MITSUBISHI ELECTRIC

Programmable Controller

Transition from MELSEC-A/QnA (Large Type) Series to MELSEC iQ-R Series Handbook

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

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 manual and then keep the manual 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]

- 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 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 products in a Class Ⅰ, Division 2 environment]

- Products with the Cl.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]

⚠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.

[Design Precautions]

⚠CAUTION

[Precautions for using 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.

[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.

[Installation Precautions]

⚠CAUTION

- Use the programmable controller in an environment that meets the 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.
- When using an SD memory card, fully insert it into the SD memory card slot. Check that it is inserted completely. Poor contact may cause malfunction.
- Securely insert an extended SRAM cassette or a battery-less option 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, extended SRAM cassette, battery-less option 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 a blank cover module (RG60) to each empty slot and an included extension connector protective cover to the unused extension cable connector before powering on the system 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 cables may swing or inadvertently be pulled, resulting in malfunction or damage to modules or cables.
  In addition, the weight of the cables may put stress on modules in an environment of strong vibrations and shocks.
  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 RTD 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.

[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 shielded cables 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 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.

[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.
- 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 perform each of the following operations more than 50 times (IEC 61131-2/JIS B 3502 compliant).
  Exceeding the limit may cause malfunction.
  - Mounting/removing the module to/from the base unit
  - Inserting/removing the extended SRAM cassette or battery-less option cassette to/from the CPU module
  - Mounting/removing the terminal block to/from the module
- 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.
- Do not touch the metal terminals on the back side of the SD memory 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 or a battery-less option cassette. Doing so may cause malfunction or failure of the module.
- 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.

[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) Mitsubishi 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 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'S USER, 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 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 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 representative in your region.

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 DOCUMENT

Generic term	Description
ACPU	A generic term for the MELSEC-A series CPU modules
AnACPU	A generic term for the A2ACPU(-S1), A3ACPU, A2ACPUP21/R21, A2ACPUP21/R21-S1, and A3ACPUP21/R21
AnNCPU	A generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU(-S1), A2NCPUP21/R21, A2NCPUP21/R21-S1, A2NCPUP21-S3/S4, A3NCPU, A3NCPUP21/R21, and A3NCPUP21-S3
AnUCPU	A generic term for the A2UCPU(-S1), A3UCPU, and A4UCPU
QnACPU	A generic term for the MELSEC-QnA series CPU modules
RCPU	A generic term for the MELSEC iQ-R series CPU modules
RnCPU	A generic term for the R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, and R120CPU

1 OVERVIEW

This document describes models to select for replacing modules from the MELSEC-A/QnA series to the MELSEC iQ-R series.

1.1 Considerations Before Selecting Alternative Models for Replacement

Some items need to be considered before replacing modules from the MELSEC-A/QnA series to the MELSEC iQ-R series. The following are main items to be considered. Consider them sufficiently in advance.
(It is necessary to understand the existing system configuration before taking the items into consideration.)

Replacement methods and installation location

Whether some space can be reserved when adding a base unit at the replacement work.

Model selection (I/O module)

Whether a module whose specifications (rated input current and others) and functions are equivalent to that of the existing module exists or not in the MELSEC iQ-R series.
Whether using the existing external wiring or wiring newly.

Model selection (intelligent function module)

Whether the specifications of the replaced module and connection external device match or not.
Whether using the existing external wiring or wiring newly.

Model selection (control network module)

Whether MELSECNET can be replaced with CC-Link IE Control or CC-Link IE Field.
Whether a new communication cable installation has been considered or not at the replacement of the network.

Model selection (communication module)

Whether the communication target device is compatible with the MELSEC iQ-R series module commands in the communications using the MC protocol or not.
Whether the software (program) of the communication target device can be converted into the one supported by the MELSEC iQ-R series.

Use of existing programs

Whether using the programs in the existing system or creating a new program.
Whether the workload and cost of correction have been considered or not when using the existing programs of intelligent function modules and communication modules.

1.2 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 modules

1.3 How to Replace the System from the MELSEC-A/QnA Series to the MELSEC iQ-R Series

This section describes how to replace the system from the MELSEC-A/QnA series to the MELSEC iQ-R series.

Model selection

Select a model to be replaced. For details, refer to the following.

☞ Page 19 CPU MODULE REPLACEMENT to ☞ Page 264 CONTROL NETWORK MODULE REPLACEMENT

Project conversion

Convert the project used in the MELSEC-A/QnA series so that it can be used in the MELSEC iQ-R series. For details, refer to the following.

☞ Page 287 PROJECT REPLACEMENT

2 CPU MODULE REPLACEMENT

2.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series CPU modules in accordance with the program capacity, number of I/O points, and functions of the MELSEC-A/QnA series CPU modules.
Select models that best suit your application considering the scope of control of the MELSEC-A/QnA series CPU module currently used, as well as the system specifications and extensibility after replacement.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
ACPU	A1NCPU A1NCPUP21 A1NCPUR21 A1NCPUP21-S3 *1	R00CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 1.0μs → 0.031μs (3) PC MIX value: 0.2 → 19 (4) Number of I/O points: 256 → 4096 (5) Number of I/O device points: 256 → 8192 (6) Program capacity: 6K steps → 10K steps (7) Number of file register points: 0K → 96K (8) Extension level: 1 → 7 (9) Memory: 4KRAM/4KROM/4KEROM → Program memory/built-in RAM/built-in ROM (10)Microcomputer program: Available → Not available (11)Others: Equipped with the power supply module → None*2
	A2NCPU A2NCPUP21 A2NCPUR21 A2NCPUP21-S3 *1	R01CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 1.0μs → 0.031μs (3) PC MIX value: 0.2 → 19 (4) Number of I/O points: 512 → 4096 (5) Number of I/O device points: 512 → 8192 (6) Program capacity: 14K steps → 15K steps (7) Number of file register points: 4K → 96K (8) Extension level: 3 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/built-in ROM/SD memory card (10)Microcomputer program: Available → Not available
	A2NCPU-S1 A2NCPUP21-S1 A2NCPUR21-S1 A2NCPUP21-S4 *1	R01CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 1.0μs → 0.031μs (3) PC MIX value: 0.2 → 19 (4) Number of I/O points: 1024 → 4096 (5) Number of I/O device points: 1024 → 8192 (6) Program capacity: 14K steps → 15K steps (7) Number of file register points: 4K → 96K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/built-in ROM/SD memory card (10)Microcomputer program: Available → Not available
	A3NCPU A3NCPUP21 A3NCPUR21 A3NCPUP21-S3 *1	R04CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 1.0μs → 0.98ns (3) PC MIX value: 0.2 → 419 (4) Number of I/O points: 2048 → 4096 (5) Number of I/O device points: 2048 → 12288 (6) Program capacity: 30K steps × 2 steps → 40K steps (7) Number of file register points: 4K → 160K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/built-in ROM/SD memory card (10)Microcomputer program: Available → Not available
		R08CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 1.0μs → 0.98ns (3) PC MIX value: 0.2 → 419 (4) Number of I/O points: 2048 → 4096 (5) Number of I/O device points: 2048 → 12288 (6) Program capacity: 30K steps × 2 steps → 80K steps (7) Number of file register points: 4K → 544K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/built-in ROM/SD memory card (10)Microcomputer program: Available → Not available

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
ACPU	A2ACPU A2ACPUP21 A2ACPUR21 A2ACPUP21-S3 *1	R01CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.2μs → 0.031μs (3) PC MIX value: 0.9 → 19 (4) Number of I/O points: 512 → 4096 (5) Number of I/O device points: 512 → 8192 (6) Program capacity: 14K steps → 15K steps (7) Number of file register points: 8K → 96K (8) Extension level: 3 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
	A2ACPU-S1 A2ACPUP21-S1 A2ACPUR21-S1 A2ACPUP21-S4 *1	R01CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.2μs → 0.031μs (3) PC MIX value: 0.9 → 19 (4) Number of I/O points: 1024 → 4096 (5) Number of I/O device points: 1024 → 8192 (6) Program capacity: 14K steps → 15K steps (7) Number of file register points: 8K → 96K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
	A3ACPU A3ACPUP21 A3ACPUR21 A3ACPUP21-S3 *1	R04CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.15μs → 0.98ns (3) PC MIX value: 0.9 → 419 (4) Number of I/O points: 2048 → 4096 (5) Number of I/O device points: 2048 → 12288 (6) Program capacity: 30K steps × 2 steps → 40K steps (7) Number of file register points: 8K → 160K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
		R08CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.15μs → 0.98ns (3) PC MIX value: 0.9 → 419 (4) Number of I/O points: 2048 → 4096 (5) Number of I/O device points: 2048 → 12288 (6) Program capacity: 30K steps × 2 steps → 80K steps (7) Number of file register points: 8K → 544K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
	A2UCPU	R01CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.2μs → 0.031μs (3) PC MIX value: 0.9 → 19 (4) Number of I/O points: 512 → 4096 (5) Number of I/O device points: 8192 → 8192 (6) Program capacity: 14K steps → 15K steps (7) Number of file register points: 8K → 96K (8) Extension level: 3 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
	A2UCPU-S1	R01CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.2μs → 0.031μs (3) PC MIX value: 0.9 → 19 (4) Number of I/O points: 1024 → 4096 (5) Number of I/O device points: 8192 → 8192 (6) Program capacity: 14K steps → 15K steps (7) Number of file register points: 8K → 96K (8) Extension level: 3 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
ACPU	A3UCPU	R04CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.15μs → 0.98ns (3) PC MIX value: 1.2 → 419 (4) Number of I/O points: 2048 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 30K steps × 2 → 40K steps (7) Number of file register points: 8K → 160K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
		R08CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.15μs → 0.98ns (3) PC MIX value: 1.2 → 419 (4) Number of I/O points: 2048 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 30K steps × 2 → 80K steps (7) Number of file register points: 8K → 544K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
	A4UCPU	R08CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.15μs → 0.98ns (3) PC MIX value: 1.2 → 419 (4) Number of I/O points: 4096 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 30K steps × 4 → 80K steps (7) Number of file register points: 8K → 544K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card
		R16CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.15μs → 0.98ns (3) PC MIX value: 1.2 → 419 (4) Number of I/O points: 4096 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 30K steps × 4 → 160K steps (7) Number of file register points: 8K → 800K (8) Extension level: 7 → 7 (9) Memory: Depending on a memory cassette → Program memory/built-in RAM/ built-in ROM/SD memory card

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
QnACPU	Q2ACPU	R04CPU	(1) I/O control: Refresh only (2) Processing speed (LD instruction): For refresh, 0.2μs → 0.98ns (3) PC MIX value: 1.3 → 419 (4) Number of I/O points: 512 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 28K steps → 40K steps (7) Number of file register points: 1018K → 160K (when an extended SRAM cassette is used: 8352K maximum) (8) Extension level: 3 → 7 (9) Number of mountable memory cards: 2 → 1
	Q2ACPU-S1	R08CPU	(1) I/O control: Refresh only (2) Processing speed (LD instruction): For refresh, 0.2μs → 0.98ns (3) PC MIX value: 1.3 → 419 (4) Number of I/O points: 1024 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 60K steps → 80K steps (7) Number of file register points: 1018K → 544K (when an extended SRAM cassette is used: 8736K maximum) (8) Extension level: 7 → 7 (9)Number of mountable memory cards: 2 → 1
	Q3ACPU	R16CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.15μs → 0.98ns (3) PC MIX value: 1.8 → 419 (4) Number of I/O points: 2048 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 92K steps → 160K steps (7) Number of file register points: 1018K → 800K (when an extended SRAM cassette is used: 8992K maximum) (8) Extension level: 7 → 7 (9) Number of mountable memory cards: 2 → 1
	Q4ACPU	R16CPU	(1) I/O control: Refresh/direct switching → Refresh only (2) Processing speed (LD instruction): For refresh, 0.075μs → 0.98ns (3) PC MIX value: 3.8 → 419 (4) Number of I/O points: 4096 → 4096 (5) Number of I/O device points: 8192 → 12288 (6) Program capacity: 124K steps → 160K steps (7) Number of file register points: 1018K → 800K (when an extended SRAM cassette is used: 8992K maximum) (8) Extension level: 7 → 7 (9) Number of mountable memory cards: 2 → 1

*1 Consider replacing the system on MELSECNET with a system on CC-Link IE Control or CC-Link IE Field.

*2 The A1NCPU is a CPU module that integrates the power supply module.
For the power supply module, refer to the following. (☞ Page 203 A1NCPU (power supply part) and R62P)

2.2 Specification Comparison Table

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

Item		MELSEC-A/QnA series		MELSEC iQ-R series	Compatibility	Precautions
		ACPU	QnACPU	RnCPU		
Control method		Stored program cyclic operation			○	
I/O control mode		AnNCPU: Refresh mode or direct mode AnA/AnUCPU: Refresh mode (Direct access I/O is available by specifying direct access I/O (DX, DY).)	Refresh mode (Direct access I/O is available by specifying direct access I/O (DX, DY).)		△	
Programming language	Sequence control language	Relay symbol language, logic symbol language, MELSAP-Ⅱ (SFC) (except for the A1NCPU)	Relay symbol language, logic symbol language, MELSAP3 (SFC)	Ladder diagram (LD), sequential function chart (SFC), structured text (ST), function block diagram (FBD/LD)	△	*1
Processing speed	Sequence instruction [LD]	AnNCPU: 1.0μs (for refresh) A2ACPU(-S1): 0.2 to 0.4μs A3ACPU: 0.15 to 0.3μs A2UCPU(-S1): 0.2μs A3U/A4UCPU: 0.15μs	Q2ACPU(-S1): 0.2μs Q3ACPU: 0.15μs Q4ACPU: 0.075μs	R00/R01CPU: 31.36ns R02CPU: 3.92ns R04/R08/R16CPU: 0.98ns	—	
PC MIX value		AnNCPU: 0.2 AnACPU: 0.9 AnUCPU: 1.2	Q2ACPU(-S1): 1.3 Q3ACPU: 1.8 Q4ACPU: 3.8	R00/R01CPU: 19 R02CPU: 146 R04/R08/R16CPU: 419	○	
Constant scan		10 to 190ms (Setting available in increments of 10ms)	5 to 2000ms (Setting available in increments of 5ms)	R00/R01/R02CPU: 0.5 to 2000ms (Setting available in increments of 0.1ms) R04/R08/R16CPU: 0.2 to 2000ms (Setting available in increments of 0.1ms)	○	
Memory capacity		Capacity of the installed memory cassette AnNCPU: 448K bytes maximum AnACPU: 768K bytes maximum AnUCPU: 1024K bytes maximum	Capacity of the installed memory 2036K bytes maximum × 2	Program memory: R00CPU: 40K bytes R01CPU: 60K bytes R02CPU: 80K bytes R04CPU: 160K bytes R08CPU: 320K bytes R16CPU: 640K bytes Memory card: Capacity of an SD memory card SD/SDHC memory card: 32G bytes maximum (except for the R00CPU)	—	
Program capacity	Sequence program	A1NCPU: 6K steps A2N/A2A/A2UCPU(-S1): 14K steps A3N/A3A/A3UCPU: 30K × 2 steps A4UCPU: 30K × 4 steps	Q2ACPU: 28K steps Q2ACPU-S1: 60K steps Q3ACPU: 92K steps Q4ACPU: 124K steps	R00CPU: 10K steps R01CPU: 15K steps R02CPU: 20K steps R04CPU: 40K steps R08CPU: 80K steps R16CPU: 160K steps	○	
	Microcomputer program	AnNCPU: 58K bytes maximum AnA/AnUCPU: —	—		×	*2
Number of I/O points		A1NCPU: 256 A2N/A2A/A2UCPU: 512 A2N/A2A/A2UCPU-S1: 1024 A3N/A3A/A3UCPU: 2048 A4UCPU: 4096	Q2ACPU: 512 Q2ACPU-S1: 1024, Q3ACPU: 2048, Q4ACPU: 4096	4096	○	

Item		MELSEC-A/QnA series		MELSEC iQ-R series	Compatibility	Precautions
		ACPU	QnACPU	RnCPU		
Number of device points	Input [X]	A1NCPU: 256 A2N/A2A/A2UCPU: 512 A2N/A2A/A2UCPU-S1: 1024 A3N/A3A/A3UCPU: 2048 A4UCPU: 8192	8192	R00/R01/R02CPU: 8192 R04/R08/R16CPU: 12288	○	
	Output [Y]	A1NCPU: 256 A2N/A2A/A2UCPU: 512 A2N/A2A/A2UCPU-S1: 1024 A3N/A3A/A3UCPU: 2048 A4UCPU: 8192	8192	R00/R01/R02CPU: 8192 R04/R08/R16CPU: 12288	○	
	Internal relay [M]	AnNCPU: 1000 (Total 2048, shared by M/L/S) AnA/AnUCPU: 7144 (Total 8192, shared by M/L/S)	8192	R00/R01/R02CPU: 8192 R04/R08/R16CPU: 12288	○	*3
	Latch relay [L]	AnNCPU: 1048 (Total 2048, shared by M/L/S) AnA/AnUCPU: 1048 (Total 8192, shared by M/L/S)	8192		○	*3
	Step relay [S]	AnNCPU: 0 (Total 2048, shared by M/L/S) AnA/AnUCPU: 0 (Total 8192, shared by M/L/S)	8192	R00/R01/R02CPU: 8192 R04/R08/R16CPU: 16384	○	*3
	Annunciator [F]	AnNCPU: 256 AnA/AnUCPU: 2048	2048		○	*3
	Edge relay [V]	—	2048		○	*3
	Link relay [B]	AnNCPU: 1024 AnACPU: 4096 AnUCPU: 8192	8192		○	*3
	Timer [T]	AnNCPU: 256 AnA/AnUCPU: 2048	2048	R00/R01/R02CPU: 2048 R04/R08/R16CPU: 1024 (Timer [T]) + 1024 (Long timer [LT])	○	*3
	Counter [C]	AnNCPU: 256 AnA/AnUCPU: 1024	1024	R00/R01/R02CPU: 1024 R04/R08/R16CPU: 512 (Counter [C]) + 512 (Long counter [LC])	○	*3
	Data register [D]	AnNCPU: 1024 AnACPU: 6144 AnUCPU: 8192	12288	R00/R01/R02CPU: 12282 R04/R08/R16CPU: 18432	○	*3
	Link register [W]	AnNCPU: 1024 AnACPU: 4096 AnUCPU: 8192	8192		○	*3
	File register [R]	8192	32768 (1042432 maximum, by switching blocks)	The number of points specified in the [ZR] section can be used by switching blocks in increments of 32768 points.	○	*3
	File register [ZR]	—	1042432	R00/R01/R02CPU: 98304 R04/R08/R16CPU: Calculated by a formula*4 (The maximum number of points varies depending on the model.)	○	*3
	Accumulator [A]	2	—		—	*5
	Index register [Z]	AnNCPU: 1 AnA/AnUCPU: 7	16	20	○	*3
	Index register [V]	AnNCPU: 1 AnA/AnUCPU: 7	—		—	*6
	Nesting [N]	8	15	15	○	

Item		MELSEC-A/QnA series		MELSEC iQ-R series	Compatibility	Precautions
		ACPU	QnACPU	RnCPU		
Number of device points	Pointer [P]	256	4096	8192	○	*3
	Interrupt pointer [I]	32	48	1024	○	
	Special relay [M/SM]	256	2048	4096	△	*7
	Special register [D/SD]	256	2048	4096	△	*7
	Link special relay [SB]	—	2048		○	*3
	Link special register [SW]	—	2048		○	*3
	Function input [FX]	—	16		○	
	Function output [FY]	—	16		○	
	Function register [FD]	—	5	5 points × 4 words	○	
Number of comments	Comment	4032 maximum (only A1NCPU: 128)	51200 maximum	Within memory capacity	○	
	Extended comment	3968 maximum	—	—	—	
Link direct device		—	For MELSECNET/10 only Specification format: J□□\□□	Specified form: J□\X□, J□\Y□, J□\W□, J□\B□, J□\SW□, J□\SB□	○	
Special function module direct device		—	Specified form: U□\G□		○	
Latch (data retention during power failure) range		1048	8192		○	
RUN/PAUSE contact		AnNCPU: One contact can be set up in X0 to FF for each of RUN and PAUSE. AnA/AnUCPU: 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 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/R16CPU: One contact can be set up in X0 to 2FFF for each of RUN and PAUSE.	○	
Internal current consumption (5VDC)		A1NCPU: 0.53A A1NCPUP21(-S3): 1.23A A1NCPUR21: 1.63A A2NCPU(-S1): 0.73A A2NCPUP21(-S1/S3/S4): 1.38A A2NCPUR21(-S1): 1.78A A3NCPU: 0.90A A3NCPUP21(-S3): 1.55A A3NCPUR21: 1.95A A2ACPU(-S1): 0.4A A2ACPUP21(-S1/S3/S4): 1.0A A2ACPUR21(-S1): 1.4A A3ACPU: 0.6A A3ACPUP21(-S3): 1.1A A3ACPUR21: 1.6A A2UCPU(-S1): 0.4A A3U/A4UCPU: 0.5A	Q2ACPU/Q2ACPU-S1/Q3ACPU: 0.4A Q4ACPU: 0.9A	0.67A	—	
External dimensions		250(H) × 79.5(W) × 121(D)mm (only A1NCPU: 250(H) × 135(W) × 121(D)mm)	250(H) × 79.5(W) × 121(D)mm	106(H) × 27.8(W) × 110(D)mm	—	

Item	MELSEC-A/QnA series		MELSEC iQ-R series	Compatibility	Precautions
	ACPU	QnACPU	RnCPU		
Weight	A1NCPU: 1.45kg A1NCPUP21(-S3)/ A1NCPUR21: 1.75kg A2NCPU(-S1): 0.62kg A2NCPUP21(-S1/S3/S4)/ A2NCPUR21(-S1): 0.92kg A3NCPU: 0.65kg A3NCPUP21(-S3)/ A3NCPUR21: 0.95kg A2ACPU(-S1)/A3ACPU: 0.7kg A2ACPUP21(-S1/S3/S4)/ A2ACPUR21(-S1)/ A3ACPUP21(-S3): 0.9kg A3ACPUAR21: 1.0kg A2UCPU(-S1): 0.5kg A3U/A4UCPU: 0.6kg	0.80kg	0.20kg	—	

*1 The relay symbol language is equivalent to the ladder diagram (LD).

*2 The RnCPU does not support the microcomputer program. Consider replacing it with other programs such as the sequence program.

*3 The number of device points to use can be changed with the engineering tool.

*4 The maximum value is [α + β].
α: <Capacity of the R**CPU> (R04CPU: 160K words, R08CPU: 544K words, R16CPU: 800K words), β: Capacity of the extended SRAM cassette
The value must be in the following range.
File register file storage area ≤ [α + β]

*5 This device is converted to the special register area of SD718 or SD719 automatically when the project is converted.

*6 The device "V" is used as the edge relay in the RnCPU.

*7 The special relay areas of M9000 or later are replaced with those of SM, and the special register areas of D9000 or later are replaced with those of SD in the RnCPU.

2.3 Function Comparison Table

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

Function		MELSEC-A/QnA series		MELSEC iQ-R series	Precautions
		ACPU	QnACPU	RnCPU	
Constant scan	Executes the sequence program at constant time intervals regardless of the processing time of the program.	○	○	△	Set this function with the special register (D9020) for the ACPU/QnACPU, and with parameters for the RnCPU.
Latch (data retention during power failure)	Holds the data of devices in the event of power OFF, resetting, and a momentary power failure longer than the allowable momentary power failure period.	○	○	○	
Remote RUN/STOP	Executes the remote RUN/STOP using external switches and peripheral devices.	○	○	○	
PAUSE	Stops operations while holding the output status.	○	○	△	The RnCPU transitions to the PAUSE state by turning on the PAUSE contact only, while the ACPU/QnACPU transitions to the PAUSE state by turning on both the PAUSE contact and the special relay M9040.
Interrupt processing	Executes the program that corresponds to the cause when an interrupt cause occurs.	○	○	○	
Microcomputer mode	Executes various controls and operations over utility programs and user created microcomputer programs stored in the microcomputer program area by calling them from the sequence program.	AnNCPU: ○ AnA/AnUCPU: ×	×	×	The RnCPU does not support the microcomputer program. Consider replacing it with a sequence program.
ERROR LED display priority ranking	Sets for ON/OFF of ERROR LED at the occurrence of error.	AnNCPU: × AnA/AnUCPU: ○	○	○	
File management	Manages all data such as parameters, sequence programs, device comments, file registers, as files.	×	○	○	Memory configuration and data to be stored differ.
Structured program	Selects a suitable execution type for program application, and divides each program by designer, process or others.	×	○	○	
I/O assignment	Performs the I/O assignment to any individual module regardless of its mounted position.	×	○	○	
ROM operation	Enables operation with parameters and programs stored in ROMs in order not to lose user programs due to battery exhaustion.	○	○	○	With the RnCPU, the ROM operation is not required since the program memory is the flash ROM.
Data protection function (system protect, keyword registration/ password registration)	Prohibits reading/writing from peripheral devices to programs and comments in the memory cassettes, the memory card, and built-in memory of a CPU module.	○	○	△	Programs can be protected from read/write using passwords in the RnCPU, while parameters/programs in the user memory can be protected from read/write using keywords in the ACPU/ QnACPU.
Initial device value	Sets an initial value of device memory, file registers, and special function modules when the CPU module is placed in RUN status.	×	○	○	Memory configuration and data to be stored differ.

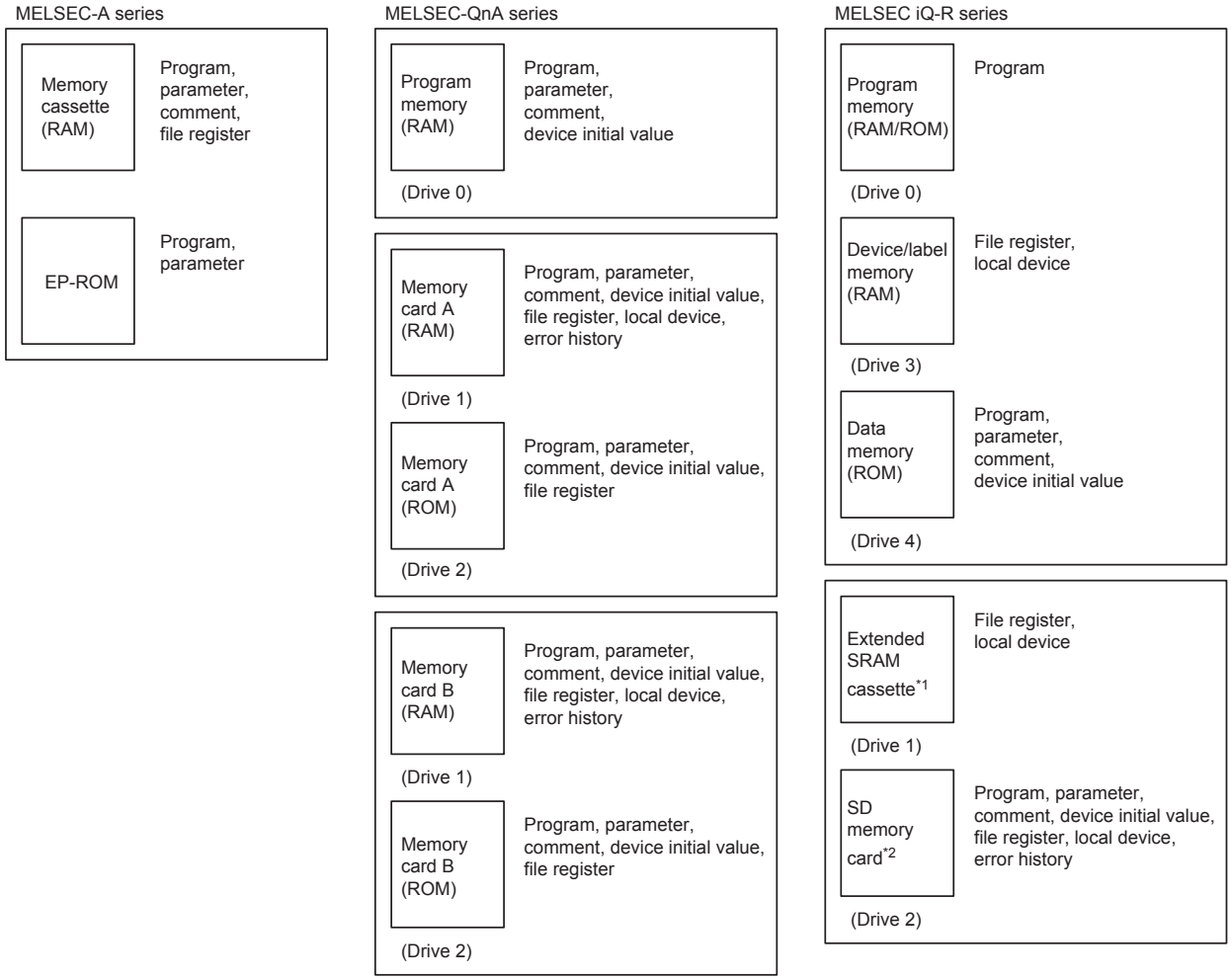
Function		MELSEC-A/QnA series		MELSEC iQ-R series	Precautions
		ACPU	QnACPU	RnCPU	
Output status setting at changing from STOP to RUN	Sets the output (Y) status at the change from STOP to RUN to re-outputting data before STOP or outputting data after the operation execution.	○	○	○	
Number of general data processing	Sets the number of general data processing executed in one END operation.	×	○	○	
Clock function	The CPU module incorporates a clock, which can be read/written. The clock data consists of year, month, day, hour, minute, second and a day of the week.	○	○	△	The RnCPU uses 4-digit year of the western calendar while the ACPU/QnACPU uses the lower 2-digit year.
Write during RUN	Changes (writes to) programs when the CPU module is in the RUN status.	○	○	○	Setting the reserved area for online change is required for the RnCPU.
Status latch	Stores the data of all devices in a memory cassette or a memory card at the occurrence of an error for monitoring by a peripheral.	○ (except for the A1NCPU)	○*1	×	The status latch function cannot be used in the RnCPU.
Sampling trace	Stores the data of specified devices in a memory cassette or a memory card at the specified intervals for monitoring by a peripheral.	○ (except for the A1NCPU)	○	×	The sampling trace function cannot be used in the RnCPU. Use the trigger logging in the data logging function instead.
Program trace	Collects the execution status of specified programs and steps, and stores them in a file.	×	○*1	×	The program trace function cannot be used in the RnCPU.
Simulation function	Detaches I/O modules or special modules from the CPU module and test-operates the program upon the step operation.	×	○*1	△	Use the simulation function of the GX Works3 instead.
Step operation	Stops the execution of a sequence program at the specified step.	○	○	×	The step operation function cannot be used in the RnCPU.
Execution time measurement (Program list monitor, scan time measurement)	Measures the operation time for each program.	×	○	○	
Module access interval reading	Monitors the access interval of special function modules or peripheral devices.	×	○	○	
Off-line switch	Skips the devices used for OUT instruction in the operation processing of sequence program.	AnNCPU: ○ AnA/AnUCPU: ×	×	×	The off-line switch function cannot be used in the RnCPU. Use the external input/output forced on/off function of the RnCPU instead.
Online I/O module replacement	Enables I/O modules to be replaced while the CPU is in RUN.	○	○	△	To use the online module change function of the RnCPU, use the Process CPU.
Self-diagnostics	Diagnoses whether any error has occurred, detects errors, and stops the CPU module, etc.	○	○	○	Error codes differ from the ones of ACPU and QnACPU.
Error history	Stores errors detected by the diagnostics function into the CPU module. Error details can be monitored from peripherals.	AnNCPU: × AnA/AnUCPU: ○	○	○	

*1 SW□IVD/NX-GPPQ is required. These functions are not applicable to GX Developer. (The production of SW□IVD/NX-GPPQ was discontinued.)

2.4 Precautions for Replacement

Memory configuration

The Memory configuration differs between the MELSEC-A/QnA series CPU module and the MELSEC iQ-R series CPU module. Depending on the capacity and application of the memory before replacement, consider which memory to use and whether to use a memory card.



*1 The R00CPU, R01CPU, and R02CPU do not support the extended SRAM cassette.
*2 The R00CPU does not support SD memory cards.

Write during RUN

Before executing the online change function (the write during RUN function) in the MELSEC iQ-R series CPU module, reserve the area in advance for the program size that will be increased.
The default reserved area for online change is 500 steps (2000 bytes).

Parameters

Set parameters, such as the program setting, that are 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

The sampling trace function cannot be used in the RCPU.
Use the trigger logging of the data logging function instead. Note that an SD memory card is required to store the data because the CPU built-in memory cannot be used as data storage destination.

Password and keyword

In the RCPU, passwords are used to protect data such as programs from read/write, while in the ACPU/QnACPU, keywords are 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)

3 I/O MODULE REPLACEMENT

3.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series I/O modules in accordance with the specifications of the MELSEC-A/QnA series I/O modules.

