MΩ or more Between thermocouple input channels: 500VDC, 10MΩ or more		○	
Disconnection detection		Available		○	
Maximum number of writes to flash memory		50000 times		○	
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)		○	
External interface		40-pin connector (A6CON1/2/4)		○	Existing external wiring can be used.
Applicable wire size		For A6CON1/4: 0.088 to 0.3㎟ (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24㎟ (28 to 24 AWG) (stranded wire)		○	
Internal current consumption (5VDC)		0.65A	0.36A	—	
Weight		0.22kg	0.19kg	—	

Temperature control module

Q64TCTT and R60TCTRT2TT2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCTT	R60TCTRT2TT2		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable thermocouples		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
	Cold junction temperature compensation accuracy (Ambient temperature: 0 to 55℃)	Temperature process value: -100℃ or more, within ±1.0℃ Temperature process value: -150 to -100℃, within ±2.0℃ Temperature process value: -200 to -150℃, within ±3.0℃			
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCTRT2TT2.
Control output period		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor compensation value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control system		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 1 to 3600s	Integral time (I): 0 to 3600s (set 0 for P control and PD control.)		
		Derivative time (D): 0 to 3600s (set 0 for PI control.)	Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)		
Set value (SV) setting range		Within temperature range set to the used thermocouple		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
E^2PROM write count		100000 times maximum	10^{12} times maximum (writes to non-volatile memory)	○	
Insulation method		Between input and grounding: Transformer Between input and channel: Transformer	Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer	○	
Dielectric strength		Between input and grounding: 500VAC for 1 minute Between input and channel: 500VAC for 1 minute	Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute	○	

Item	Specifications		Compatibility	Precautions
	Q64TCTT	R60TCTRT2TT2		
Insulation resistance	Between input and grounding: 500VDC, 20MΩ or more Between input and channel: 500VDC, 20MΩ or more	Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more	○	
Number of occupied I/O points	16 points, 1 slot (I/O assignment: intelligent 16 points)		○	
External interface	18-point terminal block		○	
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable crimping terminal	R1.25-3 (A crimping terminal with sleeve cannot be used.)		○	
Internal current consumption	0.55A	0.28A	—	
Weight	0.20kg	0.22kg	—	

*1 The following table lists thermocouples usable for the Q64TCTT.

Thermocouple type	℃		℉	
	Temperature measurement range	Resolution	Temperature measurement range	Resolution
R	0 to 1700	1	0 to 3000	1
K	0 to 500 0 to 800 0 to 1300	1	0 to 1000 0 to 2400	1
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
J	0 to 500 0 to 800 0 to 1200	1	0 to 1000 0 to 1600 0 to 2100	1
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0 to 700 -300 to 400	1
	-200.0 to 400.0 0.0 to 400.0	0.1	0.0 to 700.0	0.1
S	0 to 1700	1	0 to 3000	1
B	0 to 1800	1	0 to 3000	1
E	0 to 400 0 to 1000	1	0 to 1800	1
	0.0 to 700.0	0.1	—	—
N	0 to 1300	1	0 to 2300	1
U	0 to 400 -200 to 200	1	0 to 700 -300 to 400	1
	0.0 to 600.0	0.1	—	—
L	0 to 400 0 to 900	1	0 to 800 0 to 1600	1
	0.0 to 400.0 0.0 to 900.0	0.1	—	—
PLⅡ	0 to 1200	1	0 to 2300	1
W5Re/W26Re	0 to 2300	1	0 to 3000	1

*2 The following table lists thermocouples usable for the R60TCTRT2TT2.

Thermocouple type	℃			℉		
	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℃/Ω)	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℉/Ω)
R	0 to 1700	1	0.030	0 to 3000	1	0.054
K	0 to 500 0 to 800 0 to 1300	1	0.005	0 to 1000 0 to 2400	1	0.008
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1300.0	0.1		0.0 to 1000.0	0.1	
J	0 to 500 0 to 800 0 to 1200	1	0.003	0 to 1000 0 to 1600 0 to 2100	1	0.006
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1000.0	0.1		0.0 to 1000.0	0.1	
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0.004	0 to 700 -300 to 400	1	0.008
	-200.0 to 400.0 0.0 to 400.0	0.1		0.0 to 700.0	0.1	
S	0 to 1700	1	0.030	0 to 3000	1	0.054
B	0 to 1800	1	0.038	0 to 3000	1	0.068
E	0 to 400 0 to 1000	1	0.003	0 to 1800	1	0.005
	0.0 to 700.0 -200.0 to 1000.0	0.1		—	—	—
N	0 to 1300	1	0.006	0 to 2300	1	0.011
	0.0 to 1000.0	0.1		—	—	—
U	0 to 400 -200 to 200	1	0.004	0 to 700 -300 to 400	1	0.009
	0.0 to 600.0	0.1		—	—	—
L	0 to 400 0 to 900	1	0.003	0 to 800 0 to 1600	1	0.006
	0.0 to 400.0 0.0 to 900.0	0.1		—	—	—
PLⅡ	0 to 1200	1	0.005	0 to 2300	1	0.010
W5Re/W26Re	0 to 2300	1	0.017	0 to 3000	1	0.021

Q64TCTTN and R60TCTRT2TT2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCTTN	R60TCTRT2TT2		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable thermocouples		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
	Cold junction temperature compensation accuracy (Ambient temperature: 0 to 55℃)	Temperature process value: -100℃ or more Within ±1.0℃ Temperature process value: -150 to -100℃ Within ±2.0℃ Temperature process value: -200 to -150℃ Within ±3.0℃			
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCTRT2TT2.
Control output cycle		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor correction value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control method		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 0 to 3600s (set 0 for P control and PD control.)			
		Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)			
Set value (SV) setting range		Within the temperature range set in the thermocouple to be used		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
Number of accesses to non-volatile memory		Maximum 10^{12} times		○	
Insulation method		Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer		○	
Dielectric withstand voltage		Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute		○	
Insulation resistance		Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more		○	
Number of occupied I/O points		16 points, 1 slot (I/O assignment: intelligent 16 points)		○	
External interface		18-point terminal block		○	
Applicable wire size		0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal		R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption		0.29A	0.28A	—	
Weight		0.20kg	0.22kg	—	

*1 The following table lists thermocouples usable for the Q64TCTTN.

Thermocouple type	℃			℉		
	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℃/Ω)	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℉/Ω)
R	0 to 1700	1	0.030	0 to 3000	1	0.054
K	0 to 500 0 to 800 0 to 1300	1	0.005	0 to 1000 0 to 2400	1	0.008
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1		0.0 to 1000.0	0.1	
J	0 to 500 0 to 800 0 to 1200	1	0.003	0 to 1000 0 to 1600 0 to 2100	1	0.006
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1		0.0 to 1000.0	0.1	
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0.004	0 to 700 -300 to 400	1	0.008
	-200.0 to 400.0 0.0 to 400.0	0.1		0.0 to 700.0	0.1	
S	0 to 1700	1	0.030	0 to 3000	1	0.054
B	0 to 1800	1	0.038	0 to 3000	1	0.068
E	0 to 400 0 to 1000	1	0.003	0 to 1800	1	0.005
	0.0 to 700.0	0.1		—	—	—
N	0 to 1300	1	0.006	0 to 2300	1	0.011
U	0 to 400 -200 to 200	1	0.004	0 to 700 -300 to 400	1	0.009
	0.0 to 600.0	0.1		—	—	—
L	0 to 400 0 to 900	1	0.003	0 to 800 0 to 1600	1	0.006
	0.0 to 400.0 0.0 to 900.0	0.1		—	—	—
PLⅡ	0 to 1200	1	0.005	0 to 2300	1	0.010
W5Re/W26Re	0 to 2300	1	0.017	0 to 3000	1	0.021

*2 The following table lists thermocouples usable for the R60TCTRT2TT2.

Thermocouple type	℃			℉		
	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℃/Ω)	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℉/Ω)
R	0 to 1700	1	0.030	0 to 3000	1	0.054
K	0 to 500 0 to 800 0 to 1300	1	0.005	0 to 1000 0 to 2400	1	0.008
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1300.0	0.1		0.0 to 1000.0	0.1	
J	0 to 500 0 to 800 0 to 1200	1	0.003	0 to 1000 0 to 1600 0 to 2100	1	0.006
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1000.0	0.1		0.0 to 1000.0	0.1	
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0.004	0 to 700 -300 to 400	1	0.008
	-200.0 to 400.0 0.0 to 400.0	0.1		0.0 to 700.0	0.1	
S	0 to 1700	1	0.030	0 to 3000	1	0.054
B	0 to 1800	1	0.038	0 to 3000	1	0.068
E	0 to 400 0 to 1000	1	0.003	0 to 1800	1	0.005
	0.0 to 700.0 -200.0 to 1000.0	0.1		—	—	—
N	0 to 1300	1	0.006	0 to 2300	1	0.011
	0.0 to 1000.0	0.1		—	—	—
U	0 to 400 -200 to 200	1	0.004	0 to 700 -300 to 400	1	0.009
	0.0 to 600.0	0.1		—	—	—
L	0 to 400 0 to 900	1	0.003	0 to 800 0 to 1600	1	0.006
	0.0 to 400.0 0.0 to 900.0	0.1		—	—	—
PLⅡ	0 to 1200	1	0.005	0 to 2300	1	0.010
W5Re/W26Re	0 to 2300	1	0.017	0 to 3000	1	0.021

Q64TCRT and R60TCRT4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCRT	R60TCRT4		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable platinum temperature-measuring resistor		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCRT4.
Control output period		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor compensation value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control system		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 1 to 3600s	Integral time (I): 0 to 3600s (set 0 for P control and PD control.)		
		Derivative time (D): 0 to 3600s (set 0 for PI control.)	Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)		
Set value (SV) setting range		Within the temperature range set to the used platinum temperature-measuring resistor		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
E^2PROM write count		100000 times maximum	10^{12} times maximum (writes to non-volatile memory)	○	
Insulation method		Between input and grounding: Transformer Between input and channel: Transformer	Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer	○	
Dielectric strength		Between input and grounding: 500VAC for 1 minute Between input and channel: 500VAC for 1 minute	Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute	○	
Insulation resistance		Between input and grounding: 500VDC, 20MΩ or more Between input and channel: 500VDC, 20MΩ or more	Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more	○	
Number of occupied I/O points		16 points, 1 slot (I/O assignment: intelligent 16 points)		○	
External interface		18-point terminal block		○	
Applicable wire size		0.3 to 0.75mm² (22 to 18 AWG)		○	

Item	Specifications		Compatibility	Precautions
	Q64TCRT	R60TCRT4		
Applicable crimping terminal	R1.25-3 (A crimping terminal with sleeve cannot be used.)		○	
Internal current consumption	0.55A	0.28A	—	
Weight	0.20kg	0.22kg	—	

*1 The following table lists platinum temperature-measuring resistor usable for the Q64TCRT.

Platinum temperature-measuring resistor type	℃		℉	
	Temperature measurement range	Resolution	Temperature measurement range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

*2 The following table lists platinum temperature-measuring resistor usable for the R60TCRT4.

Platinum temperature-measuring resistor type	℃		℉	
	Temperature measuring range	Resolution	Temperature measuring range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0 -200.0 to 850.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0 -200.0 to 640.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

Q64TCRTN and R60TCRT4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCRTN	R60TCRT4		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable platinum resistance thermometer		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCRT4.
Control output cycle		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor correction value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control method		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 0 to 3600s (set 0 for P control and PD control.)			
		Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)			
Set value (SV) setting range		Within the temperature range set in the platinum resistance thermometer to be used		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
Number of accesses to non-volatile memory		Maximum 10^{12} times		○	
Insulation method		Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer		○	
Dielectric withstand voltage		Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute		○	
Insulation resistance		Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more		○	
Number of occupied I/O points		16 points, 1 slot (I/O assignment: intelligent 16 points)		○	
External interface		18-point terminal block		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal		R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption		0.29A	0.28A	—	
Weight		0.20kg	0.22kg	—	

*1 The following table lists platinum resistance thermometers usable for the Q64TCRTN.

Platinum resistance thermometer type	℃		℉	
	Temperature measuring range	Resolution	Temperature measuring range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

*2 The following table lists platinum resistance thermometers usable for the R60TCRT4.

Platinum resistance thermometer type	℃		℉	
	Temperature measuring range	Resolution	Temperature measuring range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0 -200.0 to 850.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0 -200.0 to 640.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

Q64TCTTBW and R60TCTRT2TT2BW

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCTTBW	R60TCTRT2TT2BW		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable thermocouples		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
	Cold junction temperature compensation accuracy (Ambient temperature: 0 to 55℃)	Temperature process value: -100℃ or more Within ±1.0℃ Temperature process value: -150 to -100℃ Within ±2.0℃ Temperature process value: -200 to -150℃ Within ±3.0℃			
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCTRT2TT2BW.
Control output period		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor compensation value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control system		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 1 to 3600s	Integral time (I): 0 to 3600s (set 0 for P control and PD control.)		
		Derivative time (D): 0 to 3600s (set 0 for PI control.)	Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)		
Set value (SV) setting range		Within the temperature range set in the thermocouple to be used		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
E^2PROM write count		100000 times maximum	10^{12} times maximum (writes to non-volatile memory)	○	
Insulation method		Between input and grounding: Transformer Between input and channel: Transformer	Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer	○	
Dielectric strength		Between input and grounding: 500VAC for 1 minute Between input and channel: 500VAC for 1 minute	Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute	○	

Item	Specifications		Compatibility	Precautions
	Q64TCTTBW	R60TCTRT2TT2BW		
Insulation resistance	Between input and grounding: 500VDC, 20MΩ or more Between input and channel: 500VDC, 20MΩ or more	Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more	○	
Heater disconnection detection specifications	Current sensor*3		○	
	Input accuracy: Full scale × (±1.0%)			
	Alert delay count: 3 to 255 times			
Number of occupied I/O points	32 points, 2 slots (I/O assignment: empty 16 points + intelligent 16 points)		○	
External interface	18-point terminal block × 2		○	
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable crimping terminal	R1.25-3 (A crimping terminal with sleeve cannot be used.)		○	
Internal current consumption	0.64A	0.31A	—	
Weight	0.30kg	0.34kg	—	

*1 The following table lists thermocouples usable for the Q64TCTTBW.

Thermocouple type	℃		℉	
	Temperature measurement range	Resolution	Temperature measurement range	Resolution
R	0 to 1700	1	0 to 3000	1
K	0 to 500 0 to 800 0 to 1300	1	0 to 1000 0 to 2400	1
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
J	0 to 500 0 to 800 0 to 1200	1	0 to 1000 0 to 1600 0 to 2100	1
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0 to 700 -300 to 400	1
	-200.0 to 400.0 0.0 to 400.0	0.1	0.0 to 700.0	0.1
S	0 to 1700	1	0 to 3000	1
B	0 to 1800	1	0 to 3000	1
E	0 to 400 0 to 1000	1	0 to 1800	1
	0.0 to 700.0	0.1	—	—
N	0 to 1300	1	0 to 2300	1
U	0 to 400 -200 to 200	1	0 to 700 -300 to 400	1
	0.0 to 600.0	0.1	—	—
L	0 to 400 0 to 900	1	0 to 800 0 to 1600	1
	0.0 to 400.0 0.0 to 900.0	0.1	—	—
PLⅡ	0 to 1200	1	0 to 2300	1
W5Re/W26Re	0 to 2300	1	0 to 3000	1

*2 The following table lists thermocouples usable for the R60TCTRT2TT2BW.

Thermocouple type	℃			℉		
	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℃/Ω)	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℉/Ω)
R	0 to 1700	1	0.030	0 to 3000	1	0.054
K	0 to 500 0 to 800 0 to 1300	1	0.005	0 to 1000 0 to 2400	1	0.008
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1300.0	0.1		0.0 to 1000.0	0.1	
J	0 to 500 0 to 800 0 to 1200	1	0.003	0 to 1000 0 to 1600 0 to 2100	1	0.006
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1000.0	0.1		0.0 to 1000.0	0.1	
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0.004	0 to 700 -300 to 400	1	0.008
	-200.0 to 400.0 0.0 to 400.0	0.1		0.0 to 700.0	0.1	
S	0 to 1700	1	0.030	0 to 3000	1	0.054
B	0 to 1800	1	0.038	0 to 3000	1	0.068
E	0 to 400 0 to 1000	1	0.003	0 to 1800	1	0.005
	0.0 to 700.0 -200.0 to 1000.0	0.1		—	—	—
N	0 to 1300	1	0.006	0 to 2300	1	0.011
	0.0 to 1000.0	0.1		—	—	—
U	0 to 400 -200 to 200	1	0.004	0 to 700 -300 to 400	1	0.009
	0.0 to 600.0	0.1		—	—	—
L	0 to 400 0 to 900	1	0.003	0 to 800 0 to 1600	1	0.006
	0.0 to 400.0 0.0 to 900.0	0.1		—	—	—
PLⅡ	0 to 1200	1	0.005	0 to 2300	1	0.010
W5Re/W26Re	0 to 2300	1	0.017	0 to 3000	1	0.021

*3 The following list selectable current sensors.

Q64TCTTBW

- CTL-12-S36-8 (0.0 to 100.0A)
- CTL-6-P-H (0.0~20.00A) (The conventional CTL-6-P is also available.)

R60TCTRT2TT2BW

Model name	Contact
CTL-12-S36-10 (0.0 to 100.0A)	U.R.D. Co., LTD. www.u-rd.com
CTL-12-S56-10 (0.0 to 100.0A)	
CTL-6-P-H (0.00 to 20.00A)	
CTL-6-S-H (0.00 to 20.00A)	
CTL-12L-8 (0.0 to 100.0A)	

Q64TCTTBWN and R60TCTRT2TT2BW

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCTTBWN	R60TCTRT2TT2BW		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable thermocouples		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
	Cold junction temperature compensation accuracy (Ambient temperature: 0 to 55℃)	Temperature process value: -100℃ or more Within ±1.0℃ Temperature process value: -150 to -100℃ Within ±2.0℃ Temperature process value: -200 to -150℃ Within ±3.0℃			
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCTRT2TT2BW.
Control output cycle		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor correction value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control method		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 0 to 3600s (set 0 for P control and PD control.)			
		Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)			
Set value (SV) setting range		Within the temperature range set in the thermocouple to be used		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
Number of accesses to non-volatile memory		Maximum 10^{12} times		○	
Insulation method		Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer		○	
Dielectric withstand voltage		Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute		○	
Insulation resistance		Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more		○	
Heater disconnection detection specifications		Current sensor*3		○	
		Input accuracy: Full scale × (±1.0%)			
		Number of alert delay: 3 to 255 times			
Number of occupied I/O points		32 points, 2 slots (I/O assignment: empty 16 points + intelligent 16 points)		○	
External interface		18-point terminal block × 2		○	

Item	Specifications		Compatibility	Precautions
	Q64TCTTBWN	R60TCTRT2TT2BW		
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal	R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption	0.33A	0.31A	—	
Weight	0.30kg	0.34kg	—	

*1 The following table lists thermocouples usable for the Q64TCTTBWN.

Thermocouple type	℃			℉		
	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℃/Ω)	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℉/Ω)
R	0 to 1700	1	0.030	0 to 3000	1	0.054
K	0 to 500 0 to 800 0 to 1300	1	0.005	0 to 1000 0 to 2400	1	0.008
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1		0.0 to 1000.0	0.1	
J	0 to 500 0 to 800 0 to 1200	1	0.003	0 to 1000 0 to 1600 0 to 2100	1	0.006
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1		0.0 to 1000.0	0.1	
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0.004	0 to 700 -300 to 400	1	0.008
	-200.0 to 400.0 0.0 to 400.0	0.1		0.0 to 700.0	0.1	
S	0 to 1700	1	0.030	0 to 3000	1	0.054
B	0 to 1800	1	0.038	0 to 3000	1	0.068
E	0 to 400 0 to 1000	1	0.003	0 to 1800	1	0.005
	0.0 to 700.0	0.1		—	—	—
N	0 to 1300	1	0.006	0 to 2300	1	0.011
U	0 to 400 -200 to 200	1	0.004	0 to 700 -300 to 400	1	0.009
	0.0 to 600.0	0.1		—	—	—
L	0 to 400 0 to 900	1	0.003	0 to 800 0 to 1600	1	0.006
	0.0 to 400.0 0.0 to 900.0	0.1		—	—	—
PLⅡ	0 to 1200	1	0.005	0 to 2300	1	0.010
W5Re/W26Re	0 to 2300	1	0.017	0 to 3000	1	0.021

*2 The following table lists thermocouples usable for the R60TCTRT2TT2BW.

Thermocouple type	℃			℉		
	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℃/Ω)	Temperature measuring range	Resolution	Effect from wiring resistance of 1Ω (℉/Ω)
R	0 to 1700	1	0.030	0 to 3000	1	0.054
K	0 to 500 0 to 800 0 to 1300	1	0.005	0 to 1000 0 to 2400	1	0.008
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1300.0	0.1		0.0 to 1000.0	0.1	
J	0 to 500 0 to 800 0 to 1200	1	0.003	0 to 1000 0 to 1600 0 to 2100	1	0.006
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0 -200.0 to 1000.0	0.1		0.0 to 1000.0	0.1	
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0.004	0 to 700 -300 to 400	1	0.008
	-200.0 to 400.0 0.0 to 400.0	0.1		0.0 to 700.0	0.1	
S	0 to 1700	1	0.030	0 to 3000	1	0.054
B	0 to 1800	1	0.038	0 to 3000	1	0.068
E	0 to 400 0 to 1000	1	0.003	0 to 1800	1	0.005
	0.0 to 700.0 -200.0 to 1000.0	0.1		—	—	—
N	0 to 1300	1	0.006	0 to 2300	1	0.011
	0.0 to 1000.0	0.1		—	—	—
U	0 to 400 -200 to 200	1	0.004	0 to 700 -300 to 400	1	0.009
	0.0 to 600.0	0.1		—	—	—
L	0 to 400 0 to 900	1	0.003	0 to 800 0 to 1600	1	0.006
	0.0 to 400.0 0.0 to 900.0	0.1		—	—	—
PLⅡ	0 to 1200	1	0.005	0 to 2300	1	0.010
W5Re/W26Re	0 to 2300	1	0.017	0 to 3000	1	0.021

*3 The following tables list selectable current sensors.

Q64TCTTBWN

Model name	Contact
CTL-12-S36-8 (0.0 to 100.0A)	U.R.D. Co., LTD. www.u-rd.com
CTL-12-S36-10 (0.0 to 100.0A)	
CTL-12-S56-10 (0.0 to 100.0A)	
CTL-6-P (0.00 to 20.00A)	
CTL-6-P-H (0.00 to 20.00A)	

R60TCTRT2TT2BW

Model name	Contact
CTL-12-S36-10 (0.0 to 100.0A)	U.R.D. Co., LTD. www.u-rd.com
CTL-12-S56-10 (0.0 to 100.0A)	
CTL-6-P-H (0.00 to 20.00A)	
CTL-6-S-H (0.00 to 20.00A)	
CTL-12L-8 (0.0 to 100.0A)	

Q64TCRTBW and R60TCRT4BW

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCRTBW	R60TCRT4BW		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable platinum temperature-measuring resistor		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCRT4BW.
Control output period		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor compensation value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control system		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 1 to 3600s	Integral time (I): 0 to 3600s (set 0 for P control and PD control.)		
		Derivative time (D): 0 to 3600s (set 0 for PI control.)	Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)		
Set value (SV) setting range		Within the temperature range set to the used platinum temperature-measuring resistor		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
E^2PROM write count		100000 times maximum	10^{12} times maximum (writes to non-volatile memory)	○	
Insulation method		Between input and grounding: Transformer Between input and channel: Transformer	Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer	○	
Dielectric strength		Between input and grounding: 500VAC for 1 minute Between input and channel: 500VAC for 1 minute	Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute	○	
Insulation resistance		Between input and grounding: 500VDC, 20MΩ or more Between input and channel: 500VDC, 20MΩ or more	Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more	○	
Heater disconnection detection specifications		Current sensor*3		○	
		Input accuracy: Full scale × (±1.0%)			
		Alert delay count: 3 to 255 times			

Item	Specifications		Compatibility	Precautions
	Q64TCRTBW	R60TCRT4BW		
Number of occupied I/O points	32 points, 2 slots (I/O assignment: empty 16 points + intelligent 16 points)		○	
External interface	18-point terminal block × 2		○	
Applicable wire size	0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable crimping terminal	R1.25-3 (A crimping terminal with sleeve cannot be used.)		○	
Internal current consumption	0.64A	0.31A	—	
Weight	0.30kg	0.34kg	—	

*1 The following table lists platinum temperature-measuring resistor usable for the Q64TCRTBW.

Platinum temperature-measuring resistor type	℃		℉	
	Temperature measurement range	Resolution	Temperature measurement range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

*2 The following table lists platinum temperature-measuring resistor usable for the R60TCRT4BW.

Platinum temperature-measuring resistor type	℃		℉	
	Temperature measuring range	Resolution	Temperature measuring range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0 -200.0 to 850.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0 -200.0 to 640.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

*3 The following list selectable current sensors.

Q64TCRTBW

- CTL-12-S36-8 (0.0 to 100.0A)
- CTL-6-P-H (0.0~20.00A) (The conventional CTL-6-P is also available.)

R60TCRT4BW

Model name	Contact
CTL-12-S36-10 (0.0 to 100.0A)	U.R.D. Co., LTD. www.u-rd.com
CTL-12-S56-10 (0.0 to 100.0A)	
CTL-6-P-H (0.00 to 20.00A)	
CTL-6-S-H (0.00 to 20.00A)	
CTL-12L-8 (0.0 to 100.0A)	

Q64TCRTBWN and R60TCRT4BW

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		Q64TCRTBWN	R60TCRT4BW		
Control output		Transistor output		○	
Number of temperature input points		4 channels/module		○	
Usable platinum resistance thermometer		*1	*2	○	
Accuracy	Indication accuracy	Ambient temperature: 25±5℃: Full-scale × (±0.3%) Ambient temperature: 0 to 55℃: Full-scale × (±0.7%)		○	
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)	Switchable between 250ms/4 channels and 500ms/4 channels	○	The sampling cycle can be selected for the R60TCRT4BW.
Control output cycle		1 to 100s	0.5 to 100.0s	○	
Input impedance		1MΩ		○	
Input filter		0 to 100s (0: Input filter OFF)		○	
Sensor correction value setting		-50.00 to 50.00%		○	
Operation at sensor input disconnection		Upscale processing		○	
Temperature control method		PID ON/OFF pulse or two-position control		○	
PID constants range		PID constants: Setting can be made by auto tuning.		○	
		Proportional band (P): 0.0 to 1000.0% (0: 2-position control)			
		Integral time (I): 0 to 3600s (set 0 for P control and PD control.)			
		Derivative time (D): 0 to 3600s (set 0 for P control and PI control.)			
Set value (SV) setting range		Within the temperature range set in the platinum resistance thermometer to be used		○	
Dead band setting range		0.1 to 10.0%		○	
Transistor output		Output signal: ON/OFF pulse		○	
		Rated load voltage: 10 to 30VDC			
		Maximum load current: 0.1A/point, 0.4A/common			
		Maximum inrush current: 0.4A 10ms			
		Leakage current at OFF: 0.1mA or lower			
		Maximum voltage drop at ON: 1.0VDC (TYP) 0.1A, 2.5VDC (MAX) 0.1A			
		Response time: OFF→ON: 2ms or less, ON→OFF: 2ms or less			
Number of accesses to non-volatile memory		Maximum 10^{12} times		○	
Insulation method		Between input terminal and programmable controller power supply: Transformer Between input channels: Transformer		○	
Dielectric withstand voltage		Between input terminal and programmable controller power supply: 500VAC for 1 minute Between input channels: 500VAC for 1 minute		○	
Insulation resistance		Between input terminal and programmable controller power supply: 500VDC, 20MΩ or more Between input channels: 500VDC, 20MΩ or more		○	
Heater disconnection detection specifications		Current sensor*3		○	
		Input accuracy: Full scale × (±1.0%)			
		Number of alert delay: 3 to 255 times			
Number of occupied I/O points		32 points, 2 slots (I/O assignment: empty 16 points + intelligent 16 points)		○	
External interface		18-point terminal block × 2		○	
Applicable wire size		0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal		R1.25-3 (A solderless terminal with sleeve cannot be used.)		○	
Internal current consumption		0.33A	0.31A	—	
Weight		0.30kg	0.34kg	—	

*1 The following table lists platinum resistance thermometers usable for the Q64TCRTBWN.

Platinum resistance thermometer type	℃		℉	
	Temperature measurement range	Resolution	Temperature measurement range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

*2 The following table lists platinum resistance thermometers usable for the R60TCRT4BW.

Platinum resistance thermometer type	℃		℉	
	Temperature measuring range	Resolution	Temperature measuring range	Resolution
Pt100	-200.0 to 600.0 -200.0 to 200.0 -200.0 to 850.0	0.1	-300 to 1100	1
			-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0 -200.0 to 200.0 -200.0 to 640.0	0.1	-300 to 900	1
			-300.0 to 300.0	0.1

*3 The following tables list selectable current sensors.

Q64TCRTBWN

Model name	Contact
CTL-12-S36-8 (0.0 to 100.0A)	U.R.D. Co., LTD. www.u-rd.com
CTL-12-S36-10 (0.0 to 100.0A)	
CTL-12-S56-10 (0.0 to 100.0A)	
CTL-6-P (0.00 to 20.00A)	
CTL-6-P-H (0.00 to 20.00A)	

R60TCRT4BW

Model name	Contact
CTL-12-S36-10 (0.0 to 100.0A)	U.R.D. Co., LTD. www.u-rd.com
CTL-12-S56-10 (0.0 to 100.0A)	
CTL-6-P-H (0.00 to 20.00A)	
CTL-6-S-H (0.00 to 20.00A)	
CTL-12L-8 (0.0 to 100.0A)	

7.3 Comparison of Analog I/O Module Functions

Analog input module

Q64AD/Q68ADV/Q68ADI and R60AD4/R60ADV8/R60ADI8

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64AD Q68ADV Q68ADI	R60AD4 R60ADV8 R60ADI8	
A/D conversion enable/ disable setting	Specifies whether to enable or disable the A/D conversion for each channel. By disabling the conversion for the channels that are not used, the sampling time can be shortened.	○	○	
A/D conversion method	(1) Sampling processing The A/D conversion for analog input values is performed successively for each channel, and Digital output value is output upon each conversion. (2) Averaging processing For each channel, A/D conversion values are averaged for the set number of times or set amount of time, and the average value is output as a digital value.	○	○	
Maximum and minimum value hold function	The maximum and minimum values of Digital output value are retained in the module.	○	△	*1
Temperature drift compensation function	Errors arising from changes in the ambient temperature of the module are automatically compensated for to improve conversion accuracy. The temperature drift compensation function can be performed at (A/D conversion time for all channels) + 160μs.	○	×	There will be no problem if this function is not used since the conversion accuracy has improved in the iQ-R series modules.
Resolution mode	The resolution mode can be changed according to the application, and digital-value resolution settings of 1/4000, 1/ 12000 or 1/16000 can be selected. The resolution mode setting is applicable to all channels.	○	○	*2
Online module change	This function enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Offset/gain setting	Allows the correction of errors in digital output values.	○	○	
Saving and restoring offset/gain values	Makes it possible to save and restore the offset/gain values of the user range setting.	○	○	
Q compatible mode function	Controls an operation state with the buffer memory layout converted to that equivalent to the Q series.	—	○	

*1 When the averaging processing is used, the maximum and minimum values of following data are stored.
· Q64AD/Q68ADV/Q68ADI: A/D conversion values for each sampling processing time
· R60AD4/R60ADV8/R60ADI8: Digital output values after averaging processing

*2 The resolution is set to 1/32000, so modify the sequence program or use the scaling function to convert digital output values.

Q68AD-G and R60AD8-G

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q68AD-G	R60AD8-G	
A/D conversion enable/ disable setting	Specifies whether to enable or disable the A/D conversion for each channel. By disabling the conversion for the channels that are not used, the sampling time can be shortened.	○	○	
A/D conversion method	(1) Sampling processing The A/D conversion for analog input values is performed successively for each channel, and Digital output value is output upon each conversion. (2) Averaging processing ❶ Time averaging Executes A/D conversion for a set time, and calculates the average of the total value excluding the maximum value and the minimum value to store it in the buffer memory area. ❷ Count averaging Executes A/D conversion for a set number of times, and calculates the average of the total value excluding the maximum value and the minimum value to store it in the buffer memory area. ❸ Move averaging The specified count of digital output values imported per sampling time are averaged to find a value, which is then stored into the buffer memory. (3) Primary delay filter A digital output value is smoothed according to the preset time constant.	○	○	
Maximum and minimum value hold function	The maximum and minimum values of Digital output value are retained in the module.	○	△	*1
Input signal error detection function	A voltage or current input that is equal to or more than the input signal error detection upper limit value, or equal to or less than the input signal error detection lower limit value is detected.	○	○	
Warning output function	(1) Process alarm A warning is output when a digital output value is equal to or more than the process alarm upper upper limit value, or equal to or less than the process alarm lower lower limit value. (2) Rate alarm A warning is output when the rate of digital output value change reaches the rate alarm upper limit value or more, or the rate alarm lower limit value or less.	○	○	
Online module change	This function enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Scaling function	Converts the A/D conversion value to a preset scaling value (ratio (%)) and stores the converted value into the buffer memory.	○	○	
Offset/gain setting	Allows the correction of errors in digital output values.	○	○	
Saving and restoring offset/gain values	Makes it possible to back up, save, and restore the offset/gain values of the user range setting.	○	○	
Q compatible mode function	Controls an operation state with the buffer memory layout converted to that equivalent to the Q series.	—	○	

*1 When the averaging processing is used, the maximum and minimum values of following data are stored.
· Q68AD-G: A/D conversion values for each sampling time
· R60AD8-G: Digital output values after averaging processing or primary delay filter processing

Q66AD-DG and R60AD6-DG

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q66AD-DG	R60AD6-DG	
A/D conversion enable/ disable setting	Specifies whether to enable or disable the A/D conversion for each channel. Disabling A/D conversion of unused channels can reduce the entire conversion time.	○	○	
A/D conversion method	(1) Sampling processing The A/D conversion for analog input values is performed successively for each channel, and the digital output value is output upon each conversion. (2) Averaging processing ❶ Time averaging A/D conversion is made for the preset period of time, the sum of values other than the maximum and minimum values is averaged, and the result is stored into the buffer memory. ❷ Count averaging A/D conversion is made for the preset number of times, the sum of values other than the maximum and minimum values is averaged, and the result is stored into the buffer memory. ❸ Move averaging The specified count of digital output values imported per sampling time are averaged to find a value, which is then stored into the buffer memory. (3) Primary delay filter A digital output value is smoothed according to the preset time constant.	○	○	
Maximum and minimum value hold function	The maximum and minimum values of the digital output values are retained in the module.	○	△	
Input signal error detection function	A voltage input or current input that is equal to or more than the input signal error detection upper limit value, or equal to or less than the input signal error detection lower limit value is detected.	○	○	
Warning output function	(1) Process alarm A warning is output when a digital output value is equal to or more than the process alarm upper upper limit value, or equal to or less than the process alarm lower lower limit value. (2) Rate alarm A warning is output when the digital output value changes in a rate by which the digital output value reaches the rate alarm upper limit value or more, or the rate alarm lower limit value or less.	○	○	
Conversion starting time setting function	Setting the A/D conversion starting time allows A/D conversion to be started at the point when the output of the 2-wire transmitter stabilizes.	○	○	
Supply power ON/OFF function	The supply power to the 2-wire transmitter can be switched ON/OFF channel by channel. Power is supplied to channels that have input range settings of "4 to 20mA (2-wire transmitter input): 0H", "4 to 20mA (Extended mode) (2-wire transmitter input): AH" or "User range setting (2-wire transmitter input): FH", and that are set to "Enabled" in A/D conversion enable/disable setting (Un\G0).	○	○	
Online module change	The module can be changed without the system being stopped.	○	△	Operation using engineering tool is not supported.
Scaling function	Converts the A/D conversion value to a preset scaling value (ratio (%)) and stores the converted value into the buffer memory.	○	○	
Q compatible mode function	Allows the buffer memory addresses of the A/D converter module to be the same layout as the MELSEC-Q series module.	—	○	

Q64ADH and R60ADH4

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64ADH	R60ADH4	
A/D conversion enable/ disable setting	Specifies whether to enable or disable the A/D conversion for each channel. Disabling the conversion on unused channels reduces the conversion cycles.	○	○	
A/D conversion method	(1) Sampling processing The A/D conversion for analog input values is performed successively for each channel, and Digital output value is output upon each conversion. (2) Averaging processing ❶ Time average Executes A/D conversion for a set time, and calculates the average of the total value excluding the maximum value and the minimum value to store it in the buffer memory area. ❷ Count average Executes A/D conversion for a set number of times, and calculates the average of the total value excluding the maximum value and the minimum value to store it in the buffer memory area. ❸ Moving average The specified count of digital output values imported per sampling time are averaged to find a value, which is then stored into the buffer memory.	○	○	If the conversion speed varies with the count average used, review the count setting value.
Offset/gain setting	Allows the correction of errors in digital output values.	○	○	
Input range extended mode function	The input range can be extended.	○	×	Use the warning output function instead.
Conversion speed switch function	The conversion speed can be selected from 20μs, 80μs, or 1ms.	○	○	*1
Maximum value/minimum value hold function	Stores the maximum and minimum values of digital operation values to the buffer memory area for each channel.	○	○	
Input signal error detection function	Detects an analog input value that exceeds the setting range.	○	○	
Warning output function (process alarm)	Outputs a warning when a digital operation value enters the preset warning output range.	○	○	
Scaling function	Performs scale conversion on digital output values within a specified range between a scaling upper limit value and a scaling lower limit value.	○	○	
Shift function	Adds (shifts) a set conversion value shift amount to a digital output value and stores the result in the buffer memory area.	○	○	
Digital clipping function	When the input voltage or current exceeds the input range, the maximum value of the digital operation value can be set to 2000, and the minimum value can be set to 0 or -2000.	○	○	
Difference conversion function	Subtracts a difference conversion reference value from a digital operation value and stores the acquired value in the buffer memory area.	○	○	
Logging function	(1) Normal logging mode Logs digital output values or digital operation values. 10000 points of data can be logged for each channel. (Note that the function can be used only when the conversion speed is 80μs or 1ms.) (2) High-speed logging mode Performs high-speed logging (recording) at a conversion speed of 20μs.	○	○	*2
Flow amount integration function	Performs the A/D conversion of analog input value (voltage or current) from a source such as a flow meter and integrates the digital operation value.	○	×	
Error log function	Records up to the 16 errors and alarms that occurred in the A/D converter module to store them into the buffer memory area as history.	○	○	*3

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64ADH	R60ADH4	
Module error collection function	Collects errors and alarms occurred in the A/D converter module and stores them to the CPU module.	○	○	For the R60ADH4, use the event history function instead.
Error clear function	Clears an error from the system monitor when it occurs.	○	○	
Online module change	Enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Saving and restoring offset/gain values	Makes it possible to save and restore the offset/gain values of the user range setting.	○	○	

*1 For the R60ADH4, the function specifications are as follows.
Operation mode: Medium speed: 10μs/CH, Low speed: 20μs/CH, Simultaneous conversion: 5μs/4CH, Synchronization: Inter-module synchronization cycle
For details, refer to the following.
📖 MELSEC iQ-R High Speed Analog-Digital Converter Module User's Manual (Application)

*2 For the R60ADH4, the function specifications are as follows.
(1) Normal logging function
A maximum of 90000 points of data can be logged. The conversion speed is 20μs/channel.
(2) Continuous logging function
The function logs digital values in four channels simultaneously and transfers the logging data to the CPU module continuously without stopping the logging operation.
The data that have been converted from analog to digital can be continuously collected at high speed (5μs cycle at a maximum) and in four channels simultaneously.

*3 For the Q64ADH, alarms are stored together with errors in the error history. For the R60ADH4, alarms are stored in the dedicated alarm history.

Analog output module

Q62DA(N)/Q64DA(N)/Q68DAV(N)/Q68DAI(N) and R60DA4/R60DAV8/R60DAI8

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q62DA(N) Q64DA(N) Q68DAV(N) Q68DAI(N)	R60DA4 R60DAV8 R60DAI8	
D/A conversion enable/disable	Specifies whether to enable or disable the D/A conversion for each channel. By disabling the D/A conversion for the channels that are not used, the conversion speed can be shortened.	○	○	
D/A output enable/disable function	Specifies whether to output the D/A conversion value or offset value for each channel. The conversion speed is constant regardless of whether the output is enabled/disabled.	○	○	
Synchronous output function	An analog output synchronized with the programmable controller CPU can be obtained.	○	×	*1
Analog output HOLD/CLEAR function	The output analog value can be retained when the programmable controller CPU is placed in the STOP status or when an error occurs.	○	○	
Analog output test during programmable controller CPU STOP	When CH□ Output enable/disable flag is forced on during programmable controller CPU STOP, the D/A converted analog value is output.	○	○	
Resolution mode	The resolution can be set to 1/4000, 1/12000 or 1/16000 according to the application. The resolution mode setting is applicable to all channels.	○	△	*2
Online module change	This function enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Offset/gain setting	Corrects errors in D/A conversion values for each channel.	○	○	
Backing up, saving, and restoring offset/gain values	Makes it possible to back up, save, and restore the offset/gain values of the user range setting.	○	○	
Q compatible mode function	Controls an operation state with the buffer memory layout converted to that equivalent to the Q series. This compatibility makes it possible to reuse sequence programs that have exhibited high performance on the Q series analog output modules.	—	○	

*1 The synchronous output function is not available for the R60DA4, R60DAV8, and R60DAI8. If this function is necessary, consider using the R60DAH4.
When the R60DAH4 is operated in high-speed output mode, the conversion speed is as short as 1μs/channel.
This high-speed operation converts a digital value written from a program to an analog value within 2μs and applies it to the analog output.

*2 Because the resolution is 1/32000, any of the following needs to be performed.
· Use the scaling function to covert the scale to 1/32000 or equivalent.
· Add a program to convert digital values to those for the resolution of 1/32000 or equivalent.

Q66DA-G and R60DA8-G

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q66DA-G	R60DA8-G	
D/A conversion enable/ disable function	Specifies whether to enable or disable the D/A conversion for each channel. By disabling the D/A conversion for the channels that are not used, the conversion speed can be shortened.	○	○	
D/A output enable/disable function	Specifies whether to output the D/A conversion value or offset value for each channel. The conversion speed is constant regardless of whether the output is enabled/disabled.	○	○	
Analog output HOLD/ CLEAR function	The output analog value can be retained when the programmable controller CPU is placed in the STOP status or when an error occurs.	○	○	
Analog output test during programmable controller CPU STOP	When CH□ Output enable/disable flag is forced on during programmable controller CPU STOP, the D/A converted analog value is output.	○	○	
Warning output function	Outputs a warning if a digital input value falls outside the setting range.	○	○	
Rate control function	Limits the increase and decrease in analog output values per conversion cycle of one channel (6ms). Using this function prevents rapid change of analog output values.	○	△	*1
Resolution mode	The resolution can be set to 1/4000, 1/12000 or 1/16000 according to the application. The resolution mode setting is applicable to all channels.	○	△	*2
Scaling function	The input range of digital values can be changed to any given range between -32000 and 32000.	○	○	
Online module change	This function enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Offset/gain setting	Corrects errors in D/A conversion values for each channel.	○	○	
Saving and restoring offset/gain values	Makes it possible to back up, save, and restore the offset/gain values of the user range setting.	○	○	
Q compatible mode function	Controls an operation state with the buffer memory layout converted to that equivalent to the Q series. This compatibility makes it possible to reuse sequence programs that have exhibited high performance on the Q series analog output modules.	—	○	

*1 Because the conversion cycle of one channel is 1ms, add a program to increment/decrement digital values per 6ms (conversion cycle of one channel).

*2 Because the resolution is 1/32000, any of the following needs to be performed.
- Use the scaling function to covert the scale to 1/32000 or equivalent.
- Add a program to convert digital values to those for the resolution of 1/32000 or equivalent.

Q64DAH and R60DAH4

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64DAH	R60DAH4	
D/A conversion enable/disable function	Specifies whether to enable or disable the D/A conversion for each channel. By disabling the D/A conversion for the channels that are not used, the conversion speed can be shortened.	○	○	
D/A output enable/disable function	Specifies whether to output the D/A conversion value or offset value for each channel. The conversion speed is constant regardless of whether the output is enabled/disabled.	○	○	
Analog output HOLD/CLEAR function	The output analog value can be retained when the programmable controller CPU is placed in the STOP status or when an error occurs.	○	○	
Analog output test when CPU module is in STOP status	When the CPU module is in STOP operation status, forcibly turning CH□ Output enable/disable flag ON outputs the D/A-converted analog value.	○	○	
Warning output function	Outputs a warning if a digital value falls outside the setting range (warning output lower limit value to warning output upper limit value).	○	○	
Wave output function	Registering prepared wave data (digital value) in the D/A converter module enables continuous analog output in the specified conversion cycle.	○	△	*1
Scaling function	The input range of digital values can be changed to any given range between -32000 and 32000.	○	○	
Online module change	This function enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Error log function	Records up to the 16 errors and alarms that occurred in the D/A converter module to store them into the buffer memory area as history.	○	○	*2
Error clear function	Clears an error from the system monitor when it occurs.	○	○	
Module error collection function	Collects errors and alarms occurred in the D/A converter module and stores them to the CPU module.	○	○	For the R60DAH4, use the event history function instead.
Range switching function	The output range to be used can be selected from the following. • Industrial shipment range (4 to 20mA, 0 to 20mA, 1 to 5V, 0 to 5V, -10 to 10V) • User range setting	○	○	
External power supply READY flag (X7)	This signal turns on when the external power supply 24VDC is supplied. When the signal is off, the analog output value is 0V/0mA regardless of other settings.	○	○	

*1 Because the conversion speed is faster than that of the Q64DAH, the analog output time per wave data point in wave output mode is shorter. Adjust the analog output time by using any of the following methods.
· Set the "CH□ Constant for wave output conversion cycle" and adjust the analog output time per wave data point.
· Modify the wave data according to the conversion speed of the R60DAH4.

*2 For the Q64DAH, alarms are stored together with errors in the error history. For the R60DAH4, alarms are stored in the dedicated alarm history.

Temperature input module

Q68RD3-G and R60RD8-G

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q68RD3-G	R60RD8-G	
Temperature conversion function	This function incorporates temperature data to a module by connecting a RTD. Temperature data are stored into the buffer memory in 16-bit signed binary (-2000 to 8500).	○	○	
Temperature conversion system	(1) Sampling processing This processing converts every temperature input value for each channel, and outputs a measured temperature value after every conversion. All the values output are then saved in the buffer memory. (2) Averaging processing This processing averages measured temperature values for each channel and stores the averaged value in the buffer memory. The following three methods are used for the averaging processing. ❶ Time average ❷ Count average ❸ Moving average (3) Primary delay filter This processing smooths measured temperature values by a preset time constant.	○	○	
Conversion enable/ disable function	This function specifies temperature conversion availability (enable or disable) for each channel.	○	○	
RTD type selection function, Range switching function	This function sets RTD type and measurement range for each channel.	○	○	
Disconnection detection function	This function detects disconnection of RTD which is connected to each conversion-enabled channel.	○	○	
Conversion setting for disconnection detection function	This function is to select a value to be stored in the CH□ Measured temperature value (Un\G11 to Un\G18) from "Up scale", "Down scale" or "Given value" when disconnection is detected.	○	○	For the R60RD8-G, "Value just before disconnection" can be selected.
Warning output function	(1) Process alarm A warning is output when the measured temperature value is equal to or more than the process alarm upper upper limit value, or equal to or less than the process alarm lower lower limit value. (2) Rate alarm A warning is output when the measured temperature value changes in a rate by which the measured temperature value reaches the rate alarm upper limit value or more, or the rate alarm lower limit value or less.	○	○	
Scaling function	This function converts a measured temperature value to a preset scaling value (ratio (%)) and stores the converted value into the buffer memory.	○	○	
Offset/gain setting function	This function compensates an error of measured temperature value.	○	○	
Online module change	This function enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Q compatible mode function	This function controls an operation state with the buffer memory layout converted to that equivalent to the Q series.	—	○	

Q68TD-G-H02(H01) and R60TD8-G

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q68TD-G (-H02/H01)	R60TD8-G	
Temperature conversion function	This function incorporates temperature data to a module by connecting a thermocouple. Temperature data are stored into the buffer memory in 16-bit signed binary (-2700 to 18200).	○	○	
Temperature conversion system	(1) Sampling processing This processing converts every temperature input value for each channel, and outputs a measured temperature value after every conversion. All the values output are then saved in the buffer memory. (2) Averaging processing This processing averages measured temperature values for each channel and stores the averaged value in the buffer memory. The following three methods are used for the averaging processing. ❶ Time average ❷ Count average ❸ Moving average (3) Primary delay filter This processing smooths measured temperature values by a preset time constant.	○	○	
Conversion enable/ disable function	This function specifies temperature conversion availability (enable or disable) for each channel.	○	○	
Thermocouple type selection function	This function sets the type of thermocouple on each channel.	○	○	
Disconnection detection function	This function detects the disconnection of the connected thermocouple on each conversion-enabled channel.	○ (Q68TD-G-H02 only)	○	
Conversion setting for disconnection detection function	This function is to select a value to be stored in CH□ Measured temperature value (Un\G11 to Un\G18) from "Up scale", "Down scale" or "Given scale" when disconnection is detected.	○ (Q68TD-G-H02 only)	○	For the R60TD8-G, "Value just before disconnection" can be selected.
Disconnection monitor function	This function checks the disconnection state of the connected thermocouple on each conversion-enabled channel.	○ (Q68TD-G-H01 only)	×	For the R60TD8-G, use the disconnection detection function.
Disconnection state conversion setting function	This function is to select a value to be stored in CH□ Measured temperature value (Un\G11 to Un\G18) from "Up scale", "Down scale" or "Given scale" in disconnection state.	○ (Q68TD-G-H01 only)	×	For the R60TD8-G, use the disconnection detection function.
Cold junction temperature compensation with/ without setting function	This function sets whether to use cold junction temperature compensation. Use this function to measure temperature in higher accuracy than the cold junction temperature compensation accuracy (±1℃) by the cold junction temperature compensation resistor (RTD) that is included with the module. The cold junction temperature compensation accuracy can be improved by disabling the cold junction temperature compensation and providing a precision ice bath externally.	○	○	
Cold junction temperature compensation resistor disconnection detection function	This function detects a disconnection of connected cold junction temperature compensation resistor (RTD).	○	○	
Warning output function	(1) Process alarm A warning is output when the measured temperature value is equal to or more than the process alarm upper upper limit value, or equal to or less than the process alarm lower lower limit value. (2) Rate alarm A warning is output when the measured temperature value changes in a rate by which the measured temperature value reaches the rate alarm upper limit value or more, or the rate alarm lower limit value or less.	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q68TD-G (-H02/H01)	R60TD8-G	
Scaling function	This function converts a measured temperature value to a preset scaling value (ratio (%)) and stores the converted value into the buffer memory.	○	○	
Offset/gain setting function	This function compensates an error of measured temperature value.	○	○	
Online module change	This function enables a module change without the system being stopped.	○	△	Operation using engineering tool is not supported.
Q compatible mode function	This function controls an operation state with the buffer memory layout converted to that equivalent to the Q series.	—	○	

Temperature control module

Q64TCTT/Q64TCRT and R60TCTRT2TT2/R60TCRT4

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTT Q64TCRT	R60TCTRT2TT2 R60TCRT4	
Auto tuning function	Sets suitable PID constants automatically.	○	△	"AT error status monitor" is not available for the R60TCTRT2TT2 and R60TCRT4. Check for auto tuning failure using error codes.
Forward action/reverse action selection function	Heat control (reverse action) or cooling control (forward action) can be selected for operation control.	○	○	
RFB limiter function	Limits the manipulation value overshoot which frequently occurs when the set value (SV) is changed or control target is changed.	○	○	
Sensor compensation function	Reduces the difference between the measured value and actual temperature to zero when these two are different due to measurement conditions.	○	○	
Unused channel setting	Sets the PID operation for channels that do not perform temperature adjustment to "not execute".	○	○	
PID control forced stop	Stops the PID operation for channels that is performing temperature adjustment.	○	○	
Loop disconnection detection function	Detects errors in the control system (control loop) caused by a load (heater) disconnection, abnormal external operation device (such as magnet relay), or a temperature sensor disconnection.	○	○	
Data storage on E^2PROM	By backing up the buffer memory contents to E^2PROM, the load of sequence program can be reduced.	○	○	
Alert function	Monitors the process value (PV) and alerts the user.	○	○	
Control output setting at CPU stop error occurrence	Continues/stops temperature adjustment control output when a CPU stop error occurs.	○	○	For the R60TCTRT2TT2 and R60TCRT4, use the HOLD/CLEAR function instead.
Q64TC control status	The Q64TC can be controlled by the output signal and buffer memory settings of the Q64TC.	○	○	
Online module change	A module change is made without the system being stopped.	○	△	Operation using engineering tool is not supported.
Q compatible mode function	This function arranges the buffer memory addresses of the temperature control module to become equivalent to the ones of a MELSEC-Q series module. This compatibility makes it possible to reuse programs that have exhibited high performance on the MELSEC-Q series modules.	—	○	

Q64TCTTN/Q64TCRTN and R60TCTRT2TT2/R60TCRT4

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTTN Q64TCRTN	R60TCTRT2TT2 R60TCRT4	
Control mode selection function	A control mode can be selected from the following modes. • Standard control • Heating-cooling control (normal mode) • Heating-cooling control (expanded mode) • Mix control (normal mode) • Mix control (expanded mode)	○	○	
Control output setting at CPU stop error	Whether to clear or hold the transistor output status when a CPU module stop error occurs or when a CPU module is turned from RUN to STOP can be selected.	○	○	For the R60TCTRT2TT2 and R60TCRT4, use the HOLD/CLEAR function instead.
Control method	The following control methods can be used with the settings of proportional band (P), integral time (I), and derivative time (D). • Two-position control • P control • PI control • PD control • PID control	○	○	
Manual reset function	The stable status position in the P control or PD control can be moved manually.	○	○	
Manual control	A manipulated value (MV) can be set manually by users without being automatically calculated by the PID control.	○	○	
Auto tuning function	Sets suitable PID constants automatically.	○	○	
Simple two-degree-of-freedom	In addition to the PID control, this function selects a suitable response speed for the set value (SV) change from three levels to simply achieve the two-degree-of-freedom PID control.	○	○	
Derivative action selection function	This function improves dynamic characteristics by selecting a suitable derivative action for fixed value actions or ramp actions.	○	○	
Setting change rate limiter setting function	The change rate setting of the set value (SV) per set time unit when this value is changed. The batch setting or individual setting can be selected for the temperature rise and drop.	○	○	
Moving averaging process to a temperature process value (PV)	Moving averaging process can be set to a temperature process value (PV). With this function, the fluctuation of temperature process values (PV) can be reduced in electrically noisy environments or in the environments where temperature process values (PV) fluctuate greatly. The moving averaging process can be disabled to hasten the response to the change of temperature process values (PV).	○	○	
Temperature process value (PV) scaling function	This function can convert temperature process values (PV) into the set width to import them in the buffer memory.	○	○	
Alert function	This function issues an alert when a temperature process value (PV) or deviation (E) meets the condition set in advance.	○	○	
RFB limiter function	When deviation (E) continues for a long period of time, this function prevents the PID operation results (manipulated value (MV)) calculated by integral actions from exceeding the effective range of the manipulated value (MV).	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTTN Q64TCRTN	R60TCTRT2TT2 R60TCRT4	
Sensor correction function	When there is a difference between the temperature process value (PV) and actual temperature due to the measurement condition, this function corrects the error. Select one of the following two correction methods. • Normal sensor correction (one-point correction) function: Corrects an error by using the percentage of a difference to the full scale of the set input range as an error corrected value. • Sensor two-point correction function: Corrects an error by setting any two points (corrected offset value and corrected gain value).	○	○	
Auto-setting at input range change	When the input range is changed, the related buffer memory data is automatically changed to prevent the values in those buffer memory areas from being out of the setting range.	○	○	
Input/output (with another analog module) function	This function can input and output with other analog modules (including A/D converter module and D/A converter module) on the system.	○	○	
ON delay output function	This function enables users to configure settings considering the delay time (response/scan time delay) of an actual transistor output.	○	○	
Self-tuning function	This function constantly monitors the control state. When the control system is oscillatory just after the control start, owing to the set value (SV) change or fluctuation of characteristics of a controlled object, PID constants are changed automatically.	○	○	
Peak current suppression function	This function suppresses the peak current by automatically changing the values of the upper limit output limiter of each channel and dividing the timing of the transistor output.	○	○	
Simultaneous temperature rise function	This function allows several loops to reach the set value (SV) at the same time.	○	○	
Forward/reverse action selection function	Whether to execute a PID operation with a forward action or a reverse action can be selected.	○	○	
Loop disconnection detection function	This function detects errors in the control system (control loop).	○	○	
During AT loop disconnection detection function	This function detects loop disconnections during auto tuning.	○	○	
Proportional band setting function	This function can set the proportional band (P) individually for heating or cooling.	○	○	
Cooling method setting function	When the auto tuning is executed, an auto tuning formula is automatically selected according to the selected cooling method and the operation starts.	○	○	
Overlap/dead band function	By changing the temperature where the cooling transistor output is started, whether control stability is prioritized or energy saving is prioritized can be selected.	○	○	
Temperature conversion function (using unused channels)	In the heating-cooling control (normal mode) and mix control (normal mode), only the temperature measurement can be performed using unused temperature input terminals.	○	○	
Buffer memory data backup function	A set value in a buffer memory area can be backed up in the E^2PROM. Because the backed up value is restored at the next startup of the module, an initial setting program is not required once this function is executed.	○	○	
Error history function	Up to 16 errors and alarms that occur are stored in the buffer memory as history.	○	○	
Module error history collection function	This function notifies the CPU module of errors and alarms that occur. Error information is held in the memory inside of the CPU module as module error history.	○	○	For the R60TCTRT2TT2 and R60TCRT4, use the event history function instead.
Error clear function	This function clears an error from the system monitor when it occurs.	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTTN Q64TCRTN	R60TCTRT2TT2 R60TCRT4	
Online module change	A module change is made without the system being stopped.	○	△	Operation using engineering tool is not supported.
Q compatible mode function	This function arranges the buffer memory addresses of the temperature control module to become equivalent to the ones of a MELSEC-Q series module. This compatibility makes it possible to reuse programs that have exhibited high performance on the MELSEC-Q series modules.	—	○	

Q64TCTTBW/Q64TCRTBW and R60TCTRT2TT2BW/R60TCRT4BW

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTTBW Q64TCRTBW	R60TCTRT2TT2BW R60TCRT4BW	
Auto tuning function	Sets suitable PID constants automatically.	○	△	"AT error status monitor" is not available for the R60TCTRT2TT2BW and R60TCRT4BW. Check for auto tuning failure using error codes.
Forward action/ reverse action selection function	Heat control (reverse action) or cooling control (forward action) can be selected for operation control.	○	○	
RFB limiter function	Limits the manipulation value overshoot which frequently occurs when the set value (SV) is changed or control target is changed.	○	○	
Sensor compensation function	Reduces the difference between the measured value and actual temperature to zero when these two are different due to measurement conditions.	○	○	
Unused channel setting	Sets the PID operation for channels that do not perform temperature adjustment to "not execute".	○	○	
PID control forced stop	Stops the PID operation for channels that is performing temperature adjustment.	○	○	
Heater disconnection detection function	Measures the current which flows in the heater main circuit to detect disconnection.	○	○	
Current error detection function when output is off	Measures whether the current flows in the heater main circuit when the transistor output is off to check for any error.	○	○	
Loop disconnection detection function	Detects errors in the control system (control loop) caused by a load (heater) disconnection, abnormal external operation device (such as magnet relay), or a temperature sensor disconnection.	○	○	
Data storage on E^2PROM	By backing up the buffer memory contents to E^2PROM, the load of sequence program can be reduced.	○	○	
Alert function	Monitors the process value (PV) and alerts the user.	○	○	
Control output setting at CPU stop error occurrence	Continues/stops temperature adjustment control output when a CPU stop error occurs.	○	○	For the R60TCTRT2TT2BW and R60TCRT4BW, use the HOLD/CLEAR function instead.
Q64TC control status	The Q64TC can be controlled by the output signal and buffer memory settings of the Q64TC.	○	○	
Online module change	A module change is made without the system being stopped.	○	△	Operation using engineering tool is not supported.
Q compatible mode function	This function arranges the buffer memory addresses of the temperature control module to become equivalent to the ones of a MELSEC-Q series module. This compatibility makes it possible to reuse programs that have exhibited high performance on the MELSEC-Q series modules.	—	○	

Q64TCTTBWN/Q64TCRTBWN and R60TCTRT2TT2BW/R60TCRT4BW

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTTBWN Q64TCRTBWN	R60TCTRT2TT2BW R60TCRT4BW	
Control mode selection function	A control mode can be selected from the following modes. • Standard control • Heating-cooling control (normal mode) • Heating-cooling control (expanded mode) • Mix control (normal mode) • Mix control (expanded mode)	○	○	
Control output setting at CPU stop error	Whether to clear or hold the transistor output status when a CPU module stop error occurs or when a CPU module is turned from RUN to STOP can be selected.	○	○	For the R60TCTRT2TT2BW and R60TCRT4BW, use the HOLD/ CLEAR function instead.
Control method	The following control methods can be used with the settings of proportional band (P), integral time (I), and derivative time (D). • Two-position control • P control • PI control • PD control • PID control	○	○	
Manual reset function	The stable status position in the P control or PD control can be moved manually.	○	○	
Manual control	A manipulated value (MV) can be set manually by users without being automatically calculated by the PID control.	○	○	
Auto tuning function	Sets suitable PID constants automatically.	○	○	
Simple two-degree-of-freedom	In addition to the PID control, this function selects a suitable response speed for the set value (SV) change from three levels to simply achieve the two-degree-of-freedom PID control.	○	○	
Derivative action selection function	This function improves dynamic characteristics by selecting a suitable derivative action for fixed value actions or ramp actions.	○	○	
Setting change rate limiter setting function	The change rate setting of the set value (SV) per set time unit when this value is changed. The batch setting or individual setting can be selected for the temperature rise and drop.	○	○	
Moving averaging process to a temperature process value (PV)	Moving averaging process can be set to a temperature process value (PV). With this function, the fluctuation of temperature process values (PV) can be reduced in electrically noisy environments or in the environments where temperature process values (PV) fluctuate greatly. The moving averaging process can be disabled to hasten the response to the change of temperature process values (PV).	○	○	
Temperature process value (PV) scaling function	This function can convert temperature process values (PV) into the set width to import them in the buffer memory.	○	○	
Alert function	This function issues an alert when a temperature process value (PV) or deviation (E) meets the condition set in advance.	○	○	
RFB limiter function	When deviation (E) continues for a long period of time, this function prevents the PID operation results (manipulated value (MV)) calculated by integral actions from exceeding the effective range of the manipulated value (MV).	○	○	
Sensor correction function	When there is a difference between the temperature process value (PV) and actual temperature due to the measurement condition, this function corrects the error. Select one of the following two correction methods. • Normal sensor correction (one-point correction) function: Corrects an error by using the percentage of a difference to the full scale of the set input range as an error corrected value. • Sensor two-point correction function: Corrects an error by setting any two points (corrected offset value and corrected gain value).	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTTBWN Q64TCRTBWN	R60TCTRT2TT2BW R60TCRT4BW	
Auto-setting at input range change	When the input range is changed, the related buffer memory data is automatically changed to prevent the values in those buffer memory areas from being out of the setting range.	○	○	
Input/output (with another analog module) function	This function can input and output with other analog modules (including A/D converter module and D/A converter module) on the system.	○	○	
ON delay output function	This function enables users to configure settings considering the delay time (response/scan time delay) of an actual transistor output.	○	○	
Self-tuning function	This function constantly monitors the control state. When the control system is oscillatory just after the control start, owing to the set value (SV) change or fluctuation of characteristics of a controlled object, PID constants are changed automatically.	○	○	
Peak current suppression function	This function suppresses the peak current by automatically changing the values of the upper limit output limiter of each channel and dividing the timing of the transistor output.	○	○	
Simultaneous temperature rise function	This function allows several loops to reach the set value (SV) at the same time.	○	○	
Forward/reverse action selection function	Whether to execute a PID operation with a forward action or a reverse action can be selected.	○	○	
Loop disconnection detection function	This function detects errors in the control system (control loop).	○	○	
During AT loop disconnection detection function	This function detects loop disconnections during auto tuning.	○	○	
Proportional band setting function	This function can set the proportional band (P) individually for heating or cooling.	○	○	
Cooling method setting function	When the auto tuning is executed, an auto tuning formula is automatically selected according to the selected cooling method and the operation starts.	○	○	
Overlap/dead band function	By changing the temperature where the cooling transistor output is started, whether control stability is prioritized or energy saving is prioritized can be selected.	○	○	
Temperature conversion function (using unused channels)	In the heating-cooling control (normal mode) and mix control (normal mode), only the temperature measurement can be performed using unused temperature input terminals.	○	○	
Heater disconnection detection function	The current which flows in the heater main circuit can be measured and disconnections can be detected.	○	○	
Output off-time current error detection function	An error of when the transistor output is off can be detected.	○	○	
Buffer memory data backup function	A set value in a buffer memory area can be backed up in the E^2PROM. Because the backed up value is restored at the next startup of the module, an initial setting program is not required once this function is executed.	○	○	
Error history function	Up to 16 errors and alarms that occur are stored in the buffer memory as history.	○	○	
Module error history collection function	This function notifies the CPU module of errors and alarms that occur. Error information is held in the memory inside of the CPU module as module error history.	○	○	For the R60TCTRT2TT2BW and R60TCRT4BW, use the event history function instead.
Error clear function	This function clears an error from the system monitor when it occurs.	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		Q64TCTTBWN Q64TCRTBWN	R60TCTRT2TT2BW R60TCRT4BW	
Online module change	A module change is made without the system being stopped.	○	△	Operation using engineering tool is not supported.
Q compatible mode function	This function arranges the buffer memory addresses of the temperature control module to become equivalent to the ones of a MELSEC-Q series module. This compatibility makes it possible to reuse programs that have exhibited high performance on the MELSEC-Q series modules.	—	○	

7.4 Precautions for Analog I/O Module Migration

Wiring

■Analog output module

The terminal layout differs between the Q66DA-G and the R60DA8-G.

