MITSUBISHI

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

(Fundamentals)



SAFETY PRECAUTIONS

(Always read these instructions before using this equipment.)

Before using this product, please read this handbook and the relevant manuals introduced in this handbook carefully and pay full attention to safety to handle the product correctly.

In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".



Note that the $\underline{\bigwedge}$ CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

Please save this handbook to make it accessible when required and always forward it to the end user.

[Design Precautions]

Install a safety circuit external to the PLC that keeps the entire system safe even when there are problems with the external power supply or the PLC module. Otherwise, trouble could result from erroneous output or erroneous operation. (1) Outside the PLC, construct mechanical damage preventing interlock circuits such as emergency stop, protective circuits, positioning upper and lower limits switches and interlocking forward/ reverse operations. (2) When the PLC detects the following problems, it will stop calculation and turn off all output in the case of (a). In the case of (b), it will hold or turn off all output according to the parameter setting. Note that the AnS series module will turn off the output in either of cases (a) and (b). Q series module A series module (a) The power supply module has over current protection equipment and over voltage Output OFF Output OFF protection equipment. (b) The CPU module self-diagnosis functions, such Hold or turn off all output according to the parameter as the watchdog timer error, detect problems. Output OFF setting.

In addition, all output will be turned on when there are problems that the PLC CPU cannot detect, such as in the I/O controller. Build a fail safe circuit exterior to the PLC that will make sure the equipment operates safely at such times.

Refer to "LOADING AND INSTALLATION" in this manual for example fail safe circuits.

(3) Output could be left on or off when there is trouble in the outputs module relay or transistor. So build an external monitoring circuit that will monitor any single outputs that could cause serious trouble.

[Design Precautions]

DANGER

- When overcurrent which exceeds the rating or caused by short-circuited load flows in the output module for a long time, it may cause smoke or fire. To prevent this, configure an external safety circuit, such as fuse.
- Build a circuit that turns on the external power supply when the PLC main module power is turned on.

If the external power supply is turned on first, it could result in erroneous output or erroneous operation.

- When there are communication problems with the data link, refer to the corresponding data link manual for the operating status of each station.
 Not doing so could result in erroneous output or erroneous operation.
- When connecting a peripheral device to the CPU module or connecting a personal computer or the like to the intelligent function module / special function module to exercise control (data change) on the running PLC, configure up an interlock circuit in the sequence program to ensure that the whole system will always operate safely.

Also before exercising other control (program change, operating status change (status control)) on the running PLC, read the manual carefully and fully confirm safety.

Especially for the above control on the remote PLC from an external device, an immediate action may not be taken for PLC trouble due to a data communication fault.

In addition to configuring up the interlock circuit in the sequence program, corrective and other actions to be taken as a system for the occurrence of a data communication fault should be predetermined between the external device and PLC CPU.

• Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.

They should be installed 100 mm (3.94 inch) or more from each other.

Not doing so could result in noise that would cause erroneous operation.

• When controlling items like lamp load, heater or solenoid valve using an output module, large current (approximately ten times greater than that present in normal circumstances) may flow when the output is turned OFF to ON.

Take measures such as replacing the module with one having sufficient rated current.

[Installation Precautions]

• Use the PLC in an environment that meets the general specifications contained in this manual. Using this PLC in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of the product.
• While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, securely mount the module with the fixing hole as a supporting point.
Incorrect loading of the module can cause a malfunction, failure or drop.
When using the PLC in the environment of much vibration, tighten the module with a screw. Tighten the screw in the specified torque range.
Undertightening can cause a drop, short circuit or malfunction.
Overtightening can cause a drop, short circuit or malfunction due to damage to the screw or module.
 When installing extension cables, be sure that the base unit and the extension module connectors are installed correctly. After installation, check them for looseness.
Poor connections could cause an input or output failure.
 Securely load the memory card into the memory card loading connector. After installation, check for lifting
Poor connections could cause an operation fault.
 Completely turn off the externally supplied power used in the system before mounting or removing the module. Not doing so could result in damage to the product.Note that the module can be changed online (while power is on) in the system that uses the CPU module compatible with online module change or on the MELSECNET/H remote I/O station. Note that there are restrictions on the modules that can be changed online (while power is on), and each module has its predetermined changing procedure.
For details, refer to this manual and the online module change section in the manual of the module compatible with online module change.
• Do not directly touch the module's conductive parts or electronic components. Touching the conductive parts could cause an operation failure or give damage to the module.

[Wiring Precautions]

DANGER

• Completely turn off the externally supplied power used in the system when installing or placing wiring.

Not completely turning off all power could result in electric shock or damage to the product.

 When turning on the power supply or operating the module after installation or wiring work, be sure that the module's terminal covers are correctly attached. Not attaching the terminal cover could result in electric shock.

[Wiring Precautions]

- Be sure to ground the FG terminals and LG terminals to the protective ground conductor. Not doing so could result in electric shock or erroneous operation.
- When wiring in the PLC, be sure that it is done correctly by checking the product's rated voltage and the terminal layout.
 Connecting a power supply that is different from the rating or incorrectly wiring the product could result in fire or damage.
- External connections shall be crimped or pressure welded with the specified tools, or correctly soldered.

Imperfect connections could result in short circuit, fires, or erroneous operation.

- Tighten the terminal screws with the specified torque.
 If the terminal screws are loose, it could result in short circuits, fire, or erroneous operation.
 Tightening the terminal screws too far may cause damages to the screws and/or the module, resulting in fallout, short circuits, or malfunction.
- Be sure there are no foreign substances such as sawdust or wiring debris inside the module. Such debris could cause fires, damage, or erroneous operation.
- The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring.
 Do not peel this label during wiring.
 Before starting system operation, be sure to peel this label because of heat dissipation.

[Startup and Maintenance precautions]

- Do not touch the terminals while power is on.
 Doing so could cause shock or erroneous operation.
- Correctly connect the battery.
 Also, do not charge, disassemble, heat, place in fire, short circuit, or solder the battery.
 Mishandling of battery can cause overheating or cracks which could result in injury and fires.
- Switch off all phases of the externally supplied power used in the system when cleaning the module or retightening the terminal or module mounting screws.
 Not doing so could result in electric shock.
 Undertightening of terminal screws can cause a short circuit or malfunction.
 Overtightening of screws can cause damages to the screws and/or the module, resulting in fallout, short circuits, or malfunction.

[Startup and Maintenance precautions]

• The online operations conducted for the CPU module being operated, connecting the p	eripheral
device (especially, when changing data or operation status), shall be conducted after the	e manual has
been carefully read and a sufficient check of safety has been conducted.	
Operation mistakes could cause damage or problems with of the module.	
 Do not disassemble or modify the modules. 	
Doing so could cause trouble, erroneous operation, injury, or fire.	
 Use any radio communication device such as a cellular phone or a PHS phone more the 	nan 25cm
(9.85 inch) away in all directions of the PLC.	
Not doing so can cause a malfunction.	
• Completely turn off the externally supplied power used in the system before mounting of	or removing
the module. Not doing so could result in damage to the product.	
Note that the module can be changed online (while power is on) in the system that use	s the CPU
module compatible with online module change or on the MELSECNET/H remote I/O sta	ation.
Note that there are restrictions on the modules that can be changed online (while powe	er is on), and
each module has its predetermined changing procedure.	
For details, refer to this manual and the online module change section in the manual of the	ne module
compatible with online module change.	
 Do not mount/remove the module onto/from base unit more than 50 times (IEC61131-2 	e-compliant),
after the first use of the product. Failure to do so may cause the module to malfunction	due to poor
contact of connector.	
Do not drop or give an impact to the battery mounted to the module.	
Doing so may damage the battery, causing the battery fluid to leak inside the battery.	
If the battery is dropped or given an impact, dispose of it without using.	
 Before touching the module, always touch grounded metal, etc. to discharge static elect 	tricity from
human body, etc.	

• When disposing of this product, treat it as industrial waste.

[Transportation Precautions]

 When transporting lithium batteries, make sure to treat them based on the transport regulations. (Refer to QCPU User's Manual (Hardware Design, Maintenance and Inspection) for details of the controlled models.)

REVISIONS

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INTRODUCTION

1.1 Suggestions for Transition from Large-sized A/QnA Series to Q Series

1.1.1 Advantages of Transition to Q series

(1) Advanced performance of equipments (Tact time reduction).

The Q series includes faster operation processing speed, faster bus speed and dual processors of Super MSP (MELSEC SEQUENCE PROCESSOR) and general-purpose processor to provide approximately 5 times more efficient processing than the A series. This realizes more advanced performance of equipments.

(2) Compact control panel and space saving

As the Q series needs only 1/4 mounting area of the A series, it is possible to create more compact control panel.

(3) Improved maintainability

- (a) The high-speed program ports (USB port and high-speed serial port) enable the program reading/writing time to be greatly reduced, resulting in improvement of on-site maintainability.
- (b) As standard ROM (Flush ROM) is built-in the Q series, ROM operation can be performed (Without Battery) without a memory card.
- (c) As large files can be managed, it is possible to store conventional programs as correction history in memory.

1.1.2 Suggestions for Transition to Q series

(1) Gradual transition to Q series without modifying the wiring

Method: Replace the modules gradually by using the QA extension base (QA65B) and utilizing the property of the large-sized A series.

Advantage: The cost and workload for the transition can be divided, and yet the function extension can be continued during the transition.



Replacement procedures:

Step 1

- Mount the QCPU and module for function extension (if necessary) on a Q series main base, and then connect it to the QA extension base (QA65B). Mount the existing large-sized A modules such as the power supply module and I/O module etc. on the extension base. (The existing wiring is usable without modification.)
- Programs are automatically converted* by changing the PLC type from ACPU to QCPU using GX Developer. Even if the module arrangement is changed, the I/O can be assigned to the same number as before, which cuts out the need to modify the programs and line number for I/O module.
 - * Some instructions are not automatically converted. In case of intelligent function module or network module, programs and parameters need be changed.

Step 2

Replace existing modules on the A base with the Q series modules sequentially, and remove the QA extension base (QA65B) when all the modules have been replaced.



large-sized A power supply, I/O modules, etc can be used.

The existing wiring is usable without modification.

1 INTRODUCTION

(2) Transition to Q series by utilizing existing (terminal block) wiring

Method: Use the upgrade tool manufactured by Mitsubishi Electric Engineering Co., Ltd and the existing mounting hole/terminal block wiring.

Advantage: No need to process additional holes, and the existing wiring is usable.



Remove the existing terminal block (with wiring) and mount it onto the renewal tool (Base adapter).

Replacement procedures:

- Remove the existing large-sized A series together with the base, and use the existing mounting holes to mount the upgrade tool (Base adapter) manufactured by Mitsubishi Electric Engineering Co., Ltd. Then mount the Q series. (By mounting the base adapter, it is not necessary to redo the mounting holes.)
- Mount the upgrade tool (Conversion adapter) manufactured by Mitsubishi Electric Engineering Co., Ltd. on the mounted Q series I/O modules.
- Remove the terminal blocks wired from the existing large-sized A series I/O modules, and mount the blocks on the conversion adapter. (The existing wiring is usable.)
- Programs are automatically converted* by changing the PLC type from ACPU to QCPU using GX Developer. Even if the module arrangement is changed, the I/O can be assigned to the same number as before, which cuts out the need to modify the programs and slot number for I/O module.
 - * Some instructions are not automatically converted. In case of intelligent function module or network module, programs and parameters need be changed



The upgrade tool manufactured by Mitsubishi Electric Engineering Co., Ltd For products manufactured by Mitsubishi Electric Engineering Co., Ltd., contact your local sales office.

1.1.3 Precautions for Transition from Large-sized A/QnA Series to Q Series

- (a) Be sure to confirm its functions, specifications and instructions by referring the manual of the corresponding Q series module prior to use.
- (b) Be sure to check the operation of whole system before the actual operation.

2 CPU MODULE REPLACEMENT

2.1 List of Alternative CPU Module Models for Replacement

A/QnA seri disc	ies models to be continued		Q series alternative models
Product	Model	Model	Remark (restrictions)
	A1NCPU	Q02CPU	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.079µs PC MIX value: 0.2 → 4.4
	A1NCPUP21	Q02CPU QJ71LP21-25	 4) I/O points: 256 points → 4096 points 5) Program capacity: 6k steps → 28k steps 6) File register points: 0 point → 1017k points 7) Extension stage: 1 stage → 7 stage
	A1NCPUR21	Q02CPU QJ71BR11	 8) Applicable memory: 4KRAM/4KROM/4KEROM → built-in RAM/built-in flash ROM/memory card Q2MEM-** 9) Micro computer program: Available → Not available
	A2NCPU	Q02CPU	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.079µs PC MIX value:0.2 → 4.4
	A2NCPUP21	Q02CPU QJ71LP21-25	 4) I/O points: 512 points → 4096 points 5) Program capacity: 14k steps → 28k steps 6) File register points: 4k points → 1017k points
	A2NCPUR21	Q02CPU QJ71BR11	 7) Extension stage: 3 stages → 7 stages 8) Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 9) Micro computer program: Available → Not available
	A2NCPU-S1	Q02CPU	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.079µs PC MIX value: 0.2 → 4.4
CPU module	A2NCPUP21-S1	Q02CPU QJ71LP21-25	 4) I/O points: 1024 points → 4096 points 5) Program capacity: 14k steps → 28k steps 6) File register points: 4k points → 1017k points 7) Extension stage: 7 stages → 7 stages
	A2NCPUR21-S1	Q02CPU QJ71BR11	 a) Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 9) Micro computer program: Available → Not available
	A3NCPU	Q06HCPU	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.034µs PC MIX value: 0.2 → 10.3
	A3NCPUP21	Q06HCPU QJ71LP21-25	 4) I/O points: 2048 points → 4096 points 5) Program capacity: 30k × 2 steps → 60k steps 6) File register points: 8k points → 1017k points 7) Extension stage: 7 stages → 7 stages
	A3NCPUR21	Q06HCPU QJ71BR11	 a) Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 9) Micro computer program: Available → Not available
	A2ACPU	Q02CPU	 I/O control: Refresh only Processing speed (LD instruction): 0.2µs → 0.079µs PC MIX value: 0.9 → 4.4
	A2ACPUP21	Q02CPU QJ71LP21-25	4) I/O points: 512 points \rightarrow 4096 points 5) Program capacity: 14k steps \rightarrow 28k steps 6) File register points: 8k points \rightarrow 1017k points
	A2ACPUR21	Q02CPU QJ71BR11	 a) Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-**

A/QnA ser dis	ies models to be	Q series alternative models					
Product	Model	Model	Remark (restrictions)				
	A2ACPU-S1	Q02CPU	 I/O control: Refresh only Processing speed (LD instruction): 0.2µs → 0.079µs PC MIX value: 0.9 → 4.4 				
	A2ACPUP21-S1	Q02CPU QJ71LP21-25	 4) I/O points: 1024 points → 4096 points 5) Program capacity: 14k steps → 28k steps 6) File register points: 8k points → 1017k points 				
	A2ACPUR21-S1	Q02CPU QJ71BR11	 a) File register points. ok points → 1017k points 7) Extension stage: 7 stages → 7 stages 8) Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 				
	A3ACPU	Q06HCPU	1) I/O control: Refresh only 2) Processing speed (LD instruction): $0.15\mu s \rightarrow 0.034\mu s$ 3) PC MIX values 1.2 \rightarrow 10.2				
	A3ACPUP21	Q06HCPU QJ71LP21-25	4) I/O points: 2048 points \rightarrow 4096 points 5) Program capacity: 30k × 2 steps \rightarrow 60k steps				
	A3ACPUR21	Q06HCPU QJ71BR11	 6) File register points: 8k points → 1017k points 7) Extension stage: 7 stages → 7 stages 8) Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 				
	A2UCPU	Q02CPU	 I/O control: Refresh only Processing speed (LD instruction): 0.2μs → 0.079μs PC MIX value: 0.9 → 4.4 I/O points: 512 points → 4096 points Program capacity: 14k steps → 28k steps File register points: 8k points → 1017k points Extension stage: 3 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 				
CPU module	A2UCPU-S1	Q02CPU	 I/O control: Refresh only Processing speed (LD instruction): 0.2μs → 0.079μs PC MIX value: 0.9 → 4.4 I/O points: 1024 points → 4096 points Program capacity: 14k steps → 28k steps File register points: 8k points → 1017k points Extension stage: 7 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 				
	A3UCPU	Q06HCPU	 I/O control: Refresh only Processing speed (LD instruction): 0.15µs → 0.034µs PC MIX value: 1.2 → 10.3 I/O points: 2048 points → 4096 points Program capacity: 30k × 2 steps → 60k steps File register points: 8k points → 1017k points Extension stage: 7 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 				
	A4UCPU	Q12HCPU	 I/O control: Refresh only Processing speed (LD instruction): 0.15µs → 0.034µs PC MIX value: 1.2 → 10.3 I/O points: 4096 points → 4096 points Program capacity: 30k × 4 steps → 124k steps File register points: 8k points → 1017k points Extension stage: 7 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** 				
	A1NCPUP21-S3	Q02CPU QJ71LP21G	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.079µs PC MIX value: 0.2 → 4.4 I/O points: 256 points → 4096 points Program capacity: 6k steps → 28k steps File register points: 0 point → 1017k points Extension stage: 1 stage → 7 stage Applicable memory: 4kRAM/4kROM/4kEROM → built-in RAM/built-in flash ROM/memory card Q2MEM-** Micro computer program: Available → Not available 				

2 CPU MODULE REPLACEMENT

A/QnA ser dis	ies models to be		Q series alternative models
Product	Model	Model	Remark (restrictions)
	A2NCPUP21-S3	Q02CPU QJ71LP21G	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.079µs PC MIX value:0.2 → 4.4 I/O points: 512 points → 4096 points Program capacity: 14k steps → 28k steps File register points: 4k points → 1017k points Extension stage: 3 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** Micro computer program: Available → Not available
	A2NCPUP21-S4	Q02CPU QJ71LP21G	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.079µs PC MIX value: 0.2 → 4.4 I/O points: 1024 points → 4096 points Program capacity: 14k steps → 28k steps File register points: 4k points → 1017k points Extension stage: 7 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** Micro computer program: Available → Not available
	A3NCPUP21-S3	Q06HCPU QJ71LP21G	 I/O control: Refresh/Direct switching → Refresh only Processing speed (LD instruction): For refresh 1.0µs → 0.034µs PC MIX value: 0.2 → 10.3 I/O points: 2048 points → 4096 points Program capacity: 30k × 2 steps → 60k steps File register points: 8k points → 1017k points Extension stage: 7 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** Micro computer program: Available → Not available
CPU module	A2ACPUP21-S3	Q02CPU QJ71LP21G	 I/O control: Refresh only Processing speed (LD instruction): 0.2µs → 0.079µs PC MIX value: 0.9 → 4.4 I/O points: 512 points → 4096 points Program capacity: 14k steps → 28k steps File register points: 8k points → 1017k points Extension stage: 3 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** Micro computer program: Available → Not available
	A2ACPUP21-S4	Q02CPU QJ71LP21G	 I/O control: Refresh only Processing speed (LD instruction): 0.2µs → 0.079µs PC MIX value: 0.9 → 4.4 I/O points: 1024 points → 4096 points Program capacity: 14k steps → 28k steps File register points: 8k points → 1017k points Extension stage: 7 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** Micro computer program: Available → Not available
	A3ACPUP21-S3	Q06HCPU QJ71LP21G	 I/O control: Refresh only Processing speed (LD instruction): 0.15µs → 0.034µs PC MIX value: 1.2 → 10.3 I/O points: 2048 points → 4096 points Program capacity: 30k × 2 steps → 60k steps File register points: 8k points → 1017k points Extension stage: 7 stages → 7 stages Applicable memory: Depending on the memory cassette → built-in RAM/built-in flash ROM/memory card Q2MEM-** Micro computer program: Available → Not available

2 CPU MODULE REPLACEMENT

A/QnA ser disc	ies models to be continued		Q series alternative models
Product	Model	Model	Remark (restrictions)
	Q2ACPU	Q02CPU	 I/O control: Refresh only Processing speed (LD instruction): 0.2µs → 0.079µs PC MIX value: 1.3 → 4.4 I/O points: 512 points → 4096 points Program capacity: 28k steps → 28k steps File register points: 1018k points → 1017k points Fite register points: 3 stages → 7 stages Number of memory cards: 2 cards → 1 card Max. memory card SRAM capacity: 2M bytes × 2 cards → 2M bytes × 1 card
	Q2ACPU-S1	Q06HCPU	 I/O control: Refresh only Processing speed (LD instruction): 0.2µs → 0.034µs PC MIX value: 1.3 → 10.3 I/O points: 1024 points → 4096 points Program capacity: 60k steps → 60k steps File register points: 1018k points → 1017k points Extension stage: 7 stages → 7 stages Number of memory cards: 2 cards → 1 card Max. memory card SRAM capacity: 2M bytes × 2 cards → 2M bytes × 1 card
CPU module	Q3ACPU	Q12HCPU	 I/O control: Refresh only Processing speed (LD instruction): 0.15µs → 0.034µs PC MIX value: 1.8 → 10.3 I/O points: 2048 points → 4096 points Program capacity: 92k steps → 124k steps File register points: 1018k points → 1017k points Extension stage: 7 stages → 7 stages Number of memory cards: 2 cards → 1 card Max. memory card SRAM capacity: 2M bytes × 2 cards → 2M bytes × 1 card
	Q4ACPU	Q12HCPU	 I/O control: Refresh only Processing speed (LD instruction): 0.075µs → 0.034µs PC MIX value: 3.8 → 10.3 I/O points: 4096 points → 4096 points Program capacity: 124k steps → 124k steps File register points: 1018k points → 1017k points Extension stage: 7 stages → 7 stages Number of memory cards: 2 cards → 1 card Max. memory card SRAM capacity: 2M bytes × 2 cards → 2M bytes × 1 card
	A2CCPU	Q02CPU QJ61BT11N	
	A2CCPUP21	Q02CPU QJ61BT11N QJ71LP21-25	1) I/O control: Refresh only 2) Processing speed (LD instruction): $1.25\mu s \rightarrow 0.079\mu s$
	A2CCPUR21	Q02CPU QJ61BT11N QJ71BR11	 3) PC MIX value: 0.1 → 4.4 4) I/O points: 512 points → 4096 points 5) Program capacity: 8k steps → 28k steps
	A2CCPUC24-PRF	Q02CPU QJ61BT11N QJ71C24N	 6) File register points: 4k points → 1017k points 7) Remote I/O: MINI-S3 → CC-Link 8) Applicable memory: built-in RAM/4KROM/8KROM/16KROM
	A2CCPUC24	Q02CPU QJ61BT11N QJ71C24N	→ built-in KAM/built-in flash KOM/memory card Q2MEM-** 9) Micro computer program: Available → Not available
	A2CJCPU-S3	Q02CPU	

2.2 CPU Module Specifications Comparisons

			A	/QnA serie	es		Q se	ries		
Function	Contents	A2CCPU	AnNCPU	AnACPU	AnUCPU	QnACPU	High Performance model *1	Process *2	Precaution for replacement	Reference section
Control method	Repetitive operation of stored program	0	0	0	0	0	0	0	-	-
I/O control method	Refresh mode/ Direct mode	0	O *3	0 *4	0 *4	0 *4	0 *4	0 *4	Use direct I/O instructions to input/output in the direct mode, as the Q series supports the refresh mode only.	Section 7.7.2
Program- ming lan- guage	Language dedicated to sequence control (Relay symbol, Logic symbol, MELSAP language)	0	0	0	0	0	0	0	The MELSAP language for QnA/ Q series is MELSAP3 and that for A series is MELSAP- II.	Section 7.6
Process- ing speed	Sequence instractions (µs/step)	1.25	1.0	0.15	0.15	0.075	0.034	0.034	-	-
Watch- dog timer (WDT)	Watchdog timer (WDT) (ms)	10 to 2000	10 to 2000	200	200	5 to 2000	10 to 2000	10 to 2000	_	-
Memory capacity	User memory capacity (bytes)	32k (Built-in RAM)	Max. 448k (Memory casette)	Max. 768k (Memory casette)	Max. 1024k (Memory casette)	Max. 2036k × 2 (SRAM card)	Max. 2M (SRAM card)	Max. 2M (SRAM card)	A memory cassette is required for the A series as user memory, while the user memory is included in the Q series as standard equipment.	Section 2.4.1
	Sequence program (steps)	Max. 8k	Max. 30k × 2	Max. 30k × 2	Max. 30k × 4	Max. 124k	Max. 252k	Max. 252k	-	-
Program capacitiy	Microcomputer program (bytes)	Max. 14k	Max. 58k	×	×	×	×	×	The AnA, AnU, QnA and Q series do not include microcomputer program. Therefore, consider use of sequence program, etc as the substitution.	_
Number of occu- pied I/O points	Number of I/O points (points) *5	512	256 to 2048	512 to 2048	512 to 4096	512 to 4096	4096	4096	_	-

O: Usable \triangle : Partially different in spec. (eg. setting method) ×: Not usable

*1 "High Performance model" is the generic term of Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 "Process" is the generic term of Q12PHCPU and Q25PHCPU.

*3 Direct I/O is also selectable with the I/O control method setting switch.

*4 Basically, only the refresh mode is applicable, but some instructions/devices can be input/output in the direct mode.

*5 This number means the number of applicable points for the access to actual I/O modules.

2 CPU MODULE REPLACEMENT

				A/OnA series					in spec. (e	g. setting method) ×.	NUL USADIE
				A	/QnA serie	es		Q se	ries	Descention for	D-(
Function	Cor	ntents	A2CCPU	AnNCPU	AnACPU	AnUCPU	QnACPU	High Performance model *1	Process *2	Precaution for replacement	Reference section
	Input dev (points) *	vice (X) 6	512	256 to 2048	512 to 2048	8192	8192	8192	8192	_	-
	Output de (points) *	evice (Y) 6	512	256 to 2048	512 to 2048	8192	8192	8192	8192	-	-
	Internal r (points)	elay (M)					8192	8192	8192	-	-
	Latch relay (L) (points)		Total 2048	Total 2048	Total 8192	Total 8192	8192	8192	8192	-	-
	Step rela (points)	y (S)					8192 *7	8192 *7	8192 *7	-	-
	Annuncia (points)	ator (F)	256	256	2048	2048	2048	2048	2048	-	-
	Edge rela (points)	ay (V)	×	×	×	×	2048	2048	2048	-	-
	Link relay (points)	y (B)	1024	1024	4096	8192	8192	8192	8192	-	-
	Timer (T) (points)		256	256	2048	2048	2048	2048	2048	-	-
	Counter (C) (points)		256	256	1024	1024	1024	1024	1024	-	-
No. of	Data regi (points)	ister (D)	1024	1024	6144	8192	12288	12288	12288	-	-
device	Link register (W) (points)		1024	1024	4096	8192	8192	8192	8192	-	-
ponno	File register (R) (points)		4096	8192	8192	8192	32768	32768	32768	-	-
	Accumulater (A) (points)		2	2	2	2	×	×	×	Accumulators are converted to the special registers (SD718, SD719) upon $A \rightarrow Q$ program conversion as they are not included in the QnA and Q series.	Section 7.7.7
	Index regis- ter	(Z) (points)	1	1	7	7	16	16	16	-	-
		(V) (points)	1	1	7	7	×	×	×	This is used as edge relay for the QnA and Q series	-
	Nesting ((points)	N)	8	8	8	8	15	15	15	-	-
	Pointer (l (points)	P)	256	256	256	256	4096	4096	4096	-	-
	Special r (points)	elay (M)	256	256	256	256	2048	2048	2048	-	-
	Special r (points)	egister (D)	256	256	256	256	2048	2048	2048	-	-
Comment Points	Commen (points) *	it points 8	Max. 1600	Max. 4032	Max. 4032	Max. 4032	Max. approx. 50k	Max. approx. 50k	Max. approx. 50k	-	-
Self-diag- nostics	Watchdog timer (WDT), Memory error detection, CPU error detection, Battery error detection		0	0	0	0	0	0	0	-	-
Operation mode at error occurrence	ration le at Stop/Continue set- r ting urrence		0	0	0	0	0	0	0	-	-
Output mode switching at changing from STOP to RUN	Re-output tion statut STOP/Se output af tion exect	at opera- is before election of ter opera- eution	0	0	0	0	0	0	0	_	_

nt in a method) Not usable

*1 "High Performance model" is the generic term of the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 "Process" is the generic term of the Q12PHCPU and Q25PHCPU.

*6 This number means the number of usable points on the program.

*7 The step replays (S) of the QnA and Q series are dedicated to the SFC.

*8 Comment points are the points that can be written to CPU.

2.3 CPU Module Functional Comparisons

2.3.1 Functional Comparisons Between A2CCPU, AnNCPU and Q Series CPU

			A se	eries	Q se	eries		
	Function	Contents	A2CCPU	AnNCPU	High Performance model *1	Process *2	Precaution for replacement	Reference section
	Constant scan	Executes the sequence program at constant time intervals regardless of the processing time of the program.	0	0	Δ	Δ	Set this function with the special register (D9020) for A series, and with parameters for Q series.	-
	Latch (power backup)	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.	0	0	0	0	-	-
Control	Remote RUN/STOP	Executes the remote RUN/ STOP using external switches and peripheral devices.	0	0	0	0	-	-
	PAUSE	Stops operations while holding the output status.	0	0	0	0	Set the PAUSE enable flag with the special relay (M9040) for A series, and with the special relay (SM206) for Q series.	Section 7.4.3
	Interrupt processing	Executes the program that corresponds to the cause when an interrupt cause occurs.	0	0	Δ	Δ	For A series, an interrupt program is required for each main program and sub- program separately. For Q series, create only one interrupt program to share between the two programs.	Section 7.7.9
	Microcom- puter 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.	0	0	×	×	Consider use of sequence program, etc., as the substitution. The Q series does not include the instructions by a utility package. Therefore, modify the corresponding instructions of QCPU and substitute them.	-
	Display pri- ority of ERROR LED	The settings for ON/OFF of ERROR LED at the occurrence of error.	0	×	0	0	Target errors vary by model, but there is no functional difference.	-
	ROM opera- tion	Enables operation with parameters and programs stored in ROMs in order not to lose user programs due to battery exhaustion.	0	0	Δ	Δ	When performing ROM operation in the Q series, use the boot run function to read the sequence programs stored in the standard ROM built in the CPU or memory card into the program memory built in the CPU.	Section 7.7.11
	Data protec- tion function (System protect, Key- word regis- tration/ Password registration)	Prohibits peripheral devices from reading/writing to programs and comments in the memory cassettes, the memory card, and built-in memory, etc. of a CPU module.	0	0	Δ	Δ	The Q series prohibits each file from being read/written by password registration, whereas the A series prohibits the parameters and programs from being read/ written to the user memory by keyword registration.	Section 2.4.2
	The settings of output status at changing from STOP to RUN	The settings for the output status at changing from STOP to RUN (Y) between "re-output operation status before STOP" and "output after operation execution".	0	0	0	0	In case of transition from the A series, it is necessary to re-set the parameters.	_

Outloopla A. Dertially different in analy (an aptting method) ×. Not usable

*1 "High Performance model" is the generic term of Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 *3 "Process" is the generic term of Q12PHCPU and Q25PHCPU.

Device numbers are converted upon the PLC type change by GX Developer. (Refer to Section 7.4)

2 CPU MODULE REPLACEMENT

			y different in	spec. (eg. setting method)	<: Not usable			
			A se	eries	Q se	eries		
	Function	Contents	A2CCPU	AnNCPU	High Performance model *1	Process *2	Precaution for replacement	Reference section
Control	Clock function	A CPU includes a clock, of which data can be read and written. The clock data consists of year, month, date, hour, minute, second and a day of the week.	O*4	0	Δ	Δ	The Q series handles the four digits of the year (western calendar), whereas the A series handles only the last two digits.	_
	Write during RUN	Changes (writes to) the program of a CPU in the RUN mode.	0	0	O*5	O*5	For the Q series, it is necessary to set the reserved capacity for the write during RUN in advance.	Section 2.4.3
	Status latch	Stores the data of all devices in the memory cassette or memory card at the occurrence of an error for monitoring by the peripheral device.	0	○*6	×	×	The Q series does not include the status latch function.	_
Debug	Sampling trace	Stores the data of specified devices at the specified intervals for monitoring by the peripheral device.	0	○*6	0*7	0*7	The SRAM card is required to execute the sampling trace in the Q series.	-
	Step operation	Stops the execution of a sequence program at the specified step.	×	0	×	×	The Q series does not include the step operation function. Consider the debug with GX Simulator.	-
	Off-line switch	Skips the devices used for OUT instruction in the operation processing of sequence program.	0	0	×	×	The Q series does not include the off-line switch function.	-
tenance	Online I/O module replacement	Enables I/O modules to be replaced while the CPU is in RUN	×	0	×	0	Replace I/O module while CPU is in RUN. (Only supported for Process CPU)	-
Maint	Self- diagnostics function	Executes self-diagnostics to check for errors and stop a CPU, etc.	0	0	0	0	Error codes differ between the A series and Q series.	-

*1 "High Performance model" is the generic term of Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 "Process" is the generic term of Q12PHCPU and Q25PHCPU.

*4 Only A2CCPUC24 (-PRF) is applicable. A2CJCPU-S3 and A2CCPU (P21/R21) are not.

*5 It is necessary to set the reserved capacity for the write during RUN in advance. (Default-set to 500 steps.)

*6 The A1NCPU (P21/R21) is not applicable.

*7 The SRAM card is required.

2.3.2 Functional Comparisons Between AnACPU, AnUCPU and Q Series CPU

			A se	eries	Q se	eries		
	Function	Contents	AnACPU	AnUCPU	High Performance model *1	Process *2	Precaution for replacement	Reference section
	Constant scan	Executes the sequence program at constant time intervals regardless of the processing time of the program.	0	0	Δ	Δ	Set this function with the special register (D9020) for A series, and with parameters for Q series.	-
-	Latch (power backup)	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.	0	0	0	0	-	_
	Remote RUN/ STOP	Executes the remote RUN/ STOP using external switches and peripheral devices.	0	0	0	0	-	_
	PAUSE	Stops operations while holding the output status.	0	0	0	0	Set the PAUSE enable flag with the special relay (M9040) for A series, and with the special relay (SM206) for Q series.	Section 7.4.3
	Interrupt processing	Executes the program that corresponds to the cause when an interrupt cause occurs.	0	0	Δ	Δ	For A series, an interrupt program is required for each main program and sub-program separately. For Q series, create only one interrupt program to share between the two programs.	Section 7.7.9
ntrol	Display priority of ERROR LED	The settings for ON/OFF of ERROR LED at the occurrence of error.	0	0	0	0	Target errors vary by model, but there is no functional difference.	-
CO	ROM operation	Enables operation with parameters and programs stored in ROMs in order not to lose user programs due to battery exhaustion.	0	0	Δ	Δ	When performing ROM operation in the Q series, use the boot run function to read the sequence programs stored in the standard ROM built in the CPU or memory card into the program memory built in the CPU.	Section 7.7.11
	Data protection function (System protect, Keyword registration/ Password registration)	Prohibits peripheral devices from reading/writing to programs and comments in the memory cassettes, the memory card, and built-in memory, etc. of a CPU module.	0	0	Δ	Δ	The Q series prohibits each file from being read/written by password registration, whereas the A series prohibits the parameters and programs from being read/written to the user memory by keyword registration.	Section 2.4.2
	The settings of output status at changing from STOP to RUN	The settings for the output status at changing from STOP to RUN (Y) between "re-output operation status before STOP" and "output after operation execution".	0	0	0	0	In case of transition from the A series, it is necessary to re-set the parameters.	-
	Clock function	A CPU includes a clock, of which data can be read/ written. The clock data consists of year, month, date, hour, minute, second and a day of the week.	0	0	Δ	Δ	The Q series handles the four digits of the year (western calendar), whereas the A series handles only the last two digits.	-

O: Usable \triangle : Partially different in spec. (eg. setting method) ×: Not usable

*1 "High Performance model" is the generic term of Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 "Process" is the generic term of Q12PHCPU and Q25PHCPU.

*3 Device numbers are converted upon the PLC type change by GX Developer. (Refer to Section 7.4)

2 CPU MODULE REPLACEMENT

MELSEC

				O: Usable	\triangle : Partially	/ different in s	spec. (eg. setting method)	×: Not usable
			A se	eries	Q s	eries		
	Function	Contents	AnACPU	AnUCPU	High Performance model *1	Process *2	Precaution for replacement	Reference section
	Write during RUN	Changes (writes to) the program of a CPU in the RUN mode.	0	0	O*4	O*4	For the Q series, it is necessary to set the reserved capacity for the write during RUN in advance.	Section 2.4.3
Debug	Status latch	Stores the data of all devices in the memory cassette or memory card at the occurrence of an error for monitoring by the peripheral device.	0	0	×	×	The Q series does not include the status latch function.	_
	Sampling trace	Stores the data of specified devices at the specified intervals for monitoring by the peripheral device.	0	0	O*5	O*5	The SRAM card is required to execute the sampling trace in the Q series.	-
	Step operation	Stops the execution of a sequence program at the specified step.	0	0	×	×	The Q series does not include the step operation function. Consider the debug with GX Simulator.	-
	Online I/O module replacement	Enables I/O modules to be replaced while the CPU is in RUN	0	0	×	0	Replace I/O module while CPU is in RUN. (Only supported for Process CPU)	-
intenance	Self- diagnostics function	Executes self-diagnostics to check for errors and stop a CPU, etc.	0	0	0	0	Error codes differ between the A series and Q series.	-
Main	Error history	Stores errors detected by the diagnostics function into the CPU. Error details can be monitored from peripheral devices.	0	0	0	0	The Q series can store error history data in a memory card (up to 100 errors) as well as in the built-in memory.	-

*1 "High Performance model" is the generic term of Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 "Process" is the generic term of Q12PHCPU and Q25PHCPU.

*4 It is necessary to set the reserved capacity for the write during RUN in advance. (Default-set to 500 steps.)

*5 The SRAM card is required.

2.3.3 Functional Comparisons Between QnACPU and Q series CPU

O: Usable	\triangle : Partially different in spec. (eg. setting method)	×: Not usable

			QnA series	Q se	eries		
	Function	Contents	QnACPU	High Performance	Process *2	Precaution for replacement	Reference section
	Constant scan	Executes the sequence program at the constant time intervals regardless of the processing time of the program.	0	Model *1	0	-	-
	Latch (power backup)	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.	0	0	0	_	-
	Remote RUN/ STOP	Executes the remote RUN/STOP using external switches and peripheral devices.	0	0	0	-	-
	PAUSE	Stops operations while holding the output status.	0	0	0	_	-
	Interrupt processing	Executes the program that corresponds to the cause when an interrupt cause occurs.	0	0	0	-	_
	Display priority of ERROR LED	The settings for ON/OFF of ERROR LED at the occurrence of error.	0	0	0	Target errors vary by model, but there is no functional difference.	-
	File management	Manages all of parameters, sequence programs, device comments, file registers, etc as files.	0	0	0	Memory configuration and data to be stored differ between the QnA series and Q series.	Section 2.4.1
	Structured program	Selects a suitable execution type for program application, and divides each program by designer, process or others.	0	0	0	_	-
Control	I/O assignment	Performs the I/O assignment to any individual module regardless of its mounted position.	0	Δ	Δ	When using a base unit with other than 8 slots, set the number of slots with the parameter (I/O assignment setting).	Section 2.4.4
	Boot run (ROM operation)	Executes the sequence program after reading it from the memory card to the CPU built-in memory when the CPU goes to RUN mode.	0	0	0	Memory configuration and data to be stored differ between the QnA series and Q series.	Section 2.4.1
	Data protection (System protect, Keyword registration/ Password registration)	Prohibits peripheral devices to read/write the programs and comments in the CPU built-in memory, memory cassette, or memory card.	0	Δ	Δ	The Q series provides read/ write protection for each file with password registration. The QnA series prohibits parameters/programs read/ write from/to the user memory with keyword registration.	Section 2.4.2
	Initial device value	Sets an initial value of device memory, file registers, and special function modules, etc. when the CPU has become RUN status.	0	0	0	Memory configuration and data to be stored differ between the QnA series and Q series.	Section 2.4.1
	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.	0	0	0	Resetting parameters is required to replace the QnA series with the Q series.	-
-	Number of general data processing	Sets the number of general data processing executed in one END operation.	0	Δ	Δ	For the Q series use COM instructions or set the communication reserved time with special register (SD315) if necessary.	-
	Clock function	A CPU 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.	0	Δ	Δ	The Q series uses 4-digit year of the western calendar while the QnA series uses the lower 2-digit year.	-

*1 "High performance model" is the generic term of Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 "Process" is the generic term of Q12PHCPU and Q25PHCPU.