Select models that best suit your application considering the specifications of the MELSEC-A/QnA series I/O module currently used.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Input module	AX10	RX10	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (10mA → 8.2mA), ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed
	AX10-UL	RX10	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (11mA → 8.2mA), ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed
	AX11	RX10	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of input points is changed (32 → 16 × 2 modules). (4) Specifications: Rated input current (10mA → 8.2mA), ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed
	AX11EU	RX10	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of input points is changed (32 → 16 × 2 modules). (4) Specifications: Rated input current (12mA → 8.2mA), ON voltage/ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed
	AX20	RX28	(1) External wiring: Changed (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (16 → 16 × 2 modules). The number of input points is changed (16 → 8 × 2 modules). (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed
	AX20-UL	RX28	(1) External wiring: Changed (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (16 → 16 × 2 modules). The number of input points is changed (16 → 8 × 2 modules). (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed
	AX21	RX28	(1) External wiring: Changed (2) Number of slots: Changed (4 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 4 modules). The number of input points is changed (32 → 8 × 4 modules). (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Input module	AX21EU	RX28	(1) External wiring: Changed (2) Number of slots: Changed (4 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 4 modules). The number of input points is changed (32 → 8 × 4 modules). (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input impedance are changed. (5) Functions: Not changed
	AX31 (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (8.5mA → 4mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX31 (when 12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX31 (when 12/24VAC is used)	None	Commute and smooth the 12/24VAC externally before inputting to the RX41C4 (24VDC) or RX71C4 (5/12VDC).
	AX31-S1	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (8.5mA → 4mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX40 (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 10mA → 7mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX40 (when 12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX40-UL (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 10mA → 7mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX40-UL (when 12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Input module	AX41 (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 10mA → 4mA), ON voltage, OFF current, and input resistance are changed. (5) Functions: Not changed
	AX41 (when 12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX41-S1 (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 10mA → 4mA), ON voltage, OFF current, and input resistance are changed. (5) Functions: Not changed
	AX41-S1 (when 12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX41-UL (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 10mA → 4mA), ON voltage, OFF current, and input resistance are changed. (5) Functions: Not changed
	AX41-UL (when 12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX42 (when 24VDC is used)	RX42C4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 7mA → 4mA), ON voltage, OFF current, and input resistance are changed. (5) Functions: Not changed
	AX42 (when 12VDC is used)	RX72C4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Input module	AX42-S1 (when 24VDC is used)	RX42C4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 7mA → 4mA), ON voltage, OFF current, and input resistance are changed. (5) Functions: Not changed
	AX42-S1 (when 12VDC is used)	RX72C4	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX50/AX50-S1	None	Consider replacing it with the RX40C7 and FA-TH16X48D31L[*1].
	AX60/AX60-S1	None	Consider replacing it with the RX40C7 and FA-TH16X100D31L[*1].
	AX70 (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX70 (when 5/12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (3.5/2mA → 1.7/4.8mA), ON voltage, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX70-UL (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX70-UL (when 5/12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (3.5/2mA → 1.7/4.8mA), ON voltage, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX71 (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (Approx. 4.5mA → 4mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX71 (when 5/12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (3.5/2mA → 1.7/4.8mA), ON voltage, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX80 (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (10mA → 7mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Input module	AX80 (when 12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX80-UL (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (10mA → 7mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX80-UL (when 12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX80E (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (10mA → 7mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX80E (when 12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX81 (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (10mA → 4mA), ON voltage, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX81 (when 12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX81B	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed (64 → 32). (4) Specifications: Rated input current (7mA → 4mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Changed (No disconnection detection function)
		RX40NC6B	(1) External wiring: Changed (An external power supply is required.) (2) Number of slots: Changed (2 modules are required.) (3) Programs: An input type is changed (positive common/negative common shared type → negative common). The number of occupied I/O points is changed (64 → 32). The diagnostic information is read from the buffer memory. (4) Specifications: Rated input current (7mA → 6mA), ON voltage/ON current, OFF voltage/OFF current, input resistance, and external resistance are changed. (5) Functions: Not changed
	AX81-S1 (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (5mA → 4mA), ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Input module	AX81-S1 (when 12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX81-S2 (when 48VDC is used)	None	Consider replacing it with the RX40C7 and FA-TH16X48D31L[*1].
	AX81-S2 (when 60VDC is used)	None	—
	AX81-S3 (when 24VDC is used)	RX41C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (10mA → 4mA), ON voltage, OFF current, and input resistance are changed. (5) Functions: Not changed
	AX81-S3 (when 12VDC is used)	RX71C4	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
	AX82 (when 24VDC is used)	RX42C4	(1) External wiring: Changed (37-pin D-sub connector → 40-pin connector) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated input current (7mA → 4mA), ON voltage/ON current, and input resistance are changed. (5) Functions: Not changed
		RX41C4	(1) External wiring: Changed (37-pin D-sub connector → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: Not changed (4) Specifications: Rated input current (7mA → 4mA), ON voltage/ON current, and input resistance are changed. (5) Functions: Not changed
	AX82 (when 12VDC is used)	RX72C4	(1) External wiring: Changed (37-pin D-sub connector → 40-pin connector) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed
		RX71C4	(1) External wiring: Changed (37-pin D-sub connector → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: Not changed (4) Specifications: ON voltage/ON current, OFF voltage/OFF current, and input resistance are changed. (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Output module	AY10	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Not changed
	AY10A	RY18R2A	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (16 → 16 × 2 modules). The number of output points is changed (16 → 8 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Not changed
	AY10A-UL	RY18R2A	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (16 → 16 × 2 modules). The number of output points is changed (16 → 8 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Not changed
	AY11	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Changed (No varistor, relay not replaceable)
	AY11A	RY18R2A	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (16 → 16 × 2 modules). The number of output points is changed (16 × 1 module → 8 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Changed (No varistor)
	AY11AEU	RY18R2A	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (16 → 16 × 2 modules). The number of output points is changed (16 × 1 module → 8 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Changed (No varistor)
	AY11E	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Changed (No fuse, no varistor)
	AY11EEU	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Changed (No fuse, no varistor)
	AY11-UL	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Changed (No varistor, relay not replaceable)
	AY13	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Output module	AY13E	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Changed (No fuse)
	AY13EU	RY10R2	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Not changed
	AY15EU	RY10R2	(1) External wiring: Changed (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (24 → 16 × 2 modules). (4) Specifications: Rated output current is not changed. (Note that the contact life span is reduced to half.) (5) Functions: Not changed
	AY20EU	RY20S6	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is changed (minimum load current). (5) Functions: Changed (No fuse)
	AY22	RY20S6	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is changed (2A → 0.6A). (5) Functions: Changed (No fuse, no varistor)
	AY23	RY20S6	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Not changed (5) Functions: Changed (No fuse)
	AY40	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY40-UL	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY40P	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Not changed
	AY40A	RY18R2A	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (16 → 16 × 2 modules). The number of output points is changed (16 → 8 × 2 modules). (4) Specifications: An output type is changed (transistor output → contact output). A response time is changed (2/2ms or less → 10/12ms or less). (5) Functions: Changed (No surge suppressor)

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Output module	AY41	RY41NT2P	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY41P	RY41NT2P	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Not changed
	AY41-UL	RY41NT2P	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY42	RY42NT2P	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY42-S1	RY42NT2P	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: A response time is changed (0.1/0.3ms or less → 0.5/1ms or less). (5) Functions: Changed (The protection function is added.)
	AY42-S3	RY42NT2P	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (No fuse. The protection function is added.)
	AY42-S4	RY42NT2P	(1) External wiring: Changed (An external power supply is required.) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY50	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (No fuse. The protection function is added.)
	AY50-UL	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (No fuse. The protection function is added.)
	AY51	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY51-S1	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Not changed (5) Functions: Changed (No fuse. The protection function is added.)

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Output module	AY51-UL	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Not changed (5) Functions: Changed (The protection function is added.)
	AY60	RY10R2	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: An output type is changed (transistor output → contact output). A response time is changed (2/2ms or less → 10/12ms or less). (5) Functions: Changed (No surge suppressor, no fuse)
	AY60E	RY10R2	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: An output type is changed (transistor output → contact output). A response time is changed (2/2ms or less → 10/12ms or less). (5) Functions: Changed (No surge suppressor, no fuse)
	AY60EP	RY10R2	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: An output type is changed (transistor output → contact output). A response time is changed (0.5/1.5ms or less → 10/12ms or less). (5) Functions: Changed (No surge suppressor, no protection function)
	AY60S	RY10R2	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: An output type is changed (transistor output → contact output). A response time is changed (1/3ms or less → 10/12ms or less). (5) Functions: Changed (No surge suppressor, no fuse)
	AY60S-UL	RY10R2	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: An output type is changed (transistor output → contact output). A response time is changed (1/3ms or less → 10/12ms or less). (5) Functions: Changed (No surge suppressor, no fuse)
	AY70	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output voltage is changed (5/12VDC → 12/24VDC). (5) Functions: Changed (The surge suppressor and protection function are added.)
	AY70-UL	RY40NT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output voltage is changed (5/12VDC → 12/24VDC). (5) Functions: Changed (The protection function is added.)
	AY71	RY41NT2H	(1) External wiring: Changed (Screw terminal block → 40-pin connector) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Not changed
	AY72	RY41NT2H	(1) External wiring: Not changed (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed (32 → 16 × 2 modules). The number of output points is changed (32 → 16 × 2 modules). (4) Specifications: Not changed (5) Functions: Not changed
	AY80	RY40PT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Changed (No fuse. The protection function is added.)

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Output module	AY80EP	RY40PT5P	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is changed (0.8A → 0.5A). (5) Functions: Not changed
	AY81	RY41PT1P	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is changed (0.5A → 0.1A). (5) Functions: Changed (The protection function is added.)
	AY81EP	RY41PT1P	(1) External wiring: Changed (Screw terminal block → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Rated output current is changed (0.8A → 0.1A). (5) Functions: Not changed
	AY82EP	RY42PT1P	(1) External wiring: Changed (37-pin D-sub connector → 40-pin connector) (2) Number of slots: Not changed (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Not changed
		RY41PT1P	(1) External wiring: Changed (37-pin D-sub connector → 40-pin connector. An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: Not changed (4) Specifications: Not changed (5) Functions: Not changed
I/O module	AH42	RH42C4NT2P	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed (64 → 32). (4) Specifications: Rated input voltage (12/24VDC → 24VDC), rated input current (7mA → 4mA), ON voltage, OFF current, and input resistance are changed. (5) Functions: Changed (The protection function is added.)
Dynamic input module	A42XY	None	Consider using the RX42C4/RY42NT2P after converting I/O signal from dynamic to static.
Interrupt module	AI61 (when 24VDC is used)	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed (32 → 16). (4) Specifications: Rated input current (14mA → 7mA), ON voltage, OFF voltage, and input resistance are changed. (5) Functions: Not changed
	AI61 (when 12VDC is used)	RX70C4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed (32 → 16). (4) Specifications: Rated input current (6mA → 4.8mA), ON voltage, OFF voltage, and input resistance are changed. (5) Functions: Not changed
	AI61-S1	RX40C7	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed (32 → 16). (4) Specifications: Rated input current (14mA → 7mA), ON voltage, OFF voltage, and input resistance are changed. (5) Functions: Not changed
Dummy module	AG62	None	■Dummy module function Consider using the RG60 and I/O assignment setting. ■Simulation switch function Consider using the RX40C7 and an external switch.
Blank cover module	AG60	RG60	None in particular

*1 Please consult your local Mitsubishi Electric representative.

3.2 Specification Comparison Tables

Input modules

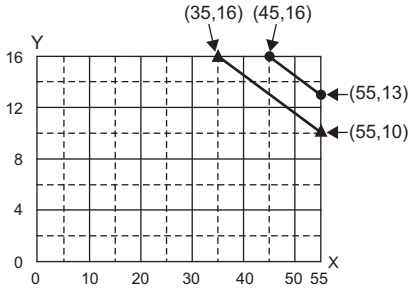
AX10 and RX10

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

Item		Specifications		Compatibility	Precautions
		AX10	RX10		
Input type		AC input		○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		100 to 120VAC (+10/-15%), 50/60Hz (±3Hz)		○	
Input voltage distortion		Within 5%		○	
Rated input current		10mA (100VAC, 60Hz)	8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (16 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		300mA maximum, within 0.3ms (at 132VAC)	200mA maximum, within 1ms	○	
ON voltage/ON current		80VAC or higher/6mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON current is changed after replacement.*1
OFF voltage/OFF current		40VAC or lower/4mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 10kΩ (60Hz), approx. 12kΩ (50Hz)	12.2kΩ (60Hz), 14.6kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less	15ms or less (100VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less	20ms or less (100VAC 50Hz, 60Hz)	○	
Common terminal arrangement		16 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.39kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX10.

*2 The following figure shows a derating chart.



▲: Input voltage 120VAC

●: Input voltage 132VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

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

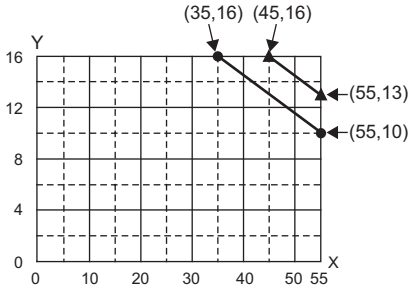
AX10-UL and RX10

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

Item		Specifications		Compatibility	Precautions
		AX10-UL	RX10		
Input type		AC input		○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		110 to 120VAC (+10/-15%), 50/60Hz	100 to 120VAC (+10/-15%), 50/60Hz (±3Hz)	○	
Input voltage distortion		Within 5%		○	
Rated input current		11mA (110VAC) 12mA (120VAC)	8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (16 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		300mA maximum, within 0.3ms (at 132VAC)	200mA maximum, within 1ms	○	
ON voltage/ON current		80VAC or higher/6mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON current is changed after replacement.*1
OFF voltage/OFF current		40VAC or lower/4mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 10kΩ (60Hz), approx. 12kΩ (50Hz)	12.2kΩ (60Hz), 14.6kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less	15ms or less (100VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less	20ms or less (100VAC 50Hz, 60Hz)	○	
Withstand voltage		For 1 minute at 1500VAC rms between AC external connecting terminals and general grounding	1400VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		16 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.39kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX10.

*2 The following figure shows a derating chart.



▲: Input voltage 120VAC

●: Input voltage 132VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

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

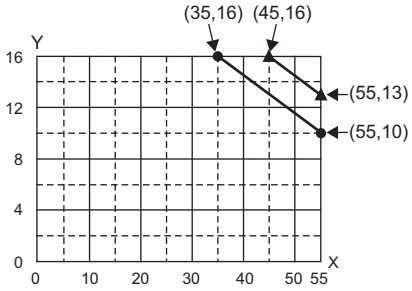
AX11 and RX10

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

Item		Specifications		Compatibility	Precautions
		AX11	RX10		
Input type		AC input		○	
Number of input points		32	16	△	When 17 or more points are required, use two modules of the RX10.
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		100 to 120VAC (+10/-15%), 50/60Hz (±3Hz)		○	
Input voltage distortion		Within 5%		○	
Rated input current		10mA (100VAC, 60Hz)	8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (20 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		300mA maximum, within 0.3ms (at 132VAC)	200mA maximum, within 1ms	○	
ON voltage/ON current		80VAC or higher/6mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON current is changed after replacement.*1
OFF voltage/OFF current		40VAC or lower/4mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 10kΩ (60Hz), approx. 12kΩ (50Hz)	12.2kΩ (60Hz), 14.6kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less	15ms or less (100VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less	20ms or less (100VAC 50Hz, 60Hz)	○	
Common terminal arrangement		32 points/common (common terminal: TB9, TB18, TB27, TB36)	16 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR11X13Y), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)	16 (I/O assignment: Input 16 points)	△	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.49kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX10.

*2 The following figure shows a derating chart.



▲: Input voltage 120VAC

●: Input voltage 132VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

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

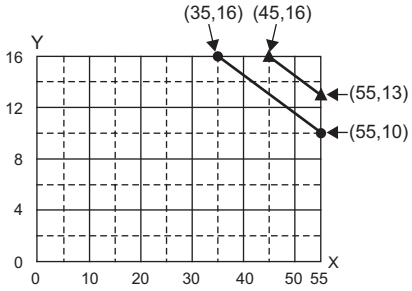
AX11EU and RX10

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

Item		Specifications		Compatibility	Precautions
		AX11EU	RX10		
Input type		AC input		○	
Number of input points		32	16	△	When 17 or more points are required, use two modules of the RX10.
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		100 to 120VAC (+10/-15%), 50/60Hz (±3Hz)		○	
Input voltage distortion		Within 5%		○	
Rated input current		Approx. 12mA (120VAC)	8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (20 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		300mA maximum, within 1ms (at 132VAC)	200mA maximum, within 1ms	○	
ON voltage/ON current		79VAC or higher/6mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		40VAC or lower/4mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 10kΩ (60Hz), approx. 12kΩ (50Hz)	12.2kΩ (60Hz), 14.6kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less (100VAC, 60Hz)	15ms or less (100VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less (100VAC, 60Hz)	20ms or less (100VAC 50Hz, 60Hz)	○	
Withstand voltage		1780VAC rms/3 cycles (Altitude 2000m)	1400VAC rms for 1 minute	○	
Isolation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		IEC801-4: 1kV	By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	○	
Common terminal arrangement		32 points/common (common terminal: TB9, TB18, TB27, TB36)	16 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3.5 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR11X13Y), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 19 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)	16 (I/O assignment: Input 16 points)	△	
Internal current consumption (5VDC)		150mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX10.

*2 The following figure shows a derating chart.



▲: Input voltage 120VAC

●: Input voltage 132VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

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

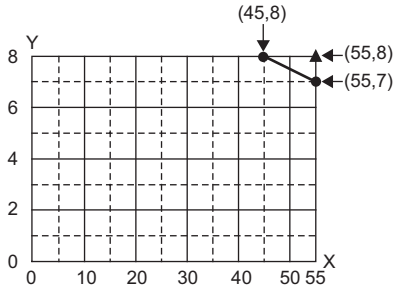
AX20 and RX28

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

Item		Specifications		Compatibility	Precautions
		AX20	RX28		
Input type		AC input		○	
Number of input points		16	8	△	When 9 or more points are required, use two modules of the RX28.
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		200 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	100 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	○	
Input voltage distortion		Within 5%		○	
Rated input current		10mA (200VAC, 60Hz)	16.4mA (200VAC, 60Hz) 13.7mA (200VAC, 50Hz) 8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	○	
Maximum number of simultaneous input points		100% (16 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		600mA maximum within 0.12ms (at 264VAC)	950mA maximum within 1ms (at 264VAC)	△	The maximum inrush current is increased after replacement.*1
ON voltage/ON current		160VAC or higher/5.5mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		70VAC or lower/3.5mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 22kΩ (60Hz), approx. 24kΩ (50Hz)	12.1kΩ (60Hz), 14.5kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less	10ms or less (200VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less	20ms or less (200VAC 50Hz, 60Hz)	○	
Common terminal arrangement		16 points/common (common terminal: TB9, TB18)	8 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)	16 (I/O assignment: Input 16 points)	△	The number of input points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		55mA (TYP. all points ON)	90mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.38kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX28.

*2 The following figure shows a derating chart.



▲: Input voltage 240VAC

●: Input voltage 264VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

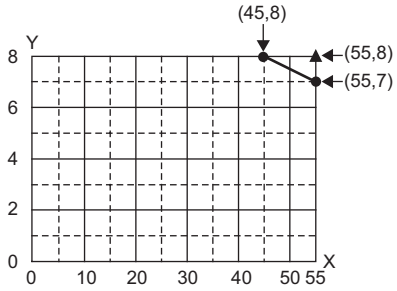
AX20-UL and RX28

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

Item		Specifications		Compatibility	Precautions
		AX20-UL	RX28		
Input type		AC input		○	
Number of input points		16	8	△	When 9 or more points are required, use two modules of the RX28.
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		220 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	100 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	○	
Input voltage distortion		Within 5%		○	
Rated input current		11mA (220VAC) 12mA (240VAC)	16.4mA (200VAC, 60Hz) 13.7mA (200VAC, 50Hz) 8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	○	
Maximum number of simultaneous input points		100% (16 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		600mA maximum within 0.12ms (at 264VAC)	950mA maximum within 1ms (at 264VAC)	△	The maximum inrush current is increased after replacement.*1
ON voltage/ON current		160VAC or higher/5.5mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		70VAC or lower/3.5mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 22kΩ (60Hz), approx. 24kΩ (50Hz)	12.1kΩ (60Hz), 14.5kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less	10ms or less (200VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less	20ms or less (200VAC 50Hz, 60Hz)	○	
Withstand voltage		Between AC external connecting terminals and general grounding 1500VAC rms for 1 minute	2300VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		16 points/common (common terminal: TB9, TB18)	8 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2㎟ (14 to 18 AWG)	0.3 to 0.75㎟ core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)	16 (I/O assignment: Input 16 points)	△	The number of input points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		55mA (TYP. all points ON)	90mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.38kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX28.

*2 The following figure shows a derating chart.



▲: Input voltage 240VAC

●: Input voltage 264VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

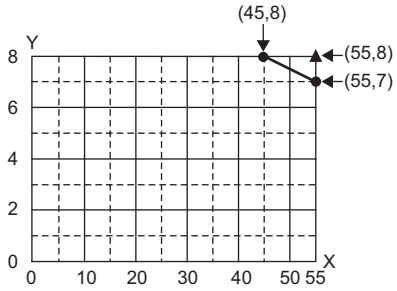
AX21 and RX28

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

Item		Specifications		Compatibility	Precautions
		AX21	RX28		
Input type		AC input		○	
Number of input points		32	8	△	When 9 or more points are required, use multiple RX28s.
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		200 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	100 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	○	
Input voltage distortion		Within 5%		○	
Rated input current		10mA (220VAC, 60Hz)	16.4mA (200VAC, 60Hz) 13.7mA (200VAC, 50Hz) 8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	○	
Maximum number of simultaneous input points		60% (20 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		600mA maximum within 0.12ms (at 264VAC)	950mA maximum within 1ms (at 264VAC)	△	The maximum inrush current is increased after replacement.*1
ON voltage/ON current		160VAC or higher/5.5mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		70VAC or lower/3.5mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 22kΩ (60Hz), approx. 24kΩ (50Hz)	12.1kΩ (60Hz), 14.5kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less	10ms or less (200VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less	20ms or less (200VAC 50Hz, 60Hz)	○	
Common terminal arrangement		32 points/common (common terminal: TB9, TB18, TB27, TB36)	8 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)	16 (I/O assignment: Input 16 points)	△	The number of input points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		110mA (TYP. all points ON)	90mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX28.

*2 The following figure shows a derating chart.



▲: Input voltage 240VAC

●: Input voltage 264VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

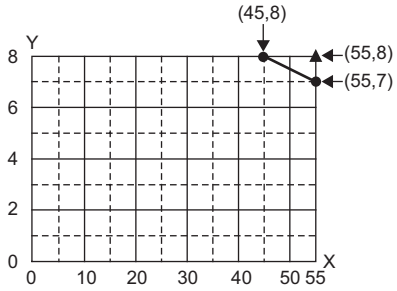
AX21EU and RX28

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

Item		Specifications		Compatibility	Precautions
		AX21EU	RX28		
Input type		AC input		○	
Number of input points		32	8	△	When 9 or more points are required, use multiple RX28s.
Isolation method		Photocoupler		○	
Rated input voltage/rated frequency		200 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	100 to 240VAC (+10/-15%), 50/60Hz (±3Hz)	○	
Input voltage distortion		Within 5%		○	
Rated input current		Approx. 12mA (240VAC, 60Hz)	16.4mA (200VAC, 60Hz) 13.7mA (200VAC, 50Hz) 8.2mA (100VAC, 60Hz) 6.8mA (100VAC, 50Hz)	○	
Maximum number of simultaneous input points		60% (20 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
Inrush current		600mA maximum within 0.5ms (at 264VAC)	950mA maximum within 1ms (at 264VAC)	△	The maximum inrush current is increased after replacement.*1
ON voltage/ON current		160VAC or higher/5.5mA or higher	80VAC or higher/5mA or higher (50Hz, 60Hz)	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		70VAC or lower/3.5mA or lower	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	△	The OFF voltage and OFF current are changed after replacement.*1
Input impedance		Approx. 22kΩ (60Hz), approx. 24kΩ (50Hz)	12.1kΩ (60Hz), 14.5kΩ (50Hz)	△	The input impedance is changed after replacement.*1
Response time	OFF to ON	15ms or less (200VAC, 60Hz)	10ms or less (200VAC 50Hz, 60Hz)	○	
	ON to OFF	25ms or less (200VAC, 60Hz)	20ms or less (200VAC 50Hz, 60Hz)	○	
Withstand voltage		2830VAC rms/3 cycles (Altitude 2000m)	2300VAC rms for 1 minute	○	
Isolation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		IEC801-4: 1kV	By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	○	
Common terminal arrangement		32 points/common (common terminal: TB9, TB18, TB27, TB36)	8 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3.5 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm² (14 to 19 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)	16 (I/O assignment: Input 16 points)	△	The number of input points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		150mA (TYP. all points ON)	90mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.18kg	—	

*1 Check the specifications of sensors and switches connected to the RX28.

*2 The following figure shows a derating chart.



▲: Input voltage 240VAC

●: Input voltage 264VAC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

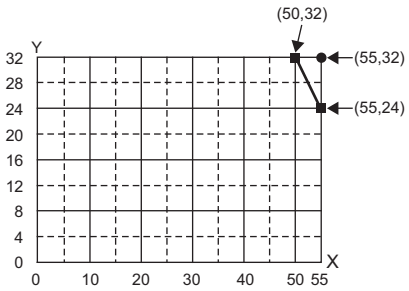
AX31 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX31	RX41C4		
Input type		AC/DC input	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		DC input: 12/24VDC (+10/-15%, ripple ratio within 5%) AC input: 12/24VAC (+10/-15%), 50/60Hz (±3Hz)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC/VAC), 8.5mA (24VDC/VAC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (32 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		7VDC/VAC or higher/2mA or higher	19V or higher/3mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		2.5VDC/VAC or lower/0.7mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.7kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	DC input: 20ms or less (12/24VDC) AC input: 25ms or less (12/24VAC, 60Hz)	Configured in the parameter.*3	○	Set the input response time of parameters to 20ms.
	ON to OFF	DC input: 20ms or less (12/24VDC) AC input: 20ms or less (12/24VAC, 60Hz)	Configured in the parameter.*3	○	
Common terminal arrangement		32 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.49kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX31 (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX31	RX71C4		
Input type		AC/DC input	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		DC input: 12/24VDC (+10/-15%, ripple ratio within 5%) AC input: 12/24VAC (+10/-15%), 50/60Hz (±3Hz)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC/VAC) 8.5mA (24VDC/VAC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		100% (32 points)		○	
ON voltage/ON current		7VDC/VAC or higher/2mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		2.5VDC/VAC or lower/0.7mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.7kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	DC input: 20ms or less (12/24VDC) AC input: 25ms or less (12/24VAC, 60Hz)	Configured in the parameter.*2	○	Set the input response time of parameters to 20ms.
	ON to OFF	DC input: 20ms or less (12/24VDC) AC input: 20ms or less (12/24VAC, 60Hz)	Configured in the parameter.*2	○	
Common terminal arrangement		32 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.49kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

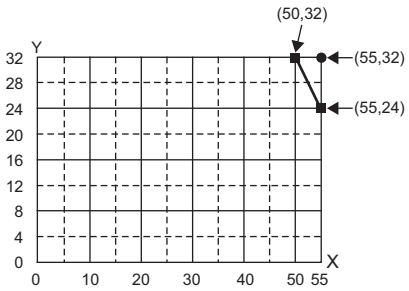
AX31-S1 and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX31-S1	RX41C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+10/-20%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	△	The allowable voltage range is changed after replacement.*1
Rated input current		8.5mA	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (32 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		16VDC or higher/5mA or higher	19V or higher/3mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		8VDC or lower/2mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.7kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		32 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.49kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX40 (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AX40	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	7mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX40 (when 12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AX40	RX70C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX40-UL (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AX40-UL	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC), Approx. 10mA (24VDC)	7mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX40-UL (when 12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AX40-UL	RX70C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

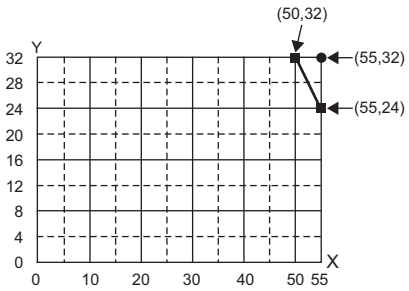
AX41 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX41	RX41C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (5 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX41 (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX41	RX71C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (5 points/common)	100% (32 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

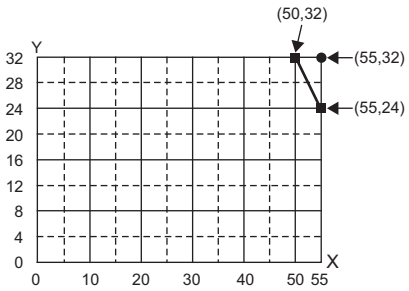
AX41-S1 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX41-S1	RX41C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (5 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.1ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 0.1ms.
	ON to OFF	0.2ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	×	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX41-S1 (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX41-S1	RX71C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (5 points/common)	100% (32 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.1ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 0.1ms.
	ON to OFF	0.2ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

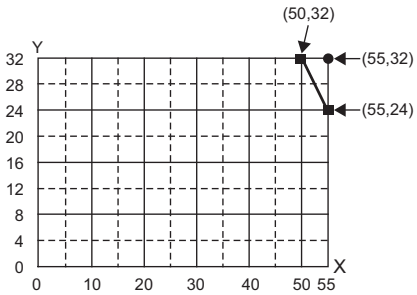
AX41-UL (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX41-UL	RX41C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (5 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Withstand voltage		For 1 min at 500VAC rms between DC external connecting terminals and general grounding	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3.5 × 7 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.088 to 0.3mm²	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX41-UL (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX41-UL	RX71C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (5 points/common)	100% (32 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Withstand voltage		For 1 min at 500VAC rms between DC external connecting terminals and general grounding	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3.5 × 7 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.088 to 0.3mm²	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

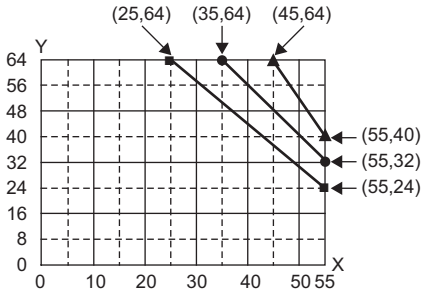
AX42 (when 24VDC is used) and RX42C4

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

Item		Specifications		Compatibility	Precautions
		AX42	RX42C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (20 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 3.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		32 points/common (common terminal: 1B1, 1B2, 2B1, 2B2)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)		○	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.51kg	0.13kg	—	

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

*2 The following figure shows a derating chart.



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

*3 The following table shows the input response times.

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

AX42 (when 12VDC is used) and RX72C4

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

Item		Specifications		Compatibility	Precautions
		AX42	RX72C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (20 points/common)	100% (64 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 3.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		32 points/common (common terminal: 1B1, 1B2, 2B1, 2B2)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)		○	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.51kg	0.14kg	—	

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

*2 The following table shows the input response times.

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

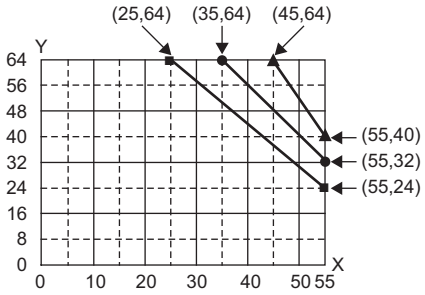
AX42-S1 (when 24VDC is used) and RX42C4

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

Item		Specifications		Compatibility	Precautions
		AX42-S1	RX42C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (20 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 3.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.5ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 0.4ms.
	ON to OFF	0.5ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		32 points/common (common terminal: 1B1, 1B2, 2B1, 2B2)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)		○	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.51kg	0.13kg	—	

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

*2 The following figure shows a derating chart.



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

*3 The following table shows the input response times.

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

AX42-S1 (when 12VDC is used) and RX72C4

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

Item		Specifications		Compatibility	Precautions
		AX42-S1	RX72C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (20 points/common)	100% (64 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 3.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.5ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 0.4ms.
	ON to OFF	0.5ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		32 points/common (common terminal: 1B1, 1B2, 2B1, 2B2)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)		○	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.51kg	0.14kg	—	

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

*2 The following table shows the input response times.

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

AX70 (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AX70	RX40C7		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+10/-10%, ripple ratio within 5%) (SW ON) 12/24VDC (+10/-15%, ripple ratio within 5%) (SW OFF)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		3.5mA TYP./5.5mA MAX. (5VDC) 2mA TYP./3mA MAX. (12VDC) 4.5mA TYP./6mA MAX. (24VDC)	7mA TYP. (at 24VDC)	○	
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		3.5VDC or higher/1.0mA or higher (SW ON) 5VDC or higher/1.0mA or higher (SW OFF)	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		1.1VDC or lower/0.2mA or lower (SW ON) 2VDC or lower/0.2mA or lower (SW OFF)	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 1.4kΩ (SW ON) Approx. 5.5kΩ (SW OFF)	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	1.5ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 1ms.
	ON to OFF	3ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX70 (when 5/12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AX70	RX70C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+10/-10%, ripple ratio within 5%) (SW ON) 12/24VDC (+10/-15%, ripple ratio within 5%) (SW OFF)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		3.5mA TYP./5.5mA MAX. (5VDC) 2mA TYP./3mA MAX. (12VDC) 4.5mA TYP./6mA MAX. (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	△	The rated input current is decreased when 5VDC is used.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		3.5VDC or higher/1.0mA or higher (SW ON) 5VDC or higher/1.0mA or higher (SW OFF)	3.5V or higher/1mA or higher	△	The ON voltage is changed when 12VDC is used.*1
OFF voltage/OFF current		1.1VDC or lower/0.2mA or lower (SW ON) 2VDC or lower/0.2mA or lower (SW OFF)	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 1.4kΩ (SW ON) Approx. 5.5kΩ (SW OFF)	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	1.5ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 1ms.
	ON to OFF	3ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX70-UL (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AX70-UL	RX40C7		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (ripple ratio within 5%) (SW ON) 12/24VDC (ripple ratio within 5%) (SW OFF)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		3.5mA TYP./5.5mA MAX. (5VDC) 2mA TYP./3mA MAX. (12VDC) 4.5mA TYP./6mA MAX. (24VDC)	7mA TYP. (at 24VDC)	○	
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		3.5VDC or higher/1.0mA or higher (SW ON) 5VDC or higher/1.0mA or higher (SW OFF)	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		1.1VDC or lower/0.2mA or lower (SW ON) 2VDC or lower/0.2mA or lower (SW OFF)	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 1.4kΩ (SW ON) Approx. 5.5kΩ (SW OFF)	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	1.5ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 1ms.
	ON to OFF	3ms or less	Configured in the parameter.*2	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX70-UL (when 5/12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AX70-UL	RX70C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+10/-10%, ripple ratio within 5%) (SW ON) 12/24VDC (+10/-15%, ripple ratio within 5%) (SW OFF)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		3.5mA TYP./5.5mA MAX. (5VDC) 2mA TYP./3mA MAX. (12VDC) 4.5mA TYP./6mA MAX. (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	△	The rated input current is decreased when 5VDC is used.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		3.5VDC or higher/1.0mA or higher (SW ON) 5VDC or higher/1.0mA or higher (SW OFF)	3.5V or higher/1mA or higher	△	The ON voltage is changed when 12VDC is used.*1
OFF voltage/OFF current		1.1VDC or lower/0.2mA or lower (SW ON) 2VDC or lower/0.2mA or lower (SW OFF)	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 1.4kΩ (SW ON) Approx. 5.5kΩ (SW OFF)	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	1.5ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 1ms.
	ON to OFF	3ms or less	Configured in the parameter.*2	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

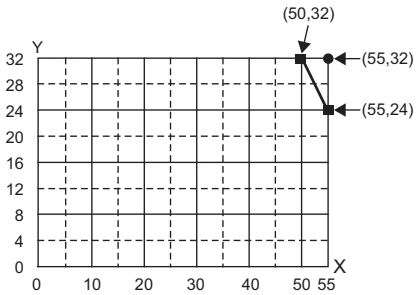
AX71 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX71	RX41C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+10/-10%, ripple ratio within 5%) (SW ON) 12/24VDC (+10/-15%, ripple ratio within 5%) (SW OFF)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		3.5mA TYP./5.5mA MAX. (5VDC) 2mA TYP./3mA MAX. (12VDC) 4.5mA TYP./6mA MAX. (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (8 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		3.5VDC or higher/1.0mA or higher (SW ON) 5VDC or higher/1.0mA or higher (SW OFF)	19V or higher/3mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		1.1VDC or lower/0.2mA or lower (SW ON) 2VDC or lower/0.2mA or lower (SW OFF)	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 1.4kΩ (SW ON) Approx. 5.5kΩ (SW OFF)	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	1.5ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 1ms.
	ON to OFF	3ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX71 (when 5/12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX71	RX71C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		5VDC (+10/-10%, ripple ratio within 5%) (SW ON) 12/24VDC (+10/-15%, ripple ratio within 5%) (SW OFF)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		3.5mA TYP./5.5mA MAX. (5VDC) 2mA TYP./3mA MAX. (12VDC) 4.5mA TYP./6mA MAX. (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	△	The rated input current is decreased when 5VDC is used.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (32 points)	○	
ON voltage/ON current		3.5VDC or higher/1.0mA or higher (SW ON) 5VDC or higher/1.0mA or higher (SW OFF)	3.5V or higher/1mA or higher	△	The ON voltage is changed when 12VDC is used.*1
OFF voltage/OFF current		1.1VDC or lower/0.2mA or lower (SW ON) 2VDC or lower/0.2mA or lower (SW OFF)	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 1.4kΩ (SW ON) Approx. 5.5kΩ (SW OFF)	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	1.5ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 1ms.
	ON to OFF	3ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

AX80 (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AX80	RX40C7		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	7mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX80 (when 12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AX80	RX70C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX80-UL (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AX80-UL	RX40C7		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	7mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX80-UL (when 12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AX80-UL	RX70C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX80E (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AX80E	RX40C7		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	7mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	15V or higher/4mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	8V or lower/2mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	5.5ms (TYP.) 0.5ms or less (high-speed mode, upper 8 points only)	Configured in the parameter.*2	○	Set the input response time of parameters to 5ms or 0.4ms/ 1ms.
	ON to OFF	6.0ms (TYP.) 1.0ms or less (high-speed mode, upper 8 points only)	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AX80E (when 12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AX80E	RX70C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		100% (8 points/common)	100% (16 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	5.5ms (TYP.) 0.5ms or less (high-speed mode, upper 8 points only)	Configured in the parameter.*2	○	Set the input response time of parameters to 5ms or 0.4ms/ 1ms.
	ON to OFF	6.0ms (TYP.) 1.0ms or less (high-speed mode, upper 8 points only)	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 (I/O assignment: Input 16 points)		○	
Internal current consumption (5VDC)		55mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

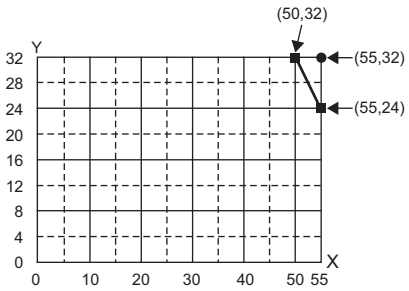
AX81 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX81	RX41C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (5 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX81 (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX81	RX71C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 4mA (12VDC) Approx. 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (5 points/common)	100% (32 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

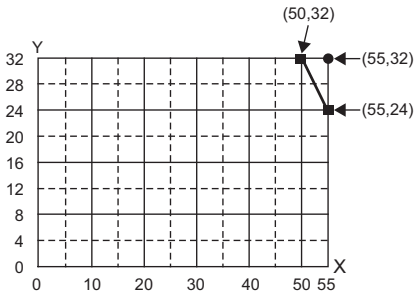
AX81B and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX81B	RX41C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (21.6 to 30VDC, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	△	The rated input voltage is lowered after replacement.*1
Rated input current		7mA (normal input) 1.5mA (disconnection detection)	4mA TYP. (at 24VDC)	△	The rated input current is decreased when the normal input is used.*1
Maximum number of simultaneous input points		60% (5 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		21.0VDC or higher/5.4mA or higher (normal input) 1.0VDC or lower/0.2mA or lower (disconnection detection)	19V or higher/3mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		7.0VDC or lower/1.9mA or lower (normal input) 6.0VDC or higher/1.3mA or higher (disconnection detection)	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 3.6kΩ (normal input) Approx. 4.3kΩ (disconnection detection)	5.3kΩ	△	The input resistance is changed after replacement.*1
External resistance		0.1kΩ or less (at turning on) 11.4 to 12.7kΩ or less (at turning off) 150kΩ or more (at disconnection)	—	—	
Parallel resistance with external switch		12kΩ (tolerance: ±5%, 1/4W or more)	—	—	
Disconnection detection function		Available	Not available	×	The disconnection detection function is not supported after replacement.
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED), 32 point switch-over using switch	ON indication (LED)	○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)	32 (I/O assignment: Input 32 points)	△	The number of occupied input points is changed after replacement.
Internal current consumption (5VDC)		125mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

AX81B and RX40NC6B

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

Item		Specifications		Compatibility	Precautions
		AX81B	RX40NC6B		
Input type		DC input (positive common/negative common shared type)	DC input (negative common type)	△	The positive common cannot be used.
Number of input points		32	16	△	When 17 or more points are required, use two modules of the RX40NC6B.
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (21.6 to 30VDC, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	△	The rated input voltage is lowered after replacement.*1
Rated input current		7mA (normal input) 1.5mA (disconnection detection)	6mA TYP. (at 24VDC)	△	The rated input current is decreased when the normal input is used.*1
Maximum number of simultaneous input points		60% (5 points/common)	100% (16 points)	○	
ON voltage/ON current		21.0VDC or higher/5.4mA or higher (normal input) 1.0VDC or lower/0.2mA or lower (disconnection detection)	14V or higher/3.5mA or higher	△	The ON voltage and OFF voltage are changed after replacement.*1*2
OFF voltage/OFF current		7.0VDC or lower/1.9mA or lower (normal input) 6.0VDC or higher/1.3mA or higher (disconnection detection)	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1*2
Input resistance		Approx. 3.6kΩ (normal input) Approx. 4.3kΩ (disconnection detection)	Approx. 4.0kΩ	△	The input resistance is changed after replacement.*1
External resistance		0.1kΩ or less (at turning on) 11.4 to 12.7kΩ or less (at turning off) 150kΩ or more (at disconnection)	*2	△	The external resistance is changed after replacement.*1
Parallel resistance with external switch		12kΩ (tolerance: ±5%, 1/4W or more)			
Disconnection detection function		Available	Available	○	
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
External power supply	Voltage	—	24VDC (ripple ratio within 5%) (allowable voltage range: 20.4 to 28.8VDC)	×	An external power supply is required.
	Current	—	130mA (at 24VDC)	×	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED) 32 point switch-over using switch	ON indication (LED)	○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)	32 (I/O assignment: Input 32 points)	△	The number of occupied input points is changed after replacement.
Internal current consumption (5VDC)		125mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	

Item	Specifications		Compatibility	Precautions
	AX81B	RX40NC6B		
Weight	0.45kg	0.25kg	—	

*1 Check the specifications of sensors and switches connected to the RX40NC6B.