To use the 40-pin connector of the Q66DA-G with the R60DA8-G, wiring needs to be corrected accordingly except the external power supply pins (A19, A20, B19, and B20).

Dedicated instruction

There is no difference between the MELSEC-Q series and the MELSEC iQ-R series.

I/O signals and buffer memory areas

The layouts of I/O signals and buffer memory areas differ between the MELSEC-Q series and the MELSEC iQ-R series.

If I/O signals and buffer memory areas are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

In Q compatible mode, the MELSEC-Q series program can be used as it is except for the differences in some signals and functions.

Resolution mode switching function

The MELSEC iQ-R series modules do not support the resolution mode switching function because the resolution has already been enhanced.

By using the scaling function, a converted value which is equivalent to that in the MELSEC-Q series can be determined.

Temperature drift compensation function

The MELSEC iQ-R series modules do not support the temperature drift compensation function because the accuracy has already been enhanced. (The accuracy is comparable to that of the MELSEC-Q series with the temperature drift compensation function used.)

If the function is used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Temperature conversion system

For the MELSEC iQ-R series, the setting value of the averaging processing in the temperature conversion system is changed because the conversion speed is enhanced. If the processing is used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Disconnection detection function

In the MELSEC iQ-R series digital-analog converter module (R60DA4, R60DAI8), this function is active all the time while the analog output range is set to "4 to 20mA" and an error is output when an external wiring is disconnected. If this error detection is not required, set other analog output ranges.

Point

For details on these precautions, refer to the following.

📖 MELSEC iQ-R Module Configuration Manual

📖 MELSEC iQ-R Analog-Digital Converter Module User's Manual (Startup)

📖 MELSEC iQ-R Analog-Digital Converter Module User's Manual (Application)

📖 MELSEC iQ-R Channel Isolated Analog-Digital Converter Module (With Signal Conditioning Function) User's Manual (Startup)

📖 MELSEC iQ-R Channel Isolated Analog-Digital Converter Module (With Signal Conditioning Function) User's Manual (Application)

📖 MELSEC iQ-R Digital-Analog Converter Module User's Manual (Startup)

📖 MELSEC iQ-R Digital-Analog Converter Module User's Manual (Application)

📖 MELSEC iQ-R Channel Isolated Thermocouple Input Module/Channel Isolated RTD Input Module User's Manual (Startup)

📖 MELSEC iQ-R Channel Isolated Thermocouple Input Module/Channel Isolated RTD Input Module User's Manual (Application)

📖 MELSEC iQ-R Temperature Control Module User's Manual (Startup)

📖 MELSEC iQ-R Temperature Control Module User's Manual (Application)

8 POSITIONING MODULE AND PULSE I/O MODULE MIGRATION

8.1 Positioning Module and Pulse I/O Module Migration Model List

This section describes examples of migration to MELSEC iQ-R series positioning modules and pulse I/O modules in accordance with the MELSEC-Q series positioning/pulse I/O module specifications.
Consider the scope of control by the MELSEC-Q series positioning module and pulse I/O module used and the system specifications and extensibility after migration to choose a model that best suits your application.

Item		MELSEC-Q series	MELSEC iQ-R series	Specification difference
Positioning	Open collector output	QD75P1N	RD75P2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75P1	RD75P2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75P2N	RD75P2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75P2	RD75P2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75P4N	RD75P4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75P4	RD75P4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD70P4	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
		QD70P8	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.

Item		MELSEC-Q series	MELSEC iQ-R series	Specification difference
Positioning	Differential output	QD75D1N	RD75D2	(1) External wiring: Changed (Pin 2B19/20: Not used → PULSE COM) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75D1	RD75D2	(1) External wiring: Changed (Pin 2B19/20: Not used → PULSE COM) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75D2N	RD75D2	(1) External wiring: Changed (Pin 2B19/20: Not used → PULSE COM) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75D2	RD75D2	(1) External wiring: Changed (Pin 2B19/20: Not used → PULSE COM) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75D4N	RD75D4	(1) External wiring: Changed (Pin 2B19/20: Not used → PULSE COM) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD75D4	RD75D4	(1) External wiring: Changed (Pin 2B19/20: Not used → PULSE COM) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
		QD70D4	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
		QD70D8	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	Open collector output with built-in counter function	QD72P3C3	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	Analog positioning	QD73A1	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
High-speed counter	QD62	RD62P2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
	QD62E	RD62P2E	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
	QD62D	RD62D2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed
	QD63P6	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	QD64D2	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	QD65PD2	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
Channel isolated pulse input	QD60P8-G	RD60P8-G	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points and I/O signals are not changed, and the buffer memory assignment (R mode: Not compatible, Q compatible mode: Compatible) is changed. (4) Specifications: Changed (5) Functions: Not changed

8.2 Comparison of Positioning Module and Pulse I/O Module Specifications

Positioning module

QD75P1N and RD75P2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75P1N	RD75P2		
No. of control axes		1	2	○	The number of axes varies.
Interpolation function		None	2-axis linear interpolation, 2-axis circular interpolation	—	
Control system		PTP (Point To Point) control, path control (linear can be set), speed control, speed-position switching control, position-speed switching control	PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control	○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 4000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75P1N	RD75P2		
Starting time	1-axis linear control: 1.5ms		○	In Q compatible mode
	1-axis speed control: 1.5ms			
	2-axis linear interpolation control (Composite speed): 1.5ms			
	2-axis linear interpolation control (Reference axis speed): 1.5ms			
	2-axis circular interpolation control: 2.0ms			
	2-axis speed control: 1.5ms			
	3-axis linear interpolation control (Composite speed): 1.7ms			
	3-axis linear interpolation control (Reference axis speed): 1.7ms			
	3-axis speed control: 1.7ms			
	4-axis linear interpolation control: 1.8ms			
	4-axis speed control: 1.8ms			
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	200000pulse/s		○	
Maximum connection distance between servos	2m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.29A	0.38A	—	
Weight	0.14kg	0.14kg	—	

QD75P1 and RD75P2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75P1	RD75P2		
No. of control axes		1	2	○	The number of axes varies.
Interpolation function		None	2-axis linear interpolation, 2-axis circular interpolation	—	
Control system		PTP (Point To Point) control, path control (linear can be set), speed control, speed-position switching control, position-speed switching control	PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control	○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 1000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75P1	RD75P2		
Starting time	1-axis linear control: 6ms	1-axis linear control: 1.5ms	△	The RD75 is upward compatibility with the QD75 and has the same programs. Because the performance such as the starting time and refreshing cycle is enhanced, modify each program as needed while checking the timing of the processing.
	1-axis speed control: 6ms	1-axis speed control: 1.5ms		
	2-axis linear interpolation control (Composite speed): 7ms	2-axis linear interpolation control (Composite speed): 1.5ms		
	2-axis linear interpolation control (Reference axis speed): 7ms	2-axis linear interpolation control (Reference axis speed): 1.5ms		
	2-axis circular interpolation control: 7ms	2-axis circular interpolation control: 2.0ms		
	2-axis speed control: 6ms	2-axis speed control: 1.5ms		
	3-axis linear interpolation control (Composite speed): 7ms	3-axis linear interpolation control (Composite speed): 1.7ms		
	3-axis linear interpolation control (Reference axis speed): 7ms	3-axis linear interpolation control (Reference axis speed): 1.7ms		
	3-axis speed control: 6ms	3-axis speed control: 1.7ms		
	4-axis linear interpolation control: 7ms	4-axis linear interpolation control: 1.8ms		
	4-axis speed control: 7ms	4-axis speed control: 1.8ms		
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	200000pulse/s		○	
Maximum connection distance between servos	2m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.40A	0.38A	—	
Weight	0.15kg	0.14kg	—	

QD75P2N and RD75P2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75P2N	RD75P2		
No. of control axes		2		○	
Interpolation function		2-axis linear interpolation, 2-axis circular interpolation		○	
Control system		PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control		○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 4000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75P2N	RD75P2		
Starting time	1-axis linear control: 1.5ms		○	In Q compatible mode
	1-axis speed control: 1.5ms			
	2-axis linear interpolation control (Composite speed): 1.5ms			
	2-axis linear interpolation control (Reference axis speed): 1.5ms			
	2-axis circular interpolation control: 2.0ms			
	2-axis speed control: 1.5ms			
	3-axis linear interpolation control (Composite speed): 1.7ms			
	3-axis linear interpolation control (Reference axis speed): 1.7ms			
	3-axis speed control: 1.7ms			
	4-axis linear interpolation control: 1.8ms			
	4-axis speed control: 1.8ms			
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	200000pulse/s		○	
Maximum connection distance between servos	2m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.30A	0.38A	—	
Weight	0.14kg	0.14kg	—	

QD75P2 and RD75P2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75P2	RD75P2		
No. of control axes		2		○	
Interpolation function		2-axis linear interpolation, 2-axis circular interpolation		○	
Control system		PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control		○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 1000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75P2	RD75P2		
Starting time	1-axis linear control: 6ms	1-axis linear control: 1.5ms	△	The RD75 is upward compatibility with the QD75 and has the same programs. Because the performance such as the starting time and refreshing cycle is enhanced, modify each program as needed while checking the timing of the processing.
	1-axis speed control: 6ms	1-axis speed control: 1.5ms		
	2-axis linear interpolation control (Composite speed): 7ms	2-axis linear interpolation control (Composite speed): 1.5ms		
	2-axis linear interpolation control (Reference axis speed): 7ms	2-axis linear interpolation control (Reference axis speed): 1.5ms		
	2-axis circular interpolation control: 7ms	2-axis circular interpolation control: 2.0ms		
	2-axis speed control: 6ms	2-axis speed control: 1.5ms		
	3-axis linear interpolation control (Composite speed): 7ms	3-axis linear interpolation control (Composite speed): 1.7ms		
	3-axis linear interpolation control (Reference axis speed): 7ms	3-axis linear interpolation control (Reference axis speed): 1.7ms		
	3-axis speed control: 6ms	3-axis speed control: 1.7ms		
	4-axis linear interpolation control: 7ms	4-axis linear interpolation control: 1.8ms		
	4-axis speed control: 7ms	4-axis speed control: 1.8ms		
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	200000pulse/s		○	
Maximum connection distance between servos	2m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.46A	0.38A	—	
Weight	0.15kg	0.14kg	—	

QD75P4N and RD75P4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75P4N	RD75P4		
No. of control axes		4		○	
Interpolation function		2-, 3-, or 4-axis linear interpolation, 2-axis circular interpolation, 3-axis helical interpolation		○	
Control system		PTP (Point To Point) control, path control (all of linear, circular, and helical can be set), speed control, speed-position switching control, position-speed switching control		○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 4000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75P4N	RD75P4		
Starting time	1-axis linear control: 1.5ms		○	In Q compatible mode
	1-axis speed control: 1.5ms			
	2-axis linear interpolation control (Composite speed): 1.5ms			
	2-axis linear interpolation control (Reference axis speed): 1.5ms			
	2-axis circular interpolation control: 2.0ms			
	2-axis speed control: 1.5ms			
	3-axis linear interpolation control (Composite speed): 1.7ms			
	3-axis linear interpolation control (Reference axis speed): 1.7ms			
	3-axis helical interpolation control: 2.6ms			
	3-axis speed control: 1.7ms			
	4-axis linear interpolation control: 1.8ms			
	4-axis speed control: 1.8ms			
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	200000pulse/s		○	
Maximum connection distance between servos	2m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.36A	0.42A	—	
Weight	0.16kg	0.15kg	—	

QD75P4 and RD75P4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75P4	RD75P4		
No. of control axes		4		○	
Interpolation function		2-, 3-, or 4-axis linear interpolation, 2-axis circular interpolation	2-, 3-, or 4-axis linear interpolation, 2-axis circular interpolation, 3-axis helical interpolation	○	
Control system		PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control	PTP (Point To Point) control, path control (all of linear, circular, and helical can be set), speed control, speed-position switching control, position-speed switching control	○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 1000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75P4	RD75P4		
Starting time	1-axis linear control: 6ms	1-axis linear control: 1.5ms	△	The RD75 is upward compatibility with the QD75 and has the same programs. Because the performance such as the starting time and refreshing cycle is enhanced, modify each program as needed while checking the timing of the processing.
	1-axis speed control: 6ms	1-axis speed control: 1.5ms		
	2-axis linear interpolation control (Composite speed): 7ms	2-axis linear interpolation control (Composite speed): 1.5ms		
	2-axis linear interpolation control (Reference axis speed): 7ms	2-axis linear interpolation control (Reference axis speed): 1.5ms		
	2-axis circular interpolation control: 7ms	2-axis circular interpolation control: 2.0ms		
	2-axis speed control: 6ms	2-axis speed control: 1.5ms		
	3-axis linear interpolation control (Composite speed): 7ms	3-axis linear interpolation control (Composite speed): 1.7ms		
	3-axis linear interpolation control (Reference axis speed): 7ms	3-axis linear interpolation control (Reference axis speed): 1.7ms		
	—	3-axis helical interpolation control: 2.6ms		
	3-axis speed control: 6ms	3-axis speed control: 1.7ms		
	4-axis linear interpolation control: 7ms	4-axis linear interpolation control: 1.8ms		
	4-axis speed control: 7ms	4-axis speed control: 1.8ms		
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	200000pulse/s		○	
Maximum connection distance between servos	2m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.58A	0.42A	—	
Weight	0.16kg	0.15kg	—	

QD75D1N and RD75D2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75D1N	RD75D2		
No. of control axes		1	2	○	The number of axes varies.
Interpolation function		None	2-axis linear interpolation, 2-axis circular interpolation	—	
Control system		PTP (Point To Point) control, path control (linear can be set), speed control, speed-position switching control, position-speed switching control	PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control	○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, 21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 4000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75D1N	RD75D2		
Starting time	1-axis linear control: 1.5ms		○	In Q compatible mode
	1-axis speed control: 1.5ms			
	2-axis linear interpolation control (Composite speed): 1.5ms			
	2-axis linear interpolation control (Reference axis speed): 1.5ms			
	2-axis circular interpolation control: 2.0ms			
	2-axis speed control: 1.5ms			
	3-axis linear interpolation control (Composite speed): 1.7ms			
	3-axis linear interpolation control (Reference axis speed): 1.7ms			
	3-axis speed control: 1.7ms			
	4-axis linear interpolation control: 1.8ms			
	4-axis speed control: 1.8ms			
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	4000000pulse/s	5000000pulse/s	○	
Maximum connection distance between servos	10m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.43A	0.54A	—	
Weight	0.15kg	0.15kg	—	

QD75D1 and RD75D2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		QD75D1	RD75D2	Compatibility	Precautions
		Specifications			
No. of control axes		1	2	○	The number of axes varies.
Interpolation function		None	2-axis linear interpolation, 2-axis circular interpolation	—	
Control system		PTP (Point To Point) control, path control (linear can be set), speed control, speed-position switching control, position-speed switching control	PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control	○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 1000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	QD75D1	RD75D2	Compatibility	Precautions
	Specifications			
Starting time	1-axis linear control: 6ms	1-axis linear control: 1.5ms	△	The RD75 is upward compatibility with the QD75 and has the same programs. Because the performance such as the starting time and refreshing cycle is enhanced, modify each program as needed while checking the timing of the processing.
	1-axis speed control: 6ms	1-axis speed control: 1.5ms		
	2-axis linear interpolation control (Composite speed): 7ms	2-axis linear interpolation control (Composite speed): 1.5ms		
	2-axis linear interpolation control (Reference axis speed): 7ms	2-axis linear interpolation control (Reference axis speed): 1.5ms		
	2-axis circular interpolation control: 7ms	2-axis circular interpolation control: 2.0ms		
	2-axis speed control: 6ms	2-axis speed control: 1.5ms		
	3-axis linear interpolation control (Composite speed): 7ms	3-axis linear interpolation control (Composite speed): 1.7ms		
	3-axis linear interpolation control (Reference axis speed): 7ms	3-axis linear interpolation control (Reference axis speed): 1.7ms		
	3-axis speed control: 6ms	3-axis speed control: 1.7ms		
	4-axis linear interpolation control: 7ms	4-axis linear interpolation control: 1.8ms		
	4-axis speed control: 7ms	4-axis speed control: 1.8ms		
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	1000000pulse/s	5000000pulse/s	○	
Maximum connection distance between servos	10m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.52A	0.54A	—	
Weight	0.15kg	0.15kg	—	

QD75D2N and RD75D2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75D2N	RD75D2		
No. of control axes		2		○	
Interpolation function		2-axis linear interpolation, 2-axis circular interpolation		○	
Control system		PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control		○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 4000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75D2N	RD75D2		
Starting time	1-axis linear control: 1.5ms		○	In Q compatible mode
	1-axis speed control: 1.5ms			
	2-axis linear interpolation control (Composite speed): 1.5ms			
	2-axis linear interpolation control (Reference axis speed): 1.5ms			
	2-axis circular interpolation control: 2.0ms			
	2-axis speed control: 1.5ms			
	3-axis linear interpolation control (Composite speed): 1.7ms			
	3-axis linear interpolation control (Reference axis speed): 1.7ms			
	3-axis speed control: 1.7ms			
	4-axis linear interpolation control: 1.8ms			
	4-axis speed control: 1.8ms			
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	4000000pulse/s	5000000pulse/s	○	
Maximum connection distance between servos	10m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.45A	0.54A	—	
Weight	0.15kg	0.15kg	—	

QD75D2 and RD75D2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75D2	RD75D2		
No. of control axes		2		○	
Interpolation function		2-axis linear interpolation, 2-axis circular interpolation		○	
Control system		PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control		○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 1000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75D2	RD75D2		
Starting time	1-axis linear control: 6ms	1-axis linear control: 1.5ms	△	The RD75 is upward compatibility with the QD75 and has the same programs. Because the performance such as the starting time and refreshing cycle is enhanced, modify each program as needed while checking the timing of the processing.
	1-axis speed control: 6ms	1-axis speed control: 1.5ms		
	2-axis linear interpolation control (Composite speed): 7ms	2-axis linear interpolation control (Composite speed): 1.5ms		
	2-axis linear interpolation control (Reference axis speed): 7ms	2-axis linear interpolation control (Reference axis speed): 1.5ms		
	2-axis circular interpolation control: 7ms	2-axis circular interpolation control: 2.0ms		
	2-axis speed control: 6ms	2-axis speed control: 1.5ms		
	3-axis linear interpolation control (Composite speed): 7ms	3-axis linear interpolation control (Composite speed): 1.7ms		
	3-axis linear interpolation control (Reference axis speed): 7ms	3-axis linear interpolation control (Reference axis speed): 1.7ms		
	3-axis speed control: 6ms	3-axis speed control: 1.7ms		
	4-axis linear interpolation control: 7ms	4-axis linear interpolation control: 1.8ms		
	4-axis speed control: 7ms	4-axis speed control: 1.8ms		
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	1000000pulse/s	5000000pulse/s	○	
Maximum connection distance between servos	10m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.56A	0.54A	—	
Weight	0.15kg	0.15kg	—	

QD75D4N and RD75D4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75D4N	RD75D4		
No. of control axes		4		○	
Interpolation function		2-, 3-, or 4-axis linear interpolation, 2-axis circular interpolation, 3-axis helical interpolation		○	
Control system		PTP (Point To Point) control, path control (all of linear, circular, and helical can be set), speed control, speed-position switching control, position-speed switching control		○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 4000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75D4N	RD75D4		
Starting time	1-axis linear control: 1.5ms		○	In Q compatible mode
	1-axis speed control: 1.5ms			
	2-axis linear interpolation control (Composite speed): 1.5ms			
	2-axis linear interpolation control (Reference axis speed): 1.5ms			
	2-axis circular interpolation control: 2.0ms			
	2-axis speed control: 1.5ms			
	3-axis linear interpolation control (Composite speed): 1.7ms			
	3-axis linear interpolation control (Reference axis speed): 1.7ms			
	3-axis helical interpolation control: 2.6ms			
	3-axis speed control: 1.7ms			
	4-axis linear interpolation control: 1.8ms			
	4-axis speed control: 1.8ms			
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	4000000pulse/s	5000000pulse/s	○	
Maximum connection distance between servos	10m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.66A	0.78A	—	
Weight	0.16kg	0.15kg	—	

QD75D4 and RD75D4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD75D4	RD75D4		
No. of control axes		4		○	
Interpolation function		2-, 3-, or 4-axis linear interpolation, 2-axis circular interpolation	2-, 3-, or 4-axis linear interpolation, 2-axis circular interpolation, 3-axis helical interpolation	○	
Control system		PTP (Point To Point) control, path control (all of linear and circular can be set), speed control, speed-position switching control, position-speed switching control	PTP (Point To Point) control, path control (all of linear, circular, and helical can be set), speed control, speed-position switching control, position-speed switching control	○	
Control unit		mm, inch, degree, pulse		○	
Positioning data		600 data/axis		○	
Backup		Parameters, positioning data, and block start data can be saved on the flash ROM (battery-less backup).	The following save destination can be selected for positioning data and block start data. • CPU module • Flash ROM of the positioning module (battery-less)	○	The timing at which the backup data is reflected to the buffer memory is different. To change the parameters, positioning data, and block start data via a program, do it after confirming that Module access flag (X1) has turned on.
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental system/absolute system			
		Position-speed switching control: Incremental system			
		Path control: Incremental system/absolute system			
	Positioning range	In absolute system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse		○	
		In incremental system -214748364.8 to 214748364.7μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse			
		In speed-position switching control (INC mode)/position-speed switching control 0 to 214748364.7μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse			
		In speed-position switching control (ABS mode) 0 to 359.99999 degree			
	Speed command	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 2000000.000 degree/min 1 to 1000000 pulse/s	0.01 to 20000000.00 mm/min 0.001 to 2000000.000 inch/min 0.001 to 3000000.000 degree/min 1 to 5000000 pulse/s	○	
	Acceleration/deceleration process	Trapezoidal acceleration/deceleration, S-curve acceleration/deceleration		○	
	Acceleration/deceleration time	1 to 8388608ms (Four patterns can be set for each of acceleration time and deceleration time.)		○	
	Sudden stop deceleration time	1 to 8388608ms		○	

Item	Specifications		Compatibility	Precautions
	QD75D4	RD75D4		
Starting time	1-axis linear control: 6ms	1-axis linear control: 1.5ms	△	The RD75 is upward compatibility with the QD75 and has the same programs. Because the performance such as the starting time and refreshing cycle is enhanced, modify each program as needed while checking the timing of the processing.
	1-axis speed control: 6ms	1-axis speed control: 1.5ms		
	2-axis linear interpolation control (Composite speed): 7ms	2-axis linear interpolation control (Composite speed): 1.5ms		
	2-axis linear interpolation control (Reference axis speed): 7ms	2-axis linear interpolation control (Reference axis speed): 1.5ms		
	2-axis circular interpolation control: 7ms	2-axis circular interpolation control: 2.0ms		
	2-axis speed control: 6ms	2-axis speed control: 1.5ms		
	3-axis linear interpolation control (Composite speed): 7ms	3-axis linear interpolation control (Composite speed): 1.7ms		
	3-axis linear interpolation control (Reference axis speed): 7ms	3-axis linear interpolation control (Reference axis speed): 1.7ms		
	—	3-axis helical interpolation control: 2.6ms		
	3-axis speed control: 6ms	3-axis speed control: 1.7ms		
	4-axis linear interpolation control: 7ms	4-axis linear interpolation control: 1.8ms		
	4-axis speed control: 7ms	4-axis speed control: 1.8ms		
Quick start function	—	Start with the positioning start signal: 8μs	—	
		Start with the external command signal: 20μs		
Start time adjustment function	—	0.00 to 100000.00ms (in increments of 0.01ms)	—	
Start time when the inter-module synchronization function is used	—	8μs	—	
External interface	40-pin connector (A6CON1/2/4)		○	
Applicable wire size	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)		○	
Maximum output pulse	1000000pulse/s	5000000pulse/s	○	
Maximum connection distance between servos	10m		○	
Flash ROM write count	100000 times maximum		○	
Number of occupied I/O points	32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)	0.82A	0.78A	—	
Weight	0.16kg	0.15kg	—	

High-speed counter module

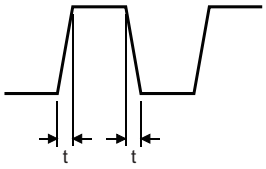
QD62 and RD62P2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

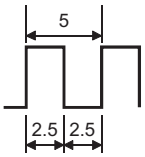
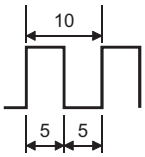
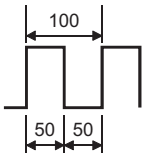
Item		Specifications		Compatibility	Precautions
		QD62	RD62P2		
Counting speed switch setting	200k	100k to 200kpps		○	
	100k	10k to 100kpps			
	10k	10kpps or less			
Number of channels		2 channels		○	
Count input signal	Phase	1-phase input (1 multiple/2 multiples), 2-phase input (1 multiple/2 multiples/4 multiples), CW/CCW input		○	
	Signal level (ϕA, ϕB)	5/12/24VDC, 2 to 5mA		○	
Counter	Counting speed (maximum)*1	200k setting: 200kpps, 100k setting: 100kpps, 10k setting: 10kpps		○	
	Counting range	32-bit signed binary values (-2147483648 to 2147483647)		○	
	Model	UP/DOWN preset counter + Ring counter function		○	
	Minimum count pulse width (duty ratio: 50%)	*2	*3	○	
Coincidence output	Comparison range	32-bit signed binary values		○	
	Comparison result	Set value < Count value, Set value = Count value, Set value > Count value		○	
External input	Preset	5/12/24VDC, 2 to 5mA	5/12/24VDC, 7 to 10mA	△	The external input specifications are different. Check the specifications of external devices.
	Function start				
External output	Coincidence output	Transistor (sinking type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common Current consumption of the external auxiliary power supply: 8mA (TYP., 24VDC)	Transistor (sinking type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common Current consumption of the external auxiliary power supply: 43mA (TYP., 24VDC and all points ON/common)	△	The external output specifications are different. Check the specifications of external devices.
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)		○	
External interface		40-pin connector (A6CON1/2/3/4)	40-pin connector (A6CON1/2/4)	△	The A6CON3 cannot be used.
Applicable wire size		For A6CON1/4: 0.3mm² (22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire) For A6CON3: 28 AWG (stranded wire), 30 AWG (solid wire)	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)	○	
Internal current consumption (5VDC)		0.30A	0.11A	—	
Weight		0.11kg	0.11kg	—	

*1 The counting speed is affected by the pulse rise/fall time. A count can be performed with the following counting speed.

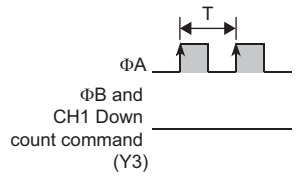
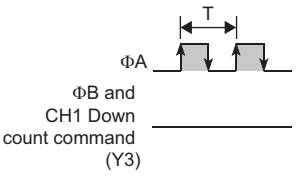
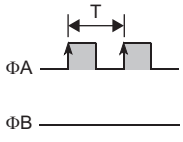
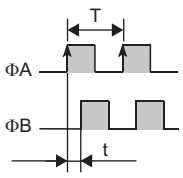
Counting speed switch setting	200kpps	100kpps	10kpps
Rise/fall time	Both 1- and 2-phase inputs		
t = 1.25μs or less	200kpps	100kpps	10kpps
t = 2.5μs or less	100kpps	100kpps	10kpps
t = 25μs or less	—	10kpps	10kpps
t = 500μs or less	—	—	500pps

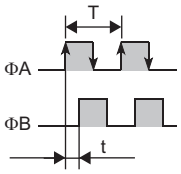
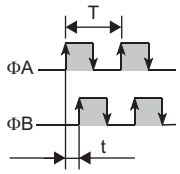


*2 The following table shows the minimum count pulse width for the QD62.

Counting speed switch setting		
200kpps	100kpps	10kpps
		
(Unit: μs) (Minimum phase differential for 2-phase input: 1.25μs)	(Unit: μs) (Minimum phase differential for 2-phase input: 2.5μs)	(Unit: μs) (Minimum phase differential for 2-phase input: 25μs)

*3 The following table shows the minimum count pulse width for the RD62P2.

Pulse input mode	Waveform (in up count, duty ratio: 50%)	Minimum count pulse cycle, T, and phase difference, t (μs), at each counting speed		
		200kpps	100kpps	10kpps
1-phase multiple of 1		T=5	T=10	T=100
1-phase multiple of 2		T=10	T=20	T=200
CW/CCW		T=5	T=10	T=100
2-phase multiple of 1		T=5 t=1.25	T=10 t=2.5	T=100 t=25

Pulse input mode	Waveform (in up count, duty ratio: 50%)	Minimum count pulse cycle, T, and phase difference, t (μs), at each counting speed		
		200kpps	100kpps	10kpps
2-phase multiple of 2		T=10 t=2.5	T=20 t=5	T=200 t=50
2-phase multiple of 4		T=20 t=5	T=40 t=10	T=400 t=100

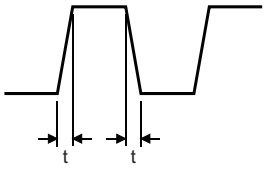
QD62E and RD62P2E

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

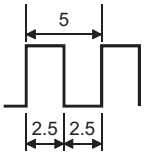
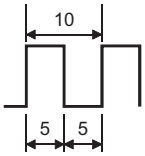
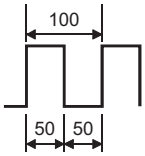
Item		Specifications		Compatibility	Precautions
		QD62E	RD62P2E		
Counting speed switch setting	200k	100k to 200kpps		○	
	100k	10k to 100kpps			
	10k	10kpps or less			
Number of channels		2 channels		○	
Count input signal	Phase	1-phase input (1 multiple/2 multiples), 2-phase input (1 multiple/2 multiples/4 multiples), CW/CCW input		○	
	Signal level (ϕA, ϕB)	5/12/24VDC, 2 to 5mA		○	
Counter	Counting speed (maximum)*1	200k setting: 200kpps, 100k setting: 100kpps, 10k setting: 10kpps		○	
	Counting range	32-bit signed binary values (-2147483648 to 2147483647)		○	
	Model	UP/DOWN preset counter + Ring counter function		○	
	Minimum count pulse width (duty ratio: 50%)	*2	*3	○	
Coincidence output	Comparison range	32-bit signed binary values		○	
	Comparison result	Set value < Count value, Set value = Count value, Set value > Count value		○	
External input	Preset	5/12/24VDC, 2 to 5mA	5/12/24VDC, 7 to 10mA	△	The external input specifications are different. Check the specifications of external devices.
	Function start				
External output	Coincidence output	Transistor (sourcing type) output 2 points/channel 12/24VDC, 0.1A/point, 0.4A/common Current consumption of the external auxiliary power supply: 8mA (TYP., 24VDC)	Transistor (sourcing type) output 2 points/channel 12/24VDC, 0.4A/point, 0.4A/common Current consumption of the external auxiliary power supply: 43mA (TYP., 24VDC and all points ON/common)	△	The external output specifications are different. Check the specifications of external devices.
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)		○	
External interface		40-pin connector (A6CON1/2/3/4)	40-pin connector (A6CON1/2/4)	△	The A6CON3 cannot be used.
Applicable wire size		For A6CON1/4: 0.3mm² (22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire) For A6CON3: 28 AWG (stranded wire), 30 AWG (solid wire)	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)	○	
Internal current consumption (5VDC)		0.33A	0.20A	—	
Weight		0.11kg	0.12kg	—	

*1 The counting speed is affected by the pulse rise/fall time. A count can be performed with the following counting speed.

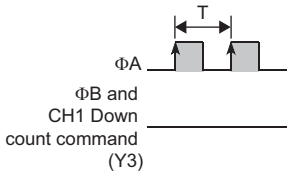
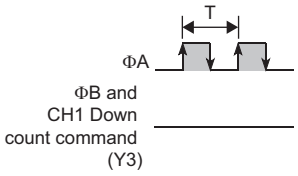
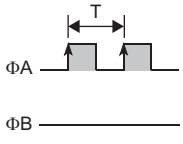
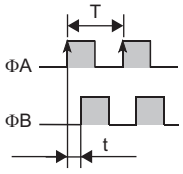
Counting speed switch setting	200kpps	100kpps	10kpps
Rise/fall time	Both 1- and 2-phase inputs		
t = 1.25μs or less	200kpps	100kpps	10kpps
t = 2.5μs or less	100kpps	100kpps	10kpps
t = 25μs or less	—	10kpps	10kpps
t = 500μs or less	—	—	500pps

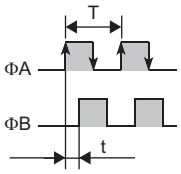
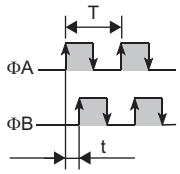


*2 The following table shows the minimum count pulse width for the QD62E.

Counting speed switch setting		
200kpps	100kpps	10kpps
		
(Unit: μs) (Minimum phase differential for 2-phase input: 1.25μs)	(Unit: μs) (Minimum phase differential for 2-phase input: 2.5μs)	(Unit: μs) (Minimum phase differential for 2-phase input: 25μs)

*3 The following table shows the minimum count pulse width for the RD62P2E.

Pulse input mode	Waveform (in up count, duty ratio: 50%)	Minimum count pulse cycle, T, and phase difference, t (μs), at each counting speed		
		200kpps	100kpps	10kpps
1-phase multiple of 1		T=5	T=10	T=100
1-phase multiple of 2		T=10	T=20	T=200
CW/CCW		T=5	T=10	T=100
2-phase multiple of 1		T=5 t=1.25	T=10 t=2.5	T=100 t=25

Pulse input mode	Waveform (in up count, duty ratio: 50%)	Minimum count pulse cycle, T, and phase difference, t (μs), at each counting speed		
		200kpps	100kpps	10kpps
2-phase multiple of 2		T=10 t=2.5	T=20 t=5	T=200 t=50
2-phase multiple of 4		T=20 t=5	T=40 t=10	T=400 t=100

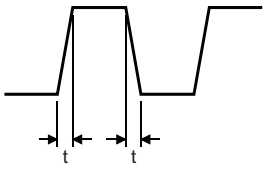
QD62D and RD62D2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

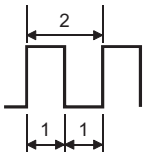
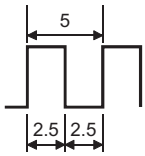
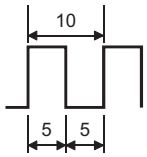
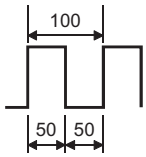
Item		Specifications		Compatibility	Precautions
		QD62D	RD62D2		
Counting speed switch setting	8M	—	4M to 8Mpps	○	In multiple of 4
	4M	—	2M to 4Mpps		In multiple of 2/multiple of 4
	2M	—	1M to 2Mpps		
	1M	—	500k to 1Mpps		
	500k	200k to 500kpps			
	200k	100k to 200kpps			
	100k	10k to 100kpps			
	10k	10kpps or less			
Number of channels		2 channels		○	
Count input signal	Phase	1-phase input (1 multiple/2 multiples), 2-phase input (1 multiple/2 multiples/4 multiples), CW/CCW input		○	
	Signal level (ϕA, ϕB)	EIA Standard RS-422-A differential line driver level (AM26LS31 (manufactured by Texas Instruments Japan Limited.) or equivalent)		○	
Counter	Counting speed (maximum)*1	500k setting: 500kpps 200k setting: 200kpps 100k setting: 100kpps 10k setting: 10kpps	8M setting: 8Mpps 4M setting: 4Mpps 2M setting: 2Mpps 1M setting: 1Mpps 500k setting: 500kpps 200k setting: 200kpps 100k setting: 100kpps 10k setting: 10kpps	○	
	Counting range	32-bit signed binary values (-2147483648 to 2147483647)		○	
	Model	UP/DOWN preset counter + Ring counter function		○	
	Minimum count pulse width (duty ratio: 50%)	*2	*3	○	
Coincidence output	Comparison range	32-bit signed binary values		○	
	Comparison result	Set value < Count value, Set value = Count value, Set value > Count value		○	
External input	Preset	5/12/24VDC, 2 to 5mA	5/12/24VDC, 7 to 10mA	△	The external input specifications are different. Check the specifications of external devices.
	Function start				
External output	Coincidence output	Transistor (sinking type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common Current consumption of the external auxiliary power supply: 8mA (TYP., 24VDC)	Transistor (sinking type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common Current consumption of the external auxiliary power supply: 43mA (TYP., 24VDC and all points ON/common)	△	The external output specifications are different. Check the specifications of external devices.
Number of occupied I/O points		16 points (I/O assignment: Intelligent 16 points)		○	
External interface		40-pin connector (A6CON1/2/3/4)	40-pin connector (A6CON1/2/4)	△	The A6CON3 cannot be used.
Applicable wire size		For A6CON1/4: 0.3mm² (22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire) For A6CON3: 28 AWG (stranded wire), 30 AWG (solid wire)	For A6CON1/4: 0.088 to 0.3mm² (28 to 22 AWG) (stranded wire) For A6CON2: 0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)	○	
Internal current consumption (5VDC)		0.38A	0.17A	—	
Weight		0.12kg	0.12kg	—	

*1 The counting speed is affected by the pulse rise/fall time. A count can be performed with the following counting speed.

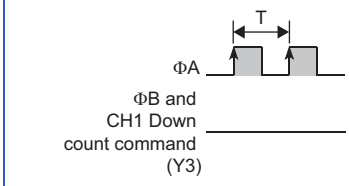
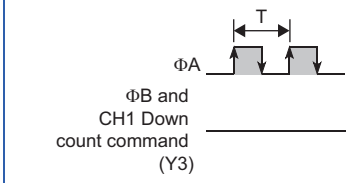
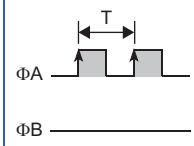
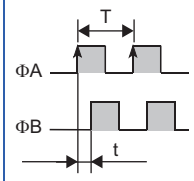
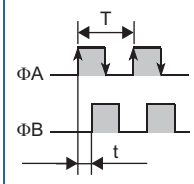
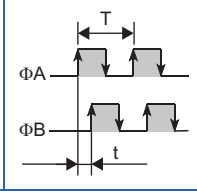
Counting speed switch setting	8Mpps 4Mpps 2Mpps	1Mpps	500kpps	200kpps	100kpps	10kpps
Rise/fall time	Both 1- and 2-phase inputs					
t = 0.125μs or less	2Mpps	1Mpps	500kpps	200kpps	100kpps	10kpps
t = 0.25μs or less	1Mpps	1Mpps	500kpps	200kpps	100kpps	10kpps
t = 0.5μs or less	—	500kpps	500kpps	200kpps	100kpps	10kpps
t = 1.25μs or less	—	—	200kpps	200kpps	100kpps	10kpps
t = 2.5μs or less	—	—	—	100kpps	100kpps	10kpps
t = 25μs or less	—	—	—	—	10kpps	10kpps
t = 500μs or less	—	—	—	—	—	500pps



*2 The following table shows the minimum count pulse width for the QD62D.

Counting speed switch setting			
500kpps	200kpps	100kpps	10kpps
			
(Unit: μs) (Minimum phase differential for 2-phase input: 0.5μs)	(Unit: μs) (Minimum phase differential for 2-phase input: 1.25μs)	(Unit: μs) (Minimum phase differential for 2-phase input: 2.5μs)	(Unit: μs) (Minimum phase differential for 2-phase input: 25μs)

*3 The following table shows the minimum count pulse width for the RD62D2.

Pulse input mode	Waveform (in up count, duty ratio: 50%)	Minimum count pulse cycle, T, and phase difference, t (μs), at each counting speed							
		8Mpps	4Mpps	2Mpps	1Mpps	500kpps	200kpps	100kpps	10kpps
1-phase multiple of 1		—	—	T=0.5	T=1	T=2	T=5	T=10	T=100
1-phase multiple of 2		—	T=0.5	T=1	T=2	T=4	T=10	T=20	T=200
CW/CCW		—	—	T=0.5	T=1	T=2	T=5	T=10	T=100
2-phase multiple of 1		—	—	T=0.5 t=0.125	T=1 t=0.25	T=2 t=0.5	T=5 t=1.25	T=10 t=2.5	T=100 t=25
2-phase multiple of 2		—	T=0.5 t=0.125	T=1 t=0.25	T=2 t=0.5	T=4 t=1	T=10 t=2.5	T=20 t=5	T=200 t=50
2-phase multiple of 4		T=0.5 t=0.125	T=1 t=0.25	T=2 t=0.5	T=4 t=1	T=8 t=2	T=20 t=5	T=40 t=10	T=400 t=100

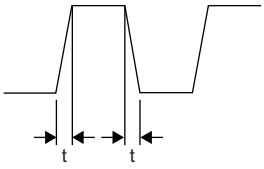
Channel isolated pulse input module

QD60P8-G and RD60P8-G

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

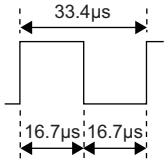
Item		Specifications		Compatibility	Precautions
		QD60P8-G	RD60P8-G		
Counting speed switch setting	30kpps	10k to 30kpps		○	
	10kpps	1k to 10kpps			
	1kpps	100 to 1kpps			
	100pps	50 to 100pps			
	50pps	10 to 50pps			
	10pps	1 to 10pps			
	1pps	0.1 to 1pps			
	0.1pps	0.05 to 0.1pps			
Number of channels		8 channels		○	
Count input signal	Phase	1-phase input		○	
	Signal level	5VDC/12 to 24VDC		○	
Counter	Counting speed (maximum)*1	30kpps setting: 30kpps, 10kpps setting: 10kpps, 1kpps setting: 1kpps, 100pps setting: 100pps, 50pps setting: 50pps, 10pps setting: 10pps, 1pps setting: 1pps, 0.1pps setting: 0.1pps		○	
	Counting range	Sampling pulse number: 16-bit unsigned binary (0 to 32767) Accumulating count value: 32-bit unsigned binary (0 to 99999999) Input pulse value: 32-bit unsigned binary (0 to 2147483647)		○	
	Count type	Linear counter, ring counter		○	
	Minimum count pulse width (Duty ratio 50%)	*2		○	
Withstand voltage		For 1 min at 1500VAC between AC external connecting terminals and general grounding For 1 min at 500VAC between DC external connecting terminals and general grounding For 1 min at 1780VAC between channels	For 1 min at 500VAC rms between I/O terminal and programmable controller power supply For 1 min at 1780VAC between channels	○	
Insulation resistance		5MΩ or more at 500VDC between all AC external terminals and general grounding	10MΩ or more at 500VDC between I/O terminal and programmable controller power supply 10MΩ or more at 500VDC between channels	○	
External interface		18-point terminal block (M3 screws)		○	The existing external wiring and terminal blocks in the existing system can be used.
Applicable wire size		0.3 to 0.75mm² (22 to 18 AWG)		○	
Applicable solderless terminal		R1.25-3 (solderless terminal with an insulation sleeve cannot be used)		○	
Internal current consumption (5VDC)		0.58A	0.72A	—	
Weight		0.17kg	0.23kg	—	

*1 The counting speed is affected by the rise/fall time of pulses. A count can be performed with the following counting speed.

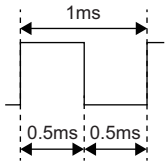
Rise/fall time		Counting speed switch setting							
		30kpps	10kpps	1kpps	100pps	50pps	10pps	1pps	0.1pps
	t = 8.4µs or less	30kpps	10kpps	1kpps	100pps	50pps	10pps	1pps	0.1pps
	t = 25µs or less	10kpps	10kpps	1kpps	100pps	50pps	10pps	1pps	0.1pps
	t = 250µs or less	—	1kpps	1kpps	100pps	50pps	10pps	1pps	0.1pps
	t = 2.5ms or less	—	—	100pps	100pps	50pps	10pps	1pps	0.1pps
	t = 5ms or less	—	—	—	50pps	50pps	10pps	1pps	0.1pps
	t = 25ms or less	—	—	—	—	10pps	10pps	1pps	0.1pps
	t = 250ms or less	—	—	—	—	—	1pps	1pps	0.1pps
	t = 2.5s or less	—	—	—	—	—	—	0.1pps	0.1pps
	t = 5s or less	—	—	—	—	—	—	—	0.05pps

*2 The following table shows the minimum count pulse width for the QD60P8-G and RD60P8-G.

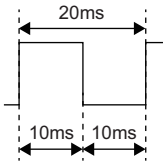
■30kpps



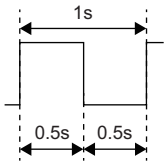
■1kpps



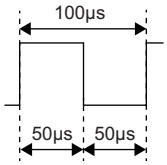
■50pps



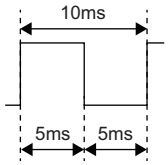
■1pps



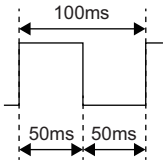
■10kpps



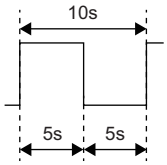
■100pps



■10pps



■0.1pps



8.3 Comparison of Positioning Module and Pulse I/O Module Functions

Positioning module

QD75P□(N)/QD75D□(N) and RD75P□/RD75D□

■Main functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD75P□(N) QD75D□(N)	RD75P□ RD75D□	
OPR control	• Machine OPR control Mechanically establishes the positioning start point using a near-point dog or stopper. (Positioning start No.9001) • Fast OPR control Positions a target to the OP address ([Md.21] Machine feed value) stored in the module using machine OPR control. (Positioning start No.9002)	○	○	
Position control	• Linear control (1-axis linear control, 2-/3-/4-axis linear interpolation control) Positions a target using a linear path to the address set in the positioning data or to the position specified with the movement amount. • Fixed-feed control (1-/2-/3-/4-axis fixed-feed control) Positions a target by the movement amount specified with the amount set in the positioning data. (With the fixed-feed control, [Md.20] Current feed value is set to 0 when the control is started. In the 2-axis fixed-feed control, 3-axis fixed-feed control, or 4-axis fixed-feed control, the fixed-feed is performed along a linear path obtained by interpolation.) • 2-axis circular interpolation control Positions a target using an arc path to the address set in the positioning data, or to the position specified with the movement amount, sub point, or center point. • 3-axis helical interpolation control Positions a target using a helical path to the address set in the positioning data, or to the position specified with the movement amount, sub point, or center point.	○	○	
Speed control	(1-/2-/3-/4-axis speed control) Continuously outputs the pulses corresponding to the command speed set in the positioning data.	○	○	
Speed-position switching control	Performs the speed control, and position control (Positioning with the specified address or movement amount) immediately after that by turning on Speed-position switching signal.	○	○	
Position-speed switching control	Performs the position control, and speed control (Continuous output of the pulses corresponding to the specified command speed) immediately after that by turning on Position-speed switching signal.	○	○	
Current value changing	Changes [Md.20] Current feed value to the address set in the positioning data. The following two methods can be used. (Machine feed value cannot be changed.) • Current value changing using positioning data • Current value changing using the current value changing start No. (No. 9003)	○	○	
NOP instruction	A control system that is not executed. When the NOP instruction is set, the operation of the next data starts and this instruction is not executed.	○	○	
JUMP instruction	Unconditionally or conditionally jumps to the specified positioning data No.	○	○	
LOOP	Performs the loop control with repeated LOOP to LEND.	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD75P□(N) QD75D□(N)	RD75P□ RD75D□	
LEND	Returns to the beginning of the loop control with repeated LOOP to LEND.	○	○	
Block start (normal start)	With one start, executes the positioning data in a random block with the set order.	○	○	
Condition start	Judges the condition set in Condition data for the specified positioning data, and executes Block start data. When the condition is established, Block start data is executed. When not established, that block start data is ignored, and the next point's block start data is executed.	○	○	
Wait start	Judges the condition set in Condition data for the specified positioning data, and executes Block start data. When the condition is established, Block start data is executed. When not established, the control stops (waits) until the condition is established.	○	○	
Simultaneous start	Simultaneously executes the positioning data having the number for the axis specified with Condition data (Outputs pulses at the same timing).	○	○	
Repeated start (FOR loop)	Repeats the program from the block start data set with FOR loop to the block start data set in NEXT for the specified number of times.	○	○	
Repeated start (FOR condition)	Repeats the program from the block start data set with FOR condition to the block start data set in NEXT until the conditions set in Condition data are established.	○	○	
Multiple axes simultaneous start control	Starts the operation of multiple axes simultaneously according to the pulse output level. (Positioning start No. 9004, same as the "simultaneous start" above)	○	○	
JOG operation	Outputs pulses to the drive unit while JOG start signal is on.	○	○	
Inching operation	Outputs pulses corresponding to a minute movement amount by the manual operation to the drive unit. (Performs the fine adjustment with JOG start signal.)	○	○	
Manual pulse generator operation	Outputs pulses commanded with the manual pulse generator to the drive unit. (Performs the fine adjustment and others at the pulse level.)	○	○	

■Sub functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD75P□(N) QD75D□(N)	RD75P□ RD75D□	
OPR retry function	Retries the machine OPR with the upper/lower limit switches during the machine OPR. This allows the machine OPR to be performed even if the axis is not returned to a position before the near-point dog with operations such as the JOG operation.	○	○	
OP shift function	After the machine OPR, this function compensates the position by the specified distance from the machine OP position and sets that position as the OP address.	○	○	
Backlash compensation function	Compensates the backlash amount of the machine system. Feed pulses equivalent to the set backlash amount are output each time the movement direction changes.	○	○	
Electronic gear function	By setting the movement amount per pulse, this function can freely change the machine movement amount per commanded pulse. A flexible positioning system that matches the machine system can be structured with this function.	○	○	
Near pass function	Suppresses the machine vibration when the positioning data is switched during continuous path control in the interpolation control.	○	○	
Output timing selection of near pass control	This function allows the user to select the timing to output the difference between the actual and the set positioning end addresses in the continuous path control, in which the difference is output during the execution of the next positioning data.	○	○	
Speed limit function	If the command speed exceeds [Pr.8] Speed limit value during the control, this function limits the command speed to within the setting range of [Pr.8] Speed limit value.	○	○	
Torque limit function	If the torque generated in the servo motor exceeds [Pr.17] Torque limit setting value during the control, this function limits the generated torque to within the setting range of [Pr.17] Torque limit setting value.	○	○	
Software stroke limit function	If a command outside of the upper/lower limit stroke limit setting range, set in the parameters, is issued, this function will not execute the positioning for that command.	○	○	
Hardware stroke limit function	Performs the deceleration stop with the limit switch connected to the connector for external devices.	○	○	
Speed change function	Changes the speed during positioning. Set the new speed in [Cd.14] New speed value, the speed change buffer memory area, and change the speed with [Cd.15] Speed change request.	○	○	
Override function	Changes the speed during positioning within a percentage of 1 to 300%. Execute this function using [Cd.13] Positioning operation speed override.	○	○	
Acceleration/ deceleration time change function	Changes the acceleration/deceleration time at the speed change. (This function is added to the speed change function and override function)	○	○	
Torque change function	Changes the torque limit value during the control.	○	○	
Target position change function	Changes the target position during positioning. The position and speed can be changed simultaneously.	○	○	
Absolute position restoration function	Restores the absolute position of a specified axis. By this function, the OPR after power-on is not required once the OPR is executed at system start-up.	○	○	
Step function	Temporarily stops the operation to check the positioning operation during debugging and other operation. The operation can be stopped for each Automatic deceleration or Positioning data.	○	○	
Skip function	Pauses (decelerates to stop) the positioning being executed when Skip signal is input, and performs the next positioning.	○	○	
M code output function	Issues a command for a subsidiary work (such as stopping clamps or drills and changing tools) corresponding to each M code number (0 to 65535) that can be set to each positioning data.	○	○	
Teaching function	Stores the address positioned with the manual control into the positioning address of the specified positioning data No. ([Cd.39]).	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD75P□(N) QD75D□(N)	RD75P□ RD75D□	
Command in-position function	At each automatic deceleration, this function calculates the remaining distance for the module to reach the positioning stop position, and sets Command in-position flag to 1 when the value is less than or equal to the set value. When performing another subsidiary work before the control ends, use this function as a trigger for the subsidiary work.	○	○	
Acceleration/ deceleration process function	Adjusts acceleration/deceleration of the control (acceleration/ deceleration time and curve).	○	○	
Continuous operation interrupt function	Interrupts the continuous operation. When this request is accepted, the operation will stop at the completion of the positioning data being executed.	○	○	
Pre-reading start function	Shortens the virtual start time.	○	○	
Deceleration start flag function	To inform the stop timing, this function turns on Deceleration start flag when the speed status is changed from the constant speed or acceleration to deceleration during the position control whose operation pattern is Positioning complete.	○	○	
Stop command processing for deceleration stop function	Selects a deceleration curve when a stop cause occurs during the deceleration stop processing to speed 0.	○	○	
During uncompleted OPR operation setting function	Sets whether or not to execute the positioning control when OPR request flag is on.	×	○	*1
Positioning options	The following settings can be set for each positioning data. • M code ON signal output timing • ABS direction in degrees • Interpolation speed designation method	○	○	

*1 For the RD75P□/D□, starting positioning when OPR is not complete causes an error for safety reasons.
To make the operation compatible with the QD75P□/D□, set [Pr.58] Setting of operation during uncompleted OPR to "1: Execute the positioning control".

■Common functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD75P□(N) QD75D□(N)	RD75P□ RD75D□	
Parameter initialization function	Resets the "parameters" stored in the module buffer memory and flash ROM to the default values. The following two methods can be used. • Method using a sequence program. • Method using GX Works2/GX Configurator-QP.	○	△	For the RD75P□/D□, use the module data initialization function instead. Only the method using a sequence program is supported.
Execution data backup function	Stores the setting data currently being executed into the flash ROM. The following two methods can be used. • Method using a sequence program. • Method using GX Works2/GX Configurator-QP.	○	△	For the RD75P□/D□, use the module data backup function instead. Only the method using a sequence program is supported.
External I/O signal logic switching function	Switches I/O signal logics according to the externally connected devices. This function enables the use of the system that does not use b (N.C.) contact signals, such as Drive unit READY or Upper/lower limit signal, by setting parameters to positive logic.	○	○	
External I/O signal monitor function	Monitors the external I/O signal monitor information in the module's detailed information which can be displayed on the system monitor of GX Works2.	○	○	For the RD75P□/D□, use the module diagnostics function of GX Works3.
History monitor function	Monitors the error history, warning history, and start history of all axes.	○	○	
Module error history function	Collects errors that occurred and stores them to the CPU module.	○	○	For the RD75P□/D□, use the event history function of GX Works3.

High-speed counter module

QD62(E/D) and RD62(P2/P2E/D2)

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD62 QD62E QD62D	RD62P2 RD62P2E RD62D2	
Linear counter function	Values from -2147483648 to 2147483647 can be counted. If the count exceeds the range, the overflow is detected.	○	○	*1
Ring counter function	Counts pulses repeatedly within the range between the ring counter upper limit and the ring counter lower limit.	○	○	*1
Coincidence output function	Compares the coincidence output point of any preset channel with the present counter value, and outputs the ON/OFF signal.	○	○	*1
Coincidence detection interrupt function	Generates an interrupt signal to the CPU module when coincidence is detected, and starts the interrupt program.	○	○	*1
Preset function	Overwrites the present counter value with any numerical value.	○	○	*1
Counter function selection	(1) Disable count function Makes it possible to stop counting pulses while the count enable command is on. (2) Latch counter function Stores the present counter value at the signal input of Counter function selection start command in the buffer memory. (3) Sampling counter function Counts the pulses that are input during the preset sampling time period from the time the counter function selection start command is input, and stores the count in the buffer memory. (4) Periodic pulse counter function Stores the present and previous counter values to the buffer memory at the preset cycle (T) while the counter function selection start command signal is input. (For the RD62P2/RD62P2E/RD62D2, the difference value is also stored.)	○	○	*1

*1 The counter operation mode for the RD62P2/RD62P2E/RD62D2 is "pulse count mode".