2 CPU MODULE REPLACEMENT

Function			QnA Q series				
		Contents	QnACPU	High Performance model *1	Process *2	Precaution for replacement	Reference section
	Write during RUN	Changes (writes to) the program of a CPU in the RUN mode.	O*3	O*3	O*3	For the Q series, it is necessary to set the reserved capacity for the write during RUN in advance.	Section 2.4.3
	Status latch	Stores the data of all devices in the memory cassette or memory card at the occurrence of an error for monitoring by the peripheral device.	O*5	×	×	The Q series does not include the status latch function.	_
	Sampling trace	Stores the data of specified devices at the specified intervals for monitoring by the peripheral device.	O*4	O*4	O*4	-	_
	Program trace	Collects the execution status of specified programs and steps, and stores them in a file.	O *4 *5	×	×	The Q series does not incorporate the program trace function.	-
Debug	Simulation function	Detaches I/O modules or special modules from the CPU module and test-operates the program upon the step operation.	O*5	×	×	The Q series does not have the simulation function. Performing debugging with GX Simulator is recommended.	_
	Step operation	Stops the execution of a sequence program at the specified step.	0	×	×	The Q series does not include the step operation function. Consider the debug with GX Simulator.	_
	Execution time measurement (Program list monitor, scan time measurement)	Measures the operation time for each program.	0	0	0	_	-
	Module access interval reading	Monitors the access interval of special function modules or peripheral devices.	0	0	0	-	_
Maintenance	Online I/O module replacement	Enables I/O modules to be replaced while the CPU is in RUN.	0	×	0	Replace I/O module while CPU is in RUN. (Only supported for Process CPU)	-
	Self- diagnostics	Diagnoses wherher any error has occurred, detects errors and stop a CPU, etc.	0	0	0	Error codes differ between the A series and Q series.	-
	Error history	Stores errors, which are detected with the diagnostics function, in a CPU or memory card. The stored history can be monitored with peripheral devices.	0	0	0	_	_

O: Usable △: Partially different in spec. (eg. setting method) ×: Not usable

*1 "High performance model" is the generic term of Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU and Q25HCPU.

*2 "Process" is the generic term of Q12PHCPU and Q25PHCPU.

*3 It is necessary to set the reserved capacity for the write during RUN in advance. (Default-set to 500 steps.)

*4 The SRAM card is required.

*5 SW \Box IVD/NX-GPPQ is required. This is not applicable to GX Developer.

2.4 Precautions for CPU Module Replacement

2.4.1 Memory for CPU Module

The memory configuration is shown in (1). Examine the following points depending on the memory capacity before replacement and applications.

- Memory to store
- To use or not use a memory card

(1) Memory configuration and data that can be stored



(2) Capacity of each memory

The following table shows the memory of CPU modules, in which the user program, etc. is stored, together with its capacity.

Item		Model			
		A series	QnA series	Q series	
Memory cassette		Max. 1024k bytes	-	-	
		Max. 32k bytes	Max. 496k bytes	Max. 1008k bytes	
Built-III KAW		(for A2CCPU only)	(Program memory)	(Program memory)	
	SRAM	Max 2M bytes	Max 2M bytes		
	card	_	Max. ZIM Dytes	Max. ZIVI Dytes	
Memory card	EEPROM	_	Max 512k bytes		
Welliory caru	card	_	Wax. STZK Dyles	_	
	Flash card	-	Max. 1M bytes	Max. 4M bytes	
	ATA card	-	-	Max. 32M bytes	
Standard RAM		_	_	Max. 256k bytes	
Standard ROM		_	_	Max. 1008k bytes	

2.4.2 Keyword Registration and Password Registration

The Q series prohibits reading from/writing to programs, etc. when a password is registered, as does the A/QnA series with keyword registration. Available functions are described below.

Itom	Model			
nem	A series QnA series		Q series	
Prohibiting method for writing to program, etc.	The following attribute can be set to the specified memory. • Prohibition of read/write	 Either of the following attributes can be set to the specified memory (drive). Prohibition of read/write display Prohibition of write 	 Batch password setting for all files provides the equivalent function. (Supplement) By using a password, the following attributes can be set to each specified file of the specified memory (drive). Prohibition of read/write display Prohibition of write 	

2.4.3 Write During RUN

To execute the write during RUN, it is necessary to, reserve the program capacity for increase upon the write during RUN in advance.

(1) A series

The program capacity is decided by the parameter (memory capacity setting), and can be increased within the capacity range upon the write during RUN.

(2) QnA/Q series

It is necessary to set the program capacity for increase upon the write during RUN at the PLC write. (This set capacity is called as the write during RUN reserved step. By default, 500 steps are reserved.)

The following shows the setting screen for Allocate memory for Write during RUN as a reference.

Write to PLC	×
Connecting interface COM2 <> PLC module PLC Connection Network No. @ Station No. Host PLC type Q25PH	
File selection Device data Program Common Local Selected File type Range type Start End Alloc,	Execute
MAIN Ladder Whole range	Password setup
	Transfer setup Keyword setup
Allocate memoru for 'Write during BUN'	Remote operation
Read file type Specifying an identical step to all files. E Reading left capacity at the same time.	Format PLC memory
Merge peripheral statement/note Initial free space	Create title
Free space volume volume	Bytes

2.4.4 No. of Base I/O Slots

The following table indicates how the No. of base I/O slots is allocated for each series.

Itom	Model			
	A series	QnA series	Q series	
	Fixed to 8 slots regardless of the actual number.		To use a base unit other than 8 slots, set the number of slots.	
No. of base I/O slots			(Supplement) Default follows the actual slot number. (Setting changeable with parameter)	

The following gives an example of replacing the A35B+A68B system (Default parameter is used) with the Q35B+Q68B system.



2.4.5 Programming Tool and Connection Cable for Q Series CPU

(1) Programming tool for Q series CPU

The programming for the Q series CPU is performed with GX Developer. Note that the following programming software packages are not applicable.

Compatible CPU	Software package model
	SWIDSRXV-GPPA
ACPU	SWDIVD-GPPA
	SWDNX-GPPA
	SWDIVD-GPPQ
QIACEU	SWDNX-GPPQ

(2) Connection cable for Q series CPU

There are two connecting methods, the RS232 connection and USB connection, for the connection between the personal computer (which GX Developer is installed) and the Q series CPU. The connection availability for the CPU model is shown in the following table.

Note that the RS232/RS422 conversion cable for the A/QnA series CPU are not applicable.

CPU model	RS232 connection	USB connection
Q00JCPU		
Q00CPU		Unavailabla
Q01CPU		Ullavallable
Q02CPU		
Q02HCPU	Available*1	
Q06HCPU	Avaliable I	
Q12HCPU		Aveilable*0
Q12PHCPU		Available 2
Q25HCPU		
Q25PHCPU		

*1 Applicable cable is the QC30R2.

*2 Use the USB cable which conforms to the USB Standard Rev.1.1.

Refer to GX Developer Operating Manual for details.
3.1 List of Alternative Models for I/O Module

A/QnA series models t	o be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
Input module	AX10	QX10	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Not changed Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed S) Functions: Not changed
	AX11	QX10	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16 × 2) 4) Specifications Rated input voltage: Not changed Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed S) Functions: Not changed
	AX11EU	QX10	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16 × 2) 4) Specifications Rated input voltage: Not changed Rated input voltage: Not changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed S) Functions: Not changed
	AX20	QX28	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Changed 4) Specifications Rated input voltage: Not changed Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: Not changed

A/QnA series models to be discontinued		Q series alternative models		
Product	Model	Model	Remark (restrictions)	
Input module	AX21	QX28	 1) External wiring: Changed 2) Number of slots: Changed (4 modules required) 3) Program Number of occupied I/O points: Changed 4) Specifications Rated input voltage: Changed Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed S) Functions: Not changed Number of slots: Changed A specifications Rated input current: Changed ON voltage/OFF current: Changed OFF voltage/OFF current: Changed S) Functions: Not changed 	
	AX21EU	QX28	 External wiring: Changed External wiring: Changed Number of slots: Changed (4 modules required) Program Number of occupied I/O points: Changed Specifications	
	AX31	None	Alternating with QX41 is recommended. [When applying DC input] 1) External wiring: Changed (Connector terminal block must be converted.) 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: Not changed *1: When 12VDC is required, use QX71. [When applying AC input] Convert the 12/24VAC to DC externally before input- ting to QX41.	
	AX31-S1	QX41	 External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications Rated input voltage: Not changed Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed Functions: Not changed 	
	AX40	QX40	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed S) Functions: Not changed *1: When 12VDC is required, use QX70. 	

A/QnA series models t	o be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
	AX40-UL	QX40	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed
Input module			 4) Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: Not changed
	AX41	QX41	 *1: When 12VDC is required, use QX70. 1) External wiring: Changed (Connector terminal block must be converted.) 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: Not changed
	AX41-S1	QX41-S1	 Within 12VDC is required, use QX71. External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications Rated input voltage: Changed (12VDC not applica- ble) Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed Functions: Not changed
	AX41-UL	QX41	 1) External wiring: Changed (Connector terminal block must be converted.) 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: Not changed *1: When 12VDC is required, use QX71.
	AX42	QX42	 1) External wiring: Not changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed S) Functions: Not changed *1: When 12VDC is required, use QX72.

A/QnA series models to be discontinued			Q series alternative models
Product	Model	Model	Remark (restrictions)
			1) External wiring: Not changed
			2) Number of slots: Not changed
			3) Program
			Number of occupied I/O points: Not changed
			4) Specifications
	AX42-S1	QX42-S1	Rated input voltage: Changed (12VDC not applicable)
			Rated input current: Changed
			ON voltage/ON current: Changed
			OFF voltage/OFF current: Changed
			5) Functions: Not changed
			Alternating with QX40 is recommended
			1) External wiring: Changed
			Connect a 5 6 kO (1/2W or more) resistor to the
			external signal wire serially.
			2) Number of slots: Not changed
			3) Program
			Number of occupied I/O points: Not changed
	AX50-S1	None	4) Specifications
			Rated input voltage: Changed
			Rated input current: Changed
			ON voltage/ON current: Changed
			OFF voltage/OFF current: Changed
			Input resistance: Changed
			5) Functions: Not changed
			Alternating with QX40 is recommended.
	AX60-S1		1) External wiring: Changed
			Connect a $20k\Omega$ (2W or more) resistor to the external
			signal wire serially.
Input module		None	2) Number of slots: Not changed
			3) Program
			Number of occupied I/O points: Not changed
			4) Specifications
			Rated input voltage: Changed
			Rated input current: Changed
			OR voltage/OR current: Changed
			Input resistance: Changed
			5) Functions: Not changed
			1) External wiring: Changed
			2) Number of slots: Not changed
			3) Program
			Number of occupied I/O points: Not changed
			4) Specifications
	4.1/70	0740	Rated input voltage: Changed (24VDC not applica-
	AX/U	QX70	ble)
			Rated input current: Changed
			ON voltage/ON current: Changed
			OFF voltage/OFF current: Changed
			Input resistance: Changed
			5) Functions: Not changed
			1) External wiring: Changed (Connector terminal block
			must be converted.)
			2) Number of slots: Not changed
			3) Program
			Number of occupied I/O points: Not changed
			4) Specifications
	AX71	QX71	Rated input voltage: Changed (24VDC not applica-
			ble)
			Rated input current: Changed
			ON voltage/ON current: Changed
			OFF voltage/OFF current: Changed
			Input resistance: Changed
		1	5) Functions: Not changed

A/QnA series models t	o be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
Input module	AX80	QX80	 External wiring: Changed Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications
	AX80E	QX82-S1	 External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed Functions: Not changed *1: When 12VDC is required, use QX70.
	AX81	QX81	 External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed voltage/OFF current: Changed F voltage/OFF current: Changed F voltage/OFF current: Changed Functions: Not changed *1:When 12VDC is required, use QX71.
	AX81B	None	 Alternating with QX81 is recommended. 1) External wiring: Changed (Connector terminal block must be converted.) 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Changed 4) Specifications Rated input voltage: Not changed Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: The wire breakage detection function not provided
	AX81-S1	QX81	 External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed Functions: Not changed *1: When 12VDC is required, use QX71.

A/QnA series models to	o be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
Input module	AX81-S2	None	 Alternating with QX81 is recommended. 1) External wiring: Changed (Connector terminal block must be converted.) Connect a 5.6kΩ (1/2W or more) or 8.2kΩ (1W or more) resistor serially to the external signal wire at 48VDC or 60VDC, respectively. 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Changed Rated input current: Changed ON voltage/OFF current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: Not changed
	AX81-S3	QX82-S1	 External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Changed Specifications Rated input voltage: Changed (12VDC not applica- ble) Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed Functions: Not changed
	AX82	QX82	 1) External wiring: Changed (D sub → FCN connector) 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated input voltage: Changed (12VDC not applicable) *1 Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed S) Functions: Not changed *1: When 12VDC is required, use QX72.

A/QnA series models to	o be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
	AY10	QY10	 External wiring: Changed Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications
Output module	AY10A	QY18A	 5) Functions: Not changed 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Changed 4) Specifications Rated output voltage: Not changed Rated output current: Not changed (However, contact life span is reduced to half.) 5) Functions: Not changed
	AY11	QY10	 External wiring: Changed Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications

A/QnA series models to be discontinued		Q series alternative models		
Product	Model	Model	Remark (restrictions)	
Output module	AY11A	QY18A	 External wiring: Changed Number of slots: Changed (2 modules required) Program Number of occupied I/O points: Changed Specifications	
	AY11AEU	QY18A	 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Changed 4) Specifications Rated output voltage: Not changed Rated output current: Not changed (However, contact life span is reduced to half.) 5) Functions: Changed (No varistor) 	
	AY11E	QY10	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated output voltage: Not changed Rated output current: Not changed (However, contact life span is reduced to half.) S) Functions: Changed (No fuse, no varistor) 	
	AY11EEU	QY10	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications	
	AY11-UL	QY10	 External wiring: Changed Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications	
	AY13	QY10	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16×2) 4) Specifications Rated output voltage: Not changed Rated output voltage: Not changed Rated output current: Not changed (However, contact life span is reduced to half.) 5) Functions: Not changed 	
	AY13E	QY10	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16×2) 4) Specifications Rated output voltage: Not changed Rated output voltage: Not changed Rated output current: Not changed (However, contact life span is reduced to half.) 5) Functions: Changed (No fuse) 	

A/QnA series models t	o be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
Output module	AY13EU	QY10	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16×2) 4) Specifications Rated output voltage: Not changed Rated output current: Not changed (However, contact life span is reduced to half.) 5) Functions: Not changed
	AY15EU	QY10	 External wiring: Changed Number of slots: Changed (2 modules required) Program Number of occupied I/O points: Not changed Specifications
	AY22	QY22	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated output voltage: Not changed Rated output voltage: Not changed Rated output current: Changed (Output 2A → 0.6A) 5) Functions: Changed (No fuse, no varistor)
	AY23	QY22	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16×2) 4) Specifications Rated output voltage: Not changed Rated output voltage: Not changed Functions: Changed (No fuse)
	AY40	QY40P	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications
	AY40A	QY68A	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Changed 4) Specifications Rated output voltage: Not changed Rated output current: Not changed Response: Slow 5) Functions: Not changed
	AY41	QY41P	 External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications Rated output voltage: Changed (28.8VDC or more not applicable) Rated output current: Changed Functions: Not changed
	AY41-UL	QY41P	 External wiring: Changed (Connector terminal block must be converted.) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications Rated output voltage: Not changed Rated output current: Not changed Eunctions: Not changed Functions: Not changed

A/QnA series models to be discontinued		Q series alternative models		
Product	Model	Model	Remark (restrictions)	
Output module	AY42	QY42P	 External wiring: Not changed Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications	
	AY42-S1	QY42P	 1) External wiring: Not changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications Rated output voltage: Not changed Rated output current: Not changed Response time: Changed (from 0.3ms to 1ms or less) 5) Functions: Not changed 	
	AY42-S3	QY42P	 External wiring: Not changed Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications	
	AY42-S4	QY42P	 External wiring: Changed (External power supply is required) Number of slots: Not changed Program Number of occupied I/O points: Not changed Specifications	
	AY50	QY50	 1) External wiring: Changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Not changed 4) Specifications	
	AY51	QY50	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16×2) 4) Specifications Rated output voltage: Not changed Rated output current: Not changed 5) Functions: Not changed 	
	AY51-S1	QY50	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16×2) 4) Specifications Rated output voltage: Not changed Rated output voltage: Not changed 5) Functions: Changed (Fuse not replaceable) 	
	AY51-UL	QY50	 1) External wiring: Changed 2) Number of slots: Changed (2 modules required) 3) Program Number of occupied I/O points: Not changed (32=16×2) 4) Specifications Rated output voltage: Not changed Rated output current: Not changed 5) Functions: Not changed 	

A/QnA series models to	o be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
			1) External wiring: Changed 2) Number of slots: Changed (2 modules required)
			3) Program
	4)/00	0)/004	Number of occupied I/O points: Changed
	AY60	QY68A	4) Specifications Rated output voltage: Changed (48V/DC not applicable)
			Rated output voltage. Changed (40VDC not applicable)
			5) Functions: Changed (Fuse not replaceable,
			independent common)
			 External wiring: Changed Number of slots: Changed (2 modules required)
			3) Program
	AY60E	QY68A	Number of occupied I/O points: Changed
			4) Specifications
			Rated output voltage. Changed (46VDC not applicable) Rated output current: Not changed
			5) Functions: Changed (No fuse, independent common)
			1) External wiring: Changed
			2) Number of slots: Changed (2 modules required)
		0)/004	Number of occupied I/O points: Changed
	AY60S	QY68A	4) Specifications
			Rated output voltage: Changed (48VDC not applicable)
			5) Functions: Changed (No fuse, independent common)
			1) External wiring: Changed
			2) Number of slots: Not changed
			3) Program
	AY70	QY70	4) Specifications
			Rated output voltage: Not changed
			Rated output current: Not changed
Output module		QY71	5) Functions: Not changed
Output module			must be converted.)
			2) Number of slots: Not changed
	AX/74		3) Program
	AY71		4) Specifications
			Rated output voltage: Not changed
			Rated output current: Not changed
			5) Functions: Not changed
			2) Number of slots: Changed (2 modules required)
			3) Program
	AY72	QY71	Number of occupied I/O points: Not changed (64=32×2)
			Rated output voltage: Not changed
			Rated output current: Not changed
			5) Functions: Not changed
			 External wiring: Changed Number of slots: Not changed
			3) Program
	AY80	0780	Number of occupied I/O points: Not changed
		a loo	4) Specifications
			Rated output voltage: Not changed Rated output current: Not changed
			5) Functions: Changed (Fuse not replaceable)
			1) External wiring: Changed (Connector terminal block
			must be converted.)
			3) Program
	AY81	QY81P	Number of occupied I/O points: Not changed
			4) Specifications
			Rated output voltage: Not changed
			5) Functions: Not changed

A/QnA series models to	be discontinued		Q series alternative models
Product	Model	Model	Remark (restrictions)
Output module	AY82-EP	QY81P	 External wiring: Not changed Number of slots: Changed (2 modules required) Program Number of occupied I/O points: Not changed (64=32×2) Specifications
I/O module	AH42	QH42P	 1) External wiring: Not changed 2) Number of slots: Not changed 3) Program Number of occupied I/O points: Changed (32 points occupied) 4) Specifications Rated input voltage: Changed (12VDC not applicable) Rated input current: Changed ON voltage/ON current: Changed OFF voltage/OFF current: Changed Input resistance: Changed 5) Functions: Not changed
Dynamic scan I/O module	A42XY	None	Use both QX42 and QY42P and converting I/O signal from dynamic to static.
Dummy module	AG62	None	[Dummy module function] Alternating with QG60 and I/O assignment setting is recommended. [Simulation switch function] Alternating with QX40 and external switch is recommended.
Blanking module	AG60	QG60	No restrictions
	AI61	Q160	 External wiring: Changed Number of slots: Not changed Program Number of occupied I/O points: Changed (16 points occupied) Specifications
Interrupt module	Al61-S1	Q160	 External wiring: Changed Number of slots: Not changed Program Number of occupied I/O points: Changed (16 points occupied) Specifications

3.2 I/O Modules Specifications Comparisons Between

3.2.1 Specifications Comparisons Between Input Modules

(1) Specifications comparisons between AX10 and QX10

			O: Compatib	ole, ∆: Pai	rtial change required, ×: Incompatible
Spec	ification	AX10	QX10	Compatibility	Precautions for replacement
Number of	input points	16 points	16 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	100-120VAC 50/60Hz	100-120VAC 50/60Hz	0	
Input voltag	e distortion	within 5%	within 5%	0	
Rated input	current	10mA (100VAC 60Hz)	Approx. 8mA (100VAC, 60Hz) Approx. 7mA (100VAC, 50Hz)	Δ	Reduced. *1
Inrush curre	ent	Max. 300mA within 0.3ms (132VAC)	Max. 200mA within 1ms (132VAC)	0	
Operating v	oltage range	85 to 132VAC (50/60Hz ± 5%)	85 to 132VAC (50/60Hz ± 3Hz)	0	
Maximum s on input po	imultaneous int	100% (16 points) simultaneously ON	Refer to the derating chart. *2	Δ	Use within the range shown in the derating figure.
ON voltage	/ON current	80VAC or more/ 6mA or more	80VAC or more/5mA or more (50Hz, 60Hz)	0	
OFF voltage	e/OFF current	40VAC or less/ 4mA or less	30VAC or less/1.7mA or less (50Hz, 60Hz)		Reduced.*1
Input resist	ance	Approx. 10kΩ (60Hz) Approx. 12kΩ (50Hz)	Approx. 12kΩ (60Hz) Approx. 15kΩ (50Hz)		Increased.*1
Response	OFF to ON	15ms or less	15ms or less (100VAC 50Hz, 60Hz)	0	
time	ON to OFF	25ms or less	20ms or less (100VAC 50Hz, 60Hz)	0	
Common te arrangemer	erminal nt	16 points/common (common teminal: TB9,TB18)	16 points/common (common teminal: TB17)	0	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	20 points removable terminal block (M3 × 6 screws)	18 points terminal block (M3 × 6 screws)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.*3
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current cor	sumption	0.055A (TYP. all points ON)	0.05A (TYP. all points ON)	0	
External dir	nensions	$\begin{array}{l} 250 \ (\text{H}) \ \times \ 37.5 \ (\text{W}) \ \times \ 121 \ (\text{D}) \ \text{mm} \\ (9.84 \ (\text{H}) \ \times \ 1.48 \ (\text{W}) \ \times \ 4.76 \ (\text{D}) \ \text{inch}) \end{array}$	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.39kg	0.17kg	0	

*1 Check the specifications of sensor or switch to connect to the QX10.





*3 The conversion adapter (ERNT-AQTX10) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(2) Specifications comparisons between AX11 and QX10

			O: Compatib	ole, ∆: Pa	rtial change required, ×: Incompatible
Speci	fication	AX11	QX10	Compatibility	Precautions for replacement
Number of i	nput points	32 points	16 points	×	Use two QX10s when using 17 points or more.
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	100-120VAC 50/60Hz	100-120VAC 50/60Hz	0	
Input voltag	e distortion	within 5%	within 5%	0	
Rated input	current	10mA (100VAC 60Hz)	Approx. 8mA (100VAC, 60Hz), Approx. 7mA (100VAC, 50Hz)		Reduced. *1
Inrush curre	ent	Max. 300mA within 0.3ms (132VAC)	Max. 200mA within 1ms (132VAC)	0	
Operating v	oltage range	85 to 132VAC (50/60Hz ± 5%)	85 to 132VAC (50/60Hz ± 3Hz)	0	
Maximum s on input poi	imultaneous nt	60% (20 points) simultaneously ON	Refer to the derating chart*2	0	
ON voltage/	ON current	80VAC or more/6mA or more	80VAC or more/5mA or more (50Hz, 60Hz)	0	
OFF voltage	e/OFF current	40VAC or less/4mA or less	30VAC or less/1.7mA or less (50Hz, 60Hz)	Δ	Reduced. *1
Input resista	ance	Approx. 10kΩ (60Hz) Approx. 12kΩ (50Hz)	Approx. 12kΩ (60Hz) Approx. 15kΩ (50Hz)		Increased. *1
Response	OFF to ON	15ms or less	15ms or less (AC100V 50Hz, 60Hz)	0	
time	ON to OFF	25ms or less	20ms or less (AC100V 50Hz, 60Hz)	0	
Common te arrangemer	rminal nt	32 points/common (common terminal: TB9,TB18,TB27,TB36)	16 points/common (common terminal:TB17)	0	
Operation in	ndicator	ON indiction (LED)	ON indiction (LED)	0	
External co	nnections	38 points removable terminal block (M3 × 6 screws)	18 points terminal block (M3 × 6 screws)	×	
Applicable v	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable of terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current con	sumption	0.11A (TYP. all points ON)	0.05A (TYP. all points ON)	0	
External din	nensions	250 (H) \times 37.5 (W) \times 131 (D) mm (9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		Wiring space is narrower.
Weight		0.49kg	0.17kg	0	

*1 Check the specifications of sensor or switch to connect to the QX10.

*2 The following figure shows derating.



(3) Spacifications comparisons between AX11EU and QX10

			O:Compatib	le, ∆: Pa	rtial change required, x: Incompatible
Speci	fication	AX11EU	QX10	Compatibility	Precautions for replacement
Number of i	input points	32 points	16 points	×	Use two QX10s when using 17 points or more.
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	100-120VAC 50/60Hz	100-120VAC 50/60Hz	0	
Input voltag	e distortion	Within 5%	Within 5%	0	
Rated input	current	12mA (120VAC 60Hz)	Approx. 8mA (100VAC, 60Hz). Approx. 7mA (100VAC, 50Hz)		Reduced. *1
Inrush curre	ent	Max. 300mA within 1ms (132VAC)	Max. 200mA within 1ms (132VAC)	0	
Operating v	oltage range	85 to 132 VAC (50/60Hz ± 5%)	85 to 132VAC (50/60Hz ± 3Hz)	0	
Maximum s on input poi	imultaneous int	60% (20 points) simultaneously ON	Refer to derating chart*2	0	
ON voltage/	ON current	79VAC or more/6mA or more	80VAC or more/5mA or more (50Hz, 60Hz)	0	
OFF voltage	e/OFF current	40VAC or less/4mA or less	30VAC or less/1.7mA or less (50Hz, 60Hz)	Δ	Reduced. *1
input resista	ance	Approx. 10kΩ (60Hz) Approx. 12kΩ (50Hz)	Approx. 12kΩ (60Hz) Approx. 15kΩ (50Hz)		Increased. *1
Response	OFF to ON	15ms or less (100VAC 60Hz)	15ms or less (100VAC 50Hz, 60Hz)	0	
time	ON to OFF	25ms or less (100VAC 60Hz)	20ms or less (100VAC 50Hz, 60Hz)	0	
Common te arrangemer	erminal ht	32 points/common (common terminal: TB9,TB18,TB27,TB36)	16 points/common (common terminal:TB17)	0	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	38 points removable terminal block (M3.5 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable v	wire size	0.75 to 2mm ² (AWG14 to AWG19)	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable of terminal	crimping	RAV1.25-3.5,RAV2-3.5	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current con	sumption	0.15A (TYP.all points ON)	0.05A (TYP.all points ON)	0	
Dielectric w voltage (Act circuit and i circuit)	ithstand ross external nternal	1780VAC rms/3cycles (altitude 2,000m (6557.38ft.))	1780VAC rms/3cycles (altitude 2,000m (6557.38ft.))	0	
Insulation v	esistance	10MΩ or more by insulation resistance tester	10MΩ or more by insulation resistance tester	0	
Noise durat	bility	IEC801-4 : 1kV	By noise simulator of 1500Vp-p noise voltage, 1µs noise width and 25 to 60Hz noise frequency First transient noise IEC61000- 4-4: 1kV	0	
External din	nensions	250 (H) \times 37.5 (W) \times 131 (D) mm (9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		Wiring space is narrower.
Weight		0.50kg	0.17kg	0	

*1 Check the specifications of sensor or switch to connect to the QX10.





(4) Specifications comparisons between AX20 and QX28

			O: Compatib	ole, <u>∆</u> : Par	tial change required, ×: Incompatible
Speci	fication	AX20	QX28	Compatibility	Precautions for replacement
Number of i	nout points	16 points	8 points	×	Use two QX28s when using 9
			(16 points occupied)	^	points or more.
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	200-240VAC 50/60Hz	100-240VAC 50/60Hz	0	
Input voltag	e distortion	Within 5%	Within 5%	0	
Rated input	current	10mA (200VAC 60Hz)	Approx. 17mA (200VAC, 60Hz), Approx. 14mA (200VAC, 50Hz), Approx. 8mA (100VAC, 60Hz), Approx. 7mA (100VAC, 50Hz)	0	
Inrush curre	ent	Max. 600mA within 0.12ms (264VAC)	Max. 500mA within 1ms (264VAC)	0	
Operating v	oltage range	170 to 264VAC (50/60Hz ± 5%)	85 to 264VAC (50/60Hz ± 3Hz)	0	
Maximum s on input poi	imultaneous nt	100% (16 points) simultaneously ON	Refer to the derating chart. *1		Use within the range shown in the derating figure.
ON voltage/	ON current	160VAC or more/ 5.5mA or more	80VAC or more/5mA or more (50Hz, 60Hz)	0	
OFF voltage	e/OFF current	70VAC or less/3.5mA or less	30VAC or less/1.7mA or less (50Hz, 60Hz)		Reduced. *2
Input resista	ance	Approx. 22kΩ (60Hz), Approx. 24kΩ (50Hz)	Approx. 12kΩ (60Hz) , Approx. 15kΩ (50Hz)	0	
Response	OFF to ON	15ms or less	10ms or less (100VAC 50Hz, 60Hz)	0	
time	ON to OFF	25ms or less	20ms or less (100VAC 50Hz, 60Hz)	0	
Common te arrangemer	rminal nt	16 points/common (common teminal:TB9,TB18)	8 points/common (common teminal:TB17)	0	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	20 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable v	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable of terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current con	sumption	0.055A (TYP. all points ON)	0.05A (TYP. all points ON)	Δ	Review current capacity when using 2 QX28s or more since current consumption is increased in that use.
External din	nensions	250 (H) \times 37.5 (W) \times 121 (D) mm (9.84 (H) \times 1.48 (W) \times 4.76 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.38kg	0.20kg		Calculate weight carefully when using 2 QX28s or more since the weight is increased in that use.

*1 The following figure shows derating.



*2 Check the specifications of sensor or switch to connect to the QX28.

(5) Specifications comparisons between AX21 and QX28

			O: Compatib	le, ∆: Par	tial change required, x: Incompatible
Speci	fication	AX21	QX28	Compatibility	Precautions for replacement
Number of i	input points	32 points	8 points (16 points occupied)	×	Use the appropriate number of QX28s when using 9 points or more.
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	200-240VAC 50/60Hz	100-240VAC 50/60Hz	0	
Input voltag	e distortion	within 5%	within 5%	0	
Rated input	current	10mA (220VAC 60Hz)	Approx. 17mA (200VAC, 60Hz), Approx. 14mA (200VAC, 50Hz), Approx. 8mA (100VAC, 60Hz), Approx. 7mA (100VAC, 50Hz)	0	
Inrush curre	ent	Max. 600mA within 0.12ms (264VAC)	Max. 500mA within 1ms (264VAC)	0	
Operating v	oltage range	170 to 264VAC (50/60Hz ± 5%)	85 to 264VAC (50/60Hz ± 3Hz)	0	
Maximum s on input poi	imultaneous int	60% (20 points) simultaneously ON	Refer to the derating chart. *1	0	
ON voltage	ON current	160VAC or more/ 5.5mA or more	80VAC or more/5mA or more (50Hz, 60Hz)	0	
OFF voltage	e/OFF current	70VAC or less/3.5mA or less	30VAC or less/1.7mA or less (50Hz, 60Hz)	\bigtriangleup	Reduced. *2
input resista	ance	Approx. 22kΩ (60Hz), Approx. 24kΩ (50Hz)	Approx. 12kΩ (60Hz), Approx. 15kΩ (50Hz)	0	
Response	OFF to ON	15ms or less	10ms or less (100VAC 50Hz, 60Hz)	0	
time	ON to OFF	25ms or less	20ms or less (100VAC 50Hz, 60Hz)	0	
Common te arrangemer	erminal nt	32 points/common (common teminal: TB9,TB18,TB27,TB36)	8 points/common (common teminal:TB17)	0	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	38 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable of terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current cor	nsumption	0.11A (TYP. all points ON)	0.05A (TYP. all points ON)	Δ	Review current capacity when using 3 QX28s or more since current consumption is increased in that use.
External dir	nensions	250 (H) \times 37.5 (W) \times 131 (D) mm (9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	$\begin{array}{ll} 98 \ (\text{H}) \ \times \ 27.4 \ (\text{W}) \ \times \ 90 \ (\text{D}) \ \text{mm} \\ (3.86 \ (\text{H}) \ \times \ 1.08 \ (\text{W}) \ \times \ 3.54 \ (\text{D}) \ \text{inch} \) \end{array}$		Wiring space is narrower.
Weight		0.50kg	0.20kg		Calculate weight carefully when using 3 QX28s or more since the weight is increased in that use.

*1 The following figure shows derating.



*2 Check the specifications of sensor or switch to connect to the QX28.

(6) Specifications comparisons between AX21EU and QX28

			O: Compatib	le, ∆: Par	tial change required, x: Incompatible
Speci	fication	AX21EU	QX28	Compatibility	Precautions for replacement
Number of i	input points	32 points	8 points (16 points occupied)	×	Use the appropriate number of QX28s when using 9 points or more.
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	200-240VAC 50/60Hz	100-240VAC 50/60Hz	0	
Input voltag	e distortion	within 5%	within 5%	0	
Rated input	current	Approx. 12mA (240VAC 60Hz)	Approx. 17mA (200VAC, 60Hz), Approx. 14mA (200VAC, 50Hz), Approx. 8mA (100VAC, 60Hz), Approx. 7mA (100VAC, 50Hz)	0	
Inrush curre	ent	Max. 600mA within 0.5ms (264VAC)	Max. 500mA within 1ms (264VAC)	0	
Operating v	oltage range	170 to 264VAC (50/60Hz ± 5%)	85 to 264VAC (50/60Hz ± 3Hz)	0	
Maximum s on input poi	imultaneous int	60% (20 points) simultaneously ON	Refer to the derating chart. *1	0	
ON voltage/	ON current	160VAC or more/ 5.5mA or more	80VAC or more/5mA or more (50Hz, 60Hz)	0	
OFF voltage	e/OFF current	70VAC or less/3.5mA or less	30VAC or less/1.7mA or less (50Hz, 60Hz)		Reduced. *2
input resista	ance	Approx. 22kΩ (60Hz), Approx. 24kΩ (50Hz)	Approx. 12kΩ (60Hz), Approx. 15kΩ (50Hz)	0	
Response	OFF to ON	15ms or less (200VAC 60Hz)	10ms or less (100VAC 50Hz, 60Hz)	0	
time	ON to OFF	25ms or less (200VAC 60Hz)	20ms or less (100VAC 50Hz, 60Hz)	0	
Common te arrangemer	erminal nt	32 points/common (common teminal: TB9,TB18,TB27,TB36)	8 points/common (common teminal:TB17)	0	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	38 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable	wire size	0.75 to 2mm ² (AWG14 to AWG19)	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable of terminal	crimping	RAV1.25-3.5, RAV2-3.5	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current con	sumption	0.15A (TYP. all points ON)	0.05A (TYP. all points ON)	Δ	Review current capacity when using 3 QX28s or more since current consumption is increased in that use.
External dir	nensions	250 (H) \times 37.5 (W) \times 131 (D) mm (9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		Wiring space is narrower.
Weight		0.50kg	0.20kg		Calculate weight carefully when using 3 QX28s or more since the weight is increased in that use.

*1 The following figure shows derating.



*2 Check the specifications of sensor or switch to connect to the QX28.

(7) Specifications comparisons between AX31 and QX41

			O: Compatib	le, ∆: Par	tial change required, x: Incompatible
Speci	fication	AX31	QX41	Compatibility	Precautions for replacement
Number of i	input points	32 points	32 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Poted input	voltaga	12/24VDC, 12/24VAC	241/00		12/24VAC and 12VDC are not
Raleu Inpul	vollage	(50/60Hz)	24000	×	applicable. *1
Rated input	current	8.5mA (24VDC/AC),		~	Reduced *2
Italed Input	current	4mA (12VDC/AC)			Reduced. 2
		10.2 to 26.4VDC			
Operations	voltage	(Ripple ratio within 5%),	20.4 to 28.8VDC	~	12/24VAC and 12VDC are not
range		10.2 to 26.4VAC	(Ripple ratio within 5%)	_	applicable. *1
		(50/60Hz ± 5%)			
Maximum s	imultaneous	100% simultaneously ON	Refer to the derating chart, *3		Use within the range shown in the
on input poi	int.		······································		derating figure.
ON voltage	ON current	7VDC/AC or more/	19V or more/3mA or more	×	12/24VAC and 12VDC are not
		2mA or more			applicable. *1
OFF voltage	e/OFF current	2.5VDC/AC or less	11V or less/1.7mA or less	×	12/24VAC and 12VDC are not
		/0.7mA or less		applicable. *1	
Input resista	ance	Approx. 2.7kΩ	Approx. 5.6kΩ	\triangle	Increased. *2
	OFF to ON	20ms or less (12/24VDC) ,	1ms/5ms/10ms/20ms/		
		25ms or less	70ms or less	0	Set the input response time of
-		(12/24VAC 60Hz)	(CPU parameter setting)		parameters to 20 ms.
Response			Initial setting is 10ms		
time	ON to OFF	20ms or less (12/24VDC) ,	1ms/5ms/10ms/20ms/		
		20ms or less	(CPLL parameter patting)	0	Set the input response time of
		(12/24VAC 60Hz)	(CFO parameter setting)		parameters to 20 ms.
		32 points/common			
Common te	erminal	(common terminal:	32 points/common	0	
arrangemer	nt	TB9 TB18 TB27 TB36)	(common terminal:B01, B02)	Ŭ	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
		38 points removable		_	
External co	nnections	terminal block	40 pin connector (option)	×	
		(M3 × 6 screws)	··· ··· ··· ··· (···)		
			0.3mm ² (AWG#22) or less		Wiring change is required. *4
Applicable	wire size	0.75 to 2mm ²	(For A6CON1 or A6CON4)	×	3
Applicable	crimping	R1.25-3,R2-3,			
terminal		RAV1.25-3,RAV2-3	-	×	
Current con	sumption	0.11A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
-		250 (H) × 37.5 (W) × 131 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm		
External dir	nensions	(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.49kg	0.15kg	0	

*1 For use of 12/24VAC, externally convert it into direct current before input. In the case of 12VDC, use the QX71.

- *2 Check the specifications of sensor or switch to connect to the QX41.
- *3 The following figure shows derating.