*2 The RX40NC6B detects disconnection when the input current is 0.3mA or lower. When the leakage current of an input device is 0.3mA or lower, connect a bleeder resistor (approx. 56kΩ as a guide for the resistance value) in parallel to and close to the connected device.

*3 The following table shows the input response times.

Timing	Set value		
	1ms	5ms	10ms
OFF to ON (MAX.)	1ms	5ms	10ms
ON to OFF (MAX.)	1ms	5ms	10ms

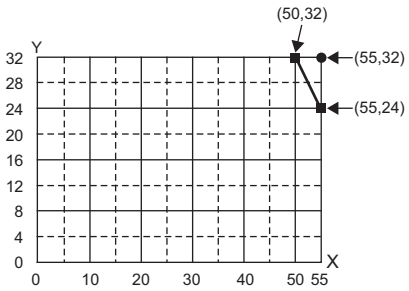
AX81-S1 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX81-S1	RX41C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		2.5mA (12VDC) 5mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (5 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		5.6VDC or higher/1.1mA or higher	19V or higher/3mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		2.4VDC or lower/0.39mA or lower	6V or lower/1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 4.8kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		105mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX81-S1 (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX81-S1	RX71C4		
Input type		DC input (positive common/negative common shared type)		○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		2.5mA (12VDC) 5mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (5 points/common)	100% (32 points)	○	
ON voltage/ON current		5.6VDC or higher/1.1mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		2.4VDC or lower/0.39mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 4.8kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		105mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

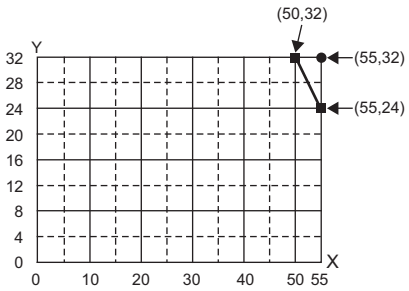
AX81-S3 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX81-S3	RX41C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (5 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.1ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 0.1ms.
	ON to OFF	0.2ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX81-S3 (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX81-S3	RX71C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		4mA (12VDC) 10mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		60% (5 points/common)	100% (32 points)	○	
ON voltage/ON current		9.5VDC or higher/3mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.1ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 0.1ms.
	ON to OFF	0.2ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41X), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 (I/O assignment: Input 32 points)		○	
Internal current consumption (5VDC)		110mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.45kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

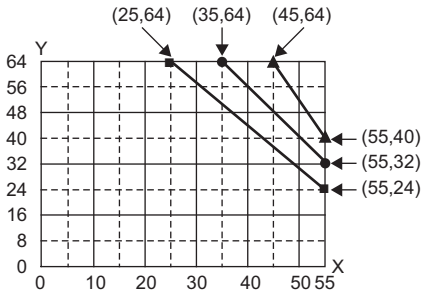
AX82 (when 24VDC is used) and RX42C4

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

Item		Specifications		Compatibility	Precautions
		AX82	RX42C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		40 points (when next to the power supply module is located: 26 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/2.6mA or higher	19V or higher/3mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.0mA or lower	6V or lower/1mA or lower	○	
Input resistance		Approx. 3.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		32 points/common (common terminal: 1-17, 1-18, 1-36, 2-17, 2-18, 2-36)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
External interface		37-pin D-sub connector × 2 (A6CON1E/2E/3E)	40-pin connector × 2 (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)		○	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.60kg	0.13kg	—	

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

*2 The following figure shows a derating chart.



▲: Input voltage 24VDC

●: Input voltage 26.4VDC

■: Input voltage 28.8V

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

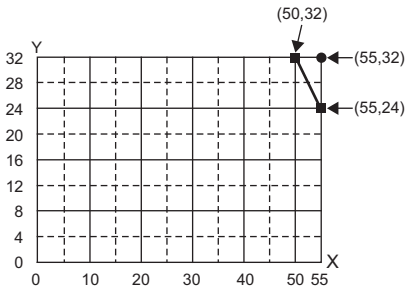
AX82 (when 24VDC is used) and RX41C4

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

Item		Specifications		Compatibility	Precautions
		AX82	RX41C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64	32	△	When 33 or more points are required, use two modules of the RX41C4.
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		40 points (when next to the power supply module is located: 26 points)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/2.6mA or higher	19V or higher/3mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.0mA or lower	6V or lower/1mA or lower	○	
Input resistance		Approx. 3.4kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*3	○	
Common terminal arrangement		32 points/common (common terminal: 1-17, 1-18, 1-36, 2-17, 2-18, 2-36)	32 points/common (common terminal: B01, B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch	ON indication (LED)	○	
External interface		37-pin D-sub connector × 2 (A6CON1E/2E/3E)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-ASLCXY81), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)	32 (I/O assignment: Input 32 points)	△	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.60kg	0.11kg	—	

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

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8VDC

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

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

AX82 (when 12VDC is used) and RX72C4

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

Item		Specifications		Compatibility	Precautions
		AX82	RX72C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		40 points (when next to the power supply module is located: 26 points)	100% (64 points)	○	
ON voltage/ON current		9.5VDC or higher/2.6mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.0mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 3.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		32 points/common (common terminal: 1-17, 1-18, 1-36, 2-17, 2-18, 2-36)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
External interface		37-pin D-sub connector × 2 (A6CON1E/2E/3E)	40-pin connector × 2 (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)		○	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	150mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.60kg	0.14kg	—	

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

*2 The following table shows the input response times.

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

AX82 (when 12VDC is used) and RX71C4

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

Item		Specifications		Compatibility	Precautions
		AX82	RX71C4		
Input type		DC input (negative common type)	DC input (positive common/negative common shared type)	○	
Number of input points		64	32	△	When 33 or more points are required, use two modules of the RX71C4.
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	○	
Maximum number of simultaneous input points		40 points (when next to the power supply module is located: 26 points)	100% (32 points)	○	
ON voltage/ON current		9.5VDC or higher/2.6mA or higher	3.5V or higher/1mA or higher	△	The ON voltage and ON current are changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.0mA or lower	1V or lower/0.1mA or lower	△	The OFF voltage and OFF current are changed after replacement.*1
Input resistance		Approx. 3.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		32 points/common (common terminal: 1-17, 1-18, 1-36, 2-17, 2-18, 2-36)	32 points/common (common terminal: B01, B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch	ON indication (LED)	○	
External interface		37-pin D-sub connector × 2 (A6CON1E/2E/3E)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-ASLCXY81), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 (I/O assignment: Input 64 points)	32 (I/O assignment: Input 32 points)	△	
Internal current consumption (5VDC)		120mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.60kg	0.12kg	—	

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

*2 The following table shows the input response times.

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

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

Output modules

AY10 and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY10	RY10R2		
Output type		Contact output		○	
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 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		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		None		○	
Fuse		None		○	
Relay socket		None		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.44kg	0.22kg	—	

*1 The following tables show the life data.

AY10

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

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

AY10A and RY18R2A

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

Item		Specifications		Compatibility	Precautions
		AY10A	RY18R2A		
Output type		Contact output		○	
Number of output points		16	8	△	When 9 or more points are required, use two modules of the RY18R2A.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point 2A at 240VAC (COSθ = 1)/point 16A/all points	2A at 24VDC (resistive load)/point 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		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		None		○	
Fuse		None		○	
Relay socket		None		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Common terminal arrangement		No common (all points independent)		○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10AY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)	16 points (I/O assignment: Output 16 points)	△	The number of output points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		115mA (TYP. all points ON)	260mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.19kg	—	

*1 The following tables show the life data.

AY10A

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

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

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

AY10A-UL and RY18R2A

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

Item		Specifications		Compatibility	Precautions
		AY10A-UL	RY18R2A		
Output type		Contact output		○	
Number of output points		16	8	△	When 9 or more points are required, use two modules of the RY18R2A.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point 2A at 240VAC (COSθ = 1)/point 16A/all points	2A at 24VDC (resistive load)/point 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		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		None		○	
Fuse		None		○	
Relay socket		None		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Withstand voltage		Between AC external connecting terminals and general grounding 1500VAC rms for 1 minute	2300VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		No common (all points independent)		○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10AY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)	16 points (I/O assignment: Output 16 points)	△	The number of output points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		115mA (TYP. all points ON)	260mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.19kg	—	

*1 The following tables show the life data.

AY10A-UL

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

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

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

AY11 and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY11	RY10R2		
Output type		Contact output		○	
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 8A/common		○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		264VAC, 125VDC		○	
Leakage current at OFF		0.1mA (200VAC, 60Hz)	—	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		Varistor (387 to 473V)	None	×	No varistor is built in this model.
Fuse		None		○	
Relay socket		Available	None	×	The relay cannot be replaced.
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.22kg	—	

*1 The following tables show the life data.

AY11

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

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

AY11A and RY18R2A

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

Item		Specifications		Compatibility	Precautions
		AY11A	RY18R2A		
Output type		Contact output		○	
Number of output points		16	8	△	When 9 or more points are required, use two modules of the RY18R2A.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point 2A at 240VAC (COSθ = 1)/point 16A/all points	2A at 24VDC (resistive load)/point 2A at 240VAC (COSθ = 1)/point 8A/module	○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		264VAC, 125VDC		○	
Leakage current at OFF		0.1mA (200VAC, 60Hz)	—	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		Varistor (387 to 473V)	None	×	No varistor is built in this model.
Fuse		None		○	
Relay socket		None		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Common terminal arrangement		No common (all points independent)		○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10AY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)	16 points (I/O assignment: Output 16 points)	△	The number of output points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		115mA (TYP. all points ON)	260mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.47kg	0.19kg	—	

*1 The following tables show the life data.

AY11A

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

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

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

AY11AEU and RY18R2A

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

Item		Specifications		Compatibility	Precautions
		AY11AEU	RY18R2A		
Output type		Contact output		○	
Number of output points		16	8	△	When 9 or more points are required, use two modules of the RY18R2A.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point 2A at 24VAC (COSθ = 1)/point 16A/all points	2A at 24VDC (resistive load)/point 2A at 240VAC (COSθ = 1)/point 8A/module	○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		49.9VAC, 74.9VDC	264VAC, 125VDC	○	
Leakage current at OFF		0.1mA (49.9VAC, 60Hz)	—	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		Varistor (387 to 473V)	None	×	No varistor is built in this model.
Fuse		None		○	
Relay socket		None		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Withstand voltage		Between AC external connecting terminals and general grounding 1500VAC rms for 1 minute Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	2300VAC rms for 1 minute	○	
Isolation resistance		500VDC between AC/DC external connecting terminals and general grounding 10MΩ or more by insulation resistance tester	10MΩ or more by insulation resistance tester	○	
Noise immunity		By noise simulator of 1500Vp-p AC type noise voltage, 500Vp-p DC type 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	○	
Common terminal arrangement		No common (all points independent)		○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10AY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)	16 points (I/O assignment: Output 16 points)	△	The number of output points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		115mA (TYP. all points ON)	260mA (TYP. all points ON)	—	

Item	Specifications		Compatibility	Precautions
	AY11AEU	RY18R2A		
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.47kg	0.19kg	—	

*1 The following tables show the life data.

AY11AEU

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 200 thousand times or more
	1.5A at 24VAC (COSϕ = 0.7) 200 thousand times or more 0.75A at 24VAC (COSϕ = 0.35) 200 thousand times or more 1A at 24VDC, 0.1A at 48VDC (L/R = 7ms) 200 thousand times or more

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

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

AY11E and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY11E	RY10R2		
Output type		Contact output		○	
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 8A/common		○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		250VAC, 125VDC	264VAC, 125VDC	○	
Leakage current at OFF		0.1mA (200VAC, 60Hz)	—	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		Varistor (387 to 473V)	None	×	No varistor is built in this model.
Fuse		8A MF51NM8 or FGMA250V8A	None	×	No fuse is built in this model.
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.47kg	0.22kg	—	

*1 The following tables show the life data.

AY11E

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 200 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 200 thousand times or more 0.75A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 200 thousand times or more 1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 200 thousand times or more

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

AY11EEU and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY11EEU	RY10R2		
Output type		Contact output		○	
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 24VAC (COSθ = 1)/point, 8A/common	2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 8A/common	○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		49.9VAC, 74.9VDC	264VAC, 125VDC	○	
Leakage current at OFF		0.1mA (49.9VAC, 60Hz)	—	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		Varistor (387 to 473V)	None	×	No varistor is built in this model.
Fuse		8A MF51NM8 or FGMA250V8A	None	×	No fuse is built in this model.
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Withstand voltage		Between AC external connecting terminals and general grounding 1500VAC rms for 1 minute Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	2300VAC rms for 1 minute	○	
Isolation resistance		500VDC between AC/DC external connecting terminals and general grounding 10MΩ or more by insulation resistance tester	10MΩ or more by insulation resistance tester	○	
Noise immunity		By noise simulator of 1500Vp-p AC type noise voltage, 500Vp-p DC type 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	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	

Item	Specifications		Compatibility	Precautions
	AY11EEU	RY10R2		
External dimensions	250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.47kg	0.22kg	—	

*1 The following tables show the life data.

AY11EEU

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 200 thousand times or more
	1.5A at 24VAC (COSϕ = 0.7) 200 thousand times or more 0.75A at 24VAC (COSϕ = 0.35) 200 thousand times or more 1A at 24VDC, 0.1A at 48VDC (L/R = 7ms) 200 thousand times or more

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

AY11-UL and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY11-UL	RY10R2		
Output type		Contact output		○	
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 8A/common		○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		264VAC, 125VDC		○	
Leakage current at OFF		0.1mA (200VAC, 60Hz)	—	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Surge suppressor		Varistor (387 to 473V)	None	×	No varistor is built in this model.
Relay socket		Available	None	×	The relay cannot be replaced.
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	150mA (TYP. 24VDC, all points ON)	—	○	
Withstand voltage		Between AC external connecting terminals and general grounding 1500VAC rms for 1 minute	2300VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.22kg	—	

*1 The following tables show the life data.

AY11-UL

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 200 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 200 thousand times or more 0.75A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 200 thousand times or more 1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 200 thousand times or more

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

AY13 and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY13	RY10R2		
Output type		Contact output		○	
Number of output points		32	16	△	When 17 or more points are required, use two modules of the RY10R2.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 5A/common	2A at 24VDC (resistive load)/point, 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		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	290mA (TYP. 24VDC, all points ON)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR11X13Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.59kg	0.22kg	—	

*1 The following tables show the life data.

AY13

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 200 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 200 thousand times or more 0.75A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 200 thousand times or more 1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 200 thousand times or more

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

AY13E and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY13E	RY10R2		
Output type		Contact output		○	
Number of output points		32	16	△	When 17 or more points are required, use two modules of the RY10R2.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 5A/common	2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 8A/common	○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		250VAC, 125VDC	264VAC, 125VDC	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
Fuse		8A MF51NM8 or FGMA250V8A	None	×	No fuse is built in this model.
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	290mA (TYP. 24VDC, all points ON)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR11X13Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.60kg	0.22kg	—	

*1 The following tables show the life data.

AY13E

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 200 thousand times or more
	1.5A at 200VAC, 1A at 240VAC (COSϕ = 0.7) 200 thousand times or more 0.75A at 200VAC, 0.5A at 240VAC (COSϕ = 0.35) 200 thousand times or more 1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 200 thousand times or more

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

AY13EU and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY13EU	RY10R2		
Output type		Contact output		○	
Number of output points		32	16	△	When 17 or more points are required, use two modules of the RY10R2.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 24VAC (COSθ = 1)/point, 5A/common	2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 8A/common	○	
Minimum switching load		1mA at 5VDC		○	
Maximum switching load		49.9VAC, 74.9VDC	264VAC, 125VDC	○	
Response time	OFF to ON	10ms or less		○	
	ON to OFF	12ms or less		○	
Life		Refer to the life table.*1		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower)	—	○	No external power supply is required.
	Current	290mA (TYP. 24VDC, all points ON)	—	○	
Withstand voltage		Between AC external connecting terminals and general grounding 1500VAC rms for 1 minute Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	2300VAC rms for 1 minute	○	
Isolation resistance		500VDC between AC/DC external connecting terminals and general grounding 10MΩ or more by insulation resistance tester	10MΩ or more by insulation resistance tester	○	
Noise immunity		By noise simulator of 1500Vp-p AC type noise voltage, 500Vp-p DC type 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	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR11X13Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.59kg	0.22kg	—	

*1 The following tables show the life data.

AY13EU

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 200 thousand times or more
	1.5A at 24VAC (COSϕ = 0.7) 200 thousand times or more 0.75A at 24VAC (COSϕ = 0.35) 200 thousand times or more 1A at 24VDC, 0.1A at 48VDC (L/R = 7ms) 200 thousand times or more

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

AY15EU and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY15EU	RY10R2		
Output type		Contact output		○	
Number of output points		24	16	△	When 17 or more points are required, use two modules of the RY10R2.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated switching voltage, current		2A at 24VDC (resistive load)/point, 2A at 240VAC (COSθ = 1)/point, 8A/common		○	
Minimum switching load		10mA at 5VDC	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		△	The electrical life is half after replacement.
Maximum switching frequency		3600 times/hour		○	
External power supply	Voltage	24VDC±10% (ripple voltage 4Vp-p or lower), SELV power supply	—	○	No external power supply is required.
	Current	220mA (TYP. 24VDC, all points ON), SELV power supply	—	○	
Withstand voltage		(AC batch relay-drive power supply, 5V internal circuit) 2830VAC rms/3 cycles (altitude 2000m) (Relay-drive power supply, 5V internal circuit) 500VAC rms/3 cycles (altitude 2000m)	2300VAC rms for 1 minute	○	
Isolation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		IEC801-4: 1kV	By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB20, TB31)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3.5 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm² (15 to 19 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3.5, R2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		150mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.50kg	0.22kg	—	

*1 The following tables show the life data.

AY15EU

Mechanical	20 million times or more
Electrical	Rated switching voltage/current load: 100 thousand times or more
	2A at 200VAC, 1.8A at 240VAC (COSϕ = 0.7) 200 thousand times or more 1.1A at 200VAC, 0.9A at 240VAC (COSϕ = 0.35) 200 thousand times or more 1.1A at 24VDC, 0.1A at 100VDC (L/R = 7ms) 200 thousand times or more

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

AY20EU and RY20S6

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

Item		Specifications		Compatibility	Precautions
		AY20EU	RY20S6		
Output type		Triac output		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage, frequency		100 to 240VAC, 40/70Hz	100 to 240VAC (+10%/-15%) 50/60Hz (±3Hz)	○	
Maximum load voltage		264VAC		○	
Maximum load current		0.6A/point, 1.9A/common	0.6A/point, 4.8A/common	△	The total common current is decreased after replacement.*1
Minimum load voltage/ current		15mA at 24VAC, 15mA at 100VAC, 15mA at 240VAC	100mA at 24VAC, 25mA at 100VAC, 25mA at 240VAC	△	The minimum load current is increased after replacement.*1
Maximum inrush current		30A 10ms or less, 15A 100ms or less	20A/cycle or lower	△	The maximum inrush current is decreased after replacement.*1
Leakage current at OFF		1.5mA or lower (240VAC, 60Hz)	1.5mA or lower (at 120V, 60Hz), 3mA or lower (at 240V, 60Hz)	△	The leakage current at OFF is increased after replacement.*1
Maximum voltage drop at ON		1.5VAC or lower (15mA to 0.6A)	1.5V or lower	○	
Response time	OFF to ON	1ms or less	Total of 1ms and 0.5 cycles or less	○	
	ON to OFF	Total of 1ms and 0.5 cycles or less	Total of 1ms and 0.5 cycles or less (rated load, resistive load)	○	
Surge suppressor		CR absorber (0.1μF+47Ω)	CR absorber	○	
Fuse		3.2A fuse (1 fuse/common) GP-32	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
Withstand voltage		2830VAC rms/3 cycles (Altitude 2000m)	2300VAC rms for 1 minute	○	
Isolation resistance		10MΩ or more by insulation resistance tester		○	
Noise immunity		IEC 801-4: 1kV	By noise simulator of 1500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	○	
Common terminal arrangement		4 points/common (common terminal: TB8, TB18, TB28, TB38)	16 points/common (common terminal: TB17)	△	As the common changes from four commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3.5 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2㎟ (15 to 19 AWG)	0.3 to 0.75㎟ core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3.5, R2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		400mA (TYP. all points ON)	280mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.65kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY20S6.

AY22 and RY20S6

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

Item		Specifications		Compatibility	Precautions
		AY22	RY20S6		
Output type		Triac output		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage, frequency		100 to 240VAC, 50/60Hz±5%	100 to 240VAC (+10%/-15%) 50/60Hz (±3Hz)	○	
Maximum load voltage		264VAC		○	
Maximum load current		2A/point, 3.3A/common	0.6A/point, 4.8A/common	△	The maximum load current is decreased after replacement.*1
Minimum load voltage/ current		100mA at 24VAC, 10mA at 100VAC, 20mA at 240VAC	100mA at 24VAC, 25mA at 100VAC, 25mA at 240VAC	△	The minimum load current is increased after replacement.*1
Maximum inrush current		40A 10ms or less, 15A 100ms or less	20A/cycle or lower	△	The maximum inrush current is decreased after replacement.*1
Leakage current at OFF		1.5mA or lower (120VAC, 60Hz), 3mA or lower (240VAC, 60Hz)	1.5mA or lower (at 120V, 60Hz), 3mA or lower (at 240V, 60Hz)	○	
Maximum voltage drop at ON		1.5VAC or lower (1 to 2A) 1.8VAC or lower (0.2 to 1A) 5VAC or lower (0.2A or lower)	1.5V or lower	○	
Response time	OFF to ON	1ms or less	Total of 1ms and 0.5 cycles or less	○	
	ON to OFF	Total of 1ms and 0.5 cycles or less	Total of 1ms and 0.5 cycles or less (rated load, resistive load)	○	
Surge suppressor		CR absorber (0.022μF+47Ω) Varistor (387 to 473V)	CR absorber	△	No varistor is built in this model.
Fuse		7A fast blow fuse (1 fuse/common) HP-70K	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		305mA (TYP. all points ON)	280mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.71kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY20S6.

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

AY23 and RY20S6

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

Item		Specifications		Compatibility	Precautions
		AY23	RY20S6		
Output type		Triac output		○	
Number of output points		32	16	△	When 17 or more points are required, use two modules of the RY20S6.
Isolation method		Photocoupler		○	
Rated load voltage, frequency		100 to 240VAC, 40 to 70Hz	100 to 240VAC (+10%/-15%) 50/60Hz (±3Hz)	○	
Maximum load voltage		264VAC		○	
Maximum load current		0.6A/point, 2.4A/common (when next to the power supply module is located: 1.05A/common)	0.6A/point, 4.8A/common	○	
Minimum load voltage/ current		100mA at 24VAC, 10mA at 100VAC, 10mA at 240VAC	100mA at 24VAC, 25mA at 100VAC, 25mA at 240VAC	△	The minimum load current is increased after replacement.*1
Maximum inrush current		20A 10ms or less, 8A 100ms or less	20A/cycle or lower	○	
Leakage current at OFF		1.5mA or lower (120VAC, 60Hz), 3mA or lower (240VAC, 60Hz)	1.5mA or lower (at 120V, 60Hz), 3mA or lower (at 240V, 60Hz)	○	
Maximum voltage drop at ON		1.5VAC or lower (100 to 600mA) 1.8VAC or lower (50 to 100mA) 2VAC or lower (10 to 50mA)	1.5V or lower	○	
Response time	OFF to ON	1ms or less	Total of 1ms and 0.5 cycles or less	○	
	ON to OFF	Total of 1ms and 0.5 cycles or less	Total of 1ms and 0.5 cycles or less (rated load, resistive load)	○	
Surge suppressor		CR absorber (0.022μF+47Ω)	CR absorber	○	
Fuse		3.2A fast blow fuse (1 fuse/common) HP-32	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
Common terminal arrangement		8 points/common (common terminal: TB9, TB18, TB27, TB36)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR11X13Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		590mA (TYP. all points ON)	280mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.55kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY20S6.

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

AY40 and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY40	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 0.8A/common	0.5A/point, 5A/common	○	
Maximum inrush current		0.4A	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	8mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY40-UL and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY40-UL	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 0.8A/common	0.5A/point, 5A/common	○	
Maximum inrush current		0.4A	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	8mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY40P and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY40P	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+10%/-15%)	12/24VDC (+20%/-15%)	○	
Maximum load current		0.1A/point, 0.8A/common	0.5A/point, 5A/common	○	
Maximum inrush current		0.38A, 5ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (+10%/-15%)	12/24VDC (+20/-15%) (ripple ratio within 5%)	○	
	Current	15mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		Overheat protection function (in increments of 1 common), short circuit protection function	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY40A and RY18R2A

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

Item		Specifications		Compatibility	Precautions
		AY40A	RY18R2A		
Output type		Transistor output (all points independent, sink type)	Contact output	×	The output type is changed after replacement.*1
Number of output points		16	8	△	When 9 or more points are required, use two modules of the RY18R2A.
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated load voltage		12/24VDC (10.2 to 30VDC)	24VDC/240VAC (MAX. 125VDC/264VAC)	○	
Maximum load current		0.3A/point	2A/point, 8A/module	○	
Maximum inrush current		1A, 100ms or less	—	—	
Leakage current at OFF		0.1mA or lower	—	—	
Maximum voltage drop at ON		1.5VDC (50mA to 0.3A) 1.0VDC (50mA or lower)	—	—	
Response time	OFF to ON	2ms or less	10ms or less	△	The response time is changed after replacement.*1
	ON to OFF	2ms or less (resistive load)	12ms or less	△	
Life		Unlimited electrical life	Refer to the life table.*2	×	The electrical/mechanical life is limited because contact output is used.
Maximum switching frequency		Unlimited mechanical life	3600 times/hour		
Surge suppressor		Surge absorbing diode	None	×	The surge suppressor is not built in this model.
Common terminal arrangement		No common (all points independent)		○	
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10AY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)	16 points (I/O assignment: Output 16 points)	△	The number of output points is 8, but 16 points are occupied.
Internal current consumption (5VDC)		190mA (TYP. all points ON)	260mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.42kg	0.19kg	—	

*1 Check the specifications of loads connected to the RY18R2A.

*2 The following tables show the life data.

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

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

AY41 and RY41NT2P

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

Item		Specifications		Compatibility	Precautions
		AY41	RY41NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		32		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 1.6A/common	0.2A/point, 2A/common	○	
Maximum inrush current		0.4A	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	20mA (TYP. 24VDC/common)	16mA (at 24VDC)	○	
Common terminal arrangement		16 points/common (common terminal: TB18, TB36)	32 points/common (common terminal: A01, A02)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.11kg	—	

*1 Check the specifications of loads connected to the RY41NT2P.

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

AY41P and RY41NT2P

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

Item		Specifications		Compatibility	Precautions
		AY41P	RY41NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		32		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+10%/-15%)	12/24VDC (+20%/-15%)	○	
Maximum load current		0.1A/point, 1.0A/common	0.2A/point, 2A/common	○	
Maximum inrush current		0.38A, 5ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (+10%/-15%)	12/24VDC (+20/-15%) (ripple ratio within 5%)	○	
	Current	30mA (TYP. 24VDC/common)	16mA (at 24VDC)	○	
Common terminal arrangement		16 points/common (common terminal: TB18, TB36)	32 points/common (common terminal: A01, A02)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		Overheat protection function (in increments of 8 points), short circuit protection function	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.11kg	—	

*1 Check the specifications of loads connected to the RY41NT2P.

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

AY41-UL and RY41NT2P

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

Item		Specifications		Compatibility	Precautions
		AY41-UL	RY41NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		32		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 1.6A/common	0.2A/point, 2A/common	○	
Maximum inrush current		0.4A	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	20mA (TYP. 24VDC/common)	16mA (at 24VDC)	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		16 points/common (common terminal: TB18, TB36)	32 points/common (common terminal: A01, A02)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3.5 × 7 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.088 to 0.3mm²	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	—	—	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	180mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.11kg	—	

*1 Check the specifications of loads connected to the RY41NT2P.

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

AY42 and RY42NT2P

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

Item		Specifications		Compatibility	Precautions
		AY42	RY42NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		64		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 2A/common (when next to the power supply module is located: 1.6A/common)	0.2A/point, 2A/common	○	
Maximum inrush current		0.4A	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	40mA (TYP. 24VDC/common)	16mA (at 24VDC)/common	○	
Common terminal arrangement		32 points/common (common terminal: 1A1, 1A2, 2A1, 2A2)	32 points/common (common terminal: 1A01, 1A02, 2A01, 2A02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)		○	
Internal current consumption (5VDC)		340mA (TYP. all points ON)	250mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.50kg	0.13kg	—	

*1 Check the specifications of loads connected to the RY42NT2P.

AY42-S1 and RY42NT2P

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

Item		Specifications		Compatibility	Precautions
		AY42-S1	RY42NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		64		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 2A/common (when next to the power supply module is located: 1.6A/common)	0.2A/point, 2A/common	○	
Maximum inrush current		0.4A	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	0.1ms or less	0.5ms or less	△	The response time is changed after replacement.*1
	ON to OFF	0.3ms or less (resistive load)	1ms or less (rated load, resistive load)	△	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	40mA (TYP. 24VDC/common)	16mA (at 24VDC)/common	○	
Common terminal arrangement		32 points/common (common terminal: 1A1, 1A2, 2A1, 2A2)	32 points/common (common terminal: 1A01, 1A02, 2A01, 2A02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)		○	
Internal current consumption (5VDC)		290mA (TYP. all points ON)	250mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.50kg	0.13kg	—	

*1 Check the specifications of loads connected to the RY42NT2P.

AY42-S3 and RY42NT2P

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

Item		Specifications		Compatibility	Precautions
		AY42-S3	RY42NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		64		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 2A/common (when next to the power supply module is located: 1.6A/common)	0.2A/point, 2A/common	○	
Maximum inrush current		0.4A/point, 3.5A/fuse	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
Fuse		1.6A normal blow fuse (2 fuses/common)	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	40mA (TYP. 24VDC/common)	16mA (at 24VDC)/common	○	
Common terminal arrangement		32 points/common (common terminal: 1A1, 1A2, 2A1, 2A2)	32 points/common (common terminal: 1A01, 1A02, 2A01, 2A02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)		○	
Internal current consumption (5VDC)		290mA (TYP. all points ON)	250mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.50kg	0.13kg	—	

*1 Check the specifications of loads connected to the RY42NT2P.

AY42-S4 and RY42NT2P

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

Item		Specifications		Compatibility	Precautions
		AY42-S4	RY42NT2P		
Output type		Transistor output (sink type)		○	
Number of output points		64		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 1.92A/common	0.2A/point, 2A/common	○	
Maximum inrush current		0.4A, 10ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 1.0VDC, 0.1A at 2.5VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Zener diode build-in photocoupler	Zener diode	○	
External power supply	Voltage	—	12/24VDC (+20/-15%) (ripple ratio within 5%)	×	An external power supply is required.
	Current	—	16mA (at 24VDC)/common	×	
Common terminal arrangement		32 points/common (common terminal: 1A1, 1A2, 2A1, 2A2)	32 points/common (common terminal: 1A01, 1A02, 2A01, 2A02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)		△	The wiring for external power supply needs to be changed after replacement.
Applicable wire size		0.088 to 0.3mm²		△	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)		○	
Internal current consumption (5VDC)		500mA (TYP. 60% or less simultaneous ON)	250mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight		0.44kg	0.13kg	—	

*1 Check the specifications of loads connected to the RY42NT2P.