Channel isolated pulse input module

QD60P8-G and RD60P8-G

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QD60P8-G	RD60P8-G	
Accumulating counter	Linear counter function	Counts from 0 to 99999999 and detects an overflow when the count range is exceeded.	○	○	
	Ring counter function	Repeats counting between 0 and 99999999.	○	○	
	Comparison output function	Turns on Accumulating counter comparison flag (X0 to X17) when Accumulating count value reaches or exceeds Comparison output setting value.	○	○	
Sampling counter	Count cycle change function	Changes the count cycle of Sampling pulse number or Accumulating count value.	○	○	
	Movement averaging function	Performs movement averaging processing by the specified number of times if there are variations in Sampling pulse number.	○	○	
	Pre-scale function	Converts the number of pulses by multiplying the number of input pulses by any setting number.	○	○	
	Warning output function	Sets the upper/upper limit value, upper/lower limit value, lower/upper limit value and lower/lower limit value for Sampling pulse number converted by the pre-scale function to output alarms.	○	○	
Counter reset function		Resets Sampling pulse number, Accumulating count value, or Input pulse value. A reset can be made at any timing.	○	○	
Pulse edge selection function		Selects whether the rise or fall of an input pulse will be used for counting.	○	○	
Count enable function		Starts input pulse count operation when Count enable (Y18 to Y1F) is turned on.	○	○	
Online module change function		Changes the module without stopping the system.	○	△	Operation using engineering tool is not supported.
Interrupt function		Executes an interrupt program of the CPU module when an interrupt factor such as an error or warning output is detected.	—	○	
Error history function		Stores up to 16 errors and alarms that occurred in the pulse input module in the buffer memory areas.	—	○	
Event history function		Collects the errors and alarms that occurred and the operations executed in the pulse input module as event information into the CPU module.	—	○	
Q compatible mode function		Assigns the buffer memory addresses of the pulse input module in the same way as those of the MELSEC-Q series module.	—	○	

8.4 Precautions for Positioning Module and Pulse I/O Module Migration

Wiring

■Positioning module

There are differences in the layout of PULSE COM terminals between the QD75D2N/QD75D4N and the RD75D2/RD75D4.
To use the 40-pin connector of the QD75D2N/QD75D4N with the RD75D2/RD75D4, wiring to the 2B20 and 2B19 pins is required.

■High-speed counter module

The wiring for coincidence output differs between the QD62E and the RD62P2E.
To use the 40-pin connector of the QD62E with the RD62P2E, wiring to the A01 and A02 pins is no longer required. (A01 and A02 are non-connection pins.)

Dedicated instruction

There is no difference between the MELSEC-Q series and the MELSEC iQ-R series.

Writing parameters

The MELSEC iQ-R series allows parameters to be written to the CPU module as well as the positioning module. This makes it possible to control parameters centrally by the CPU module, thereby making it easier to change the module in maintenance.
The module parameters and module extension parameters stored in the CPU module are reflected to the positioning module when the system is powered on, the CPU module is reset, or the operating status of the CPU module is changed from STOP to RUN.
To set the module extension parameters using a program, execute the parameter setting program after Module access flag turns on. Because changing the operating status of the CPU module from STOP to RUN overwrites the parameters stored in the CPU module, restart the parameter setting program.
To set positioning data using a program or change positioning data using the teaching function, especially for the system where positioning data varies from one workpiece to another or the system where settings are changed with GOT or other external devices, set "Positioning module" in "Extended parameter storage setting" under "Basic setting" of module parameter, and store parameters into the positioning module using the module backup function.

I/O signals and buffer memory areas

The layouts of I/O signals and buffer memory areas differ between the MELSEC-Q series and the MELSEC iQ-R series.
If I/O signals and buffer memory areas are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Point

For details on these precautions, refer to the following.
- MELSEC iQ-R Module Configuration Manual
- MELSEC iQ-R Positioning Module User's Manual (Startup)
- MELSEC iQ-R Positioning Module User's Manual (Application)
- MELSEC iQ-R High-Speed Counter Module User's Manual (Startup)
- MELSEC iQ-R High-Speed Counter Module User's Manual (Application)
- MELSEC iQ-R Channel Isolated Pulse Input Module User's Manual (Startup)
- MELSEC iQ-R Channel Isolated Pulse Input Module User's Manual (Application)

9 CONTROL NETWORK MODULE MIGRATION

9.1 Control Network Module Migration Model List

The following describes examples of migration to MELSEC iQ-R series control network modules in accordance with the MELSEC-Q series control network module specifications.
Consider the scope of control by your MELSEC-Q series control network module and the system specifications and extensibility after migration to choose a model that best suits your application.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
CC-Link IE Controller Network	QJ71GP21-SX	RJ71GP21-SX	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Not changed (5) Functions: Changed
	QJ71GP21S-SX	RJ71GP21S-SX	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Not changed (5) Functions: Changed
CC-Link IE Field Network	QJ71GF11-T2	RJ71GF11-T2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points and I/O signals are not changed, and the buffer memory addresses are changed. (4) Specifications: Not changed (5) Functions: Changed
	QJ71GF11-T2	RJ71EN71	The RJ71EN71 can be connected by configuring settings using an engineering tool.*1
CC-Link	QJ61BT11	RJ61BT11	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points and I/O signals are not changed, and the buffer memory addresses are changed. (4) Specifications: Not changed (5) Functions: Changed
	QJ61BT11N	RJ61BT11	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points and I/O signals are not changed, and the buffer memory addresses are changed. (4) Specifications: Not changed (5) Functions: Changed
CC-Link/LT	QJ61CL12	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
AnyWireASLINK	QJ51AW12AL	RJ51AW12AL	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Not changed (5) Functions: Not changed
AnyWire DB A20	QJ51AW12D2	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
MELSECNET/H	QJ71LP21-25	RJ71LP21-25	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. For station numbers/MODE, parameter settings are required. (4) Specifications: Not changed (5) Functions: Changed (Remote I/O network is not available, simple dual-structured system is not available.)
	QJ71LP21S-25	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	QJ72LP25-25	No applicable module	—
	QJ71LP21G	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	QJ72LP25G	No applicable module	—
	QJ71BR11	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
	QJ72BR15	No applicable module	—
	QJ71NT11B	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
FL-net(OPCN-2)	QJ71FL71-T QJ71FL71-T-F01	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module, or use the ER-1FL2-T.*2
	QJ71FL71 QJ71FL71-B2 QJ71FL71-B5 QJ71FL71-F01 QJ71FL71-B2-F01 QJ71FL71-B5-F01	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
MODBUS®	QJ71MB91	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module. If the QJ71MB91 is used as the master, consider using the predefined protocol function of the RJ71C24 instead.
	QJ71MT91	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module. If the QJ71MT91 is used as the master, consider using the predefined protocol function of the RCPU/RJ71EN71 or the simple CPU communication function of the RJ71EN71 instead.*3 If the QJ71MT91 is used as a slave, consider using the MODBUS/TCP slave function of the RJ71EN71 instead.*3*4
AS-i	QJ71AS92	No applicable module	Connect the RQ extension base unit (RQ6☐B) to use the Q series module.
DeviceNet	QJ71DN91	RJ71DN91	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points and I/O signals are not changed, and the buffer memory addresses are changed. (4) Specifications: Not changed (5) Functions: Not changed
PROFIBUS-DP	QJ71PB92V	RJ71PB91V	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Changed
	QJ71PB93D	RJ71PB91V	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points, I/O signals, and buffer memory addresses are not changed. (4) Specifications: Changed (5) Functions: Not changed

*1 For details, refer to the following.
MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)
MELSEC iQ-R Ethernet User's Manual (Application)
*2 For details on the ER-1FL2-T, please consult your local Mitsubishi representative.
*3 For the firmware version for using each function, refer to the User's Manual (Application) for the target models.
*4 For details, refer to the following.
MELSEC iQ-R Ethernet User's Manual (Application)

9.2 Comparison of Control Network Module Specifications

CC-Link IE Controller Network module

QJ71GP21-SX and RJ71GP21-SX

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71GP21-SX	RJ71GP21-SX		
Maximum link points per network	LB	32K points (32768 points, 4K bytes) (Basic model QCPU or safety CPU: 16K points (16384 points, 2K bytes))	32K points (32768 points, 4K bytes)	○	
	LW	128K points (131072 points, 256K bytes) (Basic model QCPU or safety CPU: 16K points (16384 points, 32K bytes))	128K points (131072 points, 256K bytes)	○	
	LX	8K points (8192 points, 1K bytes)		○	
	LY	8K points (8192 points, 1K bytes)		○	
Maximum points per station	LB	16K points (16384 points, 2K bytes)		○	
		Extended mode: 32K points (32768 points, 4K bytes)		○	
	LW	16K points (16384 points, 32K bytes)		○	
		Extended mode: 128K points (131072 points, 256K bytes)		○	
	LX	8K points (8192 points, 1K bytes)		○	
	LY	8K points (8192 points, 1K bytes)		○	
Transient transmission capacity		1920 bytes maximum		○	
Communication speed		1Gbps		○	
Number of connected stations per network		When the Universal model QCPU is used for control station: 120 (Control station: 1, Normal station: 119) When a module other than the Universal model QCPU is used for control station: 64 (Control station: 1, Normal station: 63)	120 stations (Control station: 1, Normal station: 119)	○	
Connection cable		Optical fiber cable (Multimode fiber)		○	
Overall cable distance		66000m (when connecting 120 stations)		○	
Station-to-station distance (maximum)		550m (Core/Clad = 50/125 (μm))		○	
Maximum number of networks		239		○	
Maximum number of groups		32		○	
Network topology		Duplex loop		○	
Optical fiber specifications	Specifications	1000BASE-SX(MMF) optical fiber cable		○	
	Standard	IEC60793-2-10 Types A1a.1 (50/125μm multimode)		○	
	Transmission loss (maximum)	3.5 (dB/km) or less (λ = 850nm)		○	
	Transmission band (min.)	500 (MHz·km) or more (λ = 850nm)		○	
Connector specifications	Specifications	Duplex LC connector		○	
	Standard	IEC61754-20: Type LC connector		○	
	Connection loss	0.3 (dB) or less		○	
	Polished surface	PC (Physical Contact) polishing		○	
Laser class (IEC60825-1)		Class 1 laser product		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	

Item	Specifications		Compatibility	Precautions
	QJ71GP21-SX	RJ71GP21-SX		
Internal current consumption (5VDC)	0.85A	0.88A	—	
Weight	0.18kg	0.18kg	—	

QJ71GP21S-SX and RJ71GP21S-SX

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71GP21S-SX	RJ71GP21S-SX		
Maximum link points per network	LB	32K points (32768 points, 4K bytes) (Basic model QCPU or safety CPU: 16K points (16384 points, 2K bytes))	32K points (32768 points, 4K bytes)	○	
	LW	128K points (131072 points, 256K bytes) (Basic model QCPU or safety CPU: 16K points (16384 points, 32K bytes))	128K points (131072 points, 256K bytes)	○	
	LX	8K points (8192 points, 1K bytes)		○	
	LY	8K points (8192 points, 1K bytes)		○	
Maximum link points per station	LB	16K points (16384 points, 2K bytes)		○	
		Extended mode: 32K points (32768 points, 4K bytes)		○	
	LW	16K points (16384 points, 32K bytes)		○	
		Extended mode: 128K points (131072 points, 256K bytes)		○	
	LX	8K points (8192 points, 1K bytes)		○	
	LY	8K points (8192 points, 1K bytes)		○	
Transient transmission capacity		1920 bytes maximum		○	
Communication speed		1Gbps		○	
Number of connected stations per network		When the QnCPU is used for control station: 120 stations (Control station: 1, Normal station: 119) When a module other than the QnCPU is used for control station: 64 stations (Control station: 1, Normal station: 63)	120 stations (Control station: 1, Normal station: 119)	○	
Connection cable		Optical fiber cable (Multimode fiber)		○	
Overall cable distance		66000m (when connecting 120 stations)		○	
Station-to-station distance (maximum)		550m (Core/Clad = 50/125 (μm))		○	
Maximum number of networks		239		○	
Maximum number of groups		32		○	
Network topology		Duplex loop		○	
Optical fiber specifications	Specifications	1000BASE-SX(MMF) optical fiber cable		○	
	Standard	IEC60793-2-10 Types A1a.1 (50/125μm multimode)		○	
	Transmission loss (maximum)	3.5 (dB/km) or less (λ = 850nm)		○	
	Transmission band (min.)	500 (MHz·km) or more (λ = 850nm)		○	
Connector specifications	Specifications	Duplex LC connector		○	
	Standard	IEC61754-20: Type LC connector		○	
	Connection loss	0.3 (dB) or less		○	
	Polished surface	PC (Physical Contact) polishing		○	
Laser class (IEC60825-1)		Class 1 laser product		○	
Number of occupied I/O points		48 points (I/O assignment: Empty first half: 16 points, Latter half 32 points for intelligent)		○	

Item		Specifications		Compatibility	Precautions
		QJ71GP21S-SX	RJ71GP21S-SX		
External power supply	Voltage	20.4 to 31.2VDC		○	
	Current	0.28A			
	Terminal screw size	M3			
	Applicable solderless terminal	R1.25-3			
	Applicable wire size	0.3 to 1.25mm²			
	Tightening torque	0.42 to 0.58N·m			
	Allowable momentary power failure time	1ms (Level PS1)			
	Noise immunity	By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency			
Internal current consumption (5VDC)		0.85A	0.95A	—	
Weight		0.18kg	0.26kg	—	

CC-Link IE Field Network master/local module

QJ71GF11-T2 and RJ71GF11-T2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item				Specifications		Compatibility	Precautions
				QJ71GF11-T2	RJ71GF11-T2		
Maximum number of link points per network			RX	16384 points, 2K bytes		○	
			RY	16384 points, 2K bytes		○	
			RWr	8192 points, 16K bytes		○	
			RWw	8192 points, 16K bytes		○	
Maximum number of link points per station	When the submaster function is not used	Master station	RX	16384 points, 2K bytes		○	
			RY	16384 points, 2K bytes		○	
			RWr	8192 points, 16K bytes		○	
			RWw	8192 points, 16K bytes		○	
	When the submaster function is used	Master operating station	RX	16384 points, 2K bytes		○	
			RY	16384 points, 2K bytes (2048 points and 256 bytes for the send range of an own station)		○	
			RWr	8192 points, 16K bytes		○	
			RWw	8192 points, 16K bytes (1024 points and 2048 bytes for the send range of an own station) 8192 points when communication mode is "High-Speed" (Own station send range is 256 points.)	8192 points, 16K bytes (1024 points and 2048 bytes for the send range of an own station) 8192 points when communication mode is "High-Speed" (Own station send range is 256 points.)	○	
		Submaster operating station	RX	2048 points, 256 bytes (assigned for the station number 0 or submaster station)		○	
			RY	2048 points, 256 bytes (assigned for the station number 0 or submaster station)		○	
			RWr	1024 points, 2048 bytes (assigned for the station number 0 or submaster station) 256 points, 512 bytes when communication mode is "High-Speed"	1024 points, 2048 bytes (assigned for the station number 0 or submaster station) 256 points, 512 bytes when communication mode is "High-Speed"	○	
			RWw	1024 points, 2048 bytes (assigned for the station number 0 or submaster station) 256 points, 512 bytes when communication mode is "High-Speed"	1024 points, 2048 bytes (assigned for the station number 0 or submaster station) 256 points, 512 bytes when communication mode is "High-Speed"	○	
	Local station		RX	2048 points, 256 bytes		○	
			RY	2048 points, 256 bytes		○	
			RWr	1024 points, 2048 bytes 256 points, 512 bytes when communication mode is "High-Speed"	1024 points, 2048 bytes 256 points, 512 bytes when communication mode is "High-Speed"	○	
			RWw	1024 points, 2048 bytes 256 points, 512 bytes when communication mode is "High-Speed"	1024 points, 2048 bytes 256 points, 512 bytes when communication mode is "High-Speed"	○	

Item		Specifications		Compatibility	Precautions
		QJ71GF11-T2	RJ71GF11-T2		
Ethernet part	Communication speed	1Gbps		○	
	Network topology	Line topology, star topology (Coexistence of line topology and star topology is also possible.), or ring topology		○	
	Connection cable	Ethernet cable which satisfies 1000BASE-T standard: Category 5e or higher, straight cable (double shielded, STP)		○	
	Maximum station-to-station distance	100m maximum (conforms to ANSI/TIA/EIA-568-B (Category 5e))		○	
	Overall cable distance	Line topology: 12000m (When the master station and 120 local and submaster stations are connected) Star topology: Depends on the system configuration Ring topology: 12100m (When the master station and 120 local and submaster stations are connected)		○	
	Number of cascade connections	20 levels maximum		○	
Number of stations per network	Master station	1 station (Up to 120 local and submaster stations can be connected to the master station)		○	
	Submaster station	1 station		○	
	Local station	120 stations (including the submaster station)		○	
Maximum number of networks		239		○	
Communication method		Token passing		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)		0.85A	0.82A	—	
Weight		0.18kg	0.17kg	—	

CC-Link system master/local module

QJ61BT11 and RJ61BT11

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ61BT11	RJ61BT11		
Transmission speed		Selected from 156kbps, 625kbps, 2.5Mbps, 5Mbps, and 10Mbps.		○	
Maximum number of connected modules (master station)		64		○	
Number of occupied stations (local station)		1 to 4 stations		○	
Maximum number of link points per system	CC-Link Ver.1	Remote I/O (RX, RY): 2048 points Remote register (RWw): 256 points (master station → remote device station/local station/intelligent device station/standby master station) Remote register (RWr): 256 points (remote device station/local station/intelligent device station/standby master station → master station)		○	
	CC-Link Ver.2	—	Remote I/O (RX, RY): 8192 points Remote register (RWw): 2048 points (master station → remote device station/local station/ intelligent device station/standby master station) Remote register (RWr): 2048 points (remote device station/ local station/intelligent device station/standby master station → master station)	—	
Number of link points per remote station/local station/ intelligent device station/standby master station	CC-Link Ver.1	Remote I/O (RX, RY): 32 points (30 points for a local station) Remote register (RWw): 4 points (master station → remote device station/local station/intelligent device station/standby master station) Remote register (RWr): 4 points (remote device station/local station/ intelligent device station/standby master station → master station)		○	
	CC-Link Ver.2	—	*1	—	
Communication method		Broadcast polling method		○	
Synchronization method		Frame synchronization method		○	
Encoding method		NRZI method		○	
Network topology		Bus (RS-485)		○	
Transmission format		HDLC compliant		○	
Error control system		CRC(X16+X12+X5+1)		○	
Connection cable		• Ver.1.10-compatible CC-Link dedicated cable • CC-Link dedicated cable (Ver.1.00-compatible) • CC-Link dedicated high-performance cable (Ver.1.00-compatible)	• Ver.1.10-compatible CC-Link dedicated cable	△	For the RJ61BT11, only the Ver.1.10-compatible CC-Link dedicated cable can be used.
Maximum overall cable distance (maximum transmission distance)		Depends on the transmission speed. For details, refer to the relevant manuals.		○	
RAS function		• Standby master station • Automatic return function • Local station cutoff function • Error detection using link special relay areas (SB) and link special register areas (SW)		○	
Number of I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)		0.46A	0.34A	—	
Weight		0.12kg	0.16kg	—	

*1 The following table shows the number of link points per station.

Item	Extended cyclic setting			
	Single	Double	Quadruple	Octuple
Remote I/O (RX, RY)	32 points (30 points for a local station)	32 points (30 points for a local station)	64 points (62 points for a local station)	128 points (126 points for a local station)
Remote register (RWw)	4 points	8 points	16 points	32 points
Remote register (RWr)	4 points	8 points	16 points	32 points

QJ61BT11N and RJ61BT11

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ61BT11N	RJ61BT11		
Transmission speed		Selected from 156kbps, 625kbps, 2.5Mbps, 5Mbps, and 10Mbps.		○	
Maximum number of connected modules (master station)		64 modules		○	
Number of occupied stations (local station)		1 to 4 stations		○	
Maximum number of link points per system	CC-Link Ver.1	• Remote I/O (RX, RY): 2048 points • Remote register (RWw): 256 points (master station → remote device station/local station/intelligent device station/standby master station) • Remote register (RWr): 256 points (remote device station/local station/intelligent device station/standby master station → master station)		○	
	CC-Link Ver.2	• Remote I/O (RX, RY): 8192 points • Remote register (RWw): 2048 points (master station → remote device station/local station/intelligent device station/standby master station) • Remote register (RWr): 2048 points (remote device station/local station/intelligent device station/standby master station → master station)		○	
Number of link points per remote station/local station/ intelligent device station/standby master station	CC-Link Ver.1	• Remote I/O (RX, RY): 32 points (30 points for a local station) • Remote register (RWw): 4 points (master station → remote device station/local station/intelligent device station/standby master station) • Remote register (RWr): 4 points (remote device station/local station/intelligent device station/standby master station → master station)		○	
	CC-Link Ver.2	*1		○	
Communication method		Broadcast polling method		○	
Synchronization method		Frame synchronization method		○	
Encoding method		NRZI method		○	
Network topology		Bus (RS-485)		○	
Transmission format		HDLC compliant		○	
Error control system		CRC(X16+X12+X5+1)		○	
Connection cable		• Ver.1.10-compatible CC-Link dedicated cable • CC-Link dedicated cable (Ver.1.00-compatible) • CC-Link dedicated high-performance cable (Ver.1.00-compatible)	• Ver.1.10-compatible CC-Link dedicated cable	△	For the RJ61BT11, only the Ver.1.10-compatible CC-Link dedicated cable can be used.
Maximum overall cable distance (maximum transmission distance)		Depends on the transmission speed. For details, refer to the relevant manuals.		○	
RAS function		• Standby master station • Automatic return function • Local station cutoff function • Error detection using link special relay areas (SB) and link special register areas (SW)		○	
Number of I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)		0.46A	0.34A	—	
Weight		0.12kg	0.16kg	—	

*1 The following table shows the number of link points per station.

Item	Extended cyclic setting			
	Single	Double	Quadruple	Octuple
Remote I/O (RX, RY)	32 points (30 points for a local station)	32 points (30 points for a local station)	64 points (62 points for a local station)	128 points (126 points for a local station)
Remote register (RWw)	4 points	8 points	16 points	32 points
Remote register (RWr)	4 points	8 points	16 points	32 points

AnyWireASLINK master module

QJ51AW12AL and RJ51AW12AL

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ51AW12AL	RJ51AW12AL		
Transmission clock		27.0kHz		○	
Maximum transmission distance (total length)		200m		○	
Transmission system		DC power supply transmission total frame cyclic transmission cyclic system		○	
Connection type		Bus topology (multidrop system, T-branch system, tree branch system)		○	
Transmission protocol		Dedicated protocol (AnyWireASLINK)		○	
Error control		Checksum, double-check system		○	
Number of connected I/O points		512 points maximum (input: 256 points, output: 256 points)		○	
Number of connectable local modules		128 maximum (varies depending on the current consumption of each local module)		○	
RAS function		Disconnected transmission cable location detection function, transmission cable short detection function, transmission cable voltage drop detection function		○	
Transmission cable (DP, DN)		• UL-listed general-purpose 2-wire cable (VCTF, VCT1.25mm², 0.75mm², temperature rating 70℃ or higher) • UL-listed general-purpose wire (1.25mm², 0.75mm², temperature rating 70℃ or higher) • Dedicated flat cable (1.25mm², 0.75mm², temperature rating 90℃)		○	
Power cable (24V, 0V)		• UL-listed general-purpose 2-wire cable (VCTF, VCT0.75 to 2.0mm², temperature rating 70℃ or higher) • UL-listed general-purpose wire (0.75mm² to 2.0mm², temperature rating 70℃ or higher) • Dedicated flat cable (1.25mm², 0.75mm², temperature rating 90℃)		○	
Transmission cable supply current		When using a 1.25mm² cable: 2A maximum, When using a 0.75mm² cable: 1.2A maximum		○	
Maximum number of writes to EEPROM		100000 times maximum		○	
Power supply	Internal current consumption (5VDC)	Voltage: 5VDC±5% Current consumption: 0.2A maximum	0.2A	○	
	External power supply	Voltage: 21.6 to 27.6VDC (24VDC -10 to +15%), ripple voltage 0.5Vp-p or lower Recommended voltage: 26.4VDC (24VDC +10%) Module current consumption: 0.1A Transmission cable supply current: 2A maximum	Voltage: 21.6 to 27.6VDC (24VDC -10 to +15%), ripple voltage 0.5Vp-p or lower Recommended voltage: 26.4VDC (24VDC +10%) Transmission cable supply current: 2A maximum	○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Weight		0.2kg	0.13kg	—	

MELSECNET/H network module

QJ71LP21-25 and RJ71LP21-25

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71LP21-25	RJ71LP21-25		
Maximum link points per network	LB	16384 points (MELSECNET/10 mode: 8192 points)		○	
	LW				
	LX	8K points (8192 points, 1K bytes)		○	
	LY				
Maximum number of link points per station	LB	• MELSECNET/H mode, MELSECNET/10 mode {(LY+LB)÷8+(2×LW)}≤2000 bytes • MELSECNET/H extended mode {(LY+LB)÷8+(2×LW)}≤35840 bytes		○	
	LW				
	LX				
	LY				
Communication speed		25Mbps/10Mbps (The operating mode must be set by using the mode setting switch, according to the communication speed.)	25Mbps/10Mbps	○	
Number of connected stations per network		64 stations (Control station: 1, Normal station: 63)		○	
Connection cable		Optical fiber cable (obtained by user)		○	
Overall cable distance		30km		○	
Station-to-station distance	25Mbps	SI optical cable: 200m H-PCF optical cable: 400m Broadband H-PCF optical cable: 1km QSI optical cable: 1km		○	
	10Mbps	SI optical cable: 500m H-PCF optical cable: 1km Broadband H-PCF optical cable: 1km QSI optical cable: 1km		○	
Maximum number of networks		239 (total number including the remote I/O network)		○	
Maximum number of groups		32 (MELSECNET/10 mode: 9)		○	
Network topology		Duplex loop		○	
Communication method		Token ring		○	
Error control system		CRC ($X^{16} + X^{12} + X^5 + 1$) and retry due to timeout		○	
RAS function		• Loopback function (using error detection and cable disconnection) • Diagnostic function (line check of own station for link) • System failure prevention using control station switching • Error detection using link special relay areas and link special register areas		○	
Transient transmission		• N: N communications (such as monitoring and upload/download of programs) • Send/receive instructions from the sequence program (ZNRD/ZNWR, SEND/RECV, RECVS, READ/WRITE, SREAD/SWRITE, REQ, RRUN/RSTOP, RTMRD/RTMWR) • Transmission function using channel numbers (channel 1 to 8) as destination		○	
Special cyclic transmission function		Low speed cyclic transmission function		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)		0.55A	0.48A	—	
Weight		0.11kg	0.15kg	—	

DeviceNet master-slave module

QJ71DN91 and RJ71DN91

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item				Specifications		Compatibility	Precautions
				QJ71DN91	RJ71DN91		
Master function	Node type			DeviceNet master (Group 2 only client)		○	
	Node No.			0 to 63		○	
	Number of connections	Message connection		63		○	
				63 (polling, bit strobe, change of state, cyclic)		○	
	Communication data size	I/O communication	Send	Max. 4096 points (512 bytes), max. 256 bytes per node		○	
			Receive	Max. 4096 points (512 bytes), max. 256 bytes per node		○	
		Message communication	Send	Max. 240 bytes		○	
			Receive	Max. 240 bytes		○	
Slave function	Node type			DeviceNet slaves (Group 2 server)		○	
	Node No.			0 to 63		○	
	Number of connections	I/O connection		1 (polling)		○	
	Communication data size	I/O communication	Send	Max. 1024 points (128 bytes)		○	
			Receive	Max. 1024 points (128 bytes)		○	
Communication speed				Selectable from 125kbaud, 250kbaud and 500kbaud.		○	
Maximum cable length				*1		○	
Current consumption required on the network				0.03A		○	
Number of writes to flash ROM				Max. 100000 times		○	
No. of occupied I/O points				32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)				0.17A	0.30A	—	
Weight				0.11kg	0.15kg	—	

*1 The following table shows the maximum cable length. (The length complies with THE CIP NETWORKS LIBRARY Volume 3 DeviceNet Adaptation of CIP Edition 1.14.)

Communication speed	Maximum trunk line distance		
	Thick cables	Thin cables	Combination of thick and thin cables
125kbaud	500m	100m	Thick cable length +5 × Thin cable length ≤ 500m
250kbaud	250m		Thick cable length +2.5 × Thin cable length ≤ 250m
500kbaud	100m		Thick cable length + Thin cable length ≤ 100m

PROFIBUS-DP master module

QJ71PB92V and RJ71PB91V

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item			Specifications		Compatibility	Precautions
			QJ71PB92V	RJ71PB91V		
PROFIBUS-DP station type			DP-Master (Class 1)	DP-Master (Class 1), DP-Slave	○	
Transmission specifications	Electrical standard/ characteristics		EIA-RS485 compliant		○	
	Medium		Shielded twisted pair cable		○	
	Network topology		Bus topology (Tree topology when repeaters are used)		○	
	Data link method		• Between DP-Master and DP-Slave: Polling method	• Between DP-Masters: Token passing • Between DP-Master and DP-Slave: Polling method	○	
	Encoding method		NRZ		○	
	Transmission speed		9.6kbps to 12Mbps (The transmission speed is controlled within ±0.2%. (Compliant with IEC 61158-2))		○	
	Transmission distance		*1		○	
	Max. No. of repeaters		3 repeaters		○	
	Number of connectable modules		• 32 per segment (including repeater(s)) • 126 per network (total of DP-Masters and DP-Slaves)		○	
	Max. No. of DP-Slaves		125 Up to 124 DP-Slaves when QJ71PB92Vs are mounted on main base units in a redundant system	125	○	
	I/O data size	Input data	Max. 8192 bytes (Max. 244 bytes per DP-Slave)		○	
		Output data	Max. 8192 bytes (Max. 244 bytes per DP-Slave)		○	
Number of writes to flash ROM			Max. 100000 times		○	
No. of occupied I/O points			32 points (I/O assignment: Intelligent 32 points)		○	
Internal current consumption (5VDC)			0.57A	0.42A	—	
Weight			0.13kg	0.16kg	—	

*1 The following table lists the transmission distance.

QJ71PB92V

Transmission speed	Transmission distance	Max. transmission distance when repeater is used
9.6kbps	1200m/segment	4800m/network
19.2kbps		
93.75kbps		
187.5kbps	1000m/segment	4000m/network
500kbps	400m/segment	1600m/network
1.5Mbps	200m/segment	800m/network
3Mbps	100m/segment	400m/network
6Mbps		
12Mbps		

RJ71PB91V

Transmission speed	Transmission distance
9.6kbps	1200m/segment
19.2kbps	
45.45kbps	
93.75kbps	
187.5kbps	1000m/segment
500kbps	400m/segment
1.5Mbps	200m/segment
3Mbps	100m/segment
6Mbps	
12Mbps	

The max. transmission distance in the table above is based on the case where 3 repeaters are used. The calculation formula for the transmission distance extended using a repeater(s) is:

Max. transmission distance [m/network] = (Number of repeaters + 1) × Transmission distance [m/segment]

PROFIBUS-DP slave module

QJ71PB93D and RJ71PB91V

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71PB93D	RJ71PB91V		
PROFIBUS-DP station type		Slave station	DP-Master (Class 1), DP-Slave	○	
Station numbers that may be set		0 to 125		○	
Max. number of data that may be communicated		Number of I/O data is 192 words in total. (Size of I/O data is up to 122 words.)	Maximum of 244 bytes (maximum of 384 bytes in total of I/O data)	○	
Transmission specifications	Electrical standard/ characteristics	Complies with EIA-RS485		○	
	Medium	Shielded twisted pair cable		○	
	Network topology	Bus topology (Tree topology when repeaters are used)		○	
	Data link method	Polling method		○	
	Encoding method	NRZ		○	
	Transmission speed	9.6kbps to 12Mbps (Transmission speed control within ±0.3% (EN50170 Volume 2 compliant))	9.6kbps to 12Mbps (Transmission speed control is within ±0.2% (compliant with IEC 61158-2).)	○	
	Transmission distance	*1		○	
	Maximum number of repeaters	3 units per network		○	
	Number of connectable modules	32 units per segment (including repeaters)		○	
Flash ROM write count		Max. 10000 times	Max. 100000 times	○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
5VDC Internal power consumption		0.44A	0.42A	—	
Weight		0.11kg	0.16kg	—	

*1 The following table lists the transmission distance.

Transmission speed	Transmission distance
9.6kbps	1200m/segment
19.2kbps	
45.45kbps	
93.75kbps	
187.5kbps	1000m/segment
500kbps	400m/segment
1.5Mbps	200m/segment
3Mbps	100m/segment
6Mbps	
12Mbps	

The max. transmission distance in the table above is based on the case where 3 repeaters are used. The calculation formula for the transmission distance extended using a repeater(s) is:

Max. transmission distance [m/network] = (Number of repeaters + 1) × Transmission distance [m/segment]

9.3 Comparison of Control Network Module Functions

CC-Link IE Controller Network module

QJ71GP21(S)-SX and RJ71GP21(S)-SX

■Cyclic transmission

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71GP21(S)-SX	RJ71GP21(S)-SX	
Communication using LB/LW	Allows each station to write data to its own send range of a link device (LB/LW) to send them to all other stations on the network.	○	○	
Additional LB/LW setting (LB/LW settings (2))	Without changing the assignments in LB/LW settings (1), extends each station's send range.	○	○	
Send points extension	Extends the maximum send points of each station.	○	○	
Communication using LX/LY	Used to exchange data between the I/O master station that controls LX/LY and another station on a one-to-one (1:1) basis.	○	○	
Refresh	Allows automatic data transfer between the link devices of the CC-Link IE Controller Network module and CPU module devices.	○	○	
Direct access to link devices	Directly reads from or writes to link devices (LB/LW/LX/LY/SB/SW) of the CC-Link IE Controller Network module from the sequence program.	○	○	
Assurance of cyclic data integrity	Assures the cyclic data integrity in increments of 32 bits or stations.	○	○	
Cyclic transmission punctuality assurance	Keeps the link scan time constant by making each station to send the specified number of transient transmissions within one link scan.	○	○	
Constant link scan	Keeps the link scan time to a preset time period.	○	○	
Group cyclic transmission	A Universal model QCPU can share cyclic data only with stations in the same shared group. It does not receive cyclic data from stations in a different shared group. Stations without shared group setting will share cyclic data with all stations.	○	○	
Increase of send points by mounting multiple network modules of the same network number	Increases send points by mounting multiple CC-Link IE Controller Network modules of the same network number with one CPU module.	○	○	
Reserved station specification	Used to reserve a station that will be connected to the network in the future (although the station is not actually connected at present, it must be included in the total number of stations for the network). Reserved stations are not detected as faulty.	○	○	
Interlink transmission	Transfers link device (LB/LW) data of a network module to another network module at a relay station.	○	○	
Stop/restart of cyclic transmission	Disables receiving data from other stations and sending data of its own station in a case such as debugging. (Transient transmission is not stopped.)	○	○	

■Transient transmission

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QJ71GP21(S)-SX	RJ71GP21(S)-SX	
Link dedicated instruction	Read from/write to other station devices (for Q/QnA series)	Reads or writes data from/to devices of a programmable controller on another station. (READ/SREAD/WRITE/SWRITE instruction)	○	○	
	Transient request to another station (for Q/QnA series)	Remotely runs or stops a programmable controller on another station. (REQ instruction) Reads or writes clock data from/to a programmable controller on another station. (REQ instruction)	○	○	
	Data send/ receive (for Q/QnA series)	Sends data to a programmable controller on another station. (SEND instruction) Reads data received from a programmable controller on another station. (RECV/RECVS instruction)	○	○	
	Read from/write to other station devices (for A series)	Reads or writes data from/to devices of a programmable controller on another station. (ZNRD/ZNWR instruction)	○	○	
	Remote RUN/ STOP (for Q series)	Remotely runs or stops a programmable controller on another station. (RRUN/RSTOP instruction)	○	○	
	Read/write of another station's clock data (for Q series)	Reads or writes clock data from/to a programmable controller on another station. (RTMRD/RTMWR instruction)	○	○	
CC-Link dedicated instruction	Read/write of another station's data	Reads or writes the specified points of data from the target station's device. (RIRD/RIWT instruction)	○	○	
Engineering tool access to other stations		Allows seamless access to the Ethernet, CC-Link IE Controller Network, MELSECNET/H, MELSECNET/10, CC-Link IE Field Network, and CC-Link systems using an engineering tool.	○	○	
Group		By specifying transient transmission target stations as a group, data can be sent to all stations of the same group number.	○	○	
Routing		Allows transient transmissions to stations located on other networks in a multi-network system.	○	○	
Clock setting from an engineering tool		Sets up the clock of the CPU module that is connected to the network using an engineering tool.	○	○	
Changing number of transient transmissions		The number of transient transmissions that one station can execute during one link scan can be changed.	○	○	

■RAS functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71GP21(S)-SX	RJ71GP21(S)-SX	
Control station switching	Even if the control station goes down, a normal station (sub-control station) takes over the control to continue data link.	○	○	
Loopback	Any disconnected cable or faulty station is isolated from the network, and data link can be continued among normally operating stations.	○	○	
Automatic return	When a station disconnected from a network due to a data link error recovers from the error, the station is automatically reconnected to the network and restarts data link.	○	○	
Cable fault detection	A cable fault can be detected as a cause of a communication error.	○	○	
Cable insertion error detection	Incorrect cable connection between OUT and IN can be detected as a cause of loopback or disconnection from the network.	○	○	
Detection of duplicated control station or station number	Duplication of the control station or station number can be detected as a cause of loopback or disconnection from the network.	○	○	
External power supply	The external power can be directly supplied to the CC-Link IE Controller Network module with external power supply function.	○ (QJ71GP21S-SX only)	○ (RJ71GP21S-SX only)	
Detection of time of transient transmission error completion	The time at which a transient transmission by a link dedicated instruction failed can be detected, and network number and station number of the station where the error is detected can be checked.	○	○	
Transient transmission when a CPU module error occurred	Transient transmission can be performed to another station even if an error has occurred in the CPU module of the station.	○	○	

■Diagnostic functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QJ71GP21(S)-SX	RJ71GP21(S)-SX	
Module itself	Hardware test	Checks the hardware inside the CC-Link IE Controller Network module.	○	△	For the RJ71GP21(S)-SX, check using the module communication test.
	Self-loopback test	Checks the hardware of the communication circuit of the CC-Link IE Controller Network module.	○	△	
At system startup	Loop test	Checks the network cable connection status, line status, and each station's parameter setting status from the control station.	○	×	For the RJ71GP21(S)-SX, check the error status using the CC-Link IE Controller Network diagnostics.
	Station-to-station test	Checks the condition of the cable connected between two stations (from OUT of the executing station to IN of the other station).	○	×	
Before system operation	Communication test	Checks if transient transmission data can be properly routed from the own station to the communication target.	○	○	
	IP communication test	Checks whether there is an error in the communication route when the IP packet transfer function is used.	○	○	

■Redundant-CPU-compatible function

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71GP21(S)-SX	RJ71GP21(S)-SX	
System switching request to control system CPU	When a CC-Link IE Controller Network module of the control system CPU detects a data link error, it issues a system switching request to the control system CPU.	○	○	

■Other functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71GP21(S)-SX	RJ71GP21(S)-SX	
Interrupt request to the CPU module	Interrupt conditions are checked every link scan, and if the conditions are met, an interrupt is requested to the CPU module to start the interrupt program.	○	○	
Station number setting by sequence program	For Universal model QCPUs, the station number of a normal station (own station) can be set in the sequence program. (UINI instruction)	○	○	
IP packet transfer function	Communications in a protocol, such as FTP and HTTP, using the specified IP address of an Ethernet device can be performed over the CC-Link IE Controller Network. With this function, two networks of CC-Link IE Controller Network and Ethernet are not required, resulting in reduced wiring cost.	○	○	

CC-Link IE Field Network master/local module

QJ71GF11-T2 and RJ71GF11-T2

■Cyclic transmission

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QJ71GF11-T2	RJ71GF11-T2	
Communications with other stations	Communications using RX and RY	Communicates I/O data in units of bits between the master station and other stations.	○	○	
	Communications using RWr and RWw	Communicates I/O data in units of words between the master station and other stations.	○	○	
Access to devices and link devices	Link refresh	Automatically transfers data between a link device of the master/local module and a device in a CPU module.	○	○	
	Direct access to link devices	Directly accesses the link devices of the master/local module directly from the program.	○	○	
Interlink transmission		Transfers link device data of the master station or submaster station to another network module on a relay station.	○	○	
Mode selection for cyclic transmission		This mode is selected for optimizing the performance of cyclic transmission based on the cyclic transmission and transient transmission frequency. The mode can be selected from "Online (Normal Mode)" and "Online (High Speed Mode)".	○	○	
Assurance of cyclic data integrity		Assures the cyclic data integrity in increments of 32 bits or stations.	○	○	
Scan synchronization specification		Selects whether link scan is set to asynchronous or synchronous with the sequence scan of the CPU module.	○	○	
Input status setting for data link faulty station		Selects whether input data from another station where a data link error occurs is cleared or held.	○	○	
Output status setting for CPU STOP		Selects whether cyclic data output is held or cleared when the CPU module mounted with the master/local module is set to STOP state.	○	○	
Output status setting for CPU stop error		Selects whether cyclic transmission output is held or cleared when a stop error occurs in the CPU module where a master/local module is mounted.	○	○	
Cyclic transmission stop and restart		Stops the cyclic transmission during debugging and other operations. (Data reception from a local station and data sending from the own station are stopped.) Also, the stopped cyclic transmission is restarted. Transient transmission does not stop.	○	○	

■Transient transmission

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71GF11-T2	RJ71GF11-T2	
Communications within the same network	Performs the transient transmission to other stations using dedicated instructions and GX Works2.	○	○	
Communications with different networks	By presetting the routing parameters (communication route) using GX Works2, transient transmission can be performed to stations on different networks through GX Works2. Seamless communications are available with the following networks. • Ethernet • CC-Link IE Controller Network • MELSECNET/H, MELSECNET/10 • CC-Link (when using GX Works2)	○	○	

■RAS functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71GF11-T2	RJ71GF11-T2	
Local station disconnection	Only the local station where an error occurs is disconnected, and data link continues with the stations that are operating normally. In line topology, all stations connected after the faulty station are disconnected.	○	○	
Automatic return	When the station disconnected from the network due to a data link failure recovers, it automatically returns to the network and restarts data link.	○	○	
Module error collection function	An error that has occurred in a master/local module can be stored in the CPU module as error history. The history data can be stored on a memory with backup power feature; therefore error details are held even if the CPU module is reset or the system is powered off.	○	×	For the RJ71GF11-T2, use the event history function instead.
Loopback function	Only the station where an error occurs is disconnected, and data link continues with the stations that are operating normally. All stations after the faulty station are disconnected in line topology. By using the loopback function with ring topology, data link continues with the stations that are operating normally.	○	○	
Submaster Function	This function allows the submaster station to control local stations instead of the master station when the master station is disconnected in a system where the master station and submaster station are connected on the same network. Using this function prevents the entire network from going down due to disconnection of the master station.	○	○	

■Diagnostic functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QJ71GF11-T2	RJ71GF11-T2	
CC-Link IE Field Network diagnostics		The status of CC-Link IE Field Network can be checked using GX Works2. The error locations, error causes, corrective actions, and event history can be checked in GX Works2.	○	○	
Diagnostics of the module alone	Hardware test	Checks the hardware in the master/local module.	○	×	For the RJ71GF11-T2, use the module communication test instead.
	Self-loopback test	Checks the communication circuit in the transmission system of the master/local module.	○	×	
Diagnostics of own network	Loop test	Checks the network line status, and each station's parameter setting status.	○	×	
	Cable test	Checks the connection status of the Ethernet cables.	○	○	
Diagnostics of other network	Communication test	Checks whether the communication route for transient transmission from the own station to the destination station is correct.	○	○	
	IP communication test	Checks whether there is an error in the communication route when the IP packet transfer function is used.	○	○	

■Other functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71GF11-T2	RJ71GF11-T2	
Reserved station specification	The reserved stations are included in the number of stations that will be connected to the network in the future without actually connecting them. Reserved stations are not detected as faulty stations even though they are not actually connected.	○	○	
Temporary cancel of the reserved station setting	Reserved station specification can be temporarily canceled without changing the parameters.	○	○	
Error invalid station and temporary error invalid station setting	Prevents the master station from detecting a local station as a faulty station even if the local station is disconnected during data link. This can be used when replacing a local station during data link, for instance.	○	○	
Interrupt request to the CPU module	Checks interrupt conditions in every link scan, and makes an interrupt request to the CPU module to start the interrupt program if the interrupt conditions are met.	○	○	
IP packet transfer function	Communications in a protocol, such as FTP and HTTP, using the specified IP address of an Ethernet device can be performed over the CC-Link IE Field Network. With this function, two networks of CC-Link IE Field Network and Ethernet are not required, resulting in reduced wiring cost.	○	○	
Station number setting using a program	The station numbers of a local station (own station) can be set using a program. When there are local stations with the same program and network parameters (excluding the station numbers), setting the station numbers using a program allows project data items other than the station number to be the same, leading to reduced development work hours.	○	○	
Data backup/restoration	The setting data of the local station is backed up into the SD memory card of the CPU module on the master station. The setting data backed up on the SD memory card of the CPU module on the master station is restored into the local station.	○	○	

CC-Link system master/local module

QJ61BT11(N) and RJ61BT11

■Cyclic transmission

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ61BT11(N)	RJ61BT11	
Communications with other stations	Remote net Ver.1 mode	○	○	
	Remote net Ver.2 mode	○*1	○	
	Remote net additional mode	○*1	×	Use the remote net Ver.2 mode instead.
	Remote I/O net mode	○	○	
Auto refresh	Automatically transfers data between the RX/RY/RWr/RWw/SB/SW of the master/local module and a device in a CPU module. The RX/RY/RWr/RWw/SB/SW can be accessed by accessing a device in a CPU module from a program.	○	○	
Scan synchronization	Selects whether link scan is set to asynchronous or synchronous with the sequence scan. If it is set to asynchronous, the input transmission delay time will shorten. If it is set to synchronous, the output transmission delay time will shorten.	○	○	
Cyclic data block data assurance per station	Prevents read/write data per station from being separated between new and old data depending on the auto refresh timing. Because the setting is configured only on an engineering tool, a program to prevent data separation is not required.	○*1	○	
32-bit data integrity assurance	Prevents read/write data in 32-bit increments from being separated between new and old data.	○	○	
Data link stop/restart	Stops or restarts data link of the own station using an engineering tool or SB/SW. This function is used when data link should be temporarily stopped for maintenance or other reasons.	○	○	
Remote I/O station points setting	When the master station is in the remote net Ver.2 mode, the refresh points with a remote I/O station can be selected from 8 points, 16 points, and 32 points. Changing the number of points can save the areas of the refresh device in a CPU module. (In modes other than the remote net Ver.2 mode, only 32 points per station can be selected.)	○*1	○	

*1 This function is not available for the QJ61BT11.

■Transient transmission

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ61BT11(N)	RJ61BT11	
Communication using a dedicated instruction	Communication with other station is possible at any timing. Unlike cyclic transmission, direct access to buffer memory areas in other stations can be performed. This function is used to access data that is updated infrequently.	○	○	

■RAS functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ61BT11(N)	RJ61BT11	
Local station cutoff function	Data link can be continued in a normal station by disconnecting a local station that cannot perform data link due to reasons such as power-off. (No parameter setting is required.) Using this function prevents the entire system from going down when one station goes down.	○	○	
Automatic return function	When a local station that has been disconnected from data link due to reasons such as power-off returns to the normal status, data link is automatically restarted. The time between an error and a return can be shortened.	○	○	
Setting of the data link status upon an error in the programmable controller CPU of the master station	Selects whether to stop or continue data link when a stop error occurs in the CPU module of a master station.	○	○	
Setting of the status of the input data from a data link faulty station	Selects whether to clear or hold input data from a data link faulty station. Selects how data should be handled according to the system used.	○	○	
Local station refresh/ compulsory clear setting in case of programmable controller CPU STOP	Selects whether to refresh or compulsorily clear remote output (RY) when the switch on a CPU module is set to STOP. Selects how data should be handled according to the system used.	○*1	○	
Standby master station	If the master station goes down due to an error in a CPU module, power supply, or others, switching the control to the standby master station (a backup station for the master station) continues data link. This function is used not to stop the entire system even if the master station goes down.	○	○	
Master station duplication error canceling function	Clears a master station duplication error without resetting the CPU module or powering off and on the system when the error has been detected.	○*1	○	

*1 This function is not available for the QJ61BT11.

■Diagnostic functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ61BT11(N)	RJ61BT11	
Line test	Checks whether a CC-Link dedicated cable is properly connected and data link can be performed with local stations.	○	○	
Transmission speed test	Checks whether the transmission speed setting of a local station is the same as that of the master station. The station number of the local station having a different transmission speed setting can be also checked; therefore, corrective action upon a transmission error can be easily taken.	○*1	○	
CC-Link diagnostics	Checks the status of CC-Link system using an engineering tool. Unlike the link special relay (SB) and the link special register (SW), the system status can be checked on a graphical window; therefore, corrective actions can be easily taken.	○	○	
Hardware test	Checks the hardware in the master/local module.	○	○	

*1 This function is not available for the QJ61BT11.

■Other functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ61BT11(N)	RJ61BT11	
Remote device station initialization procedure registration function	Using an engineering tool, registers in advance the initial setting of a remote device station which was performed on a program, and saves the setting by turning on the link special relay (SB). A program for the initial setting is not required.	○	○	
Event issuance for the interrupt program	Issues an interrupt request to a CPU module when the interrupt conditions that have been set using an engineering tool are satisfied, and executes the interrupt program. This function is used to stop the control and execute an interrupt program upon an error or for other purposes.	○	○	
Automatic CC-Link startup	Data link can be performed by powering on the master/local module. This function is used to check the operation of when a system is configured.	○	×	For the RJ61BT11, set the module parameters.
Reserved station function	Prevents local stations that are not actually connected (but will be connected in future) from detecting as "Data Link Faulty Station" in the master station and local station. By setting local stations that will be connected in future as reserved stations, local stations can be added without a program change because the RX/RY/RWr/RWw assignment is not changed. In addition, the number of points of a local station that has been set as a reserved station can be set to zero points.	○	○	
Error invalid station setting function	Prevents a local station from being detected as a faulty station in the master station and local station even if a data link error occurs in the local station. This function is used when a local station is powered off as a matter of the system configuration or for other purposes.	○	○	
Temporary error invalid station setting function	Prevents a local station from being detected as a faulty station in the master station and local station even if a data link error occurs in the local station. This setting can be configured even during data link, unlike the error invalid station setting function. This function is used to exchange local stations for maintenance or for other purposes during data link.	○	○	
Automatic detection of connected device	The time of setting parameters can be reduced by automatically reading information of local stations. The model names of local stations can be read.	○*1	×	For the RJ61BT11, set the module parameters.
Data backup/restoration	The setting data of the local station is backed up into the SD memory card of the CPU module on the master station. The setting data backed up on the SD memory card of the CPU module on the master station is restored into the local station.	○*1	×	For the RJ61BT11, use GX Works3 to set parameters of local stations.

*1 This function is not available for the QJ61BT11.

AnyWireASLINK master module

QJ51AW12AL and RJ51AW12AL

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ51AW12AL	RJ51AW12AL	
Bit transmission function	Performs input and output of up to 512 points (256 input points and 256 output points) between the master module and the slave module.	○	○	
Parameter reading function	Reads the parameters of a slave module connected to the master module without delaying the AnyWireASLINK bit transmission.	○	○	
Parameter writing function	Writes the parameters of a slave module connected to the master module without delaying the AnyWireASLINK bit transmission.	○	○	
Automatic address detection function	The master module detects or stores the ID (address) of the connected slave module when the SET switch on the front of the master module is pressed. (Alternatively a specific bit can be used.)	○	○	
Transmission cable short detection function	Detects a short in DP-DN cables.	○	○	
Disconnected transmission cable location detection function	Detects the location of DP-DN cable disconnection.	○	○	
Transmission cable voltage drop detection function	Monitors a voltage drop in the 24VDC external power supply.	○	○	
Parameter access error detection function	Detects an error upon reading or writing of the setting values of the slave module.	○	○	
Same ID used detection function	Checks whether the same ID is used for multiple slave modules. The LEDs of the relevant slave modules are forcibly turned on.	○	○	
Module with no ID setting detection function	Detects slave modules with no ID assigned (default ID).	○	○	
Backup/restoring function	Backs up various information of the connected slave module into the SD memory card of the CPU module. Restores the information backed up on the SD memory card of the CPU module into the connected slave module.	○	○	

QJ71LP21(S)-25 and RJ71LP21-25

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71LP21-25	RJ71LP21-25	
■Cyclic transmission				
Communication using LB/LW	Writes data on the link relay (LB) and the link register (LW) of the network module, and sends the data to all stations connected in the same network.	○	○	
Communication using LX/LY	Exchanges data between the following stations on a one-to-one (1:1) basis: the I/O master station that controls LX/LY, another station (optical loop system: 63 stations maximum, coaxial bus system and twist bus system: 31 stations maximum)	○	○	
Interlink data transfer function	Transfers link data to the other networks at the same time by using parameters. This function is used when one programmable controller is connected to multiple networks.	○	○	
Low speed cyclic transmission	Useful for collectively sending data that do not require high-speed performance to another station by link devices (LB, LW).	○	○	
■RAS function				
Automatic return function	If a station is disconnected from the network due to a data link error, this function automatically returns the station to the network when it recovers, and restarts data link.	○	○	
Control station switching function	If the control station (station where common parameters are set) goes down, this function changes another normal station to a sub-control station, and continues data link.	○	○	
Control station recovery control function	This function shortens network downtime by resolving the cause of an error in the control station and making that station join the network as a normal station.	○	○	
Loopback function (optical loop system)	The optical loop system uses duplex transmission path. If an error occurs on a transmission path, this function switches the transmission path from forward loop to reverse loop and vice versa, or performs loopback to disconnect a faulty area and continue transmission between stations on which data are communicated normally.	○	○	
Transient transmission enabled even at CPU module error	This function enables the network module to continue transient transmission even at an error occurrence that stops the CPU module during system operation.	○	○	
Check of the time when transient transmission failed	Information (such as time, faulty network number, and faulty station number) related to a failure of transient transmission by the instruction (such as SEND, READ, SREAD, WRITE, SWRITE, or REQ instruction) can be checked.	○	○	
Diagnostic function	The line status of the network and the module setting status can be checked with this function.	○	○	
■Transient transmission				
Communication function	Exchanges data between stations using a communication request.	○	○	
Routing function	Allows transient transmissions to stations with different network numbers in a multi-network system.	○	○	
Group function	Divides transient transmission target stations into groups, and sends data to all the stations in one group with one instruction.	○	○	
Sending messages by using logical channel numbers	Useful for when many types of information is involved in the transmission and you want to limit messages to be received on the stations.	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71LP21-25	RJ71LP21-25	
Data send/receive (SEND/RECV)	Communicates data with another station (another network) at any timing by using a sequence program.	○	○	
Read from/write to word device on another station (READ/SREAD/WRITE/SWRITE)				
Transient request to another station (REQ)				
Read from/write to word device on another station (ZNRD/ZNWR)				
Remote RUN/Remote STOP (RRUN/RSTOP)	Remote RUN/Remote STOP	○	○	
Read/write clock data from/to CPU module on another station (RTMRD/RTMWR)	Sets up the clock of a CPU module that is connected to the network using a programming tool.	○	○	
■Redundant system function				
Pairing setting	Sets a combination of station numbers of network modules that are included in the redundant system.	○	○	
Redundant system settings	Sets the operation mode for the network module mounted on system B.	○	○	
System switching request function	When a network module is connected to a control system CPU module in the redundant system, if a data link error occurs on this network module and the error status (D.LINK LED off) continues for the system switching monitoring time (set in SW0018) or longer, this function automatically issues a system switching request to the control system CPU module.	○	○	For the RJ71LP21-25, use the module parameter to set the system switching monitoring time.
■Other functions				
Direct access to link devices	Directly reads/writes data from/to link devices (LB, LW, LX, LY, SB, SW) of a network module using a sequence program, independent from the link refresh of CPU module.	○	○	
Clock setting to a station on the network with a programming tool	Sets up the clock of a CPU module that is connected to the network using a programming tool.	○	○	
Interrupt sequence program activation	Uses the interrupt settings parameters of the own station and checks the interrupt condition at the timing data are received from another station. When the interrupt condition is established, an interrupt request is made from the network module to the CPU module, and the interrupt sequence program of the CPU module on the own station is activated.	○	○	
Multiplex transmission function (optical loop system)	Performs high speed communications using duplex transmission path (forward loop and reverse loop).	○	△	The RJ71LP21-25 cannot operate as a control station with multiplex transmission function.
Simple dual-structured network	For a network with this structure, two network modules (operative, standby) are connected to each CPU module. If an error (such as disconnection) occurs and it affects some areas on the operative network, the module performing link refresh is switched from the operative module to the standby module (standby network) to continue data link.	○	×	Instead of refresh settings, use a sequence program to execute refresh.*1
Stopping/restarting cyclic transmission, stopping link refresh (network test)	Stops/restarts the cyclic transmission using the network test of GX Developer.	○	○	
Increase of send points by mounting multiple network modules of the same network number	Increases the number of send points (a maximum of 2000 bytes per station) to a maximum of 8000 bytes (when four modules are mounted) by mounting multiple network modules with the same network number to one CPU module.	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71LP21-25	RJ71LP21-25	
Parameter unique to the station	Useful for reassigning send ranges (LB, LW) of each station. The reassignment eliminates the need to modify the program even if link device settings are extended during operation. In addition, the parameter allows a user to remove unnecessary ranges in a simple way so that only areas required for transmission are used as send ranges.	○	×	Replace assignments of parameters unique to the station with refresh parameters.*1

*1 For details, refer to the following.
MELSEC iQ-R MELSECNET/H Network Module User's Manual (Application)

DeviceNet master-slave module

QJ71DN91 and RJ71DN91

■Data communications

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QJ71DN91	RJ71DN91	
Master function	I/O communication function	A function for I/O data communications with each slave node (up to 63 nodes) using the buffer memory of the DeviceNet master-slave module.	○	○	
	Message communication function	A function for reading/writing attribute data of slave nodes using the buffer memory of the DeviceNet master-slave module.	○	○	
Slave function	I/O communication function	A function for I/O data communications with the master node using the buffer memory of the DeviceNet master-slave module.	○	○	
Data consistency function	Dedicated instruction	Maintains I/O data consistency using dedicated instructions.	○	○	
	Refresh	Maintains I/O data consistency by refreshing.	○	○	
Auto configuration		Detects slave nodes on the network and automatically creates parameters for the master function.	○	○	

■RAS

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71DN91	RJ71DN91	
Hardware test	Checks if the module operates normally. The ROM check, RAM check, and self-loopback test is performed.	○	○	
Communication test	Performs the transmit test and receive test with the DeviceNet master-slave module connected to another DeviceNet device using a DeviceNet cable.	○	○	

PROFIBUS-DP master module

QJ71PB92V and RJ71PB91V

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QJ71PB92V	RJ71PB91V	
PROFIBUS-DPV0	I/O data exchange	Up to 125 DP-Slaves can be connected to a single QJ71PB92V, enables the I/O data exchange.	○	○	
	Acquisition of diagnostic and extended diagnostic information	Diagnostic or extended diagnostic information of an error occurred on a DP-Slaves during I/O data exchange can be easily acquired using the buffer memory and I/O signals.	○	○	
	Global control function	By sending services (SYNC, UNSYNC, FREEZE, UNFREEZE) to each DP-Slave in a group, synchronous control of DP-Slave I/O data is available.	○	○	
PROFIBUS-DPV1	Acyclic communication	Allows data reading/writing to DP-Slaves at any specific timing independently of I/O data exchange.	○	○	
	Alarm acquisition	Enables acquisition of up to 8 alarms or status information data that have been generated on any DP-Slave.	○	○	
PROFIBUS-DPV2	Time control over DP-Slaves	Operates as the time master and set the time of each DP-Slave.	○	○	
Data swap function		Swaps the upper and lower bytes in word units when I/O data is sent and received.	○	○	
Data consistency function		When I/O data from DP-Slaves are read from or written to the buffer memory, prevents the I/O data from being separated and incorrectly mixed.	○	○	
Output status setting for the case of a CPU stop error		Sets the handling of I/O data when a CPU stop error occurs in a CPU module to which the PROFIBUS-DP master module is mounted.	○	○	
Temporary slave reservation function		Without modifying the slave parameter in GX Configurator-DP, allows the DP-Slave type to be changed to "Reserved station" temporarily.	○	○	
Redundant system support function		When the control system CPU or the PROFIBUS-DP master module detects an error, the control and standby systems are switched each other to continue communications.	○	○	

PROFIBUS-DP slave module

QJ71PB93D and RJ71PB91V

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71PB93D	RJ71PB91V	
I/O data communication function	Operates as a PROFIBUS-DP slave station and communicates I/O data with the master station.	○	○	
Separation prevention function	Prevents the I/O data of the CPU module from being unmatched with the I/O data of the master station.	○	○	
Global control function	Controlled simultaneously for each specified group by multicasting (broadcasting) from the master station	○	○	
Swap function	Swapped in word units when input or output data are sent to or received from the master station.	○	○	
Notification function of extended diagnostic information	Notifies DP-Master of extended diagnostic information occurring during I/O data exchange.	○	○	
I/O data read function	Sends I/O data on the request from the DP-Master (Class 2).	○	○	
I/O configuration information read function	Sends I/O configuration information on the request from the DP-Master (Class 2).	○	○	
FDL address changing function	Changes FDL address of DP-Slaves from the DP-Master (Class 2) or a program.	○	○	
Output status setting for the case of a CPU stop error	Sets the handling of I/O data when a CPU stop error occurs in a CPU module to which the PROFIBUS-DP slave module is mounted.	○	○	
Operation mode changing function	Changes the operation mode using a program.	○	○	

9.4 Precautions for Control Network Module Migration

Precautions common to the control network modules

Interrupt setting

To execute an interrupt program in the MELSEC iQ-R series network modules, set the interrupt pointer number in module parameter.