*4 By using connectors/terminal block converter modules (A6TBXY36, etc.) conversion to the terminal block is possible.

(8) Specifications comparisons between AX31-S1 and QX41

			O: Compatib	le, ∆: Par	tial change required, x: Incompatible
Speci	fication	AX31-S1	QX41	Compatibility	Precautions for replacement
Number of	input points	32 points	32 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	t voltage	24VDC	24VDC	0	
Rated input	current	8.5mA	Approx. 4mA	\triangle	Reduced. *1
Operating		19.2 to 26.4VDC	20.4 to 28.8VDC	~	20 4\/DC or more are required
Operating v	ollage lange	(Ripple ratio within 5%)	(Ripple ratio within 5%)		20.4VDC of more are required.
Maximum s on input poi	imultaneous int	100% simultaneously ON	Refer to the derating chart. *2		Use within the range shown in the derating figure.
ON voltage	ON current	16VDC or more/5mA or more	19V or more/3mA or more		19VDC or more are required to turn on.
OFF voltage	e/OFF current	8VDC or less/2mA or less	11V or less/1.7mA or less	\triangle	Reduced. *1
input resista	ance	Approx. 2.7kΩ	Approx. 5.6kΩ	\bigtriangleup	Increased. *1
Response time	OFF to ON	10ms or less	1ms/5ms/10ms/20ms/ 70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
	ON to OFF	10ms or less	1ms/5ms/10ms/20ms/ 70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
Common te arrangemen	erminal nt	32 points/common (common teminal: TB9,TB18,TB27,TB36)	32 points/common (common teminal:B01, B02)	0	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	38 points removable terminal block (M3 × 6 screws)	40 pin connector (option)	×	
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required. *3
Applicable of terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	-	×	
Current cor	sumption	0.11A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.49kg	0.15kg	0	

*1 Check the specifications of sensor or switch to connect to the QX41.

*2 The following figure shows derating.



*3 By using connectors/terminal block converter modules (A6TBXY36, etc.) conversion to the terminal block is possible.

(9) Specifications comparisons between AX40 and QX40

			O:Compatib	le, ∆: Par	tial change required, x: Incompatible
Speci	fication	AX40	QX40	Compatibility	Precautions for replacement
Number of i	input points	16 points	16 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	12V/24VDC	24VDC	\triangle	12VDC are not applicable. *1
Rated input	current	Approx. 4mA/Approx. 10mA	Approx. 4mA	Δ	Reduced. *2
Operating v	oltage range	10.2 to 26.4VDC (Ripple ratio within 5%)	20.4 to 28.8VDC (Ripple ratio within 5%)	\bigtriangleup	12VDC are not applicable. *1
Maximum s on input poi	imultaneous int	100% (8 point/common) simultaneously ON	100% simultaneously ON	0	
ON voltage	ON current	9.5VDC or more/3mA or more	19V or more/3mA or more	\triangle	12VDC are not applicable. *1
OFF voltage	e/OFF current	6VDC or less/1.5mA or less	11V or less/1.7mA or less	\triangle	12VDC are not applicable. *1
input resista	ance	Approx. 2.4kΩ	Approx. 5.6kΩ	Δ	Increased. *2
Response OFF	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
	ON to OFF	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
Common te arrangemer	rminal nt	8 points/common (common teminal:TB9,TB18)	16 points/common (common teminal:TB17)	Δ	For wiring, a different voltage cannot be applied to each common since the QX40 has only one common.
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	20 points removable terminal block (M3 × 6 screws)	18 points terminal block (M3×6 screws)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required. *3
Applicable of terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 (Sleeved crimping terminals cannot be used)	×	
Current con	sumption	0.055A (TYP. all points ON)	0.05A (TYP. all points ON)	0	
External dir	nensions	$\begin{array}{l} 250 \ (\text{H}) \ \times \ 37.5 \ (\text{W}) \ \times \ 121 \ (\text{D}) \ \text{mm} \\ (9.84 \ (\text{H}) \ \times \ 1.48 \ (\text{W}) \ \times \ 4.76 \ (\text{D}) \ \text{inch}) \end{array}$	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		Wiring space is narrower.
Weight		0.36kg	0.16kg	0	

*1 Use the QX70 at 12VDC.

*2 Check the specifications of sensor or switch to connect to the QX40.

*3 The conversion adapter (ERNT-AQTX40) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(10) Specifications comparisons between AX40-UL and QX40

		O: Compatible, △: Partial change required, ×: Incompatibl					
Speci	fication	AX40-UL	QX40	Compatibility	Precautions for replacement		
Number of i	input points	16 points	16 points	0			
Isolation me	ethod	Photocoupler	Photocoupler	0			
Rated input	t voltage	12V/24VDC	24VDC	\triangle	12VDC are not applicable. *1		
Rated input	current	Approx. 4mA/Approx. 10mA	Approx. 4mA	\triangle	Reduced. *2		
Operating v	oltage range	10.2 to 26.4VDC (Ripple ratio within 5%)	20.4 to 28.8VDC (Ripple ratio within 5%)	Δ	12VDC are not applicable. *1		
Maximum s on input poi	imultaneous int	100% (8 point/common) simultaneously ON	100% simultaneously ON	0			
ON voltage	ON current	9.5VDC or more/3mA or more	19V or more/3mA or more	\triangle	12VDC are not applicable. *1		
OFF voltage	e/OFF current	6VDC or less/1.5mA or less	11V or less/1.7mA or less	\triangle	12VDC are not applicable. *1		
input resista	ance	Approx. 2.4kΩ	Approx. 5.6kΩ	\triangle	Increased. *2		
Response OFI	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.		
	ON to OFF	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.		
Common te arrangemer	erminal nt	8 points/common (common teminal:TB9,TB18)	16 points/common (common teminal:TB17)	Δ	For wiring, a different voltage cannot be applied to each common since the QX40 has only one common.		
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0			
External co	nnections	20 points removable terminal block (M3 × 6 screws)	18 points terminal block (M3×6 screws)	×			
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.		
Applicable of terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (Sleeved crimping terminals cannot be used)	×			
Current cor	nsumption	0.055A (TYP. all points ON)	0.05A (TYP. all points ON)	0			
External dir	mensions	$\begin{array}{l} 250 \ (\text{H}) \ \times \ 37.5 \ (\text{W}) \ \times \ 121 \ (\text{D}) \ \text{mm} \\ (9.84 \ (\text{H}) \ \times \ 1.48 \ (\text{W}) \ \times \ 4.76 \ (\text{D}) \ \text{inch}) \end{array}$	$\begin{array}{l} 98 \ (\text{H}) \ \times \ 27.4 \ (\text{W}) \ \times \ 90 \ (\text{D}) \ \text{mm} \\ (3.86 \ (\text{H}) \ \times \ 1.08 \ (\text{W}) \ \times \ 3.54 \ (\text{D}) \ \text{inch}) \end{array}$		Wiring space is narrower.		
Weight		0.36kg	0.16kg	0			

*1 Use the QX70 at 12VDC.

*2 Check the specifications of sensor or switch to connect to the QX40.

(11) Specifications comparisons between AX41 and QX41

O: Compatible				le, ∆: Par	ial change required, x: Incompatible
Speci	fication	AX41	QX41	Compatibility	Precautions for replacement
Number of i	nput points	32 points	32 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	12V/24VDC	24VDC	\triangle	12VDC are not applicable. *1
Rated input	current	Approx. 4mA/Approx. 10mA	Approx. 4mA	Δ	Reduced. *2
Operating v	oltage range	10.2 to 26.4VDC (Ripple ratio within 5%)	20.4 to 28.8VDC (Ripple ratio within 5%)		12VDC are not applicable. *1
Maximum s on input poi	imultaneous nt	60% (5 point/common) simultaneously ON	Refer to the derating chart. *3	0	
ON voltage	ON current	9.5VDC or more/3mA or more	19V or more/3mA or more	\triangle	12VDC are not applicable. *1
OFF voltage	e/OFF current	6VDC or less/1.5mA or less	11V or less/1.7mA or less	\triangle	12VDC are not applicable. *1
input resistance		Approx. 2.4kΩ	Approx. 5.6kΩ	\triangle	Increased. *2
Response time	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
	ON to OFF	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
Common terminal arrangement		8 points/common (common teminal: TB9,TB18,TB27,TB36)	32 points/common (common teminal:B01, B02)	Δ	For wiring, a different voltage cannot be applied to each common since the QX41 has only one common.
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External connections		38 points removable terminal block (M3 × 6 screws)	40 pin connector (option)	×	
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required. *4
Applicable of terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	-	×	
Current con	sumption	0.11A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
External dir	nensions	250 (H) \times 37.5 (W) \times 131 (D) mm (9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)	Δ	
Weight		0.44kg	0.15kg	0	

*1 Use the QX71 at 12VDC.

- *2 Check the specifications of sensor or switch to connect to the QX41.
- *3 The following figure shows derating.



*4 The conversion adapter (ERNT-AQTX41) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

Moreover, by using connectors/terminal block converter modules (A6TBXY36, etc.) conversion to the terminal block is possible.

(12) Specifications comparisons between AX41-S1 and QX41-S1

			O: Compatib	le, ∆: Par	tial change required, x: Incompatible
Speci	fication	AX41-S1	QX41-S1	Compatibility	Precautions for replacement
Number of i	nput points	32 points	32 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	12V/24VDC	24VDC	Δ	12VDC are not applicable.
Rated input	current	Approx. 4mA/Approx. 10mA	Approx. 4mA	\triangle	Reduced. *1
Operating	oltage range	10.2 to 26.4VDC	20.4 to 28.8VDC	^	12\/DC are not applicable
Operating v	ollage lange	(Ripple ratio within 5%)	(Ripple ratio within 5%)		
Maximum s	imultaneous	60% (5 point/common)	Refer to the derating chart. *2	0	
			10)/ or more/2mA or more	^	12)/DC are not applicable
ON Voltage/		9.3VDC of mole/smA of mole			12VDC are not applicable.
OFF voltage	e/OFF current	6VDC or less/1.5mA or less	9.5V or less/1.5mA or less		12VDC are not applicable.
input resista	ance	Approx. 2.4KΩ	Approx. 5.6kΩ	Δ	Increased. *1
			0.1ms/0.2ms/0.4ms/0.6ms		
	OFF to ON	0.1ms or less	/1ms or less	0	Set the input response time of
_			(CPU parameter setting)		parameters to 0.1 ms.
Response			Initial setting is 0.2ms		
time	ON to OFF		0.1ms/0.2ms/0.4ms/0.6ms		- · · · · · · · ·
		0.2ms or less	/1ms or less	0	Set the input response time of
			(CPU parameter setting)		parameters to 0.1 ms.
			Initial setting is 0.2ms		
. .		8 points/common			For wiring, a different voltage
Common te	rminal	(common teminal:	32 points/common		cannot be applied to each
arrangemer	nt	TB9,TB18,TB27,TB36)	(common teminal:B01, B02)		common since the QX41-S1 has
		0111111111111111		<u> </u>	only one common.
Operation in	ndicator	ON Indication (LED)	ON Indication (LED)	0	
		38 points removable			
External co	nnections	terminal block	40 pin connector (option)	×	
		(M3 × 6 screw)			
Applicable v	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less	×	Wiring change is required. *3
			(For A6CON1 or A6CON4)		
Applicable of	crimping	R1.25-3,R2-3,	_	×	
terminal		RAV1.25-3,RAV2-3			
Current con	sumption	0.11A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
External dir	nensions	250 (H) × 37.5 (W) × 131 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm	\triangle	
		$(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)$	$(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)$		
Weight		0.44kg	0.15kg	0	

*1 Check the specifications of sensor or switch to connect to the QX41-S1.

*2 The following figure shows derating.



*3 The conversion adapter (ERNT-AQTX41) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

Moreover, by using connectors/terminal block converter modules (A6TBXY36, etc.) conversion to the terminal block is possible.

(13) Specifications comprarisons between AX41-UL and QX41

			O: Compatib	le, ∆: Pa	artial change required, x: Incompatible
Speci	fication	AX41-UL	QX41	Compatibility	Precautions for replacement
Number of	input points	32 points	32 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not applicable.*1
Rated input	current	Approx. 4mA/ Approx. 10mA	Approx. 4mA		Reduced.*2
Operations	voltage	10.2 to 26.4VDC	20.4 to 28.8VDC	~	12\/DC are not appliable *1
range		(Ripple ratio within 5%)	(Ripple ratio within 5%)		12 VDC are not applicable. 1
Maximum s on input po	imultaneous int.	60% (5 point/common) simultaneously ON	Refer to the derating chart. *3	0	
ON voltage	ON current	9.5VDC or more/3mA or more	19V or more/3mA or more	\triangle	12VDC are not applicable.*1
OFF voltage	e/OFF current	6VDC or less/1.5mA or less	11V or less/1.7mA or less	\triangle	12VDC are not applicable.*1
Input resista	ance	Approx. 2.4kΩ	Approx. 5.6kΩ	\triangle	Increased.*2
Response	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
time	ON to OFF	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
Common te arrangeme	erminal nt	32 point/common (common terminal: TB9,TB18,TB27,TB36)	32 points/common (common terminal: B01, B02)	0	
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	nnections	38 points removable terminal block (M3 × 6 screw)	40 pin connector (option)	×	
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required.*4
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	_	×	
Current cor	sumption	0.11A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
External dir	nensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.44kg	0.15kg	0	

- *1 Use the QX71 at 12VDC.
- *2 Check the specifications of sensor or switch to connect to the QX41.
- *3 The following figure shows derating.



*4 By using connectors/terminal block converter modules (A6TBXY36, etc.) conversion to the terminal block is possible.

(14) Specifications comparisons between AX42 and QX42

		O: Compatible, \triangle : Partial change required, \times : Incomp					
Speci	fication	AX42	QX42	Compatibility	Precautions for replacement		
Number of i	input points	64 points	64 points	0			
Isolation me	ethod	Photocoupler	Photocoupler	0			
Rated input	voltage	12VDC/24VDC	24VDC	Δ	12VDC are not applicable.*1		
Rated input	current	Approx. 3mA/Approx. 7mA	Approx. 4mA	\triangle	Reduced.*2		
Operations	voltage	10.2 to 26.4VDC	20.4 to 28.8VDC	^	12)/DC are not applicable \$1		
range		(Ripple ratio within 5%)	(Ripple ratio within 5%)		12VDC are not applicable. 1		
Maximum s	imultaneous	60% (20point/common)	Refer to the derating chart.	^	Use within the range shown in the		
on input poi	int.	simultaneously ON	*3	Δ	derating figure.		
ON voltage	ON current	9.5VDC or more/ 3mA or more	19V or more/3mA or more		12VDC are not applicable.*1		
OFF voltage	e/OFF current	6VDC or less/ 1.5mA or less	11V or less/1.7mA or less		12VDC are not applicable.*1		
Input resista	ance	Approx. 3.4kΩ	Approx. 5.6kΩ	\triangle	Increased. *2		
Response	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.		
time	ON to OFF	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.		
Common te arrangemer	erminal nt	32 points/common (common terminal: 1B1,1B2,2B1,2B2)	32 points/common (common terminal: 1B01,1B02,2B01,2B02)	0			
Operation in	ndicator	ON indication (LED) 32 point switch-over using switch	ON indication (LED) 32 point switch-over using switch	0			
External co	nnections	40pin connector (with solder) × 2	40 pin connector × 2 (option)	0	The 40 pin connectors are sold separately. Purchase them separately.		
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	0			
Current cor	sumption	0.12A (TYP. all points ON)	0.09A (TYP. all points ON)	0			
External dir	nensions	250 (H) \times 37.5 (W) \times 106 (D) mm (9.84 (H) \times 1.48 (W) \times 4.17 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)				
Weight		0.51kg	0.18kg	0			

*1 Use the QX72 at 12VDC.

*2 Check the specifications of sensor or switch to connect to the QX42.

*3 The following figure shows derating.



(15) Specifications comparisons between AX42-S1 and QX42-S1

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	ification	AX42-S1	QX42-S1	Compatibility	Precautions for replacement
Number of	input points	64 points	64 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	it voltage	12VDC/24VDC	24VDC	Δ	12VDC are not applicable.
Rated inpu	it current	Approx. 3mA/Approx. 7mA	Approx. 4mA	\triangle	Reduced.*1
Operations	s voltage	10.2 to 26.4VDC	20.4 to 28.8VDC	~	12)/DC are not applicable
range		(Ripple ratio within 5%)	(Ripple ratio within 5%)		12VDC are not applicable.
Maximum	simultaneous	60% (20 point/common)	Defer to the deroting chart *2	~	Use within the range shown in the
on input po	pint.	simultaneously ON	Refer to the derating chart. "2	Δ	derating figure.
ON voltage	e/ON current	9.5VDC or more/3mA or more	19V or more/3mA or more	Δ	12VDC are not applicable.
OFF voltag	e/OFF current	6VDC or less/1.5mA or less	9.5V or less/1.5mA or less	Δ	12VDC are not applicable.
Input resist	tance	Approx. 3.4kΩ	Approx. 5.6kΩ	Δ	Increased.*1
			0.1ms/0.2ms/0.4ms/0.6ms		
			/1ms or less	0	Set the input response time of
	OFF to ON	0.5ms of less	(CPU parameter setting)	0	parameters to 0.4 ms.
Response			Initial setting is 0.2ms		
time			0.1ms/0.2ms/0.4ms/0.6ms	0	
	ON to OFF	0.5ms or less	/1ms or less		Set the input response time of
			(CPU parameter setting)		parameters to 0.4 ms
			Initial setting is 0.2ms		
Common t	orminal	32 points/common	32 points/common		
orrongomo	enninai	(common terminal: 1B1, 1B2,	(common terminal: 1B01,	0	
ananyeme		2B1, 2B2)	1B02, 2B01, 2B02)		
		ON indication (LED)	ON indication (LED)		
Operation	indicator	32 point switch-over using	32 point switch-over using	0	
		switch	switch		
Extornal or	opportions	40 pin connector	40 pin connector $\times 2$ (option)	0	
	Jinections	(with solder) \times 2		Ŭ	
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less	0	
Applicable	WITC SIZE	0.01111	(For A6CON1 or A6CON4)	Ŭ	
		Two external wiring			The 40 pin connectors are sold
Accessory		connectors	-	×	separately. Purchase them
					separately.
Current co	nsumption	0.12A (TYP. all points ON)	0.09A (TYP. all points ON)	0	
External di	mensions	250 (H) \times 37.5 (W) \times 106 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm	~	
		(9.84 (H) \times 1.48 (W) \times 4.17 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.51kg	0.18kg	0	

*1 Check the specifications of sensor or switch to connect to the QX42-S1.

*2 The following figure shows derating.



(16) Specifications comparisons between AX50-S1 and QX40

			O: Compatib	ole, ∆: Pa	rtial change required, ×: Incompatible
Speci	fication	AX50-S1	QX40	Compatibility	Precautions for replacement
Number of i	input points	16 points	16 points	0	
Isolation me	ethod	Photocoupler	Photocoupler	0	
Rated input	voltage	48VDC	24VDC	×	Voltage over 28.8VDC is not applicable.*1
Rated input	current	4mA	Approx. 4mA	0	
Max. inrush	current	_	_		
Operations	voltage	38.4 to 57.6VDC	20.4 to 28.8VDC		Voltage over 28.8VDC is not
range		(Ripple ratio within 5%)	(Ripple ratio within 5%)	×	applicable.*1
Maximum s on input poi	imultaneous int.	100% (8 point/common) simultaneously ON	100% simultaneously ON	0	
ON voltage	ON current	34VDC or more/3mA or more	19V or more/3mA or more	×	Voltage over 28.8VDC is not applicable.*1
OFF voltage	e/OFF current	10VDC or less/1mA or less	11V or less/1.7mA or less	×	Voltage over 28.8VDC is not applicable.*1
Input resista	ance	Approx. 11kΩ	Approx. 5.6kΩ	×	Include a resistor of $5.6k\Omega(1/2W \text{ or})$ more) in series with the external signal line for input to the QX40.
Response time	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
	ON to OFF	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
Common te arrangemer	erminal nt	8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)		For wiring, a different voltage cannot be applied to each common since the QX40 has only one common.
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
External connections		20 points removable terminal block (M3 × 6 screws)	18 points terminal block (M3 × 6 screws)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable of terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current cor	sumption	0.055A (TYP. all points ON)	0.05A (TYP. all points ON)	0	
External dir	nensions	250 (H) \times 37.5 (W) \times 121 (D) mm (9.84 (H) \times 1.48 (W) \times 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		Wiring space is narrower.
Weight		0.37kg	0.16kg	0	

*1 Connect a resistor of $5.6k\Omega$ (1/2W or higher) serially to the external signal line that connects external devices to the QX40.

(17) Specifications comparisons between AX60-S1 and QX40

O: Compatible, \triangle : Partial change required, \times					
Speci	ification	AX60-S1	QX40	Compatibility	Precautions for replacement
Number of	input points	16 points	16 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	it voltage	100/110/120VDC	24VDC	×	Voltage over 28.8VDC is not applicable.*1
Rated inpu	it current	2mA	Approx. 4mA	0	
Max. inrus	h current	65mA (121VDC) 75mA (140VDC)	_	0	
Operations	voltage range	85 to 140VDC (Ripple ratio within 5%)	20.4 to 28.8VDC (Ripple ratio within 5%)	×	Voltage over 28.8VDC is not applicable.*1
Maximum s on input po	simultaneous pint.	60% (5 point/common) simultaneously ON	100% simultaneously ON	0	
ON voltage	e/ON current	80VDC or more/1.4mA or more	19V or more/3mA or more	×	Voltage over 28.8VDC is not applicable.*1
OFF voltage	e/OFF current	20VDC or less/0.5mA or less	11V or less/1.7mA or less	×	Voltage over 28.8VDC is not applicable.*1
Input resist	tance	Approx. 50kΩ	Approx. 5.6kΩ	×	Input resistance is lower.*1
Response	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
time	ON to OFF	20ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
Common to arrangeme	erminal ent	8 points/common	16 points/common (common terminal: TB17)		For wiring, a different voltage cannot be applied to each common since the QX40 has only one common.
Operation	indicator	ON indication (LED)	ON indication (LED)	0	
External co	onnections	20 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current co	nsumption	0.055A (TYP. all points ON)	0.05A (TYP. all points ON)	0	
External di	mensions	250 (H) \times 37.5 (W) \times 121 (D) mm (9.84 (H) \times 1.48 (W) \times 4.76 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		Wiring space is narrower.
Weight		0.40kg	0.16kg	0	

*1 Connect a resistor of 20kΩ (2W or higher) serially to the external signal line that connects external devices to the QX40.

(18) Specifications comparisons between AX70 and QX70

O: Compatible, △: Partial change required, ×: Incompatible							
Speci	fication	AX70	QX70	Compatibility	Precautions for replacement		
Number of	input points	16 points	16 points	0			
Isolation m	ethod	Photocoupler	Photocoupler	0			
Rated inpu	t voltage	5VDC/12VDC/24VDC	5VDC/12VDC	\triangle	12VDC are not applicable.*1		
Rated innu	t current	3.5mA/2mA/4.5mA (TYP),	5VDC Approx. 1.2mA	~	12\/DC are not applicable *1		
italeu inpu	t current	5.5mA/3mA/6mA (MAX)	12VDC Approx. 3.3mA		12 VDC are not applicable. 1		
Operations	voltage range	4.5 to 5.5VDC (SW ON), 10.2 to 26.4VDC (SW OFF)	4.25 to 6VDC (Ripple ratio within 5%) 10.2 to 14.4VDC (Ripple ratio within 5%)	Δ	12VDC are not applicable.*1		
Maximum s on input po	simultaneous vint.	100% (8 point/common) simultaneously ON	100% simultaneously ON	0			
ON voltage	e/ON current	3.5VDC or more/1.0mA or more (SW ON), 5VDC or more/1.0mA or more (SW OFF)	3.5V or more/1mA or more	0			
OFF voltage	e/OFF current	1.1VDC or less/ 0.2mA or less (SW ON), 2VDC or less/ 0.2mA or less (SW OFF)	1V or less/0.1mA or less	Δ	Reduced.*2		
Input resist	ance	Approx. 1.4k Ω (SW ON), Approx. 5.5k Ω (SW OFF)	Approx. $3.3k\Omega$		Increased.*2		
Response	OFF to ON	1.5ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Set the input response time of parameters to 1 ms.		
time	ON to OFF	3ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Set the input response time of parameters to 1 ms.		
Common te arrangeme	erminal nt	8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)		For wiring, a different voltage cannot be applied to each common since the QX70 has only one common.		
Operation i	indicator	ON indication (LED)	ON indication (LED)	0			
External connections		20 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×			
Applicable wire size		0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.*3		
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×			
Current cor	nsumption	0.055A (TYP. all points ON)	0.055A (TYP. all points ON)	0			
External di	mensions	250 (H) \times 37.5 (W) \times 121 (D) mm (9.84 (H) \times 1.48 (W) \times 4.76 (D) inch)	98 (H) $\times27.4$ (W) \times 90 (D) mm (3.86 (H) $\times1.08$ (W) $\times3.54$ (D) inch)		Wiring space is narrower.		
Weight		0.36kg	0.14kg	0			

*1 Use the QX40-S1 at 24VDC.

*2 Check the specifications of sensor or switch to connect to the QX70.

*3 The conversion adapter (ERNT-AQTX40) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(19) Specifications comparisons between AX71 and QX71

O: Compatible, △: Partial change required, ×: Incompatibl						
Speci	fication	AX71	QX71	Compatibility	Precautions for replacement	
Number of	input points	32 points	32 points	0		
Isolation m	ethod	Photocoupler	Photocoupler	0		
Rated inpu	it voltage	5VDC/12VDC/24VDC	5VDC/12VDC	\triangle	12VDC are not applicable.*1	
Potod inpu	it current	3.5mA/2mA/4.5mA (TYP),	5VDC Approx. 1.2mA	~	12\/DC are not applicable *1	
Raleu Inpu	it current	5.5mA/3mA/6mA (MAX)	12VDC Approx. 3.3mA		12VDC are not applicable. 1	
Operations	voltage range	4.5 to 5.5VDC (SW ON), 10.2 to 26.4VDC (SW OFF)	4.25 to 6VDC (Ripple ratio within 5%) 10.2 to 14.4VDC (Ripple ratio within 5%)		12VDC are not applicable.*1	
Maximum s on input po	simultaneous pint.	100% (8 point/common) simultaneously ON	100% simultaneously ON	0		
ON voltage	e/ON current	3.5VDC or more/ 1.0mA or more (SW ON), 5VDC or more/ 1.0mA or more (SW OFF)	3.5V or more/1mA or more	0		
OFF voltag	e/OFF current	1.1VDC or less/ 0.2mA or less (SW ON), 2VDC or less/ 0.2mA or less (SW OFF)	1V or less/0.1mA or less		Reduced.*2	
Input resist	tance	Approx. 1.4kΩ (SW ON) , Approx. 5.5kΩ (SW OFF)	Approx. 3.3kΩ		The input resistance of the QX71 is greater than that of the AX71 SW ON status.	
Posponso	OFF to ON	1.5ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Set the input response time of parameters to 1 ms.	
time	ON to OFF	3ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Set the input response time of parameters to 1 ms.	
Common to arrangeme	erminal ent	8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: B01, B02)		For wiring, a different voltage cannot be applied to each common since the QX71 has only one common.	
Operation	indicator	ON indication (LED)	ON indication (LED)	0		
External co	onnections	38 points removable terminal block (M3 × 6 screw)	40 pin connector (option)	×		
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required.*3	
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	_	×		
Current co	nsumption	0.11A (TYP. all points ON)	0.07A (TYP. all points ON)	0		
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)			
Weight		0.45kg	0.12kg	0		

*1 Use the QX41-S1 at 24VDC.

*2 Check the specifications of sensor or switch to connect to the QX71.

*3 The conversion adapter (ERNT-AQTX41) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(20) Specifications comparisons between AX80 and QX80

			O: Compat	ible, \triangle : P	artial change required, ×: Incompatible
Speci	fication	AX80	QX80	Compatibility	Precautions for replacement
Number of	input points	16 points	16 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	t voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not applicable.*1
Rated inpu	t current	4mA/10mA	Approx. 4mA	\triangle	Reduced.*2
Operations	voltage range	10.2 to 26.4VDC	20.4 to 28.8VDC	^	12\/DC are not applicable *1
Operations	voltage range	(Ripple ratio within 5%)	(Ripple ratio within 5%)		12 VDC are not applicable. 1
Maximum s on input po	simultaneous pint.	100% (8 point/common) simultaneously ON	100% simultaneously ON	0	
ON voltage	e/ON current	9.5VDC or more/3mA or more	19V or more/3mA or more	\triangle	12VDC are not applicable.*1
OFF voltage	e/OFF current	6VDC or less/1.5mA or less	11V or less/1.7mA or less	Δ	12VDC are not applicable.*1
Input resist	tance	Approx. 2.4kΩ	Approx. 5.6kΩ	Δ	Increased.*2
			1ms/5ms/10ms/20ms		
		10ms or loss	/70ms or less	0	Use initial value (10ms) for the input
		TOTIS OF JESS	(CPU parameter setting)	0	response time of parameters.
Response			Initial setting is 10ms		
time	ON to OFF		1ms/5ms/10ms/20ms		
		10ms or loss	/70ms or less	0	Use initial value (10ms) for the input
		10113 01 1633	(CPU parameter setting)	Ŭ	response time of parameters.
			Initial setting is 10ms		
Common te	erminal	8 points/common	16 points/common		For wiring, a different voltage cannot
arrangeme	nt	(common terminal: TB9,	(common terminal: TR18)	\bigtriangleup	be applied to each common since
anangeme	int	TB18)			the QX80 has only one common.
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
		20 points removable terminal	18 points terminal block		
External co	onnections	block	(M3 × 6 screw)	×	
		(M3 × 6 screw)	(103 × 0 301eW)		
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core	×	Wiring change is required *3
			(2.8mm (0.11 inch) OD max.)	~	Winnig onlange to required. O
Applicable	crimping	R1 25-3 R2-3	R1.25-3		
terminal	omping	RAV1 25-3 RAV2-3	(sleeved crimping terminals	×	
tonnia			cannot be used)		
Current cor	nsumption	0.055A (TYP. all points ON)	0.05A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm	98 (H) \times 27.4 (W) \times 90 (D) mm	~	Wiring space is parrower
		(9.84 (H) \times 1.48 (W) \times 4.76 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.36kg	0.16kg	0	

*1 Use the QX70 at 12VDC.

*2 Check the specifications of sensor or switch to connect to the QX80.

*3 The conversion adapter (ERNT-AQTX80) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(21) Specifications comparisons between AX80E and QX82-S1

			O: Compat	ible, ∆: P	artial change required, x: Incompatible
Speci	ification	AX80E	QX82-S1	Compatibility	Precautions for replacement
Number of	input points	16 points	64 points	×	Set 16 points in the I/O assignment of Parameter.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	it voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not applicable.*1
Rated inpu	it current	4mA/10mA	Approx. 4mA	\triangle	Reduced.*2
Operations	voltage range	10.2 to 26.4VDC (Ripple ratio within 5%)	20.4 to 28.8VDC (Ripple ratio within 5%)		12VDC are not applicable.*1
Maximum s	simultaneous pint.	100% (8 point/common) simultaneously ON	Refer to the derating chart. *3		Use within the range shown in the derating figure.
ON voltage	e/ON current	9.5VDC or more/2.6mA or more	19VDC or more/3mA or more	Δ	12VDC are not applicable.*1
OFF voltag	e/OFF current	6VDC or less/1.0mA or less	9.5VDC or less/1.5mA or less	\triangle	12VDC are not applicable.*1
Input resis	tance	Approx. 2.4kΩ	Approx. 5.6kΩ	\triangle	Increased.*2
Response	OFF to ON	5.5ms (TYP.)	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms		Set the input response time of parameters to 1 ms.
time	ON to OFF	6.0ms (TYP.)	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms		Set the input response time of parameters to 1 ms.
Response time high- speed	OFF to ON	0.5ms or less	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms		Set the input response time of parameters to 0.4 ms.
mode (upper 8 points only)	ON to OFF	1.0ms or less	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms		Set the input response time of parameters to 0.4 ms.
Common to arrangeme	erminal ent	8 points/common (common terminal: TB9, TB18)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)		For wiring, a different voltage cannot be applied to each common since the QX82-S1 has only one common.
Operation	indicator	ON indication (LED)	ON indication (LED) 32 point switch-over using switch	0	
External connections		20 points removable terminal block (M3 × 6 screw)	40 pin connector × 1 (option)	×	
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	-	×	
Current co	nsumption	0.055A (TYP. all points ON)	0.09A (TYP. all points ON)	Δ	Reviewing power supply capacity is required.
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	
Weight		0.36kg	0.18kg	0	

*1 Use the QX70 at 12VDC.

*2 Check the specifications of sensor or switch to connect to the QX82-S1.

*3 The following figure shows derating.



(22) Specifications comparisons between AX81 and QX81

O: Compatible, \triangle : Partial change required, \times : Incon					artial change required, ×: Incompatible
Speci	fication	AX81	QX81	Compatibility	Precautions for replacement
Number of	input points	32 points	32 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	t voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not applicable.*1
Rated inpu	t current	4mA/10mA	Approx. 4mA	\triangle	Reduced.*2
Operations	voltago rango	10.2 to 26.4VDC	20.4 to 28.8VDC	~	12\/DC are not applicable *1
Operations	vollage range	(Ripple ratio within 5%)	(Ripple ratio within 5%)		12 VDC are not applicable. 1
Maximums	simultaneous	60% (5 point/common)	Poter to the derating chart *3	0	
on input po	pint.	simultaneously ON	Refer to the defailing chart. 3	0	
ON voltage	e/ON current	9.5VDC or more/3mA or more	19VDC or more/3mA or more	\triangle	12VDC are not applicable.*1
OFF voltage	e/OFF current	6VDC or less/1.5mA or less	11VDC or less/1.7mA or less	\triangle	12VDC are not applicable.*1
Input resist	tance	Approx. 2.4kΩ	Approx. 5.6kΩ	\triangle	Increased.*2
			1ms/5ms/10ms/20ms/		
		10ms or loss	70ms or less	0	Use initial value (10ms) for the input
		10113 01 1633	(CPU parameter setting)		response time of parameters.
Response			Initial setting is 10ms		
time			1ms/5ms/10ms/20ms/		
	ON to OFF	10ms or less	70ms or less	0	Use initial value (10ms) for the input response time of parameters.
			(CPU parameter setting)		
			Initial setting is 10ms		
Common te	erminal	8 points/common	32 points/common		For wiring, a different voltage cannot
arrangeme	ont	(common terminal: TB9,	(common terminal: 17, 18, 26)	\bigtriangleup	be applied to each common since
unungomo		TB18, TB27, TB36)			the QX81 has only one common.
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
		38 points removable terminal			
External co	onnections	block	37 pin D-sub connector (option)	×	
		$(M3 \times 6 \text{ screw})$			Wiring change is required *4
Applicable wire size		0.75 to 2mm ²	0.3mm ² (For A6CON1E)	×	Winnig change is required. 4
Applicable	crimping	R1.25-3, R2-3,	_	~	
terminal		RAV1.25-3, RAV2-3		^	
Current co	nsumption	0.11A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm	^	
		(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.45kg	0.16kg	0	

- *1 Use the QX71 at 12VDC.
- *2 Check the specifications of sensor or switch to connect to the QX81.
- *3 The following figure shows derating.



*4 The conversion adapter (ERNT-AQTX81) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

Moreover, by using connectors/terminal block converter modules (A6TBXY36-E, etc.) conversion to the terminal block is possible.

(23) Specifications comparisons between AX81-S1 and QX81

			O: Compat	ible, \triangle : P	artial change required, ×: Incompatible
Speci	fication	AX81-S1	QX81	Compatibility	Precautions for replacement
Number of	input points	32 points	32 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	t voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not applicable.*1
Rated inpu	t current	2.5mA/5mA	Approx. 4mA	\triangle	Reduced.*2
Operationa		10.2 to 26.4VDC	20.4 to 28.8VDC	~	12)/DC are not applicable *1
Operations	vollage range	(Ripple ratio within 5%)	(Ripple ratio within 5%)		12VDC are not applicable. 1
Maximum s on input po	simultaneous vint.	60% (5 point/common) simultaneously ON	Refer to the derating chart. *3	0	
ON voltage	e/ON current	5.6VDC or more/ 1.1mA or more	19VDC or more/3mA or more		12VDC are not applicable.*1
OFF voltage	e/OFF current	2.4VDC or less/0.39mA or less	11VDC or less/1.7mA or less	\triangle	12VDC are not applicable.*1
Input resist	ance	Approx. 4.8kΩ	Approx. 5.6kΩ	Δ	Increased.*2
			1ms/5ms/10ms/20ms		
	OFF to ON	10ms or loss	/70ms or less	0	Use initial value (10ms) for the input
		10113 01 1835	(CPU parameter setting)	U	response time of parameters.
Response			Initial setting is 10ms		
time			1ms/5ms/10ms/20ms		
	ON to OFF	10ms or less	/70ms or less	0	Use initial value (10ms) for the input
		10113 01 1633	(CPU parameter setting)	Ű	response time of parameters.
			Initial setting is 10ms		
Common te	erminal	8 points/common	32 points/common		For wiring, a different voltage cannot
arrangeme	nt	(common terminal: TB9,	(common terminal: 17 18 36)	\bigtriangleup	be applied to each common since
g		TB18, TB27, TB36)	(the QX81 has only one common.
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
		38 points removable terminal	37 pin D-sub connector		
External co	onnections	block	(option)	×	
		$(M3 \times 6 \text{ screw})$	(option)		Wiring change is required *4
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (For A6CON1E)	×	Winnig change to required. T
Applicable	crimping	R1.25-3, R2-3,	_	×	
terminal		RAV1.25-3, RAV2-3		~	
Current co	nsumption	0.105A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
External di	mensions	250 (H) \times 37.5 (W) \times 131 (D) mm	98 (H) \times 27.4 (W) \times 90 (D) mm	~	
External u		(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.45kg	0.16kg	0	

- *1 Use the QX71 at 12VDC.
- *2 Check the specifications of sensor or switch to connect to the QX81.
- *3 The following figure shows derating.



*4 The conversion adapter (ERNT-AQTX81) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

Moreover, by using connectors/terminal block converter modules (A6TBXY36-E, etc.) conversion to the terminal block is possible.

(24) Specifications comparisons between AX81-S2 and QX81

			O: Compa	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AX81-S2	QX81	Compatibility	Precautions for replacement
Number of	input points	32 points	32 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	t voltage	48VDC/60VDC	24VDC	×	Voltage over 28.8VDC is not applicable.*1
Rated inpu	t current	3mA/4mA	Approx. 4mA	0	
Operations	voltage range	41 to 66VDC (Ripple ratio within 5%)	20.4 to 28.8VDC (Ripple ratio within 5%)	×	Voltage over 28.8VDC is not applicable.*1
Maximum s on input po	simultaneous bint.	60% (5 point/common) simultaneously ON	Refer to the derating chart. *2	0	
ON voltage	e/ON current	31VDC or more/ 1.7mA or more	19VDC or more/3mA or more	×	Voltage over 28.8VDC is not applicable.*1
OFF voltage	e/OFF current	10VDC or less/0.5mA or less	11VDC or less/1.7mA or less	×	Voltage over 28.8VDC is not applicable.*1
Input resist	tance	Approx. 18kΩ	Approx. 5.6kΩ	×	Increased.*3
Response	OFF to ON	20ms or less (60VDC)	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Set the input response time of parameters to 20 ms.
time	ON to OFF	20ms or less (60VDC)	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Set the input response time of parameters to 20 ms.
Common te arrangeme	erminal nt	8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: 17, 18, 36)		For wiring, a different voltage cannot be applied to each common since the QX81 has only one common.
Operation	indicator	ON indication (LED)	ON indication (LED)	0	
External connections		38 points removable terminal block (M3 × 6 screw)	37 pin D-sub connector (option)	×	Winn change is serviced #4
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (For A6CON1E)	×	Wiring change is required. ⁴
Applicable crimping terminal		R1.25-3, R2-3, RAV1.25-3, RAV2-3	-	×	
Current co	nsumption	0.110A (TYP. all points ON)	0.075A (TYP. all points ON)	0	
External di	mensions	$\begin{array}{l} 250 \ (\text{H}) \ \times 37.5 \ (\text{W}) \ \times 131 \ (\text{D}) \ \text{mm} \\ (9.84 \ (\text{H}) \ \times 1.48 \ (\text{W}) \ \times 5.16 \ (\text{D}) \ \text{inch}) \end{array}$	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.45kg	0.16kg	0	

*1 For use of 48VDC, connect a resistor of 5.6kΩ(1/2W or more) in series with the external signal line connected between Q81 and an external device.