AY50 and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY50	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.5A/point, 2A/common	0.5A/point, 5A/common	○	
Maximum inrush current		7A 10ms or less, 3.5A 100ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.9VDC (TYP.), 0.5A at 1.5VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Varistor (52 to 62V)	Zener diode	○	
Fuse		2A fast blow fuse (1 fuse/common)	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	65mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.42kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY50-UL and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY50-UL	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.5A/point, 2A/common	0.5A/point, 5A/common	○	
Maximum inrush current		7A 10ms or less, 3.5A 100ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.9VDC (TYP.), 0.5A at 1.5VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Varistor (52 to 62V)	Zener diode	○	
Fuse		2A fast blow fuse (1 fuse/common)	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	65mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.42kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY51 and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY51	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		32	16	△	When 17 or more points are required, use two modules of the RY40NT5P.
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.5A/point, 2A/common (when next to the power supply module is located: 3.3A/common)	0.5A/point, 5A/common	○	
Maximum inrush current		4A, 10ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.9VDC (TYP.), 0.5A at 1.5VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Varistor (52 to 62V)	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	50mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Common terminal arrangement		16 points/common (common terminal: TB18, TB36)	16 points/common (common terminal: TB18)	○	
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR51Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.53kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY51-S1 and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY51-S1	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		32	16	△	When 17 or more points are required, use two modules of the RY40NT5P.
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.3A/point, 2A/common (1A/fuse common)	0.5A/point, 5A/common	○	
Maximum inrush current		3A, 10ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.3A at 1VDC (TYP.), 0.3A at 1.5VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Transistor built-in zener diode	Zener diode	○	
Fuse		1A fast blow fuse (2 fuses/common) MP-10	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	100mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Common terminal arrangement		16 points/common (common terminal: TB18, TB36), 8 points/fuse common	16 points/common (common terminal: TB18)	○	
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR51Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		310mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.55kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY51-UL and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY51-UL	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		32	16	△	When 17 or more points are required, use two modules of the RY40NT5P.
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.5A/point, 4A/common (when next to the power supply module is located: 3.3A/common)	0.5A/point, 5A/common	○	
Maximum inrush current		4A, 10ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 0.9VDC (TYP.), 0.5A at 1.5VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Varistor (52 to 62V)	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	50mA (TYP. 24VDC/common)	4mA (at 24VDC)	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		16 points/common (common terminal: TB18, TB36)	16 points/common (common terminal: TB18)	○	
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR51Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)	16 points (I/O assignment: Output 16 points)	△	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.53kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY60 and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY60	RY10R2		
Output type		Transistor output (sink type)	Contact output	×	The output type is changed after replacement.*1
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated load voltage		12/24/48VDC (10.2 to 56VDC)	24VDC/240VAC (MAX. 125VDC/264VAC)	○	
Maximum load current		2A/point, 5A/common (3A/fuse common) (when next to the power supply module is located: 3A/common)	2A/point, 8A/common	○	
Maximum inrush current		4A 100ms or less, 8A 10ms or less	—	—	
Leakage current at OFF		0.1mA or lower	—	—	
Maximum voltage drop at ON		1.5VDC (2A)	—	—	
Response time	OFF to ON	2ms or less	10ms or less	△	The response time is changed after replacement.*1
	ON to OFF	2ms or less (resistive load)	12ms or less	△	
Life		Unlimited electrical life	Refer to the life table.*2	×	The electrical/mechanical life is limited because contact output is used.
Maximum switching frequency		Unlimited mechanical life	3600 times/hour		
Surge suppressor		Varistor (108 to 132V)	None	×	The surge suppressor is not built in this model.
Fuse		3.2A fast blow fuse (2 fuses/common) MP-10	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	24VDC (+10%/-10%)	—	○	No external power supply is required.
	Current	65mA (TYP. 24VDC/common)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.64kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY10R2.

*2 The following tables show the life data.

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

AY60E and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY60E	RY10R2		
Output type		Transistor output (source type)	Contact output	×	The output type is changed after replacement.*1
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated load voltage		12/24/48VDC (10.2 to 56VDC)	24VDC/240VAC (MAX. 125VDC/264VAC)	○	
Maximum load current		12/24VDC, 2A/point, 48VDC, 0.8A/point, 5A/common (when next to the power supply module is located: 3A/common)	2A/point, 8A/common	○	
Maximum inrush current		4A 100ms or less, 8A 10ms or less	—	—	
Leakage current at OFF		0.1mA or lower	—	—	
Maximum voltage drop at ON		1.5VDC (2A)	—	—	
Response time	OFF to ON	2ms or less	10ms or less	△	The response time is changed after replacement.*1
	ON to OFF	2ms or less (resistive load)	12ms or less	△	
Life		Unlimited electrical life	Refer to the life table.*2	×	The electrical/mechanical life is limited because contact output is used.
Maximum switching frequency		Unlimited mechanical life	3600 times/hour		
Surge suppressor		Surge absorbing diode	None	×	The surge suppressor is not built in this model.
Fuse		5A fast blow fuse (2 fuses/common)	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	24VDC (+10%/-10%)	—	○	No external power supply is required.
	Current	65mA (TYP. 24VDC/common)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.63kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY10R2.

*2 The following tables show the life data.

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

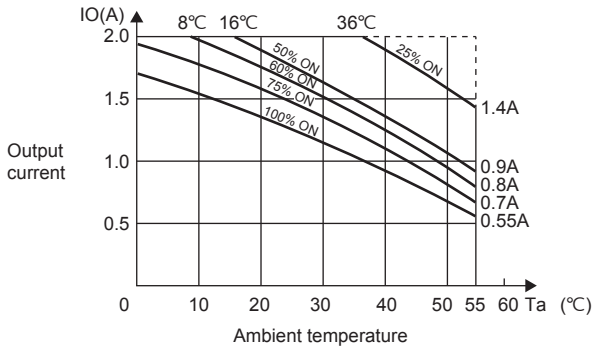
AY60EP and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY60EP	RY10R2		
Output type		Transistor output (source type)	Contact output	×	The output type is changed after replacement.*1
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated load voltage		12/24VDC (+10%/-15%)	24VDC/240VAC (MAX. 125VDC/264VAC)	○	
Maximum load current		2A/point, 0.8A/point (60% ON, 55℃)*2	2A/point, 8A/common	○	
Maximum inrush current		No limit (short circuit protection function)	—	—	
Leakage current at OFF		1mA or lower	—	—	
Maximum voltage drop at ON		2.0A at 1.6V (TYP.), 2.0A at 2.0V (MAX)	—	—	
Response time	OFF to ON	0.5ms or less	10ms or less	△	The response time is changed after replacement.*1
	ON to OFF	1.5ms or less	12ms or less	△	
Life		Unlimited electrical life	Refer to the life table.*3	×	The electrical/mechanical life is limited because contact output is used.
Maximum switching frequency		Unlimited mechanical life	3600 times/hour		
Surge suppressor		Surge absorbing diode	None	×	The surge suppressor is not built in this model.
External power supply	Voltage	24VDC (+10%/-10%)	—	○	No external power supply is required.
	Current	110mA (TYP. 24VDC/common)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB19)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		Overheat protection function (in increments of 2 points), short circuit protection function	None	×	The protection function is not available after replacement.
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.55kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY10R2.

*2 The following figure shows a derating chart.



*3 The following tables show the life data.

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

AY60S and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY60S	RY10R2		
Output type		Transistor output (sink type)	Contact output	×	The output type is changed after replacement.*1
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated load voltage		12/24/48VDC (+10%/-15%)	24VDC/240VAC (MAX. 125VDC/ 264VAC)	○	
Maximum load current		2A/point, 6.4A/common (5A/fuse common) (when next to the power supply module is located: 5A/common)	2A/point, 8A/common	○	
Maximum inrush current		4A 100ms or less, 8A 10ms or less	—	—	
Leakage current at OFF		0.1mA or lower	—	—	
Maximum voltage drop at ON		1VDC (2A)	—	—	
Response time	OFF to ON	1ms or less	10ms or less	△	The response time is changed after replacement.*1
	ON to OFF	3ms or less (resistive load)	12ms or less	△	
Life		Unlimited electrical life	Refer to the life table.*2	×	The electrical/mechanical life is limited because contact output is used.
Maximum switching frequency		Unlimited mechanical life	3600 times/hour		
Surge suppressor		Varistor (90 to 110V)	None	×	The surge suppressor is not built in this model.
Fuse		5A fast blow fuse (2 fuses/common) MP-50	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	24/48VDC (+10%/-10%)	—	○	No external power supply is required.
	Current	3mA (TYP. 24VDC/common)	—	○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		75mA (TYP. all points ON)	450mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.66kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY10R2.

*2 The following tables show the life data.

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

AY60S-UL and RY10R2

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

Item		Specifications		Compatibility	Precautions
		AY60S-UL	RY10R2		
Output type		Transistor output (sink type)	Contact output	×	The output type is changed after replacement.*1
Number of output points		16		○	
Isolation method		Photocoupler	Relay	△	Each isolation method has the same isolation performance although the method is changed after replacement.
Rated load voltage		12/24VDC (+10%/-15%)	24VDC/240VAC (MAX. 125VDC/ 264VAC)	○	
Maximum load current		2A/point, 6.4A/common (5A/fuse common) (when next to the power supply module is located: 5A/common)	2A/point, 8A/common	○	
Maximum inrush current		4A 100ms or less, 8A 10ms or less	—	—	
Leakage current at OFF		0.1mA or lower	—	—	
Maximum voltage drop at ON		1VDC (2A)	—	—	
Response time	OFF to ON	1ms or less	10ms or less	△	The response time is changed after replacement.*1
	ON to OFF	3ms or less (resistive load)	12ms or less	△	
Life		Unlimited electrical life	Refer to the life table.*2	×	The electrical/mechanical life is limited because contact output is used.
Maximum switching frequency		Unlimited mechanical life	3600 times/hour		
Surge suppressor		Varistor (90 to 110V)	None	×	The surge suppressor is not built in this model.
Fuse		5A fast blow fuse (2 fuses/common)	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	12/24VDC (+10%/-15%)	—	○	No external power supply is required.
	Current	3mA (TYP. 24VDC/common)	—	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		RAV1.25-3.5, RAV2-3.5	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		75mA (TYP. all points ON)	450mA (TYP. all points ON)	—	

Item	Specifications		Compatibility	Precautions
	AY60S-UL	RY10R2		
External dimensions	250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.66kg	0.22kg	—	

*1 Check the specifications of loads connected to the RY10R2.

*2 The following tables show the life data.

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

AY70 and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY70	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		5/12VDC (+25%/-10%)	12/24VDC (+20%/-15%)	△	5VDC voltage cannot be used after replacement.*1
Maximum load current		16mA/point, 128mA/common	0.5A/point, 5A/common	○	
Maximum inrush current		50mA 10ms	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		—	0.1mA or lower	—	
Output voltage at OFF		V_{OH}: 3.5VDC (V_{cc} = 5VDC, I_{OH} = 0.4mA)	—	—	
Maximum voltage drop at ON		V_{OL}: 0.2VDC (I_{OL} = 16mA)	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	1ms or less (rated load, resistive load)	○	
Surge suppressor		None	Zener diode	○	
External power supply	Voltage	5/12VDC (+25%/-10%)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	24VDC voltage cannot be used after replacement.*1
	Current	55mA (TYP. 12VDC/common)	4mA (at 24VDC)	○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		100mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY70-UL and RY40NT5P

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

Item		Specifications		Compatibility	Precautions
		AY70-UL	RY40NT5P		
Output type		Transistor output (sink type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		5/12VDC (+25%/-10%)	12/24VDC (+20%/-15%)	△	5VDC voltage cannot be used after replacement.*1
Maximum load current		16mA/point, 128mA/common	0.5A/point, 5A/common	○	
Maximum inrush current		50mA 10ms	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		—	0.1mA or lower	—	
Output voltage at OFF		V_{OH}: 3.5VDC (V_{cc} = 5VDC, I_{OH} = 0.4mA)	—	—	
Maximum voltage drop at ON		V_{OL}: 0.2VDC (I_{OL} = 16mA)	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	1ms or less (rated load, resistive load)	○	
Surge suppressor		None	Zener diode	○	
External power supply	Voltage	5/12VDC (+25%/-10%)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	24VDC voltage cannot be used after replacement.*1
	Current	55mA (TYP. 12VDC/common)	4mA (at 24VDC)	○	
Withstand voltage		Between DC external connecting terminals and general grounding 500VAC rms for 1 minute	510VAC rms for 1 minute	○	
Isolation resistance		5MΩ or more by insulation resistance tester	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		○	
Common terminal arrangement		8 points/common (common terminal: TB10, TB20)	16 points/common (common terminal: TB18)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3.5 × 7 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm² (14 to 18 AWG)	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		100mA (TYP. all points ON)	140mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.36kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40NT5P.

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

AY71 and RY41NT2H

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

Item		Specifications		Compatibility	Precautions
		AY71	RY41NT2H		
Output type		Transistor output (sink type)		○	
Number of output points		32		○	
Isolation method		Photocoupler		○	
Rated load voltage		5/12VDC (+25%/-10%)	5/12/24VDC (+20%/-15%)	○	
Maximum load current		16mA/point, 256mA/common	0.2A/point, 2A/common	○	
Maximum inrush current		50mA 10ms	0.7A, 10ms or less	○	
Leakage current at OFF		—	0.1mA or lower	—	
Output voltage at OFF		V_{OH}: 3.5VDC (V_{cc} = 5VDC, I_{OH} = 0.4mA)	—	—	
Maximum voltage drop at ON		V_{OL}: 0.2VDC (I_{OL} = 16mA)	0.2A at 0.1VDC (TYP.), 0.2A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	1μs or less	○	
	ON to OFF	1ms or less	2μs or less (rated load, resistive load)	○	
Surge suppressor		None	Zener diode	○	
External power supply	Voltage	5/12VDC (+25%/-10%)	—	○	No external power supply is required.
	Current	100mA (TYP. 12VDC/common)	—	○	
Common terminal arrangement		16 points/common (common terminal: TB18, TB36)	32 points/common (common terminal: A01, A02)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Internal current consumption (5VDC)		200mA (TYP. all points ON)	420mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.44kg	0.12kg	—	

AY72 and RY41NT2H

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

Item		Specifications		Compatibility	Precautions
		AY72	RY41NT2H		
Output type		Transistor output (sink type)		○	
Number of output points		64	32	△	When 33 or more points are required, use two modules of the RY41NT2H.
Isolation method		Photocoupler		○	
Rated load voltage		5/12VDC (+25%/-10%)	5/12/24VDC (+20%/-15%)	○	
Maximum load current		16mA/point, 512mA/common	0.2A/point, 2A/common	○	
Maximum inrush current		50mA 10ms	0.7A, 10ms or less	○	
Leakage current at OFF		—	0.1mA or lower	—	
Output voltage at OFF		V_{OH}: 3.5VDC (V_{cc} = 5VDC, I_{OH} = 0.4mA)	—	—	
Maximum voltage drop at ON		V_{OL}: 0.2VDC (I_{OL} = 16mA)	0.2A at 0.1VDC (TYP.), 0.2A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	1ms or less	1μs or less	○	
	ON to OFF	1ms or less	2μs or less (rated load, resistive load)	○	
Surge suppressor		None	Zener diode	○	
External power supply	Voltage	5/12VDC (+25%/-10%)	—	○	No external power supply is required.
	Current	300mA (TYP. 12VDC/common)	—	○	
Common terminal arrangement		32 points/common (common terminal: 1A1, 1A2, 2A1, 2A2)	32 points/common (common terminal: A01, A02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
External interface		40-pin connector × 2 (A6CON1/2/3/4)	40-pin connector (A6CON1/2/3/4)	○	Existing external wiring can be used.
Applicable wire size		0.088 to 0.3mm²		○	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)	32 points (I/O assignment: Output 32 points)	△	
Internal current consumption (5VDC)		300mA (TYP. all points ON)	420mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.47kg	0.12kg	—	

AY80 and RY40PT5P

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

Item		Specifications		Compatibility	Precautions
		AY80	RY40PT5P		
Output type		Transistor output (source type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.5A/point, 2A/common	0.5A/point, 5A/common	○	
Maximum inrush current		7A 10ms or less, 3.5A 100ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 1.5VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Varistor (52 to 62V)	Zener diode	○	
Fuse		2A fast blow fuse (1 fuses/common) MP-20	None	×	No fuse is built in this model.
Fuse blown indication		Available (An LED turns on when a fuse is blown. A signal is output to a CPU module.)	None	×	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	60mA (TYP. 24VDC/common)	16mA (at 24VDC)	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB19)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	130mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.42kg	0.16kg	—	

*1 Check the specifications of loads connected to the RY40PT5P.

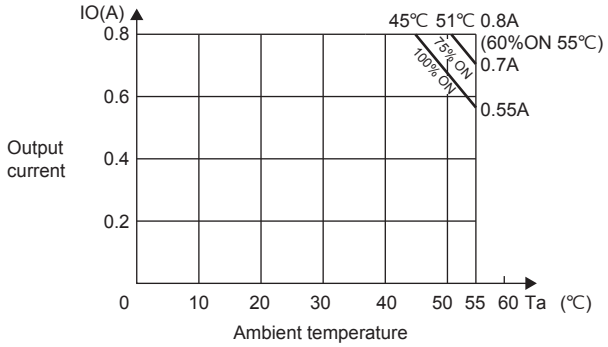
*2 For an upgrade tool, please consult your local Mitsubishi Electric representative.

AY80EP and RY40PT5P

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

Item		Specifications		Compatibility	Precautions
		AY80EP	RY40PT5P		
Output type		Transistor output (source type)		○	
Number of output points		16		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+10%/-15%)	12/24VDC (+20%/-15%)	○	
Maximum load current		0.8A/point, 0.8A/point (60% ON, 55℃)*1	0.5A/point, 5A/common	△	The maximum load current is decreased after replacement.*2
Maximum inrush current		No limit (short circuit protection function)	Current is to be limited by the overload protection function.	○	
Leakage current at OFF		1mA or lower	0.1mA or lower	○	
Maximum voltage drop at ON		0.8A at 1.1VDC (TYP.), 0.8A at 1.5VDC (MAX.)	0.5A at 0.2VDC (TYP.), 0.5A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	0.5ms or less	0.5ms or less	○	
	ON to OFF	1.5ms or less	1ms or less (rated load, resistive load)	○	
Surge suppressor		Surge absorbing diode	Zener diode	○	
External power supply	Voltage	12/24VDC (+10%/-15%)	12/24VDC (+20/-15%) (ripple ratio within 5%)	○	
	Current	110mA (TYP. 24VDC/common)	16mA (at 24VDC)	○	
Common terminal arrangement		8 points/common (common terminal: TB9, TB19)	16 points/common (common terminal: TB17)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		Overheat protection function (in increments of 2 points), short circuit protection function	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR40Y), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		16 points (I/O assignment: Output 16 points)		○	
Internal current consumption (5VDC)		115mA (TYP. all points ON)	130mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.55kg	0.16kg	—	

*1 The following figure shows a derating chart.



*2 Check the specifications of loads connected to the RY40PT5P.

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

AY81 and RY41PT1P

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

Item		Specifications		Compatibility	Precautions
		AY81	RY41PT1P		
Output type		Transistor output (source type)		○	
Number of output points		32		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 30VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.5A/point, 4A/common (when next to the power supply module is located: 3A/common)	0.1A/point, 2A/common	△	The maximum load current is decreased after replacement.*1
Maximum inrush current		4A, 10ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.5A at 1.5VDC (MAX.)	0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Varistor (52 to 62V)	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	50mA (TYP. 24VDC/common)	19mA (at 24VDC)	○	
Common terminal arrangement		16 points/common (common terminal: TB17, TB35)	32 points/common (common terminal: B01, B02)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41Y), the existing external wiring and terminal blocks in the existing system can be used.*2
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	190mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.53kg	0.11kg	—	

*1 Check the specifications of loads connected to the RY41PT1P.

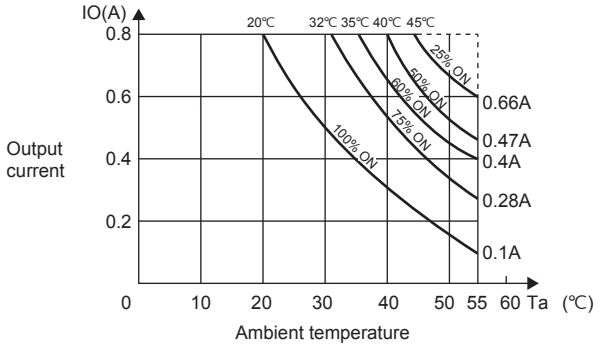
*2 For an upgrade tool, please consult your local Mitsubishi Electric representative.

AY81EP and RY41PT1P

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

Item		Specifications		Compatibility	Precautions
		AY81EP	RY41PT1P		
Output type		Transistor output (source type)		○	
Number of output points		32		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+10%/-15%)	12/24VDC (+20%/-15%)	○	
Maximum load current		0.8A/point, 0.4A/point (60% ON, 55℃)*1	0.1A/point, 2A/common	△	The maximum load current is decreased after replacement.*2
Maximum inrush current		No limit (short circuit protection function)	Current is to be limited by the overload protection function.	○	
Leakage current at OFF		1mA or lower	0.1mA or lower	○	
Maximum voltage drop at ON		0.8A at 1.1VDC (TYP.), 0.8A at 1.5VDC (MAX.)	0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	0.5ms or less	0.5ms or less	○	
	ON to OFF	1.5ms or less	1ms or less (rated load, resistive load)	○	
Surge suppressor		Surge absorbing diode	Zener diode	○	
External power supply	Voltage	12/24VDC (+10%/-15%)	12/24VDC (+20/-15%) (ripple ratio within 5%)	○	
	Current	220mA (TYP. 24VDC/common)	19mA (at 24VDC)	○	
Common terminal arrangement		16 points/common (common terminal: TB17, TB35)	32 points/common (common terminal: B01, B02)	△	As the common changes from two commons to a common, wiring with a different voltage for each common is not possible.
Operation indication		ON indication (LED)		○	
Protection function		Overheat protection function (in increments of 2 points), short circuit protection function	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		38-point terminal block (M3 × 6 screws)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR41Y), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 points (I/O assignment: Output 32 points)		○	
Internal current consumption (5VDC)		230mA (TYP. all points ON)	190mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.72kg	0.11kg	—	

*1 The following figure shows a derating chart.



*2 Check the specifications of loads connected to the RY41PT1P.

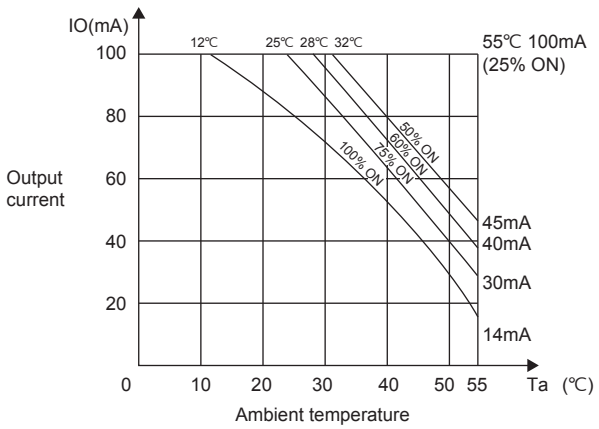
*3 For an upgrade tool, please consult your local Mitsubishi Electric representative.

AY82EP and RY42PT1P

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

Item		Specifications		Compatibility	Precautions
		AY82EP	RY42PT1P		
Output type		Transistor output (source type)		○	
Number of output points		64		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+10%/-15%)	12/24VDC (+20%/-15%)	○	
Maximum load current		0.1A/point, 0.04A/point (60% ON, 55℃)*1	0.1A/point, 2A/common	○	
Maximum inrush current		No limit (short circuit protection function)	Current is to be limited by the overload protection function.	○	
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC (TYP.), 0.1A at 3.5VDC (MAX.)	0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	0.5ms or less	0.5ms or less	○	
	ON to OFF	1.5ms or less	1ms or less (rated load, resistive load)	○	
Surge suppressor		Surge absorbing diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*2
	Current	50mA (TYP. 24VDC/common)	19mA (at 24VDC)	○	
Common terminal arrangement		32 points/common (common terminal: 1-17, 1-18, 1-36, 2-17, 2-18, 2-36)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	○	
Operation indication		ON indication (LED), 32 point switch-over using switch		○	
Protection function		Overheat protection function (in increments of 1 common), short circuit protection function	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		37-pin D-sub connector × 2 (A6CON1E/2E/3E)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.088 to 0.3mm²		×	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)		○	
Internal current consumption (5VDC)		290mA (TYP. all points ON)	290mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.58kg	0.13kg	—	

*1 The following figure shows a derating chart.



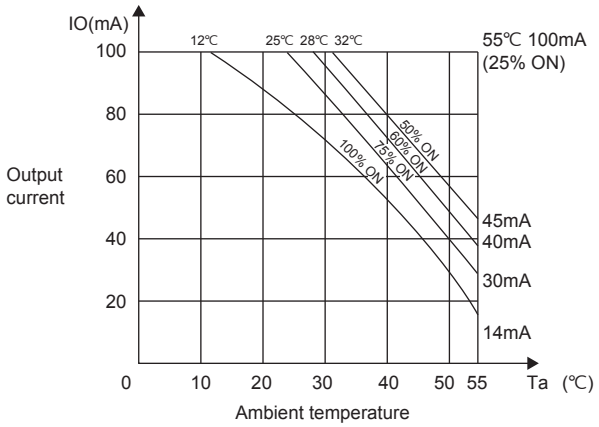
*2 Check the specifications of loads connected to the RY42PT1P.

AY82EP and RY41PT1P

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

Item		Specifications		Compatibility	Precautions
		AY82EP	RY41PT1P		
Output type		Transistor output (source type)		○	
Number of output points		64	32	△	When 33 or more points are required, use two modules of the RY41PT1P.
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (+10%/-15%)	12/24VDC (+20%/-15%)	○	
Maximum load current		0.1A/point, 0.04A/point (60% ON, 55℃)*1	0.1A/point, 2A/common	○	
Maximum inrush current		No limit (short circuit protection function)	Current is to be limited by the overload protection function.	○	
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC (TYP.), 0.1A at 3.5VDC (MAX.)	0.1A at 0.1VDC (TYP.), 0.1A at 0.2VDC (MAX.)	○	
Response time	OFF to ON	0.5ms or less	0.5ms or less	○	
	ON to OFF	1.5ms or less	1ms or less (rated load, resistive load)	○	
Surge suppressor		Surge absorbing diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*2
	Current	50mA (TYP. 24VDC/common)	19mA (at 24VDC)	○	
Common terminal arrangement		32 points/common (common terminal: 1-17, 1-18, 1-36, 2-17, 2-18, 2-36)	32 points/common (common terminal: B01, B02)	○	
Operation indication		ON indication (LED) 32 point switch-over using switch	ON indication (LED)	○	
Protection function		Overheat protection function (in increments of 1 common), short circuit protection function	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
External interface		37-pin D-sub connector × 2 (A6CON1E/2E/3E)	40-pin connector (A6CON1/2/3/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-ASLCXY81), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.088 to 0.3㎟		×	
Number of occupied I/O points		64 points (I/O assignment: Output 64 points)	32 points (I/O assignment: Output 32 points)	△	
Internal current consumption (5VDC)		290mA (TYP. all points ON)	190mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.58kg	0.11kg	—	

*1 The following figure shows a derating chart.



*2 Check the specifications of loads connected to the RY41PT1P.

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

I/O combined modules

AH42 and RH42C4NT2P

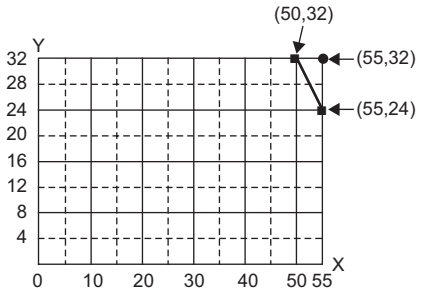
○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		AH42	RH42C4NT2P		
■Input specifications					
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		32		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	△	12VDC voltage cannot be used after replacement.*1
Rated input current		Approx. 3mA (12VDC) Approx. 7mA (24VDC)	4mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		60% (20 points/common)	Refer to the derating chart.*2	△	Use the module within the range shown in the derating chart.
ON voltage/ON current		9.5VDC or higher/3mA or higher	19V or higher/3mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		6VDC or lower/1.5mA or lower	6V or lower/1mA or lower	△	The OFF current is changed after replacement.*1
Input resistance		Approx. 3.3kΩ	5.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	10ms or less (at 24VDC)	Configured in the parameter.*3	○	Set the input response time of parameters to 10ms.
	ON to OFF	10ms or less (at 24VDC)	Configured in the parameter.*3	○	
Input common terminal arrangement		32 points/common (common terminal: 1B1, 1B2)	32 points/common (common terminal: 1B01, 1B02)	○	
■Output specifications					
Output type		Transistor output (sink type)		○	
Number of output points		32		○	
Isolation method		Photocoupler		○	
Rated load voltage		12/24VDC (10.2 to 40VDC)	12/24VDC (+20%/-15%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
Maximum load current		0.1A/point, 1A/common	0.2A/point, 2A/common	○	
Maximum inrush current		0.4A, 10ms or less	Current is to be limited by the overload protection function.	△	The inrush current value is changed after replacement.*1
Leakage current at OFF		0.1mA or lower		○	
Maximum voltage drop at ON		0.1A at 2.5VDC, 5mA at 1.75VDC, 1mA at 1.7VDC	0.2A at 0.2VDC (TYP.), 0.2A at 0.3VDC (MAX.)	○	
Response time	OFF to ON	2ms or less	0.5ms or less	○	
	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	○	
Surge suppressor		Clamp diode	Zener diode	○	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (+20/-15%) (ripple ratio within 5%)	△	The voltage exceeding 28.8VDC cannot be used after replacement.*1
	Current	20mA (TYP. 24VDC/common)	16mA (at 24VDC)	○	
Output common terminal arrangement		32 points/common (common terminal: 2A1, 2A2)	32 points/common (common terminal: 2A01, 2A02)	○	
Protection function		None	Overheat protection function (in increments of 1 point), overload protection function (in increments of 1 point)	○	
■Common specifications					
Operation indication		ON indication (LED)		○	

Item	Specifications		Compatibility	Precautions
	AH42	RH42C4NT2P		
External interface	40-pin connector × 2 (A6CON1/2/3/4)		○	Existing external wiring can be used.
Applicable wire size	0.088 to 0.3mm²		○	
Number of occupied I/O points	64 points (I/O assignment: Output 64 points)	32 points (I/O assignment: I/O combined 32 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	245mA (TYP. all points ON)	220mA (TYP. all points ON)	—	
External dimensions	250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight	0.70kg	0.13kg	—	

*1 Check the specifications of sensors, switches, and loads connected to the RH42C4NT2P.

*2 The following figure shows a derating chart.



●: Input voltage 26.4VDC

■: Input voltage 28.8V

X: Ambient temperature (℃)

Y: Number of simultaneous on points (point)

*3 The following table shows the input response times.

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

Interrupt modules

AI61 (when 24VDC is used) and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AI61	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 6mA (12VDC) Approx. 14mA (24VDC)	7mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (16 points)	100% (16 points)	○	
ON voltage/ON current		9VDC or higher	15V or higher/4mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		4VDC or lower	8V or lower/2mA or lower	△	The OFF voltage is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.2ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 0.2/0.1ms.
	ON to OFF	0.2ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		16 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: special 32 points)	16 (I/O assignment: Input 16 points)	△	The number of occupied I/O points is changed after replacement. Interrupt settings can be configured in the parameter setting of GX Works3.
Internal current consumption (5VDC)		140mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.40kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AI61 (when 12VDC is used) and RX70C4

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

Item		Specifications		Compatibility	Precautions
		AI61	RX70C4		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		12/24VDC (+10/-15%, ripple ratio within 5%)	5/12VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		Approx. 6mA (12VDC) Approx. 14mA (24VDC)	1.7mA TYP. (at 5VDC) 4.8mA TYP. (at 12VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (16 points)	100% (16 points)	○	
ON voltage/ON current		9VDC or higher	3.5V or higher/1mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		4VDC or lower	1V or lower/0.1mA or lower	△	The OFF voltage is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	2.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	0.2ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 0.1ms.
	ON to OFF	0.2ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		16 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: special 32 points)	16 (I/O assignment: Input 16 points)	△	The number of occupied I/O points is changed after replacement. Interrupt settings can be configured in the parameter setting of GX Works3.
Internal current consumption (5VDC)		140mA (TYP. all points ON)	100mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.40kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

AI61-S1 and RX40C7

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

Item		Specifications		Compatibility	Precautions
		AI61-S1	RX40C7		
Input type		DC input (positive common type)	DC input (positive common/negative common shared type)	○	
Number of input points		16		○	
Isolation method		Photocoupler		○	
Rated input voltage		24VDC (+10/-10%, ripple ratio within 5%)	24VDC (+20/-15%, ripple ratio within 5%)	○	
Rated input current		14mA	7mA TYP. (at 24VDC)	△	The rated input current is decreased after replacement.*1
Maximum number of simultaneous input points		100% (16 points)	100% (16 points)	○	
ON voltage/ON current		16VDC or higher	15V or higher/4mA or higher	△	The ON voltage is changed after replacement.*1
OFF voltage/OFF current		9VDC or lower	8V or lower/2mA or lower	△	The OFF voltage is changed after replacement.*1
Input resistance		Approx. 2.4kΩ	3.3kΩ	△	The input resistance is changed after replacement.*1
Response time	OFF to ON	2ms or more, 8ms or less	Configured in the parameter.*2	○	Set the input response time of parameters to 5ms.
	ON to OFF	2ms or more, 8ms or less	Configured in the parameter.*2	○	
Common terminal arrangement		16 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	○	
Operation indication		ON indication (LED)		○	
External interface		20-point terminal block (M3 × 6 screws)	18-point terminal block (M3 × 6 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR10XY), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.3 to 0.75mm² core (Outside diameter: 2.8mm or less)	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (A solderless terminal with an insulation sleeve cannot be used.)	×	
Number of occupied I/O points		32 points (I/O assignment: special 32 points)	16 (I/O assignment: Input 16 points)	△	The number of occupied I/O points is changed after replacement. Interrupt settings can be configured in the parameter setting of GX Works3.
Internal current consumption (5VDC)		140mA (TYP. all points ON)	110mA (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.40kg	0.16kg	—	

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

*2 The following table shows the input response times.

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

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

Blank cover modules

AG60 and RG60

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

Item	Specifications		Compatibility	Precautions
	AG60	RG60		
Number of occupied I/O points	Default: 16 points (Can be changed to 0, 16, 32, 48, or 64 points by the parameter.)	Default: 16 points (Can be changed to 0, 16, 32, 48, 64, 128, 256, 512, or 1024 points by the parameter.)	○	
Application	Used as a dustproof cover for a slot not loaded with an I/O module (especially a vacant slot between modules).		○	
External dimensions	250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight	0.17kg	0.07kg	—	

3.3 Precautions for Replacement

Wiring

Size of cables and solderless terminals

The sizes of wires or solderless terminals that can be used for terminal blocks vary between MELSEC iQ-R series and MELSEC-A/QnA series, since modules and terminal blocks of the MELSEC iQ-R series are smaller than those of the MELSEC-A/QnA series.
When replacing MELSEC-A/QnA series modules with MELSEC iQ-R series modules, use wires and solderless terminals that meet the specifications of MELSEC iQ-R series modules.
The wiring change is not required when the upgrade tool conversion adapter is used for replacement.
(Connection change for power supply and common terminals is required. Also, the conversion adapter fixture is required when the conversion adapter is used.)
As the MELSEC iQ-R series is a smaller model, wiring space on terminal blocks is narrower. Pay much attention in wiring.

Change from a terminal block to a connecter

A 32-point I/O module of the MELSEC-A/QnA series uses a terminal block while that of MELSEC iQ-R series uses a connecter.
When using a 32-point I/O module of the MELSEC iQ-R series, shift to the wiring using connecters or convert the connecters to terminal blocks with the following methods.

- Using a converter module for a connecter and a terminal block
- Using an upgrade tool conversion adapter

External wiring connector

An external wiring connecter is not included in packages of 32- and 64-point I/O modules of the MELSEC iQ-R series. Purchase the necessary number of the connecters (A6CON□) separately.

Input modules

Specifications change of rated input current

Check the specifications of external devices (such as sensors and switches) since the rated input current is decreased for some MELSEC iQ-R series input modules compared to that for the MELSEC-A/QnA series.

Specifications changes of ON voltage/ON current and OFF voltage/OFF current

Check the specifications of external devices (such as sensors and switches) since the ON voltage/ON current and OFF voltage/OFF current differ for some MELSEC iQ-R series input modules compared to that for the MELSEC-A/QnA series.

Specifications change of rated voltage value

The RX4□C□ DC input module of the MELSEC iQ-R series is dedicated to 24VDC. Use the RX7□C4 DC input module at 12VDC.