Dedicated instructions (common to CC-Link IE Field/CC-Link IE Controller)

The MELSEC iQ-R series modules cannot specify 254 (Network specified in Valid module during other station access) as a network number in dedicated instructions. Specify the network number of the own station.

CC-Link IE Field Network master/local module

System configuration

When the module other than the RJ71GF11-T2 is used as the master station, there may be additional restrictions to the serial number of the master station used.

Dedicated instruction

There is no difference between the MELSEC-Q series and the MELSEC iQ-R series.

Link special relay (SB) and link special register (SW)

Some of the SB/SW number assignments differ between the MELSEC-Q series and MELSEC iQ-R series modules. If the SB/SW is used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

CC-Link system master/local module

Dedicated instruction

• RLPASET

For the MELSEC-Q series module, the mode is set in b14 and b15 of the device (S1+1) (Setting flag) in the control data. However, for the MELSEC iQ-R series, set 0 in b14 and b15 because the mode is set in module parameter.

Link special relay (SB) and link special register (SW)

Some of the SB/SW number assignments differ between the MELSEC-Q series and MELSEC iQ-R series modules. If the SB/SW is used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Buffer memory

The layout of buffer memory areas differs between the MELSEC-Q series and the MELSEC iQ-R series.

If buffer memory areas are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

AnyWireASLINK master module

Wiring

The wiring to connect isolation (4-line) type slave modules differs between the MELSEC-Q series and the MELSEC iQ-R series.
For the MELSEC iQ-R series, if the power supply terminal of the slave module is connected to the OUT (24V, 0V) terminals, the individual wiring to the 24VDC external power supply is unnecessary.

Error codes

The error code system for the MELSEC iQ-R series has been renewed. If an error code is set as an operating condition or interlock condition in the MELSEC-Q program, the program needs to be corrected for the MELSEC iQ-R series.

MELSECNET/H network module

Dedicated instruction

There is no difference between the MELSEC-Q series and the MELSEC iQ-R series.

Simple dual-structured system

The MELSECNET/H simple dual-structured system cannot be used for the MELSEC iQ-R series. Use a MELSEC iQ-R series network module in the single-network system.

Remote I/O network

The remote I/O network cannot be used for the MELSEC iQ-R series. Consider replacing the existing remote I/O network with CC-Link IE Field Network.

RQ extension base unit

When the MELSEC iQ-R series MELSECNET/H network module is used in the system, the MELSEC-Q series MELSECNET/H network module cannot be mounted on the RQ extension base unit.

External power supply function

A network module with external power supply function is not available for the MELSEC iQ-R series.
Connect the RQ extension base unit (RQ6□B) to the system and use a Q series module.

GI optical cable

A network module compatible with a GI optical cable is not available for the MELSEC iQ-R series.
Connect the RQ extension base unit (RQ6□B) to the system and use a Q series module.

DeviceNet master-slave module

Engineering tool

The engineering tool differs between the QJ71DN91 and the RJ71DN91.
Use "GX Works2" and "GX Configurator2-DN" for the QJ71DN91, "GX Works3" and "CW-Configurator" for the RJ71DN91.

Buffer memory

The layout of buffer memory areas partly differs between the QJ71DN91 and the RJ71DN71.
If buffer memory areas are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

PROFIBUS-DP master-slave module

Engineering tool

The engineering tool differs between the QJ71PB92V/QJ71PB93D and the RJ71PB91V.

Use "GX Works2/GX Developer" and "GX Configurator-DP" for the QJ71PB92V/QJ71PB93D, "GX Works3" and "PROFIBUS Configuration Tool" for the RJ71PB91V.

Note that project data of the QJ71PB92V created in "GX Configurator-DP" can be imported to "PROFIBUS Configuration Tool".

For a project of the modules other than the QJ71PB92V, convert it to a project of the QJ71PB92V using "GX Configurator-DP", and then import it.

Point

For details on these precautions, refer to the following.

- 📖 MELSEC iQ-R Module Configuration Manual
- 📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)
- 📖 MELSEC iQ-R CC-Link IE Controller Network User's Manual (Application)
- 📖 MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)
- 📖 MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Startup)
- 📖 MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)
- 📖 MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Startup)
- 📖 MELSEC iQ-R AnyWireASLINK Master Module User's Manual (Application)
- 📖 MELSEC iQ-R MELSECNET/H Network Module User's Manual (Startup)
- 📖 MELSEC iQ-R MELSECNET/H Network Module User's Manual (Application)
- 📖 MELSEC iQ-R DeviceNet Master/Slave Module User's Manual (Startup)
- 📖 MELSEC iQ-R DeviceNet Master/Slave Module User's Manual (Application)
- 📖 MELSEC iQ-R PROFIBUS-DP Module User's Manual (Startup)
- 📖 MELSEC iQ-R PROFIBUS-DP Module User's Manual (Application)

10 INFORMATION MODULE MIGRATION

10.1 Information Module Migration Model List

This section describes examples of migration to MELSEC iQ-R series information modules in accordance with the MELSEC-Q series information module specifications.

Consider the scope of control by the MELSEC-Q series information module used and the system specifications and extensibility after migration to choose a model that best suits your application.

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
MES interface	QJ71MES96 QJ71MES96N	RD81MES96N	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
High speed data logger	QD81DL96	RD81DL96	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
High speed data communication	QJ71DC96	No applicable module	—
Web server	QJ71WS96	No applicable module	Connect the RQ extension base unit (RQ6□B) to use the Q series module. For some functions, consider using the Web server function of the CPU module instead.*1
Ethernet interface	QJ71E71-B2	RJ71EN71	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
	QJ71E71-B5	RJ71EN71	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
	QJ71E71-100	RJ71EN71	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed

Item	MELSEC-Q series	MELSEC iQ-R series	Specification difference
Serial communication	QJ71C24	RJ71C24	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
	QJ71C24N	RJ71C24	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
	QJ71C24-R2	RJ71C24-R2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
	QJ71C24N-R2	RJ71C24-R2	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
	QJ71C24N-R4	RJ71C24-R4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is not changed, I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Changed (5) Functions: Changed
Intelligent communication	QD51	No applicable module	Connect the RQ extension base unit (RQ6□B) to use the Q series module. If the QD51 is used for data communication processing with external devices, consider using the communication protocol function of the RJ71C24 instead.
	QD51-R24	No applicable module	Connect the RQ extension base unit (RQ6□B) to use the Q series module. If the QD51-R24 is used for data communication processing with external devices, consider using the communication protocol function of the RJ71C24 instead.

*1 For details, refer to the following.
MELSEC iQ-R/MELSEC iQ-F Web Server Function Guide Book

10.2 Comparison of Information Module Specifications

MES interface module

QJ71MES96(N) and RD81MES96N

■Transmission and interface

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71MES96(N)	RD81MES96N		
Ethernet	Interface	10BASE-T/100BASE-TX	10BASE-T/100BASE-TX/ 1000BASE-T	○	
	Communication method	Full-duplex/half-duplex		○	
	Flow control	Full-duplex: None Half-duplex: Back pressure congestion control		○	
	Data transmission rate	10M/100Mbps	10M/100Mbps/1000Mbps	○	
	Number of cascade stages (Number of connectable stages when a repeater hub is used.)	4 stages maximum/2 stages maximum	4 stages maximum/2 stages maximum/—	○	
	Maximum segment length	100m (length between a hub and a node)		○	
	Supported function	Auto-negotiation function	Auto-negotiation function Auto MDI/MDI-X	○	
Memory card	Supply power voltage	3.3V±5%	+3.3VDC	○	
	Supply power capacity	150mA maximum	200mA maximum	—	
	Card size	CompactFlash card TYPE I	SD memory card/SDHC memory card	—	
	Number of installable cards	1		—	
Number of I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Clock		The clock data is obtained from a programmable controller CPU (in multiple CPU system, CPU No.1) or the SNTP server computer.	The clock data is obtained from a programmable controller CPU (in multiple CPU system, CPU No.1).	△	
Internal current consumption (5VDC)		QJ71MES96N: 0.50A QJ71MES96: 0.69A	1.25A	—	
Weight		QJ71MES96N: 0.15kg QJ71MES96: 0.16kg	0.25kg	—	

■MES interface

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item			Specifications		Compatibility	Precautions
			QJ71MES96(N)	RD81MES96N		
Number of connected databases			32 maximum	16 maximum	×	The number of connected databases is fewer.
Accessible database			*1	*2	△	
Job	Allowable number of settings		64 items/project maximum		○	
	Trigger buffering		128 times maximum	192 times maximum	△	
	Trigger conditions	Number of conditions that can be combined	2 conditions maximum		○	
		Condition type	• Value monitoring • time • Period • Module startup • Handshake	• Condition (Value monitoring) • Condition (Period of time) • Event (Value changed) • Event (Fixed time) • Event (Fixed cycle) (Timer interval/time interval) • Event (Module monitoring) (MES interface module/Control CPU) • Handshake	△	
	Action	Allowable number of settings	10 actions/job maximum	30 actions/job maximum • 20 actions for main processing • 10 actions for pre-/post-processing	△	
		Type	• Select • Insert • Update • Delete • Multiselect • Stored procedure • Operation	• Select • Insert • Update • Delete • MultiSelect • Stored Procedure • Operation	○	
		Number of communication action fields	8192 fields/project maximum • [DB-tag link settings] (Select/Update/Insert/MultiSelect): 256 rows/communication action maximum • [DB-tag link settings] (Stored procedure): 257 rows/communication action maximum • [Select/Update/Delete conditions]: 8 rows/communication action maximum • [Select sort settings]: 8 rows/communication action maximum	65536 fields/project maximum • [DB-tag link settings] (Select/Update/Insert/MultiSelect): 1024 rows/DB communication action maximum • [DB-tag link settings] (Stored procedure): 1024 rows/communication action maximum • [Narrowing-Down conditions]: 8 rows/DB communication action maximum • [Sorting Order]: 8 rows/DB communication action maximum	△	
		Number of records/data selectable for communication action	40000 records/MultiSelect communication action maximum 45000 words/job maximum	40960 records/MultiSelect communication action maximum 819200 words/job maximum	△	
		Number of operations possible for operation action	(20 dyadic operations maximum)/operation action	20 operations/operation action 600 operations/job (20 operations × 30 actions)	△	

Item			Specifications		Compatibility	Precautions
			QJ71MES96(N)	RD81MES96N		
Job	Action	Operators for operation action	• Arithmetic operations: Addition, subtraction, multiplication, division, remainder, String operations: Concatenation	• Substitution • Arithmetic operations: Addition, subtraction, multiplication, division, remainder • Character String operations: CONCAT, LENGTH, RIGHT, LEFT, UPPER, LOWER, RTRIM, LTRIM • Bit operations: AND, OR, XOR, RSHIFT, LSHIFT • Type conversion: STR2INT, STR2REAL, INT2STR, REAL2STR	△	
	Program execution	Allowable number of settings	2 programs/job maximum • One program before execution of initial action + one program after execution of final action	10 external communication actions/job maximum • A total of 10 actions for pre- and post-processing	△	
Device tag	Number of access target CPU settings		64 settings/project	16 settings/project	×	Fewer number of access target CPU settings
	Number of tags		64 tags/project	64 tags/project	○	
	Number of components		256 components/tag 4096 components/project	1024 components/tag 62236 components/project	△	
	Data type		• Signed single-precision integer type (16 bits) • Signed double-precision integer type (32 bits) • Single-precision floating point type (32 bits) • Bit type • Character string type (1 to 32 characters) • 16-bit BCD • 32-bit BCD	• Bit • Word [unsigned]/Bit String [16-bits] • Double word [unsigned]/bit string [32 bits] • Word [signed] • Double word [signed] • 16bit BCD • 32bit BCD • FLOAT [Single Precision] • FLOAT [Double Precision] • Character string [Unicode] • Character string [SJIS]	△	
	Statistical processing		Average, maximum, minimum, moving average, moving maximum, moving minimum	—	×	For the RD81MES96N, statistical processing is not available.
DB buffering	Buffering capacity during communication error		Maximum capacity: CompactFlash card capacity: 32M bytes (16 to 512M bytes)	Maximum capacity: 2048M bytes/2 settings (1024M bytes/setting maximum)	△	
XML processing	Command type		One-shot execution of a job, enabling the job, disabling the job	One-shot execution of a job, enabling the job, disabling the job, acquisition of job information	△	For the RD81MES96N, use the REST server function instead of the XML processing.
	Request message size		128K bytes maximum	128K bytes maximum		
	Reception protocol		HTTP1.0			
	Character code		UTF-8			
	User authentication		Number of accounts: 16 User ID: 1 to 20 characters Password: 6 to 14 characters	Number of accounts: 16 User name: 6 to 32 characters Password: 6 to 32 characters		

*1 The following table lists databases that can be connected to the QJ71MES96(N).

Item	Description
When the DB connection service and configuration tool version 2 are used	When the DB interface is used: Relational database Oracle® 12c (Standard, Enterprise) (64bit) Oracle® 11g (Standard, Enterprise) (64bit) Microsoft® SQL Server® 2016 (Standard, Enterprise) (64bit) Microsoft® SQL Server® 2014 (Standard, Enterprise) (64bit) Microsoft® SQL Server® 2012 (Standard, Enterprise) (64bit) Microsoft® SQL Server® 2008 R2 (Standard, Enterprise) (64bit) Microsoft® Access® 2016 (32bit) Microsoft® Access® 2013 (32bit) Microsoft® Access® 2010 (32bit)
When the DB connection service and configuration tool version 1 are used	When the DB interface is used: Relational database Oracle® 12c (64bit) Oracle® 11g (32bit, 64bit) Oracle® 10g (32bit) Oracle® 9i (32bit) Oracle® 8i (32bit) Microsoft® SQL Server® 2014 (32bit, 64bit) Microsoft® SQL Server® 2012 (32bit, 64bit) Microsoft® SQL Server® 2008 R2 (32bit, 64bit) Microsoft® SQL Server® 2008 (32bit, 64bit) Microsoft® SQL Server® 2005 (32bit) Microsoft® SQL Server® 2000 (32bit) Microsoft® SQL Server® 2000 Desktop Engine (MSDE 2000) Microsoft® Access® 2013 (32bit) Microsoft® Access® 2010 (32bit) Microsoft® Access® 2007 Microsoft® Access® 2003 Microsoft® Access® 2000 Wonderware® Historian 9.0 (Industrial SQL Server®)

*2 The following table lists databases that can be connected to the RD81MES96N.

Database type	Accessible database type	Supported software	Supported edition	
Database server	Oracle®	Oracle 11g	Express Edition	Only the 64-bit version is supported.
			Standard Edition	
			Enterprise Edition	
		Oracle 12c	Express Edition	
			Standard Edition	
			Enterprise Edition	
		Oracle 18c	Express Edition	
			Standard Edition	
			Enterprise Edition	
	Microsoft SQL Server®	SQL Server 2008 R2	Express Edition	
			Standard Edition	
			Enterprise Edition	
		SQL Server 2012	Express Edition	
			Standard Edition	
			Enterprise Edition	
		SQL Server 2014	Express Edition	
			Standard Edition	
			Enterprise Edition	
		SQL Server 2016	Express Edition	
			Standard Edition	
			Enterprise Edition	
		SQL Server 2017	Express Edition	
			Standard Edition	
			Enterprise Edition	
	Microsoft Access®	Access 2010	—	Only the 32-bit version is supported.
		Access 2013	—	
		Access 2016	—	
	MySQL®	MySQL	Community Edition	Only the 64-bit version is supported.
			Standard Edition	
	PostgreSQL	PostgreSQL	—	

High speed data logger module

QD81DL96 and RD81DL96

■Transmission and interface

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD81DL96	RD81DL96		
Ethernet	Interface	100BASE-TX, 10BASE-T	1000BASE-T, 100BASE-TX, 10BASE-T	○	
	Communication method	Full-duplex/half-duplex		○	
	Flow control	Full-duplex: None, Half-duplex: Back pressure congestion control		○	
	Data transmission rate	100BASE-TX: 100Mbps 10BASE-T: 10Mbps	1000BASE-T: 1Gbps 100BASE-TX: 100Mbps 10BASE-T: 10Mbps	○	
	Transmission method	Base band		○	
	Number of cascaded stages (When a repeater hub is used)	100BASE-TX: 2 stages maximum 10BASE-T: 4 stages maximum	1000BASE-T: — 100BASE-TX: 2 stages maximum 10BASE-T: 4 stages maximum	○	
	Maximum segment length	100m		○	
	Supported function	Auto-negotiation	Auto-negotiation Auto MDI/MDI-X	○	
Card	Supply power voltage	3.3V±5%		○	
	Supply power capacity	150mA maximum	200mA maximum	—	
	Card size	CompactFlash Type I card	SD memory card SDHC memory card	—	
	Number of installable cards	1		—	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Clock		• Obtained from a programmable controller CPU (in multiple CPU system, CPU No.1) or SNTP server. • Time accuracy after obtaining the time is a daily variation of ±9.504 seconds.	• Obtained from a CPU module (in multiple CPU system, CPU No.1). • Time accuracy after obtaining the time is a daily variation of ±9.504 seconds.	△	
Internal current consumption (5VDC)		0.50A	1.1A	—	
Weight		0.15kg	0.24kg	—	

■Data sampling

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD81DL96	RD81DL96		
Number of access target CPUs		64 CPUs maximum		○	
Data sampling interval	High speed data sampling	• Sequence scan time synchronization • 1 to 32767ms (for trigger logging) • 3 to 32767ms (for continuous logging)	• Sequence scan time synchronization • 0.5 to 0.9ms, 1 to 32767ms (for trigger logging) • 2 to 32767ms (for continuous logging)	△	
	General data sampling	• 0.1 to 0.9s, 1 to 32767s • Time interval specification (specify hour/minute/second)		○	
Amount of sampled data	High speed data sampling	Overall amount of data: 8192 maximum (per setting: 256) Overall number of device points: 8192 maximum (per setting: 256)	Overall amount of data: 32768 (per setting: 1024) Overall number of device points: 32768 (per setting: 4096)	△	
	General data sampling	Overall amount of data: 16384 maximum (per setting: 256) Overall number of device points: 262144 maximum (per setting: 4096)	Overall amount of data: 65536 (per setting: 1024) Overall number of device points: 262144 (per setting: 4096)	△	
Data type		• Bit • Word [signed] • Double word [signed] • Word [unsigned] • Double word [unsigned] • Float (single precision) • Float (double precision) • 16bitBCD • 32bitBCD • String: 1 to 8192 characters • Raw: 1 to 8192 bytes		○	
Data output format		CSV file • Bit • Decimal format: 0 to 14 digits after the decimal point • Exponential format: 0 to 14 digits after the decimal point • Hexadecimal format • String • Raw	Unicode text file, CSV file • Bit • Decimal format: 0 to 14 digits after the decimal point • Exponential format: 0 to 14 digits after the decimal point • Hexadecimal format • String • Raw	△	
Scaling		Basic arithmetic operations: calculations combining (×, ÷) and (+, -)		○	

■Data logging

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD81DL96	RD81DL96		
Number of settings		64 settings maximum		○	
Logging type		• Continuous logging • Trigger logging		○	
File format		• CSV file (extension: .CSV) • Binary file (extension: .BIN)	• Unicode text file (extension: .TXT) • CSV file (extension: .CSV) • Binary file (extension: .BIN)	△	
Period		Specify applicable period or exclusion period. • Data condition: Bit ON/OFF, compare data to constant value, compare data to data • Date range: Specify start and/or end month/day • Time range: Specify start and/or end hour/minute/second • Day of week/week condition: Specify days of the week and/or weeks AND or OR combination of the above: 8 conditions maximum		○	
Trigger logging	Trigger conditions	■Conditions: • Comparison: Bit ON/OFF, compare data to constant value, compare data to data. • At the time of change of value • Fixed cycle: 1 to 86400 seconds • Time interval specification: Specify hour/minute/second. • Time of day specification: Specify month/day/hour/minute/second • At module startup AND or OR combination of the above: 8 conditions maximum ■Condition execution count: 3 conditions ■Condition execution order (order and/or time conditions): 4 conditions maximum		○	
	Number of logging lines	• Before trigger occurs: 0 to 65534 lines • After trigger occurs: 1 to 65535 lines The sum of lines of before and after trigger occurrence is up to 65535 lines.		○	
File switching timing		■Number of lines (number of records)specification: 100 to 100000 lines ■File size specification: 10 to 16384K bytes ■Condition specification: • Comparison: Bit ON/OFF, compare data to constant value, compare data to data • Fixed cycle: 1 to 86400 seconds • Time interval specification: Specify hour/minute/second • Time of day specification: Specify month/day/hour/minute/second • At module startup AND or OR combination of the above: 8 conditions maximum ■Trigger logging unit		○	
Number of saved files		1 to 65535		○	

■Event logging

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	QD81DL96	RD81DL96		
Number of settings	64 settings maximum		○	
Number of events	Maximum of 64 events per single event logging setting	Maximum of 256 events per single event logging setting	△	
File format	• CSV file (extension: .CSV) • Binary file (extension: .BIN)	• Unicode text file (extension: .TXT) • CSV file (extension: .CSV) • Binary file (extension: .BIN)	△	
Event conditions	■Conditions: • Comparison: Bit ON/OFF, compare data to constant value, compare data to data. • At the time of change of value AND or OR combination of the above: 4 conditions maximum ■Condition execution count: 3 conditions ■Condition execution order (order and/or time conditions): 4 conditions maximum		○	
Period	Specify applicable period or exclusion period. • Data condition: Bit ON/OFF, compare data to constant value, compare data to data • Date range: Specify start and/or end month/day. • Time range: Specify start and/or end hour/minute/second • Day of week/week condition: Specify days of the week and/or weeks AND or OR combination of the above: 8 conditions maximum		○	
File switching timing	■Number of lines (number of records) specification: 100 to 100000 lines ■File size specification: 10 to 16384K bytes ■Condition specification: • Comparison: Bit ON/OFF, compare data to constant value, compare data to data • At the time of change of value • Fixed cycle: 1 to 86400 seconds • Time interval specification: Specify hour/minute/second • Time of day specification: Specify month/day/hour/minute/second • At module startup AND or OR combination of the above: 8 conditions maximum		○	
Number of saved files	1 to 65535		○	

■Report

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item	Specifications		Compatibility	Precautions
	QD81DL96	RD81DL96		
Number of settings	64 settings maximum		○	
File format	Excel file (extension: .xls)		○	
Output data type	• Data inside data logging file • Current value data • Creation time		○	
Amount of output data	64 layouts per single report setting, 65535 cells in total		○	
Creation trigger conditions	■Conditions: • Comparison: Bit ON/OFF, compare data to constant value, compare data to data. • Fixed cycle: 1 to 86400 seconds • Time interval specification: Specify hour/minute/second • Time of day specification: Specify month/day/hour/minute/second • At module startup • At the time of the data logging file is switched AND or OR combination of the above: 8 conditions maximum ■Condition execution count: 3 conditions ■Condition execution order (order and/or time conditions): 4 conditions maximum		○	
Period	Specify applicable period or exclusion period. • Data condition: Bit ON/OFF, compare data to constant value, compare data to data • Date range: Specify start and/or end month/day • Time range: Specify start and/or end hour/minute/second • Day of week/week condition: Specify days of the week and/or weeks AND or OR combination of the above: 8 conditions maximum		○	
Layout file size	10M bytes maximum		○	
Number of saved files	1 to 65535		○	

■Other

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QD81DL96	RD81DL96		
E-mail	Application	• Notification when event occurs • Transmit saved files		○	
	Subject	• Event notification e-mail: User specified • Saved file transmission e-mail: Automatically created/user specified		○	
	Body	• Event notification e-mail: User specified • Saved file transmission e-mail: Automatically created/user specified		○	
	Attachment	• Event notification e-mail: None • Saved file transmission e-mail: Saved files (CSV, binary, and Excel files), 512K bytes maximum	• Event notification e-mail: None • Saved file transmission e-mail: Saved files (Unicode text, binary, CSV, and Excel files), 512K bytes maximum	△	
	Attachment format	MIME format		○	
	MIME version	1.0		○	
	Communications with mail server	Port number: 25, 587, others (1 to 65535) Authentication method • No authentication • SMTP-AUTH (PLAIN, LOGIN, CRAM-MD5) • POP before SMTP		○	
	Target address	16 groups maximum		○	
	Operability verified e-mail client software	• Microsoft Outlook Express 6.0 • Microsoft Windows Mail 6.0	Microsoft Outlook 2013	×	Microsoft Outlook 2013 is used for e-mail client operability verification.
FTP server	Application	Read and delete saved files, and read, write, and delete recipe files.		○	
	Operability verified FTP client software	• Microsoft Internet Explorer 6.0 • Windows Internet Explorer 7.0 • Windows Internet Explorer 8.0 • Windows Internet Explorer 9.0 • Windows Internet Explorer 10.0 • Windows Internet Explorer 11.0	Windows Internet Explorer 8.0 Windows Internet Explorer 9.0 Windows Internet Explorer 10.0 Windows Internet Explorer 11.0	×	Microsoft Internet Explorer 6.0 and Windows Internet Explorer 7.0 are not supported.
	Session count	10		○	
FTP client	Application	Transfer saved files		○	
	Operability verified FTP server software	Microsoft Internet Information Services		○	
Recipe	Number of data	256 data maximum		○	
	Number of records	256 records maximum		○	
	Data type	• Bit • Word [signed] • Double word [signed] • Word [unsigned] • Double word [unsigned] • FLOAT [single precision] • FLOAT [double precision] • 16bitBCD • 32bitBCD		○	
	Recipe file	CSV file (extension: .CSV), 256 files maximum		○	
	Execution type	Dedicated instructions (ladder program), configuration tool		○	

Ethernet interface module

QJ71E71-B2 and RJ71EN71

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications			Compatibility	Precautions
		QJ71E71-B2	RJ71EN71			
			Q-compatible Ethernet	Ethernet		
Transmission specifications	Data transmission speed	10Mbps (half-duplex)	1Gbps*1 100Mbps (full-duplex/ half-duplex) 10Mbps (full-duplex/ half-duplex)	1Gbps 100Mbps (full-duplex/ half-duplex) 10Mbps (full-duplex/ half-duplex)	○	
	Flow control	Back pressure congestion control	Full-duplex: None, Half-duplex: Back pressure congestion control		○	
	Interface	10BASE2: BNC	RJ45 (AUTO MDI/MDI-X)		×	
	Transmission method	Base band			○	
	Maximum segment length	185m	100m (length between a hub and a node)		×	For the RJ71EN71, connect another hub if the segment length is 100 meters or longer.
	Maximum number of nodes/ connection	30 modules/segment	Cascade connection 1000BASE-T: Depends on the switching hub used. 100BASE-TX: 2 levels maximum 10BASE-T: 4 levels maximum		—	
	Maximum frame size	1518 bytes		1518 bytes 9022 bytes (when jumbo frames are used)	○	
	Jumbo frame	Not available		Available	—	Only available for the RJ71EN71 (Ethernet)
	IP version	Compatible with IPv4			○	
Sending/ receiving data storage memory	Number of simultaneous open connections (connections usable on a program)	16 connections		128 connections For fixed buffer: 16 connections For socket communications: 112 connections	○	
	Fixed buffer	1K words × 16		5K words × 16	○	
	Socket communications	—		5K words × 48 (when only P1 is used) 5K words × 112 (when P1 and P2 are used)	—	Only available for the RJ71EN71 (Ethernet)
	Random access buffer	6K words × 1			○	
	E-mail (attachment)	6K words × 1	—		×	The e-mail function is not available for the RJ71EN71.
	E-mail (main text)	960 words × 1				
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)			○	
Internal current consumption (5VDC)		0.60A	0.82A		—	
Weight		0.13kg	0.17kg		—	

*1 When using 1Gbps, set "Communication Speed" under "Application Settings" to "Automatic Negotiation". ("1Gbps/full-duplex" cannot be selected.)

QJ71E71-B5 and RJ71EN71

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications			Compatibility	Precautions
		QJ71E71-B5	RJ71EN71			
			Q-compatible Ethernet	Ethernet		
Transmission specifications	Data transmission speed	10Mbps (Half-duplex)	1Gbps[*1] 100Mbps (Full-duplex/ Half-duplex) 10Mbps (Full-duplex/ Half-duplex)	1Gbps 100Mbps (Full-duplex/ Half-duplex) 10Mbps (Full-duplex/ Half-duplex)	○	
	Flow control	Back pressure congestion control	Full-duplex: None, Half-duplex: Back pressure congestion control		○	
	Interface	10BASE5: AUI	RJ45 (AUTO MDI/MDI-X)		×	
	Transmission method	Base band			○	
	Maximum segment length	500m	100m (length between a hub and a node)		×	For the RJ71EN71, connect another hub if the segment length is 100 meters or longer.
	Maximum number of nodes/ connection	100 modules/segment	Cascade connection 1000BASE-T: Depends on the switching hub used. 100BASE-TX: 2 levels maximum 10BASE-T: 4 levels maximum		—	
	Maximum frame size	1518 bytes		1518 bytes 9022 bytes (when jumbo frames are used)	○	
	Jumbo frame	Not available		Available	—	Only available for the RJ71EN71 (Ethernet)
	IP version	Compatible with IPv4			○	
Sending/ receiving data storage memory	Number of simultaneous open connections (connections usable on a program)	16 connections		128 connections For fixed buffer: 16 connections For socket communications: 112 connections	○	
	Fixed buffer	1K words × 16		5K words × 16	○	
	Socket communications	—		5K words × 48 (when only P1 is used) 5K words × 112 (when P1 and P2 are used)	—	Only available for the RJ71EN71 (Ethernet)
	Random access buffer	6K words × 1			○	
	E-mail (attachment)	6K words × 1	—		×	The e-mail function is not available for the RJ71EN71.
	E-mail (main text)	960 words × 1				
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)			○	
Internal current consumption (5VDC)		0.60A	0.82A		—	
Weight		0.13kg	0.17kg		—	

*1 When using 1Gbps, set "Communication Speed" under "Application Settings" to "Automatic Negotiation". ("1Gbps/full-duplex" cannot be selected.)

QJ71E71-100 and RJ71EN71

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications			Compatibility	Precautions
		QJ71E71-100	RJ71EN71			
			Q-compatible Ethernet	Ethernet		
Transmission specifications	Data transmission speed	100Mbps (Full-duplex/ Half-duplex) 10Mbps (Half-duplex)	1Gbps*1 100Mbps (Full-duplex/ Half-duplex) 10Mbps (Full-duplex/ Half-duplex)	1Gbps 100Mbps (Full-duplex/ Half-duplex) 10Mbps (Full-duplex/ Half-duplex)	○	
	Flow control	Full-duplex: None, Half-duplex: Back pressure congestion control			○	
	Interface	RJ45 (Fixed to MDI)	RJ45 (AUTO MDI/MDI-X)		○	
	Transmission method	Base band			○	
	Maximum segment length	100m (length between a hub and a node)			○	
	Number of cascade connections	100BASE-TX: 2 levels maximum 10BASE-T: 4 levels maximum	1000BASE-T: Depends on the switching hub used. 100BASE-TX: 2 levels maximum 10BASE-T: 4 levels maximum		○	
	Maximum frame size	1518 bytes		1518 bytes 9022 bytes (when jumbo frames are used)	○	
	Jumbo frame	Not available		Available	—	Only available for the RJ71EN71 (Ethernet)
	IP version	Compatible with IPv4			○	
Sending/ receiving data storage memory	Number of simultaneous open connections (connections usable on a program)	16 connections		128 connections For fixed buffer: 16 connections For socket communications: 112 connections	○	
	Fixed buffer	1K words × 16		5K words × 16	○	
	Socket communications	—		5K words × 48 (when only P1 is used) 5K words × 112 (when P1 and P2 are used)	—	Only available for the RJ71EN71 (Ethernet)
	Random access buffer	6K words × 1			○	
	E-mail (attachment)	6K words × 1	—		×	The e-mail function is not available for the RJ71EN71.
	E-mail (main text)	960 words × 1				
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)			○	
Internal current consumption (5VDC)		0.50A	0.82A		—	
Weight		0.11kg	0.17kg		—	

*1 When using 1Gbps, set "Communication Speed" under "Application Settings" to "Automatic Negotiation". ("1Gbps/full-duplex" cannot be selected.)

Serial communication module

QJ71C24 and RJ71C24

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71C24	RJ71C24		
Interface	CH1	RS-232-compliance (D-sub 9 pin female)		○	
	CH2	RS-422/485-compliance (2-piece terminal block)		○	
Communications system	Line	Full-duplex/half-duplex communications		○	
	MC protocols communication	Half-duplex communications		○	
	Non procedure protocol communication	Full-duplex/half-duplex communications		○	
	Bidirectional protocol communication	Full-duplex/half-duplex communications		○	
	Pre-defined protocol communication	Full-duplex/half-duplex communications		○	
Synchronization method		Start-stop synchronization method		○	
Transmission speed		*1		△	
Data format	Start bits	1		○	
	Data bits	7/8		○	
	Parity bits	1 (vertical parity) or none		○	
	Stop bits	1/2		○	
Access cycle	MC protocols communication	Processes one request during the END processing of the CPU module of the station with the C24.		○	
	Non procedure protocol communication/ bidirectional protocol communication	Sends each time a send request is issued. Can receive at any time.		○	
	Pre-defined protocol communication	Sends or receives data when requested with the dedicated instruction (CPRTCL).		○	
Error detection	Parity check	Selected for all protocols and when this check is enabled, ODD or EVEN is selected by a parameter.		○	
	Sum check code	For the MC or bidirectional protocol, selected by a parameter. For the non procedure protocol, selected in the user frame.		△	
Transmission control		*2		○	
Line configuration (Connection)	RS-232	1: 1		○	
	RS-422/485	1: 1, 1: n, n: 1, m: n		○	
Line configuration (Data communication) RS-232	MC protocols communication	1: 1		○	
	Non procedure protocol communication	1: 1		○	
	Bidirectional protocol communication	1: 1		○	
	Pre-defined protocol communication	—	1: 1	—	

Item		Specifications		Compatibility	Precautions
		QJ71C24	RJ71C24		
Line configuration (Data communication) RS-422/485	MC protocols communication	1: 1, 1: n, m: n		○	
	Non procedure protocol communication	1: 1, 1: n, n: 1		○	
	Bidirectional protocols communication	1: 1		○	
	Pre-defined protocol communication	—	1: 1, n: 1	—	
Transmission distance (Overall distance)	RS-232	15m maximum		○	
	RS-422/485	1200m maximum (Overall distance)		○	
Number of write accesses to a flash ROM		Maximum 100000 times to the same area		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Applicable connector for external wiring		D-sub 9 pin (male) screw type		○	
Internal current consumption (5VDC)		0.31A		—	
Weight		0.20kg	0.16kg	—	

*1 The transmission speed which can be set differs between the QJ71C24 and RJ71C24.

○: Available, ×: Not available

Item		QJ71C24	RJ71C24
Transmission speed (bps)	50, 300, 600	○	×
	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200	○	○
	230400	×	○

In the QJ71C24, the total transmission speed of CH1 and CH2 needs to be set within 115200bps.

*2 The following table lists the transmission controls.

Item	RS-232	RS-422/485
DTR/DSR control	○	×
RS/CS control	○	×
CD (DCD) signal control	○	×
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○	○

DTR/DSR signal control and DC code control are selected by the user.

QJ71C24-R2 and RJ71C24-R2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71C24-R2	RJ71C24-R2		
Interface	CH1	RS-232-compliance (D-sub 9 pin female)		○	
	CH2	RS-232-compliance (D-sub 9 pin female)		○	
Communications system	Line	Full-duplex/half-duplex communications		○	
	MC protocols communication	Half-duplex communications		○	
	Non procedure protocol communication	Full-duplex/half-duplex communications		○	
	Bidirectional protocols communication	Full-duplex/half-duplex communications		○	
	Pre-defined protocol communication	Full-duplex/half-duplex communications		○	
Synchronization method		Start-stop synchronization method		○	
Transmission speed		*1		△	
Data format	Start bits	1		○	
	Data bits	7/8		○	
	Parity bits	1 (vertical parity) or none		○	
	Stop bits	1/2		○	
Access cycle	MC protocols communication	Processes one request during the END processing of the CPU module of the station with the C24.		○	
	Non procedure protocol communication/ bidirectional protocol communication	Sends each time a send request is issued. Can receive at any time.		○	
	Pre-defined protocol communication	Sends or receives data when requested with the dedicated instruction (CPRTCL).		○	
Error detection	Parity check	Selected for all protocols and when this check is enabled, ODD or EVEN is selected by a parameter.		○	
	Sum check code	For the MC or bidirectional protocol, selected by a parameter. For the non procedure protocol, selected in the user frame.		△	
Transmission control		*2		○	
Line configuration (Connection)	RS-232	1: 1		○	
Line configuration (Data communication) RS-232	MC protocols communication	1: 1		○	
	Non procedure protocol communication	1: 1		○	
	Bidirectional protocol communication	1: 1		○	
	Pre-defined protocol communication	1: 1		○	
Transmission distance (Overall distance)	RS-232	15m maximum		○	
Number of write accesses to a flash ROM		Maximum 100000 times to the same area		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Applicable connector for external wiring		D-sub 9 pin (male) screw type		○	
Internal current consumption (5VDC)		0.26A	0.20A	—	

Item	Specifications		Compatibility	Precautions
	QJ71C24-R2	RJ71C24-R2		
Weight	0.20kg	0.14kg	—	

*1 The transmission speed which can be set differs between the QJ71C24-R2 and RJ71C24-R2.

○: Available, ×: Not available

Item		QJ71C24-R2	RJ71C24-R2
Transmission speed (bps)	50, 300, 600	○	×
	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200	○	○
	230400	×	○

In the QJ71C24-R2, the total transmission speed of CH1 and CH2 needs to be set within 115200bps.

*2 The following table lists the transmission controls.

Item	RS-232
DTR/DSR control	○
RS/CS control	○
CD (DCD) signal control	○
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○

DTR/DSR signal control and DC code control are selected by the user.

QJ71C24N and RJ71C24

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71C24N	RJ71C24		
Interface	CH1	RS-232-compliance (D-sub 9 pin female)		○	
	CH2	RS-422/485-compliance (2-piece terminal block)		○	
Communications system	Line	Full-duplex/half-duplex communications		○	
	MC protocols communication	Half-duplex communications		○	
	Non procedure protocol communication	Full-duplex/half-duplex communications		○	
	Bidirectional protocol communication	Full-duplex/half-duplex communications		○	
	Pre-defined protocol communication	Full-duplex/half-duplex communications		○	
Synchronization method		Start-stop synchronization method		○	
Transmission speed		*1		△	
Data format	Start bits	1		○	
	Data bits	7/8		○	
	Parity bits	1 (vertical parity) or none		○	
	Stop bits	1/2		○	
Access cycle	MC protocols communication	Processes one request during the END processing of the CPU module of the station with the C24.		○	
	Non procedure protocol communication/ bidirectional protocol communication	Sends each time a send request is issued. Can receive at any time.		○	
	Pre-defined protocol communication	Sends or receives data when requested with the dedicated instruction (CPRTCL).		○	
Error detection	Parity check	Selected for all protocols and when this check is enabled, ODD or EVEN is selected by a parameter.		○	
	Sum check code	For the MC or bidirectional protocol, selected by a parameter. For the non procedure protocol, selected in the user frame. For the pre-defined protocol, whether or not a sum check code is needed depends on the selected protocol.		○	
Transmission control		*2		○	
Line configuration (Connection)	RS-232	1: 1		○	
	RS-422/485	1: 1, 1: n, n: 1, m: n		○	
Line configuration (Data communication) RS-232	MC protocols communication	1: 1		○	
	Non procedure protocol communication	1: 1		○	
	Bidirectional protocol communication	1: 1		○	
	Pre-defined protocol communication	1: 1		○	

Item		Specifications		Compatibility	Precautions
		QJ71C24N	RJ71C24		
Line configuration (Data communication) RS-422/485	MC protocols communication	1: 1, 1: n, m: n		○	
	Non procedure protocol communication	1: 1, 1: n, n: 1		○	
	Bidirectional protocols communication	1: 1		○	
	Pre-defined protocol communication	1: 1, n: 1		○	
Transmission distance (Overall distance)	RS-232	15m maximum		○	
	RS-422/485	1200m maximum (Overall distance)		○	
Number of write accesses to a flash ROM		Maximum 100000 times to the same area		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Applicable connector for external wiring		D-sub 9 pin (male) screw type		○	
Internal current consumption (5VDC)		0.31A		—	
Weight		0.20kg	0.16kg	—	

*1 The transmission speed which can be set differs between the QJ71C24N and RJ71C24.

○: Available, ×: Not available

Item		QJ71C24N	RJ71C24
Transmission speed (bps)	50, 300, 600	○	×
	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200	○	○
	230400	○: CH1 only	○

In the MELSEC-Q series, the total transmission speed of CH1 and CH2 needs to be set within 230400bps. When using the communication data monitoring function, the total speed needs to be set within 115200bps.

*2 The following table lists the transmission controls.

Item	RS-232	RS-422/485
DTR/DSR control	○	×
RS/CS control	○	×
CD (DCD) signal control	○	×
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○	○

DTR/DSR signal control and DC code control are selected by the user.

QJ71C24N-R2 and RJ71C24-R2

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71C24N-R2	RJ71C24-R2		
Interface	CH1	RS-232-compliance (D-sub 9 pin female)		○	
	CH2	RS-232-compliance (D-sub 9pin female)		○	
Communications system	Line	Full-duplex/half-duplex communications		○	
	MC protocols communication	Half-duplex communications		○	
	Non procedure protocol communication	Full-duplex/half-duplex communications		○	
	Bidirectional protocol communication	Full-duplex/half-duplex communications		○	
	Pre-defined protocol communication	Full-duplex/half-duplex communications		○	
Synchronization method		Start-stop synchronization method		○	
Transmission speed		*1		△	
Data format	Start bits	1		○	
	Data bits	7/8		○	
	Parity bits	1 (vertical parity) or none		○	
	Stop bits	1/2		○	
Access cycle	MC protocols communication	Processes one request during the END processing of the CPU module of the station with the C24.		○	
	Non procedure protocol communication/ bidirectional protocol communication	Sends each time a send request is issued. Can receive at any time.		○	
	Pre-defined protocol communication	Sends or receives data when requested with the dedicated instruction (CPRTCL).		○	
Error detection	Parity check	Selected for all protocols and when this check is enabled, ODD or EVEN is selected by a parameter.		○	
	Sum check code	For the MC or bidirectional protocol, selected by a parameter. For the non procedure protocol, selected in the user frame. For the pre-defined protocol, whether or not a sum check code is needed depends on the selected protocol.		○	
Transmission control		*2		○	
Line configuration (Connection)	RS-232	1: 1		○	
Line configuration (Data communication) RS-232	MC protocols communication	1: 1		○	
	Non procedure protocol communication	1: 1		○	
	Bidirectional protocol communication	1: 1		○	
	Pre-defined protocol communication	1: 1		○	
Transmission distance (Overall distance)	RS-232	15m maximum		○	
Number of write accesses to a flash ROM		Maximum 100000 times to the same area		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	
Applicable connector for external wiring		D-sub 9 pin (male) screw type		○	

Item	Specifications		Compatibility	Precautions
	QJ71C24N-R2	RJ71C24-R2		
Internal current consumption (5VDC)	0.26A	0.20A	—	
Weight	0.20kg	0.14kg	—	

*1 The transmission speed which can be set differs between the QJ71C24N-R2 and RJ71C24-R2.

○: Available, ×: Not available

Item		QJ71C24N-R2	RJ71C24-R2
Transmission speed (bps)	50, 300, 600	○	×
	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200	○	○
	230400	○: CH1 only	○

In the MELSEC-Q series, the total transmission speed of CH1 and CH2 needs to be set within 230400bps. When using the communication data monitoring function, the total speed needs to be set within 115200bps.

*2 The following table lists the transmission controls.

Item	RS-232
DTR/DSR control	○
RS/CS control	○
CD (DCD) signal control	○
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○

DTR/DSR signal control and DC code control are selected by the user.

QJ71C24N-R4 and RJ71C24-R4

○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		QJ71C24N-R4	RJ71C24-R4		
Interface	CH1	RS-422/485-compliance (2-piece plug-in connector socket block)		○	
	CH2	RS-422/485-compliance (2-piece plug-in connector socket block)		○	
Communications system	Line	Full-duplex/half-duplex communications		○	
	MC protocols communication	Half-duplex communications		○	
	Non procedure protocol communication	Full-duplex/half-duplex communications		○	
	Bidirectional protocol communication	Full-duplex/half-duplex communications		○	
	Pre-defined protocol communication	Full-duplex/half-duplex communications		○	
Synchronization method		Start-stop synchronization method		○	
Transmission speed		*1		△	
Data format	Start bits	1		○	
	Data bits	7/8		○	
	Parity bits	1 (vertical parity) or none		○	
	Stop bits	1/2		○	
Access cycle	MC protocols communication	Processes one request during the END processing of the CPU module of the station with the C24.		○	
	Non procedure protocol communication/ bidirectional protocol communication	Sends each time a send request is issued. Can receive at any time.		○	
	Pre-defined protocol communication	Sends or receives data when requested with the dedicated instruction (CPRTCL).		○	
Error detection	Parity check	Selected for all protocols and when this check is enabled, ODD or EVEN is selected by a parameter.		○	
	Sum check code	For the MC or bidirectional protocol, selected by a parameter. For the non procedure protocol, selected in the user frame. For the pre-defined protocol, whether or not a sum check code is needed depends on the selected protocol.		○	
Transmission control		*2		○	
Line configuration (Connection)	RS-422/485	1: 1, 1: n, n: 1, m: n		○	
Line configuration (Data communication) RS-422/485	MC protocols communication	1: 1, 1: n, m: n		○	
	Non procedure protocol communication	1: 1, 1: n, n: 1		○	
	Bidirectional protocol communication	1: 1		○	
	Pre-defined protocol communication	1: 1, n: 1		○	
Transmission distance (Overall distance)	RS-422/485	1200m maximum (Overall distance)		○	
Number of write accesses to a flash ROM		Maximum 100000 times to the same area		○	
Number of occupied I/O points		32 points (I/O assignment: Intelligent 32 points)		○	

Item	Specifications		Compatibility	Precautions
	QJ71C24N-R4	RJ71C24-R4		
Applicable connector for external wiring	D-sub 9 pin (male) screw type		○	
Internal current consumption (5VDC)	0.39A	0.42A	—	
Weight	0.20kg	0.13kg	—	

*1 The transmission speed which can be set differs between the QJ71C24N-R4 and RJ71C24-R4.

○: Available, ×: Not available

Item		QJ71C24N-R4	RJ71C24-R4
Transmission speed (bps)	50, 300, 600	○	×
	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200	○	○
	230400	○: CH1 only	○

In the MELSEC-Q series, the total transmission speed of CH1 and CH2 needs to be set within 230400bps. When using the communication data monitoring function, the total speed needs to be set within 115200bps.

*2 The following table lists the transmission controls.

Item	RS-422/485
DTR/DSR control	×
RS/CS control	×
CD (DCD) signal control	×
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○

DTR/DSR signal control and DC code control are selected by the user.

10.3 Comparison of Information Module Functions

MES interface module

QJ71MES96(N) and RD81MES96N

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			QJ71MES96(N)	RD81MES96N	
DB interface function	Tag function	Collects device data of the programmable controller CPUs on the network in units of tags. By allocating database fields to tag components, the DB interface function enables the following. • Database value reading/writing • Reading/writing of programmable controller CPU device data specified with tag components	○	△	For the RD81MES96N, use the device memory input/output function instead. The RD81MES96N collects device data used for trigger judgment and jobs, instead of collecting device data in units of tags.
	Trigger monitoring function	Monitors values such as the time and tag values, and when the trigger condition changes from false to true (when the conditions are met), starts a job.	○	△	For the RD81MES96N, use the trigger condition monitoring function.*1
	Trigger buffering function	When multiple sets of conditions for data transmission are met in a concentrated manner, their data and trigger times are buffered in the module's internal memory so that actions (data operation/transmission) can be executed later using the buffered data. Even if the frequency of data transmission triggers is high, jobs are executed without missing any trigger.	○	△	For the RD81MES96N, the number of trigger buffering times increases.
	SQL text transmission function (Communication action)	Automatically creates an SQL text and communicates with the database. The following types of SQL texts are available. • Select/MultiSelect • Update • Insert • Delete	○	△	For the RD81MES96N, use the DB record input/output function instead.
	Stored procedure call function (Communication action)	Starts a stored procedure in the database.	○	△	For the RD81MES96N, the stored procedure call function is included in the DB record input/output function.
	Arithmetic processing function (Operation action)	Performs operations for tag component values.	○	△	For the RD81MES96N, use the data operation and processing function instead.*2
	Program execution function	Executes programs in the application server computer before execution of the first action and after execution of the last one in a job.	○	○	
	DB buffering function	Buffers SQL texts into a CompactFlash card when they cannot be sent due to network disconnection or failure of the database server computer. After recovery, the buffered SQL texts are automatically sent to the database. (Manual operation is also possible.)	○	△	The RD81MES96N provides an increased DB buffering capacity.
XML processing function		Processes execution of requests made by user applications using XML format messages. The XML processing function allows the following instructions for job execution. • One-shot execution of a job • Validating a job (The job is executed when the trigger conditions are met.) • Invalidating a job (The job is not executed even if the trigger conditions are met.)	○	△	For the RD81MES96N, use the REST server function instead of the XML processing function.

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71MES96(N)	RD81MES96N	
Time synchronization function	Synchronizes the time of the MES interface module with the time of the SNTP server computer on the network or a programmable controller CPU (No.1 CPU in the multiple CPU system).	○	△	For the RD81MES96N, the clock is acquired from the CPU module.
MES Interface Function Configuration Tool function	The MES Interface Function Configuration Tool is used to configure various settings of the MES interface module, which are necessary for the MES interface functions. Apart from the MES interface function settings, various operations can be performed such as checking the operating status of the MES interface functions, the operation history, and stopping/ restarting the MES interface functions.	○	△	For the RD81MES96N, the statistical processing and time synchronization setting are not available.
DB connection service function	By installing the DB connection service on the server computer, the MES interface functions of the MES interface module can be used.	○	○	

*1 For the RD81MES96N, the following trigger conditions are added.
· Event (Value change)
· Event (Module monitoring) → Control CPU

*2 For the RD81MES96N, the following operations are added.
· Character String operations: (LENGTH, RIGHT, LEFT, UPPER, LOWER, RTRIM, LTRIM)
· Bit operations (AND, OR, XOR, RSHIFT, LSHIFT)
· Type conversion (STR2INT, STR2REAL, INT2STR, REAL2STR)

High speed data logger module

QD81DL96 and RD81DL96

■Data logging function

Logs programmable controller CPU device values at the specified data sampling interval.

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD81DL96	RD81DL96	
Continuous logging function	Continuously logs programmable controller CPU device values at the specified data sampling interval.	○	○	
Trigger logging function	Logs only the specified number of lines worth of programmable controller CPU device values before and after a trigger occurs (specified condition is established).	○	△	A function to count times and hours of a specified trigger that occurs between any two triggers is added.
Save function	Saves data logging target data to a CompactFlash card in the CSV format or binary format.	○	△	For the RD81DL96, use an SD card instead. The Unicode format is also supported.

■Event logging function

Monitors sampled device values from the programmable controller CPU and logs events that occur.

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD81DL96	RD81DL96	
Save function	Saves event logging target data to a CompactFlash card in the CSV format or binary format.	○	△	For the RD81DL96, use an SD card instead. The Unicode format is also supported.
E-mail notification function	Notifies of events by e-mail to the specified address each time an event occurs.	○	○	

■Report function

Outputs the data sampled by the high speed data logger module as an Excel file.

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD81DL96	RD81DL96	
Layout function	Layouts the contents of the data logging file, the current values when the report is created, and the creation time on the Excel cells.	○	○	
Save function	Saves report files to a CompactFlash card.	○	△	For the RD81DL96, use an SD card instead.

■Other functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD81DL96	RD81DL96	
Time synchronization function	Synchronizes the time of the high speed data logger module with the time of the time server on the network or a programmable controller CPU.	○	△	For the RD81DL96, only the programmable controller CPU is synchronized. SNTP is not supported.
Auto logging function	Automatically starts the data logging function, event logging function, and report function when a CompactFlash card with the auto logging settings written to it in advance is inserted in a running high speed data logger module.	○	○	For the RD81DL96, use an SD card instead.
File access function	Downloads data logging files, event logging files, and report files from the CompactFlash card inserted in the high speed data logger module to a personal computer or deletes them.	○	○	For the RD81DL96, use an SD card instead.
Access authentication function	Performs authentication by user name and password to restrict access to the high speed data logger module.	○	○	
FTP transfer function	Automatically transfers saved logging files to the FTP server.	○	○	
File transfer function	Automatically transfers saved logging files to the file server.	×	○	
E-mail function	Automatically sends saved logging files and notifies of event occurrences.	○	○	
Recipe function	Executes the following operations using recipe files stored in a CompactFlash card. • Reads device values written on the recipe files to devices in the programmable controller CPU. • Writes device values in the programmable controller CPU to the recipe files.	○	○	

■Configuration tool functions

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD81DL96	RD81DL96	
Online start function	Starts the configuration tool online from the high speed data logger module connected to the personal computer. It is not necessary to install the configuration tool on the personal computer.	○	○	
Module search function	Searches for and connects to high speed data logger modules on the network.	○	○	
Direct connection function	Connects a personal computer to the high speed data logger module on a 1: 1 basis using an Ethernet cable. They can be easily connected without concerning the IP address.	○	○	
Module diagnostics function	Checks the operating status of the high speed data logger module and operate it. The error status of the high speed data logger module can be checked, and access to the CompactFlash card can be stopped or restarted.	○	○	
Global label/Device comment import function	Imports global labels and device comments created in the engineering tool to the settings of the high speed data logger module.	○	○	

■Loggingfile conversion tool function

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QD81DL96	RD81DL96	
File conversion function	Converts binary format logging files to CSV format logging files.	○	×	

Ethernet interface module

QJ71E71-100/B2/B5 and RJ71EN71

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71E71-B2 QJ71E71-B5 QJ71E71-100	RJ71EN71	
Connecting with MELSOFT products and a GOT	Connects an E71 to MELSOFT products (such as an engineering tool and MX Component), and a GOT.	○	○	
MC protocol communications	Reads/writes CPU module data from/to connected devices, or accesses CPU module files.	○	×	
Communications using SLMP	The connected device can read/write data from/to the buffer memory or device of an SLMP-compatible device connected to the shared network with the E71. In addition, the connected device can read/write data from/to the device of the CPU module where an E71 is mounted.	○	○	
Data communications using the predefined protocol	Sends/receives data with protocols appropriate to each connected device. The connected device side protocol can be easily selected, or created/edited from the Predefined Protocol Library.	○	○	

■Communications using a fixed buffer

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71E71-B2 QJ71E71-B5 QJ71E71-100	RJ71EN71	
Procedure exists/No procedure	Sends/receives any data between the CPU module and connected device using the fixed buffer of the E71.	○	○	
Pairing open	Pairing receiving/sending connections enables data communications with two connections by performing the open process for one port.	○	○	
Broadcast communications	Broadcast communications are enabled with all E71-mounted stations in the same Ethernet network that is connected to the E71 when "No Procedure" communications using a fixed buffer are performed using UDP/IP.	○	○	
Socket communications	Using dedicated instructions, any data can be exchanged with an external device connected by Ethernet over TCP/IP or UDP/IP.	×	○	This function is not available for the RJ71EN71 (Q-compatible Ethernet).
Communications using a random access buffer	Reads/writes data from multiple connected devices to the random access buffer of the E71.	○	○	
Router relay function	Communicates data through a router and a gateway. This function is not the function where the E71 operates as a router.	○	○	
Communications using an auto-open UDP port	Communications are enabled without the open/close processes after an E71-mounted station is started up.	○	○	
IP filter function	The IP address of the connected device to be passed or blocked is set in the buffer memory, and access from connected devices is restricted.	○	○	This function is not available for the RJ71EN71 (Q-compatible Ethernet).
Remote password	Prevents unauthorized access to the CPU module from a remote location.	○	○	
Hub connection status monitor function	The current connection status and transmission speed of the E71 and a hub and the number of times that the E71 detected disconnection can be checked.	○	○	

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71E71-B2 QJ71E71-B5 QJ71E71-100	RJ71EN71	
IP address in use detection function	If different stations in the same network use the same IP address, the address in use can be detected.	○	○	
Network configuration in a redundant system	A network can be configured in a redundant system.	○	○	
Alive check function	Checks whether a connected device is normally operating after a connection is established (open processing).	○	△	For the RJ71EN71, only KeepAlive is available for TCP/IP.
Module error collection function	Stores an error that has occurred in the E71 in the CPU module as error history. The history data can be stored on a memory with backup power feature; therefore error details are held even if the CPU module is reset or the system is powered off.	○	○	For the RJ71EN71, use the event history instead.
E-mail function	Sends/receives data using an e-mail. • Sends/receives data by a CPU module. • Sends data by the programmable controller CPU monitoring function (automatic notification function).	○	×	
CC-Link IE Controller Network, CC-Link IE Field Network, MELSECNET/H, MELSECNET/10 relay communications	Communicates data over multiple network systems where Ethernet and other networks exist together or network systems that relay multiple Ethernet networks.	○	○	
Communications using data link instructions	Reads/writes data of a CPU module in other stations over Ethernet using data link instructions.	○	○	
File transfer (FTP server) function	Reads/writes data in files from connected devices using an exclusive FTP command.	○	○	
Web function	Allows data to be read/written from/to a remote CPU module over the Internet using a commercially available web browser.	○	×	
Dedicated instructions	Dedicated instructions facilitate programming for using intelligent function modules.	○	△	For the RJ71EN71 (Ethernet), the ERRCLR instruction is replaced with the ERRCLEAR instruction. For the RJ71EN71 (Q-compatible Ethernet), the UINI instruction is available.
IP address change function	Changes the Ethernet-equipped module's IP address without changing the parameter settings.	○	○	For the RJ71EN71 (Ethernet), use the buffer memory areas instead. For the RJ71EN71 (Q-compatible Ethernet), the UINI instruction is available.

Serial communication module

QJ71C24(-R2)/QJ71C24N(-R2/R4) and RJ71C24(-R2/R4)

■Communications using MC protocol

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Communications with ASCII code	Communications with QnA compatible 2C/3C/4C frame (format 1/2/3/4) Communications with A compatible 1C frame (format 1/2/3/4)	○	○	
Communications with binary code	Communications with QnA compatible 4C frame (format 5)	○	○	
Read/write of device memory	Batch read/write in bit/word units Monitoring of device memory Batch read/write of multiple blocks Read/write by extension designation Accesses other stations via network system	○	○	
C24 buffer memory read/write	Reads/writes data from/to the buffer memory of the C24 in the own station or another station in the network.	○	○	
Intelligent function module buffer memory read/write	Reads/writes data from/to the buffer memory of the intelligent function module in the own station or another station in the network.	○	○	
Sequence program file read/write	Reads/writes files such as sequence programs and parameters stored in the programmable controller CPU.	○	○	
Programmable controller CPU monitoring function	Monitors the programmable controller CPU operating status and the data in the device memory.	○	○	
Status control of the programmable controller CPUs (such as remote RUN/STOP)	Performs remote RUN/STOP/PAUSE/latch clear/reset operations.	○	○	
Turning on/off input signals for the C24 from an external device (global function)	Turns on/off global signals (input signal: X1A/X1B) of the C24 connected to an external device via multidrop connection.	○	○	
Data transmission from a programmable controller CPU to an external device (on-demand function)	Requests data transmission from a programmable controller CPU to an external device.	○	○	

■Communication using non procedure protocol

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Data transmission/ reception in any format	Sends/receives any data between a programmable controller CPU and an external device using the message format and transmission control procedure specified by the user.	○	○	
Data transmission/ reception using user frames	Transmits/receives data by registering the corresponding user frames to the C24 in advance to match the data contents that are transmitted and received between the external device and the C24.	○	○	
Data reception by interrupt programs	Receives data using an interrupt program. Receiving data with an interrupt program expedites data reception by the programmable controller CPU.	○	○	
Programmable controller CPU monitoring function	Monitors the programmable controller CPU operating status and the data in the device memory.	○	○	
ASCII data transmission/ reception by ASCII-BIN conversion	Binary code data that is processed by the programmable controller CPU can be converted to ASCII code data for communication.	○	○	
Data transmission/ reception by specifying transparent code	Sends/receives one-byte data by using a transparent code for transmission control on the external device side as user data.	○	○	

■Communication using bidirectional protocol

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Data transmission/ reception in any format	Sends/receives any data using the message format and transmission control procedure for the C24 bidirectional protocol between external devices and programmable controller CPUs.	○	○	
Data reception by interrupt programs	Receives data using an interrupt program. Receiving data with an interrupt program expedites data reception by the programmable controller CPU.	○	○	
ASCII data transmission/ reception by ASCII-BIN conversion	Binary code data that is processed by the programmable controller CPU can be converted to ASCII code data for communication.	○	○	
Data transmission/ reception by specifying transparent code	Sends/receives one-byte data by using a transparent code for transmission control on the external device side as user data.	○	○	

■Communications using the pre-defined protocol

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Data transmission/ reception by a protocol selected from the predefined protocol library	Communicates data using an external device side protocol selected from the pre-defined protocol library.	○*1	○	
Data transmission/ reception by a created or edited protocol	Communicates data using a protocol created or edited in the external device.	○*1	○	

*1 This function is not available for the QJ71C24 and QJ71C24-R2.