For use of 60VDC, connect a resistor of $8.2k\Omega(1W \text{ or more})$ in series with the external signal line connected between Q81 and an external device.

*2 The following figure shows derating.



*3 Check the specifications of sensor or switch to connect to the QX81.

*4 By using connectors/terminal block converter modules (A6TBXY36-E, etc.) conversion to the terminal block is possible.
(25) Specifications comparisons between AX81-S3 and QX82-S1

O: Compatible, \triangle : Partial change required, ×: Incon					artial change required, x: Incompatible
Speci	ification	AX81-S3	QX82-S1	Compatibility	Precautions for replacement
Number of	input points	32 points	64 points	×	Set 32 points in the I/O assignment of Parameter.
Isolation m	nethod	Photocoupler	Photocoupler	0	
Rated inpu	it voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not applicable.
Rated inpu	it current	4mA/10mA	Approx. 4mA	Δ	Reduced.*1
Operationa	voltago rongo	10.2 to 26.4VDC	20.4 to 28.8VDC	~	12)/DC are not applicable
Operations	vollage range	(Ripple ratio within 5%)	(Ripple ratio within 5%)		12VDC are not applicable.
Maximum	simultaneous	60% (5 point/common)	Poter to the deroting obert *2	~	Use within the range shown in the
on input po	pint.	simultaneously ON	Refer to the defating chart. 2		derating figure.
ON voltage	e/ON current	9.5VDC or more/3mA or more	19VDC or more/3mA or more	\triangle	12VDC are not applicable.
OFF voltag	e/OFF current	6VDC or less/1.5mA or less	9.5VDC or less/1.5mA or less	\triangle	12VDC are not applicable.
Input resis	tance	Approx. 2.4kΩ	Approx. 5.6kΩ	\triangle	Increased.*1
Response time	OFF to ON	0.1ms or less	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms	0	Set the input response time of parameters to 0.1 ms.
	ON to OFF	0.2ms or less	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms	0	Set the input response time of parameters to 0.1 ms.
Common to arrangeme	erminal ent	8 points/common (common terminal: TB9, TB18, TB27, TB36)	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	Δ	For wiring, a different voltage cannot be applied to each common since the QX82-S1 has only one common.
Operation	indicator	ON indication (LED)	ON indication (LED) 32 point switch-over using switch	0	
External co	onnections	38 points removable terminal block (M3 × 6 screw)	40 pin connector × 1 (option)	×	
Applicable wire size		0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	-	×	
Current co	nsumption	0.110A (TYP. all points ON)	0.09A (TYP. all points ON)	0	
External di	mensions	250 (H) \times 37.5 (W) \times 131 (D) mm (9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.45kg	0.18kg	0	

*1 Check the specifications of sensor or switch to connect to the QX82-S1.





(26) Specifications comparisons between AX82 and QX82

		artial change required, ×: Incompatible			
Speci	fication	AX82	QX82	Compatibility	Precautions for replacement
Number of	input points	64 points	64 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	t voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not applicable.*1
Rated inpu	t current	Approx. 3mA/Approx. 7mA	Approx. 4mA	\triangle	Reduced.*2
Operations	voltage range	10.2 to 26.4VDC	20.4 to 28.8VDC	^	12\/DC are not applicable *1
Operations	voltage range	(Ripple ratio within 5%)	(Ripple ratio within 5%)		12 VDC are not applicable. 1
Maximum s on input po	simultaneous pint.	40points (When located next to the power supply module : 26points)	Refer to the derating chart. *3	Δ	Use within the range shown in the derating figure.
ON voltage	e/ON current	9.5VDC or more/ 2.6mA or more	19V or more/3mA or more		12VDC are not applicable.*1
OFF voltage	e/OFF current	6VDC or less/1.0mA or less	11V or less/1.7mA or less	Δ	12VDC are not applicable.*1
Input resist	tance	Approx. 3.4kΩ	Approx. 5.6kΩ	Δ	Increased.*2
Response	OFF to ON	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
time	ON to OFF	10ms or less	1ms/5ms/10ms/20ms /70ms or less (CPU parameter setting) Initial setting is 10ms	0	Use initial value (10ms) for the input response time of parameters.
Common to arrangeme	erminal nt	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)	0	
Operation	indicator	ON indication (LED) 32 point switch-over using switch	ON indication (LED) 32 point switch-over using switch	0	
External co	onnections	37 pin D-sub connector (Soldered) × 2	40 pin connector × 2 (option)	×	Connector change is required.
Applicable wire size		0.3mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	0	
Accessory		Tow external wiring D sub-connectors	-	×	The 40 pin connectors are sold separately. Purchase them separately.
Current co	nsumption	0.12A (TYP. all points ON)	0.090A (TYP. all points ON)	0	
External di	mensions	$\begin{array}{l} 250 \ (\text{H}) \ \times \ 37.5 \ (\text{W}) \ \times \ 106 \ (\text{D}) \ \text{mm} \\ (9.84 \ (\text{H}) \ \times \ 1.48 \ (\text{W}) \ \times \ 4.17 \ (\text{D}) \ \text{inch}) \end{array}$	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.60kg	0.18kg	0	

*1 Use the QX72 at 12VDC.

- *2 Check the specifications of sensor or switch to connect to the QX82.
- *3 The following figure shows derating.



3.2.2 Specifications Comparisons Between Output Module

(1) Specifications comparisons between AY10 and QY10

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY10	QY10	Compatibility	Precautions for replacement
Number of points	output	16 points	16 points	0	
Isolation m	ethod	Photocoupler	Relay	Δ	Isolation method is different, but the performance is equivalent.
Rated swite	china	24VDC 2A (resistive load) /point	24VDC 2A (resistive load) /point		
voltage/cur	rent	240VAC 2A (COS	240VAC 2A (COS∳=1) /point 8A/common	0	
Minimum s	witching	5VDC 1mA	5VDC 1mA	0	
Maximum	switchna	264VAC	264VAC		
voltage	, interning	125VDC	125VDC	0	
Leakage cu	urrent at OFF	-	_		
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/	Rated switching voltage/		
		current load 200 thousand	current load 100 thousand	\triangle	
		times or more	times or more		
Life	Electrical	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 200 thousand times or more 200VAC 0.7A, 240VAC 0.5A (COS ϕ =0.35) 200 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 200 thousand times or more	200VAC 1.5A, 240VAC 1A ($COS\phi=0.7$) 100 thousand times or more 200VAC 0.4A, 240VAC 0.3A ($COS\phi=0.7$) 300 thousand times or more 200VAC 1A, 240VAC 0.5A ($COS\phi=0.35$) 100 thousand times or more 200VAC 0.3A, 240VAC 0.15A ($COS\phi=0.35$) 300 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100 thousand	Δ	Replace the module more frequently since the life is approximately half.
Maximum s	switching	3600 times/hour	times or more 24VDC 0.3A, 100VDC 0.03A (L/R=7ms) 300 thousand times or more 3600 times/hour	0	
		8 points/common			For wiring, a different voltage cannot
Common te arrengeme	erminal nt	(common terminal: TB9,	16 points/common (common terminal: TB17)	\bigtriangleup	be applied to each common since
		TB18)	(the QY10 has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
External	Voltage	24VDC ±10% ripple voltage 4Vp-p or less	-	0	External power supply is not
power supply	Current	150mA (24VDC TYP. all points ON)	-	0	required.
External co	onnections	20 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.*1
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current cor	nsumption	0.115A (TYP. all points ON)	0.43A (TYP. all points ON)		Since more current is consumed, the current capacity must be reexamined.
External di	mensions	250 (H) \times 37.5 (W) \times 121 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm	~	Wiring space is parrower
		(9.84 (H) × 1.48 (W) × 4.76 (D) inch)	(3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.44kg	0.22kg	0	

*1 The conversion adapter (ERNT-AQTY10) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(2) Specifications comparisons between AY10A and QY18A

			O: Compat	ible, ∆: P	artial change required, x: Incompatible
Speci	fication	AY10A	QY18A	Compatibility	Precautions for replacement
Number of	output	16 points	8 points	~	Use two QY18As when using 9
points			(16 points occupied)	^	points or more.
Isolation m	ethod	Photocoupler	Relay	\bigtriangleup	Isolation method is different, but the performance is equivalent.
Rated swite	shina	24VDC 2A (resistive load) /point	24VDC 2A (resistive load) /point		
voltage/cur	rent	240VAC 2A (COSq=1) /point	240VAC 2A (COS	0	
ronago, ou		16A/all points	8A/all points		
Minimum s	witching	5VDC 1mA	5VDC 1mA	0	
load		22.0/1.0	22.0.4.0		
Maximum s	switchng	264VAC	264VAC	0	
Posponso		125VDC	125VDC	0	
time		12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
	Moonanioar	Rated switching voltage/	Rated switching voltage/	-	
		current load 200 thousand	current load 100 thousand		
		times or more	times or more		
			200VAC 1.5A, 240VAC 1A		
			(COSo=0.7) 100 thousand		
			times or more		
			200VAC 0.4A, 240VAC 0.3A		
			(COS∳=0.7) 300 thousand		
		200VAC 1.5A, 240VAC 1A	times or more		
Life	Electrical	(COS¢=0.7) 200 thousand	200VAC 1A, 240VAC 0.5A		Replace the module more frequently since the life is approximately half.
Liie			(COS _{\$=0.35}) 100 thousand		
		200VAC 0.7A, 240VAC 0.5A	times or more	~	
		times or more	200VAC 0.3A, 240VAC 0.15A		
			(COSo=0.35) 300 thousand		
		(I/R-7ms) 200 thousand	times or more		
		times or more	24VDC 1A, 100VDC 0.1A		
			(L/R=7ms) 100 thousand		
			times or more		
			24VDC 0.3A, 100VDC 0.03A		
			(L/R=7ms) 300 thousand		
Marian	unit als in a		times or more		
frequency	switching	3600 times/hour	3600 times/hour	0	
Common te	erminal	Not provided	Not provided	0	
arrengeme	nt	(all points independent)	(all points independent)	_	
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
External	Voltage	24VDC ±10%	_	0	Evternel newer events is not
power		150mA			External power supply is not
supply	Current	(24VDC TYP all points ON)	-	0	required.
		38 points removable terminal			
External co	nnections	block	18 points terminal block	×	
		(M3 × 6 screw)	(M3 × 6 screw)		
A 11 11			0.3 to 0.75mm ² core		
Applicable	wire size	0.75 to 2mm ²	(2.8mm (0.11 inch) OD max.)	×	wiring change is required.
Applicable	crimping	P1 25 3 P2 3	R1.25-3		
terminal	cimping	RAV1 25-3 RAV2-3	(sleeved crimping terminals	×	
terminai		1.20-0, 1.4V2-0	cannot be used)		
					Since more current is consumed, the
Current cor	nsumption	0.115A (TYP. all points ON)	0.24A (TYP. all points ON)	\triangle	current capacity must be
			00 (11) 07 ((11) 00 (D)	l	reexamined.
External dir	mensions	$250 (H) \times 37.5 (W) \times 131 (D) mm$ (9.84 (H) $\times 1.49 (W) \times 5.46 (D) inch$	90 (H) × ∠1.4 (W) × 90 (D) mm (3.86 (H) × 1.09 (M) × 2.54 (D) inch	\triangle	Wiring space is narrower.
Weight		0.50kg	0.22ka	0	
		0.00119	y		

(3) Specifications comparisons between AY11 and QY10

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY11	QY10	Compatibility	Precautions for replacement
Number of points	output	16 points	16 points	0	
Isolation m	ethod	Photocoupler	Relay	Δ	Isolation method is different, but the performance is equivalent.
Rated swite voltage/cur	ching rent	24VDC 2A (resistive load) /point 240VAC 2A (COS	24VDC 2A (resistive load) /point 240VAC 2A (COS =1) /point 8A/common	0	
Minimum si load	witching	5VDC 1mA	5V 1mA DC	0	
Maximum s	switchng	264VAC 125VDC	264VAC 125VDC	0	
Leakage cu	urrent at OFF	0.1mA (200VAC, 60Hz)	_	0	
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/ current load 200 thousand times or more	Rated switching voltage/ current load 100 thousand times or more	Δ	
Life	Electrical	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 200 thousand times or more 200VAC 0.7A, 240VAC 0.5A (COS ϕ =0.35) 200 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 200 thousand times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100 thousand times or more 200VAC 0.4A, 240VAC 0.3A (COS ϕ =0.7) 300 thousand times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100 thousand times or more 200VAC 0.3A, 240VAC 0.15A (COS ϕ =0.35) 300 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100 thousand times or more 24VDC 0.3A, 100VDC 0.03A (L/R=7ms) 300 thousand times or more	Δ	Replace the module more frequently since the life is approximately half.
frequency	switching	3600 times/hour	3600 times/hour	0	
Surge supp	pressor	varistor (387 to 473V)	None	×	Varistors are not built in.*1
Relay sock	et	Yes	None	×	Replace the module itself when its relay has a failure.
Common te arrengeme	erminal nt	8 points/common (common terminal: TB9,TB18)	16 points/common (common terminal: TB17)	Δ	It is not applicable to use a different voltage for each eight points since the QY10 has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
External	Voltage	24VDC ±10% ripple voltage 4Vp-p or less	_	0	External power supply is not
supply	Current	150mA (24VDC TYP. all points ON)	_	0	required.
External co	nnections	20 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.*2
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current cor	nsumption	0.115A (TYP. all points ON)	0.43A (TYP. all points ON)		Since more current is consumed, the current capacity must be reexamined.
External dir	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		Wiring space is narrower.
Weight		0.50kg	0.22kg	0	

^{*2} The conversion adapter (ERNT-AQTY10) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(4) Specifications comparisons between AY11A and QY18A

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Specif	fication	AY11A	QY18A	Compatibility	Precautions for replacement
Number of	output	16 points	8 points	×	Use two QY18As when using 9
points			(16 points occupied)		points or more.
Isolation me	ethod	Photocoupler	Relay	\bigtriangleup	Isolation method is different, but the performance is equivalent.
Rated swite	shina	24VDC 2A (resistive load) /	24VDC 2A (resistive load) /		
voltage/cur	rent	$240VAC 2A (COS_{\phi}=1) / point$	240VAC 2A (COS6=1) /point	0	
- Tonago, oan		16A/all points	8A/all points		
Minimum sv Ioad	witching	5VDC 1mA	5VDC 1mA	0	
Maximum s	witchng	264VAC 125VDC	264VAC 125VDC	0	
Leakage cu	Irrent at OFF	0.1mA (200VAC, 60Hz)		0	
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
	Weenanioar	Bated switching voltage/	Rated switching voltage/		
		current load 200 thousand	current load 100 thousand		
		times or more	times or more	-	
			200VAC 1.5A, 240VAC 1A		
			(COS _{\$=0.7}) 100 thousand		
			200VAC 0.4A, 240VAC 0.3A		
		200VAC 1.5A, 240VAC 1A	(COSØ=0.7) 300 thousand		
		(COS _{\$=0.7}) 200 thousand			
Life	Electrical	times or more	$(COS_{\phi} - 0.35) 100 \text{ thousand}$	Replace the since the l	Replace the module more frequently
		200VAC 0.7A, 240VAC 0.5A	times or more		since the life is approximately half.
		(COS _{\$=0.35}) 200 thousand	200VAC 0 3A 240VAC 0 15A	\triangle	
		times or more	(COS ₀ =0.35) 300 thousand		
		24VDC 1A, 100VDC 0.1A	times or more		
		(L/R=7ms) 200 thousand	24VDC 1A, 100VDC 0.1A		
		times or more	(L/R=7ms) 100 thousand		
			times or more		
			24VDC 0.3A, 100VDC 0.03A		
			(L/R=7ms) 300 thousand		
Maximum s	witching		times or more		
frequency	switching	3600 times/hour	3600 times/hour	0	
Surge supp	oressor	varistor (387 to 473V)	None	×	Varistors are not built in.*1
Common te	erminal	Not provided	Not provided	0	
arrengemei	nt	(all points independent)	(all points independent)	<u> </u>	
Operation i	ndicator	ON Indication (LED)	ON Indication (LED)	0	
External	Voltage	24 VDC $\pm 10\%$	-	0	External newer supply is not
power		150mA			External power supply is not
supply	Current	(24)/DC TYP all points ON)	-	0	required.
		29 points removable terminal			
External co	nnections	block	18 points terminal block	~	
External co	inconorio	(M3 × 6 screw)	(M3 × 6 screw)	^	
			0.3 to 0.75mm ² core		
Applicable	wire size	0.75 to 2mm ²	(2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable crimping			R1.25-3	1	
		R1.25-3, R2-3,	(sleeved crimping terminals	×	
terminal		KAV1.25-3, KAV2-3	cannot be used)		
Current				~	Since more current is consumed, the
Current cor	isumption	U.TISA (TYP. all points UN)	0.24A (1YP. all points ON)		current capacity must be
		260 /Ll) x 27 6 (\\\) x 424 /D)	00 (L) x 27 4 (M) x 00 (D) mm		
External dir	mensions	200 (T) × 37.3 (W) × 131 (D) MM (0.84 (H) × 1.48 (W) × 5.16 (D) inch)	30 (□) × 21.4 (W) × 30 (D) mm (3.86 (H) × 1.08 (M) × 2.54 (D) inch)	\bigtriangleup	Wiring space is narrower.
Weight		(טווו (ט) סו גע אין אין אין אין אין אין איט. 0 אדע א	(1) (U) (U) × 3.04 (U) (III)	0	
weight		0.47 Kg	0.22KY	0	

(5) Specifications comparisons between AY11AEU and QY18A

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Specif	fication	AY11AEU	QY18A	Compatibility	Precautions for replacement
Number of	output	16 points	8 points	×	Use two QY18As when using 9
points			(16 points occupied)	~	points or more.
Isolation m	ethod	Photocoupler	Relay	\bigtriangleup	Isolation method is different, but the performance is equivalent.
Rated swite	shina	24VDC 2A (resistive load) /point	24VDC 2A (resistive load) /point		
voltage/cur	rent	24VAC 2A (COS	240VAC 2A (COS	0	
vonage/our	icin	16A/all points	8A/all points		
Minimum s [,] load	witching	5VDC 1mA	5VDC 1mA	0	
Maximum s	witchng		264)/AC 125)/DC	0	
voltage		49.9VAC 74.9VDC	264VAC 125VDC	0	
Leakage cu	irrent at OFF	0.1mA (49.9VAC, 60Hz)	-	0	
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/	Rated switching voltage/		
		current load 200 thousand	current load 100 thousand	\bigtriangleup	
		times or more	times or more		
			200VAC 1.5A, 240VAC 1A		
			(COSo=0.7) 100 thousand		
			times or more		
			200\/AC 0 4A 240\/AC 0 3A		
			$(COS_{4}-0.7)$ 300 thousand		
		24VAC 1.5A	(COSQ=0.7) 300 thousand		
		(COSo=0.7) 200 thousand			
Life	Electrical	times or more	200VAC 1A, 240VAC 0.5A		Replace the module more frequently
		24VAC 0.75A	(COSo=0.35) 100 thousand		since the life is approximately half.
		(COSo=0.35) 200 thousand	times or more		
		times or more	200VAC 0.3A, 240VAC 0.15A		
		24VDC 1A, 48VDC 0.1A	(COSφ=0.35) 300 thousand		
		(I/R=7ms) 200 thousand	times or more		
		times or more	24VDC 1A, 100VDC 0.1A		
			(L/R=7ms) 100 thousand		
			times or more		
			24VDC 0.3A, 100VDC 0.03A		
			(L/R=7ms) 300 thousand		
			times or more		
Maximum s frequency	witching	3600 times/hour	3600 times/hour	0	
Surge supp	oressor	varistor (387 to 473V)	None	×	Varistors are not built in.*1
Common te	erminal	Not provided	Not provided	<u> </u>	
arrengeme	nt	(all points independent)	(all points independent)	0	
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
F	\ /= +=	24VDC ±10%		_	
External	Voltage	ripple voltage 4Vp-p or less	_	0	External power supply is not
power		150mA		_	required.
supply	Current	(24VDC TYP. all points ON)	-	0	
		38 points removable terminal			
External co	nnections	block	18 points terminal block	×	
		(M3 × 6 screw)	$(M3 \times 6 \text{ screw})$		
		(0.3 to 0.75mm ² core		
Applicable	wire size	0.75 to 2mm ²	(2.8mm (0.11 inch) OD max)	×	Wiring change is required.
			R1 25-3		
Applicable	crimping	R1.25-3, R2-3,	(slowed crimping terminals	×	
terminal		RAV1.25-3, RAV2-3	cannot be used)	~	
				ł	Since more current is serviced the
Current	au man ti				since more current is consumed, the
Current cor	Sumption	U. I DA (I YP. all points UN)	0.24A (1YP. all points ON)		current capacity must be
					re-calculated.
External dir	mensions	250 (H) × 37.5 (W) × 131 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm	\triangle	Wiring space is narrower.
		(9.84 (H) × 1.48 (W) × 5.16 (D) inch)	(3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.47kg	0.22kg	0	

(6) Specifications comparisons between AY11E and QY10

			O: Compat	ible, ∆: P	artial change required, x: Incompatible
Speci	fication	AY11E	QY10	Compatibility	Precautions for replacement
Number of points	output	16 points	16 points	0	
Isolation m	ethod	Photocoupler	Relay	Δ	Isolation method is different, but the performance is equivalent.
Rated swite voltage/cur	ching rent	24VDC 2A (resistive load) /point 240VAC 2A (COS∳=1) /point 8A/common	24VDC 2A (resistive load) /point 240VAC 2A (COS∳=1) /point 8A/common	0	
Minimum s	witching	5VDC 1mA	5VDC 1mA	0	
Maximum s	witchng	250VAC	264VAC	0	
		0.1mA (200)/AC 60Hz)	1257000	0	
Desponso		10ms or less	- 10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
ume	Mechanical	20 million times or more	20 million times or more	0	
	Mechanica	Rated switching voltage/ current load 200 thousand times or more	Rated switching voltage/ current load 100 thousand times or more	Δ	
Life	Electrical	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 200 thousand times or more 200VAC 0.7A, 240VAC 0.5A (COS ϕ =0.35) 200 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 200 thousand times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100 thousand times or more 200VAC 0.4A, 240VAC 0.3A (COS ϕ =0.7) 300 thousand times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100 thousand times or more 200VAC 0.3A, 240VAC 0.15A (COS ϕ =0.35) 300 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100 thousand times or more 24VDC 0.3A, 100VDC 0.03A (L/R=7ms) 300 thousand times or more	Δ	Replace the module more frequently since the life is approximately half.
Maximum s frequency	witching	3600 times/hour	3600 times/hour	0	
Surge supp	oressor	varistor (387 to 473V)	None	×	Varistors are not built in.*1
Common te arrengeme	erminal nt	8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)	Δ	For wiring, a different voltage cannot be applied to each common since the QY10 has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Fuse		8A MF51NM8 or FGMA250V8A	None	×	Fuses are not built in.*2
Fuse blow	indicator	None	_		
External	Voltage	24VDC ±10% ripple voltage 4Vp-p or less	-	0	External power supply is not
supply	Current	150mA (24VDC TYP. all points ON)	-	0	required.
External co	nnections	20 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 \times 6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.*3
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current cor	nsumption	0.115A (TYP. all points ON)	0.43A (TYP. all points ON)		Since more current is consumed, the current capacity must be re-calculated.
External dir	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		Wiring space is narrower.
Weight		0.47kg	0.22kg	0	

*1 Connect a varistor to reduce external noise.

*2 Mount a fuse on every external terminal to prevent external devices and modules from burning out upon load short circuit.

*3 The conversion adapter (ERNT-AQTY10) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(7) Specifications comparisons between AY11EEU and QY10

Specification points AV1 EEU OV10 Compatibility Presentations for replacement 16 points Presentations for replacement 16 points <th></th> <th></th> <th></th> <th>O: Compat</th> <th>ible, ∆: P</th> <th>artial change required, x: Incompatible</th>				O: Compat	ible, ∆: P	artial change required, x: Incompatible
Number of output points 16 points 16 points 0 Isolation method Photocoupler Relay △ performance is equivalent. Isolation method 24VDC2 A (closien) fjoint 24VAC2A (COS)=1 / fjoint BAcommon 24VDC2 A (closien) fjoint 24VAC2A (COS)=1 / fjoint BAcommon 0 0 Minimum switching taad 64 SWAC 74 SWDC 264VAC 12SVDC 0 0 Voltage/current at OFF 0.1mk (49 SWAC 76 SWDC 264VAC 12SVDC 0 0 Imme ON (16 OFF 10ms or less 10ms or less 0 0 Imme OL OFF 10ms or less 10ms or less 0 0 Imme OL OFF 10ms or less 10ms or less 0 0 Imme OL OFF 20 million times or more 0 0 0 COSH=0.71 100 housand times or more 200VAC 0.35, 200 housand times or more 0 0 0 States in more 2000 housand times or more 3000 housand times or more 0 0 States in more 3600 housand times or more 3000 housand times or more 0	Speci	fication	AY11EEU	QY10	Compatibility	Precautions for replacement
Isolation method Photocoupler Relay △ Isolation method is different, but the performance is equivalent. Ratad switching voltage(current load 24/WC 2 A (resetive load) /point 24/WC 2A (resetive load) /point 20/WC 16A 20/WC 16A //// (COS+0-07) 200 mousand times or more 20/WC 16A, 24/WC 16A (COS+0-07) 300 mousand times or more 24/WC 1A, 24/WC 0 7A (COS+0-07) 300 mousand times or more 24/WC 1A, 24/WC 0 1A (U/R-Fms) 300 mousand times or more 24/WC 1A, 40/WC 0 3A (U/R-Fms) 300 mousand times or more 24/WC 1A, 40/WC 1A (U/R-Fms) 300 mousand times or more 24/WC 1A, 40/WC 1A (U/R-Fms) 300 mousand times or more 24/WC 1A (U/R-Fms) 300 m	Number of points	output	16 points	16 points	0	
Rated switching voltage/current 24/VIC 2A (resistive load) joint 24/VIC 2A (COSe+1) joint 20/VIC 1A (25/VIC 1A) joint 20/VIC 1A, 24/VIC 1A (25/VIC 1A) joint 20/VIC 1A, 24/VIC 1A, 24/VIC 1A) joint 20/VIC 1A, 24/VIC 1A, 24/VIC 1A (COS+-0.7) 100 housand times or more 20/VIC 1A, 24/VIC 1A, 24/VIC 1A (COS+-0.7) 100 housand times or more 20/VIC 1A, 24/VIC 1A, 24/VIC 1A (COS+-0.7) 100 housand times or more 24/VIC 1A, 24/VIC 1A, 24/VIC 1A (COS+-0.7) 100 housand times or more 24/VIC 1A, 24/VIC 1A, 24/VIC 1A (UR-Fmi) 200 housand times or more 24/VIC 1A, 24/VIC 1A (UR-Fmi) 100 housand times or more 24/VIC 1A, 100/VIC 0.1A (UR-Fmi) 100 housand times or more 24/VIC 1A, 24/VIC 1A (UR-Fmi) 1	Isolation m	ethod	Photocoupler	Relay	Δ	Isolation method is different, but the performance is equivalent.
Minimum switching load SVDC 1mA SVDC 1mA O Maximum switching voltage 49.9VAC 74.9VDC 264VAC 125VDC O Leskage current at OFF 0.1mA (49.9VAC, 00Hz)	Rated swite voltage/cur	ching rent	24VDC 2A (resistive load) /point 24VAC 2A (COS =1) /point 8A/common	24VDC 2A (resistive load) /point 240VAC 2A (COS∳=1) /point 8A/common	0	
Maximum switching voltage time 49.9VAC 74.9VDC 264VAC 125VDC O Leakage current at OFF me 0.1Tm / 46.9VAC, 60Hz) - O Response ime ON to OFF 10ms or less 0 O Mechanical 20 million times or more 20 million times or more 0 Mechanical 20 million times or more 20 million times or more 0 200Vk 0 CFF 15.8 200Vk 0 14A, 240VkC 14A 200Vk 0 14A, 240VkC 0.3A (COS+-0.7) 200 thousand times or more 200Vk 0 14A, 240VkC 0.3A (COS+-0.7) 300 thousand times or more 200Vk 0 14A, 240VkC 0.3A 24VK 0 1.5A, 240VkC 0.3A,	Minimum s load	witching	5VDC 1mA	5VDC 1mA	0	
Leakage current at OFF 0.1mk (49.9VAC, 60Hz) 0 Response ime OFF 16 ON 10ms or less 10ms or less 0 Mechanical 20 millon times or more 20 millon times or more 0 Mechanical Reference 20 millon times or more 0 Life Mechanical Reference 20 millon times or more 0 200VAC 1.5A, 240VAC 1.5A (COSq=0.7) 200 thousand times or more 200VAC 1.5A, 240VAC 0.3A (COSq=0.7) 100 thousand times or more A 200VAC 1.4A, 240VAC 0.5A (COSq=0.35) 200 thousand times or more 200VAC 0.5A (COSq=0.35) 300 thousand times or more A 24VAC 1.5A (COSq=0.35) 200 thousand times or more 200VAC 0.5A (COSq=0.35) 300 thousand times or more A 24VAC 0.75A (COSq=0.35) 200 thousand times or more 100 thousand times or more A 24VAC 0.74, 44VDC 0.14, 10VDC 0.14, 10VDC 0.3A (UR=7ms) 300 thousand times or more A 20res or more 24VAC 0.3A 240VAC 0.3A COSq=0.33 300 timusand times or more 21/00 C 1.4, 44VDC 1.4A 44VDC 1.4A (UR=7ms) 300 timusand times or more A For wrints or an ot built in.*1 20res or more varistors are not built in.*1 Common terminal: TB17) A	Maximum s voltage	witchng	49.9VAC 74.9VDC	264VAC 125VDC	0	
Response OFF to ON 10ms or less 10ms or less 0 ime Michanical 20 million times or more 20 million times or more 0 Rated switching voltage/ current load 200 thousand times or more Rated switching voltage/ current load 100 thousand times or more △ Life Electrical 24/VAC 1.5A (COSH=0.7) 200 thousand times or more △ Rated switching voltage/ current load 100 thousand times or more △ Life Electrical 24/VAC 1.5A (COSH=0.7) 200 thousand times or more 200/VAC 0.5A (COSH=0.7) 100 thousand times or more △ 200/VAC 0.3A, 24/VAC 0.5A (COSH=0.35) 200 thousand times or more △ △ A 200/VAC 0.3A, 24/VAC 0.5A (COSH=0.7) 200 thousand times or more △ △ 200/VAC 0.3A, 24/VAC 0.5A (COSH=0.35) 200 thousand times or more △ △ 200/VAC 0.3A, 24/VAC 0.5A (UR=7ms) 200 thousand times or more △ ✓ 200/VAC 0.3A, 10/VDC 0.3A (UR=7ms) 200 thousand times or more △ ✓ 200/VAC 0.3A, 10/VDC 0.3A ✓ ✓ ✓ Surge suppressor varistor (387 to 473V) None × ✓ Surge suppressor varist	Leakage cu	irrent at OFF	0.1mA (49.9VAC, 60Hz)	-	0	
Ime ON to OFF 12ms or less 0 Mechanical 20 milion times or more 20 milion times or more 0 Image: Second	Response	OFF to ON	10ms or less	10ms or less	0	
Mechanical properties 20 million times or more attend switching times or more 20 million times or more current load 300 thousand times or more 0 Life Replace the module more frequently current load 200 housand times or more 0 0 24VAC 1.5A (COS4=0.7) 200 thousand times or more 200VAC 1.5A, 240VAC 0.3A (COS4=0.7) 300 thousand times or more 0 0 24VAC 0.75A (COS4=0.7) 200 thousand times or more 200VAC 1.5A, 240VAC 0.5A (COS4=0.7) 300 thousand times or more 0 0 24VDC 1.4, 84VDC 0.1A (UR=7ms) 200 thousand times or more 0 0 0 0 Maximum switching frequency 3600 times/hour 0 0 0 Surge suppressor variator (387 to 473V) None × Variators are not built in.*1 Common terminal arrengement 8A MF51MM or FGMA250V 8A (M3 × 6 screw) 0 0 0 Fuse blow indicator ON indication (LED) ON indication (LED) 0 0 Fuse blow indicator 0.75 to 2mm ² (24VDC ± 10% (M3 × 6 screw) 18 points terminal block (M3 × 6 screw) - 0 Fuse blow indicator 0.75 to 2mm ² (24WDC ± 10% (M3 × 6 screw) 0.33 to 73mm ² core (28mm (0.11 mch) OD max)	time	ON to OFF	12ms or less	12ms or less	0	
Life Rated switching voltage/ current load 200 Mousand times or more Rated switching voltage/ current load 100 Mousand times or more △ Life 24VAC 1.5A (COSH=0.7) 100 thousand times or more 200VAC 1.5A (COSH=0.7) 300 thousand times or more △ 24VAC 0.5A (COSH=0.7) 200 thousand times or more (COSH=0.3) 100 thousand times or more △ 24VAC 0.75A (COSH=0.7) 200 thousand times or more (COSH=0.3) 100 thousand times or more △ 24VAC 0.75A (COSH=0.3) 200 thousand times or more (COSH=0.3) 100 thousand times or more △ 24VAC 0.75A (COSH=0.3) 200 thousand times or more (COSH=0.3) 100 thousand times or more △ 24VDC 1.4, 40VD 0.3A (UR=7ms) 200 thousand times or more △ A Surge suppressor Varistors are not built in *1 * Common terminal arrengement 8 points/common (common terminal: TB17) △ Kraitors are not built in *1 Fuse 8A MF51NM8 or FGMA250V 8A None None × Fuses are not built in *1 Fuse blow indicator None ~ O External power supply is not required. 24VDC 170% replicable wire size 0.75 to 2mm ² (Cast 0.75mm ² rore (24VDC 100%) × Fuses are not built in *2 <		Mechanical	20 million times or more	20 million times or more	0	
Life 20VAC 1.5A, 240VAC 1A, (COSH=0.71 000 thousand times or more 20VAC 0.4A, 240VAC 0.3A, (COSH=0.71 000 thousand times or more 20VAC 0.4A, 240VAC 0.5A, (COSH=0.33) 100 thousand times or more 20VAC 1A, 240VAC 0.5A, (COSH=0.33) 100 thousand times or more 20VAC 1A, 240VAC 0.5A, (COSH=0.33) 100 thousand times or more 20VAC 1A, 240VAC 0.5A, (COSH=0.35) 100 thousand times or more 20VAC 0.3A, 240VAC 0.5A, (COSH=0.35) 100 thousand times or more 24VAC 1A, 48VPC 0.1A, (LR=7ms) 200 thousand times or more 24VPC 1A, 100VPC 0.1A, (LR=7ms) 200 thousand times or more A Maximum switching requery 3600 times/hour 3600 times/hour O Strige suppressor varistor (387 to 473)) None × Surge suppressor varistor (387 to 473)) None × Common terminal arrengement 8 points/common (common terminal: TB9, TB18) 16 points/common (common terminal: TB17) △ Fuse 804 MF51MM8 or FCMA250V 8A None × Fuses are not built in.*1 Fuse blow indicator None - O External connections 20 points removable terminal block (M3 × 6 screw) × Applicable crimping terminal R1.25-3, R2-3, R1.25-3, RAV2-3 R1.25-3 (steewed crimping terminals cannot be used) × Applicable crimping terminal 0.115A (TYP, all points ON) 0.43A (TYP, all points ON) △			Rated switching voltage/ current load 200 thousand times or more	Rated switching voltage/ current load 100 thousand times or more		
Maximum switching frequency 3600 times/hour O Surge suppressor varistor (387 to 473V) None × Varistors are not built in.*1 Common terminal arrengement 8 points/common (common terminal: TB9, TB18) 16 points/common (common terminal: TB17) △ For wiring, a different voltage cannot be applied to each common since the QY10 has only one common. Operation indicator ON indication (LED) ON indication (LED) O Fuse 8A MF51NM8 or FGMA250V 8A None × Fuses are not built in.*2 Fuse blow indicator None - O O External power supply Voltage 24VDC ±10% ripple voltage 4Vp- p or less ripple voltage 4Vp- p or less - O External power supply is not required. 150mA (24VDC TYP. all points ON) - O External power supply is not required. Applicable wire size 0.75 to 2mm ² 0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.) × Viring change is required.*3 Applicable crimping terminal R1.25-3, R2-3, RAV1.25-3, RAV2-3 R1.25-3 (sleewed crimping terminals cannot be used) × Current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) ×37.5 (W) ×121 (D) mm (9.84 (H) × 1.48 (W) ×4.76 (D) inc	Life	Electrical	24VAC 1.5A (COS ϕ =0.7) 200 thousand times or more 24VAC 0.75A (COS ϕ =0.35) 200 thousand times or more 24VDC 1A, 48VDC 0.1A (L/R=7ms) 200 thousand times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100 thousand times or more 200VAC 0.4A, 240VAC 0.3A (COS ϕ =0.7) 300 thousand times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100 thousand times or more 200VAC 0.3A, 240VAC 0.15A (COS ϕ =0.35) 300 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100 thousand times or more 24VDC 0.3A, 100VDC 0.03A (L/R=7ms) 300 thousand times or more	Δ	Replace the module more frequently since the life is approximately half.
Surge suppressor varistor (387 to 473V) None × Varistors are not built in.*1 Common terminal arrengement 8 points/common (common terminal: TB9, TB18) 16 points/common (common terminal: TB17) △ For wiring, a different voltage cannot be applied to each common since the QY10 has only one common. Operation indicator ON indication (LED) ON indication (LED) O O Fuse 8A MF51NM8 or FGMA250V 8A None × Fuses are not built in.*2 Fuse blow indicator None - O O External power voltage 4Vp-p or less - O gover supply Current 150mA (24VDC ±10% (M3 × 6 screw)) - O External power supply is not required. Voltage 120 points removable terminal block (M3 × 6 screw) - O External power supply is not required. Applicable wire size 0.75 to 2mm ² 0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.) × X Applicable crimping terminal R1.25-3, R2-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Since more current is consumed, the current capacity must be re-calculated. Current consumption 0.115A (TYP. all	Maximum s frequency	switching	3600 times/hour	3600 times/hour	0	
Common terminal arrengement 8 points/common (common terminal: TB9, TB18) 16 points/common (common terminal: TB17) △ For wiring, a different voltage cannot be applied to each common since the QY10 has only one common. Operation indicator ON indication (LED) ON indication (LED) O Fuse 8A MF51NM8 or FGMA250V 8A None × Fuses are not built in.*2 Fuse blow indicator None - O O External power supply 24VDC ±10% ripple voltage 4/p-p or less - O External power supply is not required. External over supply 150mA - O External power supply is not required. External connections 20 points removable terminal block (M3 × 6 screw) 18 points terminal block (M3 × 6 screw) × Applicable wire size 0.75 to 2mm² (2.8mm (0.11 noh OD max)) × Wiring change is required.*3 Applicable crimping terminal R1.25-3, R2-3, RAV2-3 (sleeved crimping terminals cannot be used) × Since more current is consumed, the current is consumed, the current capacity must be re-calculated. Current consumption 0.115A (TYP, all points ON) 0.43A (TYP, all points ON) △ Since more current is consumed, the current (3.86 (H) × 1.48 (W) × 3.54 (D) inch) Wiring space	Surge supp	pressor	varistor (387 to 473V)	None	×	Varistors are not built in.*1
Operation indicator ON indication (LED) ON indication (LED) O Fuse 8A MF51NM8 or FGMA250V 8A None × Fuses are not built in.*2 Fuse blow indicator None - O O External power supply Voltage 24VDC ±10% ripple voltage 4Vp-p or less - O External power supply is not required. External connections Current 150mA (24VDC TYP. all points ON) - O External block (M3 × 6 screw) × Applicable wire size 0.75 to 2mm² 0.3 to 0.75mm² core (2.8mm (0.11 inch) OD max.) × Wiring change is required.*3 Applicable crimping terminal R1.25-3, R2-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) ×37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Since more current is consumed. the current capacity must be re-calculated. External dimensions 250 (D) ×37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Wiring space is narrower.	Common te arrengeme	erminal nt	8 points/common (common terminal: TB9, TB18)	16 points/common (common terminal: TB17)		For wiring, a different voltage cannot be applied to each common since the QY10 has only one common.
Fuse 8A MF51NM8 or FGMA250V 8A None × Fuses are not built in.*2 Fuse blow indicator None - O - O External power supply Voltage 24VDC ±10% ripple voltage 4Vp-p or less - O External power supply is not required. supply Current 150mA - O External power supply is not required. External connections 20 points removable terminal block (M3 × 6 screw) 18 points terminal block (M3 × 6 screw) × × Applicable wire size 0.75 to 2mm² 0.3 to 0.75mm² core (2.8mm (0.11 inch) OD max.) × × Applicable crimping terminal R1.25-3, R2-3, RAV1.25-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) ×37.5 (W) ×121 (D) mm (9.8 (H) ×27.4 (W) ×90 (D) mm (3.86 (H) × 1.08 (W) ×3.54 (D) inch) △ Wiring space is narrower.	Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Fuse blow indicator None - O External power supply 24VDC ±10% ripple voltage 4Vp-p or less - O External power supply is not required. gower supply Current 150mA (24VDC TYP. all points ON) - O External power supply is not required. External connections 20 points removable terminal block (M3 × 6 screw) 18 points terminal block (M3 × 6 screw) × × Applicable wire size 0.75 to 2mm² 0.3 to 0.75mm² core (2.8mm (0.11 inch) OD max.) × Wiring change is required.*3 Applicable crimping terminal R1.25-3, R2-3, RAV2-3 R1.25-3 × Since more current is consumed, the current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Wiring space is narrower. Weight 0.47kg 0.22kg O O O	Fuse		8A MF51NM8 or FGMA250V 8A	None	×	Fuses are not built in.*2
External power supply Voltage 24VDC ±10% ripple voltage 4Vp-p or less - O External power supply is not required. Current 150mA (24VDC TYP. all points ON) - O External power supply is not required. External connections 20 points removable terminal block (M3 × 6 screw) 18 points terminal block (M3 × 6 screw) × × Applicable wire size 0.75 to 2mm ² 0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.) × × Applicable crimping terminal R1.25-3, R2-3, RAV1.25-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Wiring space is narrower. Weight 0.47kg 0.22kg O	Fuse blow i	indicator	None	-	0	
Supply Current 150mA (24VDC TYP. all points ON) - O required. External connections 20 points removable terminal block (M3 × 6 screw) 18 points terminal block (M3 × 6 screw) × × Applicable wire size 0.75 to 2mm ² 0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.) × Wiring change is required.*3 Applicable crimping terminal R1.25-3, R2-3, RAV1.25-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Since more current is consumed, the current capacity must be re-calculated. Current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Wiring space is narrower. Weight 0.47kg 0.22kg O	External	Voltage	24VDC ±10% ripple voltage 4Vp-p or less	-	0	External power supply is not
External connections 20 points removable terminal block (M3 × 6 screw) 18 points terminal block (M3 × 6 screw) × Applicable wire size 0.75 to 2mm² 0.3 to 0.75mm² core (2.8mm (0.11 inch) OD max.) × Applicable crimping terminal R1.25-3, R2-3, RAV1.25-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Wiring space is narrower. Weight 0.47kg 0.22kg O	supply	Current	150mA (24VDC TYP. all points ON)	-	0	required.
Applicable wire size 0.75 to 2mm² 0.3 to 0.75mm² core (2.8mm (0.11 inch) OD max.) × Wiring change is required.*3 Applicable crimping terminal R1.25-3, R2-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Since more current is consumed, the current capacity must be re-calculated. Current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)) △ Wiring space is narrower. Weight 0.47kg 0.22kg O	External co	nnections	20 points removable terminal block $(M3 \times 6 \text{ screw})$	18 points terminal block (M3 \times 6 screw)	×	
Applicable crimping terminal R1.25-3, R2-3, RAV2-3 R1.25-3 (sleeved crimping terminals cannot be used) × Current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)) △ Wiring space is narrower. Weight 0.47kg 0.22kg O	Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.*3
Current consumption 0.115A (TYP. all points ON) 0.43A (TYP. all points ON) △ Since more current is consumed, the current capacity must be re-calculated. External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Wiring space is narrower. Weight 0.47kg 0.22kg O	Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
External dimensions 250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch) 98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch) △ Wiring space is narrower. Weight 0.47kg 0.22kg O	Current cor	nsumption	0.115A (TYP. all points ON)	0.43A (TYP. all points ON)		Since more current is consumed, the current capacity must be re-calculated.
Weight 0.47kg 0.22kg O	External dir	mensions	250 (D) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		Wiring space is narrower.
	Weight		0.47kg	0.22kg	0	

*1 Connect a varistor to reduce external noise.