Specifications change of response time

For the MELSEC iQ-R series DC input modules, the I/O response time can be set with the parameter. Set the I/O response time that matches the response time of the MELSEC-A/QnA series DC input module.

Specifications change of common terminal arrangement

The common terminal arrangement may differ between the MELSEC-A/QnA series and MELSEC iQ-R series. Pay attention when applying a different voltage to each common.

Output modules

Specifications change of rated output current

Check the specifications of the load side since the rated output current is decreased for some MELSEC iQ-R series output modules compared to that for the MELSEC-A/QnA series.

Specifications change of common terminal arrangement

The common terminal arrangement may differ between the MELSEC-A/QnA series and MELSEC iQ-R series. Pay attention when applying a different voltage to each common.

Specifications change of common maximum load current

Since the maximum load current per common may differ between the MELSEC-A/QnA series and MELSEC iQ-R series, check them before use.

Leakage current at OFF

Pay attention that devices that operate with a minute current (such as an LED and a buzzer) connected to the transistor output module may operate due to leakage current at OFF.

Triac output module

Operation of the triac that is used on a triac output module may be unstable when a sudden change occurs in the voltage and current due to component characteristics.
Problems due to voltage and current fluctuation may become obvious depending on individual differences between components. Refer to the following manual and check relevant items in the precautions.

Interrupt modules

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

4 POWER SUPPLY MODULE REPLACEMENT

4.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series power supply modules in accordance with the specifications of the MELSEC-A/QnA series power supply modules.
Select models that best suit your application considering the specifications of the MELSEC-A/QnA series power supply module currently used.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Power supply module	A61P A61PN A61P-UL	R61P	(1) External wiring: Changed (2) Slots: Not changed (3) Specifications: Rated output voltage (5VDC: 8A → 6.5A), applicable tightening torque (M4 screw: 78 to 118N·cm → 102 to 138N·cm) (4) Accessories: A spare fuse and a short chip for applied voltage select terminal are not included with the MELSEC iQ-R series power supply module.
	A61PEU	R61P	(1) External wiring: Changed (2) Slots: Not changed (3) Specifications: Rated output voltage (5VDC: 8A → 6.5A), applicable tightening torque (M4 screw: 98 to 137N·cm → 102 to 138N·cm) (4) Accessories: A spare fuse and a short chip for applied voltage select terminal are not included with the MELSEC iQ-R series power supply module.
	A62P	R62P	(1) External wiring: Changed (2) Slots: Not changed (3) Specifications: Rated output voltages (5VDC: 5A → 3.5A, 24VDC: 0.8A → 0.6A), +24 and 24G terminal screws (M4 screw → M3.5 screw), applicable tightening torque (M4 screw: 78 to 118N·cm → 102 to 138N·cm) (4) Accessories: A spare fuse and a short chip for applied voltage select terminal are not included with the MELSEC iQ-R series power supply module.
	A62PEU	R62P	(1) External wiring: Changed (2) Slots: Not changed (3) Specifications: Rated output voltages (5VDC: 5A → 3.5A, 24VDC: 0.8A → 0.6A), +24 and 24G terminal screws (M4 screw → M3.5 screw), applicable tightening torque (M4 screw: 98 to 137N·cm → 102 to 138N·cm) (4) Accessories: A spare fuse and a short chip for applied voltage select terminal are not included with the MELSEC iQ-R series power supply module.
	A63P	R63P	(1) External wiring: Changed (2) Slots: Not changed (3) Specifications: Rated output voltage (5VDC: 8A → 6.5A), applicable tightening torque (M4 screw: 78 to 118N·cm → 102 to 138N·cm) (4) Accessories: A spare fuse is not included with the MELSEC iQ-R series power supply module.
	A65P	R62P	(1) External wiring: Changed (2) Slots: Not changed (3) Specifications: Rated output voltages (5VDC: 2A → 3.5A, 24VDC: 1.5A → 0.6A), +24 and 24G terminal screws (M4 screw → M3.5 screw), applicable tightening torque (M4 screw: 78 to 118N·cm → 102 to 138N·cm) (4) Accessories: A spare fuse and a short chip for applied voltage select terminal are not included with the MELSEC iQ-R series power supply module.
	A66P	No alternative models	Use a 24VDC power supply external to the programmable controller. Since the A66P is mounted on a slot for I/O modules, the corresponding slot of the MELSEC iQ-R series base unit will be empty.
	A67P	No alternative models	Consider using the R63P (input power supply voltage: 24VDC) instead. When the R63P is used, the input voltage is required to be transformed to 24VDC externally.
	A68P	No alternative models	Use a ±15VDC power supply external to the programmable controller. Since the A68P is mounted on a slot for I/O modules, the corresponding slot of the MELSEC iQ-R series base unit will be empty.
	A1NCPU (power supply part)	R62P	(1) External wiring: Changed (2) Slots: Changed (Integrated structure of the CPU and power supply part → single power supply module) (3) Specifications: Rated output voltages (5VDC: 5A → 3.5A, 24VDC: 0.8A → 0.6A), +24 and 24G terminal screws (M4 screw → M3.5 screw), applicable tightening torque (M4 screw: 78 to 118N·cm → 102 to 138N·cm) (4) Accessories: A spare fuse and a short chip for applied voltage select terminal are not included with the MELSEC iQ-R series power supply module.

4.2 Specification Comparison Tables

A61P/A61PN/A61P-UL and R61P

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

Item		Specifications		Compatibility	Precautions
		A61P/A61PN/A61P-UL	R61P		
Input power supply voltage		100 to 120VAC (+10%, -15%) (85 to 132VAC) 200 to 240VAC (+10%, -15%) (170 to 264VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	The R61P is a wide-range type applicable to 100 to 240VAC.
Input frequency		50/60Hz±5%		○	
Input voltage distortion factor		Within 5%		○	
Maximum input apparent power		160VA	130VA	○	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	8A	6.5A	△	Check the power consumption of the entire system. If the capacity is not enough, consider using the R64P (rated output current: 9A).
	24VDC	—		—	
Overcurrent protection	5VDC	8.8A 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		○	
Withstand voltage		1500VAC for 1 minute between all AC external terminals and the ground 500VAC for 1 minute between all DC external terminals and the ground	2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"	○	
Insulation resistance		5MΩ or higher by 500VDC insulation resistance tester between all AC external terminals and the ground	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 immunity		Noise voltage 1500Vp-p	Noise voltage 1500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition) Noise immunity test IEC 61000-4-4: 2kV	○	
Operation indication		POWER LED	POWER LED (Normal: On (green), Error: Off)	○	
Fuse		Glass tube fuse (rated current: 4A, external dimensions: ϕ6 × 32mm, user-changeable)	Built-in (user-unchangeable)	—	

Item		Specifications		Compatibility	Precautions
		A61P/A61PN/A61P-UL	R61P		
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	○	
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		Off→on: 10ms or less On→off: 12ms or less		
	Life		Mechanical: 20 million times or more Electrical: Rated switching voltage/ current, 100 thousand times or more		
Terminal screw size		M4×0.7×6	M4.0	○	
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		R1.25-4, R2-4 RAV1.25-4, RAV2-4	RAV1.25-4, RAV2-4, Thickness of 0.8mm or less, up to two solderless terminal connections per terminal	○	For the R61P, use a solderless terminal with insulating coating.
Applicable tightening torque		78 to 118N·cm	102 to 138N·cm	×	Tighten the screws within the applicable torque range.
External dimensions		250(H)×55(W)×121(D)mm	106(H)×54.6(W)×110(D)mm	—	
Weight		A61P(-UL): 0.98kg A61PN: 0.75kg	0.41kg	—	
Accessories		Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	—	A spare fuse is not included in the accessories of the MELSEC iQ-R series power supply module since fuses are not user-changeable, nor is the short chip since it is unnecessary to switch operating voltage.

A61PEU and R61P

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

Item		Specifications		Compatibility	Precautions
		A61PEU	R61P		
Input power supply voltage		100 to 120VAC (+10%, -15%) (85 to 132VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	The R61P is a wide-range type applicable to 100 to 240VAC.
		200 to 240VAC (+10%, -15%) (170 to 264VAC)			
Input frequency		50/60Hz±5%		○	
Input voltage distortion factor		Within 5%		○	
Maximum input apparent power		130VA		○	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	8A	6.5A	△	Check the power consumption of the entire system. If the capacity is not enough, consider using the R64P (rated output current: 9A).
	24VDC	—		—	
Overcurrent protection	5VDC	8.8A 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		○	
Withstand voltage		2830VAC rms per 3 cycles (altitude 2000m) between the primary side and FG terminal	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 all inputs and all outputs (LG and FG separated), all inputs and LG/FG terminals, all outputs and FG/LG terminals	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 immunity		By noise simulator of noise voltage of IEC 801-4, 2KV, 1500Vp-p, noise width of 1μs, and noise frequency of 25 to 60Hz	Noise voltage 1500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition) Noise immunity test IEC 61000-4-4: 2kV	○	
Operation indication		POWER LED	POWER LED (Normal: On (green), Error: Off)	○	
Fuse		Glass tube fuse (rated current: 4A, external dimensions: ϕ6 × 32mm, user-changeable)	Built-in (user-unchangeable)	—	

Item		Specifications		Compatibility	Precautions
		A61PEU	R61P		
Contact output section	Application	None	$\overline{\text{ERR}}$ contact	○	
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		Off→on: 10ms or less On→off: 12ms or less		
	Life		Mechanical: 20 million times or more Electrical: Rated switching voltage/ current, 100 thousand times or more		
Terminal screw size		M4×0.7×6	M4.0	○	
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		RAV1.25-4, RAV2-4	RAV1.25-4, RAV2-4, thickness of 0.8mm or less, up to two solderless terminal connections per terminal	○	For the R61P, use a solderless terminal with insulating coating.
Applicable tightening torque		98 to 137N·cm	102 to 138N·cm	×	Tighten the screws within the applicable torque range.
External dimensions		250(H)×55(W)×121(D)mm	106(H)×54.6(W)×110(D)mm	—	
Weight		0.80kg	0.41kg	—	
Accessories		Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	—	A spare fuse is not included in the accessories of the MELSEC iQ-R series power supply module since fuses are not user-changeable, nor is the short chip since it is unnecessary to switch operating voltage.

A62P and R62P

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

Item		Specifications		Compatibility	Precautions
		A62P	R62P		
Input power supply voltage		100 to 120VAC (+10%, -15%) (85 to 132VAC) 200 to 240VAC (+10%, -15%) (170 to 264VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	The R62P is a wide-range type applicable to 100 to 240VAC.
Input frequency		50/60Hz±5%		○	
Input voltage distortion factor		Within 5%		○	
Maximum input apparent power		155VA	120VA	○	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	5A	3.5A	△	Check the power consumption of the entire system.
	24VDC	0.8A	0.6A	△	
Overcurrent protection	5VDC	5.5A or higher	3.8A or higher	○	
	24VDC	1.2A or higher	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		○	
Withstand voltage		1500VAC for 1 minute between all AC external terminals and the ground 500VAC for 1 minute between all DC external terminals and the ground	2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"	○	
Insulation resistance		5MΩ or higher by 500VDC insulation resistance tester between all AC external terminals and the ground	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 immunity		Noise voltage 1500Vp-p	Noise voltage 1500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition) Noise immunity test IEC 61000-4-4: 2kV	○	
Operation indication		POWER LED	POWER LED (Normal: On (green), Error: Off)	○	
Fuse		Glass tube fuse (rated current: 4A, external dimensions: ϕ6 × 32mm, user-changeable)	Built-in (user-unchangeable)	—	
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	○	
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		Off→on: 10ms or less On→off: 12ms or less		
	Life		Mechanical: 20 million times or more Electrical: Rated switching voltage/ current, 100 thousand times or more		

Item	Specifications		Compatibility	Precautions
	A62P	R62P		
Terminal screw size	M4×0.7×6	M4.0 (M3.5 screw for +24V, 24G terminals)	×	The wiring for the +24V and 24G terminals needs to be changed after replacement.
Applicable wire size	0.75 to 2mm²		○	
Applicable solderless terminal	R1.25-4, R2-4 RAV1.25-4, RAV2-4	RAV1.25-4, RAV2-4, thickness of 0.8mm or less, up to two solderless terminal connections per 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.)	○	For the R62P, use a solderless terminal with insulating coating.
Applicable tightening torque	78 to 118N·cm	M4 screw: 102 to 138N·cm M3.5 screw: 66 to 89N·cm	×	Tighten the screws within the applicable torque range.
External dimensions	250(H)×55(W)×121(D)mm	106(H)×54.6(W)×110(D)mm	—	
Weight	0.94kg	0.45kg	—	
Accessories	Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	—	A spare fuse is not included in the accessories of the MELSEC iQ-R series power supply module since fuses are not user-changeable, nor is the short chip since it is unnecessary to switch operating voltage.

A62PEU and R62P

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

Item		Specifications		Compatibility	Precautions
		A62PEU	R62P		
Input power supply voltage		100 to 120VAC (+10%, -15%) (85 to 132VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	The R62P is a wide-range type applicable to 100 to 240VAC.
		200 to 240VAC (+10%, -15%) (170 to 264VAC)			
Input frequency		50/60Hz±5%		○	
Input voltage distortion factor		Within 5%		○	
Maximum input apparent power		155VA	120VA	○	
Inrush current		20A within 8ms		○	
Rated output current	5VDC	5A	3.5A	△	Check the power consumption of the entire system.
	24VDC	0.8A	0.6A	△	
Overcurrent protection	5VDC	5.5A or higher	3.8A or higher	○	
	24VDC	1.2A or higher	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		○	
Withstand voltage		1500VAC for 1 minute between all AC external terminals and the ground 500VAC for 1 minute between all DC external terminals and the ground	2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"	○	
Insulation resistance		5MΩ or higher by 500VDC insulation resistance tester between all AC external terminals and the ground	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 immunity		Noise voltage 1500Vp-p	Noise voltage 1500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition) Noise immunity test IEC 61000-4-4: 2kV	○	
Operation indication		POWER LED	POWER LED (Normal: On (green), Error: Off)	○	
Fuse		Glass tube fuse (rated current: 4A, external dimensions: ϕ6 × 32mm, user-changeable)	Built-in (user-unchangeable)	—	
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	○	
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		Off→on: 10ms or less On→off: 12ms or less		
	Life		Mechanical: 20 million times or more Electrical: Rated switching voltage/ current, 100 thousand times or more		

Item	Specifications		Compatibility	Precautions
	A62PEU	R62P		
Terminal screw size	M4×0.7×6	M4.0 (M3.5 screw for +24V, 24G terminals)	×	The wiring for the +24V and 24G terminals needs to be changed after replacement.
Applicable wire size	0.75 to 2mm²		○	
Applicable solderless terminal	R1.25-4, R2-4 RAV1.25-4, RAV2-4	RAV1.25-4, RAV2-4, Thickness of 0.8mm or less, up to two solderless terminal connections per 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.)	○	For the R62P, use a solderless terminal with insulating coating.
Applicable tightening torque	78 to 118N·cm	M4 screw: 102 to 138N·cm M3.5 screw: 66 to 89N·cm	×	Tighten the screws within the applicable torque range.
External dimensions	250(H)×55(W)×121(D)mm	106(H)×54.6(W)×110(D)mm	—	
Weight	0.94kg	0.45kg	—	
Accessories	Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	—	A spare fuse is not included in the accessories of the MELSEC iQ-R series power supply module since fuses are not user-changeable, nor is the short chip since it is unnecessary to switch operating voltage.

A63P and R63P

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

Item		Specifications		Compatibility	Precautions
		A63P	R63P		
Input power supply voltage		24VDC (+30%, -35%) (15.6 to 31.2VDC)		○	
Input frequency		—		○	
Input voltage distortion factor		—		○	
Maximum input power		65W	50W	○	
Inrush current		100A within 1ms	100A within 1ms (24VDC input)	○	
Rated output current	5VDC	8A	6.5A	△	Check the power consumption of the entire system.
	24VDC	—		—	
Overcurrent protection	5VDC	8.5A 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 1ms	Within 10ms (at 24VDC input)	○	
Withstand voltage		500VAC for 1 minute between all DC external terminals and the ground	510VAC rms per minute (altitude 0 to 2000m) between the primary terminal and 5VDC terminal	○	
Insulation resistance		5MΩ or higher by 500VDC insulation resistance tester between all DC external terminals and the ground	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 immunity		Noise voltage 500Vp-p	Noise voltage 500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition)	○	
Operation indication		POWER LED	POWER LED (Normal: On (green), Error: Off)	○	
Fuse		Glass tube fuse (rated current: 6.3A, external dimensions: ϕ6 × 32mm, user-changeable)	Built-in (user-unchangeable)	—	
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	○	
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		Off→on: 10ms or less On→off: 12ms or less		
	Life		Mechanical: 20 million times or more Electrical: Rated switching voltage/ current, 100 thousand times or more		
Terminal screw size		M4×0.7×6	M4.0	○	
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		R1.25-4, R2-4 RAV1.25-4, RAV2-4	RAV1.25-4, RAV2-4, thickness of 0.8mm or less, up to two solderless terminal connections per terminal	○	For the R63P, use a solderless terminal with insulating coating.
Applicable tightening torque		78 to 118N·cm	102 to 138N·cm	×	Tighten the screws within the applicable torque range.

Item	Specifications		Compatibility	Precautions
	A63P	R63P		
External dimensions	250(H)×55(W)×121(D)mm	106(H)×54.6(W)×110(D)mm	—	
Weight	0.80kg	0.41kg	—	
Accessories	Spare fuse: 1	None	—	A spare fuse is not included in the accessories of the MELSEC iQ-R series power supply module since fuses are not user-changeable

A65P and R62P

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

Item		Specifications		Compatibility	Precautions
		A65P	R62P		
Input power supply voltage		100 to 120VAC (+10%, -15%) (85 to 132VAC) 200 to 240VAC (+10%, -15%) (170 to 264VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	The R62P is a wide-range type applicable to 100 to 240VAC.
Input frequency		50/60Hz±5%		○	
Input voltage distortion factor		Within 5%		○	
Maximum input apparent power		110VA	120VA	△	Check the capacity of the UPS when used.
Inrush current		20A within 8ms		○	
Rated output current	5VDC	2A	3.5A	○	
	24VDC	1.5A	0.6A	△	Check the power consumption of the entire system.
Overcurrent protection	5VDC	2.2A or higher	3.8A or higher	○	
	24VDC	2.3A or higher	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		○	
Withstand voltage		1500VAC for 1 minute between all AC external terminals and the ground 500VAC for 1 minute between all DC external terminals and the ground	2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"	○	
Insulation resistance		5MΩ or higher by 500VDC insulation resistance tester between all AC external terminals and the ground	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 immunity		Noise voltage 1500Vp-p	Noise voltage 1500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition) Noise immunity test IEC 61000-4-4: 2kV	○	
Operation indication		POWER LED	POWER LED (Normal: On (green), Error: Off)	○	
Fuse		Glass tube fuse (rated current: 4A, external dimensions: ϕ6 × 32mm, user-changeable)	Built-in (user-unchangeable)	—	

Item		Specifications		Compatibility	Precautions
		A65P	R62P		
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	○	
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		Off→on: 10ms or less On→off: 12ms or less		
	Life		Mechanical: 20 million times or more Electrical: Rated switching voltage/ current, 100 thousand times or more		
Terminal screw size		M4×0.7×6	M4.0 (M3.5 screw for +24V, 24G terminals)	×	The wiring for the +24V and 24G terminals needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²		○	
Applicable solderless terminal		R1.25-4, R2-4 RAV1.25-4, RAV2-4	RAV1.25-4, RAV2-4, thickness of 0.8mm or less, up to two solderless terminal connections per 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.)	○	For the R62P, use a solderless terminal with insulating coating.
Applicable tightening torque		78 to 118N·cm	M4 screw: 102 to 138N·cm M3.5 screw: 66 to 89N·cm	×	Tighten the screws within the applicable torque range.
External dimensions		250(H)×55(W)×121(D)mm	106(H)×54.6(W)×110(D)mm	—	
Weight		0.94kg	0.45kg	—	
Accessories		Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	—	A spare fuse is not included in the accessories of the MELSEC iQ-R series power supply module since fuses are not user-changeable, nor is the short chip since it is unnecessary to switch operating voltage.

A1NCPU (power supply part) and R62P

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

Item		Specifications		Compatibility	Precautions
		A1NCPU (power supply part)	R62P		
Input power supply voltage		100 to 120VAC (+10%, -15%) (85 to 132VAC)	100 to 240VAC (+10%, -15%) (85 to 264VAC)	○	The R62P is a wide-range type applicable to 100 to 240VAC.
		200 to 240VAC (+10%, -15%) (170 to 264VAC)			
Input frequency		50/60Hz±5%		○	
Input voltage distortion factor		Within 5%		○	
Maximum input apparent power		110VA	120VA	△	Check the capacity of the UPS when used.
Inrush current		20A within 8ms		○	
Rated output current	5VDC	5A	3.5A	△	Check the power consumption of the entire system.
	24VDC	0.8A	0.6A	△	
Overcurrent protection	5VDC	5.5A or higher	3.8A or higher	○	
	24VDC	1.2A or higher	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		○	
Withstand voltage		1500VAC for 1 minute between all AC external terminals and the ground 500VAC for 1 minute between all DC external terminals and the ground	2300VAC rms per minute (altitude 0 to 2000m) between the combined "line input/LG terminals" and the "FG terminal and output"	○	
Insulation resistance		5MΩ or higher by 500VDC insulation resistance tester between all AC external terminals and the ground	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 immunity		Noise voltage 1500Vp-p	Noise voltage 1500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition) Noise immunity test IEC 61000-4-4: 2kV	○	
Operation indication		POWER LED	POWER LED (Normal: On (green), Error: Off)	○	
Fuse		Glass tube fuse (rated current: 4A, external dimensions: ϕ6 × 32mm, user-changeable)	Built-in (user-unchangeable)	—	
Contact output section	Application	None	$\overline{\text{ERR.}}$ contact	○	
	Rated switching voltage, current		0.5A at 24VDC		
	Minimum switching load		1mA at 5VDC		
	Response time		Off→on: 10ms or less On→off: 12ms or less		
	Life		Mechanical: 20 million times or more Electrical: Rated switching voltage/ current, 100 thousand times or more		

Item	Specifications		Compatibility	Precautions
	A1NCPU (power supply part)	R62P		
Terminal screw size	M4×0.7×6	M4.0 (M3.5 screw for +24V, 24G terminals)	×	The wiring for the +24V and 24G terminals needs to be changed after replacement.
Applicable wire size	0.75 to 2mm²		○	
Applicable solderless terminal	R1.25-4, R2-4 RAV1.25-4, RAV2-4	RAV1.25-4, RAV2-4, thickness of 0.8mm or less, up to two solderless terminal connections per 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.)	○	For the R62P, use a solderless terminal with insulating coating.
Applicable tightening torque	78 to 118N·cm	M4 screw: 102 to 138N·cm M3.5 screw: 66 to 89N·cm	×	Tighten the screws within the applicable torque range.
External dimensions	250(H)×135(W)×121(D)mm (including the CPU module)	106(H)×54.6(W)×110(D)mm	—	The R62P is the single power supply module.
Weight	1.65kg (including the CPU module)	0.45kg	—	The R62P is the single power supply module.
Accessories	Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	—	A spare fuse is not included in the accessories of the MELSEC iQ-R series power supply module since fuses are not user-changeable, nor is the short chip since it is unnecessary to switch operating voltage.

4.3 Precautions for Replacement

Rated output current

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

Input power supply voltage

The R61P and R62P are the wide-range type power supply module. They support input power supply voltages of both 100VAC and 200VAC.

Power capacity of the supply power

Select a power supply having enough power capacity for a power supply module.
(For an AC power supply module, the power capacity should be twice or more as large as the current consumption of the power supply module, and four times or more for a DC power supply module.)

Large-capacity type power supply module

The MELSEC iQ-R series power supply module, R64P, is the large-capacity type (9A). If the current capacity is not enough, consider using the R64P.

Point

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

5 BASE UNIT AND EXTENSION CABLE REPLACEMENT

5.1 Alternative Model Lists

This section lists alternative models of the MELSEC iQ-R series base units and extension cables in accordance with the specifications of the MELSEC-A/QnA series base units and extension cables.
Select models that best suit your application considering the specifications of the MELSEC-A/QnA series base units and extension cables currently used.

Base units

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Main base unit	A32B A32B-UL A32B-E	R33B	Number of I/O slots: 2 → 3 The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1
	A32B-S1	R33B	Number of I/O slots: 2 → 3 The base unit installation hole positions are different.
	A35B A35B-UL A35B-E	R35B	The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1
	A38B A38B-UL A38B-E A38HB A38HBEU	R38B	The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1
		R310B-HT	Number of I/O slots: 8 → 10 The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1 Each module on the R310B-HT is 5mm away from the adjacent ones.
Extension base unit (type requiring a power supply module)	A62B	R65B	Number of I/O slots: 2 → 5 The base unit installation hole positions are different.
	A65B A65B-UL	R65B	The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1
	A68B A68B-UL	R68B	The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1
		R610B-HT	Number of I/O slots: 8 → 10 The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1 Each module on the R610B-HT is 5mm away from the adjacent ones.
Extension base unit (type not requiring power supply module)	A52B	R65B	Power supply module: Not required → Required Number of I/O slots: 2 → 5 The base unit installation hole positions are different.
	A55B A55B-UL	R65B	Power supply module: Not required → Required The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1
	A58B A58B-UL	R68B	Power supply module: Not required → Required The base unit installation hole positions are different. An upgrade tool (base adapter) can be used.*1

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

Extension cables

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Extension cable	AC06B AC06B-UL	RC06B	—
	AC12B AC12B-UL	RC12B	—
	AC30B AC30B-UL	RC30B	—
	AC50B	RC50B	—
	A1SC05NB	RC06B	Cable length: 0.45m → 0.6m
	A1SC07NB	RC06B	Cable length: 0.7m → 0.6m
	A1SC30NB	RC30B	—
	A1SC50NB	RC50B	—

5.2 Specification Comparison Tables

Base units

A32B/A32B-UL/A32B-E and R33B

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

Item	Specifications		Compatibility	Precautions
	A32B/A32B-UL/A32B-E	R33B		
Number of mountable I/O modules	2	3	△	The number of slots increases.
Extendable	No	Yes	○	
Internal current consumption (5VDC)	—	0.46A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB32N + ERNT-1AR5F, can be used.*1
External dimensions	250(H)×247(W)×29(D)mm	101(H)×189(W)×32.5(D)mm	×	
Weight	0.96kg	0.31kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A32B-S1 and R33B

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

Item	Specifications		Compatibility	Precautions
	A32B-S1	R33B		
Number of mountable I/O modules	2	3	△	The number of slots increases.
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.46A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different.
External dimensions	250(H)×268(W)×29(D)mm	101(H)×189(W)×32.5(D)mm	×	
Weight	1.3kg	0.31kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

A35B/A35B-UL/A35B-E and R35B

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

Item	Specifications		Compatibility	Precautions
	A35B/A35B-UL/A35B-E	R35B		
Number of mountable I/O modules	5		○	
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.58A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB35N + ERNT-1AR5F, can be used.*1
External dimensions	250(H)×382(W)×29(D)mm	101(H)×245(W)×32.5(D)mm	×	
Weight	1.5kg	0.41kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A38B/A38B-UL/A38B-E/A38HB/A38HBEU and R38B

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

Item	Specifications		Compatibility	Precautions
	A38B/A38B-UL/A38B-E/ A38HB/A38HBEU	R38B		
Number of mountable I/O modules	8		○	
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.58A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB38N + ERNT-1AR8F, can be used.*1
External dimensions	250(H)×480(W)×29(D)mm	101(H)×328(W)×32.5(D)mm	×	
Weight	1.9kg	0.55kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A38B/A38B-UL/A38B-E/A38HB/A38HBEU and R310B-HT

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

Item	Specifications		Compatibility	Precautions
	A38B/A38B-UL/A38B-E/ A38HB/A38HBEU	R310B-HT		
Number of mountable I/O modules	8	10	△	The number of slots increases.
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.82A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB38N + ERNT-1AR10F3, can be used.*1
External dimensions	250(H)×480(W)×29(D)mm	101(H)×439(W)×32.5(D)mm	×	
Weight	1.9kg	0.69kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A62B and R65B

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

Item	Specifications		Compatibility	Precautions
	A62B	R65B		
Number of mountable I/O modules	2	5	△	The number of slots increases.
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.70A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different.
External dimensions	250(H)×283(W)×29(D)mm	101(H)×245(W)×32.5(D)mm	×	
Weight	1.1kg	0.41kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

A65B/A65B-UL and R65B

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

Item	Specifications		Compatibility	Precautions
	A65B/A65B-UL	R65B		
Number of mountable I/O modules	5		○	
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.70A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB65N + ERNT-1AR5F, can be used.*1
External dimensions	250(H)×352(W)×29(D)mm	101(H)×245(W)×32.5(D)mm	×	
Weight	1.4kg	0.41kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A68B/A68B-UL and R68B

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

Item	Specifications		Compatibility	Precautions
	A68B/A68B-UL	R68B		
Number of mountable I/O modules	8		○	
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.81A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB68N + ERNT-1AR8F, can be used.*1
External dimensions	250(H)×466(W)×29(D)mm	101(H)×328(W)×32.5(D)mm	×	
Weight	1.9kg	0.55kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A68B/A68B-UL and R610B-HT

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

Item	Specifications		Compatibility	Precautions
	A68B/A68B-UL	R610B-HT		
Number of mountable I/O modules	8	10	△	The number of slots increases.
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.85A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB68N + ERNT-1AR10F6, can be used.*1
External dimensions	250(H)×466(W)×29(D)mm	101(H)×439(W)×32.5(D)mm	×	
Weight	1.9kg	0.72kg	—	
Accessories	None	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A52B and R65B

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

Item	Specifications		Compatibility	Precautions
	A52B	R65B		
Number of mountable I/O modules	2	5	△	The power supply module is required after replacement. The number of slots increases.
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.70A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different.
External dimensions	250(H)×183(W)×29(D)mm	101(H)×245(W)×32.5(D)mm	×	
Weight	1.0kg	0.41kg	—	
Accessories	Dustproof cover	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

A55B/A55B-UL and R65B

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

Item	Specifications		Compatibility	Precautions
	A55B/A55B-UL	R65B		
Number of mountable I/O modules	5		△	The power supply module is required after replacement.
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.70A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB55N + ERNT-1AR5F, can be used.*1
External dimensions	250(H)×297(W)×29(D)mm	101(H)×245(W)×32.5(D)mm	×	
Weight	1.2kg	0.41kg	—	
Accessories	Dustproof cover	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

A58B/A58B-UL and R68B

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

Item	Specifications		Compatibility	Precautions
	A58B/A58B-UL	R68B		
Number of mountable I/O modules	8		△	The power supply module is required after replacement.
Extendable	Yes		○	
Internal current consumption (5VDC)	—	0.81A	—	
Installation hole size	ϕ6 bell-shaped hole (for M5 screw)	M4 screw hole or ϕ4.5 hole (for M4 screw)	×	Sizes and positions of the base unit installation holes are different. The upgrade tool base adapter, ERNT-AQB58N + ERNT-1AR8F, can be used.*1
External dimensions	250(H)×411(W)×29(D)mm	101(H)×328(W)×32.5(D)mm	×	
Weight	1.7kg	0.55kg	—	
Accessories	Dustproof cover	Installation screw M4 × 14	—	
DIN rail adapter	Not available	R6DIN1	—	

*1 By using the base adapter, the existing installation holes are reusable without rework.

Extension cables

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

Item		Model			Compatibility	Precautions
		MELSEC-A/QnA series		MELSEC iQ-R series		
		A main - A extension	AnS main - A extension			
Cable length	0.45m	—	A1SC05NB	RC06B	△	The cable length is changed from 0.45m to 0.6m.
	0.6m	AC06B	—	RC06B	○	—
	0.7m	—	A1SC07NB	RC06B	△	The cable length is changed from 0.7m to 0.6m.
	1.2m	AC12B	—	RC12B	○	—
	3.0m	AC30B	A1SC30NB	RC30B	○	—
	5.0m	AC50B	A1SC50NB	RC50B	○	—

5.3 Precautions for Replacement

Base units

Settings of number of slots in engineering tools

In the engineering tools for the MELSEC-A/QnA series, the number of slots is fixed to eight regardless of the actual number of slots on the base unit used. In the engineering tool of the MELSEC iQ-R series, however, the actual number of slots needs to be set.
When the base unit is replaced with the one having slots other than eight, set the number of slots.

Base unit installation holes

Since the installation hole sizes differ between the MELSEC iQ-R series and MELSEC-A/QnA series, reworking installation holes to fix the base unit on the control panel is necessary.
By using the base adapter, the existing installation holes are reusable without rework.

Internal current consumption (5VDC)

MELSEC iQ-R series base units consume 5VDC internally as well as CPU modules and I/O modules.
When calculating the internal current consumption (5VDC) of the entire system, consider the current consumption of the base unit.

Extension cables

Overall extension cable distance

Extension cables can be used up to 20.0m for the MELSEC iQ-R series while they can be used up to 6.6m for the MELSEC-A/QnA series. Select optimum cables for your 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-A/QnA series system.

Point

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

6 MEMORY AND BATTERY REPLACEMENT

6.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series memory and batteries in accordance with the specifications of the MELSEC-A/QnA series memory and batteries. Select models that best suit your application considering the specifications of the MELSEC-A/QnA series memory and batteries currently used.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Memory cassette	A3NMCA-0	Not required	The RCPU is equipped with built-in program memory. Use SD memory cards and extended SRAM cassettes as required.
	A3NMCA-2		
	A3NMCA-4		
	A3NMCA-8		
	A3NMCA-16		
	A3NMCA-24		
	A3NMCA-40		
	A3NMCA-56		
	A3NMCA-2-UL		
	A3NMCA-4-UL		
	A3NMCA-8-UL		
	A3NMCA-16-UL		
	A3NMCA-24-UL		
	A3NMCA-40-UL		
	A3AMCA-96		
	A4UMCA-128		
	A4UMCA-8E		
	A4UMCA-32E		
	A4UMCA-128E		
Memory card	Q1MEM-64S	Not required	Use SD memory cards and extended SRAM cassettes as required.
	Q1MEM-128S		
	Q1MEM-256S		
	Q1MEM-512S		
	Q1MEM-1MS		
	Q1MEM-2MS		
	Q1MEM-64SE		
	Q1MEM-128SE		
	Q1MEM-256SE		
	Q1MEM-512SE		
	Q1MEM-1MSE		
IC-RAM memory	4KRAM	Not required	The RCPU is equipped with built-in program memory. Use SD memory cards and extended SRAM cassettes as required.
EP-ROM memory	4KEROM	Not required	Use SD memory cards and extended SRAM cassettes as required.
	4KROM		
	8KROM		
	16KROM		
	32KROM		
	64KROM		
Battery[*1*2]	A6BAT	Q6BAT	—
	A8BAT	Q7BAT Q7BATN	
	A10BAT		

*1 The R00CPU, R01CPU, and R02CPU do not require a battery. However, purchase the coin battery (FX3U-32BL) if retaining the clock data for more than 10 days is required. The clock data for five years can be retained.

*2 For the R04CPU, R08CPU, and R16CPU, 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 Replacement

Extended SRAM cassette

When there is not enough space on the standard RAM after replacement, for example, when multiple blocks of extended file register has been used, consider using an extended SRAM cassette.

Battery

Replace the MELSEC-A series batteries (A6BAT, A8BAT and A10BAT) with the MELSEC iQ-R series batteries (Q6BAT, Q7BAT, and Q7BATN). (The R00CPU, R01CPU, and R02CPU do not require a battery. The R04CPU, R08CPU, and R16CPU include a Q6BAT battery as standard equipment.)

The battery life varies depending on operating conditions. For details, refer to the MELSEC iQ-R Module Configuration Manual.