■Communication via public network and others (modem function)

The pager receiver setting is not available for the RJ71C24.

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Communication with MC protocol/non procedure protocol/bidirectional protocol	Communicates with an external device in a remote location via a modem.	○	○	
Programmable controller access from the engineering tool	Accesses a programmable controller CPU in a remote location from the engineering tool.	○	○	

■Transmission control

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
DC code control (including Xon/Xoff control)	Sends/receives the DC1 and DC3 code data, and notifies the external device of whether or not data can be received. Encloses the user data with DC2 and DC4 code data, and notifies the external device of the valid transmission data range.	○	○	
DTR/DSR control	Notifies the external device of whether or not data communication can be performed using the ER (DTR) and DR (DSR) signals.	○	○	

■Other

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Independent/linked operation of each interface	Sets whether to use each of two interfaces for independent data communication or to use the two for linked data communication.	○	○	
Monitoring/testing of initial settings and setting values with utility software	The initial setting and monitor setting of the C24by using dedicated screens without having to consider the I/O signals and buffer memory areas.	○	○	
Supporting multiple CPU system	The multiple CPU system is supported.	○	○	
Remote password check	Allows the C24 to execute the remote password check set in the CPU when there is communication from the external device to the C24 using MC protocol or the programmable controller is accessed using the engineering tool.	○	○	
Echo back enable/disable setting for RS-422/485 interface	Specifies whether to receive or not (discard) the returned data sent to RDA and RDB of the own station when data is sent through RS-485 (2-wire type).	○*1 (CH2 only)	○	For the RJ71C24, this function can be used on both CH1 and CH2.

*1 This function is not available for the QJ71C24 and QJ71C24-R2.

■Debugging support function

○: Compatible/function available △: Partly changed ×: Incompatible/function not available —: Not applicable

Item	Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
		QJ71C24 QJ71C24-R2 QJ71C24N QJ71C24N-R2 QJ71C24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Circuit trace function	Traces the transmitted/received data and communication control signal between the C24 and external devices.	○	○	
Protocol execution log storage function	Checks the detailed execution status and results of the predefined protocol for each channel.	○*1	○	

*1 This function is not available for the QJ71C24 and QJ71C24-R2.

10.4 Precautions for Information Module Migration

MES interface module

Supported software packages

For MES interface modules, settings other than the parameter setting, which is set in an engineering tool (such as GX Works2 and GX Works3), need to be set in the dedicated software packages.

Software package			QJ71MES96(N)	RD81MES96N
MX MESInterface-R	SW1DND-RMESIF-J SW1DND-RMESIF-E	MES Interface Function Configuration Tool	—	Version 1.10L or later
		DB Connection Service DB Connection Service Setting Tool	Version 1.01B or later	Version 1.00A or later
MX MESInterface	SW1DNC-MESIF-J SW1DNC-MESIF-E	MES Interface Function Configuration Tool	Version 1.00A or later	—
		DB Connection Service DB Connection Service Setting Tool	Version 1.00A or later	Version 1.14Q or later

I/O signals

The layout of I/O signals differs between the MELSEC-Q series and the MELSEC iQ-R series.
If I/O signals are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Functions

The following functions differ between the MELSEC-Q series and the MELSEC iQ-R series.

No.	Item	MELSEC-Q series	MELSEC iQ-R series
1	Time synchronization	CPU module, SNTP server	CPU module*1
2	Statistical processing	Statistical processing	Not supported

*1 Time can be synchronized with that of the SNTP server by using the time synchronization setting function (SNTP client) of the CPU module.

Project file conversion tool

Project File Conversion Tool converts the settings for MELSEC-Q series MES interface module (project) to the required settings to operate MELSEC iQ-R series MES interface module.
For details on the operation method, refer to the following.
MELSEC iQ-R MES Interface Module User's Manual (Application)

High speed data logger module

Supported software packages

The following table lists the supported versions of main software packages related to high speed data logger modules.

Software package			QD81DL96	RD81DL96
GX LogViewer	SW1DNN-VIEWER-M		Version 1.00A or later	Version 1.54G or later
MELSEC iQ-R High Speed Data Logger Module Tool	SW1DNN-RDLUTL-J SW1DNN-RDLUTL-E	MELSEC iQ-R High Speed Data Logger Module Configuration Tool	—	Version 1.00A or later
High Speed Data Logger Module Tool	SW1DNN-DLUTL-J SW1DNN-DLUTL-E	High Speed Data Logger Module Configuration Tool	Version 1.00A or later	—
		Logging File Conversion Tool	Version 1.07H or later	—*1

*1 Use the logging file conversion function of GX LogViewer (version 1.54G or later) in MELSEC iQ-R series.

Dedicated instructions

There is no difference between the MELSEC-Q series and the MELSEC iQ-R series.

I/O signals

The layout of I/O signals differs between the MELSEC-Q series and the MELSEC iQ-R series.

If I/O signals are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Functions

The following functions differ between the MELSEC-Q series and the MELSEC iQ-R series.

No.	Item	MELSEC-Q series	MELSEC iQ-R series
1	Time synchronization	CPU module, SNTP server	CPU module*1
2	E-mail notification (Event logging)	Binary file, CSV file	CSV file
3	High speed data sampling setting	Batch mode, Split mode	Not supported (It is performed in the batch mode.)

*1 Time can be synchronized with that of the SNTP server by using the time synchronization setting function (SNTP client) of the CPU module.

Ethernet interface module

Dedicated instructions

■ZP.OPEN

To perform open processing by using the control data, if the external device is specified with the MAC address, change the MAC address to the IP address for the MELSEC iQ-R series.

■ZP.MRECV/ZP.MSEND

This function is not available for the MELSEC iQ-R series.

■ZP.ERRCLR

It is changed to "ZP.ERRCLEAR" in the MELSEC iQ-R series.

SLMP (MC protocol) communication setting

Select "SLMP Connection Module" for the MELSEC iQ-R series.

Random access buffer communication setting

Select the connection target module, and then select "Random Access Buffer" in "Communication Method" for the MELSEC iQ-R series.

Broadcast setting

Select the connection target module, and then select "Broadcast Send" or "Broadcast Receive" in "Communication Method" for the MELSEC iQ-R series.

Unused connection setting

Set "MELSOFT Connection Module" in the unused connection number for the MELSEC iQ-R series.

TCP/IP connection module setting

Setting the connected device automatically determines the protocol in the MELSEC iQ-R series.

Alive check setting

For the MELSEC iQ-R series, set whether to perform an alive check in "External Device Configuration" for each connection. For the TCP/IP alive check, only the KeepAlive command can be used.

Online change setting

For the MELSEC iQ-R series, enable the online change function in "Enable/Disable Online Change" under "Own Node Settings" of "Basic Settings" when the SLMP communications are performed. When the FTP server function is used, enable the function in "Allow Online Change" under "FTP Server Settings" of "Application Settings".

Send frame setting

Only "Ethernet (V2.0)" frame can be used for the MELSEC iQ-R series. "IEEE802.3" frame can be used for received data only.

Gateway parameter settings

Set "Subnet Mask" or "Default Gateway" under "Own Node Settings" of "Basic Settings" and set "Gateway Information" under "Gateway Parameter Settings" of "Application Settings" for the MELSEC iQ-R series.

Names of some parameter setting items have been changed for the MELSEC iQ-R series.

- "Subnet Mask Pattern" → "Subnet Mask"
- "Default Router IP Address" → "Default Gateway"
- "Router Information" → "Gateway Information"
- "Router IP Address" → "Gateway IP Address"

Interrupt setting

Names of some parameter setting items have been changed for the MELSEC iQ-R series.

- "RECVS Instruction" → "SEND Instruction Data Reception"
- "Fixed Buffer" → "Reception Connection"

I/O signals and buffer memory areas

The layouts of I/O signals and buffer memory areas differ between the MELSEC-Q series and the MELSEC iQ-R series.

If I/O signals and buffer memory areas are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Serial communication module

Dedicated instructions

There is no difference between the MELSEC-Q series and the MELSEC iQ-R series.

Send area and receive area in the refresh setting

In MELSEC iQ-R series, the range of the send area and the receive area cannot be specified in the refresh setting. All the send and receive areas listed below are refreshed.

- Send area (CH1): Buffer memory address 1024 to 1535 (400H to 5FFH)
- Receive area (CH1): Buffer memory address 1536 to 2047 (600H to 7FFH)
- Send area (CH2): Buffer memory address 2048 to 2559 (800H to 9FFH)
- Receive area (CH2): Buffer memory address 2560 to 3071 (A00H to BFFH)

Writing parameters

For MELSEC iQ-R series modules, parameters can be written to the CPU module as well as the serial communication module. This enables the CPU module to control parameters centrally, and thus process of changing a module for maintenance becomes easier.

The module parameters and module extension parameters stored in the CPU module are reflected to the serial communication module when the system is powered on, the CPU module is reset, or the operating status of the CPU module is changed from STOP to RUN.

I/O signals

The layout of I/O signals differs between the MELSEC-Q series and the MELSEC iQ-R series.

If I/O signals are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Buffer memory

The layout of buffer memory areas differs between the MELSEC-Q series and the MELSEC iQ-R series.

If buffer memory areas are used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

Point

For details on these precautions, refer to the following.

📖 MELSEC iQ-R Module Configuration Manual
📖 MELSEC iQ-R MES Interface Module User's Manual (Startup)
📖 MELSEC iQ-R MES Interface Module User's Manual (Application)
📖 MELSEC iQ-R High Speed Data Logger Module User's Manual (Startup)
📖 MELSEC iQ-R High Speed Data Logger Module User's Manual (Application)
📖 MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)
📖 MELSEC iQ-R Ethernet User's Manual (Application)
📖 MELSEC iQ-R Serial Communication Module User's Manual (Startup)
📖 MELSEC iQ-R Serial Communication Module User's Manual (Application)

11 PROJECT MIGRATION

Use GX Works3 to migrate projects from the MELSEC-Q series system to the MELSEC iQ-R series system.

11.1 Project Migration Procedure

Projects stored in the QCPU

This section describes the procedure for migrating projects stored in the QCPU.

Flow of migration of projects stored in the QCPU

Perform the following steps 1 to 7 to migrate projects stored in the QCPU.

■Step 1: Reading a project stored in the QCPU (operation with GX Works2)

Read a project stored in the QCPU. Select [Read from PLC] of GX Works2 to read a project.

☞ Page 396 Step 1: Reading a project stored in the QCPU (operation with GX Works2)

■Step 2: Confirmation before project migration (operation with GX Works2)

Check various parameters of the project before migration.

☞ Page 398 Step 2: Confirmation before project migration (operation with GX Works2)

■Step 3: PLC type conversion to the QnUCPU (operation with GX Works2)

Convert the PLC type of the project to the QnUCPU that can be read with GX Works3. Use [Change PLC Type] of GX Works2 to convert the project. If the PLC type of the project is the QnUCPU or QnPRHCPU, conversion in Step 3 is not required.

☞ Page 402 Step 3: PLC type conversion to the QnUCPU (operation with GX Works2)

■Step 4: Opening a GX Works2 project on GX Works3 (operation with GX Works3)

On GX Works3, read a GX Works2 formatted project. Select [Project] → [Open Other Format File] of GX Works3 to read a project.

☞ Page 405 Step 4: Opening a GX Works2 project on GX Works3 (operation with GX Works3)

■Step 5: Confirmation before writing the project (operation with GX Works3)

Check settings before project migration.

☞ Page 407 Step 5: Confirmation before writing the project (operation with GX Works3)

■Step 6: Writing the project to the RCPU (operation with GX Works3)

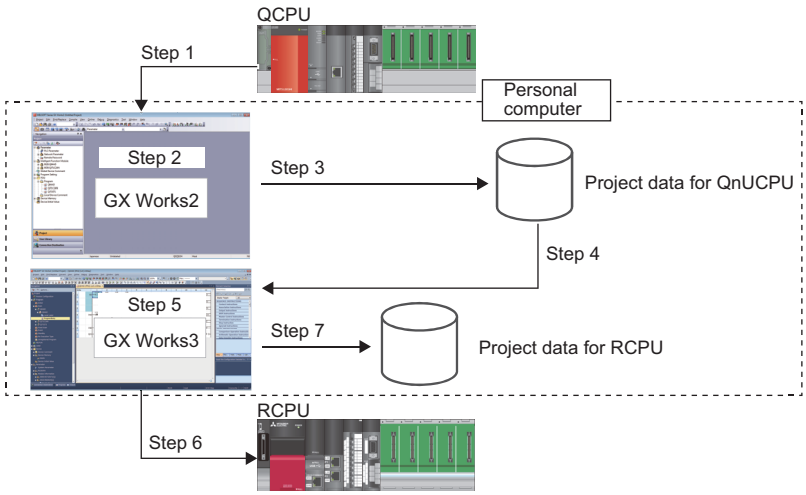
Write the project to the RCPU.

☞ Page 408 Step 6: Writing the project to the RCPU (operation with GX Works3)

■Step 7: Saving the RCPU project (operation with GX Works3)

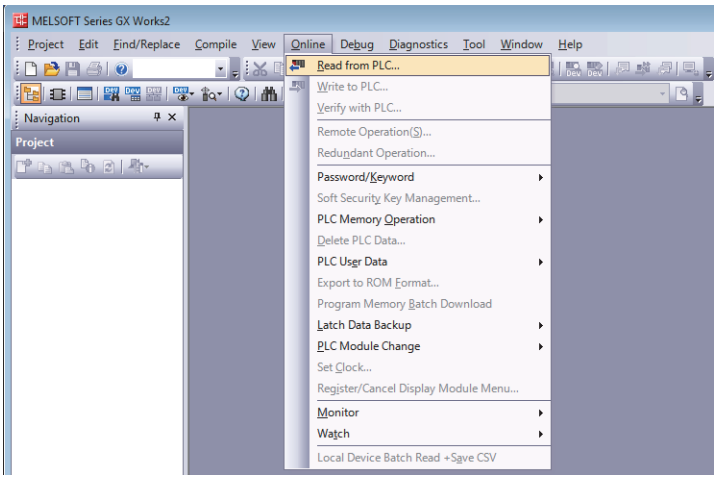
Save the RCPU project.

☞ Page 411 Step 7: Saving the RCPU project (operation with GX Works3)

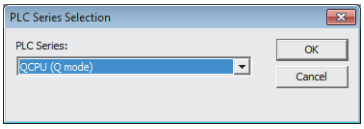


Step 1: Reading a project stored in the QCPU (operation with GX Works2)

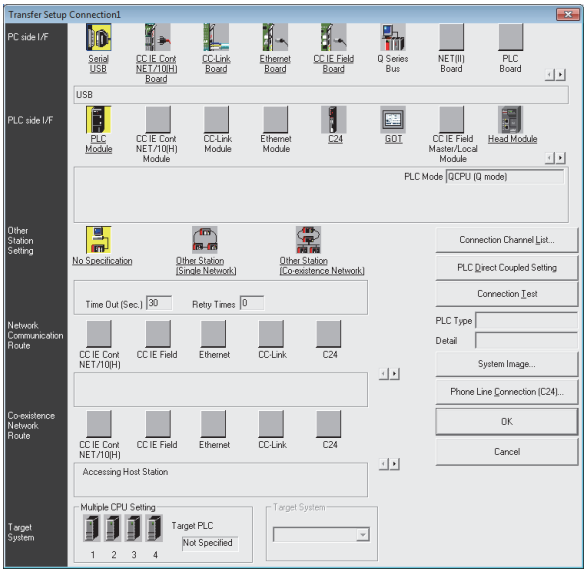
1. From [Online] menu, select [Read from PLC].



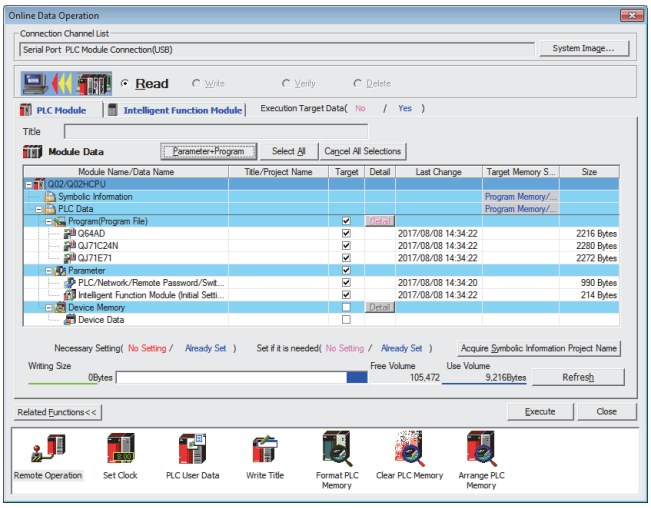
2. Select "QCPU (Q mode)" for "PLC Series".



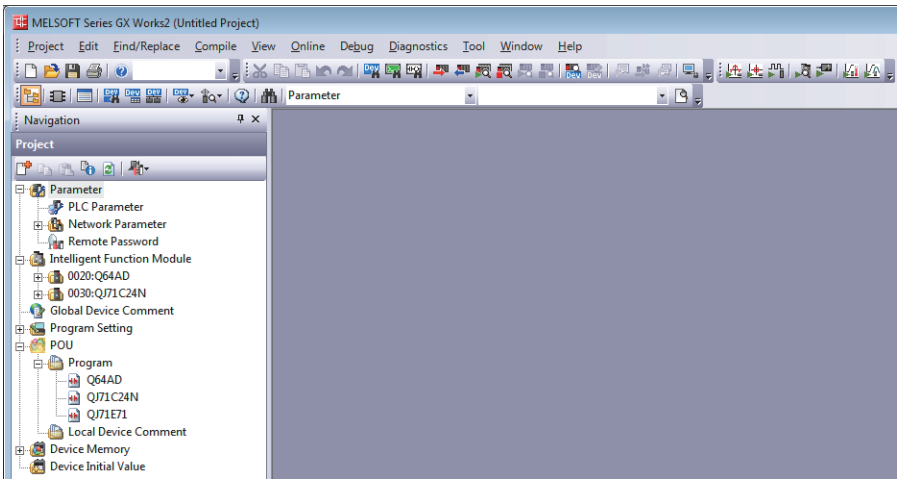
3. On the "Transfer Setup" window, configure the setting according to the programmable controller to be connected.
(In this example, "PLC Direct Coupled Setting" is selected.)
Click "Connection Test" to check that communications are possible.



4. On the "Online Data Operation" window, click "Parameter+Program", and then click "Execute".



5. Check that the programs and parameters are read.



Step 2: Confirmation before project migration (operation with GX Works2)

■Checking the I/O assignment setting

Check the I/O assignment setting of the project to be migrated before converting various parameters such as the network parameters and intelligent function module parameters to the GX Works3 format.

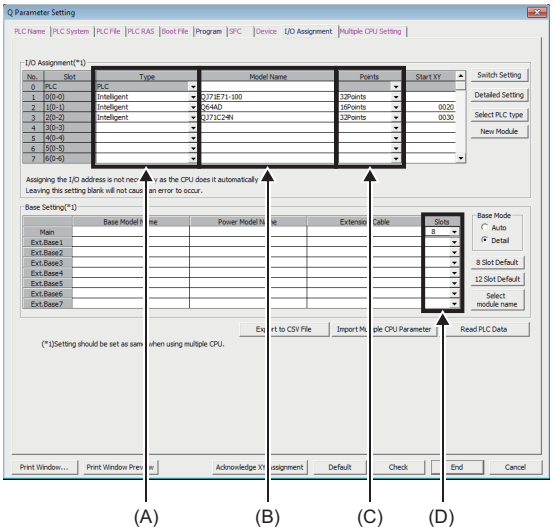
Check the following in the I/O assignment setting.

(A) "Type" in the "I/O Assignment" section

(B) "Model Name" in the "I/O Assignment" section

(C) "Points" in the "I/O Assignment" section

(D) "Slots" in the "Base Setting" section



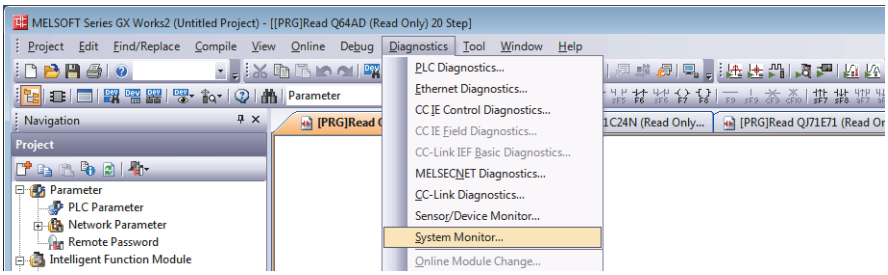
If the above (A) to (D) are left blank, set them according to your MELSEC-Q series system configuration.

Information of the above (A) to (D) can be checked on the GX Works2 system monitor.

When an I/O assignment setting is added, save the project.

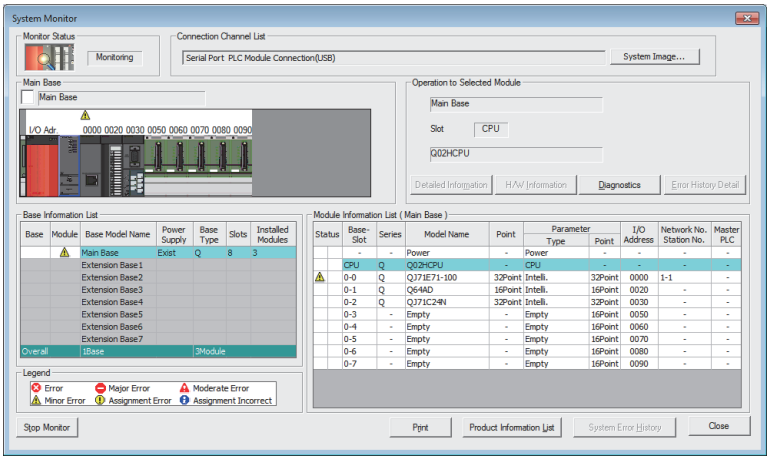
■Checking on the system monitor

1. From the [Diagnostics] menu, select [System Monitor].



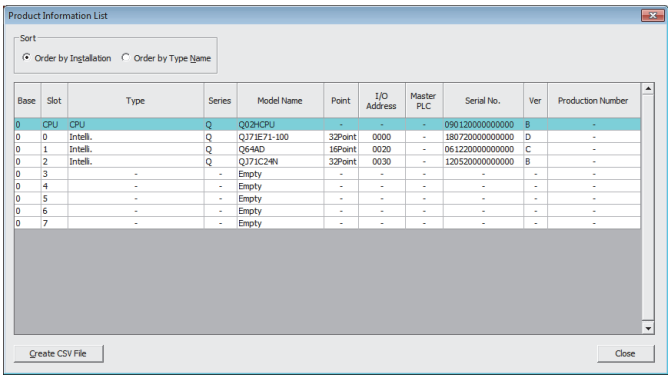
2. Click "Product Information List" on the "System Monitor" window.

The number of slots for each base is displayed in "Base Information List", which can be set in "Base Setting" in "I/O Assignment" on the "Q Parameter Setting" window.



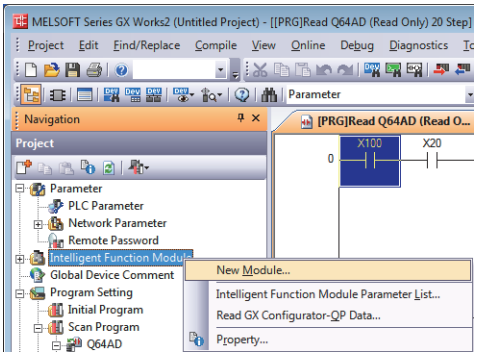
3. The "Type" and "Point" settings on the "Product Information List" window are reflected to the "I/O Assignment" section of "I/O Assignment" on the "Q Parameter Setting" window.

The product information list can be output as a CSV file. Click "Create CSV File", and name and save the list.
(Check the I/O assignment setting using the saved CSV file.)

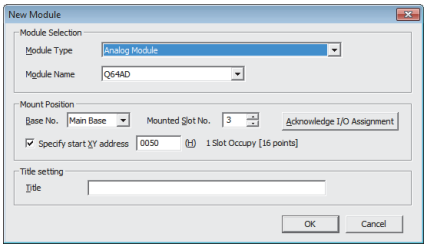


■Setting the intelligent function module parameters

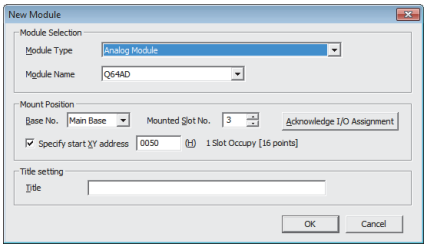
1. In the "Navigation" window, click "Project" → "Intelligent Function Module", and select "New Module" from the right-click menu.



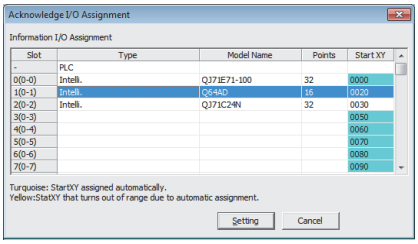
2. On the "New Module" window, select a module set in "PLC parameter"/"I/O Assignment".
(This example describes setting the intelligent function module parameters for the Q64AD set for slot 1.)



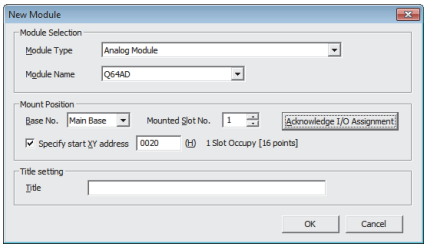
3. On the "New Module" window, click "Acknowledge I/O Assignment".



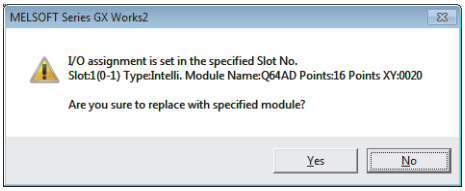
4. On the "Acknowledge I/O Assignment" window, select [Q64AD] set for slot 1, and click "Setting".



5. On the "New Module" window, check that "Mounted Slot No." has been changed, and click "OK".

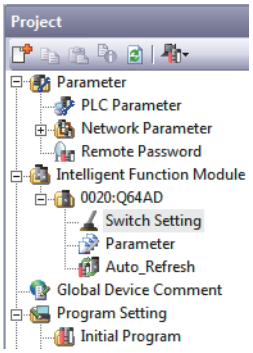


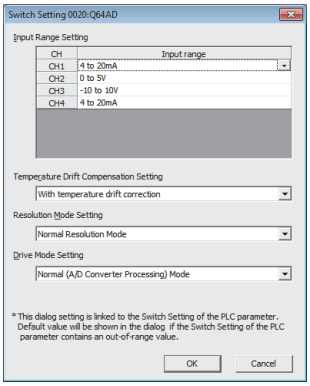
6. On the following window, click "Yes".



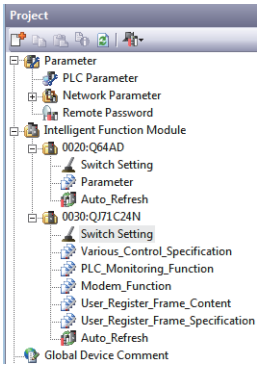
7. Create "0020: Q64AD" for "Intelligent Function Module".

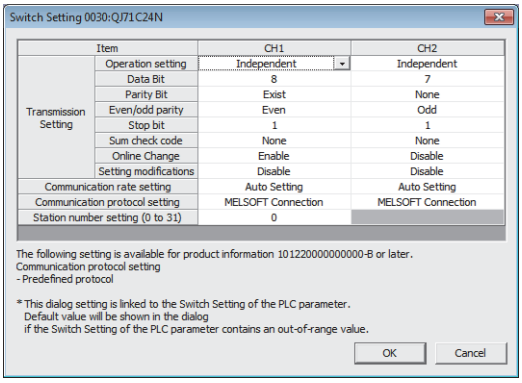
Double-click "Switch Setting" and check the setting.





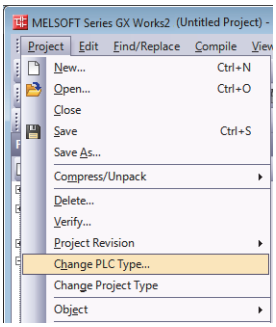
8. Set the other intelligent function module parameters using the same procedure.





Step 3: PLC type conversion to the QnUCPU (operation with GX Works2)

1. From the [Project] menu, select [Change PLC Type].



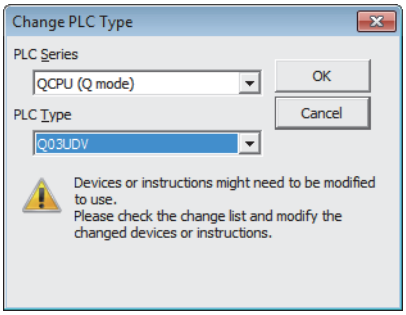
2. In "PLC Type" on the "Change PLC Type" window, select a recommended model as an alternative to the Qn(H)CPU or QnPHCPU.

The following table lists recommended models as alternatives to the Qn(H)CPU.

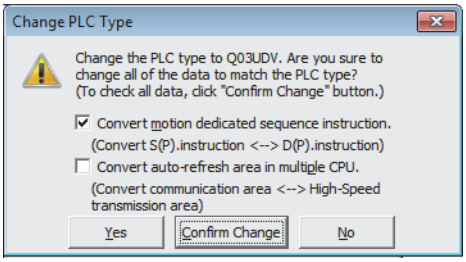
Existing model (Qn(H)CPU)	Recommended model (QnUCPU)
Q00JCPU	Q00UJCPU
Q00CPU	Q00UCPU
Q01CPU	Q01UCPU
Q02CPU/Q02HCPU	Q03UDVCPU
Q06HCPU	Q06UDVCPU
Q12HCPU	Q13UDVCPU
Q25HCPU	Q26UDVCPU

The following table lists recommended models as alternatives to the QnPHCPU.

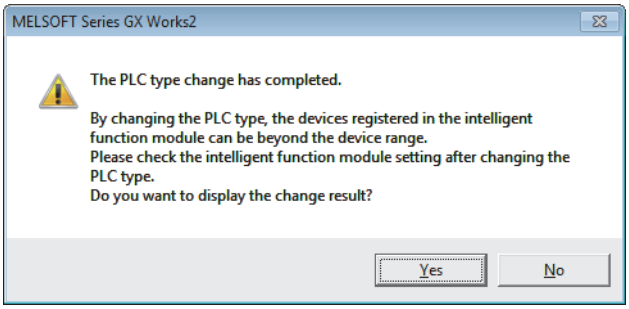
Existing model (QnPHCPU)	Recommended model (QnUCPU)
Q02PHCPU	Q04UDPVCPU
Q06PHCPU	Q06UDPVCPU
Q12PHCPU	Q13UDPVCPU
Q25PHCPU	Q26UDPVCPU



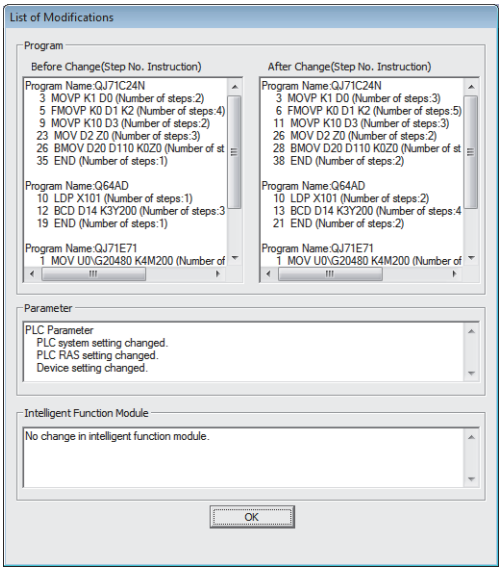
3. On the following window, select any relevant check boxes, and click "Yes".



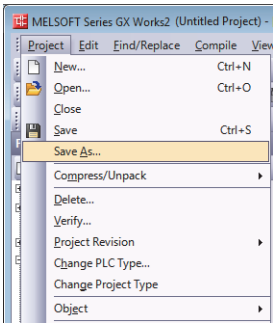
4. The following window is displayed when the PLC type change is complete.
Click "Yes" to display the change result, or click "No" not to display the result.



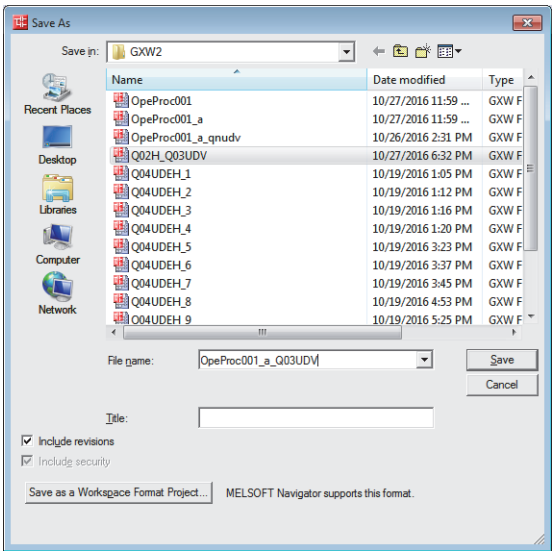
The following figure shows an example of change result.



5. From the [Project] menu, select [Save As].
(If there is any data not converted or complied, make sure to perform "Rebuild All" before saving the project.)

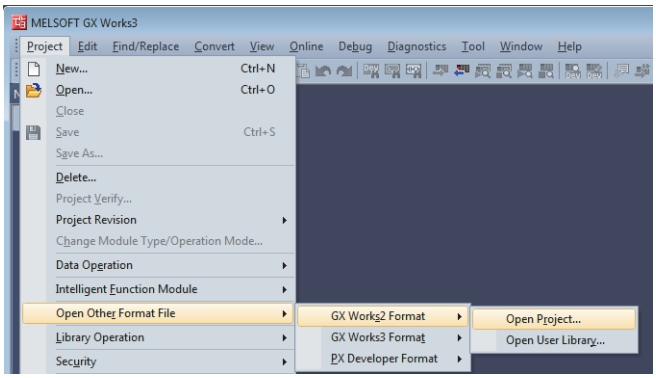


6. Set "File name" and click "Save".

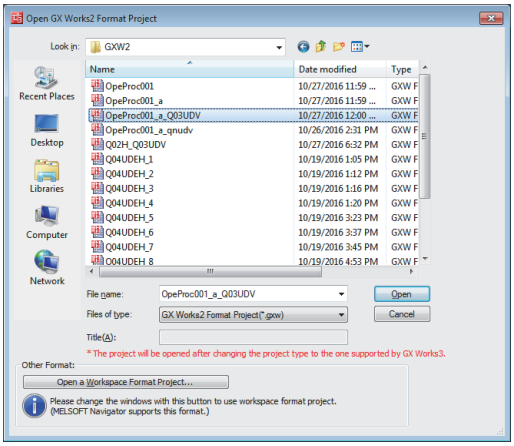


Step 4: Opening a GX Works2 project on GX Works3 (operation with GX Works3)

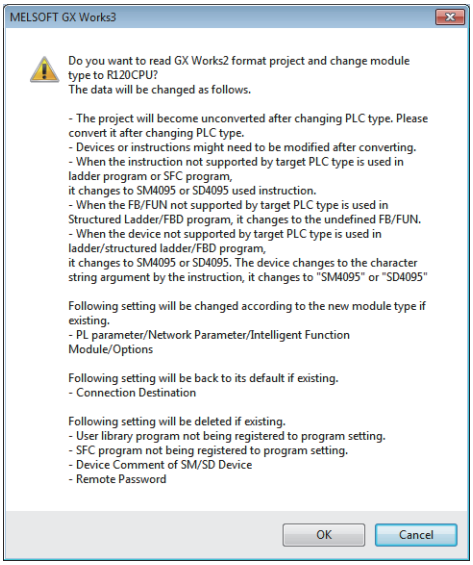
1. From the [Project] menu, select [Open Other Format File] → [GX Works2 Format] → [Open Project].



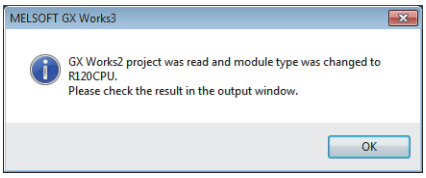
2. Select a project for which the PLC type is changed to the QnUCPU, and click "Open".



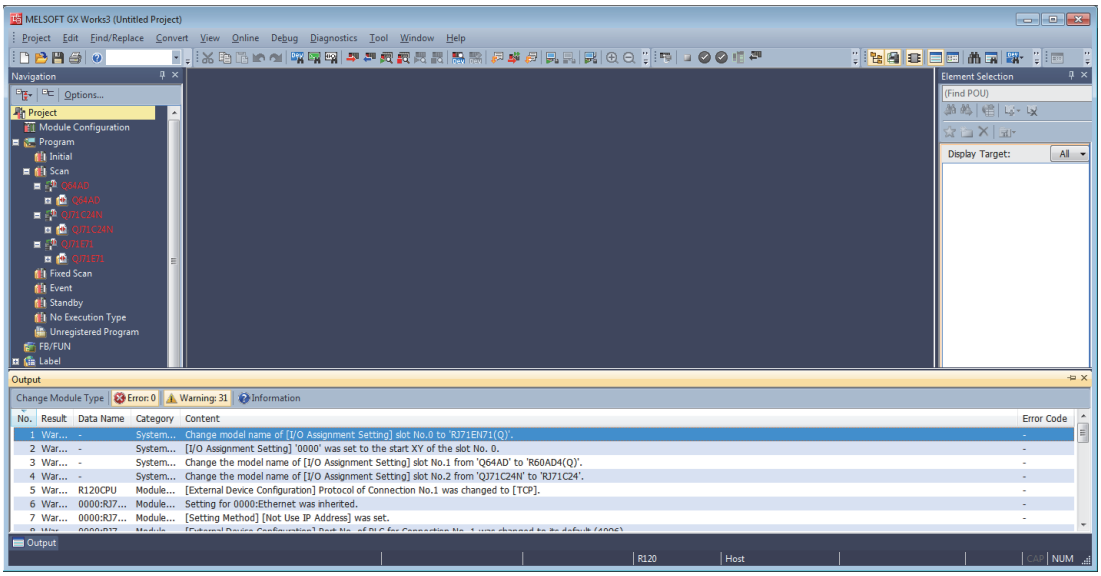
On the following window, click "OK".



3. The following window is displayed when reading is complete. Click "OK".



The model change result is displayed in the output window.

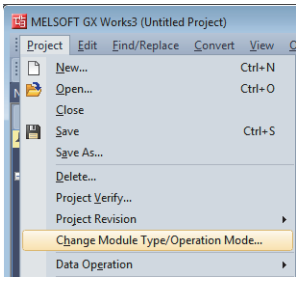


Step 5: Confirmation before writing the project (operation with GX Works3)

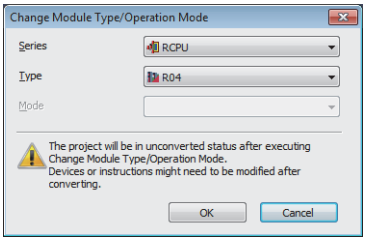
Project data of GX Works2 is changed to the R120CPU.

Before writing the project, rename the model to the one actually to be used.

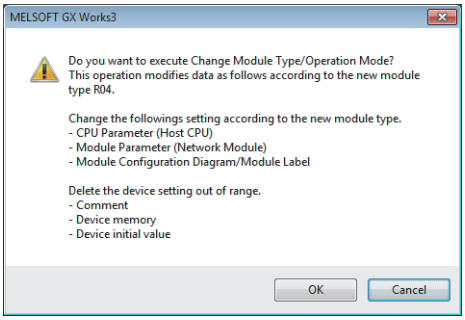
1. From the [Project] menu, select [Change Module Type/Operation Mode].



2. Select a model to be actually used, and click "OK".

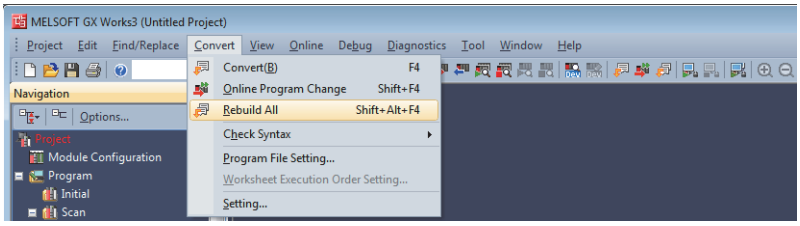


On the following window, click "OK".

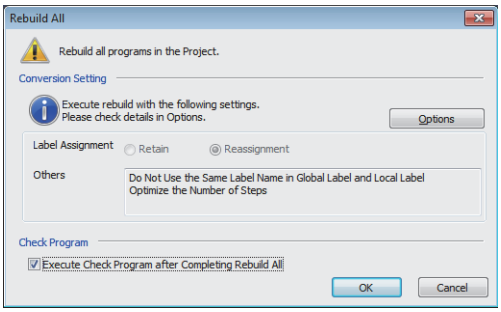


3. After the model is changed, convert programs.

From the [Convert] menu, select [Rebuild All].

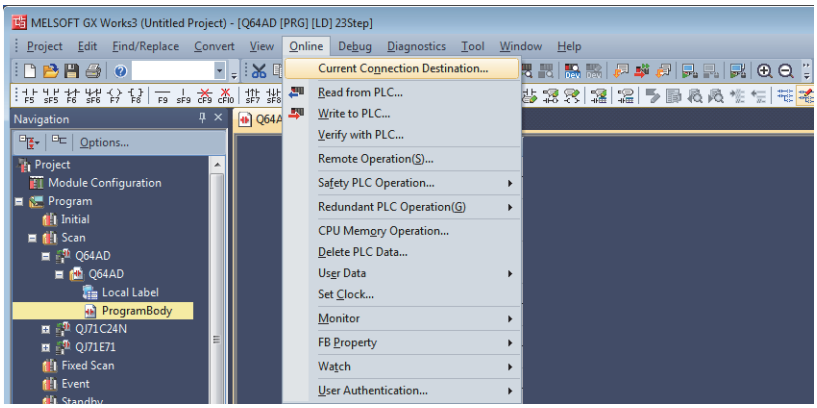


4. On the [Rebuild All] window, select the "Check Program" check box and click "OK".



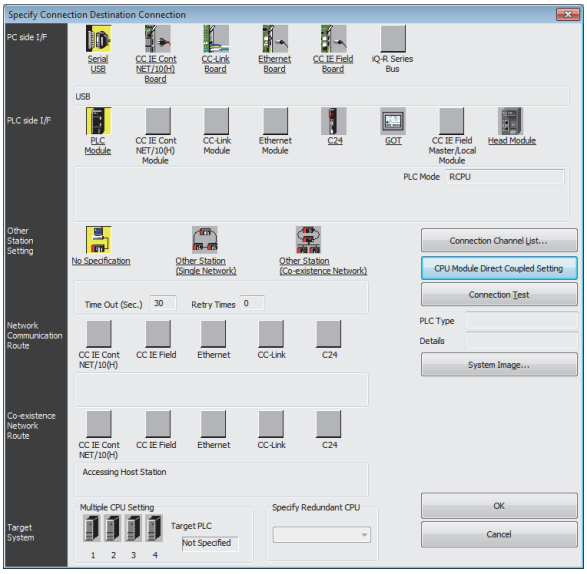
Step 6: Writing the project to the RCPU (operation with GX Works3)

1. From [Online] menu, select [Current Connection Destination].

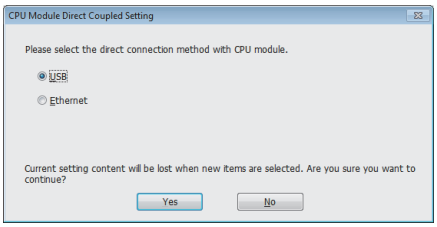


2. On the "Specify Connection Destination" window, configure the setting according to the programmable controller to be connected.

(In this example, "CPU Module Direct Coupled Setting" is selected.)

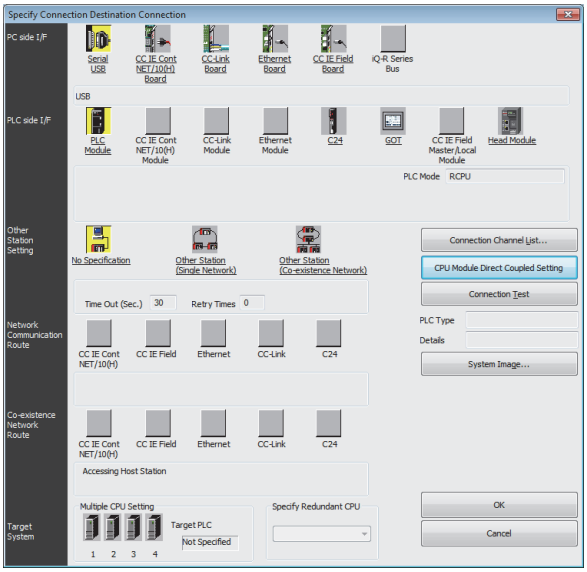


3. On the "CPU Module Direct Coupled Setting" window, select "USB" and click "Yes".

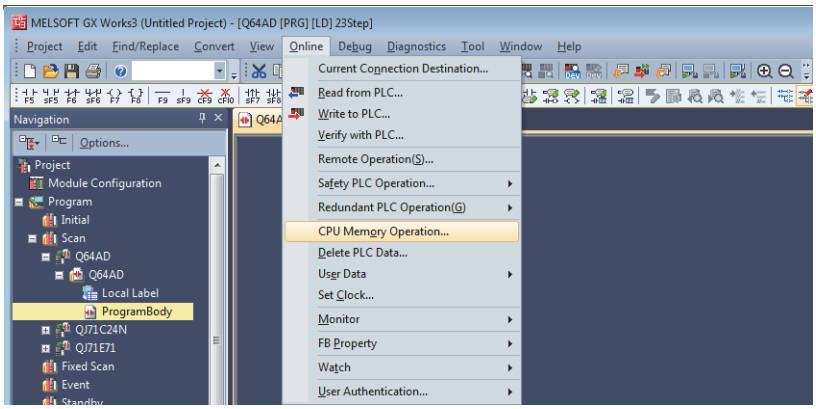


4. On the "Specify Connection Destination" window, click "Connection Test" to check that communications with the RCPU are possible.

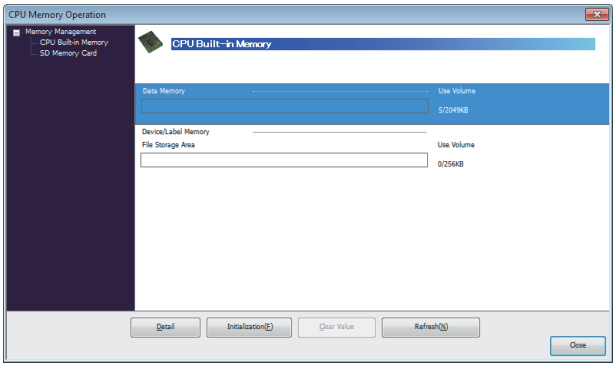
After confirming that communications are normal, click "OK".



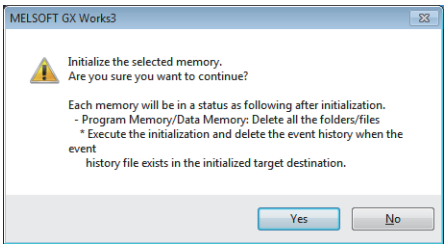
5. From [Online] menu, select [CPU Memory Operation].



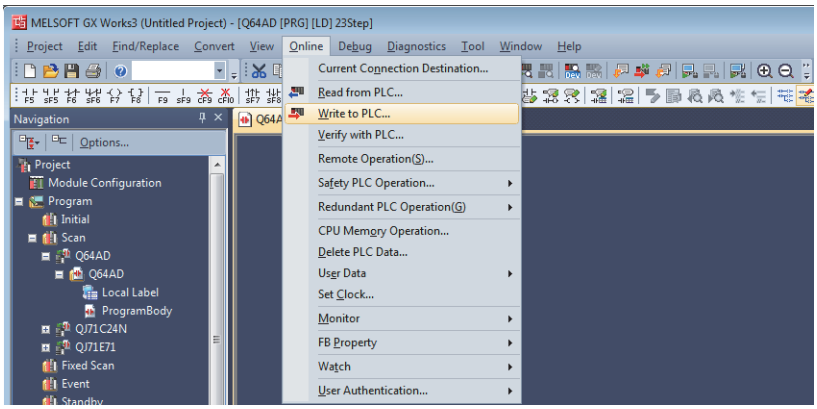
6. On the "CPU Memory Operation" window, select the "Data Memory" section and click "Initialization".



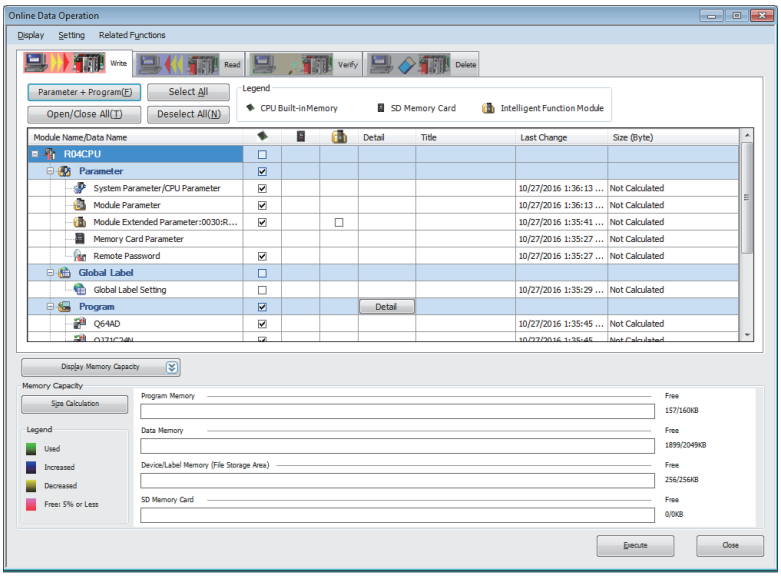
On the following window, click "Yes".



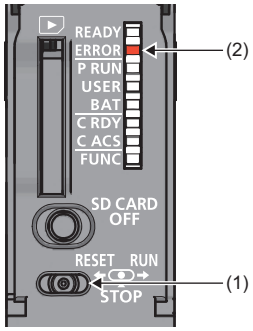
7. From [Online] menu, select [Write to PLC].



8. On the "Online Data Operation" window, click "Parameter + Program", and then click "Execute".



9. When writing to the programmable controller is complete, reset the RCPU.



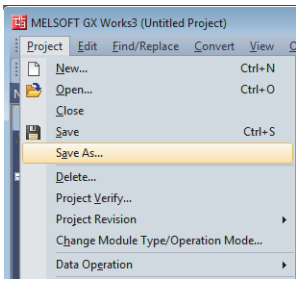
10. Set the RUN/STOP/RESET switch (1) to the RESET position for a second or longer.

11. Check that the ERROR LED (2) flashes and turns off.

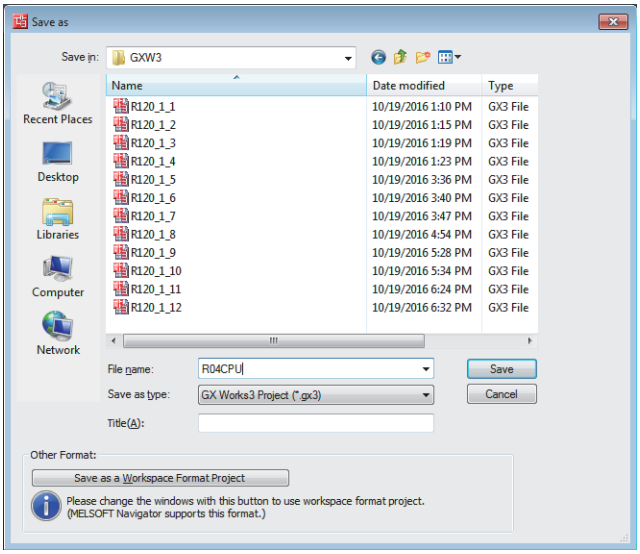
12. Set the switch back to the STOP position.

Step 7: Saving the RCPU project (operation with GX Works3)

1. From the [Project] menu, select [Save As].



2. Set "File name" and click "Save".



Point

For details on operations of each engineering tool, refer to the following.

GX Works3 Operating Manual

GX Works2 Version 1 Operating Manual (Common)

Projects stored in a personal computer

This section describes the procedure for migrating projects stored in a personal computer.

Flow of migration of projects stored in a personal computer

Perform the following steps 1 to 7 to migrate a project stored in a personal computer.

■Step 1: Reading a project stored in a personal computer (operation with GX Works2)

Read a project stored in a personal computer.

To read a GX Works2 formatted project, select [Project] → [Open] on GX Works2. To read a GX Developer formatted project, select [Project] → [Open Other Data] → [Open Other Project] on GX Works2.

☞ Page 413 Step 1: Reading a project stored in a personal computer (operation with GX Works2)

■Step 2: Confirmation before project migration (operation with GX Works2)

Check various parameters of the project before migration.

☞ Page 415 Step 2: Confirmation before project migration (operation with GX Works2)

■Step 3: PLC type conversion to the QnUCPU (operation with GX Works2)

Convert the PLC type of the project to the QnUCPU that can be read with GX Works3. Use [Change PLC Type] of GX Works2 to convert the project. If the PLC type of the project is the QnUCPU or QnPRHCPU, conversion in Step 3 is not required.

☞ Page 419 Step 3: PLC type conversion to the QnUCPU (operation with GX Works2)

■Step 4: Opening a GX Works2 project on GX Works3 (operation with GX Works3)

On GX Works3, read a GX Works2 formatted project. Select [Project] → [Open Other Format File] of GX Works3 to read a project.

☞ Page 422 Step 4: Opening a GX Works2 project on GX Works3 (operation with GX Works3)

■Step 5: Confirmation before writing the project (operation with GX Works3)

Check settings before project migration.

☞ Page 424 Step 5: Confirmation before writing the project (operation with GX Works3)

■Step 6: Writing the project to the RCPU (operation with GX Works3)

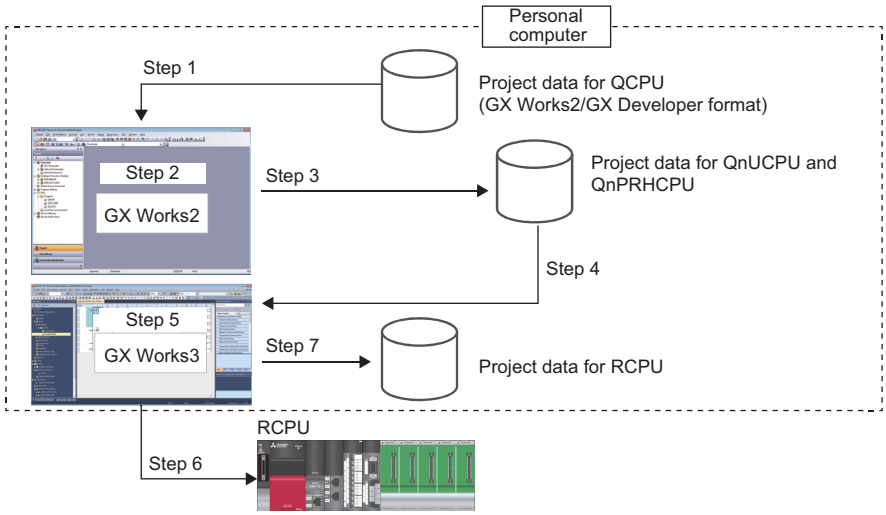
Write the project to the RCPU.

☞ Page 425 Step 6: Writing the project to the RCPU (operation with GX Works3)

■Step 7: Saving the RCPU project (operation with GX Works3)

Save the RCPU project.

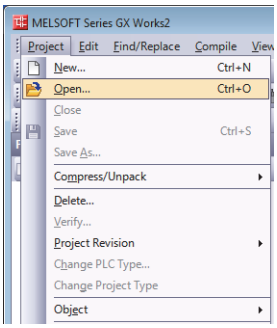
☞ Page 428 Step 7: Saving the RCPU project (operation with GX Works3)



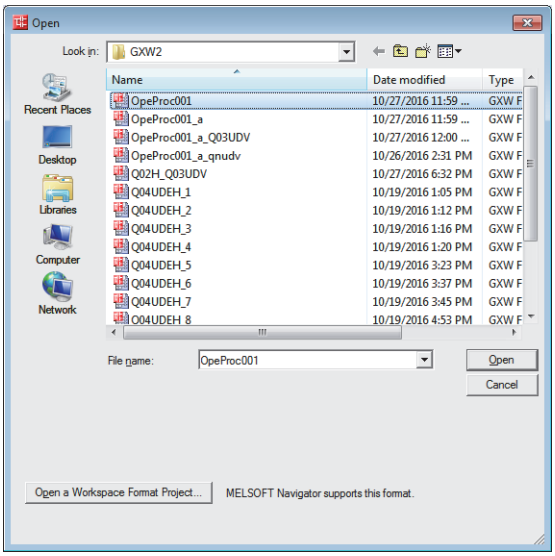
Step 1: Reading a project stored in a personal computer (operation with GX Works2)

■Reading a GX Works2 formatted project

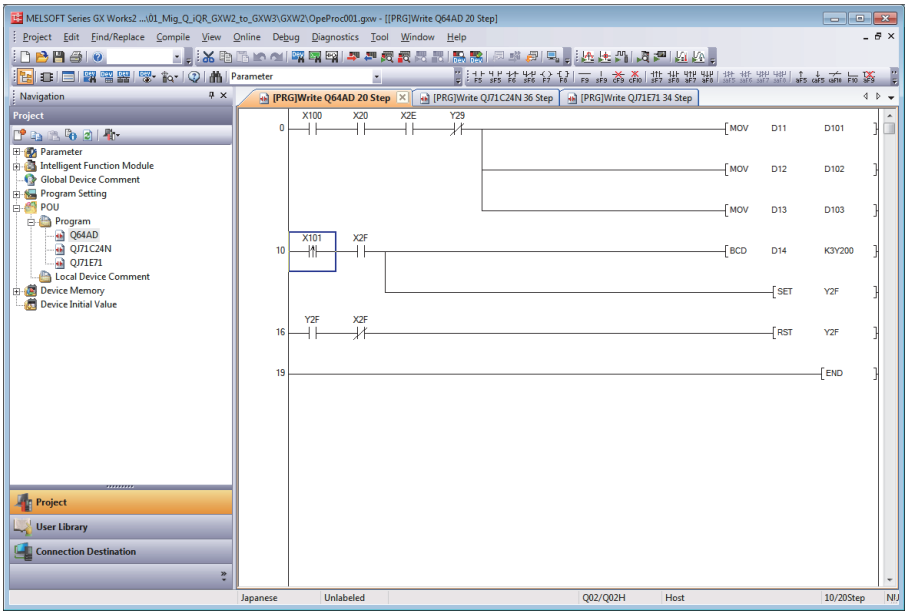
1. From the [Project] menu, select [Open].



2. Select a desired file, and click "Open".

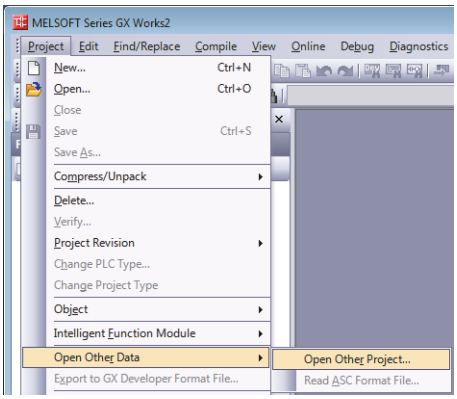


3. The project opens.

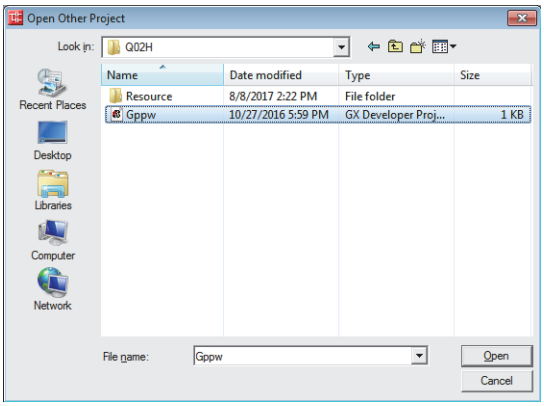


■Reading a GX Developer formatted project

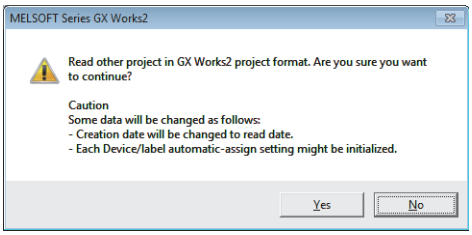
1. From the [Project] menu, select [Open Other Data] → [Open Other Project].