*2 Mount a fuse on every external terminal to prevent external devices and modules from burning out upon load short circuit.

*3 The conversion adapter (ERNT-AQTY10) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(8) Specifications comparisons between AY11-UL and QY10

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Specif	fication	AY11-UL	QY10	Compatibility	Precautions for replacement
Number of points	output	16 points	16 points	0	
Isolation me	ethod	Photocoupler	Relay	Δ	Isolation method is different, but the performance is equivalent.
Rated swite voltage/curr	ching rent	24VDC 2A (resistive load) /point 240VAC 2A (COS	24VDC 2A (resistive load) /point 240VAC 2A (COS =1) /point 8A/common	0	
Minimum sv load	witching	5VDC 1mA	5VDC 1mA	0	
Maximum s voltage	witchng	264VAC 125VDC	264VAC 125VDC	0	
Leakage cu	Irrent at OFF	0.1mA (200VAC, 60Hz)	_	0	
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/ current load 200 thousand times or more	Rated switching voltage/ current load 100 thousand times or more		
Life	Electrical	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 200 thousand times or more 200VAC 0.7A, 240VAC 0.5A (COS ϕ =0.35) 200 thousand times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 200 thousand times or more	200VAC 1.5A, 240VAC 1A ($COS\phi=0.7$) 100 thousand times or more 200VAC 0.4A, 240VAC 0.3A ($COS\phi=0.7$) 300 thousand times or more 200VAC 1A, 240VAC 0.5A ($COS\phi=0.35$) 100 thousand times or more 200VAC 0.3A, 240VAC 0.15A ($COS\phi=0.35$) 300 thousand times or more 24VDC 1A, 100VDC 0.1A ($L/R=7ms$) 100 thousand times or more 24VDC 0.3A, 100VDC 0.03A ($L/R=7ms$) 300 thousand times or more	Δ	Replace the module more frequently since the life is approximately half.
Maximum s frequency	witching	3600 times/hour	3600 times/hour	0	For wiring a different voltage connet
Common te arrengemen	erminal nt	(common terminal: TB9, TB18)	16 points/common (common terminal: TB17)		be applied to each common since the QY10 has only one common.
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
Surge supp	oressor	varistor (387 to 473V)	None	×	Varistors are not built in.*1
Relay sock	et	Yes	None	×	Replace the module itself when its relay has a failure.
External	Voltage	24VDC ±10% ripple voltage 4Vp-p or less	-	0	External power supply is not
supply	Current	150mA (24VDC TYP. all points ON)	-	0	required.
External co	nnections	20 points removable terminal block (M3 × 6 screw)	18 points terminal block (M3 × 6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3, R2-3, RAV1.25-3, RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current cor	nsumption	0.12A (TYP. all points ON)	0.43A (TYP. all points ON)		Since more current is consumed, the current capacity must be re-calculated.
External dir	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.50kg	0.22kg	0	

(9) Specifications comparisons between AY13 and QY10

			O: Compat	ible, ∆: F	artial change required, ×: Incompatible
Speci	fication	AY13	QY10	Compatibility	Precautions for replacement
Number of	output	32 points	16 points	×	Use two QY10s when using 17
points					points or more.
Isolation m	ethod	Photocoupler	Relay	\triangle	Isolation method is different, but the performance is equivalent.
Rated swite	ching	24VDC 2A (resistive load) /point	24VDC 2A (resistive load) /point		
	rent	240VAC 2A (COS	240VAC 2A (COS	0	
voltage/cui	Territ	5A/common	8A/common		
Minimum s load	witching	5VDC 1mA	5VDC 1mA	0	
Maximum s	witchng	264VAC	264VAC	~	
voltage		125VDC	125VDC	0	
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/	Rated switching voltage/		
		current load 200 thousand	current load 100 thousand	\bigtriangleup	
		times or more	times or more		
			200VAC 1.5A, 240VAC 1A		
			(COSo=0.7) 100 thousand		
			times or more		
			200VAC 0.4A. 240VAC 0.3A		
			(COSo=0.7) 300 thousand		
		200VAC 1.5A, 240VAC 1A	times or more		
		(COS _{\$=0.7}) 200 thousand	200VAC 1A 240VAC 0 5A		
Life	Electrical	times or more	$(COS_{\Phi}=0.35)$ 100 thousand		Replace the module more frequently since the life is approximately half.
		200VAC 0.7A, 240VAC 0.5A	times or more		
		(COS			
		times or more	(COSt-0.35) 200 thousand		
		24VDC 1A, 100VDC 0.1A	times or more		
		(L/R=7ms) 200 thousand			
		times or more	(1/P-7ms) 100 thousand		
			times or more		
			(L/P-7ms) 200 thousand		
			times or more		
Maximum	witching				
frequency	switching	3600 times/hour	3600 times/hour	0	
Common te	erminal	8 points/common	16 points/common		For wiring, a different voltage cannot
arrengeme	nt	(common terminal: TB9,	(common terminal: TB17)	\triangle	be applied to each common since
		TB18, TB27, TB36)	· · · · · · · · · · · · · · · · · · ·	_	the QY10 has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
External	Voltage	24VDC ±10%	-	0	
power		ripple voltage 4Vp-p or less			External power supply is not
supply	Current	290mA	_	0	required.
		(24VDC TYP. all points ON)			
		38 points removable terminal	18 points terminal block		
External co	nnections	block	$(M3 \times 6 \text{ screw})$	×	
		(M3 × 6 screw)		ļ	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core	×	Wiring change is required.
			(2.8mm (0.11 inch) OD max.)		.gg
Applicable	crimping	R1.25-3 R2-3	R1.25-3		
terminal	opg	RAV1 25-3 RAV2-3	(sleeved crimping terminals	×	
			cannot be used)		
					Since more current is consumed, the
Current cor	nsumption	0.23A (TYP. all points ON)	0.43A (TYP. all points ON)	\bigtriangleup	current capacity must be
					re-calculated.
External di	mensions	250 (H) \times 37.5 (W) \times 131 (D) mm	98 (H) $\times27.4$ (W) $\times90$ (D) mm	~	Wiring space is parrower
		(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.59kg	0.22kg	0	

(10) Specifications comparisons between AY13E and QY10

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY13E	QY10	Compatibility	Precautions for replacement
Number of points	output	32 points	16 points	×	Use two QY10s when using 17 points or more.
Isolation m	ethod	Photocoupler	Relay	Δ	Isolation method is different, but the performance is equivalent.
Deted out	a hina	24VDC 2A (resistive load) /point	24VDC 2A (resistive load) /point		
Rated Switt	cning	240VAC 2A (COSo=1) /point	240VAC 2A (COS	0	
voitage/cur	rent	5A/common	8A/common		
Minimum s	witching			0	
load		5VDC 1MA	SVDC IMA	0	
Maximum s	switchng	250VAC	264VAC	~	
voltage		125VDC	125VDC	0	
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/	Rated switching voltage/		
		current load 200 thousand	current load 100 thousand	\bigtriangleup	
		times or more	times or more		
			200VAC 1.5A, 240VAC 1A		
			(COS _{\$=0.7}) 100 thousand		
			times or more		
			200VAC 0.4A, 240VAC 0.3A		
		000 / 0 / 5 0 0 / 0 / 0	(COS = 0.7) 300 thousand		
		200VAC 1.5A, 240VAC 1A	times or more		
1.16-		(COSo=0.7) 200 thousand	200VAC 1A, 240VAC 0.5A		Dealers the merilian mere for more the
Life	Electrical	times or more	(COS = 0.35) 100 thousand		Replace the module more frequently
		200VAC 0.7A, 240VAC 0.5A	times or more		since the life is approximately half.
		(COS¢=0.35) 200 thousand	200VAC 0.3A, 240VAC 0.15A	\bigtriangleup	
		times or more	(COS = 0.35) 300 thousand		
		24VDC 1A, 100VDC 0.1A	times or more		
		(L/R=7ms) 200 thousand	24VDC 1A, 100VDC 0.1A		
		times or more	(L/R=7ms) 100 thousand		
			times or more		
			24VDC 0.3A, 100VDC 0.03A		
			(L/R=7ms) 300 thousand		
			times or more		
Maximum s	switching	3600 times/bour	2600 times/bour	0	
frequency		3000 times/nou	3000 times/nour	0	
Surge supp	oressor	None 8 pointe/common	None	0	For wiring a different veltage connet
Common te	erminal	8 points/common	16 points/common	^	For writing, a different voltage carnot
arrengeme	nt	(common terminal: 1 B9,	(common terminal: TB17)	Δ	the OX10 has only and common
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	the QT TO has only one common.
oporation	indicator	8A MF51NM8 or		Ű	
Fuse		FGMA250V8A	None	×	Fuses are not built in.*1
Fuse blow	indicator	None	-		
External	Voltaga	24VDC ±10%		0	
External	voltage	ripple voltage 4Vp-p or less	—	0	External power supply is not
power	Current	290mA		~	required.
supply	Current	(24VDC TYP. all points ON)	—	0	
	•	38 points removable terminal	10 points terminal block		
External co	onnections	block		×	
		$(M3 \times 6 \text{ screw})$	(IVI3 × 6 SCrew)		
Applicable		$0.75 \text{ to } 0 \text{ mm}^2$	0.3 to 0.75mm ² core		Wiring abanga is required
Applicable	wile Size	0.75 10 2000	(2.8mm (0.11 inch) OD max.)	×	winnig change is required.
Applicable	crimping	P1 25 2 P2 2	R1.25-3		
torminal	crimping	R1.25-3, R2-3, PAV(1.25-3, PAV(2.3)	(sleeved crimping terminals	×	
terminal		NAV 1.20-0, NAV2-0	cannot be used)		
					Since more current is consumed, the
Current cor	nsumption	0.23A (TYP. all points ON)	0.43A (TYP. all points ON)	\triangle	current capacity must be
					re-calculated.
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm	98 (H) \times 27.4 (W) \times 90 (D) mm	^	Wiring space is parrower
		(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.60kg	0.22kg	0	

*1 Mount a fuse on every external terminal to prevent external devices and modules from burning out upon load short circuit.

(11) Specifications comparisons between AY13EU and QY10

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY13EU	QY10	Compatibility	Precautions for replacement
Number of	output	32 points	16 points	~	Use two QY10s when using 17
points				^	points or more.
Isolation m	ethod	Photocoupler	Relay		Isolation method is different, but the performance is equivalent.
Potod swite	shing	24VDC 2A (resistive load) /point	24VDC 2A (resistive load) /point		
voltage/cur	rent	24VAC 2A (COS¢=1) /point	240VAC 2A (COS	0	
voltage/cui	Territ	5A/common	8A/common		
Minimum s load	witching	5VDC 1mA	5VDC 1mA	0	
Maximum s	witchng	49.9VAC	264VAC	~	
voltage		74.9VDC	125VDC	0	
Leakage cu	urrent at OFF	-	_		
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/	Rated switching voltage/		
		current load 200 thousand	current load 100 thousand	\triangle	
		times or more	times or more		
			200VAC 1 5A 240VAC 1A		
			$(COS_{\Phi} = 0.7)$ 100 thousand		
			times or more		
			$(COS_{+}-0.7)$ 200 thousand		
		24VAC 1.5A	(COS¢=0.7) 300 thousand		
		(COSo=0.7) 200 thousand	times or more		
Life	Electrical	times or more	200VAC 1A, 240VAC 0.5A	~	Replace the module more frequently since the life is approximately half.
		24VAC 0.75A	(COS∳=0.35) 100 thousand		
		(COSh=0.35) 200 thousand	times or more		
		times or more	200VAC 0.3A, 240VAC 0.15A		
			(COS = 0.35) 300 thousand		
		$(1/P-7m_{2})$ 200 theyeand	times or more		
		(L/R=7ms) 200 thousand	24VDC 1A, 100VDC 0.1A		
		times or more	(L/R=7ms) 100 thousand		
			times or more		
			24VDC 0.3A, 100VDC 0.03A		
			(L/R=7ms) 300 thousand		
			times or more		
Maximum s	switching	3600 times/hour	3600 times/hour	0	
nequency		8 noints/common		ł	For wiring a different voltage cannot
Common te	erminal	(common terminal: TP0	16 points/common	~	he applied to each common since
arrengeme	nt	(common terminal: 1B9,	(common terminal: TB17)		the OV40 has anly and common since
Orientiani		ON indication (LED)		<u> </u>	the Q FTO has only one common.
Operation I	nuicator		ON Indication (LED)	0	
External	Voltage		-	0	
power		ripple voltage 4Vp-p or less			External power supply is not
supply	Current	290mA	_	0	required.
		(24VDC TYP. all points ON)			
		38 points removable terminal	18 points terminal block		
External co	nnections	block	$(M3 \times 6 \text{ screw})$	×	
		$(M3 \times 6 \text{ screw})$			
Applicable	wiro cizo	$0.75 \text{ to } 2\text{mm}^2$	0.3 to 0.75mm ² core	~	Wiring change is required
Applicable wire size		0.75 (0 211111	(2.8mm (0.11 inch) OD max.)	^	winning change is required.
Applicable crimping			R1.25-3		
Applicable	crimping	R1.25-3, R2-3,	(sleeved crimping terminals	×	
terminal		RAV1.25-3, RAV2-3	cannot be used)		
			,	t	Since more current is consumed, the
Current cor	nsumption	0.23A (TYP. all points ON)	0.43A (TYP. all points ON)	\triangle	current capacity must be
			, , , , , , , , , , , , , , , , , , , ,		re-calculated.
		250 (H) × 37,5 (W) × 131 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm	1	
External dir	mensions	$(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)$	$(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)$	\triangle	Wiring space is narrower.
Weight		0.59kg	0.22ka	0	
weight		0.00Kg	0.22Ny	$\overline{}$	

(12) Specifications comparisons between AY15EU and QY10

			O: Com	patible, \triangle	: Partial change required, ×: Incompatible
Specif	fication	AY15EU	QY10	Compatibility	Precautions for replacement
Number of	output	24 points	16 points	~	Use two QY10s when using 17 points
points		(32 points occupied)		Â	or more.
Isolation me	ethod	Photocoupler	Relay	\bigtriangleup	Isolation method is different, but the performance is equivalent.
		24)/DC 24 (resistive lead) (reint	24VDC 2A (resistive load) /		
Rated swite	ching	24VDC 2A (resistive load) /point	point	0	
voltage/cur	rent	240VAC 2A (COS¢=1) /point 8A/	240VAC 2A (COS	0	
		common	8A/common		
Minimum sv load	witching	5VDC 10mA	5VDC 1mA	0	
Maximum s	witchng	264VAC	264VAC	0	
voltage		125VDC	125VDC	0	
Leakage cu	irrent at OFF	_	_		
Response	OFF to ON	10ms or less	10ms or less	0	
time	ON to OFF	12ms or less	12ms or less	0	
	Mechanical	20 million times or more	20 million times or more	0	
		Rated switching voltage/	Rated switching voltage/		
		current load 200 thousand	current load 100 thousand	\bigtriangleup	
		times or more	times or more		
			200VAC 1.5A, 240VAC 1A		
			(COS		
			times or more		
			200VAC 0.4A, 240VAC 0.3A		
	Electrical		(COSo=0.7) 300 thousand		
		200VAC 2A, 240VAC 1.8A	times or more		
		(COS _{\$=0.7}) 200 thousand	200VAC 1A 240VAC 0 5A		
Life		times or more	$(COS_{\phi} = 0.35) 100 \text{ thousand}$		Replace the module more frequently
		200VAC 1.1A, 240VAC 0.9A	times or more		since the life is approximately half.
		(COS = 0.35) 200 thousand		\bigtriangleup	
		times or more	$(COS_{+}-0.25)$ 200 the user d		
		24VDC 1.1A, 100VDC 0.1A	(COSØ=0.35) 300 thousand		
		(L/R=7ms) 200 thousand			
		times or more	24VDC 1A, 100VDC 0.1A		
			(L/R=7ms) 100 thousand		
			times or more		
			24VDC 0.3A, 100VDC 0.03A		
			(L/R=7ms) 300 thousand		
			times or more		
Maximum s frequency	switching	3600 times/hour	3600 times/hour	0	
Surge supp	oressor	None	None	0	
Common to	rminal	8 points/common	16 points/sommer	ſ	For wiring, a different voltage cannot be
Common te		(common terminal: TB9,	16 points/common	\bigtriangleup	applied to each common since the
arrengemei	nt	TB20, TB31)	(common terminal: 1B17)		QY10 has only one common.
Operation in	ndicator	ON indication (LED)	ON indication (LED)	0	
		24VDC ±10%			
Extornal	Voltage	ripple voltage 4Vp-p or less	-	0	
External		(Must be SELV power supply)			External network examply is not required
power		220mA			External power supply is not required.
supply	Current	(24VDC TYP. all points ON)	_	0	
		(Must be SELV power supply)			
		38 points removable terminal		1	
External co	nnections	block	18 points terminal block	×	
		(M3 × 6 screw)	$(M3 \times 6 \text{ screw})$		
		$0.75 \text{ to } 2\text{mm}^2$	0.3 to 0.75mm ² core		Wiring change is required
Applicable	wire size	$(\Delta WG14 \text{ to } \Delta WG19)$	(2.8mm (0.11 inch) OD max)	×	
Applicable	crimping		R1 25-3 (sleaved orimning	+	
terminal	omping	RAV1.25-3.5, RAV2-3.5	terminals cannot be used)	×	
terminal		1		1	1

Specification	AY15EU	QY10	Compatibility	Precautions for replacement
Dielectric withstand voltage	(AC external batch relay- drive power supply. 5V internal circuit) 2830VAC rms/3 cycle (2,000m (6557,38ft)) (Relay-drive power supply, 5V internal circuit) 500VAC rms/3 cycle (2,000m (6557,38ft))	2830VAC rms/3 cycle (altitude 2,000m (6557,38ft))	0	
Insulation resistance	10MΩ or more by insulation resistans tester	10MΩ or more by insulation resistans tester	0	
Noise durability	IEC801-4 : 1kV	By noise simulator of 1500Vp-p noise voltage, 1µs noise width and 25 to 60Hz noise frequency First transient noise IEC61000-4-4: 1kV	0	
Current consumption	0.15A (TYP. all points ON)	0.43A (TYP. all points ON)	Δ	Since more current is consumed, the current capacity must be re-calculated.
External dimensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D)inch)	Δ	Wiring space is narrower.
Weight	0.50kg	0.22kg	0	

(13) Specifications comparisons between AY22 and QY22

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY22	QY22	Compatibility	Precautions for replacement
Number of	output	16 points	16 points	0	
points				Ŭ	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	100-240VAC 50/60Hz ± 5%	100-240VAC (+10/-15%)	0	
Maximum l	oad voltage	264VAC	288VAC	0	
Maximum l	oad current	2A/point,3.3A/common	0.6A/point, 4.8A/common	×	Carefully select load for use since the maximum load current per point is lowered.
Minimum lo	ad voltago	24VAC 100mA	24VAC 100mA		Carefully select load for use since
current	au voltage	100VAC 10mA	100VAC 25mA	\bigtriangleup	the minimum load current is
current		240VAC 20mA	240VAC 25mA		increased.
Maximum in current	nrush	40A 10ms or less 15A 100ms or less	20A 1 cycle or less	\bigtriangleup	Carefully select load for use since the inrush current value differs.
Lookago a		1.5mA (120VAC 60Hz)	1.5mA or less (for 120V 60Hz)	0	
Leakage cu	ineni (OFF)	3mA (240VAC 60Hz)	3mA or less (for 240V 60Hz)	0	
Maximum v at ON	voltage drop	1.5VAC or less (1 to 2A) 1.8VAC or less (0.2 to 1A) 5VAC or less (0.2A or less)	1.5V or less	0	
Deenenee	OFF to ON	1ms or less	1ms or less	0	
time	ON to OFF	1ms + 0.5 cycles or less	1ms + 0.5 cycles or less (rated load,resistans load)	0	
Surge supp	pressor	CR absober (0.022μF+47Ω) Varistor (387 to 473V)	CR absober	Δ	Varistors are not built in. *1
Common te arrengeme	erminal nt	8 points/common (common terminal : TB9,TB18)	16 points/common (common terminal : TB17)		For wiring, a different voltage cannot be applied to each common since the QY22 has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Fuse		7A fast blow fuse (1 fuse per common) type HP-70K	None (Installing a fuse to an external cable is recommended.)	×	
Fuse blow i	indicator	Yes (LED is turned ON when fuse is blown. Signal is output to a PLC CPU.)	-	×	Fuses are not built in. *2
External connections		20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required. *3
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 sleeved crimping terminals cannot be used	×	
Current cor	nsumption	0.305A (TYP.all points ON)	0.25A (MAX.all points ON)	0	
External dir	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 112.3 (D) mm (3.86 (H) × 1.08 (W) × 4.42 (D) inch)	Δ	Wiring space is narrower.
Weight		0.71kg	0.40kg	0	

*1 Connect a varistor to reduce external noise.

*2 Mount a fuse on every external terminal to prevent the external device and module deterioration upon load short circuit. Also, configure an external circuit when displaying fuse blown is required.

*3 Using the conversion adapter (ERNT-AQTY22) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the external wiring change.

(14) Specifications comparisons between AY23 and QY22

			O: Compat	ible, ∆: P	artial change required, x: Incompatible
Speci	fication	AY23	QY22	Compatibility	Precautions for replacement
Number of points	output	32 points	16 points	×	Use two QY22s when using 17 points or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	100-240VAC 40 to 70Hz	100-240VAC (+20/-15%)	0	
Maximum I	oad voltage	264VAC	288VAC	0	
Maximum I	oad current	0.6A/point,2.4A/common (When placing next to the power supply module: 1.05A/ common)	0.6A/point, 4.8A/common	0	
Minimum lo current	oad voltage	24VAC 100mA 100VAC 10mA 240VAC 10mA	24VAC 100mA 100VAC 25mA 240VAC 25mA	Δ	Carefully select load for use since the minimum load current is increased.
Maximum i current	nrush	20A 10ms or less 8A 100ms or less	20A 1 cycle or less	0	
Leakage cu	urrent (OFF)	1.5mA (120VAC 60Hz) 3mA (240VAC 60Hz)	1.5mA or less (for 120V 60Hz) 3mA or less (for 240V 60Hz)	0	
Maximum v at ON	voltage drop	1.5VAC or less (100 to 600mA) 1.8VAC or less (50 to 100mA) 2VAC or less (10 to 50mA)	1.5V or less	0	
	OFF to ON	1ms or less	1ms or less	0	
time	ON to OFF	1ms + 0.5 cycles or less	1ms + 0.5 cycles or less (rated load,resistans load)	0	
Surge supp	pressor	CR absober (0.022μF + 47Ω)	CR absober	0	
Common te arrengeme	erminal nt	8 points/common (common terminal : TB9,TB18,TB27,TB36)	16 points/common (common terminal : TB17)		For wiring, a different voltage cannot be applied to each common since the QY22 has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Fuse		3.2A fast blow fuse (1 fuse per common) type HP-32	None	×	
Fuse blow	indicator	Yes (LED is turned ON when fuse is blown. Signal is output to a PLC CPU.)	-	×	Fuses are not built in. *1
External co	onnections	38 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 sleeved crimping terminals cannot be used	×	
Current cor	nsumption	0.59A (TYP.all points ON)	0.25A (MAX.all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 112.3 (D) mm (3.86 (H) × 1.08 (W) × 4.42(D) inch)		Wiring space is narrower.
Weight		0.55kg	0.40kg	0	

*1 Mount a fuse on every external terminal to prevent the external device and module deferioration upon load short circuit. Also, configure an external circuit when displaying fuse blown is required.

(15) Specifications comparisons between AY40 and QY40P

			O: Compa	tible, \triangle : P	artial change required, x: Incompatible
Speci	fication	AY40	QY40P	Compatibility	Precautions for replacement
Number of points	output	16 points	16 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I range	oad voltage	10.2-40VDC	10.2-28.8VDC	Δ	Voltage over 28.8 VDC is not applicable.
Maximum I	oad current	0.1A/point,0.8A/common	0.1A/point, 1.6A/common	0	
Maximum i current	nrush	0.4A	0.7A 10ms or less	0	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	2.5VDC (0.1A) 1.75VDC (5mA) 1.7VDC (1mA)	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Deenenee	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistive load)	1ms or less (rated load,resistans load)	0	
Surge supp	pressor	Clamp diode	Zener diode	0	
Common terminal arrengement		8 points/common (common terminal: TB10,TB20)	16 points/common (common terminal: TB18)	Δ	For wiring, a different voltage cannot be applied to each common since the QY40P has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Protection		None	Yes	0	
External co	onnections	20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required. *1
Applicable crimping terminal		R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 sleeved crimping terminals cannot be used	×	
External power supply	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (10.2 to 28.8V) (ripple ratio within 5%)	Δ	Voltage over 28.8 VDC is not applicable.
	Current	8mA (24VDC TYP. per common)	10mA (at 24VDC) (MAX. all points ON)	0	
Current cor	nsumption	0.115A (TYP. all points ON)	0.065A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		Wiring space is narrower.
Weight		0.36kg	0.16kg	0	

*1 Using the conversion adapter (ERNT-AQTY40) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the external wiring change.

(16) Specifications comparisons between AY40A and QY68A

			O: Compat	tible, ∆: P	artial change required, x: Incompatible
Speci	fication	AY40A	QY68A	Compatibility	Precautions for replacement
Number of	output	16 pointo	8 points		Use two QY68As when using 9
points		re points	(16 points occupied)	×	points or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	5/24VDC	0	
Operating	load voltage	10.2 to 30VDC		~	Voltage over 28.8 VDC is not
range		(Max. applied voltage)	4.5 10 20.6 VDC		applicable.
Maximum	oad current	0.3A/point	2A/point, 8A/unit	0	
Maximum current	nrush	1A 100ms or less	8A 10ms or less	0	
Leakage c	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum	voltage drop	1.5VDC (50mA to 0.3A)		0	
at ON		1.0VDC (50mA or less)	0.3VDC (IMAX.) 2A	0	
Response	OFF to ON	2ms or less	3ms or less	\bigtriangleup	Boononce time differe
time	ON to OFF	2ms or less (resistive load)	10ms or less (resistive load)	\triangle	Response time differs.
Surge sup	oressor	Surge suppression diode	Zener diode	0	
Common t	erminal	Not provided (all points inde-	Not provided (all points inde-	0	
arrengeme	nt	pendent)	pendent)	0	
Operation	indicator	ON indication (LED)	ON indication (LED)	0	
External co	onnections	38 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 sleeved crimping terminals cannot be used	×	
Current co	nsumption	0.19A (TYP. all points ON)	0.11A (TYP. all points ON)		Review current capacity when using 2 QY68As since current consumption is increased in that use.
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.42kg	0.14kg	0	

(17) Specifications comparisons between AY41 and QY41P

			O: Compa	tible, \triangle : P	artial change required, x: Incompatible
Speci	fication	AY41	QY41P	Compatibility	Precautions for replacement
Number of points	output	32 points	32 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I range	oad voltage	10.2 to 40VDC	10.2 to 28.8VDC		Reviewing power supply capacity is required.
Maximum I	oad current	0.1A/point 1.6A/common	0.1A/point 2A/common	Δ	Pay attention to the common current.
Maximum i current	nrush	0.4A	0.7A 10ms or less	0	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	2.5VDC (0.1A) 1.75VDC (5mA) 1.7VDC (1mA)	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Response	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistans load)	1ms or less (rated load,resistans load)	0	
Surge supp	pressor	Clamp diode	Zener diode	0	
Common te arrengeme	erminal nt	16 points/common (common terminal: TB18,TB36)	32 points/common (common terminal: A01, A02)		For wiring, a different voltage cannot be applied to each common since the QY41P has only one common.
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
External co	onnections	38 points removable terminal block (M3×6 screw)	40-pin connetctor (optional)	×	
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required. *1
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	-	×	
External power	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (10.2 to 28.8V) (ripple ratio within 5%)		Voltage over 28.8 VDC is not applicable.
supply	Current	20mA (24VDC TYP. per common)	20mA (at 24VDC)	0	
Current cor	nsumption	0.23A (TYP. all points ON)	0.105A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		
Weight		0.44kg	0.15kg	0	

*1 Using the conversion adapter (ERNT-AQTY41) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the external wiring change.

Moreover, by using connectors/terminal block converter modules (A6TBXY36, etc.) conversion to the terminal block is possible.

(18) Specifications comparisons between AY41-UL and QY41P

			O: Compa	tible, \triangle : P	artial change required, x: Incompatible
Speci	fication	AY41-UL	QY41P	Compatibility	Precautions for replacement
Number of points	output	32 points	32 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating range	oad voltage	10.2 to 40VDC	10.2 to 28.8VDC	Δ	Voltage over 28.8 VDC is not applicable.
Maximum I	oad current	0.1A/point 1.6A/common	0.1A/point 2A/common		Pay attention to the common current.
Maximum i current	nrush	0.4A	0.7A 10ms or less	0	
Leakage c	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	2.5VDC (0.1A) 1.75VDC (5mA) 1.7VDC (1mA)	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Response	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistans load)	1ms or less (rated load,resistans load)	0	
Surge supp	pressor	Clamp diode	Zener diode	0	
Common te arrengeme	erminal nt	16 points/common (common terminal: TB18,TB36)	32 points/common (common terminal: A01, A02)		For wiring, a different voltage cannot be applied to each common since the QY41P has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
External co	onnections	38 points removable terminal block (M3×6 screw)	40-pin connector (optional)	×	
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	×	Wiring change is required. *1
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	-	×	
External power	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)		Voltage over 28.8 VDC is not applicable.
supply	Current	20mA (24VDC TYP. per common)	20mA (at 24VDC)	0	
Current co	nsumption	0.23A (TYP. all points ON)	0.105A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.44kg	0.15kg	0	

*1 Using the conversion adapter (ERNT-AQTY41) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the external wiring change.

Moreover, by using connectors/terminal block converter modules (A6TBXY36, etc.) conversion to the terminal block is possible.