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 REPLACEMENT

7.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series analog I/O modules in accordance with the specifications and functions of the MELSEC-A/QnA series analog I/O modules.
Select models that best suit your application considering the scope of control of MELSEC-A/QnA series analog I/O modules currently used, as well as the system specifications and extensibility after replacement.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Analog input module	A616AD	R60ADV8 R60ADI8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: 8CH/module, input signals (either V or I input, minus current not applicable), I/O characteristics are changed, resolution is changed, conversion speed is changed. (5) Functions: Changed (direct access processing not available)
	A68AD	R60ADV8 R60ADI8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: Input signals (either V or I input, minus current not applicable), I/O characteristics are changed, resolution is changed, conversion speed is changed. (5) Functions: Not changed
	A68AD-S2	R60ADV8 R60ADI8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: Input signals (either V or I input, minus current not applicable), I/O characteristics are changed, resolution is changed, conversion speed is changed. (5) Functions: Not changed
	A68ADN	R60ADV8 R60ADI8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: Input signals (either V or I input, minus current not applicable), I/O characteristics are changed, resolution is changed, conversion speed is changed. (5) Functions: Not changed
Analog output module	A616DAV	R60DAV8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: 8CH/module, I/O characteristics are changed, resolution is changed, conversion speed is changed, specifications of the external power supply is changed. (5) Functions: Not changed
	A616DAI	R60DAI8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.[*1]) (2) Number of slots: Changed (2 modules are required.) (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: 8CH/module, I/O characteristics are changed, resolution is changed, conversion speed is changed, specifications of the external power supply is changed. (5) Functions: Not changed

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Analog output module	A62DA	R60DA4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.*1) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: 4CH/module, output current (minus current not applicable), I/O characteristics are changed, resolution is changed, conversion speed is changed, specifications of the external power supply is changed. (5) Functions: Not changed
	A62DA-S1	R60DA4	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.*1) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: 4CH/module, I/O characteristics are changed, resolution is changed, conversion speed is changed, specifications of the external power supply is changed. (5) Functions: Not changed
	A68DAV	R60DAV8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.*1) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: I/O characteristics are changed, resolution is changed, conversion speed is changed, specifications of the external power supply is changed. (5) Functions: Not changed
	A68DAI	R60DAI8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.*1) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: I/O characteristics are changed, resolution is changed, conversion speed is changed, specifications of the external power supply is changed. (5) Functions: Not changed
	A68DAI-S1	R60DAI8	(1) External wiring: Changed (An upgrade tool conversion adapter can be used.*1) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed, resolution (digital output value range) is changed. (4) Specifications: I/O characteristics are changed, resolution is changed, conversion speed is changed, specifications of the external power supply is changed. (5) Functions: Not changed
Temperature input module	A616TD +A60MXT(N)	R60TD8-G	(1) External wiring: Changed (2) Number of slots: Changed (Multiple modules are required.) (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed. (4) Specifications: 8CH/module, applicable thermocouples are changed, conversion speed is changed. (5) Functions: Changed (transformer isolation between channels)
	A68RD3N	R60RD8-G	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed. (4) Specifications: Supporting RTD Ni100/Pt50, conversion speed is changed, resolution is changed. (5) Functions: Changed (32-bit output not available, transformer isolation between channels)
	A68RD4N	None	—
Multiplexer	A60MX A60MXR A60MXRN A60MXT A60MXTN	None	—

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

7.2 Specification Comparison Tables

Analog input modules

A616AD and R60ADV8/R60ADI8

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

Item	Specifications		Compatibility	Precautions
	A616AD	R60ADV8/R60ADI8		
Number of analog input channels	16 channels	8 channels	△	When 9 or more channels are required, use multiple pieces of the R60ADV8/R60ADI8.
Analog input voltage	-10 to +10VDC (input resistance: 1MΩ)	R60ADV8: -10 to 10VDC (input resistance: 1MΩ) R60ADI8: —	△	Use either voltage input or current input for one module. A minus current cannot be used.
Analog input current	-20 to +20mADC (input resistance 250Ω)	R60ADV8: — R60ADI8: 0 to 20mADC (input resistance 250Ω)		
Digital output value	16-bit signed binary (data part: 12 bit): -48 to 4047, -2048 to 2047 The range can be set for each channel.	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A616AD. 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 A616AD. Converted values are stored in the buffer memory area 'Digital operation value'.
Overall accuracy (accuracy to full-scale)	When using the A616AD only 0 to 10V, -10 to 10V, -5 to 5V, -20 to 20mA: ±0.3% (±12digit) 0 to 5V, 1 to 5V, 0 to 20mA, 4 to 20mA: ±0.6% (±24digit) When using the A616AD combined with the A60MX, the A60MXR, or the A60MXRN: the accuracy of each range of the A616AD is ±0.3% (±12digit).	Ambient temperature 25±5℃: ±Within 0.1% (±32digit) Ambient temperature 0 to 55℃: ±Within 0.3% (±96digit)	○	The accuracy to full-scale is applied to the A616AD, while the accuracy to maximum digital output value is applied to the R60ADV8/R60ADI8.
Conversion speed	When using the A616AD only: 1ms/channel When using the A616AD combined with the A60MX: 1ms/channel When using the A616AD combined with the A60MXR(N): 1ms/channel (at sampling processing), 7.0ms/channel (at direct access processing)	80μs/channel	○	Comparing with the A616AD, the conversion speed of the R60ADV8/R60ADI8 is faster. Therefore, for the R60ADV8/R60ADI8, some noise may be taken in as analog signals, which is not the case with the A616AD. In this case, use the averaging processing function to eliminate noise effect.
Absolute maximum input	Voltage: ±15V, current: ±30mA	R60ADV8: Voltage: ±15V R60ADI8: Current: 30mA	○	
Number of writes of offset/gain values	—	50000 times maximum	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation (1MΩ resistor isolation)	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-isolation	○	
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR616AD), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2㎟	0.3 to 0.75㎟ (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	

Item	Specifications		Compatibility	Precautions
	A616AD	R60ADV8/R60ADI8		
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	1A	R60ADV8: 0.23A R60ADI8: 0.22A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.85kg	0.12kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A616AD.

Input	Analog input range	Digital output value	Maximum resolution
Voltage (V)	0 to +10	0 to 4000 -2000 to 2000	2.5mV (1/4000)
	0 to +5		1.25mV (1/4000)
	+1 to +5		1.0mV (1/4000)
	-10 to +10		5.0mV (1/4000)
	-5 to +5		2.5mV (1/4000)
Current (mA)	0 to +20	0 to 2000 -2000 to 0	10μA (1/2000)
	0 to +20	0 to 4000 -2000 to 2000	5μA (1/4000)
	+4 to +20		4μA (1/4000)
	-20 to +20	1000 to 3000 -1000 to 1000	20μA (1/2000)
	-20 to +20	0 to 4000 -2000 to 2000	10μA (1/4000)

*2 The following table lists the I/O characteristics and maximum resolution values of the R60ADV8/R60ADI8.

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

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

A68AD and R60ADV8/R60ADI8

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

Item	Specifications		Compatibility	Precautions
	A68AD	R60ADV8/R60ADI8		
Number of analog input channels	8 channels		○	
Analog input voltage	-10 to +10VDC (input resistance: hardware version K or later: 1MΩ, hardware version J or earlier: 30kΩ)	R60ADV8: -10 to 10VDC (input resistance: 1MΩ) R60ADI8: —	△	Use either voltage input or current input for one module. A minus current cannot be used.
Analog input current	+4 to +20mADC (input resistance 250Ω) (The range of -20 to +20mA can be used as well.)	R60ADV8: — R60ADI8: 0 to 20mADC (input resistance 250Ω)		
Digital output value	16-bit signed binary: -2048 to +2047	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A68AD. 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 A68AD. Converted values are stored in the buffer memory area 'Digital operation value'.
Overall accuracy (accuracy to maximum digital output value)	±1% (±20digit)	Ambient temperature 25±5℃: ±Within 0.1% (±32digit) Ambient temperature 0 to 55℃: ±Within 0.3% (±96digit)	○	
Conversion speed	2.5ms/channel maximum	80μs/channel	○	Comparing with the A68AD, the conversion speed of the R60ADV8/R60ADI8 is faster. Therefore, for the R60ADV8/R60ADI8, some noise may be taken in as analog signals, which is not the case with the A68AD. In this case, use the averaging processing function to eliminate noise effect.
Absolute maximum input	Voltage: ±15V, current: ±30mA	R60ADV8: Voltage: ±15V R60ADI8: Current: 30mA	○	
Number of writes of offset/gain values	—	50000 times maximum	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-isolation	○	
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR68AD), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2mm²	0.3 to 0.75mm² (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	Hardware version K or later: 0.39A, Hardware version J or earlier: 0.9A	R60ADV8: 0.23A R60ADI8: 0.22A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	Hardware version K or later: 0.3kg, Hardware version J or earlier: 0.6kg	0.12kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A68AD.

Analog input value	Digital output value	Maximum resolution
+10V	+2000	Voltage 5mV (1/2000) Current 20μA (1/1000)
+5V or +20mA	+1000	
0V or +4mA	±0	
-5V or -12mA	-1000	
-10V	-2000	

*2 The following table lists the I/O characteristics and maximum resolution values of the R60ADV8/R60ADI8.

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

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

A68AD-S2 and R60ADV8/R60ADI8

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

Item	Specifications		Compatibility	Precautions
	A68AD-S2	R60ADV8/R60ADI8		
Number of analog input channels	8 channels		○	
Analog input voltage	-10 to +10VDC (input resistance: hardware version K or later: 1MΩ, hardware version J or earlier: 30kΩ)	R60ADV8: -10 to 10VDC (input resistance: 1MΩ) R60ADI8: —	△	Use either voltage input or current input for one module. A minus current cannot be used.
Analog input current	+4 to +20mADC (input resistance 250Ω) (The range of -20 to +20mA can be used as well.)	R60ADV8: — R60ADI8: 0 to 20mADC (input resistance 250Ω)		
Digital output value	16-bit signed binary: -2048 to +2047	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A68AD-S2. 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 A68AD-S2. Converted values are stored in the buffer memory area 'Digital operation value'.
Overall accuracy (accuracy to maximum digital output value)	±1% (±20digit)	Ambient temperature 25±5℃: ±Within 0.1% (±32digit) Ambient temperature 0 to 55℃: ±Within 0.3% (±96digit)	○	
Conversion speed	2.5ms/channel maximum	80μs/channel	○	Comparing with the A68AD-S2, the conversion speed of the R60ADV8/R60ADI8 is faster. Therefore, for the R60ADV8/R60ADI8, some noise may be taken in as analog signals, which is not the case with the A68AD-S2. In this case, use the averaging processing function to eliminate noise effect.
Absolute maximum input	Voltage: ±15V, current: ±30mA	R60ADV8: Voltage: ±15V R60ADI8: Current: 30mA	○	
Number of writes of offset/gain values	—	50000 times maximum	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-isolation	○	
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR68AD), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2mm²	0.3 to 0.75mm² (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	Hardware version K or later: 0.39A, Hardware version J or earlier: 0.9A	R60ADV8: 0.23A R60ADI8: 0.22A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	Hardware version K or later: 0.3kg, Hardware version J or earlier: 0.6kg	0.12kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A68AD-S2.

Analog input value	Digital output value	Maximum resolution
+10V	+2000	Voltage 5mV (1/2000) Current 20μA (1/1000)
+5V or +20mA	+1000	
0V or +4mA	±0	
-5V or -12mA	-1000	
-10V	-2000	

*2 The following table lists the I/O characteristics and maximum resolution values of the R60ADV8/R60ADI8.

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

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

A68ADN and R60ADV8/R60ADI8

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

Item	Specifications		Compatibility	Precautions
	A68ADN	R60ADV8/R60ADI8		
Number of analog input channels	8 channels		○	
Analog input voltage	-10 to +10VDC (input resistance: 1MΩ)	R60ADV8: -10 to 10VDC (input resistance: 1MΩ) R60ADI8: —	△	Use either voltage input or current input for one module. A minus current cannot be used.
Analog input current	-20 to +20mADC (input resistance 250Ω)	R60ADV8: — R60ADI8: 0 to 20mADC (input resistance 250Ω)		
Digital output value	16-bit signed binary When 1/4000 is set: -4096 to +4095 When 1/8000 is set: -8192 to +8191 When 1/12000 is set: -12288 to +12287	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A68ADN. 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 A68ADN. Converted values are stored in the buffer memory area 'Digital operation value'.
Overall accuracy (accuracy to maximum digital output value)	±1% When 1/4000 is set: ±40digit When 1/8000 is set: ±80digit When 1/12000 is set: ±120digit	Ambient temperature 25±5℃: ±Within 0.1% (±32digit) Ambient temperature 0 to 55℃: ±Within 0.3% (±96digit)	○	
Conversion speed	20ms/channel	80μs/channel	○	Comparing with the A68ADN, the conversion speed of the R60ADV8/R60ADI8 is faster. Therefore, for the R60ADV8/R60ADI8, some noise may be taken in as analog signals, which is not the case with the A68ADN. In this case, use the averaging processing function to eliminate noise effect.
Absolute maximum input	Voltage: ±15V, current: ±30mA	R60ADV8: Voltage: ±15V R60ADI8: Current: 30mA	○	
Number of writes of offset/gain values	—	50000 times maximum	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between input channels: Non-isolation	○	
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	○	
Isolation resistance	Between the I/O terminal and programmable controller power supply: 500VDC 5MΩ or more	Between the I/O terminal and programmable controller power supply: 500VDC 10MΩ or more	○	
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR68AN), the existing external wiring and terminal blocks in the existing system can be used. *3
Applicable wire size	0.75 to 2㎟	0.3 to 0.75㎟ (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	0.4A	R60ADV8: 0.23A R60ADI8: 0.22A	—	

Item	Specifications		Compatibility	Precautions
	A68ADN	R60ADV8/R60ADI8		
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.51kg	0.12kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A68ADN.

I/O characteristics

When a gain value is 5V/20mA and an offset value is 0V/0mA

(The factory default settings of a gain value and an offset value are 5V and 0V respectively.)

Analog input value	Digital output value			Maximum resolution	
	When 1/4000 is set	When 1/8000 is set	When 1/12000 is set	Voltage	Current
+10V	+4000	+8000	+12000	1/4000: 2.5mV 1/8000: 1.25mV 1/12000: 0.83mV	1/4000: 10μA 1/8000: 5μA 1/12000: 3.33μA
+5V or +20mA	+2000	+4000	+6000		
0V or 20mA	0	0	0		
-5V or -20mA	-2000	-4000	-6000		
-10V	-4000	-8000	-12000		

*2 The following table lists the I/O characteristics and maximum resolution values of the R60ADV8/R60ADI8.

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

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

Analog output modules

A616DAV and R60DAV8

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

Item	Specifications		Compatibility	Precautions
	A616DAV	R60DAV8		
Number of analog output channels	16 channels	8 channels	△	When 9 or more channels are required, use two pieces of the R60DAV8.
Digital input	16-bit signed binary (data part: 12 bit): -4096 to 4095	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A616DAV.
Analog output	When the output voltage range setting is 10V -10 to +10VDC (external load resistance value: 2k to 1MΩ) When the output voltage range setting is 5V -5 to +5VDC (external load resistance value: 2k to 1MΩ)	-10 to 10VDC (External load resistance value: 1kΩ or more) 0 to 5VDC (External load resistance value: 500Ω or more)	○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the A616DAV.
Overall accuracy (accuracy to maximum analog output value)	When the output voltage range setting is 10V Ambient temperature 25℃: Within ±0.3% (±30mV) Ambient temperature 0 to 55℃: Within ±0.6% (±60mV) When the output voltage range setting is 5V Ambient temperature 25℃: Within ±0.3% (±15mV) Ambient temperature 0 to 55℃: Within ±0.6% (±30mV)	Ambient temperature 25±5℃: Within ±0.1% (±10mV) Ambient temperature 0 to 55℃: Within ±0.3% (±30mV)	○	
Conversion speed	Sampling period: 1.5 + 0.5 × (Number of D/A conversion enabled channels) ms Conversion time: 0.5ms	80μs/channel	○	
Absolute maximum output	15V	—	—	
Number of writes of offset/gain values	—	50000 times maximum	—	
Output short circuit protection	—	Available	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-isolation	○	
External power supply	Voltage: ±15VDC Current consumption: 0.2A at +15VDC, 0.17A at -15VDC	Voltage: 24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 670μs Current consumption: 0.16A	×	The external power supply needs to be changed after replacement.
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR616DA), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2㎟	0.3 to 0.75㎟ (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.

Item	Specifications		Compatibility	Precautions
	A616DAV	R60DAV8		
Internal current consumption (5VDC)	0.38A	0.16A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.38kg	0.14kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A616DAV.

Analog output		Digital input	Digital value resolution
When 5V is set	When 10V is set		
+5V	+10V	+4000	1/4000
+2.5V	+5V	+2000	
0V	0V	0	
-2.5V	-5V	-2000	
-5V	-10V	-4000	

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

Analog output range		Digital input 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

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

A616DAI and R60DAI8

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

Item	Specifications		Compatibility	Precautions
	A616DAI	R60DAI8		
Number of analog output channels	16 channels	8 channels	△	When 9 or more channels are required, use two pieces of the R60DAI8.
Digital input	16-bit signed binary (data part: 12 bit): 0 to 4095	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A616DAI.
Analog output	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 A616DAI.
Overall accuracy (accuracy to maximum analog output value)	0.6% (±120μA) Ambient temperature 25℃: ±0.3% (±60μA)	Ambient temperature 25±5℃: Within ±0.1% (±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (±60μA)	○	
Conversion speed	Sampling period: 1.5 + 0.5 × (Number of D/A conversion enabled channels) ms Conversion time: 0.5ms	80μs/channel	○	
Absolute maximum output	—	—	—	
Number of writes of offset/gain values	—	50000 times maximum	—	
Output short circuit protection	—	Available	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-isolation	○	
External power supply	Voltage: ±15VDC Current consumption: 0.53A at +15VDC, 0.125A at -15VDC	Voltage: 24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 700μs Current consumption: 0.26A	×	The external power supply needs to be changed after replacement.
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR616DA), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2mm²	0.3 to 0.75mm² (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	0.38A	0.16A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.38kg	0.14kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A616DAI.

Analog output	Digital input	Digital value resolution
+20mA	+4000	1/4000
+12mA	+2000	
4mA	0	

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

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

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

A62DA and R60DA4

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

Item	Specifications		Compatibility	Precautions
	A62DA	R60DA4		
Number of analog output channels	2 channels	4 channels	○	
Digital input	Voltage: -2000 to +2000 Current: -1000 to +1000	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A62DA.
Analog output	Voltage: -10 to +10VDC (external load resistance value: 500 to 1MΩ) Current: +4 to +20mADC (external load resistance value: 0 to 600Ω) (The range of -20 to +20mA can be used as well.)	Voltage: -10 to 10VDC (external load resistance value: 1kΩ or more), 0 to 5VDC (external load resistance value: 500Ω or more) Current: 0 to 20mADC (external load resistance value: 0 to 600Ω)	△	A minus current cannot be output.
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the A62DA.
Overall accuracy (accuracy to maximum analog output value)	±1% (Voltage: ±0.1V, Current: ±0.2mA)	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±20mV, Current: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV, Current: ±60μA)	○	
Conversion speed	Up to 15ms/2 channels (the same duration even for 1 channel)	80μs/channel	○	
Absolute maximum output	Voltage: ±12V, Current: ±28mA	—	—	
Number of writes of offset/gain values	—	50000 times maximum	—	
Output short circuit protection	—	Available	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-isolation	○	
External power supply	Voltage: 21.6 to 26.4VDC Inrush current: 0.35A Current consumption: 2.4A	Voltage: 24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 690μs Current consumption: 0.14A	△	Refer to the specifications of the external power supply.
External interface	20-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-AQT62DA), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2mm²	0.3 to 0.75mm² (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	0.6A	0.16A	—	
External dimensions	250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.50kg	0.14kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A62DA.

Analog output		Digital input	Maximum resolution
Voltage	Current		
+10V	—	+2000	Voltage 5mV (1/2000) Current 20μA (1/1000)
+5V	+20mA	+1000	
0V	+4mA	0	
-5V	-12mA	-1000	
-10V	—	-2000	

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

Analog output range		Digital input 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

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

A62DA-S1 and R60DA4

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

Item	Specifications		Compatibility	Precautions
	A62DA-S1	R60DA4		
Number of analog output channels	2 channels	4 channels	○	
Digital input	0 to +4000	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A62DA-S1.
Analog output	Voltage: 0 to +10VDC (external load resistance value: 500 to 1MΩ) Current: +4 to +20mADC (external load resistance value: 0 to 600Ω) (The range of 0 to +20mA can be used as well.)	Voltage: -10 to 10VDC (external load resistance value: 1kΩ or more), 0 to 5VDC (external load resistance value: 500Ω or more) 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 A62DA-S1.
Overall accuracy (accuracy to maximum analog output value)	*3	Ambient temperature 25±5℃: Within ±0.1% (Voltage: ±20mV, Current: ±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (Voltage: ±30mV, Current: ±60μA)	○	
Conversion speed	Up to 15ms/2 channels (the same duration even for 1 channel)	80μs/channel	○	
Absolute maximum output	Voltage: 0 to +12V, Current: 0 to 28mA	—	—	
Number of writes of offset/gain values	—	50000 times maximum	—	
Output short circuit protection	—	Available	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-isolation	○	
External power supply	Voltage: 21.6 to 26.4VDC Inrush current: 0.35A Current consumption: 2.4A	Voltage: 24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 690μs Current consumption: 0.14A	△	Refer to the specifications of the external power supply.
External interface	20-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-AQT62DA), the existing external wiring and terminal blocks in the existing system can be used.*4
Applicable wire size	0.75 to 2mm²	0.3 to 0.75mm² (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	0.6A	0.16A	—	
External dimensions	250(H)×37.5(W)×121(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.50kg	0.14kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A62DA-S1.

Output range	Analog output	Digital input	Maximum resolution	
			Voltage	Current
0 to 10V	+10V	+4000	1 to 5V: 1mV (1/4000) 0 to 5V: 1.25mV (1/4000) 0 to 10V: 2.5mV (1/4000)	4 to 20mA: 4μA (1/4000) 0 to 20mA: 5μA (1/4000)
	0V	0		
0 to 5V 0 to 20mA	+5V or +20mA	+4000		
	0V or 0mA	0		
1 to 5V 4 to 20mA	+5V or +20mA	+4000		
	+1V or +4mA	0		

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

Analog output range		Digital input 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

*3 The following table lists the accuracy of the A62DA-S1.

Item		Output range				
		1 to 5V	0 to 5V	0 to 10V	4 to 20mA	0 to 20mA
Temperature range	25℃ (within ±0.5%)	±25mV	±25mV	±50mV	±0.1mA	±0.1mA
	0 to 55℃ (within ±1%)	±50mV	±50mV	±100mV	±0.2mA	±0.2mA

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

A68DAV and R60DAV8

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

Item	Specifications		Compatibility	Precautions
	A68DAV	R60DAV8		
Number of analog output channels	8 channels		○	
Digital input	16-bit signed binary When 1/4000 is set: -4000 to +4000 When 1/8000 is set: -8000 to +8000 When 1/12000 is set: -12000 to +12000	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A68DAV.
Analog output	-10 to +10VDC (external load resistance value: 2k to 1MΩ)	-10 to 10VDC (External load resistance value: 1kΩ or more) 0 to 5VDC (External load resistance value: 500Ω or more)	○	
I/O characteristics, resolution	*1	*2	△	Use the scaling function to convert values to the same range as the A68DAV.
Overall accuracy (accuracy to maximum analog output value)	±1.0% (±100mV)	Ambient temperature 25±5℃: Within ±0.1% (±10mV) Ambient temperature 0 to 55℃: Within ±0.3% (±30mV)	○	
Conversion speed	Up to 40ms/8 channels (the same duration even for 1 channel)	80μs/channel	○	
Absolute maximum output	-12 to +12V	—	—	
Number of writes of offset/gain values	—	50000 times maximum	—	
Output short circuit protection	—	Available	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-isolation	○	
External power supply	Voltage: 21.6 to 26.4VDC Current consumption: 0.2A	Voltage: 24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 670μs Current consumption: 0.16A	△	Refer to the specifications of the external power supply.
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-AQT68DA), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2mm²	0.3 to 0.75mm² (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	0.15A	0.16A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.60kg	0.14kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A68DAV.

I/O characteristics

When an offset value is set to 0V and a gain value is set to 10V

Item	Analog output value	Digital value resolution			Maximum resolution of analog value
		1/4000	1/8000	1/12000	
Digital input value	+10V	4000	8000	12000	1/4000: 2.5mV 1/8000: 1.25mV 1/12000: 0.83mV
	+5V	2000	4000	6000	
	0V	0	0	0	
	-5V	-2000	-4000	-6000	
	-10V	-4000	-8000	-12000	

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

Analog output range		Digital input 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

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

A68DAI and R60DAI8

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

Item	Specifications		Compatibility	Precautions
	A68DAI	R60DAI8		
Number of analog output channels	8 channels		○	
Digital input	16-bit signed binary When 1/4000 is set: -4000 to +4000 When 1/8000 is set: -8000 to +8000 When 1/12000 is set: -12000 to +12000	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A68DAI.
Analog output	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 A68DAI.
Overall accuracy (accuracy to maximum analog output value)	±1.0% (±200μA)	Ambient temperature 25±5℃: Within ±0.1% (±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (±60μA)	○	
Conversion speed	Up to 40ms/8 channels (the same duration even for 1 channel)	80μs/channel	○	
Absolute maximum output	0 to +28mA	—	—	
Number of writes of offset/gain values	—	50000 times maximum	—	
Output short circuit protection	—	Available	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-isolation	○	
External power supply	Voltage: 21.6 to 26.4VDC Current consumption: 0.4A	Voltage: 24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 700μs Current consumption: 0.26A	△	Refer to the specifications of the external power supply.
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-AQT68DA), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2mm²	0.3 to 0.75mm² (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	0.15A	0.16A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.65kg	0.14kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A68DAI.

I/O characteristics

When an offset value is set to 4mA and a gain value is set to 20mA

Item	Analog output value	Digital value resolution			Maximum resolution of analog value
		1/4000	1/8000	1/12000	
Digital input value	+20mA	4000	8000	12000	1/4000: 5.0μA 1/8000: 2.5μA 1/12000: 1.6μA
	+12mA	2000	4000	6000	
	+4mA	0	0	0	

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

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

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

A68DAI-S1 and R60DAI8

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

Item	Specifications		Compatibility	Precautions
	A68DAI-S1	R60DAI8		
Number of analog output channels	8 channels		○	
Digital input	16-bit signed binary When 1/4000 is set: -4000 to +4000 When 1/8000 is set: -8000 to +8000 When 1/12000 is set: -12000 to +12000	16-bit signed binary: -32768 to 32767	△	Use the scaling function to convert values to the same range as the A68DAI-S1.
Analog output	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 A68DAI-S1.
Overall accuracy (accuracy to maximum analog output value)	±1.0% (±200μA)	Ambient temperature 25±5℃: Within ±0.1% (±20μA) Ambient temperature 0 to 55℃: Within ±0.3% (±60μA)	○	
Conversion speed	Up to 40ms/8 channels (the same duration even for 1 channel)	80μs/channel	○	
Absolute maximum output	0 to +28mA	—	—	
Number of writes of offset/gain values	—	50000 times maximum	—	
Output short circuit protection	—	Available	—	
Isolation method	Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation	Between the I/O terminal and programmable controller power supply: Photocoupler Between output channels: Non-isolation	○	
External power supply	Voltage: 21.6 to 26.4VDC Current consumption: 0.4A	Voltage: 24VDC +20%, -15% Ripple, spike 500mVp-p or less Inrush current: 5.0A, within 700μs Current consumption: 0.26A	△	Refer to the specifications of the external power supply.
External interface	38-point terminal block (M3×6 screws)	18-point terminal block (M3 screws)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-AQT68DA), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size	0.75 to 2㎟	0.3 to 0.75㎟ (22 to 18 AWG)	×	
Applicable solderless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)	0.15A	0.16A	—	
External dimensions	250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight	0.65kg	0.14kg	—	

*1 The following table lists the I/O characteristics and maximum resolution values of the A68DAI-S1.

I/O characteristics

When an offset value is set to 4mA and a gain value is set to 20mA

Item	Analog output value	Digital value resolution			Maximum resolution of analog value
		1/4000	1/8000	1/12000	
Digital input value	+20mA	4000	8000	12000	1/4000: 5.0μA
	+12mA	2000	4000	6000	1/8000: 2.5μA
	+4mA	0	0	0	1/12000: 1.6μA

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

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

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

Temperature input modules

A616TD + A60MXT(N) and R60TD8-G

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

Item		Specifications		Compatibility	Precautions
		A616TD + A60MXT(N)	R60TD8-G		
Number of analog input channels		16 channels (for A616TD only), 105 channels (when extended by using the A60MXT(N)) 15 channels/1 piece of the A60MXT(N) (Up to 7 pieces of the A60MXT(N) can be connected to 1 piece of the A616TD.)	8 channels + Cold junction compensation channels/1 module	△	When 9 or more channels are required, use multiple pieces of the R60TD8-G.
Temperature sensor input		-200 to 1800℃	-270 to 1820℃	○	
Output	Digital output value	16-bit signed binary (data part: 12 bit): 0 to 4000	16-bit signed binary (scaling value)	○	
	Detected temperature value	16-bit signed binary: -2000 to 18000	16-bit signed binary: -2700 to 18200	○	
Applicable thermocouple		JIS: B, R, S, K, E, J, T ANSI: B, R, S, K, E, J, T DIN: PtRh-Pt, NiCr-Ni, Fe-CuNi, Cu-CuNi BS: PtRh30-PtRh6, PtRh13-Pt, PtRh10-Pt, NiCr-NiAl, NiCr-CuNi, Fe-CuNi, Cu-CuNi	IEC 60584-1 (1995), IEC 60584-2 (1982), JIS C 1602-1995	△	Applicable thermocouples and thermocouple compliance standards vary between the A616TD + A60MXT(N) and the R60TD8-G.
Accuracy		(Conversion accuracy) + (Temperature characteristics) × (Operating ambient temperature variation) + (Cold junction compensation accuracy)		○	
Conversion speed		50ms/channel	30ms/channel	○	
Isolation method		Between the input terminal and programmable controller: Photocoupler Between channels: Non-isolation (1MΩ resistor isolation)	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: Non-isolation	○	
Disconnection detection		Available		○	
External interface		38-point terminal block (M3×6 screws)	40-pin connector (A6CON1/2/4)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	—	—	
Number of occupied I/O points		32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)		1.00A (A616TD only)	0.36A	—	
External dimensions		250(H)×37.5(W)×131(D)mm (A616TD only)	106(H)×27.8(W)×131(D)mm	—	
Weight		0.85kg (A616TD only)	0.19kg	—	

A68RD3N and R60RD8-G

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

Item		Specifications		Compatibility	Precautions
		A68RD3N	R60RD8-G		
Number of analog input channels		8 channels		○	
Measurement method		3-wire type		○	
Output (temperature conversion value)		16-bit signed binary: -1800 to 6000 32-bit signed binary: -180000 to 600000	16-bit signed binary: -2000 to 8500	△	32-bit output cannot be used.
Applicable RTD		Pt100 (JIS C 1604-1997, IEC 751-am2, JIS C 1604-1989, DIN 43760-1980), JPt100 (JIS C 1604-1981)	Pt100 (JIS C 1604-2013, IEC 751 1983) JPt100 (JIS C 1604-1981) Ni100 (DIN 43760 1987) Pt50 (JIS C 1604-1981)	△	Applicable RTDs and RTD compliance standards vary between the A68RD3N and the R60RD8-G.
Temperature measurement range	Pt100	-180 to 600℃ (27.10 to 313.71Ω)	-200 to 850℃	○	
	JPt100	-180 to 600℃ (25.80 to 317.28Ω)	-180 to 600℃		
	Ni100	—	-60 to 250℃		
	Pt50	—	-200 to 650℃		
Temperature detecting output current		1.0mA	1.0mA or lower	○	
Accuracy		±1% (accuracy to full-scale)	*1	○	
Resolution		0.025℃	0.1℃	△	Comparing with the A68RD3N, the resolution for the R60RD8-G is lower.
Conversion speed		40ms/channel	10ms/channel	○	
Isolation method		Between the platinum resistance thermometer input and programmable controller power supply: Photocoupler Between the platinum resistance thermometer input and channel: Non-isolation	Between RTD input channel and programmable controller power supply: Transformer Between RTD input channels: Transformer	○	
Withstand voltage		Between the platinum resistance thermometer input and programmable controller power supply: 500VAC for 1 minute	Between RTD input channel and programmable controller power supply: 500VAC rms for 1 minute Between RTD input channels: 1000VAC rms for 1 minute	○	
Disconnection detection		Available (Channels are independent of each other.)	Available	○	
External interface		38-point terminal block (M3×6 screws)	40-pin connector (A6CON1/2/4)	×	Wiring needs to be changed after replacement.
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	—	—	
Number of occupied I/O points		32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)		0.94A	0.35A	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×131(D)mm	—	
Weight		0.43kg	0.19kg	—	

*1 The following table lists the accuracy of the R60RD8-G.

Item		Specifications
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 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℃)

7.3 Function Comparison Tables

Analog input modules

A616AD/A68AD/A68AD-S2/A68ADN and R60ADV8/R60ADI8

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

Function		MELSEC-A/QnA series		MELSEC iQ-R series	Precautions
		A616AD	A68AD A68AD-S2 A68ADN	R60ADV8 R60ADI8	
Direct access processing	Apart from using the sampling processing, A/D conversion is performed for a target channel by taking the following steps (direct access processing): specifying a channel targeted for A/D conversion by using a sequence program; outputting the direct access request. When a target channel is simultaneously specified by both the sampling processing and the direct access processing, the direct access request is prioritized.	○	×	×	The direct access processing function cannot be used for the MELSEC iQ-R series modules.
A/D conversion enable/disable function	Whether to enable or disable A/D conversion is set with this function. Disabling the conversion on unused channels reduces the sampling time.	×	○	○	
Sampling processing	The A/D conversion for analog input values is performed successively for each channel, and a digital output value is output upon each conversion.	○	○	○	
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.	×	○	○	The setting ranges of time average and count average vary between the MELSEC-A/QnA series modules and the MELSEC iQ-R series modules.

Analog output modules

A616DAV/A616DAI/A68DAV/A68DAI(-S1)/A62DA(-S1) and R60DA4/R60DAV8/R60DAI8

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

Function		MELSEC-A/QnA series		MELSEC iQ-R series	Precautions
		A616DAV A616DAI A68DAV A68DAI A68DAI-S1	A62DA A62DA-S1	R60DA4 R60DAV8 R60DAI8	
D/A conversion enable/disable function	Whether to enable or disable D/A conversion is set for each channel with this function. Disabling the conversion on unused channels shortens the conversion speed.	○	×	○	
D/A output enable/disable function	Whether to output the D/A conversion value or offset value is set for each channel with this function. The conversion speed is constant regardless of whether the output is enabled/disabled.	○	○	○	
Analog output HOLD/CLEAR function	The analog value output is held when the programmable controller CPU is in the STOP status or when an error occurs.	○	A62DA: × A62DA-S1: ○	○	
Resolution mode	The resolution mode is switched with this function, according to the application. The resolution is selectable between 1/4000 and 1/12000. The resolution mode is batch-set for all channels.	A616DAV/A616DAI: × A68DAV/A68DAI(-S1): ○	×	△	When the resolution mode is not available, use the scaling function instead.

Temperature input modules

A616TD and R60TD8-G

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

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		A616TD	R60TD8-G	
Temperature conversion function	Obtains temperature data.	○	○	
Conversion enable/ disable function	Sets whether to enable or disable the conversion for each channel.	○	○	
Disconnection detection function	Detects a disconnection of connected thermocouples for each channel.	○	○	
Temperature conversion value storage	Stores obtained temperature data in the buffer memory.	○	○	
Input type selection function	Sets an input type for each channel.	○	○	

A68RD3N and R60RD8-G

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

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		A68RD3N	R60RD8-G	
Conversion enable/ disable specification of each channel	Enables/disables a detection of temperature.	○	○	
Sampling/averaging processing selection	Processes the detected temperature by specified method.	○	○	
Detected temperature value storage	Stores temperature data in the buffer memory.	○	○	
Disconnection detection	Detects a disconnection of connected RTDs or cables.	○	○	
Specification of RTD type	Specifies an RTD type to be used.	○	○	
Error correction function	Corrects an error in temperature conversion values.	○	○	Correct the error using the offset/gain setting of the R60RD8-G.