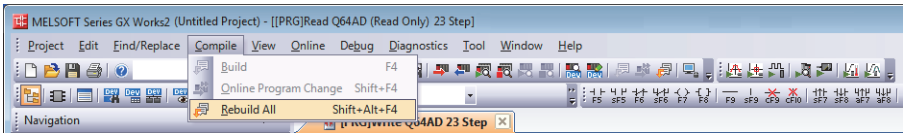
2. Select a desired GX Developer project, and click "Open".



3. On the following window, click "Yes".



4. From the [Compile] menu, select [Rebuild All].



Step 2: Confirmation before project migration (operation with GX Works2)

■Checking the I/O assignment setting

Check the I/O assignment setting of the project to be migrated before converting various parameters such as the network parameters and intelligent function module parameters to the GX Works3 format.

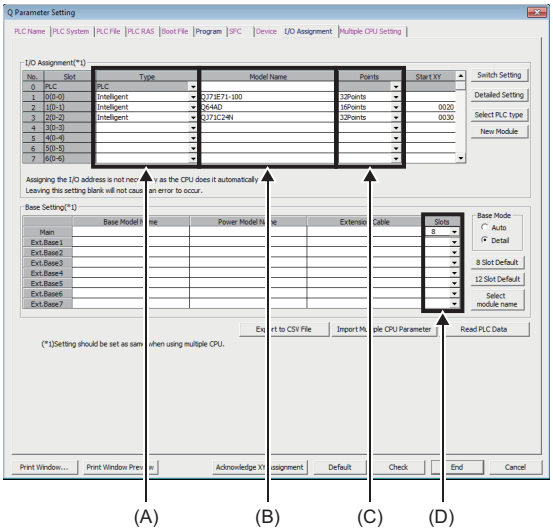
Check the following in the I/O assignment setting.

(A) "Type" in the "I/O Assignment" section

(B) "Model Name" in the "I/O Assignment" section

(C) "Points" in the "I/O Assignment" section

(D) "Slots" in the "Base Setting" section



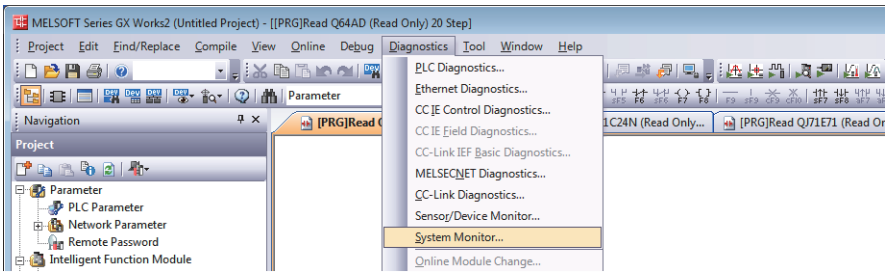
If the above (A) to (D) are left blank, set them according to your MELSEC-Q series system configuration.

Information of the above (A) to (D) can be checked on the GX Works2 system monitor.

When an I/O assignment setting is added, save the project.

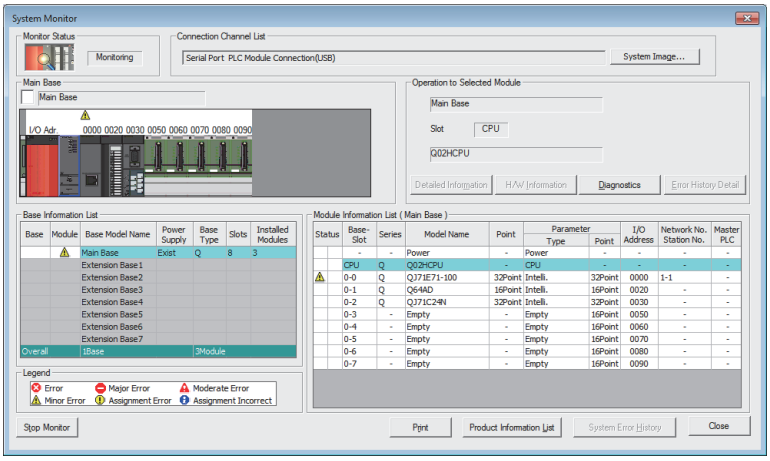
■Checking on the system monitor

1. From the [Diagnostics] menu, select [System Monitor].



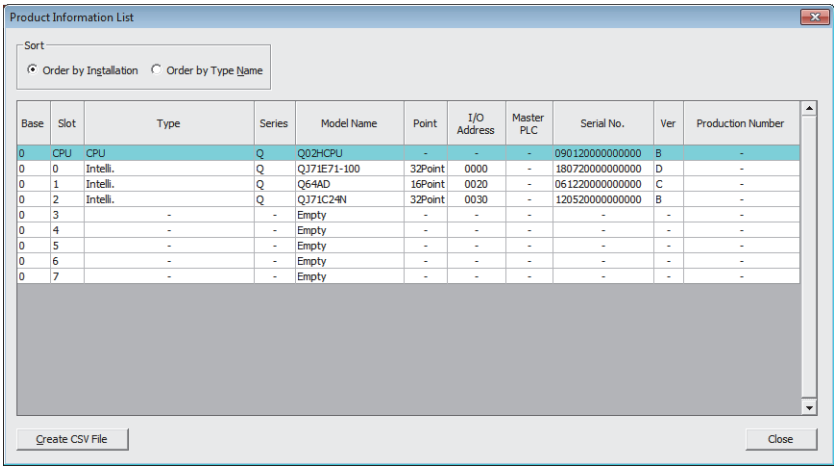
2. Click "Product Information List" on the "System Monitor" window.

The number of slots for each base is displayed in "Base Information List", which can be set in "Base Setting" in "I/O Assignment" on the "Q Parameter Setting" window.



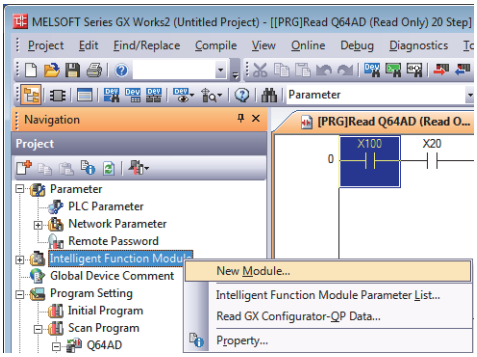
3. The "Type" and "Point" settings on the "Product Information List" window are reflected to the "I/O Assignment" section of "I/O Assignment" on the "Q Parameter Setting" window.

The product information list can be output as a CSV file. Click "Create CSV File", and name and save the list. (Check the I/O assignment setting using the saved CSV file.)



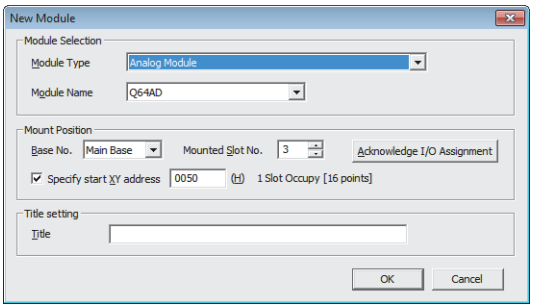
■Setting the intelligent function module parameters

1. In the "Navigation" window, click "Project" → "Intelligent Function Module", and select "New Module" from the right-click menu.

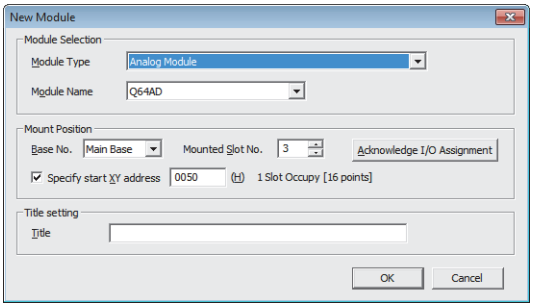


2. On the "New Module" window, select a module set in "PLC parameter"/"I/O Assignment".

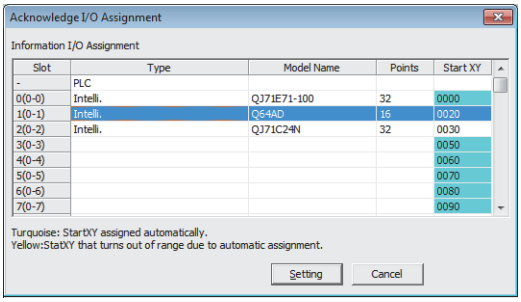
(This example describes setting the intelligent function module parameters for the Q64AD set for slot 1.)



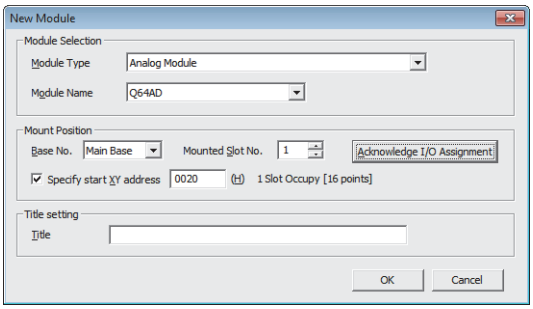
3. On the "New Module" window, click "Acknowledge I/O Assignment".



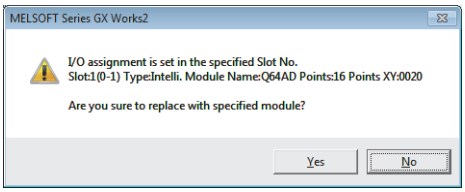
4. On the "Acknowledge I/O Assignment" window, select [Q64AD] set for slot 1, and click "Setting".



5. On the "New Module" window, check that "Mounted Slot No." has been changed, and click "OK".

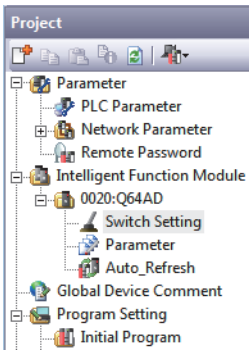


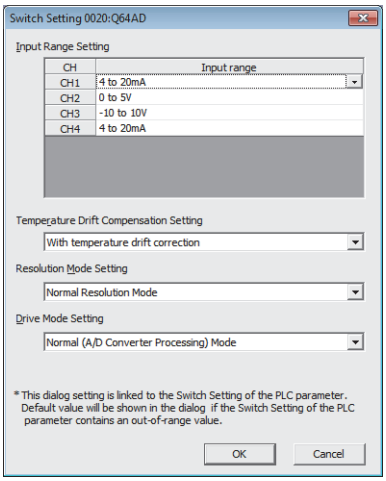
6. On the following window, click "Yes".



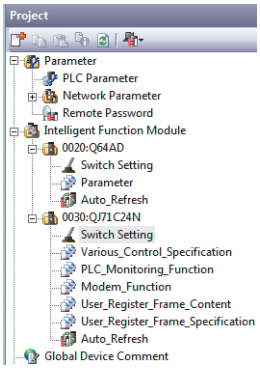
7. Create "0020: Q64AD" for "Intelligent Function Module".

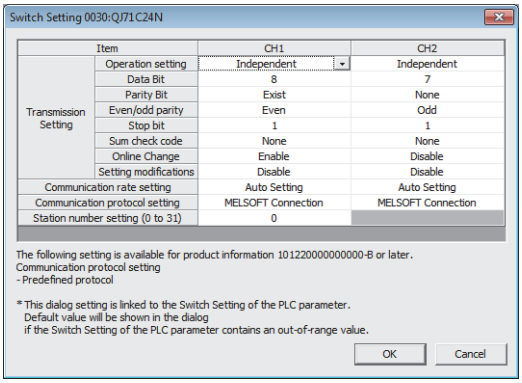
Double-click "Switch Setting" and check the setting.





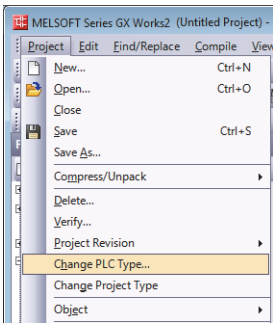
8. Set the other intelligent function module parameters using the same procedure.





Step 3: PLC type conversion to the QnUCPU (operation with GX Works2)

1. From the [Project] menu, select [Change PLC Type].



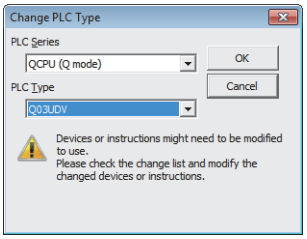
2. In "PLC Type" on the "Change PLC Type" window, select a recommended model as an alternative to the Qn(H)CPU or QnPHCPU.

The following table lists recommended models as alternatives to the Qn(H)CPU.

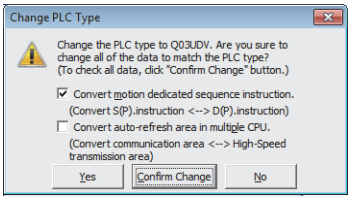
Existing model (Qn(H)CPU)	Recommended model (QnUCPU)
Q00JCPU	Q00UJCPU
Q00CPU	Q00UCPU
Q01CPU	Q01UCPU
Q02CPU/Q02HCPU	Q03UDVCPU
Q06HCPU	Q06UDVCPU
Q12HCPU	Q13UDVCPU
Q25HCPU	Q26UDVCPU

The following table lists recommended models as alternatives to the QnPHCPU.

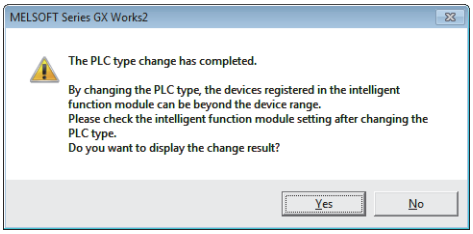
Existing model (QnPHCPU)	Recommended model (QnUCPU)
Q02PHCPU	Q04UDPVCPU
Q06PHCPU	Q06UDPVCPU
Q12PHCPU	Q13UDPVCPU
Q25PHCPU	Q26UDPVCPU



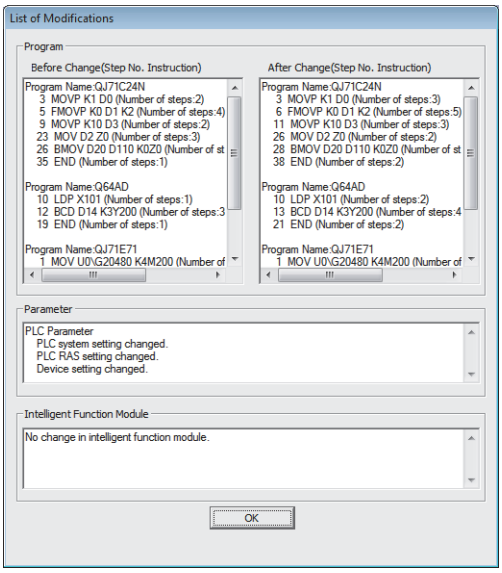
3. On the following window, select any relevant check boxes, and click "Yes".



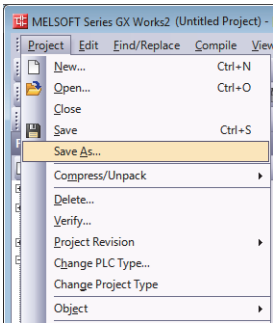
4. The following window is displayed when the PLC type change is complete.
Click "Yes" to display the change result, or click "No" not to display the result.



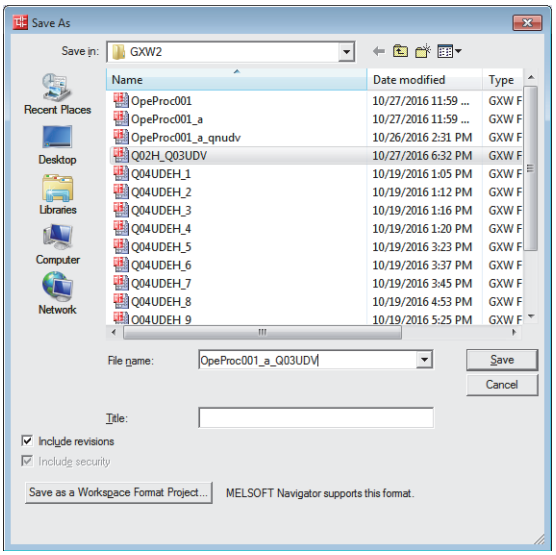
The following figure shows an example of change result.



5. From the [Project] menu, select [Save As].
(If there is any data not converted or complied, make sure to perform "Rebuild All" before saving the project.)

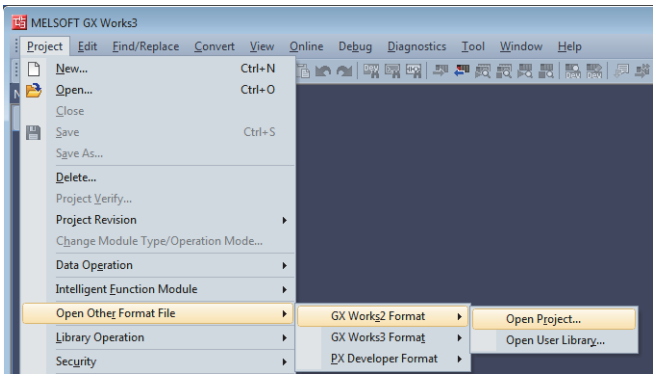


6. Set "File name" and click "Save".

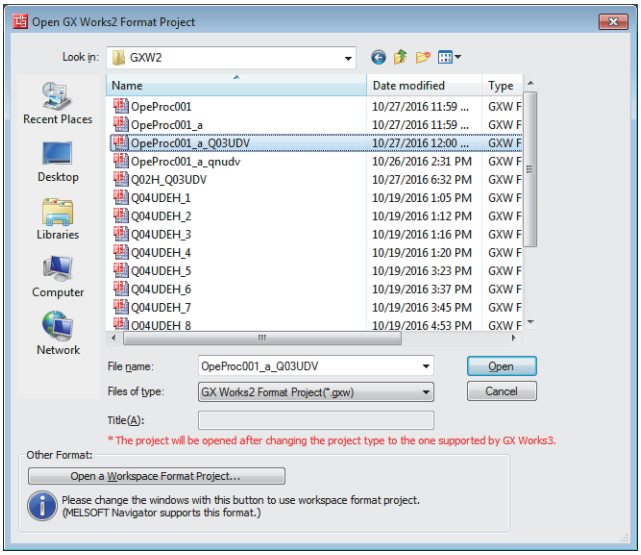


Step 4: Opening a GX Works2 project on GX Works3 (operation with GX Works3)

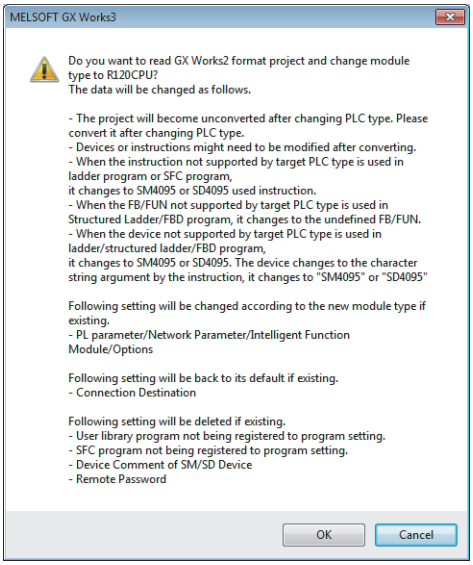
1. From the [Project] menu, select [Open Other Format File] → [GX Works2 Format] → [Open Project].



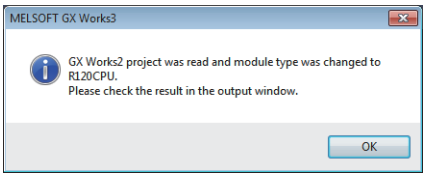
2. Select a project for which the PLC type is changed to the QnUCPU, and click "Open".



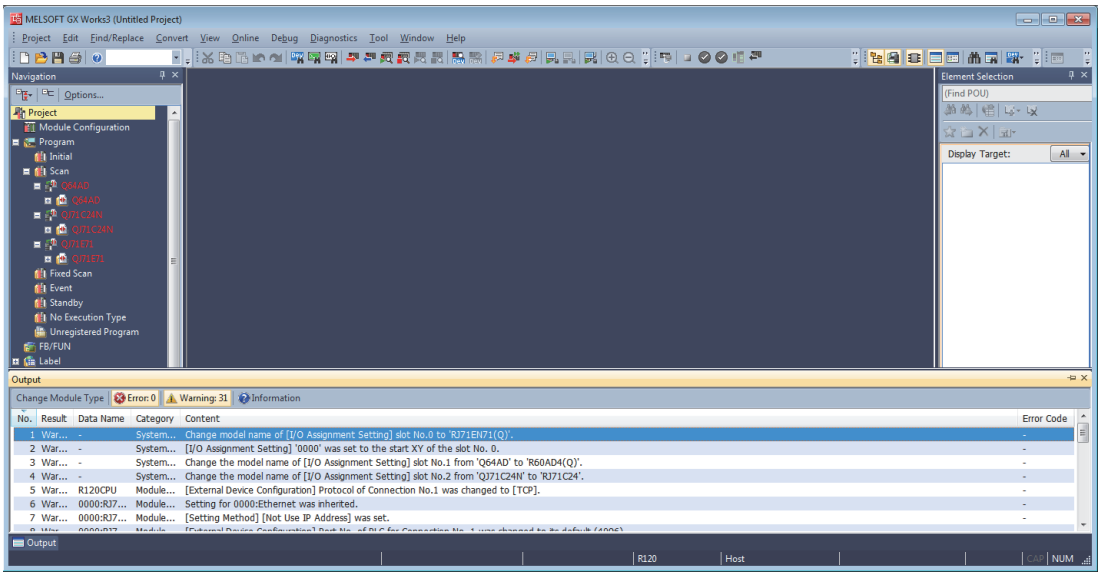
On the following window, click "OK".



3. The following window is displayed when reading is complete. Click "OK".



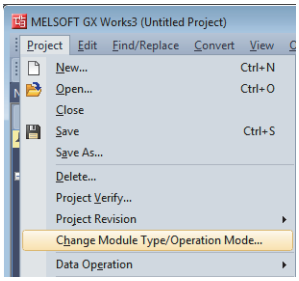
The model change result is displayed in the output window.



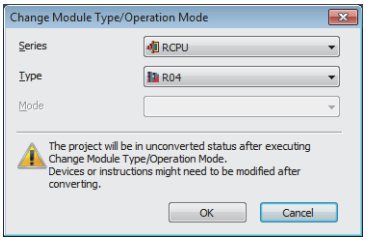
Step 5: Confirmation before writing the project (operation with GX Works3)

Project data of GX Works2 is changed to the R120CPU. (When the PLC type is the QnPRHCPU, changed to R120PCPU.)
Before writing the project, rename the model to the one actually to be used.

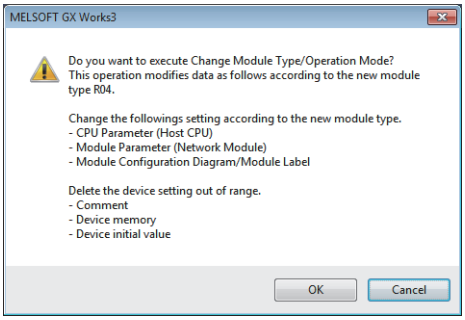
1. From the [Project] menu, select [Change Module Type/Operation Mode].



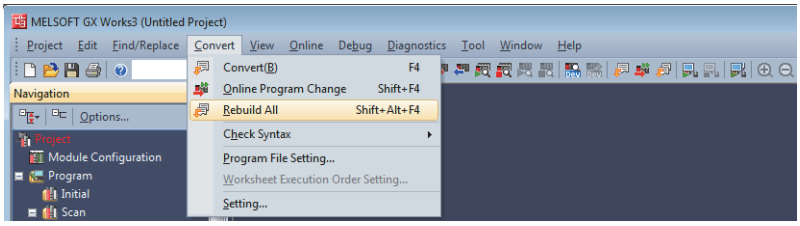
2. Select a model to be actually used, and click "OK".



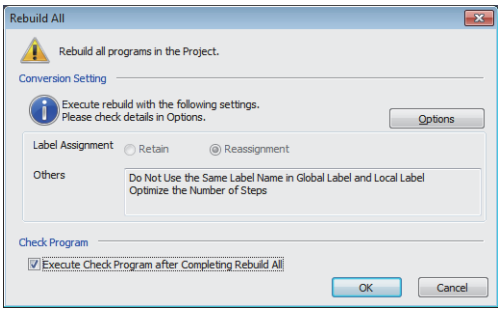
On the following window, click "OK".



3. After the model is changed, convert programs.
From the [Convert] menu, select [Rebuild All].

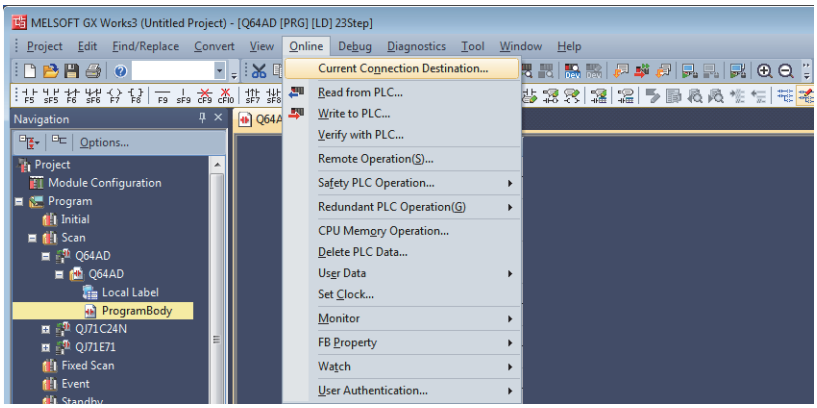


4. On the [Rebuild All] window, select the "Check Program" check box and click "OK".



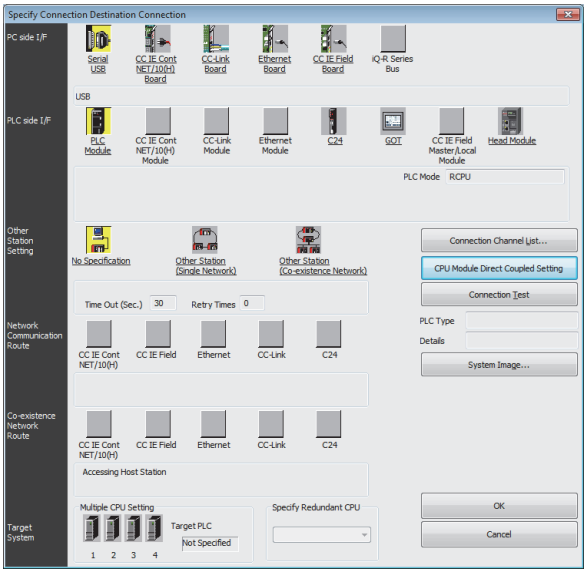
Step 6: Writing the project to the RCPU (operation with GX Works3)

1. From [Online] menu, select [Current Connection Destination].

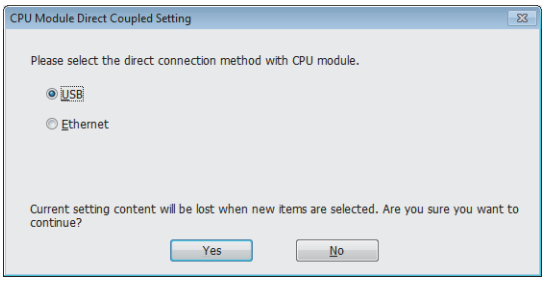


2. On the "Specify Connection Destination" window, configure the setting according to the programmable controller to be connected.

(In this example, "CPU Module Direct Coupled Setting" is selected.)

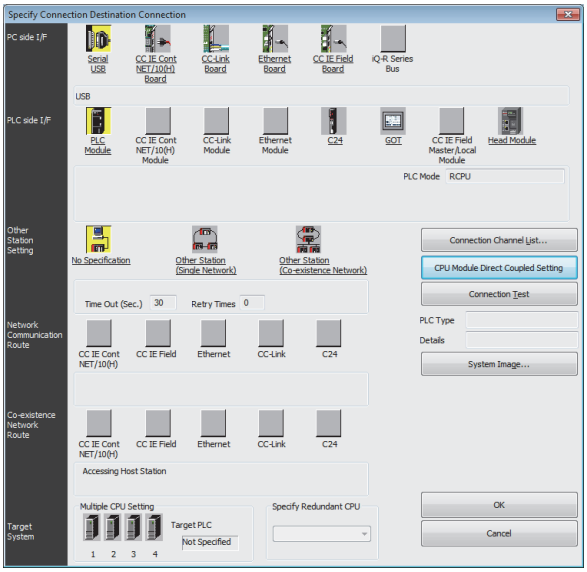


3. On the "CPU Module Direct Coupled Setting" window, select "USB" and click "Yes".

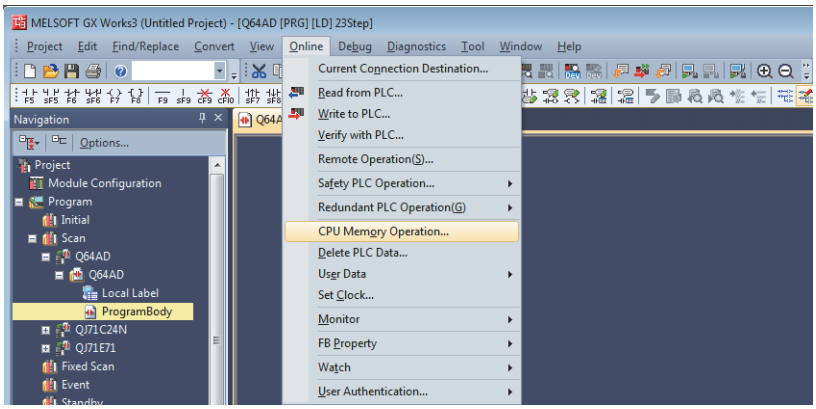


4. On the "Specify Connection Destination" window, click "Connection Test" to check that communications with the RCPU are possible.

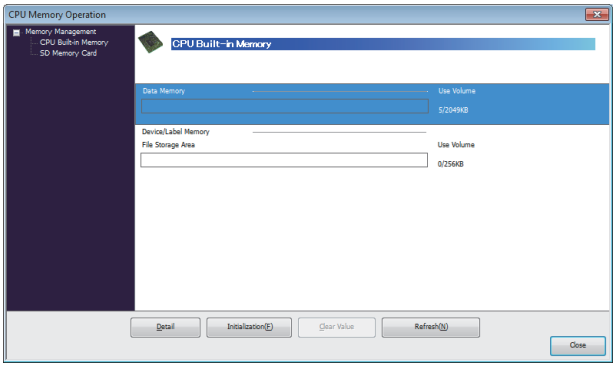
After confirming that communications are normal, click "OK".



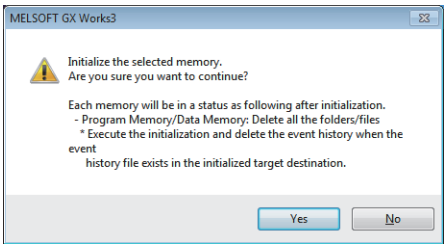
5. From [Online] menu, select [CPU Memory Operation].



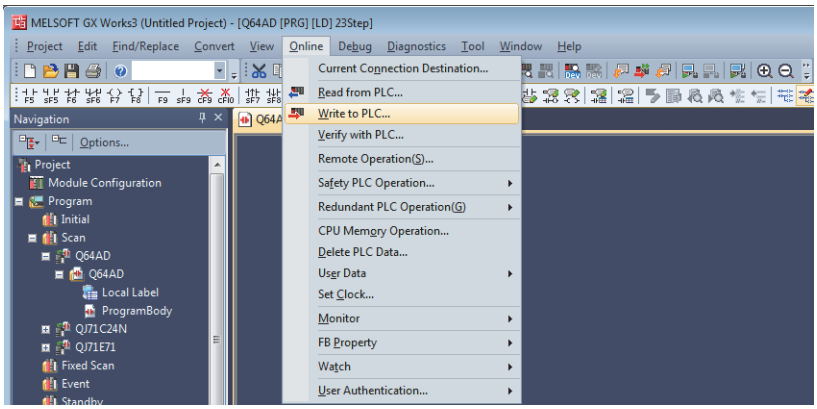
6. On the "CPU Memory Operation" window, select the "Data Memory" section and click "Initialization".



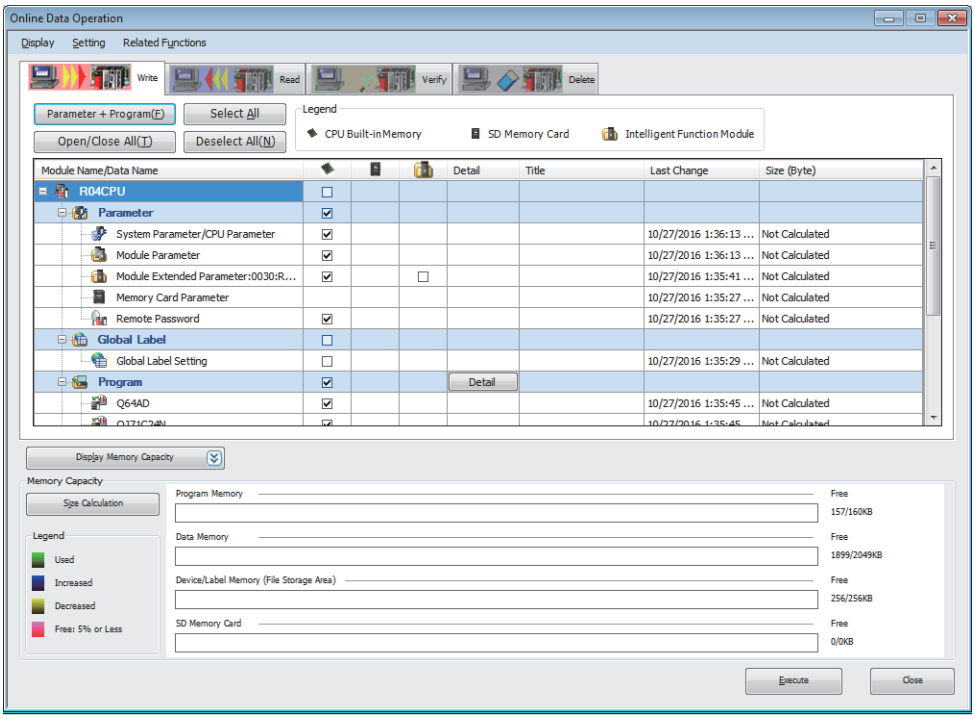
On the following window, click "Yes".



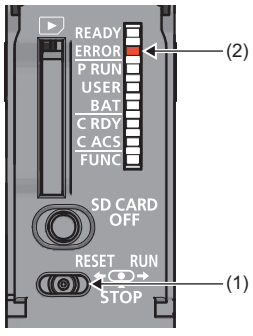
7. From [Online] menu, select [Write to PLC].



8. On the "Online Data Operation" window, click "Parameter + Program", and then click "Execute".



9. When writing to the programmable controller is complete, reset the RCPU.



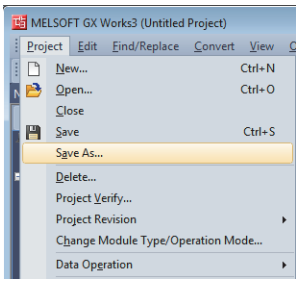
10. Set the RUN/STOP/RESET switch (1) to the RESET position for a second or longer.

11. Check that the ERROR LED (2) flashes and turns off.

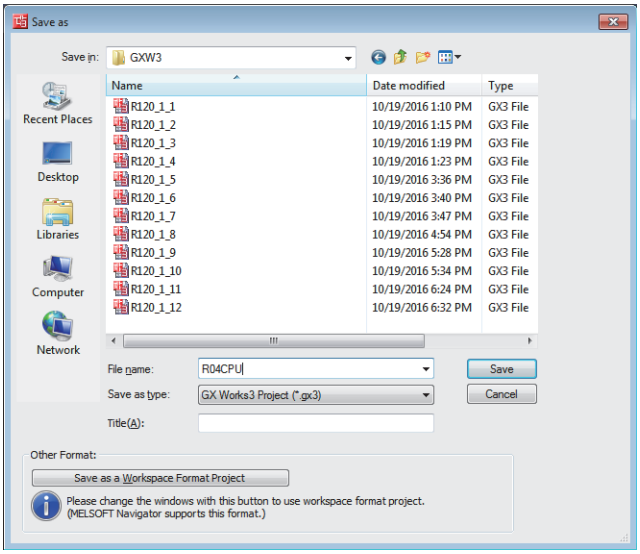
12. Set the switch back to the STOP position.

Step 7: Saving the RCPU project (operation with GX Works3)

1. From the [Project] menu, select [Save As].



2. Set "File name" and click "Save".



Point

For details on operations of each engineering tool, refer to the following.

GX Works3 Operating Manual

GX Works2 Version 1 Operating Manual (Common)

PX Developer projects

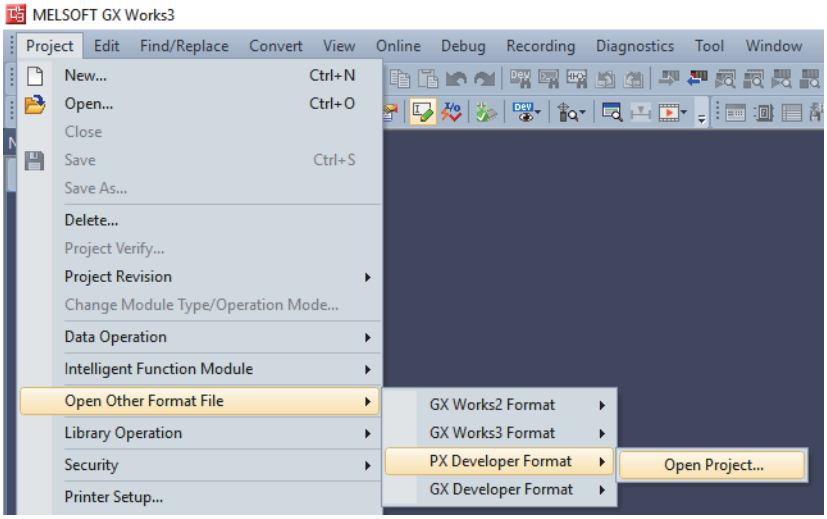
This section describes the procedure for converting projects used for PX Developer to projects for GX Works3.

For models requiring the conversion, refer to the following.

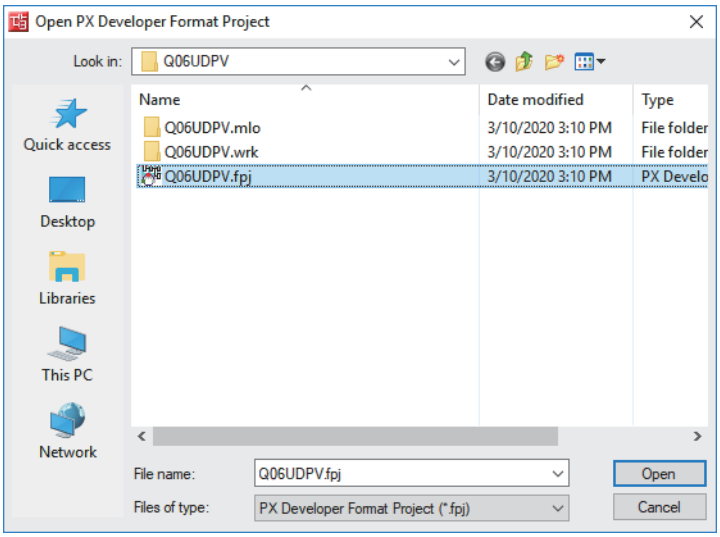
GX Works3 Operating Manual

Procedure

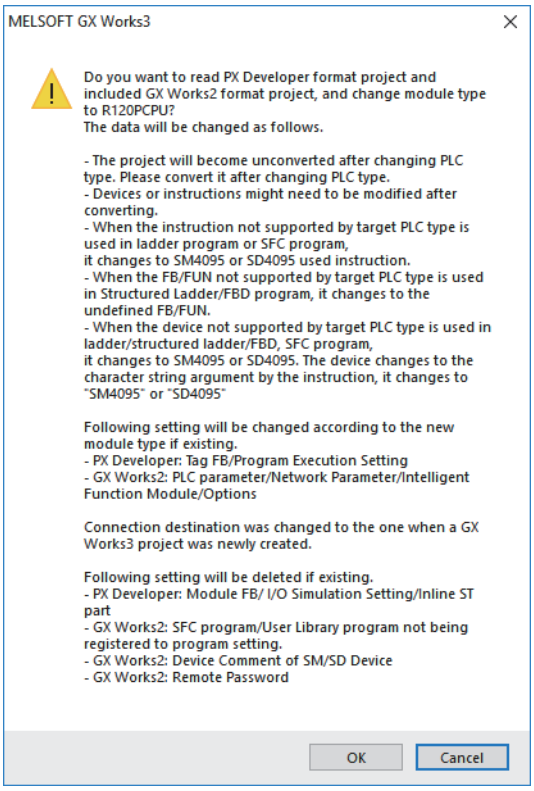
1. From the [Project] menu of GX Works3, select [Open Other Format File] ⇨ [PX Developer Format] ⇨ [Open Project].



2. Select a PX Developer formatted project to be converted, and click the [Open] button.



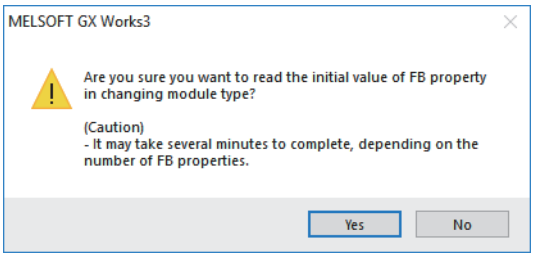
3. The following message appears. Read the message, and click the [OK] button.

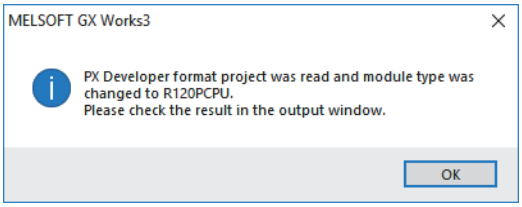


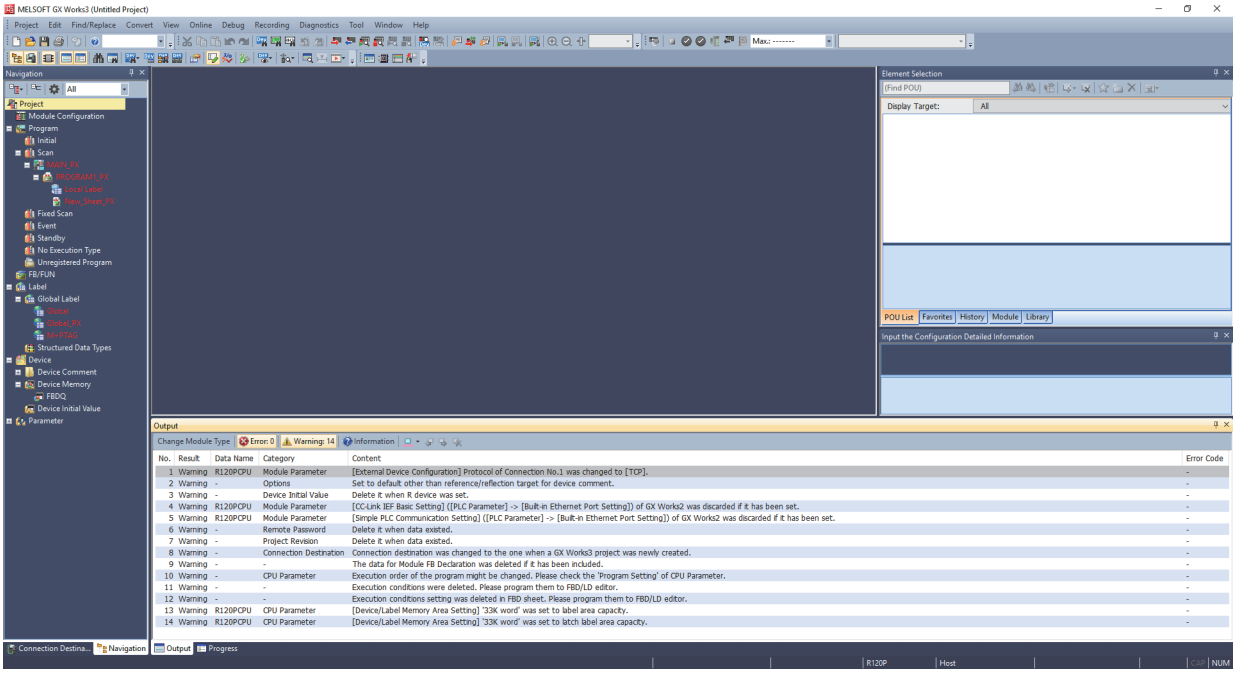
4. The PX Developer formatted project is opened in GX Works3.

Select whether to read initial values of FB Property.

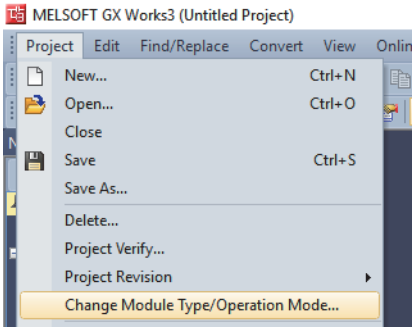
The changes in project data by this conversion (model change) are displayed in the "Output" window. According to the displayed items, change parameters and programs if necessary. Note that the model of project has been automatically changed to "R120PCPU".

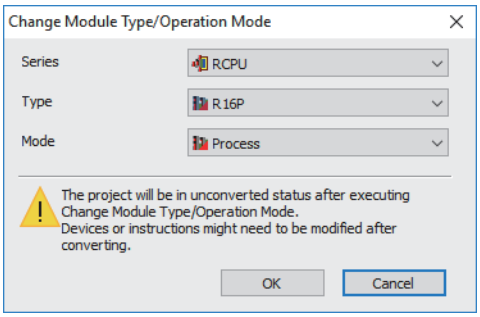






5. Change it to the model that is actually used by selecting [Project] of GX Works3 ⇨ [Change Module Type/Operation Mode].





Point

For details on operations of each engineering tool, refer to the following.

- GX Works3 Operating Manual
- PX Developer Version 1 Operating Manual (Programming Tool)
- Differences of PX Developer and GX Works3 process control functions (FA-A-0236)

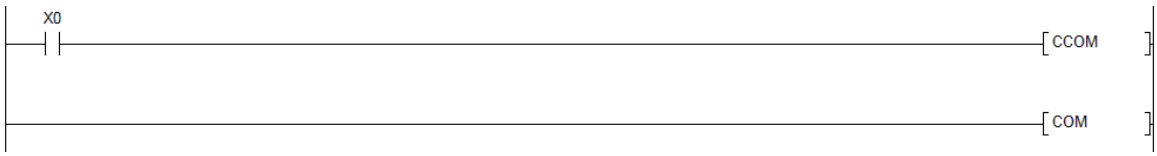
11.2 Instruction Migration

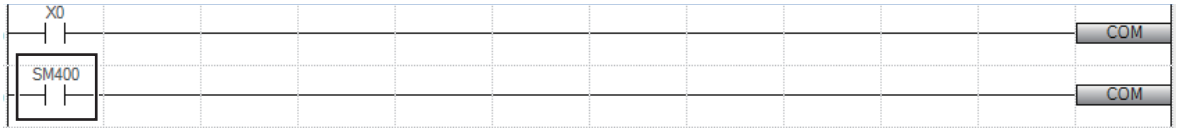
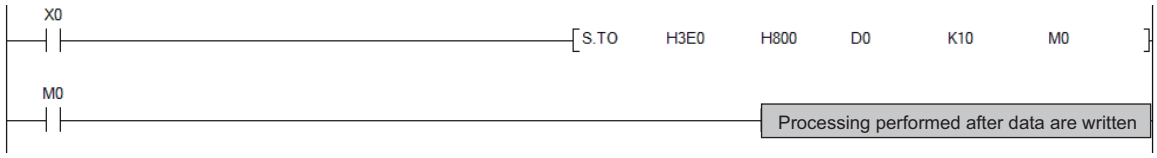
This section describes the differences of instructions after migration from the QCPU to RCPU.

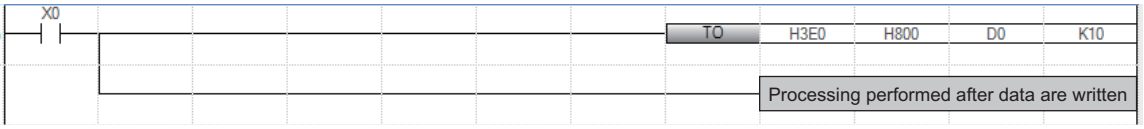
Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Basic instruction	Conversion from BIN 16-bit data to floating-point data (single precision)	FLT[*1]		INT2FLT	—
	Conversion from BIN 32-bit data to floating-point data (single precision)	DFLT[*1]		DINT2FLT	—
	Conversion from BIN 16-bit data to floating-point data (double precision)	Not supported	FLTD	INT2DBL	—
	Conversion from BIN 32-bit data to floating-point data (double precision)	Not supported	DFLTD	DINT2DBL	—
	Conversion from floating-point data to BIN 16-bit data (single precision)	INT[*1]		FLT2INT	—
	Conversion from floating-point data to BIN 32-bit data (single precision)	DINT[*1]		FLT2DINT	—
	Conversion from floating-point data to BIN 16-bit data (double precision)	Not supported	INTD	DBL2INT	—
	Conversion from floating-point data to BIN 32-bit data (double precision)	Not supported	DINTD	DBL2DINT	—
	Conversion from BIN 16-bit to BIN 32-bit data	DBL		INT2DINT	—
	Conversion from BIN 32-bit to BIN 16-bit data	WORD		DINT2INT	—
	Conversion from single precision to double precision	Not supported	ECON	FLT2DBL	—
	Conversion from double precision to single precision	Not supported	EDCON	DBL2FLT	—
Application instruction	Conversion from ASCII to hexadecimal BIN	HEX[*2]		ASC2INT	—
	Conversion from hexadecimal BIN to ASCII	ASC[*2]		INT2ASC	—
	Square root operation for floating-point data (single precision)	SQR[*1]		ESQRT	—
	Square root operation for floating-point data (double precision)	Not supported	SQRD	EDSQRT	—
	BCD 4-digit square roots	BSQR[*2]		BSQRT	—
	BCD 8-digit square roots	BDSQR[*2]		BDSQRT	—
	Ramp signal	RAMP[*2*7]		RAMPQ[*8]	—
	16-bit data search	SER		SERDATA	—
	32-bit data search	DSER		DSERDATA	—
	BIN 16-bit data sort operations	SORT		SORTD	—
	BIN 32-bit data sort operations	DSORT		DSORTD	—
	Time data conversion (from hour/minute/second to second)	SECOND		TIME2SEC	—
	Time data conversion (from second to hour/minute/second)	HOUR		SEC2TIME	—
	Reading 2-word data from the intelligent function module	DFRO[*7]		DFROM	—

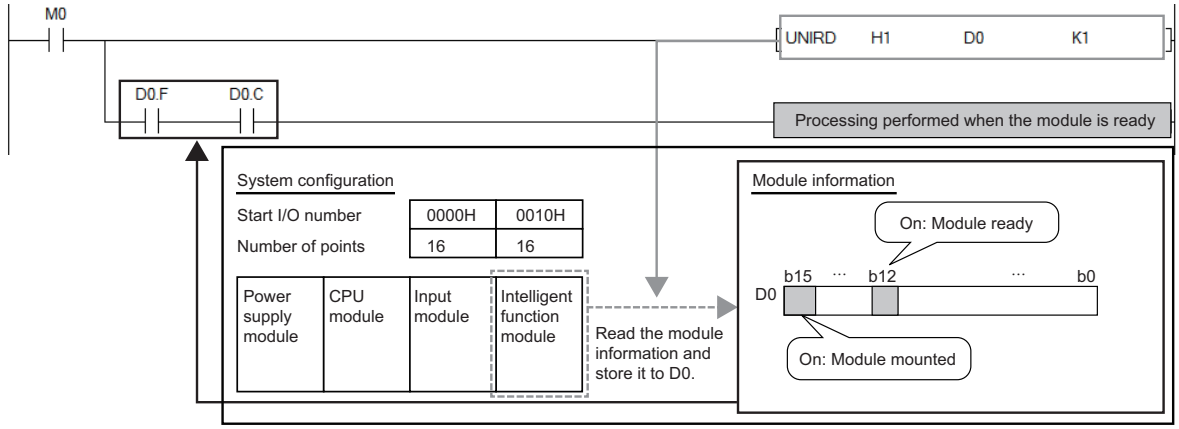
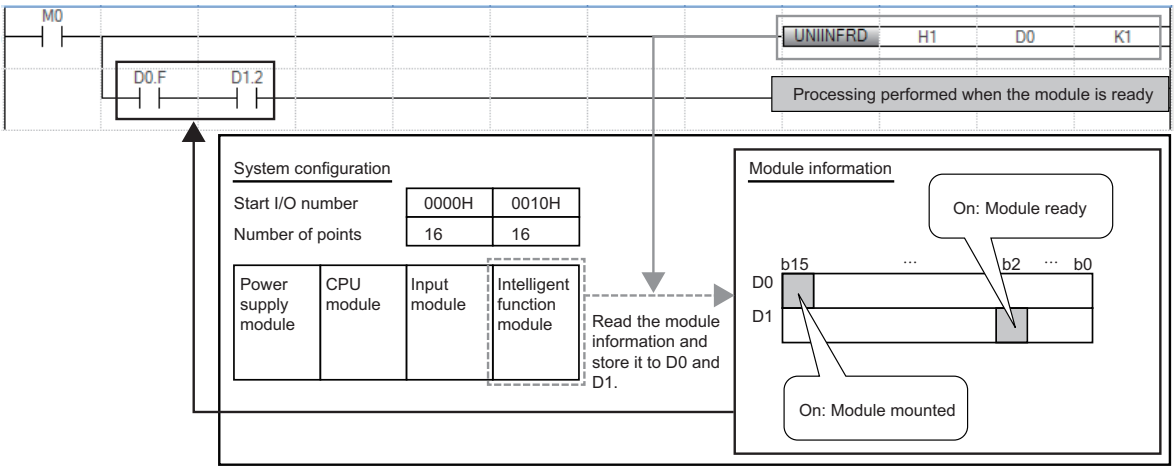
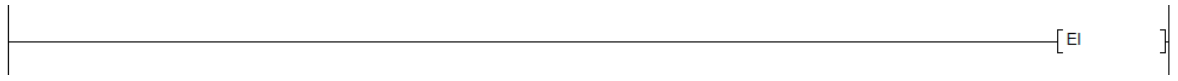
Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Application instruction	Reading device comment data	COMRD*2		Not supported	—
	File setting for file register	QDRSET*2		QDRSET (specifying Unicode)	For the QCPU, the character code that can be specified to the file name (string) of the argument was ASCII and Shift JIS. However, for the RCPU, it is changed to Unicode. Therefore, if the file name is specified with the character string constant of ASCII or Shift JIS, it needs to be changed to Unicode. When changing the character code to Unicode, use the SJIS2WS(P) instruction.
	File setting for comments	QCDSET*2		Not supported	
	Instruction to read SFC step comment	S.SFCSCOMR*1*2*3*4		Not supported	
	Instruction to read comment of SFC transition condition	S.SFCTCOMR*1*2*3*4		Not supported	
	High-speed block transfer of file register	RBMOV*1*2*5		BMOV	
	Subroutine calls between program files	ECALL*2		ECALL (Unicode specification)	For the QCPU, the character code that can be specified to the file name (string) of the argument was ASCII and Shift JIS. However, for the RCPU, it is changed to Unicode. Therefore, if the file name is specified with the character string constant of ASCII or Shift JIS, it needs to be changed to Unicode. When changing the character code to Unicode, use the SJIS2WS(P) instruction.
	Subroutine output OFF calls between program files	EFCALL*2		EFCALL (Unicode specification)	
	Program standby	PSTOP*2		PSTOP (Unicode specification)	
	Program output OFF standby	POFF*2		POFF (Unicode specification)	
	Program scan execution registration	PSCAN*2		PSCAN (Unicode specification)	
	Reading data from designated file	SP.FREAD*6		SP.FREAD (Unicode specification)	
	Writing data to designated file	SP.FWRITE*6		SP.FWRITE (Unicode specification)	
	Trace set/reset	TRACE/TRACER*2*5		Not supported	The RCPU does not support the TRACE and TRACER instruction. For the MELSEC iQ-R series, the sampling trace function is integrated into the data logging function. When sampling the device data as if it is performed as the sampling trace function, use the trigger logging of the data logging function.
	Index modification of entire ladder	IX/IXEND	Not supported		This instruction is not available for the QnUCPU and RCPU. Use a replacement program.
	Modification value specification in index modification of entire ladder	IXDEV/IXSET	Not supported		This instruction is not available for the QnUCPU and RCPU. Change the program so that the device offset value specified by the IXSET instruction is set to the index modification table by an instruction such as the MOV instruction.

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Application instruction	Print ASCII code	PR[*2*7]	Not supported		This instruction is not available for the QnUCPU and RCPU. Use the GOT or a replacement program.
	Print comment	PRC[*2*7]	Not supported		This instruction is not available for the QnUCPU and RCPU. Use the GOT instead.
	Special format failure check	CHKST/CHK[*2]	Not supported		This instruction is not available for the QnUCPU and RCPU. Use a replacement program.
	Changing check format of check instruction	CHKCIR/CHKEND[*2]	Not supported		This instruction is not available for the QnUCPU and RCPU. Use a replacement program.
	Program low speed execution registration	PLOW[*2*7]	Not supported		No low speed program is available for the QnUCPU and RCPU.
	Program execution status check	LDPCHK/ANDPCHK/ORPCHK[*2]	Not supported		This instruction is not available for the QnUCPU and RCPU. Check the status with the program list monitor.
	Numerical key input using keyboard	KEY[*2*7]	Not supported		This instruction is not available for the QnUCPU and RCPU. Use the GOT or a replacement program.
	Loading program from memory card	PLOADP[*2*7]	Not supported		This instruction is not available for the QnUCPU and RCPU. All programs to be executed must be stored in the program memory. For the QnUCPU and RCPU, it is not possible to add a program to the program memory or switch to another program in the RUN state. If the program memory capacity is not enough, move parameters, device comments, and device initial values from the program memory to a standard ROM or memory card.
	Unloading program from program memory	PUNLOADP[*2*7]	Not supported		
	Loading and unloading	PSWAPP[*2*7]	Not supported		
	Select refresh	COM (without execution condition)		COM (with execution condition)	The RCPU does not support the CCOM instruction. Use the COM instruction instead. Since an execution condition is given to the COM instruction for the RCPU, it operates in the same way as the CCOM instruction for the QnUCPU.
	Select refresh	Not supported	CCOM (with execution condition)[*1]		

<table>
<tr><th>Category</th><th>Description</th><th colspan="2">MELSEC-Q series</th><th>MELSEC iQ-R series</th><th>Precautions</th></tr>
<tr><th></th><th></th><th>Q00J/Q00/ Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU</th><th>QnUCPU, QnUDVCPU, QnUDPVCPU</th><th>RCPU</th><th></th></tr>
<tr><td>Application instruction</td><td colspan="5">• Program of GX Works2
 

• Program of GX Works3
 
</td></tr>
<tr><td></td><td>Writing to host CPU shared memory</td><td colspan="2">TO/S.TO*5*7</td><td>TO</td><td>The RCPU does not support the S.TO instruction. Use the TO instruction instead. Since data write is complete within execution of the TO instruction, the completion device (D), which turns on for one scan upon completion of the processing, is not provided for the TO instruction. If (D) is used in the MELSEC-Q series program, the program needs to be modified for the MELSEC iQ-R series.</td></tr>
<tr><td></td><td colspan="5">• Program of GX Works2
 

• Program of GX Works3
 
</td></tr>
<tr><td></td><td>Reading module information</td><td colspan="2">UNIRD</td><td>UNIINFRD</td><td>The RCPU does not support the UNIRD instruction. Use the UNIINFRD instruction instead.
The UNIINFRD instruction reads module information in units of two words. If the module information read by using the UNIRD instruction (in units of one word) is used in the MELSEC-Q series program, the program needs to be modified for the MELSEC iQ-R series.</td></tr>
</table>

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Application instruction	• Program of GX Works2  • Program of GX Works3 				
Interrupt disable	DI (without execution condition)			DI (with execution condition)	An execution condition is given to the DI and EI instructions for the RCPU. This eliminates the need of using an instruction (such as jump instruction) to skip the execution of DI or EI instruction for the RCPU when the execution is not necessary. To execute DI or EI instruction every scan for the RCPU in the same way as doing for the QCPU, set SM400 (Always ON) as an execution condition.
Interrupt enable	EI (without execution condition)			EI (with execution condition)	
	• Program of GX Works2  • Program of GX Works3 				
Instruction to read device data of another station CPU by IP address specification	SP.READ*9			Not supported	
Instruction to write device data of another station CPU by IP address specification	SP.WRITE*9			Not supported	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
SFC control instruction	Forced transition check instruction	[LD, AND, OR, LDI, ANI, ORI] TRn/BLm\TRn*2	Not supported		This instruction is not available for the QnUCPU and RCPU. The PLC type can be converted to SM1255. Modify the program as necessary.
	Active step change instruction	SCHG(D)	Not supported		This instruction is not available for the QnUCPU and RCPU.
	Transition control instruction	[SET, RST] TRn/BLm\TRn*2	Not supported		
	Block switching instruction	BRSET(S)*1*2			

*1 Availability depends on the version of the CPU module. For details, refer to the following.
QnUCPU User's Manual (Function Explanation, Program Fundamentals)
*2 This instruction is not available for the Basic model QCPU.
*3 Availability depends on the version of the CPU module. For details, refer to the following.
Qn(H)/QnPH/QnPRHCPU User's Manual(Function Explanation, Program Fundamentals)
*4 This instruction is not available for the Q00UJCPU, Q00UCPU, Q01UCPU, and Q02UCPU.
*5 This instruction is not available for the Q00JCPU and Q00UJCPU.
*6 This instruction is not available for the Q00UJCPU, Q00UCPU, and Q01UCPU.
*7 This instruction is not available for the QnPRHCPU.
*8 This instruction is not available for the RnPCPU (redundant mode).
*9 This instruction is available for the QnUDVCVPU and QnUDPVCPU.