(19) Specifications comparisons between AY42 and QY42P

			O: Compa	tible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY42	QY42P	Compatibility	Precautions for replacement
Number of points	output	64 points	64 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I range	oad voltage	10.2 to 40VDC	10.2 to 28.8VDC	Δ	Voltage over 28.8 VDC is not applicable.
Maximum I	oad current	0.1A/point, 2A/common (When placing next to the power supply module: 1.6A/ common)	0.1A/point, 2A/common	0	
Maximum i current	nrush	0.4A	0.7A, 10ms or less	0	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	2.5VDC (0.1A) 1.75VDC (5mA) 1.7VDC (1mA)	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Boononco	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistive load)	1ms or less (rated load,resistans load)	0	
Surge supp	pressor	Clamp diode	Zener diode	0	
Common te arrengeme	erminal nt	32 points/common (common terminal: 1A1,1A2,2A1,2A2)	32 points/common (common terminal: 1A01,1A02,2A01,2A02)	0	
Operation i	ndicator	ON indication (LED) 32 point switch-over using switch	ON indication (LED) 32 point switch-over using switch	0	
External co	onnections	Two 40-pin connectors (solder)	Two 40-pin connectors (optional)	0	The 40 pin connectors are sold separately. Purchase them separately.
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less (for A6CON1 or A6CON4)	0	
Accessory		Two external wiring connec- tors	-	×	The 40 pin connectors are sold separately. Purchase them separately.
External power	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)	Δ	Voltage over 28.8 VDC is not applicable.
supply	Current	40mA (24VDC TYP. per common)	20mA (at 24VDC) /common	0	
Current cor	nsumption	0.34A (TYP. all points ON)	0.15A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 106 (D) mm (9.84 (H) × 1.48 (W) × 4.17 (D) inch)	98 (H) \times 27.4 (W) \times 90 (D) mm (3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)	Δ	
Weight		0.50kg	0.17kg	0	

(20) Specifications comparisons between AY42-S1 and QY42P

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY42-S1	QY42P	Compatibility	Precautions for replacement
Number of points	output	64 points	64 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I range	oad voltage	10.2 to 40VDC	10.2 to 28.8VDC	\bigtriangleup	Voltage over 28.8 VDC is not applicable.
Maximum I	oad current	0.1A/point,2A/common (When placing next to the power supply module: 1.6A/ common)	0.1A/point, 2A/common	0	
Maximum i current	nrush	0.4A	0.7A, 10ms or less	0	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	2.5VDC (0.1A) 1.75VDC (5mA) 1.7VDC (1mA)	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Boononco	OFF to ON	0.1ms or less	1ms or less	\triangle	
time	ON to OFF	0.3ms or less (resistans load)	1ms or less (rated load,resistans load)		Response time differs.
Surge supp	pressor	Clamp diode	Zener diode	0	
Common te arrengeme	erminal nt	32 points/common (common terminal: 1A1,1A2,2A1,2A2)	32 points/common (common terminal: 1A01,1A02.2A01.2A02)	0	
Operation i	ndicator	ON indication (LED) 32 point switch-over using switch	ON indication (LED) 32 point switch-over using switch	0	
External co	onnections	Two 40-pin connectors (solder)	Two 40-pin connectors (optional)	0	The 40 pin connectors are sold separately. Purchase them separately.
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less (for A6CON1 or A6CON4)	0	
Accessory		Two external wiring connec- tors	-	×	The 40 pin connectors are sold separately. Purchase them separately.
External power	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)		Voltage over 28.8 VDC is not applicable.
supply	Current	40mA (24VDC TYP. per common)	20mA (at 24VDC) /common	0	
Current cor	nsumption	0.29A (TYP. all points ON)	0.15A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 106 (D) mm (9.84 (H) × 1.48 (W) × 4.17 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.50kg	0.17kg	0	

(21) Specifications comparisons between AY42-S3 and QY42P

			O: Compat	ible, ∆: P	artial change required, x: Incompatible
Speci	fication	AY42-S3	QY42P	Compatibility	Precautions for replacement
Number of	output	64 points	64 points	0	
points		04 points	04 points	U	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I range	oad voltage	10.2 to 40VDC	10.2 to 28.8VDC	\triangle	Voltage over 28.8 VDC is not applicable.
Maximum	oad current	0.1A/point,2A/common (When placing next to the power supply module: 1.6A/ common)	0.1A/point, 2A/common	0	
Maximum i current	nrush	0.4A/point 3.5A/fuse	0.7A 10ms or less	0	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	2.5VDC (0.1A) 1.75VDC (5mA) 1.7VDC (1mA)	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Deenenee	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistans load)	1ms or less (rated load,resistans load)	0	
Surge supp	oressor	Clamp diode	Zener diode	0	
Common te arrengeme	erminal nt	32 points/common (common terminal: 1A1,1A2,2A1,2A2)	32 points/common (common terminal: 1A01,1A02,2A01,2A02)	0	
Operation i	ndicator	1.6A normal fuse (2 fuse per common)	None	Δ	The fuse-equivalent short circuit protection function is incorporated.
Fuse		Yes	_	×	Fuse blown is not displayed since the QY42P does not have fuses.
Fuse blow	indicator	ON indication (LED) 32 point switch-over using switch	ON indication (LED) 32 point switch-over using switch	0	
External co	nnections	Two 40-pin connectors (solder)	Two 40-pin connectors (optional)	0	The 40 pin connectors are sold separately. Purchase them separately.
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less (for A6CON1 or A6CON4)	0	
Accessory		Two external wiring connectors	_	×	The 40 pin connectors are sold separately.
External power	Voltage	12/24VDC (10.2 to 40VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)		Voltage over 28.8 VDC is not applicable.
supply	Current	40mA (24VDC TYP. per common)	20mA (at 24VDC) /common	0	
Current cor	nsumption	0.29A (TYP.all points ON)	0.15A (TYP.all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 106 (D) mm (9.84 (H) × 1.48 (W) × 4.17 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	
Weight		0.50kg	0.17kg	0	

(22) Specifications comparisons between AY42-S4 and QY42P

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY42-S4	QY42P	Compatibility	Precautions for replacement
Number of points	output	64 points	64 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating range	oad voltage	10.2 to 30VDC	10.2 to 28.8VDC	Δ	Voltage over 28.8 VDC is not applicable.
Maximum I	oad current	0.1A/point,1.92A/common	0.1A/point, 2A/common	0	
Maximum i current	nrush	0.4A 10ms or less	0.7A 10ms or less	0	
Leakage c	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	2.5VDC (MAX.) 0.1A 1.0VDC (TYP.) 0.1A	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Posponso	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistans load)	1ms or less (rated load,resistans load)	0	
Surge supp	pressor	Photocoupler buid-in zener diode	Zener diode	0	
Common te arrengeme	erminal nt	32 points/common (common terminal: 1A1,1A2,2A1,2A2)	32 points/common (common terminal: 1A01,1A02,2A01,2A02)	0	
Operation i	indicator	ON indication (LED) 32 point switch-over using switch	ON indication (LED) 32 point switch-over using switch	0	
External co	onnections	Two 40-pin connectors (solder)	Two 40-pin connectors (optional)	0	The 40 pin connectors are sold separately. Purchase them separately.
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less (for A6CON1 or A6CON4)	0	
Accessory		Two external wiring connec- tors	_	×	The 40 pin connectors are sold separately. Purchase them separately.
External power	Voltage	-	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)	×	External power supply is not required.
Suppry	Current	-	20mA (at 24VDC) /common	×	
Current co	nsumption	0.50A (TYP.60% or less simultaneous ON)	0.15A (TYP.all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 106 (D) mm (9.84 (H) × 1.48 (W) × 4.17 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	
Weight		0.44kg	0.17kg	0	

(23) Specifications comparisons between AY50 and QY50

		O: Compatible, △: Partial change required, ×: Incompa				
Speci	fication	AY50	QY50	Compatibility	Precautions for replacement	
Number of points	output	16 points	16 points	0		
Isolation m	ethod	Photocoupler	Photocoupler	0		
Rated load	voltage	12/24VDC	12/24VDC	0		
Operating range	load voltage	10.2 to 30VDC	10.2 to 28.8VDC		Voltage over 28.8 VDC is not applicable.	
Maximum I	load current	0.5A/point, 2A/common	0.5A/point, 4A/common	0		
Maximum i current	inrush	7A 10ms or less 3.5A 100ms or less	4A 10ms or less	Δ	Carefully select load for use since the inrush current value differs.	
Leakage c	urrent (OFF)	0.1mA or less	0.1mA or less	0		
Maximum at ON	voltage drop	0.9VDC (TYP.) 0.5A 1.5VDC (MAX.) 0.5A	0.2VDC (TYP.) 0.5A 0.3VDC (MAX.) 0.5A	0		
Posponso	OFF to ON	2ms or less	1ms or less	0		
time	ON to OFF	2ms or less (resistans load)	1ms or less (rated load,resistans load)	0		
Surge supp	oressor	Varistor (52 to 62V)	zener diode	0		
Common to arrengeme	erminal nt	8 points/common (common terminal: TB10,TB20)	16 points/common (common terminal: TB18)		For wiring, a different voltage cannot be applied to each common since the QY50 has only one common.	
Operation i	indicator	ON indication (LED)	ON indication (LED)	0		
Fuse		2A fast blow fuse (1 fuse common) type	6.7A (unchangeable) (fuse blow capasity : 50A)		Connect the fast blow fuse to the external if necessary.	
Fuse blow	indicator	Yes (LED is turned ON when fuse is blown. Signal is output to a PLC CPU)	Yes (When fuse blows, LED indi- cates it and signal is output to CPU)		The QY50 does not detect fuse blown unless the external power is supplied.	
External co	onnections	20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×		
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.*1	
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×		
External power	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)	Δ	Voltage over 28.8 VDC is not applicable.	
supply	Current	65mA (24VDC TYP. per common)	20mA (at 24VDC) /common	0		
Current co	nsumption	0.115A (TYP.all points ON)	0.08A (TYP.all points ON)	0		
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.	
Weight		0.42kg	0.17kg	0		

*1 Using the conversion adapter (ERNT-AQTY50) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the external wiring change.

(24) Specifications comparisons between AY51 and QY50

			O: Compat	tible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY51	QY50	Compatibility	Precautions for replacement
Number of	output	32 points	16 points	~	Use two QY50s when using 17
points		32 points	16 points	×	points or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I range	oad voltage	10.2 to 30VDC	10.2 to 28.8VDC		Voltage over 28.8 VDC is not applicable.
Maximum I	oad current	0.5A/point,4A/common (When placing next to the power supply module: 3.3A/ common)	0.5A/point, 4A/common	0	
Maximum i current	nrush	4A 10ms or less	4A 10ms or less	0	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v	voltage drop	0.9VDC (TYP.) 0.5A	0.2VDC (TYP.) 0.5A	0	
at ON		1.5VDC (MAX.) 0.5A	0.3VDC (MAX.) 0.5A	0	
Posponso	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistans load)	1ms or less (rated load,resistans load)	0	
Surge supp	oressor	Varistor (52 to 62V)	Zener diode	0	
Common te arrengeme	erminal nt	16 points/common (common terminal: TB18,TB36)	16 points/common (common terminal: TB18)	0	
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
Fuse		None	6.7A (unchangeable) (fuse blow capasity : 50A)	0	
Fuse blow	indicator	-	Yes (When fuse blows, LED indi- cates it and signal is output to CPU)	0	
External co	onnections	38 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
External power	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)	Δ	Voltage over 28.8 VDC is not applicable.
supply	Current	50mA (24VDC TYP. per common)	20mA (at 24VDC) /common	0	
Current cor	nsumption	0.23A (TYP. all points ON)	0.08A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.53kg	0.17kg	0	

(25) Specifications comparisons between AY51-S1 and QY50

			O: Compat	ible, ∆: P	artial change required, x: Incompatible
Speci	fication	AY51-S1	QY50	Compatibility	Precautions for replacement
Number of	output	22 points	16 points		Use two QY50s when using 17
points		Sz points	18 points	×	points or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I	oad voltage	10.2 to 30\/DC	10.2 to 28.8\/DC	^	Voltage over 28.8 VDC is not
range		10.2 10 30 0 0 0	10.2 10 28:8 VDC		applicable.
Maximum I	oad current	0.3A/point, 2A/common (1A fuse common)	0.5A/point, 4A/common	0	
Maximum i	nrush	24.10mg or logg	44.10mp.or.loop	0	
current		SA TONIS OF less	4A TOINS OF less	0	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum \	oltage drop	1VDC (TYP.) 0.3A	0.2VDC (TYP.) 0.5A	0	
at ON		1.5VDC (MAX.) 0.3A	0.3VDC (MAX.) 0.5A	0	
Deenenee	OFF to ON	2ms or less	1ms or less	0	
timo		2ma or loss (registers loss)	1ms or less	0	
ume			(rated load, resistans load)	0	
Surgo oupr	rocor	Transistor built-in	Zapar diada	0	
Surge supp	ressor	zener diode	Zener diode	0	
		16 points/common			
Common te	erminal	(common terminal: 16 points/common	16 points/common	0	
arrengeme	nt	TB18,TB36)	TB18,TB36) (common terminal: TB18)	U	
		8 points/fuse common			
Operation indicator		ON indication (LED)	ON indication (LED)	0	
		1A fast blow fuse	6 7A (unchangoable)		Connect the fast blow fuse to the
Fuse		(2fuses per common in 8point	(fuse blow capasity : 50A)	\triangle	external if necessary
		units) MP-10	(Tuse blow capasity : 50A)		external in necessary.
		Yes	Yes		The OV50 does not detect fuse
Fuse blow	indicator	(LED is turned ON when fuse	(When fuse blows, LED	~	blown unless the external power is
1 doc blow	indicator	is blown. Signal is output to a	indicates it and signal is output		supplied
		PLC CPU)	to CPU)		
		38 points removable terminal	18 points terminal block		
External co	nnections	block	(M3×6 screw)	×	
		(M3×6 screw)			
Applicable	wire size	0 75 to 2mm ²	0.3 to 0.75mm ² core	×	Wiring change is required
, the month of the second		0.1010 2	(2.8mm (0.11 inch) OD max.)		
Applicable	crimping	R1 25-3 R2-3	R1.25-3		
terminal	omping	RAV1 25-3 RAV2-3	(sleeved crimping terminals	×	
torrinitar			cannot be used)		
		12/24VDC	12/24VDC		Voltage over 28.8 VDC is not
External	Voltage	(10.2 to 30VDC)	(10.2 to 28.8VDC)	\triangle	applicable
power		((ripple ratio within 5%)		
supply	Current	100mA (24VDC TYP. per common)	20mA (at 24VDC) /common	0	
Current cor	nsumption	0.31A (TYP. all points ON)	0.08A (TYP. all points ON)	0	
Euter L."		250 (H) × 37.5 (W) × 131 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm		
External di	nensions	(9.84 (H) \times 1.48 (W) \times 5.16 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)		winnig space is narrower.
Weight		0.55kg	0.17kg	0	

(26) Specifications comparisons between AY51-UL and QY50

			O: Compat	ible, _∆: P	artial change required, x: Incompatible
Speci	fication	AY51-UL	QY50	Compatibility	Precautions for replacement
Number of points	output	32 points	16 points	×	Use two QY50s when using 17 points or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating range	oad voltage	10.2 to 30VDC	10.2 to 28.8VDC	Δ	Voltage over 28.8 VDC is not applicable.
Maximum I	oad current	0.5A/point,4A/common (When placing next to the power supply module: 3.3A/ common)	0.5A/point, 4A/common	0	
Maximum i current	nrush	0.4A 10ms or less	4A 10ms or less	0	
Leakage c	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	oltage drop/	0.9VDC (TYP.) 0.5A 1.5VDC (MAX.) 0.5A	0.2VDC (TYP.) 0.5A 0.3VDC (MAX.) 0.5A	0	
	OFF to ON	2ms or less	1ms or less	0	
Response time	ON to OFF	2ms or less (resistans load)	1ms or less (rated load,resistans load)	0	
Surge supp	pressor	Varistor (52 to 62V)	Zener diode	0	
Common te arrengeme	erminal nt	16 points/common (common terminal: TB18,TB36)	16 points/common (common terminal: TB18)	0	
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Fuse		None	6.7A (unchangeable) (fuse blow capasity : 50A)	0	
Fuse blow	indicator	-	Yes (When fuse blows, LED indicates it and signal is output to CPU)	0	
External co	onnections	38 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
External power	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio within 5%)		Voltage over 28.8 VDC is not applicable.
supply	Current	50mA (24VDC TYP. per common)	20mA (at 24VDC) /common	0	
Current co	nsumption	0.23A (TYP.all point ON)	0.08A (TYP.all point ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		Wiring space is narrower.
Weight		0.53kg	0.17kg	0	

(27) Specifications comparisons between AY60 and QY68A

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY60	QY68A	Compatibility	Precautions for replacement
Number of	output	16 points	8 points	~	Use two QY68s when using 9 points
points		ro points	(16 points occupied)	~	or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	24VDC (12/48V)	5/24VDC	\bigtriangleup	Voltage over 28.8 VDC is not applicable.
Operating I	oad voltage	21.6 to 26.4VDC		^	Voltage over 28.8 VDC is not
range		(10.2 to 56VDC)	4.5 to 28.8VDC	\bigtriangleup	applicable.
Maximum	oad current	2A/point,5A/common (3A/fuse) (When placing next to the power supply module: 3A/ common)	2A/point, 8A/module	Δ	Since the maximum load current per common is different, pay attention to the current used in the entire module.
Maximum i	nrush	4A 100ms or less,	8A 10ms or less	0	
			0.1mA or loss	0	
Maximum v at ON	voltage drop	1.5VDC (2A)	0.3VDC (MAX.) 2A	0	
Response	OFF to ON	2ms or less	3ms or less		
time	ON to OFF	2ms or less (resistans load)	10ms or less (resistans load)	Δ	Response time differs.
Surge supp	pressor	Varistor (108 to 132V)	Zener diode	0	
Common te arrengeme	erminal nt	8 points/common (common terminal: TB10,TB20)	Not provided (all points independent)		The wiring of terminal block differs since all the contacts of the QY68A are independent.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Fuse		3.2A fast blow fuse (2 fuse per common) type MP-32	None (Installing a fuse to an external cable is recommended.)	×	
Fuse blow	indicator	Yes (When fuse blows, LED indicates it and signal is output to CPU)	-	×	Fuses are not built in. *1
External co	onnections	20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
External	Voltage	24VDC (21.6 to 26.4VDC)	_	0	
power supply	Current	65mA (24VDC TYP. per common)	-	0	
Current cor	nsumption	0.115A (TYP.all point ON)	0.11A (TYP.all point ON)	0	Review current capacity when using 2 QY68s or more since current consumption is increased in that use.
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.64kg	0.14kg	0	

*1 Mount a fuse on every external terminal to prevent the external device and module deferioration upon load short circuit. Also, configure an external circuit when displaying fuse blown is required.

(28) Specifications comparisons between AY60E and QY68A

			O: Compat	ible, ∆: P	artial change required, ×: Incompatible
Speci	fication	AY60E	QY68A	Compatibility	Precautions for replacement
Number of	output	16 points	8 points	~	Use two QY68s when using 9 points
points		ro points	(16 points occupied)	^	or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	24VDC (12/48V)	5/24VDC	\bigtriangleup	Voltage over 28.8 VDC is not applicable.
Operating	load voltage	21.6 to 26.4VDC			Voltage over 28.8 VDC is not
range		(10.2 to 56VDC)	4.5 to 28.8VDC		applicable.
Maximum I	load current	12/24VDC 2A/points 48VDC 0.8A/points 5A/common (When placing next to the power supply module: 3A/ common)	2A/points 8A/unit	Δ	Since the maximum load current per common is different, pay attention to the current used in the entire module.
Maximum i current	nrush	4A 100ms or less 8A 10ms or less	8A 10ms or less	0	
Leakage c	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	1.5VDC (2A)	0.3VDC (MAX.) 2A	0	
Response	OFF to ON	2ms or less	3ms or less	\triangle	
time	ON to OFF	2ms or less (resistans load)	10ms or less (resistans load)	Δ	Response time differs.
Surge supp	oressor	Surge suppression diode	Zener diode	0	
Common te arrengeme	erminal nt	8 points/common (common terminal: TB10,TB20)	Not provided (all points independent)		The wiring of terminal block differs since all the contacts of the QY68A are independent.
Fuse		5A fast blow fuse (2 fuse per common) type	None (Installing a fuse to an external cable is recommended.)	×	
Fuse blow	indicator	Yes (When fuse is blows, LED indicates it signal is output to CPU)	-	×	Fuses are not built in. *1
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
External co	onnections	20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable terminal	crimping	R1.25-3,R2-3 RAV1.25-3,RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current co	nsumption	0.115A (TYP.all points ON)	0.11A (TYP.all points ON)	Δ	Review current capacity when using 2 QX28s or more since current consumption is increased in that use.
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.63kg	0.14kg	0	

*1 Mount a fuse on every external terminal to prevent external devices and modules from burning out upon load short circuit. Also, configure an external circuit when fuse blown display is necessary.

(29) Specifications comparisons between AY60S and QY68A

		O: Compat	tible, \triangle : P	Partial change required, ×: Incompatible
Specification	AY60S	QY68A	Compatibility	Precautions for replacement
Number of output	16 points	8 points	~	Use two QY68As when using 9
points		(16 points occupied)	^	points or more.
Isolation method	Photocoupler	Photocoupler	0	
Rated load voltage	24/48VDC (12V)	5/24VDC	\bigtriangleup	Voltage over 28.8VDC is not applicable.
Operating load voltage range	21.6 to 52.8VDC (10.2 to 52.8VDC)	4.5 to 28.8VDC		Voltage over 28.8VDC is not applicable.
Maximum load current	2A/ points,6.4A/ common (5A/ fuse) (When placing next to the power supply module: 5A/ common)	2A/ points, 8A/unit	0	
Maximum inrush current	4A 100ms or less, 8A 10ms or less	8A 10ms or less	0	
Leakage current (OFF)	0.1mA or less	0.1mA or less	0	
Maximum voltage drop at ON	1VDC (2A)	0.3VDC (MAX.) 2A	0	
Response OFF to ON	1ms or less	3ms or less	\triangle	D
time ON to OFF	3ms or less (resistive load)	10ms or less (resistive load)	\triangle	Response time differs.
Surge suppressor	Varistor (90 to 110V)	Zener diode	0	
Common terminal arrengement	8 points/common (common terminal: TB10,TB20)	Not provided (all points independent)	Δ	The wiring of terminal block differs since all the contacts of the QY68A are independent.
Operation indicator	ON indication (LED)	ON indication (LED)	0	
Fuse	5A fast blow fuse (2 fuse per common) type MP-50	None (Installing a fuse to an external cable is recommended.)	×	
Fuse blow indicator	Yes (When fuse is blows, LED indicates it signal is output to CPU)	-	×	Fuses are not built in. *1
External connections	20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	
Applicable wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable crimping terminal	R1.25-3,R2-3, RAV1.25-3,RAV2-3	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Current consumption	0.075A (TYP.all points ON)	0.11A (TYP.all points ON)	0	Since more current is consumed, the current capacity must be reexamined.
External dimensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76(D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight	0.66kg	0.14kg	0	

*1 Mount a fuse on every external terminal to prevent external devices and modules from burning out upon load short circuit. Also, configure an external circuit when fuse blown display is necessary.

(30) Specifications comparisons between AY70 and QY70

			O: Compat	ible, \triangle : P	artial change required, ×: Incompatible
Speci	fication	AY70	QY70	Compatibility	Precautions for replacement
Number of points	output	16 points	16 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	5/12VDC	5/12VDC	0	
Operating range	oad voltage	4.5 to 15VDC	4.5 to 14.4VDC	Δ	Voltage over 14.4VDC is not applicable.
Maximum I	oad current	16mA/ point 128mA/ common	16mA/ point 256mA/ common	0	
Maximum i current	nrush	50mA 10ms	40mA 10ms of less		Carefully select load for use since the inrush current value differs. *1
Output volt	age at OFF	V _{OH} : 3.5VDC (Vcc = 5VDC, Iон = 0.4mA)	V _{OH} : 3.5VDC (Vcc = 5VDC, Iон = 0.4mA)	0	
Maximum v at ON	voltage drop	V _{OL} : 0.2VDC (I _{OL} : 16mA)	V _{OL} : 0.3VDC	Δ	Check the input specifications of an external equipment to be connected since the maximum voltage drop is bigger when turning on.
Response	OFF to ON	1ms or less	0.5ms or less	0	
time	ON to OFF	1ms or less	0.5ms of less (resistive load)	0	
Common te arrengeme	erminal nt	8 points/common (Common terminal: TB10,TB20)	16 points/common (Common terminal: TB18)		For wiring, a different voltage cannot be applied to each common since the QX40 has only one common.
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Fuse		None	1.6A (Unchangeable) (Fuse blow capacity: 50A)	0	
Fuse blow	indicator	_	Yes (LED is turned ON when fuse is blowns. Signal is output to a PLC CPU)	0	
External co	onnections	20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	Wiring change is required. *1
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm(0.11 inch)OD max.)	×	
External power	Voltage	5/12VDC (4.5 to 15VDC)	5/12VDC (4.5 to 14.4V) (ripple ratio witin 5%)		Voltage over 14.4VDC is not applicable.
supply	Current	55mA (12VDC TYP. per common)	90mA (at 12VDC) (MAX all points ON)	0	
Current co	nsumption	0.10A (TYP. all points ON)	0.095A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84(H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.36kg	0.14kg	0	

*1 The conversion adapter (ERNT-AQTY40) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(31) Specifications comparisons between AY71 and QY71

			O: Compat	ible, ∆: P	artial change required, x: Incompatible
Speci	fication	AY71	QY71	Compatibility	Precautions for replacement
Number of points	output	32 points	32 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	5/12VDC	5/12VDC	0	
Operating range	load voltage	4.5 to 15VDC	4.5 to 15VDC		Voltage over 14.4VDC is not applicable.
Maximum I	oad current	16mA/ point 256mA/ common (Sink loading)	16mA/ point 512mA/ common	0	
Maximum i current	inrush	50mA 10ms	40mA 10ms or less	Δ	Carefully select load for use since the inrush current value differs. *1
Output volt	age at OFF	V _{OH} : 3.5VDC (Vcc = 5VDC, Іон = 0.4mA)	V _{OH} : 3.5VDC (Vcc = 5VDC, Іон = 0.4mA)	0	
Maximum v at ON	voltage drop	V _{OL} : 0.2VDC (I _{OL} : 16mA)	V _{OL} : 0.3VDC	Δ	Check the input specifications of an external equipment to be connected since the maximum voltage drop is bigger when turning on.
Pooponoo	OFF to ON	1ms or less	0.5ms or less	0	
time	ON to OFF	1ms or less	0.5ms of less (resistive load)	0	
Common to arrengeme	erminal nt	16 points/common (Common terminal: TB18,TB36)	32 points/common (Common terminal: A01, A02)		For wiring, a different voltage cannot be applied to each common since the QY71 has only one common.
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
Fuse		None	1.6A (Unchangeable) (Fuse blow capacity: 50A)	0	
Fuse blow	indicator	_	Yes (When fuse is blows, LED indicates it signal is output to CPU)	0	
External co	onnections	38 points removable terminal block (M3×6 screw)	40-pin connetctor (optional)	×	
Applicable	wire size	0.75 to 2mm ²	0.3mm ² (AWG#22) or less (for A6CON1, or A6CON4)	×	wining change is required.
External power	Voltage	5/12VDC (4.5 to 15VDC)	5/12VDC (4.5 to 15VDC) (ripple ratio witin 5%)		Voltage over 14.4VDC is not applicable.
supply	Current	100mA (12VDC TYP. per common)	170mA (at 12VDC) (MAX all points ON)	0	
Current co	nsumption	0.20A (TYP. all points ON)	0.15A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.44kg	0.14kg	0	

*1 The conversion adapter (ERNT-AQTY41) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

(32) Specifications comparisons between AY72 and QY71

			O: Compat	ible, 🛆: P	artial change required, ×: Incompatible
Speci	fication	AY72	QY71	Compatibility	Precautions for replacement
Number of	output	64 points	32 points	×	Use two QY71s when using 33
points				Â	points or more.
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	5/12VDC	5/12VDC	0	
Operating I	oad voltage	4.5 to 15VDC	4.5 to 15VDC	\triangle	Voltage over 14.4VDC is not
range					applicable.
Maria		16mA/ point,	16mA/ point,	0	
waximum i	oad current	S12mA/ common	512mA/ common	0	
Maximum i	nrush	(Sirik loading)			Carefully select load for use since
current	muon	50mA 10ms	40mA 10ms or less	\bigtriangleup	the inrush current value differs. *1
		V _{он} : 3.5VDC	V _{он} : 3.5VDC	-	
Output volt	age at OFF	(Vcc = 5VDC, IOH = 0.4mA)	(Vcc=5VDC, I _{OH} =0.4mA)	0	
					Check the input specifications of an
Maximum v	oltage drop	V _{OL} : 0.2VDC		^	external equipment to be connected
at ON		(I _{OL} = 16mA)	V _{OL} . 0.3VDC		since the maximum voltage drop is
					bigger when turning on.
Response	OFF to ON	1ms or less	0.5ms or less	0	
time	ON to OFF	1ms or less	0.5ms of less	0	
		00 m cinte /	(resistive load)		
Common te	erminal	32 points/common	32 points/common		
arrengement			(Common terminal: A01, A02)	0	
Operation indicator		ON indication (LED)	ON indication (LED)	0	
operation	Indicator		1 6A (Unchangeable)		
Fuse		None	(Fuse blow capacity: 50A)	0	
			Yes		
Europhian (-	(When fuse is blows, LED	0	
Fuse blow	Indicator		indicates it signal is output to	0	
			CPU)		
					The 40 pin connector is sold
External co	onnections	Two 40-pin connectors (solder)	40-pin connetctor (optional)	0	separately.
		, , ,	,		 32 points or less: 1pcs. 33 points or more: 2pcs
			0.3mm ² (AWG#22) or less		
Applicable	wire size	0.3mm ²	(for A6CON1, or A6CON4)	0	
			, ,, ,, ,, ,, ,,	1	The 40 pin connector is sold
Accessory		Two external wiring connec-	None	~	separately.
Accessory		tors	None	~	 32 points or less: 1pcs.
	1				33 points or more: 2pcs.
Euto I		5/12VDC	5/12VDC		Voltage over 14.4VDC is not
External	voltage	(4.5 to 15VDC)	(4.5 to 15VDC)		applicable.
supply		300m∆			
Suppry	Current	(12VDC TYP. 1-common ON)	(MAX all points ON)	0	
Current cor	nsumption	0.30A (TYP, all points ON)	0.15A (TYP, all points ON)	0	
-		250 (H) × 37.5 (W) × 106 (D) mm	98 (H) × 27.4 (W) × 90 (D) mm		
External di	mensions	(9.84 (H) × 1.48 (W) × 4.17(D) inch)	(3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.47kg	0.14kg	0	

(33) Specifications comparisons between AY80 and QY80

			O: Compa	O: Compatible, \triangle : Partial change required, \times : Incompatible		
Speci	fication	AY80	QY80	Compatibility	Precautions for replacement	
Number of points	output	16 points	16 points	0		
Isolation m	ethod	Photocoupler	Photocoupler	0		
Rated load	voltage	12/24VDC	12/24VDC	0		
Operating range	load voltage	10.2 to 30VDC	10.2 to 28.8VDC	Δ	Voltage over 28.8VDC is not applicable.	
Maximum	oad current	0.5A/ point, 2A/ common	0.5A/ point, 4A/ common	0		
Maximum i current	nrush	7A 10ms or less 3.5A 100ms or less	4A 10ms or less	\triangle	Carefully select load for use since the inrush current value differs. *1	
Leakage c	urrent (OFF)	0.1mA or less	0.1mA or less	0		
Maximum at ON	voltage drop	1.5VDC (MAX.) 0.5A	0.2VDC (TYP.) 0.5A 0.3VDC (MAX.) 0.5A	0		
Deenenee	OFF to ON	2ms or less	1ms or less	0		
time	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	0		
Surge supp	oressor	Varistor (52 to 62V)	Zener diode	0		
Common terminal arrengement		8 points/common (Common terminal: TB9,TB19)	16 points/common (Common terminal: TB17)	Δ	For wiring, a different voltage cannot be applied to each common since the QY80 has only one common.	
Operation indicator		ON indication (LED)	ON indication (LED)	0		
Fuse		2A fast blow fuse (1 fuse per common) type	6.7A (Unchangeable) (Fuse blow capacity: 50A)	Δ	When necessary, connect a fuse externally.	
Fuse blow	indicator	Yes (When fuse is blows, LED indicates it's signal is output to CPU)	Yes (When fuse is blows, LED indicates it's signal is output to CPU)	Δ	The QY80 does not detect fuse blown without external power supply.	
External co	onnections	20 points removable terminal block (M3×6 screw)	18 points terminal block (M3×6 screw)	×	Wiring change is required *1	
Applicable	wire size	0.75 to 2mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch)OD max.)	×	wining change is required.	
External power	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio witin 5%)		Voltage over 28.8VDC is not applicable.	
supply	Current	60mA (24VDC TYP. 1-common ON)	20mA (at 24VDC)	0		
Current co	nsumption	0.115A (TYP. all points ON)	0.08A (TYP. all points ON)	0		
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76(D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.	
Weight		0.42kg	0.17kg	0		

*1 The conversion adapter (ERNT-AQTY80) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.
(34) Specifications comparisons between AY81 and QY81P

			O: Compat	ible, _∆: P	artial change required, ×: Incompatible
Speci	fication	AY81	QY81P	Compatibility	Precautions for replacement
Number of	output	32 points	32 points	0	
points					
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated load	voltage	12/24VDC	12/24VDC	0	
Operating I range	oad voltage	10.2 to 30VDC	10.2 to 28.8VDC	Δ	Voltage over 28.8VDC is not applicable.
Maximum I	oad current	0.5A/ point,4A/ common (When placing next to the power supply module: 3A/ common)	0.1A/ point, 2A/ common	Δ	Carefully select load for use since the maximum load current per point is lowered.
Maximum i current	nrush	4A 10ms or less	0.7A 10ms or less	Δ	Carefully select load for use since the inrush current value differs.
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0	
Maximum v at ON	voltage drop	1.5VDC (MAX.) 0.5A	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A		Because different values for maximum voltage drop are given, care should be taken to select loads to be used.
Response	OFF to ON	2ms or less	1ms or less	0	
time	ON to OFF	2ms or less (resistive load)	1ms or less (rated load, resistive load)	0	
Common te arrengeme	erminal nt	16 points/common (Common terminal: TB17,TB35)	32 points/common (Common terminal: 17,18,36)		For wiring, a different voltage cannot be applied to each common since the QY81P has only one common.
Surge supp	oressor	Varistor (52 to 62V)	Zener diode	0	
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0	
Protection		None	 Yes (overheat protection function, overload protection function) Overheat protection function is activated in increments of 2 points. Overload protection function is activated in increments of 1 point. 	0	
External co	onnections	38 points removable terminal block (M3×6 screw)	37-pin D-subconnector (optional)	×	Wiring change is required *1
Applicable wire size		0.75 to 2mm ²	0.3mm ² (for A6CON1E)	×	wining change is required.
External power	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio witin 5%)		Voltage over 28.8VDC is not applicable.
supply	Current	50mA (24VDC TYP. 1-common ON)	40mA (at 24VDC)	0	
Current cor	nsumption	0.23A (TYP. all points ON)	0.095A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 131 (D) mm (9.84 (H) × 1.48 (W) × 5.16 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.53kg	0.15kg	0	

*1 The conversion adapter (ERNT-AQTY81) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing external wiring.

Moreover, by using connectors/terminal block converter modules (A6TBXY36-E, etc.) conversion to the terminal block is possible.

(35) Specifications comparisons between AY82-EP and QY81P

O: Compatible, \triangle : Partial change required, \times : Incompa						
Speci	fication	AY82-EP	QY81P	Compatibility	Precautions for replacement	
Number of	output	64 points	32 points	×	Use two QY81Ps when using 33	
points		Photocoupler	Photocoupler	0	points or more.	
Rated load	voltage			0		
		12/24000	12/24000			
range	oau voltage	10.2 to 26.4VDC	10.2 to 28.8VDC	0		
		0.1A/ point				
Maximum l	oad current	0.04A/ point	0.1A/ point,	0		
		(60%ON, 55 °C)	2A/ common			
Maximum i	nrush			^	Carefully select load for use since	
current		No limit (Short protect)	0.7A to TUMS OF less		the inrush current value differs. *1	
Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0		
Maximum v	oltage drop	3.5VDC (0.1A)	0.1VDC (TYP.) 0.1A	0		
at ON		2.5VDC (0.1A TYP.)	0.2VDC (MAX.) 0.1A	0		
Response	OFF to ON	0.5ms or less	1ms or less	\triangle		
time	ON to OFF	1 5ms or less	1ms or less	~	Response time differs.	
	01110 011		(rated load, resistive load)	_		
Common te	erminal	32 points/common	32 points/common			
arrendeme	nt	(Common terminal: 1-17,	(Common terminal: 17 18 36)	0		
arrongomo		1-18,1-36,2-17,2-18,2-36)				
Surge supp	pressor	Surge suppression diode	Zener diode	0		
Operation i	ndicator	ON indication (LED)	ON indication (LED)	0		
Protection		 (Overheat protection func. and short-circuit protection func.) Overheat protection func. is detected in 1 point unit. When Overheat protection func. occurs at an 1 point of 1 common, output of all points for corresponded common terminal is turned. OFF. 	 Yes (overheat protection function, overload protection function) Overheat protection function is activated in increments of 2 points. Overload protection function is activated in increments of 1 point. 	0		
Protection	detection	None	None	0		
display		(No signal output to PLC CPU)	(No signal output to PLC CPU)			
Protection 1	func. reset	Automatic reset (reset by canceling Overheat	Automatic reset (reset by canceling Overheat	0		
External co	nnections	Two 37-pin connectors (solder)	37-pin D-subconnector (optional)	0	The 40 pin connector is sold separately.32 points or less: 1pcs.33 points or more: 2pcs.	
Applicable	wire size	0.3mm ²	0.3mm ² (for A6CON1E)	0		
Accessory		Two external wiring connec- tors	None	×	The 40 pin connector is sold separately.32 points or less: 1pcs.33 points or more: 2pcs.	
External power	Voltage	12/24VDC (10.2 to 30VDC)	12/24VDC (10.2 to 28.8VDC) (ripple ratio witin 5%)	Δ	Voltage of 28.8VDC or more is not allowed.	
supply	Current	50mA (24VDC TYP. 1-common ON)	40mA (at 24VDC)	0		
Current cor	nsumption	0.29A (TYP. all points ON)	0.095A (TYP. all points ON)	0		
External	moneione	250 (H) \times 37.5 (W) \times 106 (D) mm	98 (H) $\times27.4$ (W) $\times90$ (D) mm	~		
		(9.84 (H) \times 1.48 (W) \times 4.17 (D) inch)	(3.86 (H) \times 1.08 (W) \times 3.54 (D) inch)			
Weight		0.58kg	0.15kg	0		

3.2.3 Specifications Comparisons Between I/O Modules

(1) Specifications comparisons between AH42 and QH42P

	O: Compatible,					\triangle : Partial change required, \times : Incompatible			
	Specifica	ation	AH42	QH42P	Compatibility	Precautions for replacement			
	Number of	input points	32 points	32 points	0				
	Isolation m	ethod	Photocoupler	Photocoupler	0				
	Input type		Sinkting	Sink type	0				
	input type		Sink type	(positive common)	0				
	Rated input	t voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not aplicable.			
	Rated inpu	t current	Approx. 3mA/Approx. 7mA	Approx. 4mA	Δ	Reduced. *1			
	Operating	/oltage	10.2 to 26.4VDC	20.4 to 28.8VDC	~	12)/DC are not onlightly			
	range		(ripple ratio witin 5%)	(ripple ratio witin 5%)		12VDC are not aplicable.			
	Maximum								
	simultaneo	us input	60% simultaneously ON	Refer to the derating chart. *2	0				
uo	point								
cati	ON voltage	ON current	9.5VDC or more/3mA or more	19V or more/3mA or more	\triangle	12VDC are not aplicable.			
scifi	OFF voltag	e/OFF	6)/DC or loss/1 EmA or loss	11)/ or loss/1 ZmA or loss	~	12VDC are not aplicable			
spe	current		OVDC OF less/1.5mA of less			12VDC are not aplicable.			
put	Input resist	ance	Approx. 3.3k Ω	Approx. 5.6kΩ	\triangle	Increased. *1			
L				1ms/5ms/10ms/20ms		Lise initial value (10ms) for the			
			10 ms or less (24)/DC	/70ms or less	0	input response time of			
				(CPU parameter setting)	0	narameters			
	Response			initial setting is 10ms		parameters.			
	time			1ms/5ms/10ms/20ms		Lise initial value (10ms) for the			
		ON to OFF	10ms or less (24VDC)	/70ms or less	0	input response time of			
				(CPU parameter setting)	Ŭ	narameters			
				initial setting is 10ms		parameters.			
	Common terminal		32 points/common	32 points/common					
			(Common terminal: 1B1 1B2)	(Common terminal: 1B01,	0				
	anongomo	in and the second se		1B02)					
	Number of output		32 points	32 points	0				
	points				Ū				
	Isolation method		Photocoupler	Photocoupler	0				
	Output type	9	Sink type	Sink type	0				
	Rated load	voltage	12/24VDC	12-24VDC	0				
	Operating	voltage	10.2 to 40VDC	10.2 to 28.8VDC		Voltage over 28.8VDC is not			
	range	lonago				applicable.			
			0.1A/1point, 1A/1 common	0.1A/1 point, 2A/1 common	0				
	Max. inrush	n current	0.4A 10ms or less	0.7A 10ms or less	0				
u	Leakage cu	urrent (OFF)	0.1mA or less	0.1mA or less	0				
catio	Maximum v	oltage drop	2.5VDC (0.1A)	0 1VDC (TYP) 0 1A					
cific	at ON	gp	1.75VDC (5mA)	0.2VDC (MAX.) 0.1A	0				
spe			1.7VDC (1mA)						
put	Response	OFF to ON	2ms or less	1ms or less	0				
Out	time	ON to OFF	2ms or less	1ms or less	0				
-			(resistive load)	(rated load, resistive load)					
	Surge supp	pressor	Clamp diode	Zener diode	0				
	Common te	erminal	32 points/common	32 points/common					
	arrengeme	nt	(common terminal: 2A1,2A2)	(common terminal: 2A01,	0				
				2A02)					
	_		12/24VDC	12-24VDC		Voltage over 28.8VDC is not			
	External	Voltage	(10.2 to 40VDC)	(10.2 to 28.8VDC		applicable.			
	power			ripple ratio within 5%)					
	supply	Current	0.04A (24VDC TYP.)	0.015A (24VDC) /1 common	0				
				(MAX all points ON)					
0			ON Indication (LED)	ON Indication (LED)	<u> </u>				
Ope	eration indica	tor	32 point switch-over using	32 point switch-over using	0				
			switch	SWITCH					

3 I/O MODULE REPLACEMENT

MELSEC

Specification	AH42	QH42P	Compatibility	Precautions for replacement
External connections	ternal connections 40pin connector × 2 40pin connector × 2 (option)		0	The 40 pin connectors are sold separately. Purchase separately.
Applicable wire size	0.3mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	0	
Accessory	40pin connector × 2 (soldering type)	None	×	The two 40 pin connectors are sold separately. Purchase separately.
Occupied points	64 points (I/O assignment: output 64 points)	32 points (I/O assignment: input/output conposite)	×	Output number (Y □) differs. *3
Current consumption	0.25A (TYP. all points ON)	0.13A (TYP. all points ON)	0	
External dimensions	250 (H) \times 37.5 (W) \times 121 (D) mm (9.84 (H) \times 1.48 (W) \times 4.76 (D) inch)	98 (H) $\times27.4$ (W) $\times90$ (D) mm (3.86 (H) $\times1.08$ (W) $\times3.54$ (D) inch)		
Weight	0.70kg	0.20kg	0	

*1 Check the specifications of sensor or switch to connect to the QH42P.