7.4 Precautions for Replacement

Wiring

The sizes of wires or solderless terminals that can be used for terminal blocks vary between MELSEC iQ-R series and MELSEC-A/QnA series, since modules and terminal blocks of the MELSEC iQ-R series are smaller than those of the MELSEC-A/QnA series.
When replacing MELSEC-A/QnA series modules with MELSEC iQ-R series modules, use wires and solderless terminals that meet the specifications of MELSEC iQ-R series modules.
The wiring change is not required when the upgrade tool conversion adapter is used for replacement.

Dedicated instructions

Dedicated instructions vary between the MELSEC-A/QnA series and the MELSEC iQ-R series.
If a dedicated instruction is used in a MELSEC-A/QnA series program, the program needs to be corrected for MELSEC iQ-R series.

I/O signals and buffer memory areas

The layouts of I/O signals and buffer memory areas vary between the MELSEC-A/QnA series and the MELSEC iQ-R series.
If an I/O signal or a buffer memory area is used in a MELSEC-A/QnA series program, the program needs to be corrected for the MELSEC iQ-R series.

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.
Values are converted to the range equivalent to that of MELSEC-A/QnA series by using the scaling function.

Temperature conversion system

For the MELSEC iQ-R series, setting values of the averaging processing in the temperature conversion system are changed because the conversion speed is enhanced. When the averaging processing is used in a MELSEC-A/QnA 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 Analog-Digital Converter Module User's Manual (Startup)
MELSEC iQ-R Analog-Digital Converter Module 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)

8 POSITIONING MODULE AND PULSE I/O MODULE REPLACEMENT

8.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series positioning modules and pulse I/O modules in accordance with the specifications and functions of the MELSEC-A/QnA series positioning modules and pulse I/O modules.
Select models that best suit your application considering the scope of control of MELSEC-A/QnA series positioning modules and pulse I/O modules that are currently used, as well as the system specifications and extensibility after replacement.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Positioning module	AD70 AD70D AD71(S1/S2/S7) AD72	No alternative models	—
	AD75M1 AD75M2 AD75M3	RD77MS2 RD77MS4	Consider replacing the existing modules with Simple Motion modules (RD77MS2/RD77MS4). When replacing servo amplifiers and servo motors, please consult your local Mitsubishi Electric representative. For replacement of the MR-J2S□-B, refer to "Transition from MELSERVO-J2-Super/J2M Series to J4 Series Handbook" (L(NA)03093).
	AD75P1-S3 AD75P2-S3 AD75P3-S3	RD75P2 RD75P4 RD75D2 RD75D4	(1) External wiring: Changed (SCSI connector → 40-pin connector, applicable wire size) (2) Number of slots: Not changed (3) Programs: I/O signals are changed, buffer memory addresses are changed. (4) Specifications: Number of control axes is changed (1/2/3 axes → 2/4 axes), starting time is changed, command pulse output system is changed (either differential driver or open collector), maximum output pulse. (5) Functions: Changed (Stepping motor mode is not available, indirect designation is not available, LED indication is not available.)
High-speed counter module	AD61	RD62P2	(1) External wiring: Changed (Screw terminal block → 40-pin connector, an upgrade tool conversion adapter can be used.*1) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed. (4) Specifications: Counting speed (maximum) is changed, counting range is changed (24-bit unsigned binary → 32-bit signed binary), external input/output is changed. (5) Functions: Not changed
	AD61S1	RD62P2	(1) External wiring: Changed (Screw terminal block → 40-pin connector, an upgrade tool conversion adapter can be used.*1) (2) Number of slots: Not changed (3) Programs: The number of occupied I/O points is changed, I/O signals are changed, buffer memory addresses are changed. (4) Specifications: Counting speed (maximum) is changed, counting range is changed (24-bit unsigned binary → 32-bit signed binary), external input/output is changed. (5) Functions: Not changed
Position detection module	A61LS A62LS A62LS-S5 A63LS	No alternative models	—

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

8.2 Specification Comparison Tables

Positioning modules

AD75P1-S3/AD75P2-S3/AD75P3-S3 and RD75P2/RD75P4/RD75D2/RD75D4

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

Item	Specifications		Compatibility	Precautions
	AD75P1-S3/AD75P2-S3/AD75P3-S3	RD75P2/RD75P4/RD75D2/RD75D4		
Number of controlled axes	AD75P1-S3: 1 AD75P2-S3: 2 AD75P3-S3: 3	RD75P2/RD75D2: 2 RD75P4/RD75D4: 4	○	The number of axes varies.
Interpolation function	AD75P1-S3: Not available AD75P2-S3/AD75P3-S3: 2-axis linear interpolation, 2-axis circular interpolation	RD75P2/RD75D2: 2-axis linear interpolation, 2-axis circular interpolation RD75P4/RD75D4: 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	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	When set by a peripheral: 600 data/axis When set by a sequence program: 100 data/axis	600 data/axis	○	
Backup	Parameters and positioning data are saved on flash ROM (battery-less backup).	Positioning data and block start data can be saved on flash ROM (battery-less backup).	○	

Item		Specifications		Compatibility	Precautions
		AD75P1-S3/AD75P2-S3/ AD75P3-S3	RD75P2/RD75P4/RD75D2/ RD75D4		
Positioning	Positioning system	PTP control: Incremental system/absolute system		○	
		Speed-position switching control: Incremental 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: Standard mode -214748364.8 to 214748364.7 μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse Stepping motor mode -13421772.8 to 13421772.7 μm, -1342.17728 to 1342.17727 inch, 0 to 359.99999 degree, -134217728 to 134217727 pulse	In absolute system: -214748364.8 to 214748364.7 μm, -21474.83648 to 21474.83647 inch, 0 to 359.99999 degree, -2147483648 to 2147483647 pulse	○	
		In incremental system: Standard mode -214748364.8 to 214748364.7 μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse Stepping motor mode -13421772.8 to 13421772.7 μm, -1342.17728 to 1342.17727 inch, -1342.17728 to 1342.17727 degree, -134217728 to 134217727 pulse	In incremental system: -214748364.8 to 214748364.7 μm, -21474.83648 to 21474.83647 inch, -21474.83648 to 21474.83647 degree, -2147483648 to 2147483647 pulse		
		In position-speed switching control: Standard mode 0 to 214748364.7 μm, 0 to 21474.83647 inch, 0 to 21474.83647 degree, 0 to 2147483647 pulse Stepping motor mode 0 to 13421772.7 μm, 0 to 1342.17727 inch, 0 to 1342.17727 degree, 0 to 134217727 pulse	In speed-position switching control (INC mode)/position-speed switching control: 0 to 214748364.7 μm, 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	Standard mode 0.01 to 6000000.00mm/min, 0.001 to 600000.000 inch/min, 0.001 to 600000.000 degree/min, 1 to 1000000 pulse/s Stepping motor mode 0.01 to 375000.00 mm/min, 0.001 to 37500.000 inch/min, 0.001 to 37500.000 degree/min, 1 to 62500 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	Automatic trapezoidal acceleration/deceleration, S-pattern acceleration/ deceleration		○	
	Acceleration/ deceleration time	The range is selectable between 1 to 65535ms and 1 to 8388608ms. Four patterns can be set for each of acceleration time and deceleration time.	1 to 8388608ms Four patterns can be set for each of acceleration time and deceleration time.	○	
	Sudden stop deceleration time	The range is selectable between 1 to 65535ms and 1 to 8388608ms.	1 to 8388608ms	○	

Item	Specifications		Compatibility	Precautions
	AD75P1-S3/AD75P2-S3/ AD75P3-S3	RD75P2/RD75P4/RD75D2/ RD75D4		
Starting time	20ms	1-axis linear control: 0.3ms 1-axis speed control: 0.3ms 2-axis linear interpolation control (composite speed): 0.45ms 2-axis linear interpolation control (reference axis speed): 0.45ms 2-axis circular interpolation control: 0.63ms 2-axis speed control: 0.63ms 3-axis linear interpolation control (composite speed): 0.93ms 3-axis linear interpolation control (reference axis speed): 0.93ms 3-axis helical interpolation control: 1.8ms 3-axis speed control: 0.93ms 4-axis linear interpolation control: 1.08ms 4-axis speed control: 1.08ms	△	Because the performance such as the starting time and refreshing cycle of data is enhanced, modify each program as needed while checking the timing of the processing.
Command pulse output system	Open collector, differential driver	RD75P2/RD75P4: Open collector RD75D2/RD75D4: Differential driver	△	MELSEC iQ-R series modules support either an open collector or a differential driver, but not both of them.
Maximum output pulse	When connected to the open collector: 200kpps When connected to the differential driver: 400kpps	RD75P2/RD75P4: 200000 pulse/s RD75D2/RD75D4: 5000000 pulse/s	○	
Maximum connection distance between servos	When connected to the open collector: 2m When connected to the differential driver: 10m	RD75P2/RD75P4: 2m RD75D2/RD75D4: 10m	○	
Flash ROM write count	100000 times maximum		○	
External interface	10136-3000VE, 10136-6000EL	40-pin connector (A6CON1/2/4)	×	Wiring needs to be changed after replacement.
Applicable wire size	10136-3000V: 0.05 to 0.2mm² 10136-6000EL: 0.08mm²	0.088 to 0.3mm²	×	
Number of occupied I/O points	32 points (I/O assignment: Special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	
Internal current consumption (5VDC)	0.70A or lower	RD75P2: 0.38A RD75P4: 0.42A RD75D2: 0.54A RD75D4: 0.78A	—	
External dimensions	250(H)×37.5(W)×106(D)mm	106(H)×27.8(W)×110(D)mm	—	
Weight	0.35kg	RD75P2: 0.14kg RD75P4/RD75D2/RD75D4: 0.15kg	—	

High-speed counter modules

AD61 and RD62P2

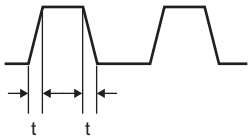
○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		AD61	RD62P2		
Number of channels		2 channels		○	
Counting speed switch setting		—	200kpps (100k to 200kpps), 100kpps (10k to 100kpps), 10kpps (10kpps or less)	○	Set the counting speed switch setting of parameters to 100kpps.
Count input signal	Phase	1-phase input, 2-phase input	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-phase input: 50KPPS 2-phase input: 50KPPS	When 200k is set: 200kpps When 100k is set: 100kpps When 10k is set: 10kpps	△	*1
	Counting range	24-bit unsigned binary: 0 to 16777215	32-bit signed binary: -2147483648 to 2147483647	△	Data is changed from 24-bit unsigned binary to 32-bit signed binary.
	Type	UP/DOWN preset counter + ring counter function		○	
	Minimum count pulse width (duty ratio: 50%)	20μs (10μs for each ON/OFF)	*2	○	
Magnitude comparison	Comparison range	24-bit unsigned binary	32-bit signed binary	△	Data is changed from 24-bit unsigned binary to 32-bit signed binary.
	Comparison result	Set value < Count value, Set value = Count value, Set value > Count value		○	
External input	Preset	5VDC 5mA, 12/24VDC 3/6mA	5/12/24VDC, 7 to 10mA	△	The external input specifications are different. Check the specifications of external devices.
	Count disable	5VDC 5mA, 12/24VDC 3/6mA	—		
	Function start	—	5/12/24VDC, 7 to 10mA		
External output	Coincidence output	Transistor (open collector) output 12/24VDC 0.5A	Transistor (sink 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.
External interface		38-point terminal block (M3×6 screws)	40-pin connector (A6CON1/2/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR61D), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)		0.30A (TYP. all points ON)	0.11A (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×111(D)mm	—	
Weight		0.50kg	0.11kg	—	

*1 The counting speed is affected by the rise/fall time of pulses. A count can be performed with the following counting speed.

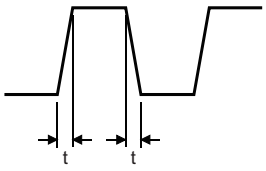
AD61

Rise/fall time	Common to 1-phase input and 2-phase input
t = 5μs	50KPPS
t = 50μs	5KPPS

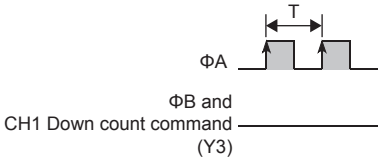
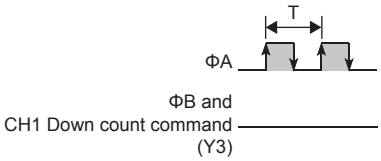
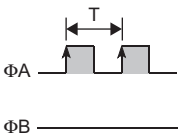
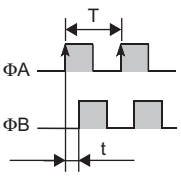
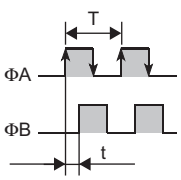


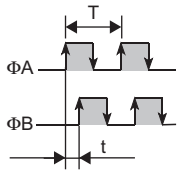
RD62P2

Counting speed switch setting	200kpps	100kpps	10kpps
Rise/fall time	Common to 1-phase input and 2-phase input		
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 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
2-phase multiple of 2		T = 10 t = 2.5	T = 20 t = 5	T = 200 t = 50

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 4		T = 20 t = 5	T = 40 t = 10	T = 400 t = 100

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

AD61S1 and RD62P2

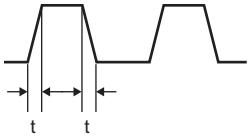
○: Compatible △: Partly changed ×: Incompatible —: Not applicable

Item		Specifications		Compatibility	Precautions
		AD61S1	RD62P2		
Number of channels		2 channels		○	
Counting speed switch setting		—	200kpps (100k to 200kpps), 100kpps (10k to 100kpps), 10kpps (10kpps or less)	○	Set the counting speed switch setting of parameters to 10kpps.
Count input signal	Phase	1-phase input, 2-phase input	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-phase input: 10KPPS 2-phase input: 7KPPS	When 200k is set: 200kpps When 100k is set: 100kpps When 10k is set: 10kpps	△	*1
	Counting range	24-bit unsigned binary : 0 to 16777215	32-bit signed binary : -2147483648 to 2147483647	△	Data is changed from 24-bit unsigned binary to 32-bit signed binary.
	Type	UP/DOWN preset counter + ring counter function		○	
	Minimum count pulse width (duty ratio: 50%)	1-phase input: 100μs (50μs for each ON/OFF) 2-phase input: 142μs (71μs for each ON/OFF)	*2	○	
Magnitude comparison	Comparison range	24-bit unsigned binary	32-bit signed binary	△	Data is changed from 24-bit unsigned binary to 32-bit signed binary.
	Comparison result	Set value < Count value, Set value = Count value, Set value > Count value		○	
External input	Preset	5VDC 5mA, 12/24VDC 3/6mA	5/12/24VDC, 7 to 10mA	△	The external input specifications are different. Check the specifications of external devices.
	Count disable	5VDC 5mA, 12/24VDC 3/6mA	—		
	Function start	—	5/12/24VDC, 7 to 10mA		
External output	Coincidence output	Transistor (open collector) output 12/24VDC 0.5A	Transistor (sink 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.
External interface		38-point terminal block (M3×6 screws)	40-pin connector (A6CON1/2/4)	×	Wiring needs to be changed after replacement. By using the upgrade tool conversion adapter (ERNT-1AR61D), the existing external wiring and terminal blocks in the existing system can be used.*3
Applicable wire size		0.75 to 2mm²	0.088 to 0.3mm²	×	
Applicable solderless terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	—	—	
Number of occupied I/O points		32 points (I/O assignment: Special 32 points)	16 points (I/O assignment: Intelligent 16 points)	△	The number of occupied I/O points is changed after replacement.
Internal current consumption (5VDC)		0.30A (TYP. all points ON)	0.11A (TYP. all points ON)	—	
External dimensions		250(H)×37.5(W)×131(D)mm	106(H)×27.8(W)×111(D)mm	—	
Weight		0.50kg	0.11kg	—	

*1 The counting speed is affected by the rise/fall time of pulses. A count can be performed with the following counting speed.

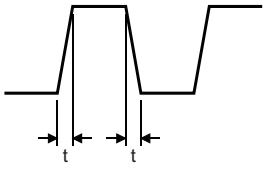
AD61S1

Rise/fall time	1-phase input	2-phase input
t = 5μs	10KPPS	7KPPS
t = 500μs	500PPS	250PPS

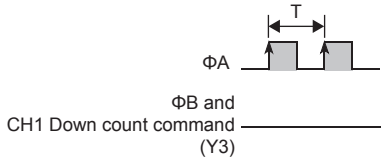
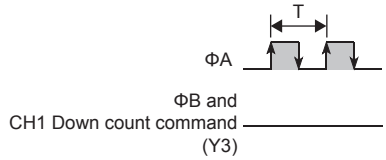
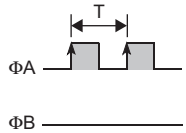
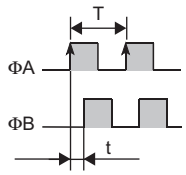
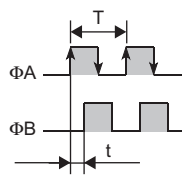


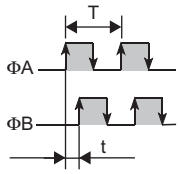
RD62P2

Counting speed switch setting	200kpps	100kpps	10kpps
Rise/fall time	Common to 1-phase input and 2-phase input		
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 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
2-phase multiple of 2		T = 10 t = 2.5	T = 20 t = 5	T = 200 t = 50

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 4		T = 20 t = 5	T = 40 t = 10	T = 400 t = 100

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

8.3 Function Comparison Tables

Positioning modules

AD75P1-S3/AD75P2-S3/AD75P3-S3 and RD75P2/RD75P4/RD75D2/RD75D4

■Main functions

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

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AD75P1-S3 AD75P2-S3 AD75P3-S3	RD75P2 RD75P4 RD75D2 RD75D4	
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.43) stored in the module using machine OPR. (Positioning start No.9002)	○	○	
Position control	• Linear control (1-axis linear control, 2-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-axis fixed-feed control, 2-axis fixed-feed control) Positions a target by the movement amount using the amount set in the positioning data. (With the fixed-feed control, [Md.29] Current feed value is set to 0 when the control is started. In the 2-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.	○	○	
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 movement amount) immediately after that by turning on Speed-position switching signal.	○	○	
Current value changing	Changes [Md.29] 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)	○	○	
JUMP instruction	Unconditionally or conditionally jumps to the specified positioning data No.	○	○	
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.	○	○	

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AD75P1-S3 AD75P2-S3 AD75P3-S3	RD75P2 RD75P4 RD75D2 RD75D4	
Simultaneous start	Simultaneously executes the positioning data having the number for the axis specified with Condition data (Outputs pulses at the same timing).	○	○	
Stop	Stops positioning operation.	○	○	
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.	○	○	
JOG operation	Outputs pulses to the drive unit while JOG start signal is on.	○	○	
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

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AD75P1-S3 AD75P2-S3 AD75P3-S3	RD75P2 RD75P4 RD75D2 RD75D4	
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 by setting the movement amount per pulse.	○	○	
Near pass mode function	Suppresses the machine vibration when the speed is changed during continuous path control in the interpolation control.	○	○	
Speed limit function	If the command speed exceeds [Pr.7] Speed limit value during the control, this function limits the command speed to within the setting range of [Pr.7] Speed limit value.	○	○	
Torque limit function	If the torque generated in the servo motor exceeds [Pr.18] Torque limit setting value during the control, this function limits the generated torque to within the setting range of [Pr.18] 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.16] New speed value, the speed change buffer memory area, and change the speed with [Cd.17] Speed change request.	○	○	
Override function	Changes the speed during positioning within a percentage of 1 to 300%. Execute this function using [Cd.18] Positioning operation speed override.	○	○	

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AD75P1-S3 AD75P2-S3 AD75P3-S3	RD75P2 RD75P4 RD75D2 RD75D4	
Acceleration/ deceleration time change function	Changes the acceleration/deceleration time at the speed change.	○	○	
Torque change function	Changes the torque limit value during the control.	○	○	
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 code number (0 to 32767) 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.5]).	○	○	
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.	○	○	
Stepping motor mode function	Sets data required to use a stepping motor.	○	×	The stepping motor mode function is not available.
Acceleration/ deceleration process function	Adjusts acceleration/deceleration of the control.	○	○	
Indirect designation function	Specifies positioning data No. indirectly and starts positioning operation.	○	×	The indirect designation function is not available.

■Common functions

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

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AD75P1-S3 AD75P2-S3 AD75P3-S3	RD75P2 RD75P4 RD75D2 RD75D4	
Parameter initialization function	Resets the setting data stored in the flash ROM of the module to the factory default values. The following two methods can be used. (1) Method using a sequence program (2) Method using software package	○	△	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. (1) Method using a sequence program (2) Method using software package	○	△	For the RD75P□/D□, use the module data backup function instead. Only the method using a sequence program is supported.
LED indication function	Indicates the module operating status, signal status, or error status with a 17-segment LED on the front of the module. What status the LED indicates is switched using the mode switch on the front of the module.	○	×	The LED indication function is not available.
Clock data function	Sets the clock data of the programmable controller CPU to the module. The set clock data are used for history data.	○	○	

High-speed counter modules

AD61/AD61S1 and RD62P2

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

Function		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AD61 AD61S1	RD62P2[*1]	
Preset function	Overwrites the present counter value with any numerical value.	○	○	
Disable function	Stops counting.	○	○	
Ring counter function	Repeats counting between any set values.	○	○	
Coincidence output function	Outputs signals when a set value and a present value match.	○	○	

*1 The counter operation mode for the RD62P2 is pulse count mode.

8.4 Precautions for Replacement

Wiring

For positioning modules, the external wiring connectors to be used differ between the MELSEC-A/QnA series and the MELSEC iQ-R series. And wire sizes applicable to the connectors differ accordingly.
For high-speed counter modules, MELSEC-A/QnA series uses a terminal block while MELSEC iQ-R series uses a connector. When using a MELSEC iQ-R series high-speed counter module, use connectors for wiring instead of terminal blocks, or use an upgrade tool conversion adapter.

External interface specifications

The external interface specifications differ between the MELSEC-A/QnA series and the MELSEC iQ-R series. Check that connections to external devices meet the specifications.

Dedicated instructions

The dedicated instructions differ between the MELSEC-A/QnA series and the MELSEC iQ-R series.
If a dedicated instruction is used in a MELSEC-A/QnA series program, the program needs to be corrected for 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-A/QnA series and the MELSEC iQ-R series. If an I/O signal or a buffer memory area is used in a MELSEC-A/QnA 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)

9 CONTROL NETWORK MODULE REPLACEMENT

9.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series control network modules in accordance with the specifications and functions of the MELSEC-A/QnA series control network modules.
Select models that best suit your application considering the scope of control of MELSEC-A/QnA series control network modules currently used, as well as the system specifications and extensibility after replacement.
Consider replacing the system on MELSECNET with a system on CC-Link IE Control or CC-Link IE Field.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
CC-Link	AJ61BT11 AJ61QBT11	RJ61BT11	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: I/O signals are changed, and buffer memory addresses are changed. (4) Specifications: Connection cables are changed (for Ver.1.10-compatible CC-Link dedicated cable) (5) Functions: Changed
MELSECNET/MINI-S3	AJ71PT32-S3 AJ71T32-S3 AJ71T32-S4 AJ72PT35 AJ72T35	None	Consider replacing the existing system with a system on CC-Link.
MELSECNET-I/OLINK	AJ51T64	None	Connect the RQ extension base unit (R6□B) and consider replacing the existing system with AnyWire DB A20.
JEMANET (OPCN-1)	AJ71J92-S3 AJ72J95	None	Consider replacing the existing system with a system on other networks.
ME-NET	AJ71ME81	None	Consider replacing the existing system with a system on other networks.
B/NET	AJ71B62-S3	None	Consider replacing the existing system with a system on other networks.

9.2 Specification Comparison Table

CC-Link system master/local modules

AJ61BT11/AJ61QBT11 and RJ61BT11

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

Item	Specifications		Compatibility	Precautions
	AJ61BT11/AJ61QBT11	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		○	
Maximum number of link points per system	Remote I/O (RX, RY): 2048 points Remote register (RWw): 256 points Remote register (RWr): 256 points		○	
Link points per station	Remote I/O (RX, RY): 32 points (30 points for a local station) Remote register (RWw): 4 points Remote register (RWr): 4 points		○	
Communication method	Broadcast polling method		○	
Synchronization method	Frame synchronization method		○	
Encoding method	NRZI method		○	
Transmission method	Bus (RS-485)		○	
Transmission format	HDLC standards		○	
Error control system	CRC ($X^{16} + X^{12} + X^5 + 1$)		○	
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	△	Only 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 function, automatic return function, slave station cutoff function, Error detection using link special relay areas (SB) and link special register areas (SW)		○	
Number of parameter registrations to E^2PROM	10,000 times	—	△	Set parameters using by GX Works3.
External interface	10-point terminal block (M3 screws)	7-point terminal block (M3)	×	Wiring needs to be changed after replacement.
Applicable wire size	0.3 to 1.25mm²		○	
Applicable solderless terminal	R1.25-3 (solderless terminal with an insulation sleeve cannot be used.)		○	
Number of occupied I/O points	32 points (I/O assignment: special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	
Internal current consumption (5VDC)	0.45A	0.34A	—	
External dimensions	250(H) × 37.5(W) × 129.1(D)mm	106(H) × 27.8(W) × 131(D)mm	—	
Weight	0.40kg	0.16kg	—	

9.3 Function Comparison Table

CC-Link system master/local modules

AJ61BT11/AJ61QBT11 and RJ61BT11

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

Functions		MELSEC-A/QnA series		MELSEC iQ-R series	Precautions
		AJ61BT11	AJ61QBT11	RJ61BT11	
Communication between master station and remote I/O station	Communicates ON/OFF information with a remote I/O station.	○	○	○	
Communication between master and remote device stations	Communicates ON/OFF information and numerical data with a remote device station.	○	○	○	
Communication between master station and local station	Communicates ON/OFF information and numerical data with a local station.	○	○	○	
Communication between master and intelligent device stations	Communicates with intelligent device station using cyclic transmission and transient transmission.	○	○	○	
Reserved station function	By setting a remote station and local station, which are to be connected in the future, as reserved stations, these stations are not treated as data link faulty stations. If a connected module is specified, no data link is available.	○	○	○	
Error invalid station setting function	Prevents the remote stations and local stations that cannot perform data link due to reasons such as power-off from detecting as data link faulty stations.	○	○	○	
Data link status setting at master station programmable controller CPU error	Sets the data link status when an operation continuation error occurs programmable controller CPU of the master station.	○	○	○	
Parameter registration to E^2PROM	Parameter writing is not required at each startup of master module by registering parameters to E^2PROM of master module.	○	○	△	Set parameters using by GX Works3.
Data link faulty station input data status setting	Sets the input (received) data status (cleared/held) from the station that has data link error caused by reasons such as power-off.	○	○	○	
Module reset function by sequence program	Resets the module by the sequence program without resetting programmable controller CPU when the switch setting is changed or an error has occurred in a module.	○	○	×	The module reset function by sequence program cannot be used.
Data link stop/restart	Stops and restarts a data link during the data link execution.	○	○	○	
Automatic return function	When a module that has been disconnected from data link due to reasons such as power-off returns to the normal status, data link is automatically restarted.	○	○	○	
Slave station detach function	Data link can be continued in a normal module by disconnecting a module that cannot perform data link due to reasons such as power-off.	○	○	○	
Data link status check (SB/SW)	Data link status can be checked. Checking the status such as the interlock of sequence program can be used.	○	○	○	

Functions		MELSEC-A/QnA series		MELSEC iQ-R series	Precautions
		AJ61BT11	AJ61QBT11	RJ61BT11	
Offline test	Hardware test: Module operation check Line test: Module connection status check Parameter check test: Parameter setting check	○	○	△	The parameter check test cannot be used.
Scan synchronous function	Synchronous mode: Data link with scan synchronized with sequence program is available. Asynchronous mode: Data link not synchronized with sequence program is available.	○	○	○	
Standby master function	Data link can be continued by switching to the standby master station when an error occurs in the master station.	○	○	○	
Dedicated instruction (RIRD, RIWT, RIRCV, RISEND, RIFR, RITO)	Enables transient transmission to an intelligent device station and a local station using dedicated instructions.	○	○	△	The instruction formats are different.
Send/receive instruction (SEND, RECV, READ, SREAD, WRITE, SWRITE, REQ)	Enables data sending/receiving to/from other stations on CC-Link. Reading/writing data from/to other stations is also available.	×	○	○	
Remote I/O net mode	Enables communications between the master station and a remote I/O station only.	○	○	△	Set parameters using by GX Works3.
Temporary error invalid station specify function	Enables module replacement without detecting an error of the faulty remote station during online.	○	○	○	
Online test function	Enables line test, link start/stop, and other operations by GX Developer.	×	○	○	
Monitoring and diagnostics	Enables monitoring and diagnosing by GX Developer.	×	○	○	

9.4 Precautions for Replacement

Dedicated instruction

The dedicated instructions differ between the MELSEC-A/QnA series and the MELSEC iQ-R series.
If the dedicated instruction is used in the MELSEC-A/QnA series program, the program needs to be corrected for 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-A/QnA series and the MELSEC iQ-R series.
If the I/O signals and buffer memory areas are used in the MELSEC-A/QnA series program, the program needs to be corrected for the MELSEC iQ-R series.

Link special relay (SB) and link special register (SW)

The link special relay (SB)/link special register (SW) number assignments differ between the MELSEC-Q series and MELSEC iQ-R series modules. If the SB/SW is used in the MELSEC-A/QnA series program, the program needs to be corrected for the MELSEC iQ-R series.

Peripheral connection module

If the AJ65BT-G4/AJ65BT-G4-S3 peripheral connection module is used, replace it with the AJ65BT-R2N CC-Link system RS-232C interface module (MELSOFT connection setting).

Processing time

The time such as sequence scan time or link refresh time differs between the MELSEC-A/QnA series and the MELSEC iQ-R series.
For details on the processing time, refer to the manual for the module used.

Parameter registration to E^2PROM

The MELSEC iQ-R series CC-Link system master/local module does not have E^2PROM. Delete the sequence program corresponding to the parameter registration to E^2PROM.

Point

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

10 INFORMATION MODULE REPLACEMENT

10.1 Alternative Model List

This section lists alternative models of the MELSEC iQ-R series information modules in accordance with the specifications and functions of the MELSEC-A/QnA series information modules.
Select models that best suit your application considering the scope of control of MELSEC-A/QnA series information modules currently used, as well as the system specifications and extensibility after replacement.

Item	MELSEC-A/QnA series	MELSEC iQ-R series	Specification difference
Computer link/serial communication	AJ71UC24 AJ71QC24N	RJ71C24	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: I/O signals are changed and buffer memory addresses are changed. (4) Specifications: Transmission speed is changed. (5) Functions: Changed (No printer function and multidrop link function for the AJ71UC24/ No link dedicated instructions for the AJ71QC24N)
	AJ71QC24N-R2	RJ71C24-R2	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: I/O signals are changed and buffer memory addresses are changed. (4) Specifications: Transmission speed is changed. (5) Functions: Changed (No link dedicated instructions)
	AJ71QC24N-R4	RJ71C24-R4	(1) External wiring: Changed (2) Number of slots: Not changed (3) Programs: I/O signals are changed and buffer memory addresses are changed. (4) Specifications: Transmission speed is changed. (5) Functions: Changed (No link dedicated instructions)
Ethernet interface	AJ71E71N3-T AJ71QE71N3-T	RJ71EN71	(1) External wiring: Not changed (2) Number of slots: Not changed (3) Programs: I/O signals are changed and buffer memory addresses are changed. (4) Specifications: Not changed (5) Functions: Changed (MC protocol 1E frame cannot be used.)
	AJ71E71N-B5 AJ71QE71N-B5	RJ71EN71	(1) External wiring: Changed (15-pin D-sub connector → RJ45) (2) Number of slots: Not changed (3) Programs: I/O signals are changed and buffer memory addresses are changed. (4) Specifications: Changed (10BASE5 → 10BASE-T) (5) Functions: Changed (MC protocol 1E frame cannot be used.)
	AJ71E71N-B2 AJ71QE71N-B2	RJ71EN71	(1) External wiring: Changed (BNC connector → RJ45) (2) Number of slots: Not changed (3) Programs: I/O signals are changed and buffer memory addresses are changed. (4) Specifications: Changed (10BASE2 → 10BASE-T) (5) Functions: Changed (MC protocol 1E frame cannot be used.)
Intelligent communication	AD51-S3 AD51H-S3	None	Consider replacing the existing system with a system on other networks.
Modem interface	A6TEL Q6TEL	None	Consider replacing the existing system with a system on other networks.
Memory card interface	AD59	None	Consider replacing the current communication method with other communication method such as RS-232. Consider replacing the memory card used with an SD memory card.
ID interface	AD35ID1 AD35ID2	None	Consider replacing the existing system with a system on other networks.

10.2 Specification Comparison Tables

Serial communication modules

AJ71UC24/AJ71QC24N and RJ71C24

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

Item		Specifications		Compatibility	Precautions
		AJ71UC24/AJ71QC24N	RJ71C24		
Interface	CH1	RS-232 compliant (D-Sub 25P)	RS-232-compliance (D-sub 9 pin)	△	Wiring needs to be changed after replacement.
	CH2	RS-422/485 compliant AJ71UC24: Terminal block AJ71QC24N: 2-piece terminal block	RS-422/485-compliance (2-piece terminal block)	△	
Communication method	MC protocol communication	Half-duplex communication		○	
	Non-procedural communication	Full-duplex communication/Half-duplex communication		○	
	Bidirectional protocol communication	Full-duplex communication/Half-duplex communication		○	
Synchronization method		Start-stop synchronization (asynchronous method)		○	
Transmission speed		AJ71UC24: 300, 600, 1200, 2400, 4800, 9600, 19200bps AJ71QC24N: 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200bps	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400bps	△	The transmission speed which can be set differs depending on the specifications.
Data format	Start bit	1		○	
	Data bit	7/8		○	
	Parity bit	1 (vertical parity)/none		○	
	Stop bit	1/2		○	
Access cycle	MC protocol communication	One request is processed during the END processing of the CPU module of the mounted station.		○	
	Non-procedural/ bidirectional communication	Transmission can be performed at each send request, and reception is available at any time.		○	
Error detection	Parity check	Performed (odd/even)/none		○	
	Sum check	Performed (MC protocol/Bidirectional)/none		○	
Transmission control		*1		○	
Line configuration (connection)	RS-232	1: 1		○	
	RS-422/485	1: 1, 1: n, m: n	1: 1, 1: n, n: 1, m: n	○	
Line configuration (data communication) RS-232	MC protocol communication	1: 1		○	
	Non-procedural communication	1: 1		○	
	Bidirectional protocol communication	1: 1		○	
Line configuration (data communication) RS-422/485	MC protocol communication	1: 1, 1: n, m: n		○	
	Non-procedural communication	1: 1, 1: n	1: 1, 1: n, n: 1	○	
	Bidirectional protocol communication	1: 1		○	

Item		Specifications		Compatibility	Precautions
		AJ71UC24/AJ71QC24N	RJ71C24		
Transmission distance (Overall distance)	RS-232	Max.15m		○	
	RS-422/485	AJ71UC24: 500m maximum (overall distance) AJ71QC24N: 1200m maximum (overall distance)	1200m maximum (overall distance)	○	
No. of E^2PROM writes/No. of flash ROM writes		Maximum 100000 times to the same area		○	
No. of occupied I/O points		32 points (I/O assignment: special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	
Internal current consumption (5VDC)		AJ71UC24: 0.30A AJ71QC24N: 0.40A	0.31A	—	
External dimensions		AJ71UC24: 250(H) × 37.5(W) × 120(D)mm AJ71QC24N: 250(H) × 37.5(W) × 113.5(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight		AJ71UC24: 0.63kg AJ71QC24N: 0.39kg	0.16kg	—	

*1 The following table lists the transmission controls.

AJ71UC24

Item	RS-232	RS-422/485
DTR/DSR (ER/DR) control	○	×
CD signal control	○	×
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○	○

AJ71QC24N

Item	RS-232	RS-422/485
DTR/DSR (ER/DR) control	○	×
RS/CS control	○	×
CD signal control	○	×
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○	○

RJ71C24

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.