Migration of PX Developer instructions

The following table lists the functions and function blocks of PX Developer and the corresponding functions and function blocks of GX Works3.

Classification		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			PX Developer	GX Works3	
Process function, general process FB	Analog value selection and average value function	High Selector	P_HS	M+P_HS	Input variable specifications are different. In PX Developer, the number of input pins varies from 2 to 16. In GX Works3, an array (the number of elements: 16) is specified.
			P_HS_E	M+P_HS_E	
		Low selector	P_LS	M+P_LS	
			P_LS_E	M+P_LS_E	
		Middle value selection	P_MID	M+P_MID	
			P_MID_E	M+P_MID_E	
		Average value	P_AVE	M+P_AVE	
			P_AVE_E	M+P_AVE_E	
		Absolute value	P_ABS	M+P_ABS	
			P_ABS_E	M+P_ABS_E	
	Correction operation	Function generator	P_FG	M+P_FG	
		Inverse function generator	P_IFG	M+P_IFG	
		Standard filter (Moving average)	P_FLT	M+P_FLT	
		Engineering value conversion	P_ENG	M+P_ENG	
		Inverse engineering value conversion	P_IENG	M+P_IENG	
		Temperature/Pressure correction	P_TPC	M+P_TPC	
		Summation	P_SUM	M+P_SUM	
		Summation (internal integer integration)	P_SUM2_	M+P_SUM2_	
		Range conversion	P_RANGE_	M+P_RANGE_	
	Arithmetic operation	Addition (with coefficient)	P_ADD	M+P_ADD	
		Subtraction (with coefficient)	P_SUB	M+P_SUB	
		Multiplication (with coefficient)	P_MUL	M+P_MUL	
		Division (with coefficient)	P_DIV	M+P_DIV	
		Square root (with coefficient)	P_SQR	M+P_SQR	
	Comparison operation	Compare greater than (with setting value)	P_>	M+P_GT	
		Compare less than (with setting value)	P_<	M+P_LT	
		Compare equal than (with setting value)	P_=	M+P_EQ	
		Compare greater or equal (with setting value)	P_>=	M+P_GE	
		Compare less or equal (with setting value)	P_<=	M+P_LE	
	Control operation	Lead-lag	P_LLAG	M+P_LLAG	
		Integral	P_I	M+P_I	
		Derivative	P_D	M+P_D	
		Dead time	P_DED	M+P_DED	
		High/Low limiter	P_LIMT	M+P_LIMT	
		Variation rate limiter1	P_VLMT1	M+P_VLMT1	
		Variation rate limiter2	P_VLMT2	M+P_VLMT2	
		Dead band	P_DBND	M+P_DBND	
		Bumpless transfer	P_BUMP	M+P_BUMP	
		Analog memory	P_AMR	M+P_AMR	
		8-points time proportioning output	P_DUTY_8PT_	M+P_DUTY_8PT_	

Classification		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			PX Developer	GX Works3	
Tag access FB	I/O control operation	Analog input processing	P_IN	M+P_IN	
		Output processing-1 with mode switching (with input addition)	P_OUT1	M+P_OUT1	
		Output processing-2 with mode switching (without input addition)	P_OUT2	M+P_OUT2	
		Output processing-3 with mode switching (with input addition and compensation)	P_OUT3_	M+P_OUT3_	
		Manual output	P_MOUT	M+P_MOUT	
		Time proportioning output	P_DUTY	M+P_DUTY	
		Pulse integration	P_PSUM	M+P_PSUM	
		Batch counter	P_BC	M+P_BC	
		Manual setter	P_MSET_	M+P_MSET_	
	Loop control operation	Ratio control (with tracking to primary loop)	P_R_T	M+P_R_T	
		Ratio control (without tracking to primary loop)	P_R	M+P_R	
		Velocity type PID control (with tracking to primary loop)	P_PID_T	M+P_PID_T	
		Velocity type PID control (without tracking to primary loop)	P_PID	M+P_PID	
		2-degree-of-freedom PID control (with tracking to primary loop)	P_2PID_T	M+P_2PID_T	
		2-degree-of-freedom PID control (without tracking to primary loop)	P_2PID	M+P_2PID	
		2-degree-of-freedom advanced PID control (with tracking to primary loop)	P_2PIDH_T_	M+P_2PIDH_T_	
		2-degree-of-freedom advanced PID control (without tracking to primary loop)	P_2PIDH_	M+P_2PIDH_	
		Position type PID control (with tracking to primary loop, without tracking from secondary loop)	P_PIDP_T	M+P_PIDP_T	
		Position type PID control (without tracking to primary loop, without tracking from secondary loop)	P_PIDP	M+P_PIDP	
		Position type PID control (with tracking to primary loop, with tracking from secondary loop)	P_PIDP_EX_T_	M+P_PIDP_EX_T_	
		Position type PID control (without tracking to primary loop, with tracking from secondary loop)	P_PIDP_EX_	M+P_PIDP_EX_	
		Sample PI control (with tracking to primary loop)	P_SPI_T	M+P_SPI_T	
		Sample PI control (without tracking to primary loop)	P_SPI	M+P_SPI	
		I-PD control (with tracking to primary loop)	P_IPD_T	M+P_IPD_T	
		I-PD control (without tracking to primary loop)	P_IPD	M+P_IPD	
		Blend PI control (with tracking to primary loop)	P_BPI_T	M+P_BPI_T	
		Blend PI control (without tracking to primary loop)	P_BPI	M+P_BPI	
		High/Low limit alarm check	P_PHPL	M+P_PHPL	
		2 position ON/OFF (with tracking to primary loop)	P_ONF2_T	M+P_ONF2_T	
		2 position ON/OFF (without tracking to primary loop)	P_ONF2	M+P_ONF2	

Classification		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			PX Developer	GX Works3	
Tag access FB	Loop control operation	3 position ON/OFF (with tracking to primary loop)	P_ONF3_T	M+P_ONF3_T	
		3 position ON/OFF (without tracking to primary loop)	P_ONF3	M+P_ONF3	
		Program setter	P_PGS	M+P_PGS	
		Multi-point program setter	P_PGS2_	M+P_PGS2_	
		Loop selector (without tracking to primary loop)	P_SEL	M+P_SEL	
		Loop selector (with tracking to primary loop)	P_SEL_T1	M+P_SEL_T1	
		Loop selector (with tracking to primary loop)	P_SEL_T2	M+P_SEL_T2	
		Loop selector (with tracking from secondary loop to primary loop)	P_SEL_T3_	M+P_SEL_T3_	
		Predictive functional control (simple first order lag)	P_PFC_SF_	N/A	
		Predictive functional control (simple second order lag)	P_PFC_SS_	N/A	
		Predictive functional control (integral process)	P_PFC_INT_	N/A	
	Tag special	Control mode change	P_MCHG	M+P_MCHG	
Tag FB	Loop tag	Velocity type PID control (with tracking to primary loop)	M_PID_T	M+M_PID_T	
		Velocity type PID control (without tracking to primary loop)	M_PID	M+M_PID	
		Velocity type PID control and duty output (with tracking to primary loop)	M_PID_DUTY_T	M+M_PID_DUTY_T	
		Velocity type PID control and duty output (without tracking to primary loop)	M_PID_DUTY	M+M_PID_DUTY	
		2-degree-of-freedom PID control (with tracking to primary loop)	M_2PID_T	M+M_2PID_T	
		2-degree-of-freedom PID control (without tracking to primary loop)	M_2PID	M+M_2PID	
		2-degree-of-freedom PID control and duty output (with tracking to primary loop)	M_2PID_DUTY_T	M+M_2PID_DUTY_T	
		2-degree-of-freedom PID control and duty output (without tracking to primary loop)	M_2PID_DUTY	M+M_2PID_DUTY	
		2-degree-of-freedom advanced PID control (with tracking to primary loop)	M_2PIDH_T_	M+M_2PIDH_T_	
		2-degree-of-freedom advanced PID control (without tracking to primary loop)	M_2PIDH_	M+M_2PIDH_	
		Position type PID control (with tracking to primary loop, without tracking from secondary loop)	M_PIDP_T	M+M_PIDP_T	
		Position type PID control (without tracking to primary loop, without tracking from secondary loop)	M_PIDP	M+M_PIDP	
		Position type PID control (with tracking to primary loop, with tracking from secondary loop)	M_PIDP_EX_T_	M+M_PIDP_EX_T_	
		Position type PID control (without tracking to primary loop, with tracking from secondary loop)	M_PIDP_EX_	M+M_PIDP_EX_	
		Sample PI control (with tracking to primary loop)	M_SPI_T	M+M_SPI_T	

Classification		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			PX Developer	GX Works3	
Tag FB	Loop tag	Sample PI control (without tracking to primary loop)	M_SPI	M+M_SPI	
		I-PD control (with tracking to primary loop)	M_IPD_T	M+M_IPD_T	
		I-PD control (without tracking to primary loop)	M_IPD	M+M_IPD	
		Blend PI control (with tracking to primary loop)	M_BPI_T	M+M_BPI_T	
		Blend PI control (without tracking to primary loop)	M_BPI	M+M_BPI	
		Ratio control (with tracking to primary loop)	M_R_T	M+M_R_T	
		Ratio control (without tracking to primary loop)	M_R	M+M_R	
		2 position ON/OFF control (with tracking to primary loop)	M_ONF2_T	M+M_ONF2_T	
		2 position ON/OFF control (without tracking to primary loop)	M_ONF2	M+M_ONF2	
		3 position ON/OFF control (with tracking to primary loop)	M_ONF3_T	M+M_ONF3_T	
		3 position ON/OFF control (without tracking to primary loop)	M_ONF3	M+M_ONF3	
		Monitor	M_MONI	M+M_MONI	
		Manual output with monitor	M_MWM	M+M_MWM	
		Batch preparation	M_BC	M+M_BC	
		Pulse integrator	M_PSUM	M+M_PSUM	
		Loop selector (without tracking to primary loop)	M_SEL	M+M_SEL	
		Loop selector (with tracking to primary loop)	M_SEL_T1	M+M_SEL_T1	
		Loop selector (with tracking to primary loop)	M_SEL_T2	M+M_SEL_T2	
		Loop selector (with tracking from secondary loop to primary loop)	M_SEL_T3_	M+M_SEL_T3_	
		Manual output	M_MOUT	M+M_MOUT	
		Program setter	M_PGS	M+M_PGS	
		Multi-point program setter	M_PGS2_	M+M_PGS2_	
		Manual setter with monitor	M_SWM_	M+M_SWM_	
		Predictive functional control (simple first order lag)	M_PFC_SF_	N/A	
		Predictive functional control (simple second order lag)	M_PFC_SS_	N/A	
		Predictive functional control (integral process)	M_PFC_INT_	N/A	
		Position-proportional output	M_PVAL_T_	M+M_PVAL_T_	
		Heating and cooling output	M_HTCL_T_	M+M_HTCL_T_	

Classification		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			PX Developer	GX Works3	
Tag FB	Status tag	Motor irreversible (2 input, 2 output)	M_NREV	M+M_NREV	
		Motor reversible (2 input, 3 output)	M_REV	M+M_REV	
		ON/OFF operation (2 input, 2 output)	M_MVAL1	M+M_MVAL1	
		ON/OFF operation (2 input, 3 output)	M_MVAL2	M+M_MVAL2	
		Timer 1 (timer stops when COMPLETE flag is ON)	M_TIMER1	M+M_TIMER1	
		Timer 2 (timer continues when COMPLETE flag is ON)	M_TIMER2	M+M_TIMER2	
		Counter 1 (counter stops when COMPLETE flag is ON)	M_COUNTER1	M+M_COUNTER1	
		Counter 2 (counter continues when COMPLETE flag is ON)	M_COUNTER2	M+M_COUNTER2	
		Push button operation (5 input, 5 output)	M_PB_	M+M_PB_	
	Alarm tag	Alarm	M_ALARM	M+M_ALARM	
		64-points alarm	M_ALARM_64PT_	M+M_ALARM_64PT_	
	Message tag	Message	M_MESSAGE	M+M_MESSAGE	
		64-points message	M_MESSAGE_64PT_	M+M_MESSAGE_64PT_	
General function, general FB	Type conversion function	REAL type → STRING type (decimal point form) conversion	REAL_TO_STRING_EX	N/A	
			REAL_TO_STRING_EX_E		
	Numerical operation function	Sign reversal	NEG	N/A	
			NEG_E		
	Arithmetic operation function	Exponentiation	POW	N/A	
			POW_E		
	Ladder program control function	Sub-routine program call (DINT type argument)	CALL_DINT	N/A	
			CALL_DINT_E		
		Program scan execution registration	PSCAN	N/A	
			PSCAN_E		
		Program standby instruction	PSTOP	N/A	
			PSTOP_E		
		Program output standby instruction	POFF	N/A	
			POFF_E		
		Program low-speed execution registration	PLOW	N/A	
			PLOW_E		
	Helper function	WORD → 16BOOL unbinding	UNBIND	N/A	
			UNBIND_E		
		16 BOOL → WORD/DWORD	BIND	N/A	
			BIND_E		
		2WORD → DWORD	MAKE_DWORD	N/A	
			MAKE_DWORD_E		
		High-order/Low-order output of DWORD type data	HI_WORD	N/A	
			HI_WORD_E		
			LO_WORD		
			LO_WORD_E		
		Input pins connection status acquisition	IS_CONNECTED	N/A	
			IS_CONNECTED_E		

Classification		Description	MELSEC-Q series	MELSEC iQ-R series	Precautions
			PX Developer	GX Works3	
General function, general FB	Communication control FB	Sending data to PLC CPUs of other stations	SEND	N/A	
		Receiving data from PLC CPUs of other stations	RECV	N/A	
	Edge detection FB	Rising edge detector	R_TRIG		The operation of each FB when the CPU module is powered off and on or reset may be different.
			R_TRIG_E		
		Falling edge detector	F_TRIG		
			F_TRIG_E		
		Edge detection input	EDGE_CHECK	EDGE_CHECK_PX*1	
	Counter FB	Up-counter	CTU		
			CTU_E		
		Down-counter	CTD		
			CTD_E		
		Up-down-counter	CTUD		
			CTUD_E		
	Bistable FB	Set-dominant flip-flop	SR		
			SR_E		
		Latch FB (BOOL type)	LATCH_BOOL	LATCH_BOOL_PX*1	
		Latch FB (REAL type)	LATCH_REAL	LATCH_REAL_PX*1	
		Latch FB (WORD type)	LATCH_WORD	LATCH_WORD_PX*1	
		Latch FB (DWORD type)	LATCH_DWORD	LATCH_DWORD_PX*1	
	Timer FB	Pulse timer (high-speed timer)	TP_HIGH	TP_HIGH_PX*1	
		Pulse timer (low-speed timer)	TP_LOW	TP_LOW_PX*1	
		ON delay timer (high-speed timer)	TON_HIGH	TON_HIGH_PX*1	
		ON delay timer (low-speed timer)	TON_LOW	TON_LOW_PX*1	
		OFF delay timer (high-speed timer)	TOF_HIGH	TOF_HIGH_PX*1	
		OFF delay timer (low-speed timer)	TOF_LOW	TOF_LOW_PX*1	
	Selection function	Multiplexer	MUX		Input variable specifications are different. In PX Developer, the output value selection range starts from 1. In GX Works3, it starts from 0.
			MUX_E		

*1 These program elements are dedicated to replacement of the program elements of PX Developer. Do not use them when creating a new program in GX Works3.

11.3 Parameter Migration

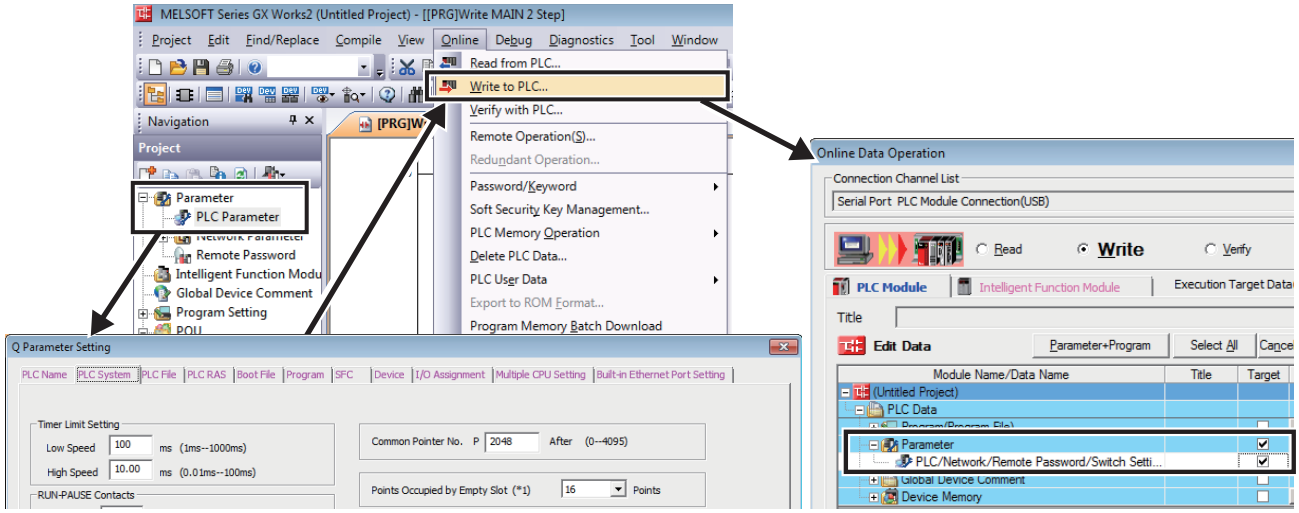
The following table lists the differences of parameters after migration from the QCPU to RCPU.

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
CPU module	CPU module settings	PLC parameter (PARAM.QPA) Redundant parameter (PARAM.QPA) (QnPRHCPU only)		• System parameter (SYSTEM.PRM) • CPU parameter (CPU.PRM) • Module parameter (UNIT.PRM) • Memory card parameter (MEMCARD.PRM)	For the RCPU, set parameters, such as I/O assignment setting, that are common to all the CPU modules in the multiple CPU system in system parameter, and set parameters, such as program setting, that is specific to each CPU module in CPU parameter. In addition, set the module parameter to use the built-in Ethernet function of the CPU module, and set the memory card parameter to perform boot operation.
I/O module	Input response time setting/interrupt setting/output mode upon error setting	I/O assignment setting of PLC parameter		Module parameter	For the RCPU, use module parameters.
Analog I/O module	Error time output mode	I/O assignment setting of PLC parameter		Module parameter	For the RCPU, use module parameters.
	Switch setting/parameter (each setting)/auto refresh	Intelligent function module parameter			
Positioning module	Error time output mode	I/O assignment setting of PLC parameter		Module parameter	For the RCPU, use module parameters and module extension parameters.
	Parameter (each setting)/auto refresh	Intelligent function module parameter			
	Positioning data/block start data			Module extension parameter	
High-speed counter module	Error time output mode	I/O assignment setting of PLC parameter		Module parameter	For the RCPU, use module parameters.
	Switch setting/parameter (each setting)/auto refresh	Intelligent function module parameter			
CC-Link IE Field Network master/local modules	Network configuration setting	Network parameter - Network configuration setting		Module parameter - Basic setting - Network configuration setting	For the RCPU, use module parameters.
	Mode setting	Network parameter - Mode		Module parameter - Application setting - Module operation mode setting	
CC-Link system master/local module	Station number setting/transmission speed	Set with the rotary switch.		Module parameter	For the RCPU, the setting method is different.
	Mode setting	Set in network parameter or switch setting.			
	Refresh	Set the start number of the refresh target device.		Set the start number and end number, or the start number and number of points of the refresh target device.	
	CC-Link configuration setting	Set in the station information settings (table format) or CC-Link configuration setting.		Set in the CC-Link configuration setting.	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
AnyWireASLINK master module	Number of transmission points	Intelligent function module parameter - Switch setting		Module parameter - Basic setting	For the RCPU, the setting method is different.
	Refresh	Intelligent function module parameter - Auto refresh		Module parameter - Refresh setting	
	Operation mode at startup time/ superencryption/error status automatic recovery	Not supported		Module parameter - Basic setting	
	AnyWireASLINK configuration	Intelligent function module parameter - AnyWireASLINK configuration		AnyWireASLINK configuration	
Ethernet interface module	SLMP (MC protocol) communication setting/random access buffer communication setting/broadcast setting/unused connection setting/TCP/IP connection module setting/alive check setting	Network parameter - Open setting		Module parameter	For the RCPU, use module parameters.
	Online change setting/send frame setting	Network parameter - Operation setting			
	Router relay (gateway) parameter setting	Network parameter - Router relay parameter			
	Interrupt setting	Network parameter - Interrupt setting			
Serial communication module	Switch setting	I/O assignment setting of PLC parameter		Module parameter	For the RCPU, use module parameters and module extension parameters.
	Various control specification/ programmable controller CPU monitoring function/user frame specification/auto refresh	Intelligent function module parameter			
	Modem function/user frame content			Module extension parameter	

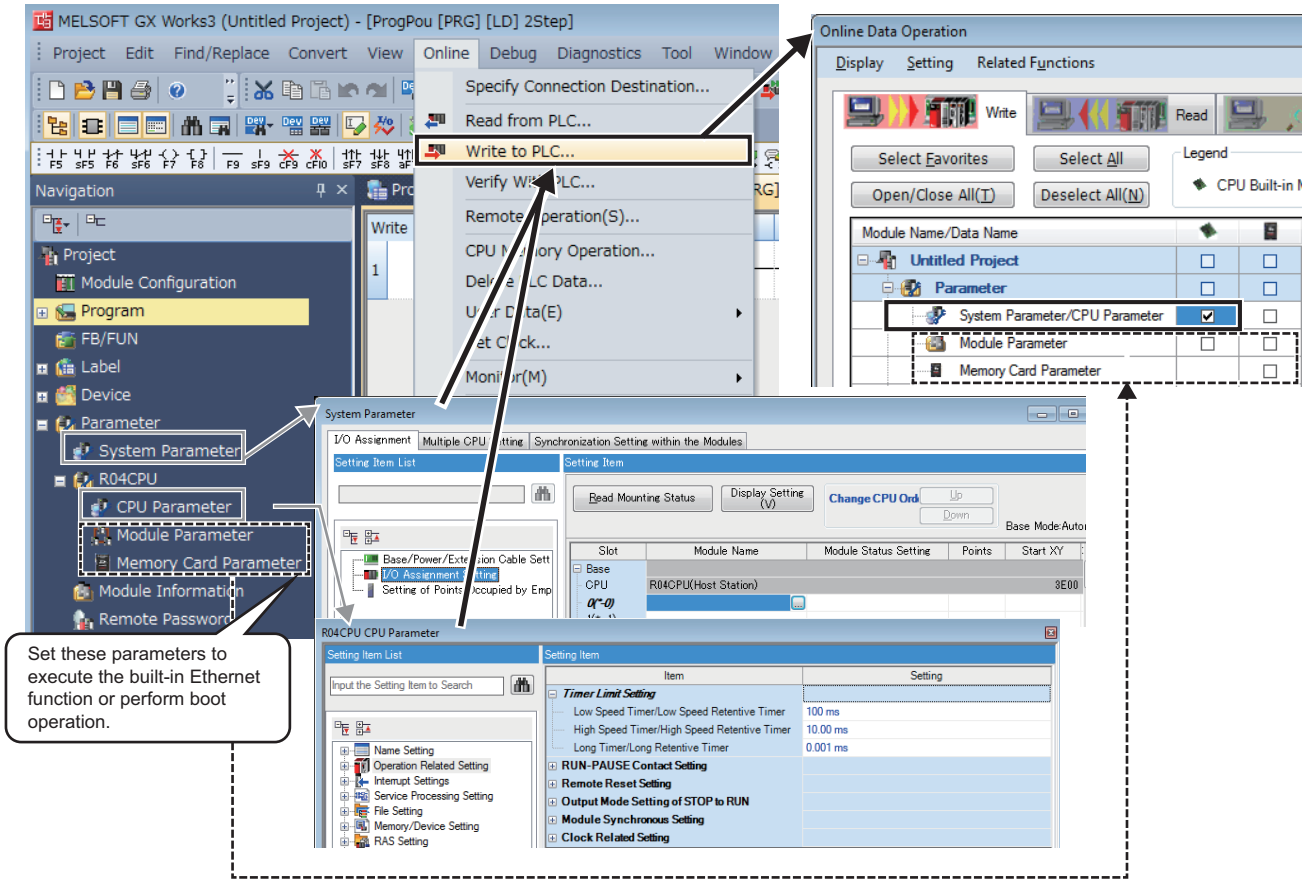
• PLC parameter setting window and Write to PLC window (GX Works2)

GX Works2



• System parameter setting window, CPU parameter setting window, and Write to PLC window (GX Works3)

GX Works3



11.4 Special Relay and Special Register Migration

Migration of special relay

The following table lists the differences of special relay after migration from the QCPU to RCPU.

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special relay (SM)	Error common information	SM5		Not supported	
	Error individual information	SM16		Not supported	
	CHK detection	SM80[*2]	Not supported		This relay is not available for the QnUCPU and RCPU.[*1] For the RCPU, SM80 is "Detailed information 1: Flag in use".
	Error clear	Not supported	SM84	Not supported	
	Startup of monitoring timer for step transition	SM90 to SM99[*2]	Not supported		This relay is not available for the QnUCPU and RCPU.[*1]
	LED OFF command	SM202[*2]		Not supported	
	PAUSE enable coil	SM206		Not supported	
	Write-protect status for device data (from outside the CPU module)	Not supported	SM214[*3*5*13]	Not supported	
	Online module change flag	SM235[*9]	Not supported	SM1617[*16]	
	Online module change complete flag	SM236[*9]	Not supported	SM1609[*16]	
	Device range check inhibit flag	Not supported	SM237[*3]	Not supported	
	No.'n' CPU error flag	SM244 to SM247[*4*12]		SM230 to SM233	
	Max. loaded I/O read	SM250[*2]	Not supported		For the QnUCPU and RCPU, SM250 need not be operated since SD250 always stores the maximum loaded I/O.
	All stations refresh command	SM254[*2]		Not supported	
	MELSECNET/10, MELSECNET/H module 1 information	SM255 to SM257[*2]	Not supported		This special relay is for use in the simple dual-structured network function. For the RCPU and QnUCPU, the simple dual-structured network function is not available. Remove sections that use this special relay.
	MELSECNET/10, MELSECNET/H module 2 information	SM260 to SM262[*2]			
	MELSECNET/10, MELSECNET/H module 3 information	SM265 to SM267[*2]			
	MELSECNET/10, MELSECNET/H module 4 information	SM270 to SM272[*2]			
	CC-Link error	SM280[*2]	Not supported		This relay is not available for the QnUCPU and RCPU. Use the I/O signals (Xn0, Xn1, XnF) of the installed CC-Link module instead.[*1]
	Online change (inactive block) status flag	Not supported	SM329[*3]	SM329[*14]	
	Operation mode for low speed execution type program	SM330[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special relay.[*1]

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/ Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special relay (SM)	Normal SFC program execution status	SM331[*2]	Not supported		For the QnUCPU and RCPU, only the normal SFC programs are available. Remove interlock by SM331 and SM332, or use SM321 instead.[*1]
	Program execution management SFC program execution status	SM332[*2]			
	Latch clear execution command	Not supported	SM339[*3*5*13]	Not supported	
	Access execution flag	SM390[*2]	Not supported		This relay is not available for the QnUCPU and RCPU. Refer to sample programs in the manual of each module, and modify the program so that interlock is acquired by the module ready signal (Xn).[*1]
	GINT instruction execution completion flag	SM391[*12]		Not supported	
	Low speed execution type program ON for 1 scan only after RUN	SM404[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special relay, or use the special relay (SM402 and SM403) for scan execution type programs.[*1]
	Low speed execution type program OFF for 1 scan only after RUN	SM405[*2*12]			
	User timing clock No.5 (for low speed programs)	SM430[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special relay, or use the special relay (SM420 to SM424) for scan execution type programs.[*1]
	User timing clock No.6 (for low speed programs)	SM431[*2*12]			
	User timing clock No.7 (for low speed programs)	SM432[*2*12]			
	User timing clock No.8 (for low speed programs)	SM433[*2*12]			
	User timing clock No.9 (for low speed programs)	SM434[*2*12]			
	Low speed program execution flag	SM510[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU.[*1]
	Reads module service interval	SM551[*2]	Not supported		The service interval measurement function is not available for the QnUCPU and RCPU.[*1]
	Drive 1 flag	SM602[*2*3]		Not supported	
	SD memory card forced disable instruction	Not supported	SM606[*5*13]	Not supported	
	SD memory card forced disable status flag	Not supported	SM607[*5*13]	Not supported	
	Memory card remove/insert enable flag	SM609[*2*3]		SM605	
	Drives 3 and 4 usable flags	SM620		Not supported	
	Drives 3 and 4 protection flag	SM621		Not supported	
	Drive 3 flag	SM622[*6]		Not supported	
	Drive 4 flag	SM623		Not supported	
	Drive 3/4 in-use flag	SM624[*2]		Not supported	
	Directory batch delete flag	Not supported	SM638[*5*13]	Not supported	For the RCPU, SM638 is "System memory rewrite count error flag".
	File register use	SM640[*6]		Not supported	
	Comment use	SM650[*2]		Not supported	
	Boot operation	SM660[*2*7]		Not supported	
	Latch data backup to standard ROM completion flag	Not supported	SM671	Not supported	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special relay (SM)	Memory card file register access range flag	SM672[*2]	Not supported		For the QnUCPU and RCPU, if an area out of the file register range of the memory card is accessed, "OPERATION ERROR" (error code: 4101) is detected. Therefore, there is no need to use this special relay to handle errors in a program. Remove sections that use this special relay.[*1]
	Error completion of latch data backup to standard ROM	Not supported	SM675	Not supported	
	Specification of restoration repeated execution	Not supported	SM676	Not supported	
	Program memory write error	Not supported	SM680	SM628	
	Program memory writing flag	Not supported	SM681	SM629	
	Program memory overwrite count error flag	Not supported	SM682	SM630	
	Standard ROM write error	Not supported	SM685	SM632	
	Standard ROM writing flag	Not supported	SM686	SM633	
	Standard ROM overwrite count error flag	Not supported	SM687	SM634	
	Backup start preparation status flag	Not supported	SM691[*3*7]	Not supported	
	Restoration complete flag	Not supported	SM692[*3*7]	Not supported	
	DT/TM instruction improper data detection flag	Not supported	SM709[*3]	SM709	
	CHK instruction priority ranking flag	SM710[*2]	Not supported		This relay is not available for the QnUCPU and RCPU.[*1]
	EI flag	SM715		Not supported	
	Block comparison (Except an interrupt program)	Not supported	SM716[*3]	Not supported	
	Block comparison (Interrupt program)	Not supported	SM717[*3]	Not supported	
	Block comparison (Interrupt program (I45))	Not supported	SM718[*8*3]	Not supported	
	File being accessed	SM721[*2]		SM753	
	SMOV instruction BCD conversion prohibit flag	Not supported	SM719[*3*5*13]	SM773	
	BIN/DBIN instruction error disabling flag	SM722		SM754	
	XCALL instruction execution condition designation	SM734[*2*3]	Not supported		For the QnUCPU and RCPU, the XCALL instruction is executed at the startup time of the execution condition as well. There is no need to use this special relay to set the operation at startup of execution condition. Remove sections that use this special relay.[*1]
	SFC comment readout instruction in execution flag	SM735[*2*3]		Not supported	
	MSG instruction reception flag	SM738[*2*11]	Not supported	Not supported	
	Refresh device write/read instruction in execution flag	Not supported	SM739[*3*4*17]	Not supported	
	Scaling instruction search method setting	Not supported	SM750[*3]	SM755	
	PID bumpless processing (for complete derivative)	SM774[*3]		SM792	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special relay (SM)	Block information using the multiple CPU high-speed transmission dedicated instruction (for CPU No.1)	Not supported	SM796*7*16*17		
	Block information using the multiple CPU high-speed transmission dedicated instruction (for CPU No.2)	Not supported	SM797*7*16*17		
	Block information using the multiple CPU high-speed transmission dedicated instruction (for CPU No.3)	Not supported	SM798*7*16*17		
	Block information using the multiple CPU high-speed transmission dedicated instruction (for CPU No.4)	Not supported	SM799*7*16*17		
	Trace preparation (for the sampling trace function)	SM800*2*6		Not supported	
	Trace start (for the sampling trace function)	SM801*2*6		Not supported	
	Trace execution in progress (for the sampling trace function)	SM802*2*6		Not supported	
	Trace trigger (for the sampling trace function)	SM803*2*6		Not supported	
	After trace trigger (for the sampling trace function)	SM804*2*6		Not supported	
	Trace completed (for the sampling trace function)	SM805*2*6		Not supported	
	Trace error (for the sampling trace function)	SM826*2*6		Not supported	
	Forced registration specification of trace setting	Not supported	SM829*2*6	Not supported	
	Auto logging	Not supported	SM841*5	Not supported	
	Backup error check flag	Not supported	SM916*3*5*13	SM953*14	
	Restoration error check flag	Not supported	SM922*3*5*13	SM959*14	
	Upper limit setting flag for the number of backup data	Not supported	SM923*3*5*13	SM960*14	
	Automatic backup retry failure flag	Not supported	SM924*3*5*13	SM961*14	
	A to Q conversion	SM1000 to SM1255		Not supported	
	MELSOFT connection extended setting network number, station number enable flag	Not supported	SM1258*3*5*13	U3En\G87.0	
	Time setting function (SNTP client) execution	Not supported	SM1270*5*8*13	U3En\G290 to U3En\G299	
	Remote password mismatch count clear	Not supported	SM1273*5*8*13	Not supported	
	IP address storage area write request	Not supported	SM1292*3*5*8	SM1520	
	IP address storage area write completion	Not supported	SM1293*3*5*8	Not supported	
	IP address storage area write error	Not supported	SM1294*3*5*8	SM1521	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/ Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special relay (SM)	IP address storage area clear request	Not supported	SM1295*3*5*8	SM1522	
	IP address storage area clear completion	Not supported	SM1296*3*5*8	Not supported	
	IP address storage area clear error	Not supported	SM1297*3*5*8	SM1523	
	Predefined protocol ready (for built-in Ethernet communications)	Not supported	SM1354*3*5*8	U3En\G692	
	Predefined protocol setting check request (for built-in Ethernet communications)	Not supported	SM1355*3*5*8	Not supported	
	Hold mode	SM1500*9*10*13		SM816*16	
	Hold mode	SM1501*9*10*13		SM817*16	
	Operation mode	SM1510*10	Not supported	SM1630*16	
	System A identification flag	SM1511*10	Not supported	SM1632*16	
	System B identification flag	SM1512*10	Not supported	SM1633*16	
	Debug mode status flag	SM1513*10	Not supported	Not supported	
	Control system judgment flag	SM1515*10	Not supported	SM1634*16	
	Standby system judgment flag	SM1516*10	Not supported	SM1635*16	
	CPU module startup status	SM1517*10	Not supported	SM1637*16	
	Standby system to control system switching status flag	SM1518*10	Not supported	SM1643*16	
	Previous control system identification flag	SM1519*10	Not supported	SM1636*16	
	Data tracking transfer trigger specification	SM1520 to SM1583*10	Not supported	SD1667 to SD1670*16	
	System switching enable/disable flag from network module	SM1590*10	Not supported	SM1645*16	
	Standby system error detection disable flag at system switching	SM1591*10	Not supported	Not supported	
	Enable/disable user system switching	SM1592*10	Not supported	SM1646*16	
	Setting to access extension base unit of standby system CPU	SM1593*10	Not supported	SM1762*16	
	Memory copy to other system start flag	SM1595*10	Not supported	SM1653*16	
	Memory copy to other system status flag	SM1596*10	Not supported	SM1654*16	
	Memory copy to other system completion flag	SM1597*10	Not supported	SM1655*16	
	Copy contents of standard ROM during memory copy	SM1598*10	Not supported	Not supported	
	Other system error flag	SM1600*10	Not supported	SM1680*16	
	Other system diagnostics error	SM1610*10	Not supported	SM1681*16	
	Other systems self-diagnostics error	SM1611*10	Not supported	SM1682*16	
	Other system common error information	SM1615*10	Not supported	Not supported	
	Error individual information for other systems	SM1626*10	Not supported	Not supported	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/ Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special relay (SM)	Standby system cancel error flag	SM1649*10	Not supported	SM1679*16	
	Transfer trigger completion flag	MS1700*10	Not supported	SM1673*16	
	Manual system switching disable/ enable setting during online program change redundant tracking	MS1709*10	Not supported	Not supported	
	Transfer tracking data during online program change enable flag	SM1710*10	Not supported	Not supported	
	Transfer trigger completion flag	SM1712 to SM1775*10	Not supported	SD1673 to SD1676*16	
	Power supply off detection flag	SM1780*2*3		Not supported	
	Power supply failure detection flag	SM1781*2*3		Not supported	
	Momentary power failure detection flag for power supply 1	SM1782*2*3		Not supported	
	Momentary power failure detection flag for power supply 2	SM1783*2*3		Not supported	
	Backup status flag	Not supported	SM1925*3*5*13	SM1350*14	
	Backup execution request	Not supported	SM1926*3*5*13	SM1351*14	
	Restoration status flag	Not supported	SM1928*3*5*13	SM1353*14*15	
	Restoration execution request	Not supported	SM1929*3*5*13	SM1354*14*15	
	Retry status flag for automatic backup	Not supported	SM1931*3*5*13	SM1356*14	
	Data logging	Not supported	SM1940 to SM2038*5*13	SM1210 to SM1309*14	The following areas are not available for the RnPCPU: SM1219, SM1229, SM1239, SM1249, SM1259, SM1269, SM1279, SM1289, SM1299, and SM1309.

*1 For details, refer to the following.
Method of replacing High Performance model QCPU with Universal model QCPU (FA-A-0001)
*2 This relay is not available for the Basic model QCPU.
*3 Availability depends on the version of the CPU module. For details, refer to the following.
QnUCPU User's Manual (Function Explanation, Program Fundamentals)
*4 This relay is not available for the Q00JCPU and Q00UJCPU.
*5 This relay is available for the QnUDVCPU.
*6 This relay is not available for the Q00UJCPU.
*7 This relay is not available for the Q00UJCPU, Q00UCPU, and Q01UCPU.
*8 This relay is available for the QnUDE(H)CPU.
*9 This relay is available for the QnPHCPU.
*10 This relay is available for the QnPRHCPU.
*11 This relay is not available for the QnPHCPU.
*12 This relay is not available for the QnPRHCPU.
*13 This relay is available for the QnUDPVCPU.
*14 Availability depends on the version of the CPU module. For details, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)
*15 This relay is not available for the RnPCPU.
*16 This relay is available for the RnPCPU.
*17 This relay is not available for the Q02UCPU.

Migration of special register

The following table lists the differences of special register after migration from the QCPU to RCPU.

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	Clock time for diagnosis error occurrence	SD1 to SD3		SD1 to SD7	For the RCPU, the latest self-diagnostic error time is stored. The stored data is different and not automatically converted.
	Error information categories, error common information, error individual information	SD4, SD5 to SD15, SD16 to SD26		SD80 to SD143	For the RCPU, detailed information 1 and 2 are stored. The stored data are different and not automatically converted.
	Error reset	SD50		Not supported	
	Battery low	SD51, SD52		Not supported	
	CHK number	SD80[*2]	Not supported		This register is not available for the QnUCPU and RCPU.[*1]
	Continuation error cause	Not supported	SD81, SD82[*3*5*13]	Not supported	
	Continuation error clear	Not supported	SD84, SD85[*5*13]	Not supported	
	Step transition monitoring timer setting value	SD90 to SD99[*2]	Not supported		This register is not available for the QnUCPU and RCPU.[*1]
	CH1 transmission speed setting	SD105[*7]		Not supported	
	IP packet transfer function related information	Not supported	SD180 to SD183[*3]	U3En\G310 to U3En\G313	
	Status of switch	SD200		SD200	
	LED status	SD201		SD201	
	LED off command	SD202[*2]		Not supported	
	Operating status of CPU	SD203		SD203	
	LED display color	Not supported	SD204	Not supported	
	LED display priority ranking	SD207 to SD209		Not supported	
	Clock data	SD210 to SD213		SD210 to SD216	For the RCPU, the stored data is different and not automatically converted.
	LED display data	SD220 to SD227		Not supported	
	Module to which online module change is being performed	SD235[*9*10]	Not supported	SD1602[*16]	
	Base mode	SD240		Not supported	
	Installed Q base presence/absence	SD242		Not supported	For the RCPU, this register is "Identification for whether or not Q series module can be mounted".
	MELSECNET/10, MELSECNET/H information: Number of mounted modules	SD254[*7]		Not supported	
	MELSECNET/10, MELSECNET/H information: Information from 1st module	SD255 to SD259[*7*14]		Not supported	
	MELSECNET/10, MELSECNET/H information: Information from 2nd module	SD260 to SD264[*7*14]		Not supported	
	MELSECNET/10, MELSECNET/H information: Information from 3rd module	SD265 to SD269[*7*14]		Not supported	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	MELSECNET/10, MELSECNET/H information: Information from 4th module	SD270 to SD274[*7*14]		Not supported	
	Installed Q base presence/absence	SD242			For the RCPU, this register is "Identification for whether or not Q series module can be mounted".
	CC-Link error	SD280, SD281[*2*9*10]	Not supported		This register is not available for the QnUCPU and RCPU. Use the I/O signals (Xn0, Xn1, XnF) of the installed CC-Link module instead.[*1]
	Device assignment	SD290 to SD304	SD282 to SD311[*3]	SD260 to SD309	
	Time reserved for communication processing	SD315	Not supported		For the QnUCPU and RCPU, the service processing setting is available in the system setting for parameters.
	Online change (inactive block) target block number	Not supported	SD329[*3]	SD329[*14]	
	Latch clear operation setting	Not supported	SD339[*3*5]	Not supported	
	Ethernet information	SD340 to SD368		Not supported	
	Ethernet instruction reception status (1st module)	SD380[*10]		Not supported	
	Ethernet instruction reception status (2nd module)	SD381[*10]		Not supported	
	Ethernet instruction reception status (3rd module)	SD382[*10]		Not supported	
	Ethernet instruction reception status (4th module)	SD383[*10]		Not supported	
	Multiple CPU system information	SD393 to SD399[*4]		SD228 to SD233[*14]	
	Low speed scan counter	SD430[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special register, or use the special register (SD420) for scan execution type programs instead.[*1]
	Low speed execution type program No.	SD510[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special register, or use the special register (SD500) for scan execution type programs instead.[*1]
	Initial scan time	SD522, SD523[*2]		SD518, SD519	
	Minimum scan time	SD524, SD525		SD522, SD523	
	Maximum scan time	SD526, SD27		SD524, SD525	
	Current scan time for low speed execution type programs	SD528, SD529[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special register, or use the special register (SD520 and SD521) for scan execution type programs instead.[*1]
	Minimum scan time for low speed execution type programs	SD532, SD533[*2*12]	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special register, or use the special register (SD524 to SD527) for scan execution type programs instead.[*1]
	Maximum scan time for low speed execution type programs	SD534, SD535[*2*12]			

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	END processing time	SD540, SD541		SD526, SD527	
	Constant scan wait time	SD542, SD543		SD528, SD529	
	Cumulative execution time for low speed execution type programs	SD544, SD545*2*12	Not supported		Low speed execution type programs are not available for the QnUCPU and RCPU. Remove sections that use this special register.*1
	Execution time for low speed execution type programs	SD546, SD547*2*12			
	Scan program execution time	SD548, SD549		SD530, SD531	
	Service interval measurement module	SD550*2	Not supported		The service interval measurement function is not available for the QnUCPU and RCPU. Remove sections that use this special register.*1
	Service interval time	SD551, SD552*2			
	Drive 2 (Memory card) capacity	SD603*2	SD603, (SD606, SD607)*5*13	SD606, SD607	For the RCPU, this register is "SD memory card (drive 2) capacity (unit: K bytes)".
	Memory card use conditions	SD604*2		SD604	For the RCPU, this register is "SD memory card (drive 2) usage status".
	Free space in drive 2 (unit: M bytes)	Not supported	SD616, SD617*5*13	SD610, SD611	For the RCPU, this register is "SD memory card (drive 2) free space (unit: K bytes)".
	Drive 3/4 types	SD620		Not supported	
	Drive 3 (Standard RAM) capacity	SD622		SD618, SD619	
	Drive 4 (Standard ROM) capacity	SD623		SD622, SD623	
	Drive 3/4 use conditions	SD624		SD614, SD620	For the RCPU, SD614 is "Device/label memory (drive 3) usage status", and SD620 is "Data memory (drive 4) usage status".
	Directory batch delete completion status	Not supported	SD638*5*13	Not supported	
	Directory batch deletion status	Not supported	SD639*5	Not supported	
	File register information	SD640 to SD647*6		Not supported	
	File register block number	SD648*6		SD312	
	Comment file information	SD650 to SD656*2		Not supported	
	Boot operation designation file	SD660 to SD666*2*7		Not supported	
	Parameter enable drive information	Not supported	SD670	Not supported	
	Program memory write (transfer) status	Not supported	SD681	SD629	
	Program memory write count index	Not supported	SD682, SD683	SD630, SD631	
	Standard ROM write (transfer) status	Not supported	SD686	SD633	
	Standard ROM write count index	Not supported	SD687, SD688	SD634, SD635	
	Backup error factor	Not supported	SD689*3*7	Not supported	
	Backup status	Not supported	SD690*3*7	Not supported	
	Backup execution status (percentage)	Not supported	SD691*3*7	Not supported	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	Restoration error factor	Not supported	SD692*3*7	Not supported	
	Restoration status	Not supported	SD693*3*7	Not supported	
	Restoration execution status (percentage)	Not supported	SD694*3*7	Not supported	
	Specification of writing to standard ROM instruction count	Not supported	SD695	SD771	
	Free memory card space at backup (lower bits)	Not supported	SD696*3*7	Not supported	
	Free memory card space at backup (upper bits)	Not supported	SD697*3*7	Not supported	
	Backup data size (lower bits)	Not supported	SD698*3*7	Not supported	
	Backup data size (upper bits)	Not supported	SD699*3*7	Not supported	
	Mask pattern	SD705, SD706	Not supported		
	String addition to data logging file name	Not supported	SD710*3*5*13	Not supported	
	Instruction error (Adding a string to data logging file names)	Not supported	SD711*3*5*13	Not supported	
	Next execution of instruction (Adding a string to data logging file names)	Not supported	SD712*3*5*13	Not supported	
	IMASK instruction mask pattern	SD715 to SD717, SD781 to SD793		SD1400 to SD1415	
	Accumulator	SD718, SD719		Not supported	
	Program No. designation for PLOADP instruction	SD720*2*12	Not supported		The PLOADP instruction is not available for the QnUCPU and RCPU. Remove sections that use this special register.*1
	PID limit setting (for complete derivative)	SD774, SD775*3*11		SD792, SD793	
	Refresh processing selection when the COM instruction is executed	SD778*3		SD775	
	Debug function usage	Not supported	SD840*3	SD1488	
	CPU module data backup/ restoration function (Backup function) Backup function setting	Not supported	SD910*3*5*13	SD944*14	
	CPU module data backup/ restoration function (Backup function) Day and time setting for automatic backup	Not supported	SD912, SD913*3*5*13	SD947, SD948, SD949*14	
	CPU module data backup/ restoration function (Backup function) Time and day of the week setting for automatic backup	Not supported	SD914, SD915*3*5*13	SD950, SD951, SD952*14	
	CPU module data backup/ restoration function (Backup function) Cause of error occurred at backup	Not supported	SD916*3*5*13	SD953*14	
	CPU module data backup/ restoration function (Restoration function) Restoration target data setting	Not supported	SD917*3*5*13	SD954*14	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	CPU module data backup/ restoration function (Restoration function) Restoration function setting	Not supported	SD918*3*5*13	SD955*14	
	CPU module data backup/ restoration function (Restoration function) Restoration target folder	Not supported	SD919, SD920, SD921*3*5*13	SD956, SD957, SD958*14	
	CPU module data backup/ restoration function (Restoration function) Cause of error occurred during restoration	Not supported	SD922*3*5*13	SD959*14	
	CPU module data backup/ restoration function (Restoration function) Upper limit value status for the number of backup data	Not supported	SD923*3*5*13	SD960*14	
	Device information during "RAM ERROR"	Not supported	SD927, SD928*3	Not supported	
	History of memory copy from control system to standby system	SD952*10	Not supported	SD988*16	
	Remote password count	Not supported	SD979 to SD999*5*8*13	U3En\G320 to U3En\G340	
	A to Q conversion	SD1000 to SD1255		Not supported	
	MELSOFT connection extended setting network number	Not supported	SD1258*5*13	U3En\G77	
	MELSOFT connection extended setting station number	Not supported	SD1259*5*13	U3En\G78	
	IP address in-use	Not supported	SD1260 to SD1265*3*5*8*13	U3En\G50 to U3En\G65	For the RCPU, this register is "Own node IP address".
	MAC address	Not supported	SD1266 to SD1268*3*5*8*13	U3En\G74 to U3En\G76	For the RCPU, this register is "Own node MAC address".
	Time setting function (SNTP) related information	Not supported	SD1270 to SD1275*5*8*13	U3En\G290 to U3En\G299	For the RCPU, the stored data is different and not automatically converted.
	Forced connection invalidation	Not supported	SD1276, SD1277*3*5*8*13	U3En\G280, U3En\G281	
	Open completion signal	Not supported	SD1282*3*5*8*13	SD1504	
	Open request signal	Not supported	SD1284*3*5*8*13	SD1505	
	Reception status signal	Not supported	SD1286*3*5*8*13	SD1506	
	Built-in Ethernet port connection status	Not supported	SD1288*3*5*8*13	Not supported	
	Ethernet basic time-out time	Not supported	SD1289*5*8*13	Not supported	
	IP address setting IP address (lower digits)	Not supported	SD1292*3*5*8*13	SD1520	
	IP address setting IP address (upper digits)	Not supported	SD1293*3*5*8*13	SD1521	
	IP address setting Subnet mask pattern (lower digits)	Not supported	SD1294*3*5*8*13	SD1522	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	IP address setting Subnet mask pattern (upper digits)	Not supported	SD1295*3*5*8*13	SD1523	
	IP address setting Default router IP address (lower digits)	Not supported	SD1296*3*5*8*13	SD1524	
	IP address setting Default router IP address (upper digits)	Not supported	SD1297*3*5*8*13	SD1525	
	IP address storage area write error factor	Not supported	SD1298*3*5*8*13	SD1526	
	IP address storage area clear error factor	Not supported	SD1299*3*5*8*13	SD1527	
	Fuse blown module	SD1300 to SD1331*2		Not supported	
	IP address change function related information	Not supported	SD1359 to SD1381*3*5*13	U3En\G710 to U3En\G729	
	Built-in Ethernet port counter	Not supported	SD1395*3*5*8*13	U3En\G226	For the RCPU, this register is "Receive FIFO overflow count".
	I/O module verification	SD1400 to SD1431*2		Not supported	
	Use request (iQ Sensor Solution backup/restoration)	Not supported	SD1435*3*5*13	SD1360*14*15	
	Right acquisition status (iQ Sensor Solution backup/restoration)	Not supported	SD1436*3*5*13	SD1361*14*15	
	Target module/execution unit setting (iQ Sensor Solution backup/restoration)	Not supported	SD1437*3*5*13	SD1362*14*15	
	Folder number setting (iQ Sensor Solution backup/restoration)	Not supported	SD1438*3*5*13	SD1363*14*15	
	Target module setting (iQ Sensor Solution backup/restoration)	Not supported	SD1439*3*5*13	SD1364*14*15	
	Target device 1 setting (iQ Sensor Solution backup/restoration)	Not supported	SD1440*3*5*13	SD1365*14*15	
	Target device 2 setting (iQ Sensor Solution backup/restoration)	Not supported	SD1441*3*5*13	SD1366*14*15	
	Operation setting (iQ Sensor Solution backup/restoration)	Not supported	SD1444*3*5*13	SD1367*14*15	
	Communication timeout time (iQ Sensor Solution backup/restoration)	Not supported	SD1445*3*5*13	Not supported	
	Execution status (iQ Sensor Solution backup/restoration)	Not supported	SD1446*3*5*13	Not supported	
	Total number of target devices (iQ Sensor Solution backup/restoration)	Not supported	SD1447*3*5*13	SD1371*14*15	
	Number of normally completed devices (iQ Sensor Solution backup/restoration)	Not supported	SD1448*3*5*13	SD1372*14*15	
	Number of devices completed with an error (iQ Sensor Solution backup/restoration)	Not supported	SD1449*3*5*13	SD1373*14*15	
	Progress per device (iQ Sensor Solution backup/restoration)	Not supported	SD1450*3*5*13	SD1374*14*15	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	Folder number (iQ Sensor Solution backup)	Not supported	SD1451*3*5*13	SD1375*14*15	
	Error cause in a module (iQ Sensor Solution backup/restoration)	Not supported	SD1452*3*5*13	SD1376*14*15	
	Error cause in a device (iQ Sensor Solution backup/restoration)	Not supported	SD1453*3*5*13	SD1377*14*15	
	Error module/execution unit information (iQ Sensor Solution backup/restoration)	Not supported	SD1454*3*5*13	SD1378*14*15	
	Error folder number information (iQ Sensor Solution backup/restoration)	Not supported	SD1455*3*5*13	SD1379*14*15	
	Error module information (iQ Sensor Solution backup/restoration)	Not supported	SD1456*3*5*13	SD1380*14*15	
	Error device Information (device 1) (iQ Sensor Solution backup/restoration)	Not supported	SD1457*3*5*13	SD1381*14*15	
	Error device Information (device 2) (iQ Sensor Solution backup/restoration)	Not supported	SD1458*3*5*13	SD1382*14*15	
	Basic period	SD1500, SD1501*9*10*13		SD816, SD817*16	
	Process control instruction detail error code	SD1502*9*10*13		Not supported	
	Process control instruction generated error location	SD1503*9*10*13		Not supported	
	Dummy device	SD1506, SD1507*9*10*13		SD820, SD821*16	
	Function availability selection for process control instruction	SD1508*9*10*13		SD818*16	
	Redundant system LED status	SD1585*10	Not supported	Not supported	
	Reason(s) for system switching	SD1588*10	Not supported	SD1643*16	
	Reason(s) for system switching failure conditions	SD1589*10	Not supported	SD1644*16	
	Network module head address, which requested system switching	SD1590*10	Not supported	SD1645*16	
	Memory copy target I/O number	SD1595*10	Not supported	SD1653*16	
	Memory copy status	SD1596*10	Not supported	SD1654*16	
	System error information	SD1600*10	Not supported	SD1648*16	
	System switching results	SD1601*10	Not supported	SD1649*16	
	System switching dedicated instruction parameter	SD1602*10	Not supported	SD1650*16	
	Other system diagnostic error	SD1610*10	Not supported	SD1681*16	
	Other system diagnostic error occurrence time	SD1611 to SD1613*10	Not supported	Not supported	
	Other system error information category	SD1614*10	Not supported	Not supported	
	Other system error common information	SD1615 to SD1625*10	Not supported	Not supported	
	Other system error individual information	SD1626 to SD1636*10	Not supported	Not supported	

Category	Description	MELSEC-Q series		MELSEC iQ-R series	Precautions
		Q00J/Q00/Q01CPU, Qn(H)CPU, QnPHCPU, QnPRHCPU	QnUCPU, QnUDVCPU, QnUDPVCPU	RCPU	
Special register (SD)	Standby system error cancel command	SD1649*10	Not supported	Not supported	
	Other system operating information	SD1650*10	Not supported	SD1680*16	
	Network module head address, which requested system switching on host (control) system	SD1690*10	Not supported	SD1646*16	
	Tracking error detection count	SD1700*10	Not supported	SD1664*16	
	Waiting time for online program change (standby system)	SD1710*10	Not supported	Not supported	
	Power supply off detection status	SD1780*2*3		SD150*14	
	Power supply failure detection status	SD1781*2*3		SD151*14	
	Momentary power failure detection counter for power supply 1	SD1782*2*3		SD152*14	
	Momentary power failure detection counter for power supply 2	SD1783*2*3		SD153*14	
	Number of backup/restoration uncompleted files	Not supported	SD1925*3*5	SD1350	
	Backup/restoration progression status	Not supported	SD1926*3*5	SD1351	
	Upper limit value setting for the number of backup data	Not supported	SD1928*3*5	SD1353	
	Data logging	Not supported	SD1940 to SD2037*5*13	SD1210 to SD1307	The following areas are not available for the RnPCPU: SD1217, SD1227, SD1237, SD1247, SD1257, SD1267, SD1277, SD1287, SD1297, and SD1307.

*1 For details, refer to the following.
Method of replacing High Performance model QCPU with Universal model QCPU (FA-A-0001)
*2 This register is not available for the Basic model QCPU.
*3 Availability depends on the version of the CPU module. For details, refer to the following.
QnUCPU User's Manual (Function Explanation, Program Fundamentals)
*4 This register is not available for the Q00JCPU and Q00UJCPU.
*5 This register is available for the QnUDVCPU.
*6 This register is not available for the Q00UJCPU.
*7 This register is not available for the Q00UJCPU, Q00UCPU, and Q01UCPU.
*8 This register is available for the QnUDE(H)CPU.
*9 This register is available for the QnPHCPU.
*10 This register is available for the QnPRHCPU.
*11 This register is not available for the QnPHCPU.
*12 This register is not available for the QnPRHCPU.
*13 This register is available for the QnUDPVCPU.
*14 Availability depends on the version of the CPU module. For details, refer to the following.
MELSEC iQ-R CPU Module User's Manual (Application)
*15 This register is not available for the RnPCPU.
*16 This register is available for the RnPCPU.

11.5 Precautions for Project Migration

TCP (MELSOFT connection)/UDP (MELSOFT connection) setting

For the RCPU, set connection numbers. Set "MELSOFT Connection Module" in the connection number not used.
The open setting is not required when connecting the GOT or other external devices using UDP. (An automatic UDP port is used.)

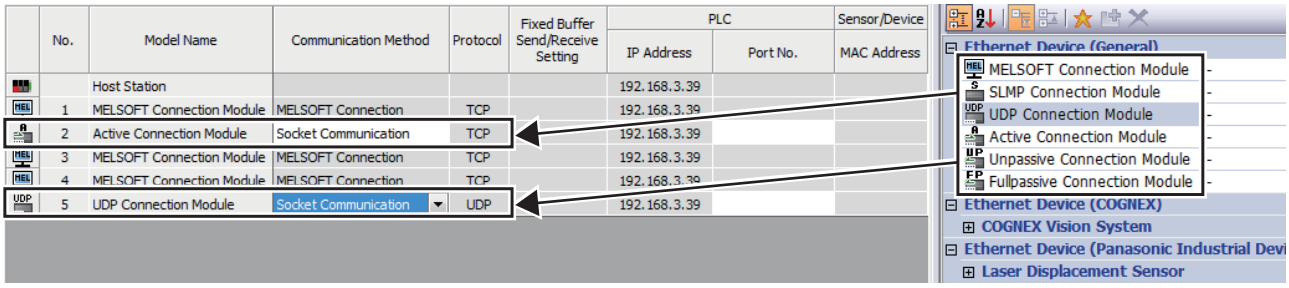
- Built-in Ethernet setting window of PLC parameter (GX Works2)

GX Works2

	Protocol	Open System	TCP Connection	Host Station	Destination IP Address	Destination Port No.
1	UDP	MELSOFT Connection				
2	TCP	Socket Communication	Active	4000	192.168. 1. 1	6000
3	TCP	MELSOFT Connection				
4	TCP	MELSOFT Connection				
5	UDP	Socket Communication		4001	192.168. 1. 10	6001

- Module parameter setting window (GX Works3)

GX Works3

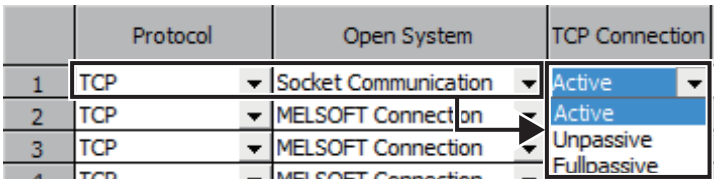


TCP connection setting of socket communications (TCP/IP connection)

For the RCPU, select "Active Connection Module", "Unpassive Connection Module", or "Fullpassive Connection Module" in the Ethernet device setting, and then set "Socket Communication in "Communication Method".