*3 Modify the output number used in the program.

(2) Specifications comparisons between A42XY and QX42/QY42P

(a) Specifications comparisons between A42XY (input part) and QX42

			O: Compa	tible, ∆: F	Partial change required, ×: Incompatible
Speci	fication	A42XY (input specification)	QX42	Compatibility	Precautions for replacement
Number of	input points	64 points	64 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
input type		Dynamic scan of 8	Static	~	Set the static
пристурс		inputs × 8	Claire	^	
		12/24VDC	24VDC		
Rated inpu	t voltage	(10.2 to 26.4VDC)	(20.4 to 28.8VDC)	0	
		(ripple ratio witin 5%)	(ripple ratio witin 5%)		
Maximum					Use within the range shown in the
simultaneo	us input	60% simultaneously ON	Refer to the deratine chart *2	\bigtriangleup	derating figure.
point					
ON voltage	e/ON current	7VDC or more	19V or more/3mA or more	\triangle	12VDC are not aplicable.
OFF voltag	je/OFF	3VDC or more	11V or less/1.7mA or less		12VDC are not aplicable.
current					
input resist	ance	Approx. 2.4kΩ	Approx. 5.6kΩ	Δ	Increased. *2
			1ms/5ms/10ms/20ms		
	OFF to ON	16ms or less	/70ms or less	0	Use initial value (10ms) for the input
			(CPU parameter setting)	•	response time of parameters.
Response			initial setting is 10ms		
time			1ms/5ms/10ms/20ms		
	ON to OFF	16ms or less	/70ms or less	0	Use initial value (10ms) for the input
			(CPU parameter setting)	_	response time of parameters.
			initial setting is 10ms		
Common to	erminal		32 points/common	-	
arrengeme	nt	-	(Common terminal:		
			1B01,1B02,2B01,2B02)		
		ON indication (LED)	ON indication (LED)		
Operation	indicator	Batch of 8 inputs selected by	32 point switch-over using	0	
		rotary switch.	switch		
External co	onnections	input: 16pin connector	40pin connector	×	Wiring change is required.
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less	0	
	[(For A6CON1 or A6CON4)		
External	N/ 14	12/24VDC			
power	Voltage	(10.2 to 26.4VDC)	_	-	
supply		(ripple ratio witin 5%)			
	Current	55mA TYP.	_	-	
		64 points			The number of occupied points is
Occupied points		(output I/O assignment: 64	64 points	0	128 points (64points \times 2 = 128
		points)	(I/O assignment: input)		points) when using both modules of
Our					the QX42 and QY42.
Current co	nsumption	U.11A LYP.	U.U9A (TYP. all points ON)	0	
External di	mensions	$250 (H) \times 37.5 (W) \times 119 (D) mm$	98 (H) × 27.4 (W) × 90 (D) mm	\triangle	
		(9.84(H) × 1.48 (W) × 4.69 (D) inch)	(3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight		0.60kg	0.18kg	Ŭ	

*1 The following figure shows derating.



*2 Check the specifications of sensor or switch to connect to the QX40.

(b) Specifications comparisons between A42XY (output part) and QY42P

			O: Compa	tible, \triangle : F	Partial change required, ×: Incompatible
Speci	fication	A42XY (Output specification)	QY42P	Compatibility	Precautions for replacement
Number of points	output	64 points	64 points	0	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Output type	e	Dynamic scan of 8 input 8	Static	×	Set the static.
Rated load	l voltage	12/24VDC (10.2 to 26.4VDC) (ripple ratio witin 5%)	12/24VDC (10.2 to 28.8VDC)	0	
Max. outpu	ut current	50mA per point (built in limiting resistor (1kΩ) not used)	0.1A/ point, 2A/ common	0	
Max. voltag ON	ge drop at	1.5V on the source side (built in limiting resistor not used) 1V on the sink side	0.1VDC (TYP.) 0.1A 0.2VDC (MAX.) 0.1A	0	
Max. simul ON	taneously	60% when built-in 1kΩ limiting resistor	100% simultanellously ON (50 mA/point)	0	
Despense	OFF to ON	16ms or less	1ms or less	0	
time	ON to OFF	16ms or less	1ms or less (rated load, resistive load)	0	
Common to arrengeme	erminal ent	_	32 points/common (Common terminal: 1A01,1A02,2A01,2A02)	-	
Operation	indicator	ON indication (LED) Batch of 8 inputs selected by rotary switch.	ON indication (LED) 32 point switch-over using switch	0	
External co	onnections	Output: 32pin connector	40pin connector	×	Wiring change is required.
Applicable	wire size	0.3mm ²	0.3mm ² (AWG#22) or less (For A6CON1 or A6CON4)	0	
External power	Voltage	12/24VDC (10.2 to 26.4VDC) (ripple ratio witin 5%)	12-24VDC (10.2 to 28.8VDC) (ripple ratio witin 5%)	0	
supply	Current	180mA TYP.	0.02A (24VDC) / common	0	
Occupied points		64 points (I/O assignment: output 64 points)	64 points (I/O assignment: output)	0	The number of occupied points is 128 points (64points \times 2 = 128 points) when using both modules of the QX42 and QY42.
Current co	nsumption	0.11A TYP.	0.15A (TYP. all points ON)	Δ	Reviewing power supply capacity is required.
External di	mensions	250 (H) × 37.5 (W) × 119 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	
Weight		0.60kg	0.17kg	0	

3.2.4 Specifications Comparisons Interrupt Module

(1) Specifications comparisons between AI61 and QI60

			O: Compa	tible, \triangle : F	Partial change required, ×: Incompatible
Speci	ification	AI61	Q160	Compatibility	Precautions for replacement
Number of	interrupt	16 points	16 points	0	
input point	S			Ŭ	
Isolation m	nethod	Photocoupler	Photocoupler	0	
Rated inpu	ut voltage	12VDC/24VDC	24VDC	\triangle	12VDC are not aplicable.
Rated inpu	it current	6mA (12VDC) 14mA (24VDC)	Approx. 6mA	\bigtriangleup	Reduced. *1
Operating range	voltage	10.2 to 26.4VDC	20.4 to 28.8VDC (ripple ratio witin 5%)	Δ	12VDC are not aplicable.
Maximum simultanec point	ous input	100% (16/ common) simultanellously ON	100% (16/ common) simultanellously ON	0	
ON voltage	e	9V or more	19V or more/4.0mA or more	Δ	12VDC are not aplicable.
OFF voltag	ge	4V or less	11V or less/1.7mA or less	\triangle	12VDC are not aplicable.
Input resis	tance	Approx. 2.4kΩ	Approx. 3.9kΩ	\triangle	Increased. *1
Response	OFF to ON	0.2ms or less	0.1ms/0.2ms/0.4ms/0.6ms/ 1ms or less (CPU parameter setting) Initial setting is 0.2ms	0	Use initial value (0.2ms) for the input response time of parameters.
time	ON to OFF	DFF 0.2ms or less 0.1ms/0.2ms/0.4ms/0.6ms/ 1ms or less (CPU parameter setting) Initial setting is 0.2ms		0	Use initial value (0.2ms) for the input response time of parameters.
Common t arrengeme	erminal ent	16 points/common (Common terminal: TB9,TB18)	16 points/common (Common terminal: TB17)	0	
Operation	indicator	ON indication (LED)	ON indication (LED)	0	
External co	onnections	20 points removable terminal block (M3 × 6 screws)	18 points terminal block (M3×6 screws)	×	
Applicable	wire size	0.75 to 1.5mm ²	0.3 to 0.75mm ² core (2.8mm (0.11 inch) OD max.)	×	Wiring change is required.
Applicable crimping terminal		1.25-3,1.25-YS3A, 2-S3, 2-YS3A V1.25-3,V1.25-YS3A, V2-S3,V2-YS3A	R1.25-3 (sleeved crimping terminals cannot be used)	×	
Occupied	points	32 points (I/O assignment: Intelligent 32 points)	16 points (I/O assignment: Interrupt)	×	I/O assignment differs.
Current co	nsumption	0.14A (TYP. all points ON)	0.06A (TYP. all points ON)	0	
External di	imensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.40kg	0.20kg	0	

*1 Check the specifications of sensor or switch to connect to the QI60.

(2) Specifications comparisons between AI61-S1 and QI60

			O: Compa	tible, ∆: F	Partial change required, ×: Incompatible
Speci	fication	AI61-S1	Q160	Compatibility	Precautions for replacement
Number of	interrupt	16 points	16 points	0	
input points	5			Ĵ	
Isolation m	ethod	Photocoupler	Photocoupler	0	
Rated inpu	t voltage	24VDC	24VDC	0	
Rated inpu	t current	14mA	Approx. 6mA	Δ	Reduced. *1
Operating	voltage	21.6 to 26.4VDC	20.4 to 28.8VDC	0	
range			(ripple ratio witin 5%)		
simultaneo	us input	100% (16/ common)	100% (16/ common)	0	
noint	us input	simultaneously ON	simultaneously ON	Ŭ	
ON voltage)	16V or more	19V or more/4.0mA or more		The ON voltage has been increased. *1
OFF voltag	le	9V or less	11V or less/1.7mA or less	Δ	The OFF voltage has been increased. *1
Input resist	ance	Approx. 2.4kΩ	Approx. 3.9kΩ	\triangle	Increased. *1
Response	OFF to ON	2ms or less, 8ms or less	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms	Δ	Setting 2ms or more input response time in Parameter is not allowed. Set Ims to the input response time.
time	ON to OFF	2ms or less, 8ms or less	0.1ms/0.2ms/0.4ms/0.6ms /1ms or less (CPU parameter setting) Initial setting is 0.2ms	Δ	Setting 2ms or more input response time in Parameter is not allowed. Set Ims to the input response time.
Common te arrengeme	erminal nt	16 points/common (Common terminal: TB9,TB18)	16 points/common (Common terminal: TB17)	0	
Operation i	indicator	ON indication (LED)	ON indication (LED)	0	
External co	onnections	20points removable terminal block (M3×6 screw)	18points terminal block (M3×6 screw)	×	
Applicable	wire size	0.75 to 1.5mm ²	0.3 to 0.75mm ² core (2.8mm(0.11 inch)OD max.)	×	Wiring change is required
Applicable crimping terminal		1.25-3,1.25-YS3A, 2-S3,2-YS3A V1.25-3,V1.25-YS3A, V2-S3,V2-YS3A	R1.25-3 (sleeved crimping terminals cannot be used)	×	wining change is required.
Occupied p	points	32 points (I/O assignment: Interrupt 32 points)	16 points (I/O assignment: Intelligent)	×	I/O assignment differs.
Current cor	nsumption	0.14A (TYP. all points ON)	0.06A (TYP. all points ON)	0	
External di	mensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)	Δ	Wiring space is narrower.
Weight		0.40kg	0.20kg	0	

*1 Check the specifications of sensor or switch to connect to the QI60.

3.2.5 Blanking Module and Dummy Module Specifications Comparisons Between

(1) Specifications comparisons between AG60 and QG60

		O: Compatible	e, ∆: Part	ial change required, x: Incompatible
Specification	AG60	QG60	Compatibility	Precautions for replacement
Number of I/O number occupied points	16 points	16 points	0	
I/O assignment classification	Vacant 16 points	Vacant 16 points	0	
Application	Use for parts without I/O module (especially, for parts of empty slot between modules) as dust control.	Mounted to the slot where no I/O module is mounted (especially between modules) for dust controll.	0	
External dimensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86 (H) × 1.08 (W) × 3.54 (D) inch)		
Weight	0.17kg	0.07kg	0	

(2) Specifications comparisons between AG62 and QG60

		O: Compatible	e, ∆: Part	ial change required, x: Incompatible
Specification	AG62	QG60	Compatibility	Precautions for replacement
Number of I/O number occupied points	Max. 64 points (Able to select from 16 points, 32 points, 48 points and 64 points by using the switch on module surface.)	16 points	Δ	
I/O assignment classification	Depends on the switch setting for the number of input occupied points (16 points, 32 points, 48 points, 64 points)	Vacant 16 points		Set the number of occupied points with the I/O assignment of parameter settings.
Application	Reserve 16 points, 32 points, 48 points or 64 points in advance for the future need of adding I/O.	Mounted to the slot where no I/O module is mounted (especially between modules) for dust controll.		
Other functions	The provided simulation switches for 16points from the first I/O number allows the input on/off without an external switch.	-	×	Configure with external switches and input modules.
Current consumption	0.07A	-		
External dimensions	250 (H) × 37.5 (W) × 121 (D) mm (9.84 (H) × 1.48 (W) × 4.76 (D) inch)	98 (H) × 27.4 (W) × 90 (D) mm (3.86(H) × 1.08 (W) × 3.54 (D) inch)	Δ	
Weight	0.3kg	0.07kg	0	

3.3 Precautions for I/O Module Replacement

(1) Wiring

(a) Size of wire and crimping terminal

The module and terminal block of the Q series are smaller than the A series, therefore the applicable size of wire and crimping terminal for terminal blocks differ between the two series.

For this reason, use the wire and crimping terminal compatible with the specifications of the Q series I/O module when replacing with Q the series.

The upgrade tool (Conversion adapter) manufactured by Mitsubishi Electric Engineering Co., Ltd. omits the procedure of changing wiring. (Connection change for power supply and common terminals is required. Also, the conversion adapter fixing plate is necessary when using the conversion adapter.)

As the Q series is a smaller model, wiring space on terminal blocks is narrower. Pay much attention in wiring.

(b) Change from terminal block to connecter

The 32-point I/O modules of the A series uses terminal blocks while that of Q series uses connecters.

When using a 32-point I/O module of the Q series shift to the wiring using connecters or convert the connecters to terminal blocks with the following methods.

- Use the conversion module for the connecters and terminal block .
- Use the upgrade tool (Conversion adapter)* manufactured by Mitsubishi Electric Engineering Co., Ltd.
- (2) Connecter for external wiring

External wiring connecters are not included in a package of the 32 and 64 points I/O module of the Q series.

Purchase the necessary number of the connecters (A6CON \Box) separately.

- (3) Precautions for input modules
 - (a) Specifications change of rated input current

Check the specifications of sensors and switches since some of the Q series input modules support lower rated input current than those of the A series.

(b) Specifications change of OFF current

Check the specifications of sensors and switches since some of the Q series input modules support lower OFF current than those of the A series.

(c) Specifications change of maximum simultaneous on input point

Check the specifications of sensors and switches since some of the Q series input modules have less maximum simultaneous on input points than those of the A series. Refer to the derating diagram and use within the range shown in the diagram when replacing with the Q series.

(d) Specifications change of rated voltage value
 The QX4 □ and the QX8 □ type DC input module of the Q series are dedicated to DC24V.
 Use QX7 □ at 12VDC.

(e) Specifications change of response time

For the Q series DC input modules, the I/O response time can be set with the parameter. Set the I/O response time with parameters adjusting it to the response time of the A series input module.

(f) Specifications change of common terminal arrangement.

The common terminal arrangement may differ between the A series and Q series. Pay attention when applying a different voltage to each common.

(4) Precautions for output module

(a) Specifications change of output current value

Some of the Q series output modules support lower output current than those of the A series. Check the specification of the load side when using the Q series output module with smaller output current.

(b) Specifications change of common terminal arrangement

The common terminal arrangement may differ between the A series and Q series. Pay attention when applying a different voltage to each common.

(c) Specifications change of common maximum load current

Check the maximum load current for one common before use, since the current for one common may differ between the A and Q series.

4 POWER SUPPLY MODULE REPLACEMENTS

4.1 List of Alternative Models for Power Supply Module

A/QnA series models to be discontinued		Q series alternative models		
Product	Model	Model	Remark (restrictions)	
			1)External wiring: Changed	
	A61P	Q61P-A1/A2	2)Number of slots: Not changed	
			3)Specifications: Current capacity is reduced.	
			1)External wiring: Changed	
	A62P	Q62P	2)Number of slots: Not changed	
			3)Specifications: Current capacity is reduced.	
	A63P		1)External wiring: Changed	
		Q63P	2)Number of slots: Not changed	
Dowor oupply modulo			3)Specifications: Current capacity is reduced.	
Power supply module	A61PEU	Q61P-A1/A2	1)External wiring: Changed	
			2)Number of slots: Not changed	
			3)Specifications: Current capacity is reduced.	
			1)External wiring: Changed	
	A62PEU	Q62P	2)Number of slots: Not changed	
			3)Specifications: Current capacity is reduced.	
	A69D	None	General-purpose switching power supply	
	AUOF	NULLE	(For ± 15VDC)	
	A61P-UL	Q61P-A1/A2	Current capacity is reduced.	

4.2 Power Supply Module Specifications Comparisons

(1) Specifications comparisons between A61P(-UL) and Q61P-A1/A2

O: Compatible, \triangle : Partial change required, ×: Incompatible

Specification		A61P(-UL)	Q61P-A1/A2	Compatibility	Precautions for replacement
Input power supply		100-120VAC+10%-15%	A1: 100-120VAC+10%-15%		Use the Q61P-A1 at voltages of
		(85 to 132VAC)	(85 to 132VAC)		100-120VAC.
		200-240VAC+10%-15%	A2: 200-240VAC+10%-15%	~	Use the Q61P-A2 at voltages of
		(170 to 264VAC)	(170 to 264VAC)		200-240VAC.
Input frequer	ncy	50/60Hz ± 5%	50/60Hz ± 5%	0	
Input voltage	distortion	5% or less	5% or less	0	
Max. input ap	pparent	130VA	105VA	0	
power		004 111 0			
Inrush currer	nt	20A within 8ms	20A within 8ms	0	
output	5VDC	8A	6A	×	of entire system.
current	24VDC	-	_	-	
Overcurrent	5VDC	8.8A or more	6.6A or more	0	
protection	24VDC	_	_	-	
Overvoltage	5VDC	5.5 to 6.5V	5.5 to 6.5V	0	
protection	24VDC	-	_	-	
Efficiency		65% or more	70% or more	0	
Power indica	ator	Power LED display	LED indication	0	
			(5VDC output: ON)	_	
Terminal scre	ew size	$M4 \times 0.7 \times 6$	M3.5 screws	×	Wiring change required.
Applicable w	rire size	0.75 to 2mm ²	0.75 to 2mm ²	0	
Applicable cr	rimping	R1.25-4, R2-4	RAV1.25-3.5, RAV2-3.5	×	Wiring change required.
terminal		RAV1.25-4, RAV2-4			
Applicable tightening		98 to 137N⋅cm	66 to 89N⋅cm	×	Lighten within the applicable
torque		250(H) × 55(W) × 121(D) mm	98(H) × 55 2(W) × 90(D) mm		
External dimensions		$(9.84 (H) \times 2.33 (W) \times 4.76 (D) inch)$	$(3.86 (H) \times 2.33 (W) \times 3.54 (D) inch)$	\bigtriangleup	
Weight (kg)		0.98	0.31	0	
Allowable mo	omentary	::::::::::::::::::::::::::::::::::::::		_	
power failure	e period	Within 20ms	within 20ms	0	
Noise durabi	ility	Noise voltage 1500Vp-p	 By noise simulator of 1500Vp-p noise voltage, 1µs noise width and 25 to 60Hz noise frequency Noise voltage IEC61000-4-4, 2kV 	0	
Dielectric withstand voltage		Across external AC terminal batch and ground: 1500VAC for 1 minute Across external DC terminal batch and ground: 500VAC for 1 minute	Across inputs/LG and outputs/ FG 2830VAC rms/3 cycles (2000 m (6562 ft.))	0	
Insulation resistance		Across external AC terminal batch and ground 5MΩ or more by insulation resistance tester.	Across inputs and outputs (LG and FG separated), across inputs and LG/FG, across outputs and FG/LG $10M\Omega$ or more by insulation resistance tester	0	
Accessory		Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	×	Fuses are not included in accessories since they are not replaceable, nor are short chip since it is unnecessary to switch operating voltage.

(2) Specifications comparisons between A62P and Q62P

O: Compatible, \bigtriangleup : Partial change required, \times : Incompatible

Specific	ation	A62P	Q62P	Compatibility	Precautions for replacement
		100-120VAC+10%-15%			
	k -	(85 to 132VAC)	100-240VAC+10%-15%	0	
Input power suppry		200-240VAC+10%-15%	(85 to 264VAC)	0	
		(170 to 264VAC)		0	
Input frequer	псу	50/60Hz ± 5%	50/60Hz ± 5%	0	
Input voltage	distortion	5% or less	5% or less	0	
Max. input a	pparent	155\/A	105\/A	0	
power		135 VA	105VA	U	
Inrush currer	nt	20A within 8ms	20A within 8ms	0	
Rated	5VDC	5A	3A	×	Confirm the current consumption
output	24\/DC	0.84	0.6A	×	of entire system
current	24700	0.07	0.0/1	Â	or entire system.
Overcurrent	5VDC	5.5A or more	3.3A or more	0	
protection	24VDC	1.2A or more	0.66A or more	0	
Overvoltage	5VDC	5.5 to 6.5V	5.5 to 6.5V	0	
protection	24VDC	-	-	-	
Efficiency		65% or more	65% or more	0	
Power indica	ator	Power LED display	LED indication	0	
			(5VDC output: ON)		
Terminal scr	ew size	M4 × 0.7 × 6	M3.5 screws	×	Wiring change required.
Applicable w	ire size	0.75 to 2mm ²	0.75 to 2mm ²	0	
Applicable ci	rimping	R1.25-4, R2-4	RAV1.25-3.5, RAV2-3.5	×	Wiring change required.
terminal		RAV1.25-4, RAV2-4			
Applicable tightening		48 to 137N.cm	66 to 89N⋅cm	×	lighten within the applicable
torque		050(L)) 55(M) 404(D)	00/(1)) 55 0/(4/) 00/(D)		tightening torque.
External dimensions		$250(H) \times 55(W) \times 121(D) \text{ mm}$	$98(H) \times 55.2(W) \times 90(D) \text{ mm}$	\bigtriangleup	
Woight (kg)		(9.64 (H) × 2.33 (W) × 4.76 (D) IIICII)	(3.66 (F) × 2.55 (W) × 5.54 (D) IIICH)	0	
		0.94	0.39	0	
nower failure period		within 20ms	within 20ms		
power failure	penou		By noise simulator of		
			1500Vp-p noise voltage, 1µs		
Niele e douele	1.4.		noise width and 25 to 60Hz	0	
Noise duradi	lity	Noise voltage 1500vp-p	noise frequency		
			Noise voltage IEC61000-4-4,		
			2kV		
		Across external AC terminal			
		batch and ground: 1500VAC for	Across inputs/LG and outputs/		
Dielectric wit	hstand	1 minute	FG	0	
voltage		Across external DC terminal	2830VAC rms/3 cycles (2000 m		
		batch and ground: 500VAC for 1	(6562 ft.))		
		minute			
			Across inputs and outputs (LG		
		Across external AC terminal	inputs and LC/EC across		
Insulation rea	sistance	batch and ground 5M Ω or more	outputs and EG/LG 10MO or	0	
		by insulation resistance tester.	more by insulation resistance		
			tester		
					Fuses are not included in
		Spare fuse: 1			accessories since they are not
Accessory		Short chip for applied voltage	None	×	replaceable, nor are short chip
		select terminal: 1			since it is unnecessary to switch
					operating voltage.

(3) Specifications comparisons between A63P and Q63P

			O: Compat	ible, \triangle : Partia	al change required, x: Incompatible
Specific	ation	A63P	Q63P	Compatibility	Precautions for replacement
Input power supply		24VDC+30%-35%	24VDC+30%-35%	0	
		(15.6 to 31.2VDC)	(15.6 to 31.2VDC)	U	
Input frequer	псу	_	_	-	
Input voltage	distortion	-	-	-	
Max. input a	oparent	65W	45W	0	
Inrush currer	nt	100A within 1ms	100A within 1ms at 24VDC input	0	
Rated	5VDC	84	64	~	Confirm the current consumption
output	0120			^	of entire system.
current	24VDC	_	_	-	
Overcurrent	5VDC	8.5A or more	6.6A or more	0	
protection	24VDC	-	_	-	
Overvoltage	5VDC	5.5 to 6.5V	5.5 to 6.5V	0	
protection	24VDC	_	_	-	
Efficiency		65% or more	70% or more	0	
Power indica	itor	Power LED display	LED indication	0	
i ower indicator			(5VDC output: ON)	Ŭ	
Terminal screw size		$M4 \times 0.7 \times 6$	M3.5 screws	×	Wiring change required.
Applicable wire size		0.75 to 2mm ²	0.75 to 2mm ²	0	
Applicable crimping		R1.25-4, R2-4	RAV1 25-3 5 RAV2-3 5	×	Wiring change required
terminal		RAV1.25-4, RAV2-4	1.0.01.20 0.0, 1.0.02 0.0		
Applicable tightening		98 to 137N.cm	66 to 89N.cm	×	Tighten within the applicable
torque				^	tightening torque.
Extornal dimonsions		$250(H) \times 55(W) \times 121(D) \text{ mm}$	$98(H)\times55.2(W)\times90(D)~mm$	~	
External and	0101010	(9.84 (H) \times 2.33 (W) \times 4.76 (D) inch)	$(3.86 (H) \times 2.33 (W) \times 3.54 (D) inch)$		
Weight (kg)		0.8	0.33	0	
Allowable me	omentary	Within 1ms	Within 10ms	0	
power failure	period	Within This	at 24VDC input	Ŭ	
			By noise simulator of 500Vp-p		
Noise durabi	lity	Noise voltage 500Vp-p	noise voltage, 1µs noise width	0	
			and 25 to 60Hz noise frequency		
Dielectric wit	hstand	Across external DC terminal	500VAC across primary and		
voltage	notana	batch and ground: 500VAC for 1		0	
vollage		minute	3720		
		Across external DC terminals	10MO or more by insulation		
Insulation rea	sistance	batch and ground $5M\Omega$ or more		0	
		by insulation resistance tester.			
					Fuses are not included in
Accessory		Spare fuse: 1	None	×	accessories since they are not
					replaceable.

(4) Specifications comparisons between A61PEU and Q61P-A1/A2

Specific	ation	A61PEU	Q61P-A1/A2	Compatibility	Precautions for replacement
		100-120VAC+10%-15%	A1: 100-120VAC+10%-15%		Use the Q61P-A1 at voltages of
		(85 to 132VAC)	(85 to 132VAC)	\triangle	100-120VAC.
Input power supply		200-240VAC+10%-15%	A2: 200-240VAC+10%-15%		Use the Q61P-A2 at voltages of
		(170 to 264VAC)	(170 to 264VAC)	Δ	200-240VAC.
Input frequer	псу	50/60Hz ± 5%	50/60Hz ± 5%	0	
Input voltage	distortion	5% or less	5% or less	0	
Max. input ap	oparent	130VA	105VA	0	
power					
Inrush currer	nt	20A within 8ms	20A within 8ms	0	
Rated	5VDC	8A	6A	×	Confirm the current consumption
ouipui	24\/DC				or entire system.
Overcurrent	5VDC	8 84 or more	6 64 or more	0	
protection	24VDC	-	-	-	
Overvoltage	5VDC	5.5 to 6.5V	5.5 to 6.5V	0	
protection	24VDC	_		_	
Efficiency		65% or more	70% or more	0	
			LED indication	-	
Power indica	itor	Power LED display	(5VDC output: ON)	0	
Terminal scre	ew size	$M4 \times 0.7 \times 6$	M3.5 screws	×	Wiring change required.
Applicable wire size		0.75 to 2mm ²	0.75 to 2mm ²	0	
Applicable cr	imping	R1.25-4, R2-4	DAV/1 25 2 5 DAV/2 2 5		Wiring obongo required
terminal		RAV1.25-4, RAV2-4	RAV 1.25-3.5, RAV2-3.5	×	winnig change required.
Applicable tightening		98 to 137N.cm	66 to 89N.cm	~	Tighten within the applicable
torque				^	tightening torque.
External dimensions		$250(H) \times 55(W) \times 121(D) \text{ mm}$	$98(H) \times 55.2(W) \times 90(D) \text{ mm}$	~	
		$(9.84 (H) \times 2.33 (W) \times 4.76 (D) inch)$	(3.86 (H) × 2.33 (W) × 3.54 (D) inch)		
Weight (kg)		0.8	0.31	0	
Allowable mo	omentary	Within 20ms	Within 20ms	0	
power failure	period	Py poigo simulator of	By poice simulator of		
		By hoise simulator of 1500Vp-p poise voltage 1us	 By hoise simulator of 1500Vp-p poise voltage 1us 		
		noise width and 25 to 60Hz	noise width and 25 to 60Hz		
Noise durabi	lity	noise frequency	noise frequency	0	
		Noise voltage IEC61000-4-4,	Noise voltage IEC61000-4-4,		
		2kV	2kV		
		Across inputs/LG and outputs/	Across inputs/LG and outputs/		
Dielectric wit	hstand	FG	FG	0	
voltage		2830VAC rms/3 cycles (2000 m	2830VAC rms/3 cycles (2000 m		
		(6562 ft.))	(6562 ft.))		
		Across inputs and outputs (LG	Across inputs and outputs (LG		
		inpute and LC/EC across	and FG separated), across		
Insulation res	sistance	autouts and EC/LC 10MO or	outputs and EC/LC 10MO or	0	
		more by insulation resistance	more by insulation resistance		
		tester	tester		
					Fuses are not included in
		Spare fuse: 1			accessories since they are not
Accessory		Short chip for applied voltage	None	×	replaceable, nor are short chip
		select terminal: 1			since it is unnecessary to switch
					operating voltage.

O: Compatible, \triangle : Partial change required, ×: Incompatible

(5) Specifications comparisons between A62PEU and Q62P

			O: Compat	ible, $ riangle$: Parti	al change required, ×: Incompatible
Specific	ation	A62PEU	Q62P	Compatibility	Precautions for replacement
		100-120VAC+10%-15%		0	
Input power oupply		(85 to 132VAC)	100-240VAC+10%-15%	0	
input power	suppry	200-240VAC+10%-15%	(85 to 264VAC)	0	
		(170 to 264VAC)		U	
Input frequer	псу	50/60Hz ± 5%	50/60Hz ± 5%	0	
Input voltage	distortion	5% or less	5% or less	0	
Max. input a	oparent	110\/A	105\/A	0	
power		11007	100 07	0	
Inrush currer	nt	20A within 8ms	20A within 8ms	0	
Rated	5VDC	5A	3A	×	Confirm the current consumption
output	24VDC	0.84	0.64	×	of entire system
current	21100	0.07	0.071	Â	
Overcurrent	5VDC	5.5A or more	3.3A or more	0	
protection	24VDC	1.2A or more	0.66A or more	0	
Overvoltage	5VDC	5.5 to 6.5V	5.5 to 6.5V	0	
protection	24VDC	-	-	-	
Efficiency		65% or more	65% or more	0	
Power indica	tor	Power LED display	LED indication	0	
			(5VDC output: ON)		
Terminal scre	ew size	M4 × 0.7 × 6	M3.5 screws	×	Wiring change required.
Applicable w	ire size	0.75 to 2mm ²	0.75 to 2mm ²	0	
Applicable cr terminal	imping	RAV1.25-4, RAV2-4	RAV1.25-3.5, RAV2-3.5	×	Wiring change required.
Applicable tightening torque		118N-cm	66 to 89N⋅cm	×	Tighten within the applicable tightening torque.
F () ()		250(H) × 55(W) × 121(D) mm	98(H) × 55.2(W) × 90(D) mm		
External dimensions		(9.84 (H) \times 2.33 (W) \times 4.76 (D) inch)	(3.86 (H) \times 2.33 (W) \times 3.54 (D) inch)	-	
Weight (kg)		0.9	0.39	0	
Allowable mo	omentary	Within 20ms	Within 20ms	0	
power failure	period		Within 20113	Ŭ	
Noise durability		 By noise simulator of 1500Vp-p noise voltage, 1µs noise width and 25 to 60Hz noise frequency Noise voltage IEC61000-4-4, 2kV 	 By noise simulator of 1500Vp-p noise voltage, 1µs noise width and 25 to 60Hz noise frequency Noise voltage IEC61000-4-4, 2kV 	0	
Dielectric withstand voltage		Across inputs/LG and outputs/ FG 2830VAC rms/3 cycles (2000 m (6562 ft.))	Across inputs/LG and outputs/ FG 2830VAC rms/3 cycles (2000 m (6562 ft.))	0	
Insulation resistance		Across inputs and outputs (LG and FG separated), across inputs and LG/FG, across outputs and FG/LG 10M Ω or more by insulation resistance tester	Across inputs and outputs (LG and FG separated), across inputs and LG/FG, across outputs and FG/LG 10M Ω or more by insulation resistance tester	0	
Accessory		Spare fuse: 1 Short chip for applied voltage select terminal: 1	None	×	Fuses are not included in accessories since they are not replaceable, nor are short chip since it is unnecessary to switch operating voltage.

(6) Specifications of A68P

Specif	ication	A68P	
		100-120VAC+10%-15%	
Input power supply		(85 to 132VAC)	
		200-240VAC+10%-15%	
		(170 to 264VAC)	
Input freque	ency	50/60Hz ± 5%	
Input voltag	e distortion	-	
Max. input a	apparent	95\/0	
power		93VA	
Inrush curre	ent	20A within 8ms	
Rated	+15VDC	1.2A	
output	-15\/DC	0.74	
current	-15000	0.774	
Overcurren	+15VDC	1.64A or more	
t protection	-15VDC	0.94A or more	
Efficiency		65% or more	
Power indic	ator	Power LED display	
		Contact output	
		Switched on if +15VDC output is +14.25V	
Power ON r	nonitor	or higher or -15VDC output is -14.25V or	
	normon	lower.	
ouipui		Min. contact switching load: 5VDC, 10mA	
		Max. contact switching load: 264VAC, 2A	
		(R load)	
Terminal sci	rew size	$M3 \times 0.5 \times 6$	
Applicable v	vire size	0.75 to 2mm ²	
Applicable of	rimping	V1.25-4, V1.25-YS4A,	
terminal		V2-S4, V2-YS4A	
Applicable t	ightening	68N.cm	
torque			
External dia	nensions	$250(H) \times \overline{75.5(W) \times 121(D)}$ mm	
		(9.84 (H) \times 2.97 (W) \times 4.76 (D) inch)	
Weight (kg)		0.9	

Substitute the general-purpose switching power supply, whose specifications are shown below, for the A68P. Choose current capacity with the result of calculating the current consumption of entire system to be used.

Specification	Precautions for replacement
Voltaga	+15VDC ± 3%(14.55V to 15.45V)
vollage	-15VDC ± 3%(-14.55 to -15.45V)
Ripple voltage	50mVp-p or less
Spike voltage	100mVp-p or less
Output voltage limit	Within ± 1V

4.3 Precautions for Power Supply Module Replacement

- (1) Current consumption differs between the Q series and A series modules. Select the power supply module with the result of calculating the current consumption of entire system.
- (2) Applicable wire and crimping terminals for terminal blocks differ between the Q Series and the A Series. Use the wire and crimping terminals compatible with the specifications.
- (3) The Q61P-A□ does not support both 100 and 200 VAC. Select the Q61-A1 (for 100 VAC) or Q61P-A2 (for 200 VAC) according to operating voltage.
- (4) The large-capacity type power supply Q64P (8.5A) for the Q Series is also available. It is recommended to use it when larger current capacity is necessary.

5 BASE UNIT AND EXTENSION CABLE REPLACEMENT

5.1 List of Alternative Models for Base Unit and Extension Cable

A/QnA series models to be discontinued		Q series alternative models		
Product	Model	Model	Remark (restrictions)	
	A32B	Q32SB		
	A35B	Q35B		
	A38B	Q38B		
	A38B-UL	Q38B		
Main base unit	A32B-E	Q32SB		
Main base unit	A35B-E	Q35B		
	A38B-E	Q38B		
	A32B-S1	Q33B	Number of I/O slots: 2slots \rightarrow 3 slots	
	A38HB	Q38B		
	A38HBEU	Q38B		
	A52B	Q52B		
	A55B	Q55B		
	A58B	Q55B	Q55B \times 2 units Number of I/O slots: 8 slots \rightarrow 5 slots \times 2 units	
Extension base unit	A62B	Q63B	Number of I/O slots: 2 slots \rightarrow 3 slots	
	A65B	Q65B		
	A68B	Q68B		
	A68B-UL	Q68B		
	AC06B	QC06B		
	AC12B	QC12B		
	AC30B	QC30B		
Extension coble	A1SC05NB	QC05B	Parallel mounting is not allowed.	
Extension cable		OCOGR	Parallel mounting is not allowed.	
	AISCUIND		Cable length: $0.7m \rightarrow 0.6m$	
	A1SC30NB	QC30B	Parallel mounting is not allowed.	
	A1SC50NB	QC50B	Parallel mounting is not allowed.	