AJ71QC24N-R2 and RJ71C24-R2

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

Item		Specifications		Compatibility	Precautions
		AJ71QC24N-R2	RJ71C24-R2		
Interface	CH1	RS-232 compliant (D-Sub 25P)	RS-232-compliance (D-sub 9 pin)	△	Wiring needs to be changed after replacement.
	CH2	RS-232 compliant (D-Sub 25P)	RS-232-compliance (D-sub 9 pin)	△	
Communication method	MC protocol communication	Half-duplex communication		○	
	Non-procedural protocol communication	Full-duplex communication/Half-duplex communication		○	
	Bidirectional protocol communication	Full-duplex communication/Half-duplex communication		○	
Synchronization method		Start-stop synchronization (asynchronous method)		○	
Transmission speed		300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200bps	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400bps	△	The transmission speed which can be set differs depending on the specifications.
Data format	Start bit	1		○	
	Data bit	7/8		○	
	Parity bit	1 (vertical parity)/none		○	
	Stop bit	1/2		○	
Access cycle	MC protocol communication	One request is processed during the END processing of the CPU module of the mounted station.		○	
	Non-procedural/ bidirectional communication	Transmission can be performed at each send request, and reception is available at any time.		○	
Error detection	Parity check	Performed (odd/even)/none		○	
	Sum check	Performed (MC protocol/Bidirectional)/none		○	
Transmission control		*1		○	
Line configuration (connection)	RS-232	1: 1		○	
Line configuration (data communication) RS-232	MC protocol communication	1: 1		○	
	Non-procedural communication	1: 1		○	
	Bidirectional protocol communication	1: 1		○	
Transmission distance (Overall distance)	RS-232	15m maximum		○	
	RS-422/485	—		—	
No. of E^2PROM writes/No. of flash ROM writes		Maximum 100000 times to the same area		○	
No. of occupied I/O points		32 points (I/O assignment: special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	
Internal current consumption (5VDC)		0.30A	0.20A	—	
External dimensions		250(H) × 37.5(W) × 113.5(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight		0.37kg	0.14kg	—	

*1 The following table lists the transmission controls.

AJ71QC24N-R2

Item	RS-232
DTR/DSR (ER/DR) control	○
RS/CS control	○
CD signal control	○
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○

RJ71C24-R2

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.

AJ71QC24N-R4 and RJ71C24-R4

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

Item		Specifications		Compatibility	Precautions
		AJ71QC24N-R4	RJ71C24-R4		
Interface	CH1	RS-422 compliant (D-Sub 25P)	RS-422/485-compliance (2-piece plug-in connector socket block)	×	Wiring needs to be changed after replacement.
	CH2	RS-422/485 compliant (2-piece terminal block)	RS-422/485-compliance (2-piece plug-in connector socket block)	△	
Communication method	MC protocol communication	Half-duplex communication		○	
	Non-procedural communication	Full-duplex communication/Half-duplex communication		○	
	Bidirectional protocol communication	Full-duplex communication/Half-duplex communication		○	
Synchronization method		Start-stop synchronization (asynchronous method)		○	
Transmission speed		300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200bps	1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400bps	△	The transmission speed which can be set differs depending on the specifications.
Data format	Start bit	1		○	
	Data bit	7/8		○	
	Parity bit	1 (vertical parity)/none		○	
	Stop bit	1/2		○	
Access cycle	MC protocol communication	One request is processed during the END processing of the CPU module of the mounted station.		○	
	Non-procedural/ bidirectional communication	Transmission can be performed at each send request, and reception is available at any time.		○	
Error detection	Parity check	Performed (odd/even)/none		○	
	Sum check	Performed (MC protocol/Bidirectional)/none		○	
Transmission control		*1		○	
Line configuration (connection)	RS-422	1: 1	—	—	
	RS-422/485	1: 1, 1: n, m: n	1: 1, 1: n, n: 1, m: n	○	
Line configuration (data communication) RS-422	MC protocol communication	1: 1	—	—	
	Non-procedural protocol communication	1: 1	—	—	
	Bidirectional protocol communication	1: 1	—	—	
Line configuration (data communication) RS-422/485	MC protocol communication	1: 1, 1: n, m: n		○	
	Non-procedural protocol communication	1: 1, 1: n	1: 1, 1: n, n: 1	○	
	Bidirectional protocol communication	1: 1		○	
Transmission distance (Overall distance)	RS-422	1200m maximum	—	—	
	RS-422/485	1200m maximum (overall distance)		○	
No. of E^2PROM writes/No. of flash ROM writes		Maximum 100000 times to the same area		○	
No. of occupied I/O points		32 points (I/O assignment: special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	

Item	Specifications		Compatibility	Precautions
	AJ71QC24N-R4	RJ71C24-R4		
Internal current consumption (5VDC)	0.60A	0.42A	—	
External dimensions	250(H) × 37.5(W) × 113.5(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight	0.39kg	0.13kg	—	

*1 The following table lists the transmission controls.

AJ71QC24N-R4

Item	RS-422	RS-422/485
DTR/DSR (ER/DR) control	○	×
RS/CS control	×	×
CD signal control	×	×
DC1/DC3 (Xon/Xoff) control DC2/DC4 control	○	○

RJ71C24-R4

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.

Ethernet interface modules

AJ71E71N3-T/AJ71QE71N3-T and RJ71EN71 (Q-compatible Ethernet)

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

Item		Specifications		Compatibility	Precautions
		AJ71E71N3-T/ AJ71QE71N3-T	RJ71EN71 (Q-compatible Ethernet)		
Transmission specifications	Type	10BASE-T	1000BASE-T, 100BASE-TX, 10BASE-T	○	
	Transmission speed	10Mbps (half-duplex)	1Gbps 100Mbps (full-duplex/half-duplex) 10Mbps (full-duplex/half-duplex)	○	
	Interface	RJ45	RJ45 (AUTO MDI/MDI-X)	○	
	Transmission method	Base band		○	
	Maximum segment length	100m (length between a hub and a node)		○	
	Maximum number of nodes/connection	Cascade connection: Up to 4	Cascade connection: 1000BASE-T: Depends on the switching hub used. 100BASE-TX: 2 levels maximum 10BASE-T: 4 levels maximum	○	
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections	16 connections	○	
	Fixed buffer	1K words × 8	1K words × 16	○	
	Random access buffer	AJ71E71N3-T: 3K words × 2 AJ71QE71N3-T: 6K words × 1	6K words × 1	○	
No. of occupied I/O points		32 points (I/O assignment: special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	
5VDC internal current consumption		AJ71E71N3-T: 0.69A AJ71QE71N3-T: 0.53A	0.82A	—	
External dimensions		250(H) × 37.5(W) × 106(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight		0.30kg	0.17kg	—	

AJ71E71N-B5/AJ71QE71N-B5 and RJ71EN71 (Q-compatible Ethernet)

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

Item		Specifications		Compatibility	Precautions
		AJ71E71N-B5/ AJ71QE71N-B5	RJ71EN71 (Q-compatible Ethernet)		
Transmission specifications	Type	10BASE5	1000BASE-T, 100BASE-TX, 10BASE-T	×	Convert 10BASE5 to 10BASE-T.
	Transmission speed	10Mbps (half-duplex)	1Gbps 100Mbps (full-duplex/half-duplex) 10Mbps (full-duplex/half-duplex)	○	
	Interface	15-pin D-sub connector (AUI)	RJ45 (AUTO MDI/MDI-X)	×	Wiring needs to be changed after replacement.
	Transmission method	Base band		○	
	Maximum node-to-node distance	2500m	—	—	
	Maximum segment length	500m	100m (length between a hub and a node)	×	Connect another hub if the segment length is 100 meters or longer.
	Maximum number of nodes/connection	100/segment	Cascade connection: 1000BASE-T: Depends on the switching hub used. 100BASE-TX: 2 levels maximum 10BASE-T: 4 levels maximum	—	
	Minimum node interval	2.5m	—	—	
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections	16 connections	○	
	Fixed buffer	1K words × 8	1K words × 16	○	
	Random access buffer	AJ71E71N-B5: 3K words × 2 AJ71QE71N-B5: 6K words × 1	6K words × 1	○	
No. of occupied I/O points		32 points (I/O assignment: special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	
5VDC internal current consumption		AJ71E71N-B5: 0.55A AJ71QE71N-B5: 0.40A	0.82A	—	
External dimensions		250(H) × 37.5(W) × 106(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight		0.33kg	0.17kg	—	

AJ71E71N-B2/AJ71QE71N-B2 and RJ71EN71 (Q-compatible Ethernet)

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

Item		Specifications		Compatibility	Precautions
		AJ71E71N-B2/ AJ71QE71N-B2	RJ71EN71 (Q-compatible Ethernet)		
Transmission specifications	Type	10BASE2	1000BASE-T, 100BASE-TX, 10BASE-T	×	Convert 10BASE2 to 10BASE-T.
	Transmission speed	10Mbps (half-duplex)	1Gbps 100Mbps (full-duplex/half-duplex) 10Mbps (full-duplex/half-duplex)	○	
	Interface	BNC connector	RJ45 (AUTO MDI/MDI-X)	×	Wiring needs to be changed after replacement.
	Transmission method	Base band		○	
	Maximum node-to-node distance	925m	—	—	
	Maximum segment length	185m	100m (length between a hub and a node)	×	Connect another hub if the segment length is 100 meters or longer.
	Maximum number of nodes/connection	30/segment	Cascade connection: 1000BASE-T: Depends on the switching hub used. 100BASE-TX: 2 levels maximum 10BASE-T: 4 levels maximum	—	
	Minimum node interval	0.5m	—	—	
Transfer data storage memory	Number of allowable simultaneously open connections	8 connections	16 connections	○	
	Fixed buffer	1K words × 8	1K words × 16	○	
	Random access buffer	AJ71E71N-B5: 3K words × 2 AJ71QE71N-B5: 6K words × 1	6K words × 1	○	
No. of occupied I/O points		32 points (I/O assignment: special 32 points)	32 points (I/O assignment: Intelligent 32 points)	○	
5VDC internal current consumption		AJ71E71N-B5: 0.67A AJ71QE71N-B5: 0.56A	0.82A	—	
External dimensions		250(H) × 37.5(W) × 106(D)mm	106(H) × 27.8(W) × 110(D)mm	—	
Weight		0.35kg	0.17kg	—	

10.3 Function Comparison Tables

Computer link/serial communication modules

AJ71UC24 and RJ71C24/RJ71C24-R2/RJ71C24-R4

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

Functions			MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
			AJ71UC24	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Communication using dedicated protocol*1	Device memory read/write	Reads/writes data on the programmable controller CPU from/to the external devices.	○	△	Command to be used, accessible device ranges, and accessing to other stations are restricted. The program on the external device needs to be changed.
	On-demand	Transmits data from the programmable controller CPU to external devices.	○	△	Change it to a sequence program that uses the dedicated instruction (ONDEMAND).
Non-procedural communication	Data transmission Programmable controller → External device	Transmits data from the programmable controller CPU to external devices.	○	△	Change it to a sequence program that uses the dedicated instruction (OUTPUT/INPUT).
	Data reception Programmable controller ← External device	Receives data from external devices.	○	△	
Bidirectional communication	Data transmission Programmable controller → External device	Transmits data from the programmable controller CPU to external devices.	○	△	Change it to a sequence program that uses the dedicated instruction (BIDOUT/BIDIN).
	Data reception Programmable controller ← External device	Receives data from external devices.	○	△	
Transmission using printer function		Transmits messages (character strings) from the programmable controller CPU to the printer.	○	×	Change it to a sequence program that uses the dedicated instruction (PRR). (Messages are transmitted by nonprocedural protocol using user frames.)
Multidrop link function		Data communication system via RS-422/485 interface. Data can be exchanged between the master station and a local station or a remote station. Maximum eight local stations or remote stations can be connected to the master station.	○	×	The multidrop link function cannot be used. Consider replacing the existing system with a system on CC-Link.
Transmission control	DTR/DSR control, CD signal control	Controls data transmission/reception with external devices by RS-232 control signals.	○	○	
	DC code control	Sends/receives DC codes (including Xon/Xoff) to control data transmission/reception with external devices.	○	○	

*1 In the MELSEC iQ-R series, this function name is "MC protocol communication (MELSEC communication protocol)".

AJ71QC24N/AJ71QC24N-R2/AJ71QC24N-R4 and RJ71C24/RJ71C24-R2/RJ71C24-R4

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

Functions			MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
			AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Communication using dedicated protocol[*1]	Communications in ASCII mode	Communicates in dedicated protocol using ASCII data. (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 in binary mode	Communicates in dedicated protocol using binary data. (Communications with QnA compatible 4C frame (format 5))	○	○	
	Device memory read/write	Reads/writes data on the programmable controller CPU from/to the external devices.	○	○	
	Access to another station	Reads/writes data from/to programmable controller CPU of another station on the network system.	○	△	The program on the personal computer side may be required to change it depending on the network used.
	On-demand	Transmits data from the programmable controller CPU to external devices.	○	○	
Non-procedural protocol communication	Data transmission/reception Programmable controller ↔ External device	Transmits/receives data between the programmable controller CPU and external devices.	○	○	
	Data transmission/reception in user frames	Transmits/receives data using the data (user frames) registered to the serial communication module.	○	○	
	Data transmission/reception by ASCII binary conversion	Converts binary data to ASCII data to transmit the data. Received ASCII data is also converted to binary data.	○	○	
Bidirectional protocol communication	Data transmission/reception Programmable controller ↔ External device	Transmits/receives data between the programmable controller CPU and external devices.	○	○	
	Data transmission/reception by ASCII binary conversion	Converts binary data to ASCII data to transmit the data. Received ASCII data is also converted to binary data.	○	○	
Communication by dedicated link instruction (SEND, RECV, READ, RITE, REQ)		Transmits/receives data with programmable controller CPU of another station on a multidrop connection by link dedicated instructions.	○	×	In the MELSEC iQ-R series, the function that communicates data with programmable controller CPU of another station on a multidrop connection by link dedicated instructions is not supported. Communication method needs to be changed. Delete data communication program by link dedicated instruction.

Functions			MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
			AJ71QC24N AJ71QC24N-R2 AJ71QC24N-R4	RJ71C24 RJ71C24-R2 RJ71C24-R4	
Transmission control	DTR/DSR control, RS/CS control, CD signal control	Controls data transmission/ reception with external devices by RS-232 control signals.	○	○	
	DC code control	Sends/receives DC codes (including Xon/Xoff) to control data transmission/reception with external devices.	○	○	

*1 In the MELSEC iQ-R series, this function name is "MC protocol communication (MELSEC communication protocol)".

Ethernet interface modules

AJ71E71N3-T/AJ71E71N-B5/AJ71E71N-B2 and RJ71EN71

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

Functions		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AJ71E71N3-T AJ71E71N-B5 AJ71E71N-B2	RJ71EN71 (Q-compatible Ethernet)	
Initial processing	Enables data communications with an external device.	○	△	Use module parameters.
Open processing	Connects the communication line to enable data communications with external devices.	○	△	Change it to a sequence program that uses the dedicated instruction (OPEN/CLOSE).
Communications using fixed buffer (procedural/nonprocedural)	Sends/receives any data between the programmable controller CPU and external devices using the fixed buffer on the Ethernet interface module.	○	△	Change it to a sequence program that uses the dedicated instruction (BUFSND/BUFRCV).
Communications using random access buffer	Reads/writes data from multiple connected devices to the random access buffer on the Ethernet interface module.	○	○	
Read/write communications of programmable controller CPU internal data	Reads/writes programmable controller CPU data from/to the external devices.	○	△	Some of the commands and device ranges are restricted.
Broadcast communication	Sends/receives data to all external devices on the same Ethernet as the Ethernet interface module by UDP/IP-based data communications. (Broadcast)	○	○	
Communications while the programmable controller CPU is stopped	Continues data communications even when the programmable controller CPU is in the stop state. (during Passive open processing)	○	△	Use module parameters.
Router relay function	Communicates data through a router and a gateway.	○	△	Use module parameters.
Existence check of external device	Checks whether a connected device is normally operating after a connection is established (open processing).	○	△	Change it to a sequence program that uses the dedicated instruction (OPEN). Only KeepAlive is available for TCP/IP.
Communications using pairing open	Opens connection with the connection for reception and connection for transmission as a single pair. (For communications using a fixed buffer)	○	△	Use module parameters. Change it to a sequence program that uses the dedicated instructions (OPEN).

AJ71QE71N3-T/AJ71QE71N-B5/AJ71QE71N-B2 and RJ71EN71

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

Functions		MELSEC-A/QnA series	MELSEC iQ-R series	Precautions
		AJ71QE71N3-T AJ71QE71N-B5 AJ71QE71N-B2	RJ71EN71 (Q-compatible Ethernet)	
Initial processing (sequence program/network parameters)	Enables data communications with an external device.	○	△	Use module parameters.
Open processing	Connects the communication line to enable data communications with external devices.	○	○	
Communications using fixed buffer (procedural/nonprocedural)	Sends/receives any data between the programmable controller CPU and external devices using the fixed buffer on the Ethernet interface module.	○	△	
Communications using random access buffer	Reads/writes data from multiple connected devices to the random access buffer on the Ethernet interface module.	○	○	
Read/write communications of programmable controller CPU internal data	Reads/writes data on the programmable controller CPU from/to the external devices.	○	△	Some of the commands and device ranges are restricted.
Communications using data link instructions	Reads/writes data on the programmable controller CPU in other stations over Ethernet using data link instructions.	○	○	
File transfer (FTP server functions)	Reads/writes data in files from connected devices using an FTP command.	○	○	
Broadcast communication	Sends/receives data to all external devices on the same Ethernet as the Ethernet interface module by UDP/IP-based data communications. (Broadcast)	○	○	
Communications while the programmable controller CPU is stopped	Continues data communications even when the programmable controller CPU is in the stop state. (during Passive open processing)	○	△	Use module parameters.
MELSECNET/H, MELSECNET/10 relay exchange	Communicates data over multiple network systems where Ethernet, MELSECNET/H, and MELSECNET/10 exist together or network systems that relay multiple Ethernet networks.	○	△	Use module parameters.
Router relay function	Communicates data through a router and a gateway.	○	○	
Existence check of external device	Checks whether a connected device is normally operating after a connection is established (open processing).	○	○	
Communications using pairing open	Opens connection with the connection for reception and connection for transmission as a single pair. (For communications using a fixed buffer)	○	△	For the MELSEC iQ-R series, connection No.8 cannot be used.
Parameter registration to E^2PROM	Registers parameters to E^2PROM.	○	△	For the MELSEC iQ-R series, E^2PROM is not supported. Register the parameters to the CPU.

10.4 Precautions for Replacement

Computer link/serial communication modules

I/O signals and buffer memory areas

The layouts of I/O signals and buffer memory areas differ between the MELSEC-A/QnA series and the MELSEC iQ-R series. If the I/O signals and buffer memory areas are used in the MELSEC-A/QnA series program, the program needs to be corrected for 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)

Processing time

The time such as the processing time for data communications differ between the MELSEC-A/QnA series and the MELSEC iQ-R series.
For details on the processing time, refer to the manual for the module used.

Ethernet interface modules

Dedicated instruction

The dedicated instructions differ between the MELSEC-A/QnA series and the MELSEC iQ-R series.
If the dedicated instruction is used in the MELSEC-A/QnA series program, the program needs to be corrected for 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-A/QnA series and the MELSEC iQ-R series. If the I/O signals and buffer memory areas are used in the MELSEC-A/QnA series program, the program needs to be corrected for the MELSEC iQ-R series.

Parameter registration to E^2PROM

E^2PROM is not supported for the Ethernet interface module in the MELSEC iQ-R series. Delete the sequence program corresponding to the parameter registration to E^2PROM.

Initial processing/End processing

Both the initial processing/End processing by the sequence program and the initial processing by the network parameter cannot be used together.
Delete the processing by the sequence program when using the network parameter.

Open processing/close processing

Do not use both the open processing/close processing by the I/O signals and the processing by the dedicated instruction (OPEN/CLOSE) on the same connection.

Passive open processing

For the MELSEC iQ-R series, an open request cannot be canceled before the open processing is completed once Passive open processing is executed. Execute close processing after the open processing is completed.

Communications using a fixed buffer

Do not use both communications using a fixed buffer by the I/O signals and the communications by the dedicated instruction (BUFSND/BUFRCV/BUFRCVS) on the same connection.

Processing time

The time such as the processing time for data communications differ between the MELSEC-A/QnA series and the MELSEC iQ-R series.

For details on the processing time, refer to the manual for the module used.

Replacement from 10BASE5/10BASE2 to 100BASE-TX/10BASE-T

Convert 10BASE5/10BASE2 into 10BASE-T/100BASE-TX.

Use a media converter and convert the interface from 10BASE5 or 10BASE2 to 10BASE-T.

For details, refer to the following.

📖Production discontinuation of MELSEC-Q series Ethernet interface module/FL-net (OPCN-2) interface module (FA-A-0190)

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. Only the KeepAlive command can be used for the TCP/IP alive check.

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. "IEEE 802.3" 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.

Point

For details on these precautions, refer to the following.

MELSEC iQ-R Module Configuration Manual

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

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

MELSEC iQ-R Ethernet/CC-Link IE User's Manual (Startup)

MELSEC iQ-R Ethernet User's Manual (Application)

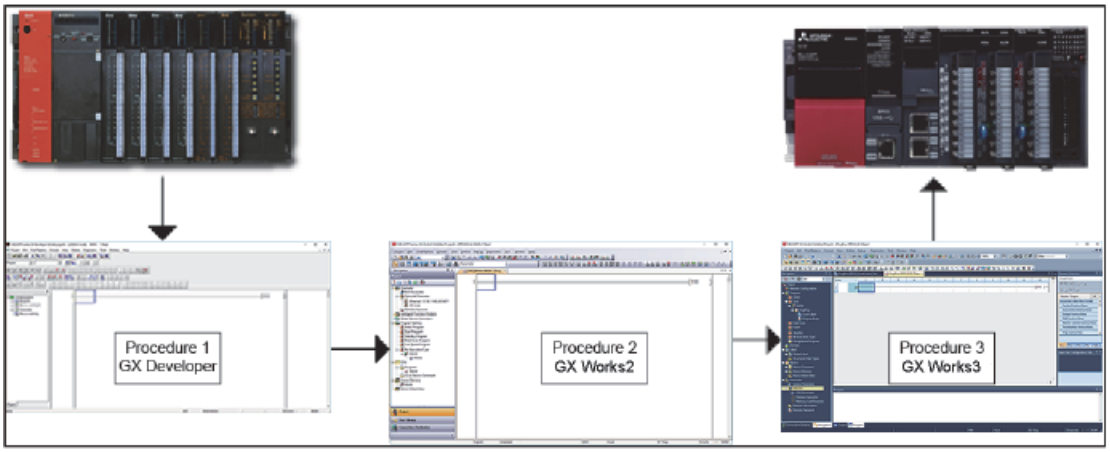
11 PROJECT REPLACEMENT

11.1 Project Replacement Procedure

This section describes how to replace the MELSEC-A/QnA series project with the MELSEC iQ-R series project.
GX Developer, GX Works2, and GX Works3 are used to replace the project.*1

*1 Use GX Developer Version 8.62Q or later and GX Works2 Version 1.05F or later.
To read SFC programs, use GX Works2 Version 1.535H or later and GX Works3 Version 1.020W or later.

Project replacement flow



1. Operation with GX Developer

Change the PLC type of the ACPU project (in GX Developer format) (A/QnACPU → Q26UDEHCPU), and save it as the QCPU project (in GX Developer format).

2. Operation with GX Works2

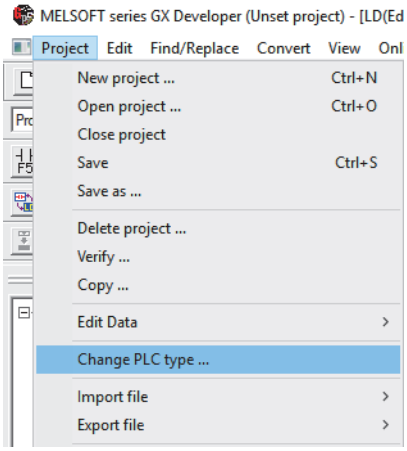
Read the QCPU project (in GX Developer format), and save it as the QCPU project (in GX Works2 format).

3. Operation with GX Works3

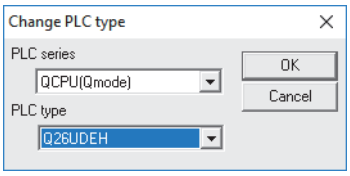
Read the QCPU project (in GX Works2 format), and convert it into the RCPU project (in GX Works3 format).

Operation method

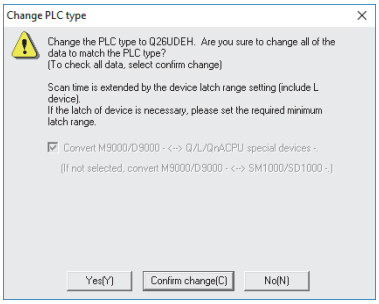
- Operation with GX Developer



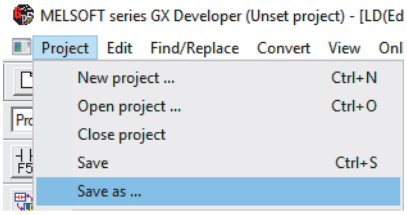
1. Select [Project] ⇨ [Change PLC Type].



2. Select "QCPU(Qmode)" and "Q26UDEHCPU", and click the [OK] button.

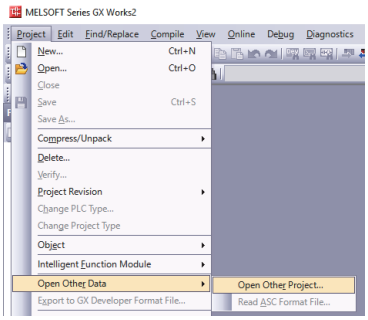


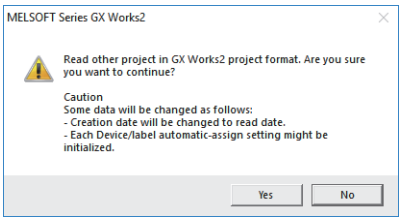
3. The following message appears. Read the message, and click the [Yes] button.

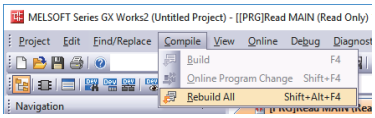


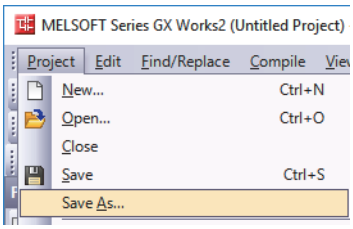
4. Select [Project] ⇨ [Save as] to save the project.

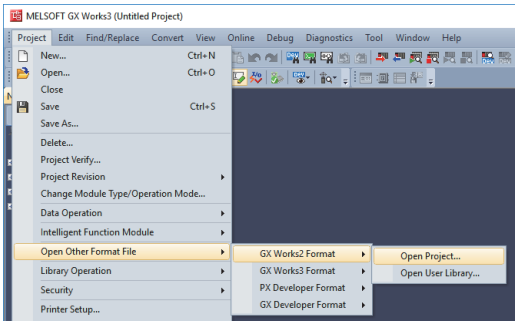
• Operation with GX Works2











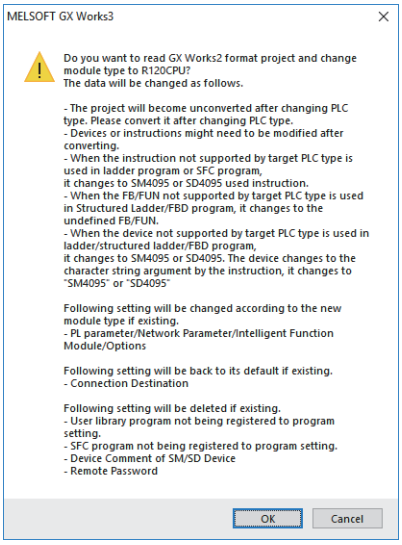
5. Select [Project] ⇨ [Open Other Data] ⇨ [Open Other Project] to open the GX Developer format project saved in Step 4.

6. The following message appears. Read the message, and click the [Yes] button.

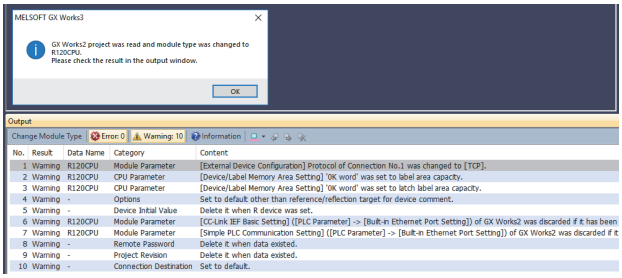
7. Select [Compile] ⇨ [Rebuild All].

8. Select [Project] ⇨ [Save As] to save the project.

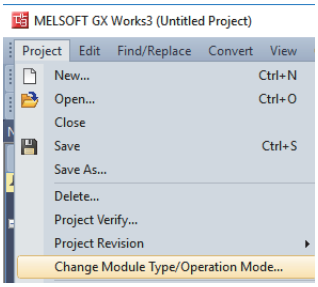
9. Select [Project] ⇨ [Open Other Format File] ⇨ [GX Works2 Format] ⇨ [Open Project] to open the GX Works2 format project saved in Step 8.



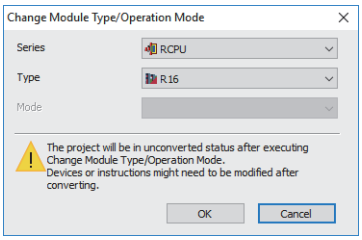
10. The following message appears. Read the message, and click the [OK] button.



11. The GX Works2 format project is opened in GX Works3. The changes in project data are displayed in the "Output" window. Change the parameters and program (devices and instructions used) as required.



12. Select [Project] ⇨ [Change Module Type/Operation Mode], and select a model to be actually used. After the project is replaced, the model is automatically set to R120CPU. The user needs to set the model actually used.



11.2 Instruction Replacement

After the project is replaced, instructions that are not supported by the RCPU are converted into those using SM4095/SD4095. For details on the converted instructions, refer to the following.

Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Fundamentals)
MELSEC-Q Series to MELSEC iQ-R Series Migration Guide

11.3 Parameter Replacement

MELSEC-A/QnA series uses GX Developer, but MELSEC iQ-R series uses GX Works3. Therefore, the user needs to review and re-set parameters.

For how to set parameters for the RCPU, refer to the following.

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

11.4 Special Relay and Special Register Replacement

Devices used as special relay and special register differ between the A/QnACPU and the RCPU.

The special relay and special register areas of the A/QnACPU are automatically converted into those of the RCPU when the project is replaced. At this time, the special relay and special register areas that are not supported by the RCPU are converted into SM4095/SD4095.

Search SM4095/SD4095, and modify the program as required.

The following table lists the special relay and special register areas of each CPU module.

Category	ACPU	QnACPU	QCPU	RCPU
Special relay	M9000 to M9255	SM0 to SM2047*1	SM0 to SM2047*1	SM0 to SM4096*1
Special register	D9000 to D9255	SD0 to SD2047*1	SD0 to SD2047*1	SD0 to SD4096*1

*1 In the QnACPU, QCPU, and RCPU, the special relay and special register areas have the same number but different meanings. For details, refer to the manual for the CPU module used.

11.5 Precautions for Replacement

Timer

The setting method, setting range, and processing method of the timer differ between the A/QnACPU and the RCPU. Modify the program as required.

Category		ACPU	QnACPU	RCPU
Low-speed timer	Measurement unit	Fixed to 100ms	In the range of 10 to 1000ms (Default: 100ms)	In the range of 1 to 1000ms (Default: 100ms)
	Specification method	[OUT Tn Kn]	[OUT Tn Kn]	
High-speed timer	Measurement unit	Fixed to 10ms	In the range of 0.1 to 100ms (Default: 10ms)	In the range of 0.01 to 100ms (Default: 10ms)
	Specification method	[OUT Tn Kn]	[OUT H Tn Kn]	
Retentive timer	Measurement unit	Fixed to 100ms	In the range of 10 to 1000ms (Default: 100ms)	In the range of 1 to 1000ms (Default: 100ms)
	Specification method	[OUT Tn Kn]	[OUT STn Kn]	
High-speed retentive timer	Measurement unit	None	In the range of 0.1 to 100ms (Default: 10ms)	In the range of 0.01 to 100ms (Default: 10ms)
	Specification method		[OUT H STn Kn]	
Setting range		1 to 32767		0 to 32767
Processing when 0 is set		Infinite (no timeout)	Instant-on	
Update processing of the current value, on/off processing of the contact		During the END processing	At execution of [OUT Tn Kn/OUT H Tn Kn]	

Counter

The processing method of the counter differs between the ACPU and the RCPU. Modify the program as required.

Category	ACPU	QnACPU	RCPU
Specification method	[OUT Cn Kn]		
Update processing of the current value, on/off processing of the contact	During the END processing	At execution of [OUT Cn Kn]	

Display instructions

The RCPU does not support display instructions. Consider replacing them as described below.

Category	ACPU	QnACPU	RCPU
PR	When M9049 is off, the characters before 00H are output. When M9049 is on, 16 characters are output.	When SM701 is off, the characters before 00H are output. When SM701 is on, 16 characters are output.	Consider replacing the instructions with a display unit or a touch panel.
PRC	A comment (16 characters) is output.	When SM701 is off, a comment (32 characters) is output. When SM701 is on, a comment (first 16 characters) is output.	

Index register

The index register area of the ACPU is "Z, Z1 to Z6, V, V1 to V6", but the area of the RCPU is "Z0 to Z20". (The device "V" is used as the edge relay in the RCPU.) The index register is replaced as follows when the project is converted.

Category	ACPU	RCPU
Index register	Z	Z0
	Z1 to Z6	Z1 to Z6
	V	Z7
	V1 to V6	Z8 to Z13

When the value other than Z/Z1 is used as an index modified device in the contact instructions of the timer and the counter in the ACPU, it is converted into SM4095. Modify the program.

Index register 32-bit specification

For the index register 32-bit specification, the ACPU uses Z for the last 16 bits and V, the same area number as Z, for the first 16 bits.

However, the RCPU uses LZ (long index register) or ZZ (using two points of index register).

When the index register 32-bit specification is used in the ACPU, modify the program.

File register

The storage location of the file register differs between the A/QnACPU and the RCPU.

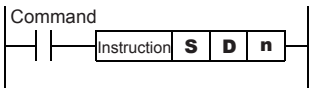
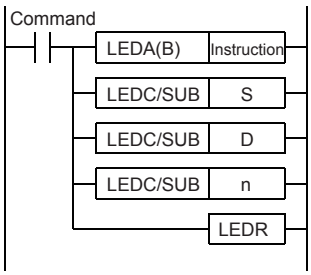
Category	ACPU	QnACPU	RCPU
Storage location	Memory cassette	Memory card (Two cards, four drives maximum)	Device/label memory, extended SRAM cassette
Maximum number of points	Depends on the memory cassette used.	1018K points × 2 (when two 2M memory cards are used)	R00/R01/R02CPU: 98304 points, R04/R08/R16CPU: Calculated by a formula.*1
Number of points per block	8K points	32K points	32K points

*1 The maximum value is [α + β].
α: <Capacity of the R**CPU> (R04CPU: 160K words, R08CPU: 544K words, R16CPU: 800K words), β: Capacity of the extended SRAM cassette
The value must be in the following range.
File register file storage area ≤ [α + β]

Dedicated instructions

The LEDA, LEDB, LEDC, SUB, and LEDR instructions used in the AnA/AnUCPU are converted into the same format as basic instructions and application instructions in the RCPU.

However, the dedicated instructions that are not supported by the RCPU are converted into SM4095. Modify the program.

Category	RCPU/QnACPU	AnACPU/AnUCPU
Instruction		 S, D, and n indicate the data used in instructions.

Main program and subprograms

A main program and its subprograms in the ACPU are converted into separate programs when the project is converted.

Boot operation (Writing programs to ROM)

The program memory of the RCPU is flash ROM, and therefore the boot operation is not required.

MEMO

REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
December 2019	L(NA)08666ENG-A	First edition

Japanese manual number: L08665-A

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]

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[Gratis Warranty Range]

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(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

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5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

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