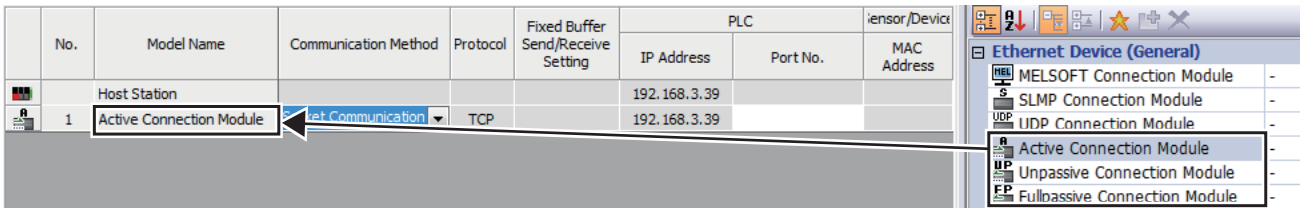
- Built-in Ethernet setting window of PLC parameter (GX Works2)

GX Works2



- Module parameter setting window (GX Works3)

GX Works3

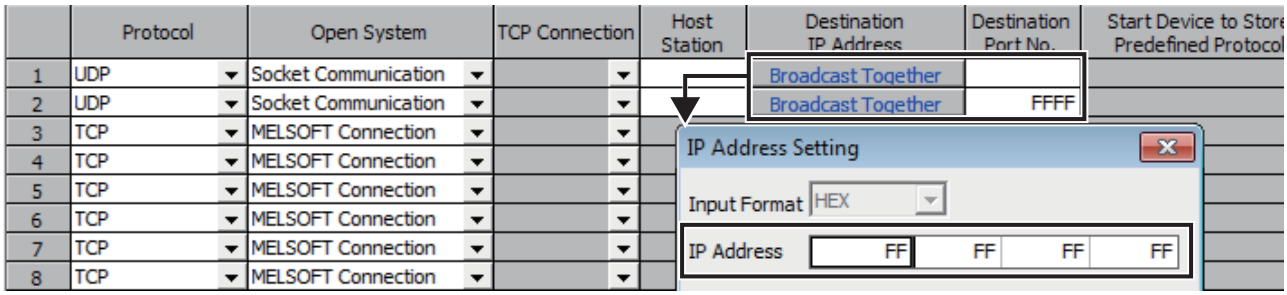


Broadcast communications setting of socket communications (UDP/IP connection)

For the RCPU, select "UDP Connection Module", and then set "Broadcast Send" or "Broadcast Receive" in "Communication Method".

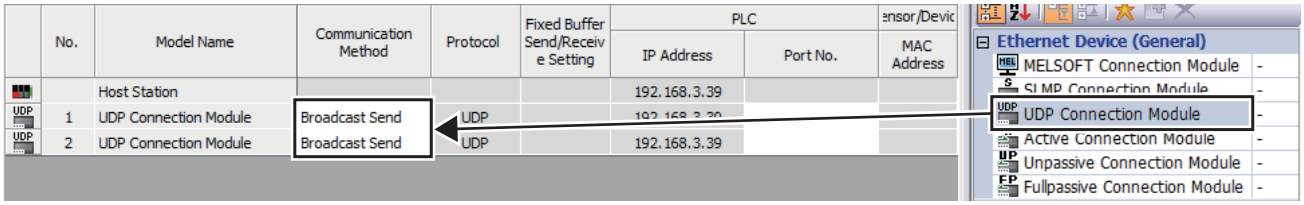
- Built-in Ethernet setting window of PLC parameter (GX Works2)

GX Works2



- Module parameter setting window (GX Works3)

GX Works3

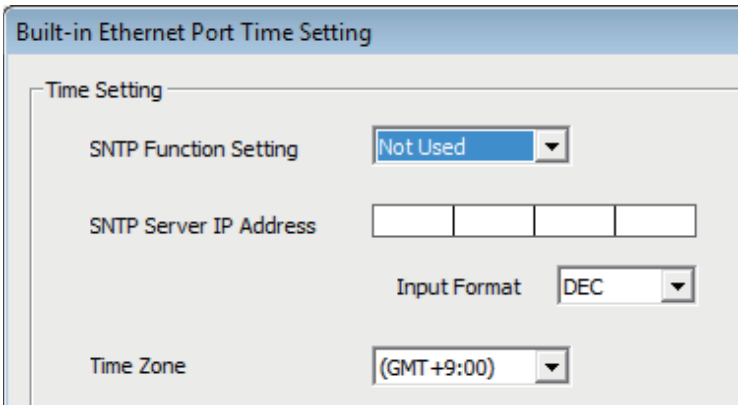


Time zone setting of time setting (SNTP client)

For the RCPU, set the time zone in "Clock Related Setting" of CPU parameter because the time zone can be set in the clock data of the CPU module.

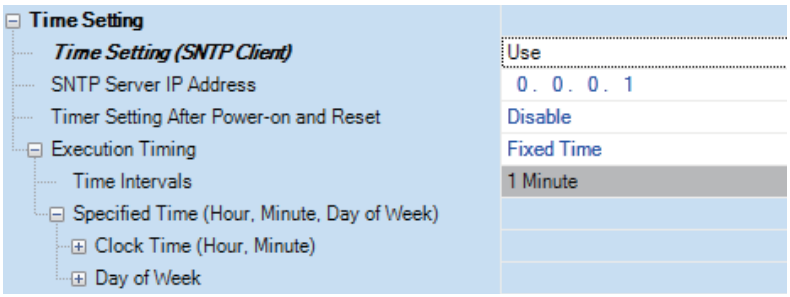
- Built-in Ethernet setting window of PLC parameter (GX Works2)

GX Works2



- Module parameter setting window (GX Works3)

GX Works3



- CPU parameter setting window (GX Works3)

GX Works3

Setting of communications using the predefined protocol

For the RCPU, check the predefined protocol operating status such as protocol execution status and protocol execution count in the CPU buffer memory (U3En\G*).

If the start device where the operating status of the predefined protocol is stored is set in the open setting of PLC parameter and the device is used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

SFC program

SFC programs can be used in the RCPU (GX Works3). However, the operation method of the engineering tool is different. For details on the operation method of GX Works3, refer to the following.

📖 GX Works3 Operating Manual

When reading the MELSAP3/MELSAP-L SFC programs created with GX Works2, refer to the following.

📖 Considerations for opening SFC programs in GX Works2 format with GX Works3 (FA-A-0192)

Monitor condition setting

The RCPU does not support the monitor condition setting. Use the trigger logging of the data logging function instead.

Trigger logging collects monitor data at the timing of specified condition or step number.

Executional conditioned device test

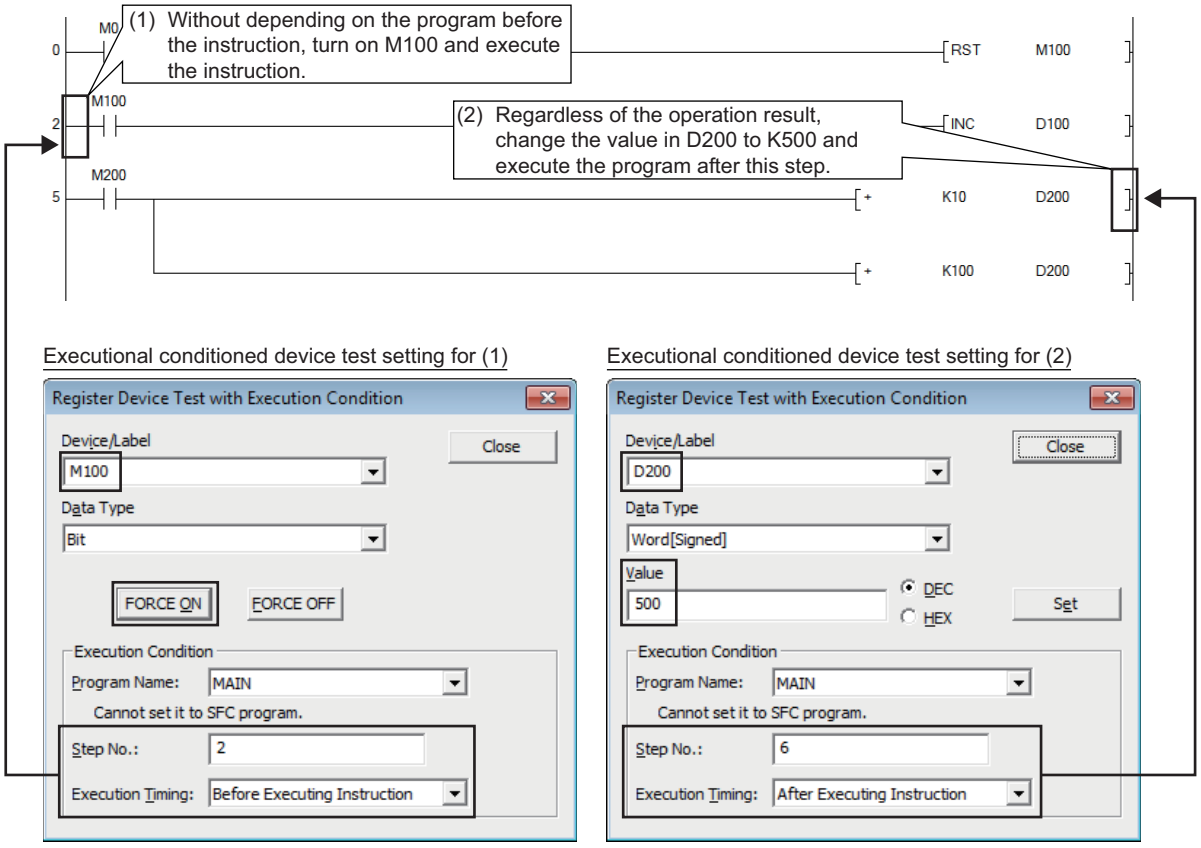
For the RCPU, availability of the executional conditioned device test varies depending on the firmware version of the CPU module. If the executional conditioned device test is not available, use the following method instead.

To change a device value at the specified step, execute the online change function, and add a replacement program to the desired position. (Delete the program to disable the processing.)

If the execution timing is set to before execution of an instruction in the QnUDVCPU program, add a program for the device test before the corresponding step in the RCPU program. If the execution timing is set to after execution of an instruction, add a program after the corresponding step.

• Program and Device Test with Execution Condition window (GX Works2)

GX Works2

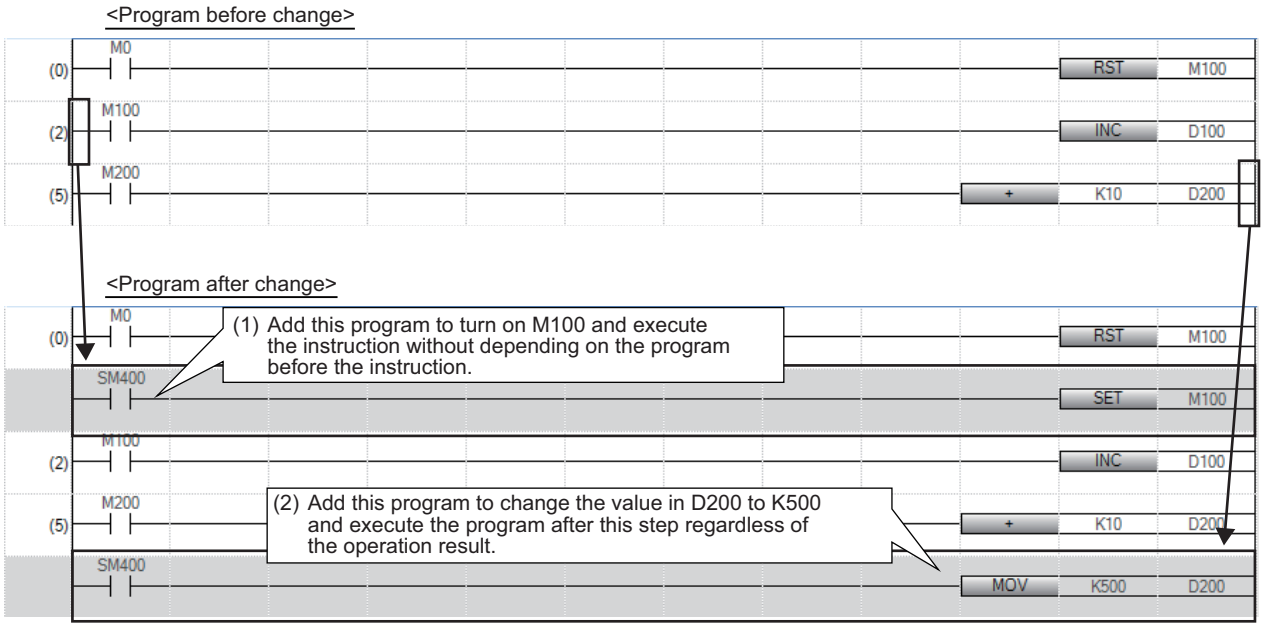


Executional conditioned device test setting for (1)

Executional conditioned device test setting for (2)

• Program (GX Works3)

GX Works3



Scan time measurement

The RCPU does not support the scan time measurement.

To check the scan time of programs being executed, use the program list monitor.

Refer to the instruction processing time list in the following manual to calculate the processing time of the specified program section.

MELSEC iQ-R Programming Manual (Instructions, Standard Functions/Function Blocks)

Access by using A-compatible 1C/1E frame

The RCPU does not support the access by using A-compatible 1C/1E frame. (The A to Q converted SM/SD areas (SM1000 to SM1255, SD1000 to SD1255) cannot be used.)

Use the SLMP or the QnA-compatible 3E/3C frame instead, and access the SM/SD areas of the RCPU.

High-speed interrupt function: high-speed I/O refresh and high-speed transfer function

To perform the high-speed interrupt function with the RCPU, set an event execution type program which will be triggered by the interrupt pointer I49 in CPU parameter (Program Setting) so that refresh is performed for each program separately.

To perform I/O refresh or transfer of the buffer memory, set refresh target data or refresh timing in "Module Parameter" of the target module.

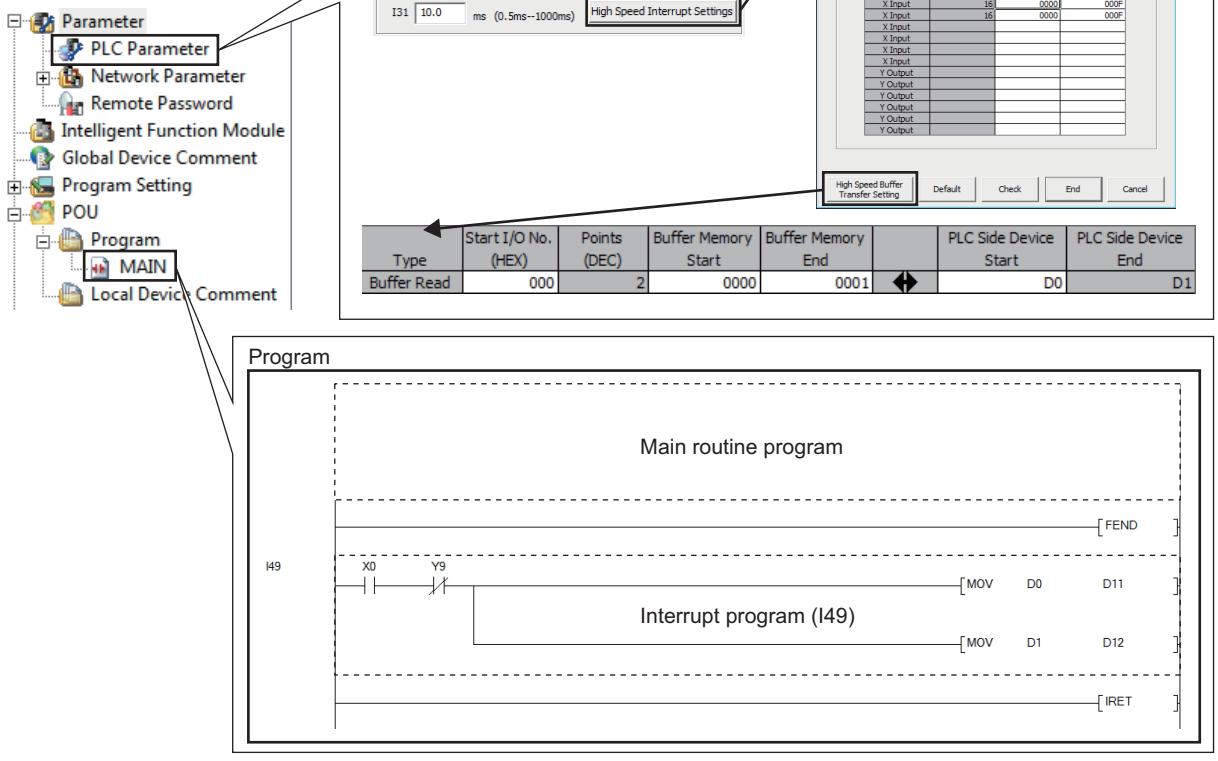
- PLC parameter setting window and program (GX Works2)

GX Works2

<System configuration>

Power supply module	CPU module	Analog module

<GX Works2>



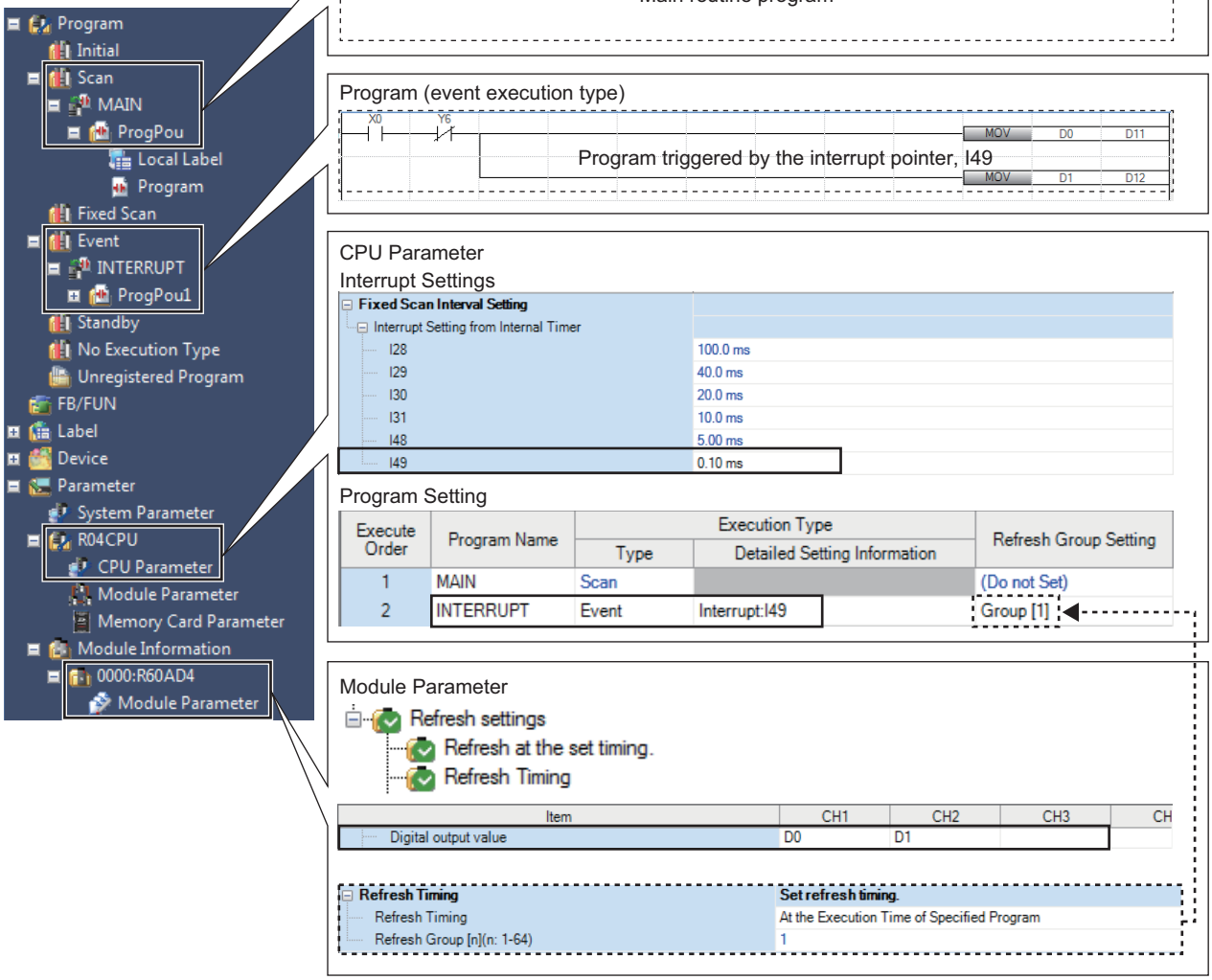
• CPU parameter setting window, module parameter setting window, and program (GX Works3)

GX Works3

<System configuration>

Power supply module	CPU module	Analog module

<GX Works3>



Service processing

The RCPU performs file access processing, such as reading program files, without being synchronized with each scan (not during END processing) so that the scan time will not be delayed due to the processing.

For this reason, the response performance does not improve even though the number of processing counts is increased in the device/label access service processing setting. (The response performance does not improve either even though the COM instruction is used.)

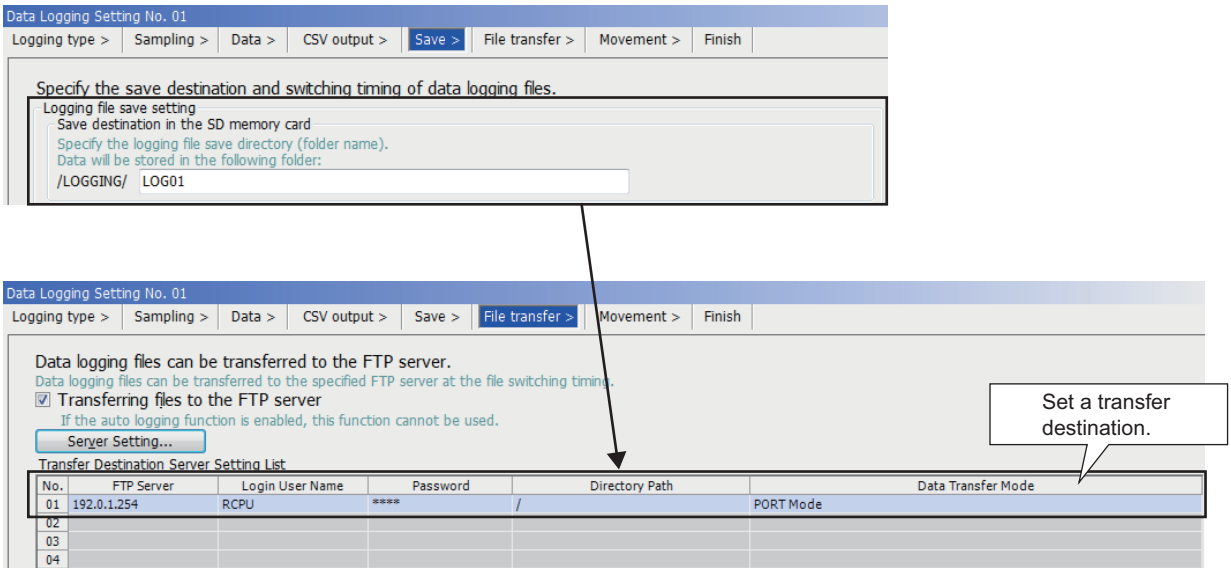
On the other hand, the RCPU performs device access processing, such as reading device data, during END processing. Therefore, the response performance of device access processing can be improved by increasing the number of processing counts in the device/label access service processing setting or by using the COM instruction.

Data logging file transfer function

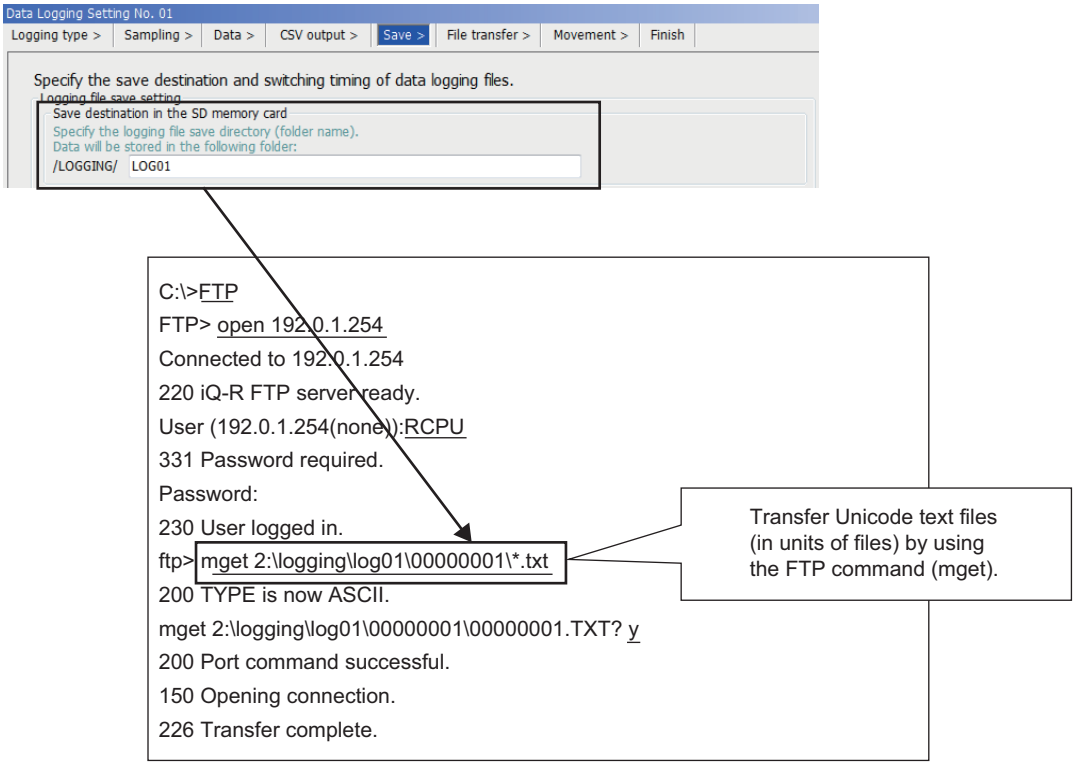
For the RCPU, availability of the data logging file transfer function varies depending on the firmware version of the CPU module. If the data logging file transfer function is not available, use the following method instead.

For the RCPU, use the FTP server function of built-in Ethernet and load logging result files stored in the CPU module to the server, such as a personal computer.

- File transfer window (CPU Module Logging Configuration Tool)



- Command Prompt window for FTP file transfer (FTP server)



Access to the host CPU operation information area in CPU shared memory

The RCPU does not have the host CPU operation information area (U3En\G0 and later) in CPU shared memory. If the host CPU operation information area is used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

To check the operation information of another CPU module, refresh the data in the corresponding special register (SD) to the CPU shared memory, and then access to the data stored in the memory.

Access to the multiple CPU high speed transmission area

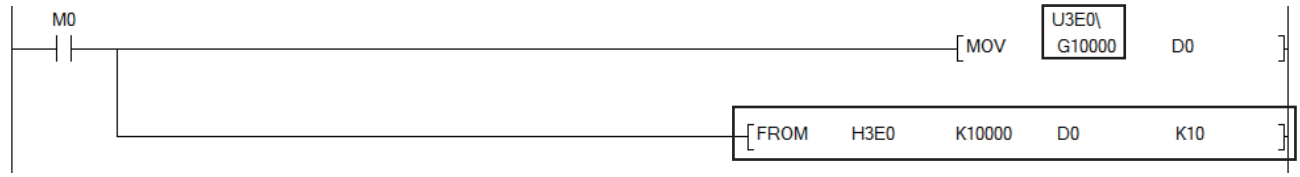
Area used for data communications among multiple CPU modules has been extended in the RCPU. The multiple CPU high speed transmission area is included in the fixed scan communication area, and the addresses have been changed from U3En\G10000 and later to U3En\HG0 and later.

If the multiple CPU high speed transmission area is used in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

When a project created by using GX Works2 is opened by "Open Other Format File" in GX Works3 and edited, the addresses U3En\G10000 and later are automatically converted to U3En\HG0 and later. Note, however, that if the fixed scan communication area is accessed by using the FROM/TO instructions, the access method needs to be corrected. Use the data transfer instruction and CPU buffer memory access device, (example: MOV U3En\HG*D0) instead of the FROM/TO instructions.

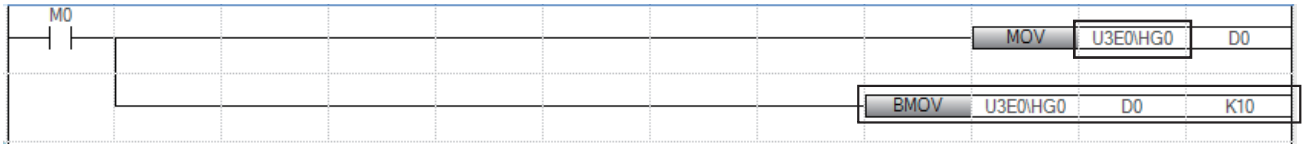
- Program to access the multiple CPU high speed transmission area (GX Works2)

GX Works2



- Program to access the fixed scan communication area (GX Works3)

GX Works3



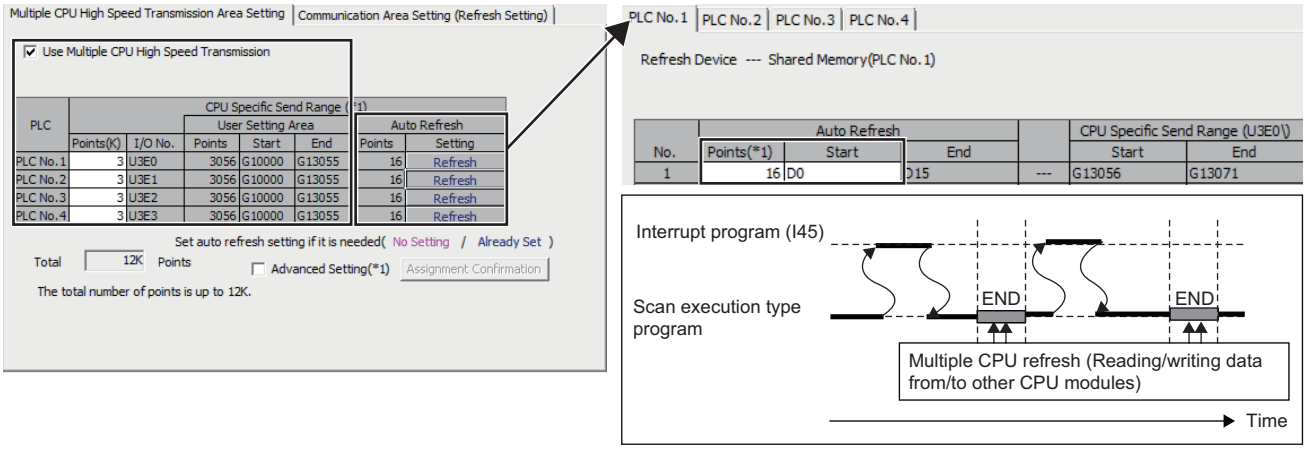
Refresh using the multiple CPU high speed transmission area

The RCPU performs multiple CPU refresh at two timings: during END processing and at execution of the multiple CPU synchronous interrupt (I45). Since refresh timing differs, if refresh using the multiple CPU high speed transmission area is set in the MELSEC-Q series program, the program needs to be corrected for the MELSEC iQ-R series.

To perform refresh during END processing (the same timing as the QCPU), set the refresh timing in system parameter ("Refresh Setting (At the END)" under "CPU Buffer Memory Setting").

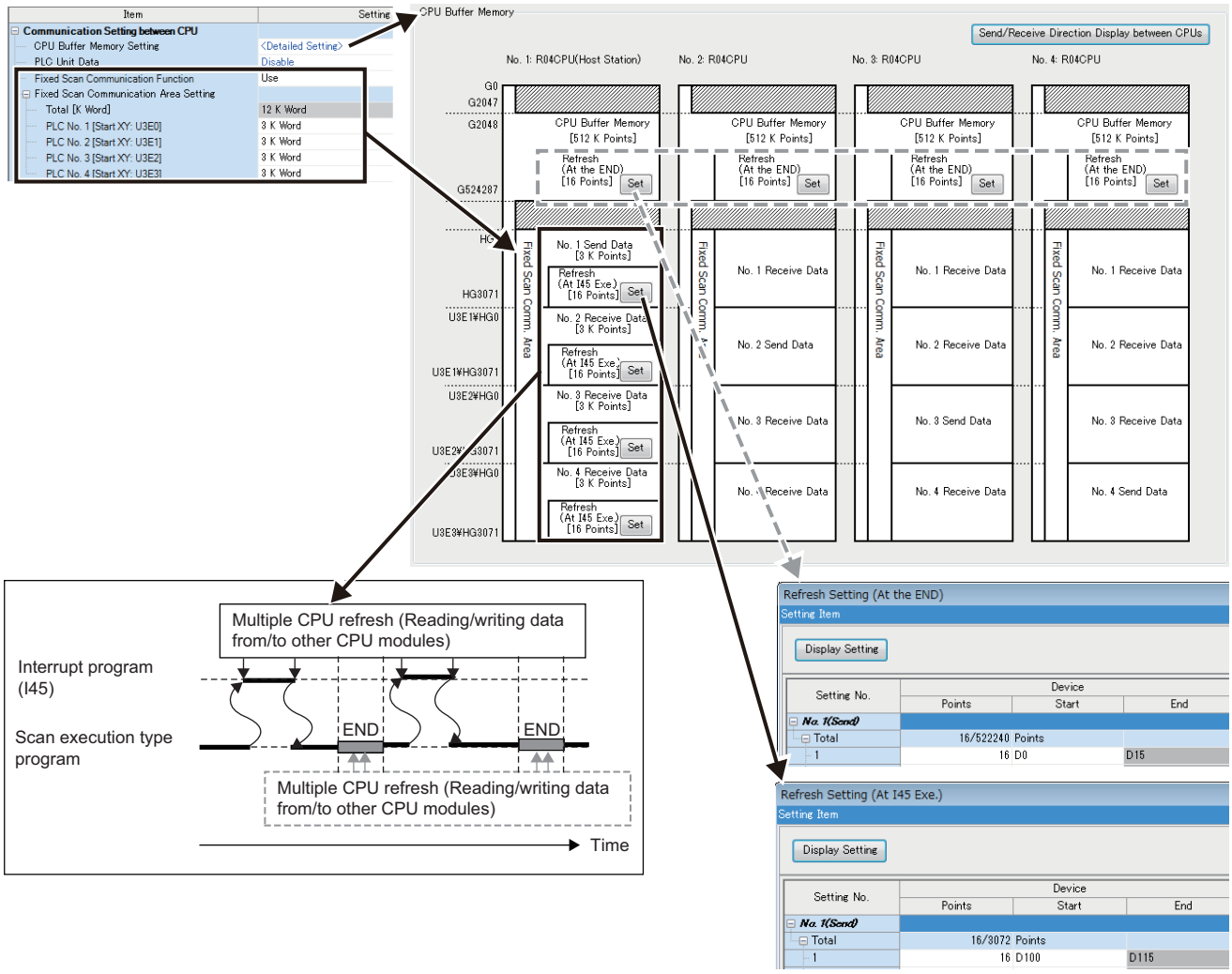
- PLC parameter setting window (Multiple CPU Setting) and refresh timing (GX Works2)

GX Works2



• System parameter setting window (Multiple CPU Setting) and refresh timing (GX Works3)

GX Works3



Self-diagnostic function

The RCPU batch-clears all the continuation errors being detected.
The delete-target continuation error does not need to be specified individually.
The error code system has been renewed for the RCPU. If an error code is set as an operating condition or interlock condition in the MELSEC-Q program, the program needs to be corrected for the MELSEC iQ-R series.

Long timer

A long timer contact turns on after a long timer coil turns on. Note that the operation (timing) may slightly differ between the RCPU and QCPU. When the long timer (LT) is used for the RCPU, the timing the contact turns on is not immediately after the coil turns on. The contact remains off until the next coil instruction is executed after the turning on of the coil, then turns on.

File size of a project

The file size of a project may increase when a project used for the MELSEC-Q series is converted to a project for the MELSEC iQ-R series. The increased file size, however, can be reduced by configuring a setting to compress a project file in GX Works3.
This project file compression setting is available for GX Works3 with the version of 1.047Z or later.
Follow the procedure below.

1. Select a project in the Navigation window and select [Project] ⇨ [Data Operation] ⇨ [Properties]. Or right-click the project and select [Properties] from the shortcut menu.
2. Select "Compression" for "File Size" and click the [OK] button. A project is saved with the file being compressed to the smaller size.

For details, refer to the following.
📖 GX Works3 Operating Manual

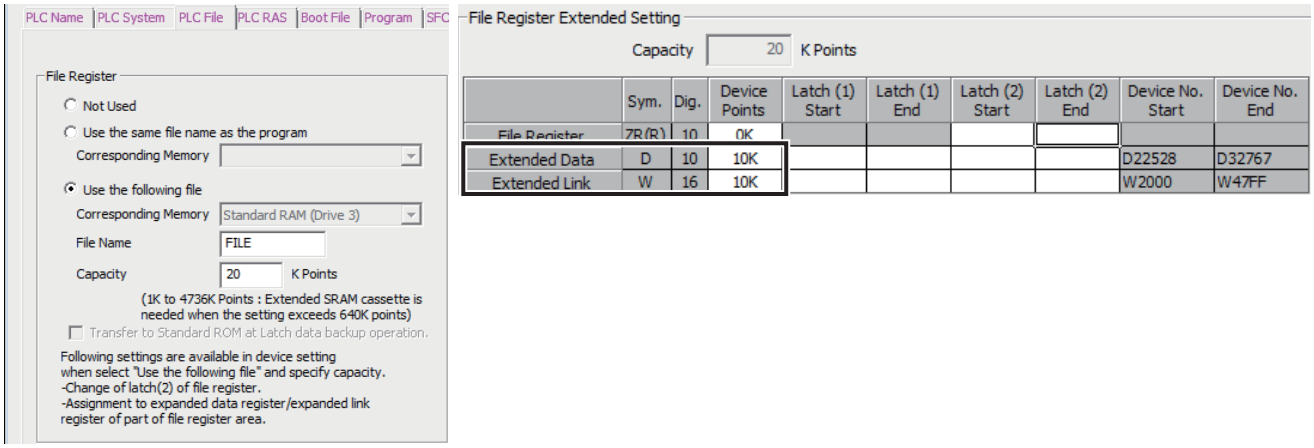
Extended data register (D) and extended link register (W)

The extended data register (D) and extended link register (W) cannot be used for the RCPU.

When using the RCPU, increase the device area capacity as well as the number of points for the data register (D) and link register (W) in CPU parameter. (To increase the device area capacity, decrease the file storage area capacity.)

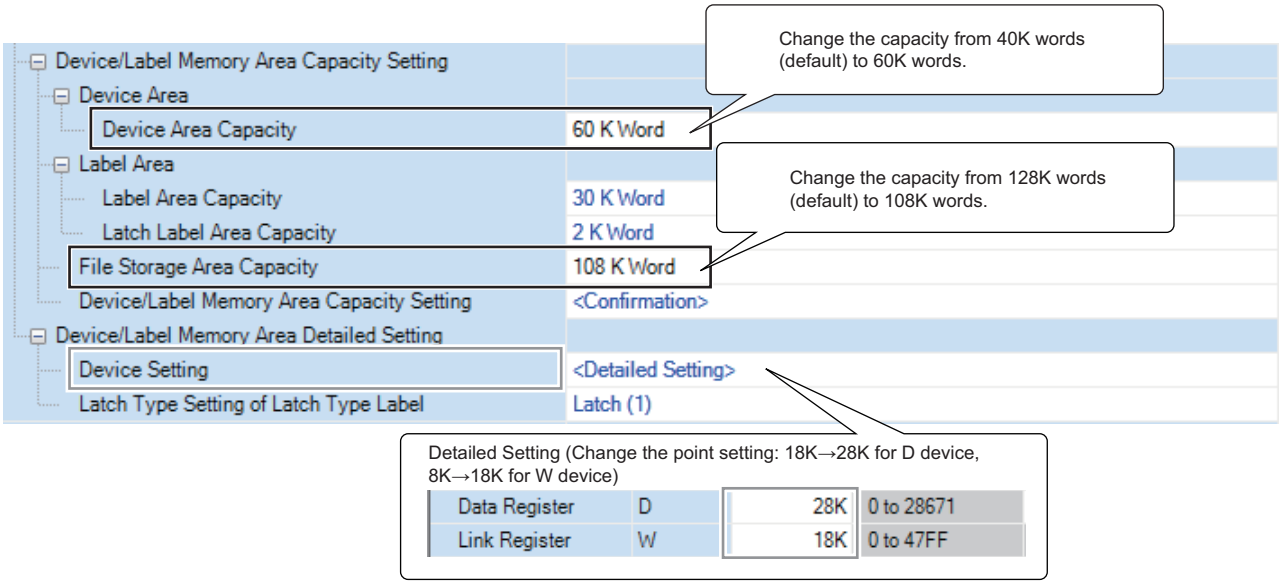
• PLC parameter setting window (GX Works2)

GX Works2



• CPU parameter setting window (GX Works3)

GX Works3



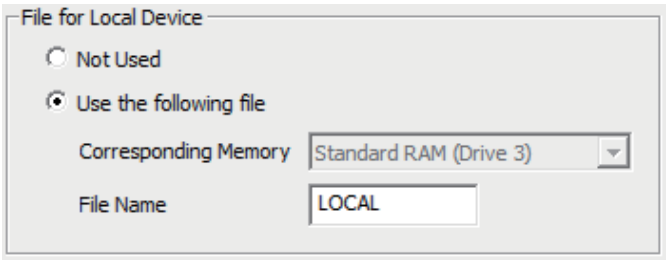
Local devices

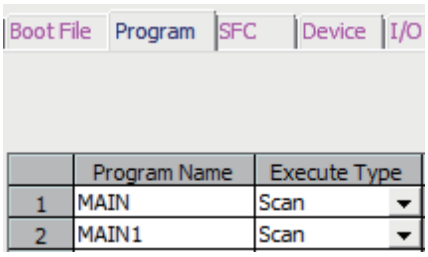
When describing local devices in the ladder for the RCPU, add "#" to the symbol.

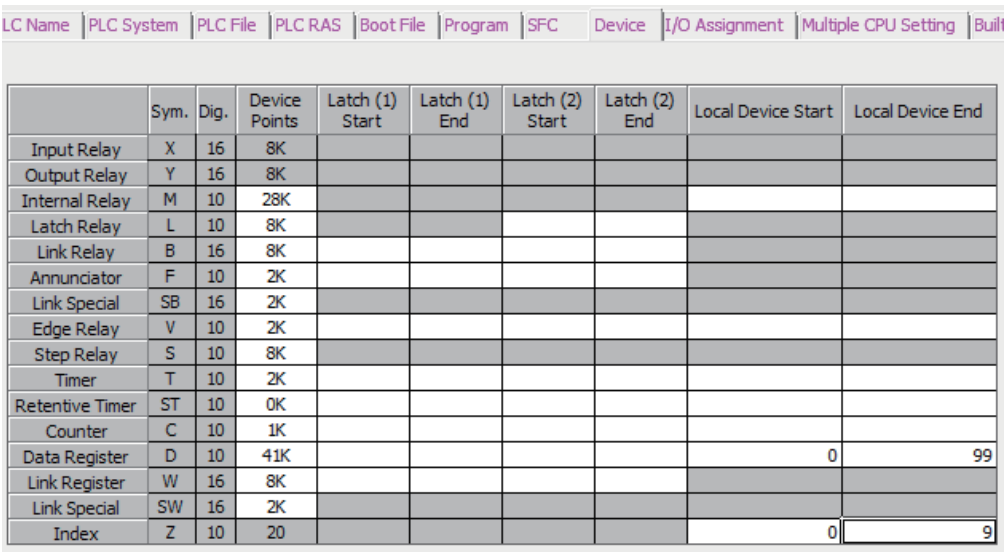
Note that "#" is not required to describe the index register (Z) and the file register (R/ZR) used in each program. For the RCPU, setting areas used for local devices is required, although specifying a local device file is not necessary.

• PLC parameter setting window (GX Works2)

GX Works2



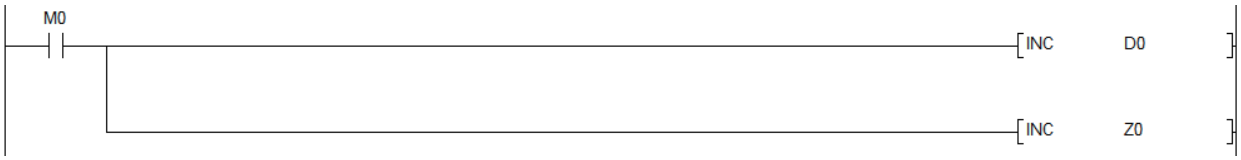




	Sym.	Dig.	Device Points	Latch (1) Start	Latch (1) End	Latch (2) Start	Latch (2) End	Local Device Start	Local Device End
Input Relay	X	16	8K						
Output Relay	Y	16	8K						
Internal Relay	M	10	28K						
Latch Relay	L	10	8K						
Link Relay	B	16	8K						
Annunciator	F	10	2K						
Link Special	SB	16	2K						
Edge Relay	V	10	2K						
Step Relay	S	10	8K						
Timer	T	10	2K						
Retentive Timer	ST	10	0K						
Counter	C	10	1K						
Data Register	D	10	41K					0	99
Link Register	W	16	8K						
Link Special	SW	16	2K						
Index	Z	10	20					0	9

• Program (MAIN/MAIN1) (GX Works2)

GX Works2



• CPU parameter setting window (GX Works3)

GX Works3

Program Setting

Execute Order	Program Name	Type
1	MAIN	Scan
2	MAIN1	Scan

Memory/Device Setting

Item	Setting
Device/Label Memory Area Capacity Setting	
Device Area	
Device Area Capacity	40 K Word
Label Area	
Label Area Capacity	30 K Word
Latch Label Area Capacity	2 K Word
File Storage Area Capacity	100 K Word
Device/Label Memory Area Capacity Setting	<Confirmation>
Device/Label Memory Area Detailed Setting	
Device Setting	<Detailed Setting>
Latch Type Setting of Latch Type Label	Latch (1)
Index Register Setting	
Points Setting	
Local Setting	
Points Setting	
Local Index Register (Z)	10 Points
Local Long Index Register (LZ)	0 Points
Start	
Index Register (Z)	0
Index Regist	0

Change the capacity from 128K words (default) to 100K words.
(Secure the local device area capacity.)

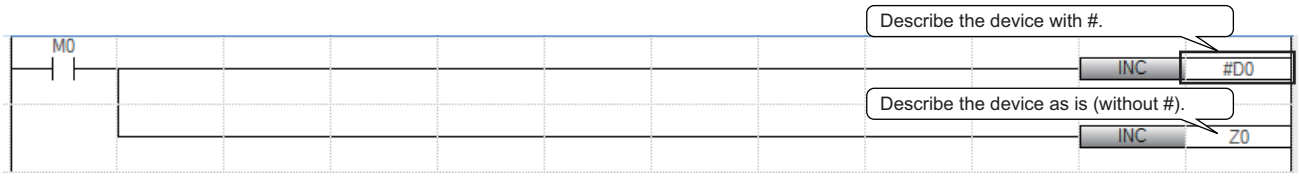
Set the local index register points.

Detailed Setting (Local Device setting)

Item	Symbol	Device		Local Device		
		Points	Range	Start	End	Points
Input	X	12K	0 to 2FFF			
Output	Y	12K	0 to 2FFF			
Internal Relay	M	12K	0 to 12287			
Link Relay	B	8K	0 to 1FFF			
Special Link Relay	SB	2K	0 to 7FF			
Annunciator	F	2K	0 to 2047			
Edge Relay	V	2K	0 to 2047			
Timer	T	1K	0 to 1023			
Long Timer	LT	1K	0 to 1023			
Retentive Timer	ST	0				
Long Retentive Time	LST	0				
Counter	C	512	0 to 511			
Long Counter	LC	512	0 to 511			
Data Register	D	18K	0 to 18431	0	99	100

• Program (MAIN/MAIN1) (GX Works3)

GX Works3



File name

Since the RCPU handles file names as Unicode data, specify the file name in Unicode when loading a file to the CPU module from an external device, such as an FTP client.

File names specified in a character string (specified by using " ") on the program do not need to be changed because they are recognized as Unicode. However, if string data stored in the device are actually used by the program, the program needs to be modified for the MELSEC iQ-R series. (Before the project is converted, the address needs to be changed to a location within 64K words.)

The number of steps

The number of steps may increase when a project of the QCPU is converted to a project of the RCPU. This may occur when a device that is accessed by the project located at an address beyond 64K words from the start of the memory which is allocated for internal devices, file registers, or extended devices. In this case, the address needs to be changed to a location within 64K words before the project is converted.

I/O refresh

For the RCPU, the I/O refresh range is the number of I/O points from the start XY of each module. (Only the I/O points for the slots where modules are set in the I/O assignment settings are included in the range.)

For the programmable controller CPU with firmware version "52" or earlier, however, the I/O refresh range is from X0/Y0 to the last I/O number. (The I/O points for the slots where no module is set in the I/O assignment settings are included in the range.)

When the CC-Link standby master function is used in a redundant system

When the standby master function of the CC-Link module is used for the QnPRHCPU, forced master switching is performed using I41 (Error interrupt) in the program. The RnPCPU, however, does not support the use of I41 (Error interrupt). For this reason, the program needs to be modified when a project of the QnPRHCPU is converted to a project of the RnPCPU.

For details, refer to the following.

MELSEC iQ-R CC-Link System Master/Local Module User's Manual (Application)

Point

For details on these precautions, refer to the following.

MELSEC iQ-R Module Configuration Manual
MELSEC iQ-R Programming Manual (Program Design)
MELSEC iQ-R Programming Manual (Instructions, Standard Functions/Function Blocks)

REVISIONS

* The document number is given on the bottom left of the back cover.

Revision date	Document number	Description
November 2017	L(NA)08510ENG-A	First edition
February 2019	L(NA)08510ENG-B	■Added models RX70, RX71, RX72, RJ71GP21S-SX, RJ71DN91, RJ71PB91VR33B, RD60P8-G ■Partial correction Section 3.1, 3.2, 5.1, 5.2, 6.1, 7.2, Chapter 8, 9, 10
March 2020	L(NA)08510ENG-C	■Added models R08PCPU, R16PCPU, R32PCPU, RJ71LP21-25 ■Changed model RD81MES96 → RD81MES96N ■Addition Section 1.2 ■Partial correction Section 1.2 → Section 1.3, Chapter 2, Section 3.2, 7.1, 7.3, Chapter 9, 10, Section 11.1, 11.2, 11.5
March 2021	L(NA)08510ENG-D	■Added models R63RP, R64RP, R310RB, R610RB, R68WRB, R60AD6-DG ■Partial correction Chapter 2, Section 3.2, Chapter 4, 5, 7, 11
March 2021	L(NA)08510ENG-E	■Partial correction Back cover
February 2022	L(NA)08510ENG-F	■Partial correction Section 7.1, 11.4
September 2022	L(NA)08510ENG-G	■Added model R102WCPU-W ■Partial correction SAFETY PRECAUTIONS, Section 2.1 to 2.4, 6.1, 11.4
September 2023	L(NA)08510ENG-H	■Partial correction Chapter 9

Japanese manual number: L08489-I

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

· For Safety CPUs

Please confirm the following product warranty details before using this product.

1. Limited Warranty and Product Support.

a. Mitsubishi Electric Company ("MELCO") warrants that for a period of eighteen (18) months after date of delivery from the point of manufacture or one year from date of Customer's purchase, whichever is less, Mitsubishi MELSEC Safety programmable logic controllers (the "Products") will be free from defects in material and workmanship.

b. At MELCO's option, for those Products MELCO determines are not as warranted, MELCO shall either repair or replace them or issue a credit or return the purchase price paid for them.

c. For this warranty to apply:

(1) Customer shall give MELCO (i) notice of a warranty claim to MELCO and the authorized dealer or distributor from whom the Products were purchased, (ii) the notice shall describe in reasonable details the warranty problem, (iii) the notice shall be provided promptly and in no event later than thirty (30) days after the Customer knows or has reason to believe that Products are not as warranted, and (iv) in any event, the notice must given within the warranty period;

(2) Customer shall cooperate with MELCO and MELCO's representatives in MELCO's investigation of the warranty claim, including preserving evidence of the claim and its causes, meaningfully responding to MELCO's questions and investigation of the problem, grant MELCO access to witnesses, personnel, documents, physical evidence and records concerning the warranty problem, and allow MELCO to examine and test the Products in question offsite or at the premises where they are installed or used; and

(3) If MELCO requests, Customer shall remove Products it claims are defective and ship them to MELCO or MELCO's authorized representative for examination and, if found defective, for repair or replacement. The costs of removal, shipment to and from MELCO's designated examination point, and reinstallation of repaired or replaced Products shall be at Customer's expense.

(4) If Customer requests and MELCO agrees to effect repairs onsite at any domestic or overseas location, the Customer will pay for the costs of sending repair personnel and shipping parts. MELCO is not responsible for any re-commissioning, maintenance, or testing on-site that involves repairs or replacing of the Products.

d. Repairs of Products located outside of Japan are accepted by MELCO's local authorized service facility centers ("FA Centers"). Terms and conditions on which each FA Center offers repair services for Products that are out of warranty or not covered by MELCO's limited warranty may vary.

e. Subject to availability of spare parts, MELCO will offer Product repair services for (7) years after each Product model or line is discontinued, at MELCO's or its FA Centers' rates and charges and standard terms in effect at the time of repair. MELCO usually produces and retains sufficient spare parts for repairs of its Products for a period of seven (7) years after production is discontinued.

f. MELCO generally announces discontinuation of Products through MELCO's Technical Bulletins. Products discontinued and repair parts for them may not be available after their production is discontinued.

2. Limits of Warranties.

a. MELCO does not warrant or guarantee the design, specify, manufacture, construction or installation of the materials, construction criteria, functionality, use, properties or other characteristics of the equipment, systems, or production lines into which the Products may be incorporated, including any safety, fail-safe and shut down systems using the Products.

b. MELCO is not responsible for determining the suitability of the Products for their intended purpose and use, including determining if the Products provide appropriate safety margins and redundancies for the applications, equipment or systems into which they are incorporated.

c. Customer acknowledges that qualified and experienced personnel are required to determine the suitability, application, design, construction and proper installation and integration of the Products. MELCO does not supply such personnel.

d. MELCO is not responsible for designing and conducting tests to determine that the Product functions appropriately and meets application standards and requirements as installed or incorporated into the end-user's equipment, production lines or systems.

e. MELCO does not warrant any Product:

(1) repaired or altered by persons other than MELCO or its authorized engineers or FA Centers;

(2) subjected to negligence, carelessness, accident, misuse, or damage;

(3) improperly stored, handled, installed or maintained;

(4) integrated or used in connection with improperly designed, incompatible or defective hardware or software;

(5) that fails because consumable parts such as batteries, backlights, or fuses were not tested, serviced or replaced;

(6) operated or used with equipment, production lines or systems that do not meet applicable and commensurate legal, safety and industry-accepted standards;

(7) operated or used in abnormal applications;

(8) installed, operated or used in contravention of instructions, precautions or warnings contained in MELCO's user, instruction and/or safety manuals, technical bulletins and guidelines for the Products;

(9) used with obsolete technologies or technologies not fully tested and widely accepted and in use at the time of the Product's manufacture;

(10) subjected to excessive heat or moisture, abnormal voltages, shock, excessive vibration, physical damage or other improper environment; or

(11) damaged or malfunctioning due to Acts of God, fires, acts of vandals, criminals or terrorists, communication or power failures, or any other cause or failure that results from circumstances beyond MELCO's control.

f. All Product information and specifications contained on MELCO's website and in catalogs, manuals, or technical information materials provided by MELCO are subject to change without prior notice.

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b. Although MELCO has obtained the certification for Product's compliance to the international safety standards IEC61508 and ISO13849-1 from TUV Rheinland, this fact does not guarantee that Product will be free from any malfunction or failure. The user of this Product shall comply with any and all applicable safety standard, regulation or law and take appropriate safety measures for the system in which the Product is installed or used and shall take the second or third safety measures other than the Product. MELCO is not liable for damages that could have been prevented by compliance with any applicable safety standard, regulation or law.
c. MELCO prohibits the use of Products with or in any application involving power plants, trains, railway systems, airplanes, airline operations, other transportation systems, amusement equipments, hospitals, medical care, dialysis and life support facilities or equipment, incineration and fuel devices, handling of nuclear or hazardous materials or chemicals, mining and drilling, and other applications where the level of risk to human life, health or property are elevated.
d. MELCO SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL, INDIRECT OR PUNITIVE DAMAGES, FOR LOSS OF PROFITS, SALES, OR REVENUE, FOR INCREASED LABOR OR OVERHEAD COSTS, FOR DOWNTIME OR LOSS OF PRODUCTION, FOR COST OVERRUNS, OR FOR ENVIRONMENTAL OR POLLUTION DAMAGES OR CLEAN-UP COSTS, WHETHER THE LOSS IS BASED ON CLAIMS FOR BREACH OF CONTRACT OR WARRANTY, VIOLATION OF STATUTE, NEGLIGENCE OR OTHER TORT, STRICT LIABILITY OR OTHERWISE.
e. In the event that any damages which are asserted against MELCO arising out of or relating to the Products or defects in them, consist of personal injury, wrongful death and/or physical property damages as well as damages of a pecuniary nature, the disclaimers and limitations contained in these terms shall apply to all three types of damages to the fullest extent permitted by law. If, however, the personal injury, wrongful death and/or physical property damages cannot be disclaimed or limited by law or public policy to the extent provided by these terms, then in any such event the disclaimer of and limitations on pecuniary or economic consequential and incidental damages shall nevertheless be enforceable to the fullest extent allowed by law.
f. In no event shall any cause of action arising out of breach of warranty or otherwise concerning the Products be brought by Customer more than one year after the cause of action accrues.
g. Each of the limitations on remedies and damages set forth in these terms is separate and independently enforceable, notwithstanding the unenforceability or failure of essential purpose of any warranty, undertaking, damage limitation, other provision of these terms or other terms comprising the contract of sale between Customer and MELCO.

4. Delivery/Force Majeure.

a. Any delivery date for the Products acknowledged by MELCO is an estimated and not a promised date. MELCO will make all reasonable efforts to meet the delivery schedule set forth in Customer's order or the purchase contract but shall not be liable for failure to do so.
b. Products stored at the request of Customer or because Customer refuses or delays shipment shall be at the risk and expense of Customer.
c. MELCO shall not be liable for any damage to or loss of the Products or any delay in or failure to deliver, service, repair or replace the Products arising from shortage of raw materials, failure of suppliers to make timely delivery, labor difficulties of any kind, earthquake, fire, windstorm, flood, theft, criminal or terrorist acts, war, embargoes, governmental acts or rulings, loss or damage or delays in carriage, acts of God, vandals or any other circumstances reasonably beyond MELCO's control.

5. Choice of Law/Jurisdiction.

These terms and any agreement or contract between Customer and MELCO shall be governed by the laws of the State of New York without regard to conflicts of laws. To the extent any action or dispute is not arbitrated, the parties consent to the exclusive jurisdiction and venue of the federal and state courts located in the Southern District of the State of New York. Any judgment there obtained may be enforced in any court of competent jurisdiction.

6. Arbitration.

Any controversy or claim arising out of, or relating to or in connection with the Products, their sale or use or these terms, shall be settled by arbitration conducted in accordance with the Center for Public Resources (CPR) Rules for Non-Administered Arbitration of International Disputes, by a sole arbitrator chosen from the CPR's panels of distinguished neutrals. Judgment upon the award rendered by the Arbitrator shall be final and binding and may be entered by any court having jurisdiction thereof. The place of the arbitration shall be New York City, New York. The language of the arbitration shall be English. The neutral organization designated to perform the functions specified in Rule 6 and Rules 7.7(b), 7.8 and 7.9 shall be the CPR.

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