5.2 Base Unit and Extension Cable Specifications Comparisons

5.2.1 Base Unit Specifications Comparisons

(1) Main base unit

(a) Comparisons between A32B(-E) and Q32SB

	Ту		
Item	A/QnA series	Q series	Precautions for replacement
	A32B(-E)	Q32SB	
Loaded I/O modules	2 can be		
Possibility of extension	Possibility of extension Cannot connect extension modules.		
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4.5 hole	replacement proceptions. When
Mounting hole size	shaped hole (for M5 screw)	(for M4 screw)	using the renewal tool (Base
Extornal dimonsions	250(H) × 247(W) × 29(D) mm	98(H) × 114(W) × 18.5(D) mm	adapter) with existing mounting
	$(9.84(H) \times 9.72(W) \times 1.14(D) \text{ inch})$	$(3.86(H) \times 4.49(W) \times 0.75(D) \text{ inch})$	holes use the Q33B
Dimensions for mounting	227 × 200 mm	101 × 80 mm	
to the panel	(8.94 × 7.87 inch)	(3.98 × 3.15 inch)	

(b) Comparisons between A32B-S1 and Q33B

	Ту		
Item	A/QnA series	Q series	Precautions for replacement
	A32B-S1	Q33B	
Loaded I/O modules	2 can be loaded	3 can be loaded	
Possibility of extension	Exter	dable	
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4.5 hole	Refer to Section 5.3.1 for
Mounting hole size	shaped hole (for M5 screw)	(for M4 screw)	replacement precautions. The
External dimensions	$250(H) \times 268(W) \times 29(D) \text{ mm}$	98(H) × 189(W) × 44.1(D) mm	renewal tool (Base adapter) for
	$(9.84(H) \times 10.55(W) \times 1.14(D) \text{ inch})$	$(3.86(H)\times7.44(W)\times1.74(D)\text{ inch})$	the A32B-S1 is not available.
Dimensions for mounting	248 × 200 mm	169 × 80 mm	
to the panel	(9.76 × 7.87 inch)	(6.65 × 3.15 inch)	

(c) Comparisons between A35B(-E) and Q35B

	Ту		
Item	A/QnA series	Q series	Precautions for replacement
	A35B(-E)	Q35B	
Loaded I/O modules	5 can be		
Possibility of extension	Exter	Defende Costien 5.2.4 fer	
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4.5 hole	Refer to Section 5.3.1 for
Mounting hole size	shaped hole (for M5 screw)	(for M4 screw)	repewal tool (Base adapter)
Extornal dimonsions	$250(H) \times 382(W) \times 29(D) \text{ mm}$	$98(H) \times 245(W) \times 44.1(D) \text{ mm}$	with existing mounting holes is
	$(9.84(H) \times 15.04(W) \times 1.14(D) \text{ inch})$	$(3.86(H) \times 9.65(W) \times 1.74(D) \text{ inch})$	available
Dimensions for mounting	$362 \times 200 \text{ mm}$	$224.5 \times 80 \text{ mm}$	
to the panel	(14.25 × 7.87 inch)	(8.84 × 3.15 inch)	

(d) Comparisons between A38B(-E/-UL)/A38HB/A38HBEU and Q38B

	Ту			
Itom	A/QnA series	Q series		
	A38B(-E/-UL)/A38HB/ A38HBEU	Q38B	Precautions for replacemen	
Loaded I/O modules	8 can be			
Possibility of extension	Exter	Poter to Section 5.2.1 for		
Mounting hole size	\varnothing 6 mm (0.24 in) dia. pear- shaped hole (for M5 screw)	M4 screw hole or ∅4.5 hole (for M4 screw)	replacement precautions. The	
External dimensions	250(H) × 480(W) × 29(D) mm (9.84(H) × 18.90(W) × 1.14(D) inch)	98(H) × 328(W) × 44.1(D) mm (3.86(H) × 12.91(W) × 1.74(D) inch)	with existing mounting holes is	
Dimensions for mounting	460 × 200 mm	308 × 80 mm		
to the panel	(18.11 × 7.87 inch)	(12.13 × 3.15 inch)		

(2) Extension base unit (No power supply module required)

(a) Comparisons between A52B and Q52B

	Ту		
Item	A/QnA series	Q series	Precautions for replacement
	A52B	Q52B	
Loaded I/O modules	2 can be		
Possibility of extension	Exter	Poter to Section 5.2.1 for	
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4.5 hole	replacement precautions. The
Mounting hole size	shaped hole (for M5 screw)	(for M4 screw)	renewal tool (Base adapter)
External dimensions	$250(H) \times 183(W) \times 29(D) \text{ mm}$	$98(H)\times106(W)\times44.1(D)~mm$	with existing mounting holes is
	$(9.84(H) \times 7.20(W) \times 1.14(D) \text{ inch})$	$(3.86(H) \times 4.17(W) \times 1.74(D) \text{ inch})$	available
Dimensions for mounting	163 × 200 mm	83.5 × 80 mm	
to the panel	(6.42 × 7.87 inch)	(3.29 × 3.15 inch)	

(b) Comparisons between A55B and Q55B

	Ту				
Item	A/QnA series	Q series	Precautions for replacement		
	A55B	Q55B			
Loaded I/O modules	5 can b	e loaded			
Possibility of extension	Exter	Extendable			
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4.5 hole	replacement proceptions. The		
Wounting hole size	shaped hole (for M5 screw)	(for M4 screw)	repewal tool (Base adapter)		
External dimensions	$250(H) \times 297(W) \times 29(D) \text{ mm}$	$98(H) \times 189(W) \times 44.1(D) \text{ mm}$	with existing mounting holes is		
	$(9.84(H) \times 11.69(W) \times 1.14(D) \text{ inch})$	$(3.86(H) \times 7.44(W) \times 1.74(D) \text{ inch})$	available		
Dimensions for mounting	277 × 200 mm	167 × 80 mm			
to the panel	(10.91 × 7.87 inch)	(6.57 × 3.15 inch)			

(c) Comparisons between A58B and two Q55Bs

	Ту			
Item	A/QnA series	Q series	Precautions for replacement	
	A58B	Q55B × 2		
Loaded I/O modules	8 can be loaded	5 units × 2 can be loaded		
Possibility of extension	Exter	ndable	Defer to Section 5.2.4 for	
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4.5 hole	replacement proceptions. When	
Mounting hole size	shaped hole (for M5 screw)	(for M4 screw)	using the renewal tool (base	
External dimensions	$250(H)\times411(W)\times29(D)~mm$	$(98(H)\times189(W)\times44.1(D)~mm)\times2$	adapter) with existing mounting	
	$(9.84(H)\times 16.18(W)\times 1.14(D)$ inch)	$((3.86(H)\times7.44(W)\times1.74(D)\text{ inch})\times2)$	holes use the Q68B	
Dimensions for mounting	391 × 200 mm	(167 × 80 mm) × 2		
to the panel	(5.39 × 7.87 inch)	((6.57 × 3.15 inch) × 2)		

(3) Extension base unit (Power supply module loaded)

(a) Comparisons between A62B and Q63B

	Ту				
Item	A/QnA series	Q series	Precautions for replacement		
	A62B	Q63B			
Loaded I/O modules	2 can be loaded	3 can be loaded			
Possibility of extension	Exten	Extendable			
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4.5 hole	replacement proceptions. The		
Mounting hole size	shaped hole (for M5 screw)	(for M4 screw)	repeated tool (Base adapter)		
Extornal dimonsions	$250(H) \times 283(W) \times 29(D) \text{ mm}$	$98(H) \times 189(W) \times 44.1(D) \text{ mm}$	with existing mounting holes is		
	$(9.84(H) \times 11.14(W) \times 1.14(D) \text{ inch})$	$(3.86(H)\times7.44(W)\times1.74(D)$ inch)	available		
Dimensions for mounting	218 × 200 mm	167 × 80 mm			
to the panel	(8.58 × 7.87 inch)	(6.57 × 3.15 inch)			

(b) Comparisons between A65B and Q65B

	Ту		
Item	A/QnA series	Q series	Precautions for replacement
	A65B	Q65B	
Loaded I/O modules	5 can be	e loaded	
Possibility of extension	Exten	dable	
Mounting hole size	Ø6 mm (0.24 in) dia. pear-	M4 screw hole or Ø4 5 hole	Refer to Section 5.3.1 for
	shaped hole	(for M4 screw)	replacement precautions. The
	(for M5 screw)		renewal tool (Base adapter)
External dimensions	$250(H)\times 352(W)\times 29(D)~mm$	$98(H) \times 245(W) \times 44.1(D)$ mm	with existing mounting holes is
	$(9.84(H) \times 13.86(W) \times 1.14(D)$ inch)	$(3.86(H)\times9.65(W)\times1.74(D) \text{ inch})$	available.
Dimensions for mounting	332 × 200 mm	222.5 × 80 mm	
to the panel	(13.07 × 7.87 inch)	(8.76 × 3.15 inch)	

(c) Comparisons between A68B (-UL) and Q68B

	Ту			
Item	A/QnA series	Q series	Precautions for replacement	
	A68B(-UL)	Q68B		
Loaded I/O modules	8 can be	e loaded		
Possibility of extension	Exten	dable		
Mounting hole size	Ø6 mm (0.24 in) dia. pear- shaped hole (for M5 screw)	M4 screw hole or Ø4.5 hole (for M4 screw)	Refer to Section 5.3.1 for replacement precautions. The renewal tool (Base adapter)	
External dimensions	250(H) ×466(W) ×29(D) mm (9.84(H) ×18.35(W) ×1.14(D) inch)	98(H) × 328(W) × 44.1(D) mm (3.86(H) × 12.91(W) × 1.74(D) inch)	with existing mounting holes is available.	
Dimensions for mounting	446 × 200 mm	306 × 80 mm		
to the panel	(17.56 × 7.87 inch)	(12.05 × 3.15 inch)		

5.2.2 Extension Cables Specifications Comparisons

Itom		Туре				
		A/QnA Series			Precautions for replacement	
nem		A main–A extension	Ans main–A extension	Q series	Frecautions for replacement	
	0.45m	-	A1SC05NB	QC05B		
	0.6m	AC06B	-	QC06B		
Cable longth	0.7m	-	A1SC07NB	QC06B	Refer to Section 5.3.2 for	
Cable length	1.2m	AC12B	-	QC12B	replacement precautions.	
	3.0m	AC30B	A1SC30NB	QC30B		
	5.0m	-	A1SC50NB	QC50B		

5.3 Precautions for Base Unit and Extension Cable Replacement

5.3.1 Precautions for Base Unit Replacement

- (1) When replacing the A/QnA series base unit with the Q series, it is necessary to redo the mounting holes to fix the unit to a control panel, since the two series have different mounting hole size.
- (2) When using the existing mounting holes to install the Q series base unit, use the renewal tool (Base adapter) manufactured by Mitsubishi Electric Engineering Co., Ltd. This base adapter allows to omit the procedure of redoing mounting holes.

5.3.2 Precautions for Extension Cable Replacement

The total extension distance of the Q series extension cable is 13.2m while that of the A series is 6.6m. Select a suitable cable according to your system.

5.4 QA65B Model Extension Base Unit

The QA65B enables Q series CPU units to be compatible with A series large-sized modules. (Only the High Performance model QCPU is applicable to the QA65B.)

5.4.1 System Configuration

This section explains the system configuration and precautions for use of the QA65B type extension base unit.

(1) Connection order of connection base units

When using the Q6 \square B, QA1S6 \square B, and QA65B together, connect them in the order of the Q6 \square B, QA1S6 \square B, and QA65B in the closest position to the main base unit.

(2) Connection order of extension base units upon setting the extension stage number

To use extension base units, it is necessary to set extension stage numbers (1 to 7) with the stage number setting connector.

Set the extension stage number 1 to the connected extension base unit closest to the main base unit, and the following extension stage number (up to 7) to the following extension base units in the connected order.



5.4.2 List of Configurating Devices

The following table shows modules that can be used on the QA65B type extension base units.

ASPR ASPR <th< th=""><th>Name</th><th></th><th></th><th>Туре</th><th></th><th>Remark</th></th<>	Name			Туре		Remark
Power supply module ASSPE ASSPEU ASSP. ASSP. ASSP. ASSP. ARSPEU AX10, AX21, AX21, AX21, AX21, AX24, AX21, AX22, AX21, AX22, AX21, AX21, AX22, AX23, AY40, AY40, AY42, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY4		A61P,	A62P,	A63P,	A65P,	
Acceptul Acceptul Input module AX10, AX21, AX40, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX41, AX40, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX41, AX40, AX	Power supply module	A67P,	A66P,	A68P.	A61PEU,	
AX10, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX21, AX20, AX20, AX20, AX20, AX20, AX20, AX21, AX20, AX22, AX20, AX20, AX22, AX20, AX20, AX20, AX22, AX21, AX22, AX22, AX23, AY40, AY42, A		A62PEU	,	,	,	
Input module AX21, AX40, AX40, AX41, AX40, AX41, AX11E, AY12E, AY12, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY44, AY44,		AX10,	AX11,	AX11EU,	AX20,	
Input module AX40, AX40, AX40, AX40, AX51, AX82, AX82, AX82, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX42, AX90, A		AX21,	AX21EU,	AX31,	AX31-S1,	
Input module AX42-S1, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX80, AX81, AX80, AX81-S, AY40, AY11, AY11,		AX40,	AX41,	AX41-S1,	AX42,	
Ax80 Ax80 Ax80 Ax80 Ax80E, Ax81, Ax81-S1, Ax81-S1, Ax81-S2, Ax81-S2, Ax81-S2, Ax81-S2, Ax81-S2, Ax81-S2, Ax81-S2, Ax81-S2, Ax81-S2, Av10, Av11A, Av11A, Av11A, Av11A, Av11A, Av11A, Av11A, Av1E, Av11A, Av11A, Av11A, Av12, Av23, Av42, Av22, Av22, Av23, Av42, Av42, Av42, Av42, Av42, Av42	Input module	AX42-S1,	AX50,	AX50-S1,	AX60,	
AX80E, AX81-S3, AY10, AY11, AY11E, AY13E, AY12E,		AX60-S1,	AX70,	AX71,	AX80,	
AX81-S3, AX81B, AX82 AY10, AY10, AY10, AY11, AY11A, AY11, AY11EU, AY11EU, AY11EU, AY11EU, AY11EU, AY122, AY23, AY40, AY40, AY40, AY41, AY42,S1, AY42,S1, AY42,S1, AY42,S3, AY40, AY40, AY40, AY41, AY41, AY42,S, AY42,S3, AY42,S4, AY40, AY41, AY42,S, AY42,S3, AY42,S4, AY40, AY41, AY42,S3, AY42,S4, AY42,S4, AY42,S1, AY42,S2, AY42,S3, AY42,S4, AY60, AY60, AY60, AY60, AY60, AY60, AY60, AY80, AY80, AY80, AY80, AY81, AY81, AY81, AY81, AY81, AY81, AV11, AY71, AY72, AY80, A980D, A680D, A680D, A680D, A680D, A680D, A680D, A680D, <t< td=""><td></td><td>AX80E.</td><td>AX81.</td><td>AX81-S1.</td><td>AX81-S2.</td><td></td></t<>		AX80E.	AX81.	AX81-S1.	AX81-S2.	
AY10, AY10A, AY11, AY11, AY11A, AY11, AY11E, AY114EU, AY11EU, AY15EU, AY15EU, AY12, AY23, AY40, AY22, AY23, AY40, AY22, AY23, AY40, AY42, AY42, AY22, AY23, AY40, AY42, AY42, AY42, AY42, AY42, AY42, AY42, AY42, AY42, AY40, AY41, AY41, AY42, AY41, AY42, AY42, AY42, AY41, AY51, AY60, AY60, AY51, AY60, AY60, AY60, AY71, AY72, AY80, AY60, AY71, AY72, AY80, AY60, AY11, AY81, AY60, AY60, AY11, AY81, AY60, AY60, AV60, A68ADN, A68ADN, A68ADN, A68AD, A68ADA, A68ADA, A60AY, <		AX81-S3.	AX81B.	AX82	,	
Output module AY11E, AY13E, AY13E, AY13E, AY13E, AY13E, AY13E, AY13E, AY14, AY40, AY42, AY40, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY40, AY40, AY42, AY40, AY40, AY40, AY40, AY40, AY42, AY40, AY41		AY10.	AY10A.	AY11.	AY11A.	
Output module AY13EL, AY22, AY23, AY40, AY40, AY40, AY41, AY42-S1, AY40, AY41, AY42-S1, AY40, AY41, AY42-S1, AY40, AY41, AY42-S2, AY42-S3, AY42-S3, AY42-S3, AY42-S4, AY40, AY42, AY42-S1, AY60, AY50, AY50, AY51, AY60, AY50, AY50, AY51, AY50, AY50, AY50, AY50, AY50, AY51, AY50, AY50, AY50, AY50, AY51, AY50, AY50, AY51, AY52, AY50, AY50, AY51, AY52, AY50, A		AY11E.	AY11AEU.	AY11EEU.	AY13.	
Output module AY22, AY23, AY42, AY40, AY42, AY40, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, AY42, AY40, ASBAY, ASBAY, ASBAY, ASBAY, AD5M, AD75M,		AY13E	AY13EU	AY15EU	AY20EU	
Dutput module Nucl. Nucl. Ar40, Ar41, Ar41, Ar41, Ar42,		AY22	AY23	AY40	AY40P	
Output module Arta:		AY40A	ΔΥ41	ΔΥ41Ρ	ΔΥ42	
Artson, Artson, Artson, Artson, Artson, VD module Adstn, Artson, Artson, Artson, High-speed counter module A68AD, A68AD-S2, A68ADN, A616AD D/A converter module A68DA, A68AD-S2, A68ADN, A616AD Imtercenter D/A converter module A68DA, A68AD-S2, A68ADN, A616AD Imtercenter Imtercenter A610AN, A660MX, A680MX, A60MX, A60MX, A60MX, A60MX, A60MX, A007N, AD71S, AD71, AD71S, AD72, AD71S, AD72, AD78M, A079N, AD75M3, '1 AD75M3, '1 AD75M3, '1 AD75M3, '1 AD75M1, A	Output module	AV42-S1	AV42-82	AV42-S3	AV42.SA	
A130, A131, A1031, A103, A104, AY60E, AY60E, AY60E, AY60E, AY60E, AY71, AY72, AY80, AY80EP, AY81 AY81EP, AY82EP ************************************		A142-31,	AT42-32,	AT42-33, AV51 S1	AT42-34, AV60	
Artous, Artous, <t< td=""><td></td><td>A150,</td><td>ATST,</td><td>AT51-51,</td><td>A100,</td><td></td></t<>		A150,	ATST,	AT51-51,	A100,	
AY11, AY2, AY80,		A1003,	ATOUE,	ATOUEF,	AT70,	
Arbit Arbit <th< td=""><td></td><td>AY71,</td><td>AY72,</td><td>AY80,</td><td>AY80EP,</td><td></td></th<>		AY71,	AY72,	AY80,	AY80EP,	
No module A42.X1, AH2, AH2, AH2, *** ************************************		AY81,	AY81EP,	AY82EP		
High-speed counter module AD51, AD5151 11 A/D converter module A68AD, A615T, A67AT, AD71S2, AD711, AD71S1, AD75M, AD7110, AD711		A42XY,	AH42,			*4
AD converter moduleABSAD, ABSAD, A62DA, A62DA, A62DA, A62DA, A616DAI,ABSADN, A68DAI, A68DAI, A68DAI,ABSAD, A68DAI, A68DAI, A68DAI, A616DAI,D/A converter moduleA616DAI, A616DAI,A616DA, A616DAI,A616DA, A616DAI,A616TD, A60MX, A00MX,A60MX, A60MX,Interrupt moduleA61, A61, A161,A161, A161, A161,A161, A161, AD70, AD70, AD70, AD71, AD71, AD71, AD71, AD71, AD7181, AD7181, AD7591-S3, AD7592-S3, AD7593-S3*1MELSECNET/MINI-S3 master moduleAD70, AD75M1, AD75M2, AD75M2, AD75M3,AD75M3, *1*1MELSECNET/MINI-S3 master moduleAD51-S3, AD75M1, AD72, AD75M2, AD75M3,AJ71T32-S3, *1*1Metuser module Position detection moduleAD51-S3, AD59, AD59, AD59, AD59, AD59, AD59, AD59, S1AG3LS*2Position detection module Memory card centronics interface moduleA64BTL*2Dinterface module MELSEC-I/OLINK moduleA64BTL*2Dinterface module AJ51T64, AJ51T64, AJ51T64, AJ51T64,AJ71ID2-R4*2Dinterface module AD51FD-S3AJ50VS-GN*2Voice output module Visio sensor moduleAD51PD-S3*2Voice output module AS50VS, AS50VS-GNAS50VS-GN*2Banking module AG60AG60Dummy moduleAG60Dummy moduleAG60	High-speed counter module	AD61,	AD61S1	1001011	10/010	*1
D/A converter module A62DA, A616DAV, A616DAV, A616DAV, A616DAV, A616DAV, A68RD3, A68RD3, A68RD4, A60MXR, A60MXR, A60MXR, A60MXR, A60MXR, A60MXR, A60MXR, A60MXR, A60MXR, A070D, AD70D, AD70D, AD70D, AD71S2, AD71S2, AD71S2, AD71S2, AD71S2, AD71S2, AD75P1-S3, AD75P2-S3, AD75P3-S3 *3 Positioning module A070, AD71S2, AD71S2, AD71S2, AD71S2, AD75P1-S3, AD75P1-S3, AD75P2-S3, AD75P3-S3 AD71S1, AD778M MELSECNET/MINI-S3 master module AD51+S3, AD75P1-S3, AD75P1-S3, AD75P3-S3 AD72, AD75M3 AD778M Intelligent communication module AD51-S3, AD51-S3, AD51+S3 AJ711732-S3 *1 Metalgent communication module AD51-S3, AD51+S3 AJ711732-S3 *1 Paging module AD51-S3, AD59-S1 *2 *2 Position detection module AS91 *2 *2 Memory card centronics interface module AD59, AD59-S1 AD59-S1 *2 Supersonic linear scale module A648TL *2 *2 Dinterface module AJ5164 *2 *2 BASET interface module AJ51452-S3 *2 *2 JEMANET (JPCN-1) master module AJ511D2-R4 *2 *2 Voice output module AJ5142-S3 *2 *2	A/D converter module	A68AD,	A68AD-S2,	A68ADN,	A616AD	
A616DAV, A616DAI Temperature-Digital converter module A68RD3, A68RD4, A616TD, A60MX, Interrupt module A161, A161-S1 *3 Positioning module A161, A161-S1 *3 AD70, AD70D, AD71, AD71S1, AD71S2, AD71S7, AD72, AD778M AD75H1, AD75M2, AD75M3 *1 MELSECNET/MINI-S3 AJ71PT32-S3, AJ71T32-S3 *1 master module AD51-S3, AD51H-S3 *2 Paging module AD51-S3, AD51H-S3 *2 Paging module AS91 *2 *2 Position detection module AS91 *2 Position detection module AS91 *2 Memory card centronics interface module AD59, AD59-S1 *2 Supersonic linear scale module A64BTL *2 *2 JEMANET(JPCN-1) master module AJ711D2-R4 *2 *2 JEMANET(JPCN-1) master module AJ71B2-S3 *2	D/A converter module	A62DA,	A62DA-S1,	A68DAV,	A68DAI-S1,	
Temperature-Digital converter module A68RD3, A60MXR, A60MXR, A60MXR, A60MXR, A60MXR, A60MXR, A60MXT A616TD, A60MX, A07N, AD7N, AD7N, AD71, AD71, AD71, AD71, AD71, AD72, AD778M *3 Positioning module AB70, AD75P1-S3, AD75P1-S3, AD75P2-S3, AD75P3-S3 AD71, AD75B4, AD75M3, AD75P3-S3 AD71, AD75M3 MELSECNET/MINI-S3 master module AJ71PT32-S3, AJ71PT32-S3, AJ71PT32-S3, AJ71PT32-S3, AJ71PT32-S3 AJ71T32-S3 *1 Intelligent communication module AD51-S3, AD51-S3, AD51H-S3 AJ71T32-S3 *2 Paging module AD52-S1, AD22-S1 *2 Position detection module A591 *2 Memory card centronics interface module AD59, AD59-S1 AD59-S1 *2 Supersonic linear scale module A64BTL *2 *2 MELSEC-I/OLINK module AJ711D2-R4 *2 *2 JEMANET (JPCN-1) master module AJ71B2-S3 *2 JEMANET (JPCN-1) master module AJ71B2-S3 *2 Voice output module A51FD-S3 *2 Voice output module A51FD-S3 *2 Voice output module A50VS, A560VS-GN S00VS-GN Blanking module A		A616DAV,	A616DAI			
module A60MXR, A60MX1 *3 Interrupt module Al61, Al61-S1 *3 Positioning module AD70, AD71, AD71, AD71S1, AD71S1, Positioning module AD71S2, AD71S7, AD72, AD778M *1 MELSECNET/MINI-S3 AD75M1, AD75M2, AD75M3 *1 MELSECNET/MINI-S3 AJ71PT32-S3, AJ71T32-S3 *1 Intelligent communication module AD51-S3, AD51H-S3 *2 Paging module AD22-S1 *2 *2 Position detection module A61LS, A62LS-S5, A63LS *2 Position detection module AS91 *2 *2 Position detection module A61LS, A62LS-S5, A63LS *2 Position detection module A61LS, A059-S1 *2 *2 Supersonic linear scale module A64BTL *2 *2 *2 ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 *2 AD7EC/PCN-1)	Temperature-Digital converter	A68RD3,	A68RD4,	A616TD,	A60MX,	
Interrupt module Al61, Al61-S1 *3 Positioning module AD70, AD70D, AD71, AD71S1, AD71S1, AD75P1-S3, AD75P2-S3, AD75P3-S3 *1 MELSECNET/MINI-S3 AD75M1, AD75M2, AD75M3 *1 Intelligent communication module AD51-S3, AD51H-S3 *1 Paging module AD51-S3, AD51H-S3 *2 Paging module AD51-S3, AD51H-S3 *2 Paging module AD51, A62LS-S5, A63LS *2 Position detection module AS91 *2 *2 ID interface module AJ59, AD59-S1 *2 ID interface module AJ71ID1-R4,	module	A60MXR,	A60MXT			
AD70, AD70, AD71, AD75, AD75, AD75, AD75, AD75, AD75, AD75, AD71, AD72, AD71, AD71, <th< td=""><td>Interrupt module</td><td>Al61,</td><td>Al61-S1</td><td></td><td></td><td>*3</td></th<>	Interrupt module	Al61,	Al61-S1			*3
Positioning module AD7152, AD7157, AD72, AD778M AD75P1-S3, AD75P2-S3, AD75P3-S3 *1 MELSECNET/MINI-S3 master module AJ71PT32-S3, AJ71T32-S3 *1 Intelligent communication module AD51-S3, AD51H-S3 AJ71T32-S3 *1 Paging module AD51-S3, AD51H-S3 AJ71T32-S3 *1 Paging module AD22-S1 *2 *2 Position detection module A61LS, A62LS-S5, A63LS *2 Position detection module AS91 *2 *2 *2 Memory card centronics interface module AD59, AD59-S1 *2 Supersonic linear scale module A64BTL *2 *2 Dinterface module AJ711D1-R4, AJ711D2-R4 *2 *2 MELSEC-I/OLINK module AJ7164 *2 *2 *2 JEMANET(JPCN-1) master module AJ7132-S3 *2 *2 External error check module AD51FD-S3 *2 *2 Voice output module A		AD70,	AD70D,	AD71,	AD71S1,	
AD75P1-S3, AD75P2-S3, AD75P3-S3 *1 MELSECNET/MINI-S3 master module AD75M1, AD75M2, AD75M3 *1 Intelligent communication module AD51-S3, AD71132-S3 *1 Intelligent communication module AD51-S3, AD51H-S3 *2 Paging module AD22-S1 *2 Position detection module A61LS, A62LS-S5, A63LS PC fault detection module AS91 Memory card centronics interface module AD59, AD59-S1 Supersonic linear scale module A64BTL ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 JEMANET(JPCN-1) master module AJ71J82-S3 JEMANET(JPCN-1) master module AJ71J92-S3 *2 Vision sensor module AJ71VC	Positioning module	AD71S2,	AD71S7,	AD72,	AD778M	
AD75M1,AD75M2,AD75M3*1MELSECNET/MINI-S3 master moduleAJ71PT32-S3,AJ71T32-S3*1Intelligent communication moduleAD51-S3,AD51H-S3*2Paging moduleAD22-S1*2Position detection moduleA61LS,A62LS-S5,A63LSPC fault detection moduleA591Memory card centronics interface moduleAD59,AD59-S1Supersonic linear scale moduleA64BTL*2ID interface moduleAJ71ID1-R4,AJ71ID2-R4*2MELSEC-I/OLINK moduleAJ51F64B/NET interface moduleAJ71B62-S3JEMANET (JPCN-1) master moduleAJ51FD-S3*2Voice output moduleA11VC*2Vision sensor moduleAS50VS,AS50VS-GNBlanking moduleAG62	· · · · · · · · · · · · · · · · · · ·	AD75P1-S3,	AD75P2-S3,	AD75P3-S3		*1
MELSECNET/MINI-S3 master module AJ71PT32-S3, AJ71T32-S3 *1 Intelligent communication module AD51-S3, AD51H-S3 *2 Paging module AD22-S1 *2 Position detection module A61LS, A62LS-S5, A63LS PC fault detection module AS91 Memory card centronics interface module AD59, AD59-S1 Supersonic linear scale module A64BTL ID interface module AJ711D1-R4, AJ71ID2-R4 *2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AD51F0-S3 JEMANET(JPCN1) master module AJ71B2-S3 *2 Voice output module AD51FD-S3 Voice output module AS1VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG62		AD75M1,	AD75M2,	AD75M3		*1
master module ADSTACLON ADSTACLON ADSTACLON Intelligent communication module AD51-S3, AD51H-S3 *2 Paging module AD22-S1 *2 Position detection module A61LS, A62LS-S5, A63LS PC fault detection module AS91 Memory card centronics interface module AD59, AD59-S1 Supersonic linear scale module A64BTL ID interface module AJ711D1-R4, AJ711D2-R4 *2 MELSEC-I/OLINK module AJ51764 B/NET interface module AJ51164 JEMANET(JPCN-1) master module AJ71B62-S3 Voice output module A11VC Voice output module A11VC Vision sensor module AG60 Dummy module AG62	MELSECNET/MINI-S3	AJ71PT32-S3		AJ71T32-S3		*1
Intelligent communication module AD51-S3, AD51H-S3 *2 Paging module AD22-S1 *2 Position detection module A61LS, A62LS-S5, A63LS PC fault detection module AS91 Memory card centronics interface module AD59, AD59-S1 Supersonic linear scale module A64BTL ID interface module AJ711D1-R4, AJ711D2-R4 *2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AJ711B62-S3 JEMANET(JPCN-1) master module AJ71J92-S3 *2 *2 Voice output module A11VC *2 Vision sensor module AS50VS, AS50VS-GN Blanking module AG60	master module					
Paging module AD22-S1 *2 Position detection module A61LS, A62LS-S5, A63LS PC fault detection module AS91 Memory card centronics interface module AD59, AD59-S1 Supersonic linear scale module A64BTL ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 MELSEC-I/OLINK module AJ51T64	Intelligent communication module	AD51-S3,	AD51H-S3			*2
Position detection module A61LS, A62LS-S5, A63LS PC fault detection module AS91	Paging module	AD22-S1				*2
PC fault detection module AS91 Memory card centronics interface module AD59, AD59-S1 Supersonic linear scale module A64BTL ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AJ71B62-S3 JEMANET(JPCN-1) AJ71B2-S3 *2 master module AD51FD-S3 *2 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG62	Position detection module	A61LS,	A62LS-S5,	A63LS		
Memory card centronics interface module AD59, AD59-S1 Supersonic linear scale module A64BTL ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AJ71B62-S3 JEMANET(JPCN-1) master module AJ51FD-S3 *2 External error check module AD51FD-S3 *2 Voice output module A1VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG62	PC fault detection module	AS91				
module Abover Abover Supersonic linear scale module A64BTL ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AJ51T64 B/NET interface module AJ71B62-S3 JEMANET(JPCN-1) AJ71J92-S3 *2 External error check module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60	Memory card centronics interface	AD59	AD59-S1			
Supersonic linear scale module A64BTL ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 AD32ID1, AD32ID2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AJ71B62-S3 JEMANET(JPCN-1) AJ71J92-S3 *2 master module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60	module	7,000,	NB00 01			
ID interface module AJ71ID1-R4, AJ71ID2-R4 *2 AD32ID1, AD32ID2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AJ71B62-S3 JEMANET(JPCN-1) AJ71J92-S3 *2 External error check module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60	Supersonic linear scale module	A64BTL				
AD32ID1, AD32ID2 MELSEC-I/OLINK module AJ51T64 B/NET interface module AJ71B62-S3 JEMANET(JPCN-1) AJ71J92-S3 *2 External error check module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60	ID interface module	AJ71ID1-R4,	AJ71ID2-R4			*2
MELSEC-I/OLINK module AJ51T64 Image: Mail of the state of the		AD32ID1,	AD32ID2			
B/NET interface module AJ71B62-S3 JEMANET(JPCN-1) master module AJ71J92-S3 External error check module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60 Dummy module AG62	MELSEC-I/OLINK module	AJ51T64				
JEMANET(JPCN-1) master module AJ71J92-S3 *2 External error check module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60 Dummy module AG62	B/NET interface module	AJ71B62-S3				
master module AUT 132-33 2 External error check module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60 Dummy module AG62	JEMANET(JPCN-1)	A 171 102 52				*0
External error check module AD51FD-S3 Voice output module A11VC Vision sensor module AS50VS, AS50VS-GN Blanking module AG60 Dummy module AG62	master module	MJ11J92-23				2
Voice output module A11VC Vision sensor module AS50VS, Blanking module AG60 Dummy module AG62	External error check module	AD51FD-S3				
Vision sensor module AS50VS, AS50VS-GN Blanking module AG60 Dummy module AG62	Voice output module	A11VC				
Blanking module AG60 Dummy module AG62	Vision sensor module	AS50VS,	AS50VS-GN			
Dummy module AG62	Blanking module	AG60				
	Dummy module	AG62				

*1 The dedicated instructions of QnA/A series program are not applicable to the QCPU. Replace them with the FROM/TO instructions.

*2 When using the QA1S65B/QA1S68B, totally up to 6 modules can be connected including the corresponding modules mounted to the QA1S65B/QA1S68B.

*3 Only one interrupt module selected from QI60, A1SI61, AI61 and AI61-S1 can be used.

5.4.3 External Dimensions

The following shows the external dimensions the QA65B.



6 MEMORY AND BATTERY REPLACEMENT

6.1 List of Alternative Models for Memory

A/QnA series models to be discontinued		Q series alternative models		
Product	Model	Model	Remark (restrictions)	
	A3NMCA-0	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A3NMCA-2	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A3NMCA-4	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
Memory cassette	A3NMCA-8	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A3NMCA-16	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A3NMCA-24	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A3NMCA-40	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A3NMCA-56	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A3AMCA-96	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A4UMCA-128	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A4UMCA-8E	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A4UMCA-32E	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
	A4UMCA-128E	Unnecessary	Built-in RAM and built-in flash ROM are alternative	
IC-RAM memory	4KRAM	Unnecessary	Built-in RAM is alternative	
	4KEROM	Unnecessary	Built-in flash ROM is alternative	
EP-ROM memory	32KROM	Unnecessary	Built-in flash ROM is alternative	
	64KROM	Unnecessary	Built-in flash ROM is alternative	

6.2 Precautions for Memory and Battery Replacement

(1) Precaution for memory replacement

(a) The Q series does not need memory cassettes, since its CPU module incorporates the built-in RAM/flash ROM.

This built-in flash ROM in the CPU module enables the ROM operation (Boot run).

(b) When using multiple blocks of extension file registers or sampling trace function for the Q series, the SRAM card for the series is required.

(2) Precaution for battery replacement

The battery for the A series (A6BAT*) should be replaced with the one for Q series (Q6BAT, Q7BAT). Refer to the users manual of each CPU module for battery life, since it varies depending on the type of CPU module and memory cassette.

* The A6BAT is not a model to be discontinued.

Memo

PROGRAM REPLACEMENT

This chapter explains how to replace (reuse) the programs and comments of the A and QnA series CPU with the Q series, and precautions for the replacement.

(1) Comparisons between ACPU and QCPU

O: Compatible, \triangle : Partial change required, ×: Incompatible

Item		ACPU specification	QCPU specification and precautions for replacement	Compat- ibility	Refer to
Sequence program	Main Sub 1 Sub 2 Sub 3 SFC	 Main program is required. Sub programs, if included, are switched with the CHG instructions. The SFC is dealt as the microcomputer program of main 	 [Specification] Each program is dealt as one file. [Measure] Execute the file setting of PLC parameter. 		Section 7.7.9
Microcompute program	r	 A user-created microcomputer program and the microcomputer program of the utility package are available. 	 [Specification] Creating microcomputer program is not applicable. [Measure] Replacing the ACPU user-created microcomputer program with sequence program since the microcomputer program execution is not applicable. For utility packages instructions, correct them equivalent to the corresponding instructions of the QCPU. 	×	_
Instruction		 Dedicated instructions for the ACPU (LED instruction, etc.) are available. 	 [Specification] With the Change PLC type, instructions are converted automatically except some instructions. [Measure] The inconvertible instructions are converted to SM1255 and SD1255 which correcting the programs is required. 	Δ	Section 7.2
File register		 Storage area is reserved in a memory cassette. One block is set in 8 k points unit. 	 [Specification] Data is stored in a standard RAM or memory card. One block is set in 32k points unit. [Measure] Execute the file setting of PLC parameter. 	Δ	Section 7.7.10
Timer, Counte	r	• Timer and counter are processed with the END.	 [Specification] Timer and counter are processed when executing an instruction. [Measure] Review the programs since the processing timing differs between timer and counter. 	Δ	Section 7.7.4, 7.7.5

QCPU specification and precautions Compat-Refer to ltem **ACPU** specification ibility for replacement [Specification] · Parameters are dedicated for each CPU. Section · Parameters are dedicated for Parameter [Measure] \triangle each CPU. 7.3 · Check and re-set the parameters since specifications and functions differ between the two CPUs. [Specification] • 1800 points of SM0 to SM1799 are provided. [Measure] 256 points of M9000 to M9255 are Section Special relay \triangle • Although automatic conversion is provided. 7.4 executed for the QCPU replacement, review the points since some specifications differ between the two CPUs. [Specification] • 1800 points of SD0 to SD1799 are provided. [Measure] • 256 points of D9000 to D9255 are Section Special register \triangle • Although automatic conversion is provided. 7.5 executed for the QCPU replacement, review the points since some specifications differ between the two CPUs. [Specification] · Comments are managed as a common comment or program · Comments are managed as a original comment. common comment or program · Comments are automatically Comment 0 original comment. replaced upon the QCPU • The comment capacity of ACPU is conversion. up to 127k (64k + 63k) bytes. · The comment capacity of the QCPU depends on memory capacity. [Specification] • The boot run is executed with programs stored in a standard Section Writing programs to • The ROM operation is executed ROM or memory card upon the \triangle with the EP-ROM. ROM QCPU replacement. 7.7.11 [Measure] · Execute the boot setting of PLC

parameter.

(2) Comparison between QnACPU and QCPU

14.0.100		QCPU specification and precautions Com		Deferte
item	QNACPU specification	for replacement	ibility	Refer to
Sequence program	- Fach program is dealt as one file	[Specification]	0	
SFC program	• Each program is dealt as one file.	• Each program is dealt as one file.	0	_
		[Specification]		
		 With the Change PLC type, 		
		instructions are converted		
	 Dedicated instructions as display 	automatically except some		
Instruction	(LED) instruction, status latch	instructions.	\wedge	Section
	(SLT) instruction, etc. are	[Measure]		7.2
	avallable.	The inconvertible instructions are		
		which correcting the programs is		
		required		
		[Specification]		
		Data is stored in a standard RAM		
		or memory card.		
	 Data is stored in a memory card. 	 One block is set in 32k points unit. 		Section
File register	One block is set in 32k points unit.	[Measure]	\bigtriangleup	7.7.10
		 Review the setting since the 		
		number of memory cards differs		
		between the two CPUs.		
		[Specification]		
		Dedicated parameters for each CPU		
	 Dedicated parameters for each 	are provided.		Section
Parameter	CPU are provided.	[Measure]	\bigtriangleup	7.3
		Check and re-set the parameters		
		since specifications and functions		
		differ between the two CPUs.		
		• 1800 points of SM0 to SM1700		
		are provided		
Special relay	 1800 points of SM0 to SM1799 	[Measure]	\triangle	Section
	are provided.	Review the points since some		7.4
		specifications differ between the		
		two CPUs.		
		[Specification]		
		1800 points of SD0 to SD1799 are		
	 1800 points of SD0 to SD1799 are 	provided.		Section
Special register	provided.	[Measure]	\triangle	7.5
		Review the points since some		
		specifications differ between the		
		IND CAUS.		
	Comments are managed as a	[Opecification]		
Comment	common comment or program	• Common comment or program	0	-
	original comment.	original comment.		
		[Specification]		
		The boot run is executed with the		
	The boot run is executed with	programs stored in a standard		
Writing programs to	program and parameter stored in	ROM or memory card upon QCPU		Section
ROM	a memory card.	replacement.	\triangle	7 7 11
	Up to two memory cards can be	• One memory card can be installed.		
	installed.			
		Execute the boot setting of PLC parameter		
		parameter.	1	

7.1 Program Replacement Procedure

The programs and comments of the A and QnA series CPU can be replaced with the Q series by "Change PLC type" of the GX Developer.

7.1.1 Program Conversion Procedure from ACPU to QCPU

Program conversion procedure follows the order of $(1) \rightarrow (2) \rightarrow (3)$ below.

- (1) Reading process of conversion source data.
- (2) Program conversion from ACPU to QCPU with the Change PLC type operation.
- (3) Writing process of converted data.

Refer to Section 7.1.2 for details of the change operation.



Personal computer

7.1.2 Change PLC Type Operation

The Change PLC type is a function that changes the target PLC type of the data read to the GX Developer.

The instructions that are not automatically converted are changed to the OUT SM1255 (for High Performance model QCPU)/OUT SM999 (Basic model for QCPU). Search these instructions or the SM1255/SM999 devices in the converted programs to convert them manually.

For intelligent function modules and network modules, review programs and parameters.

(1) Applicable range of conversion from ACPU by the GX Developer

The following table shows the applicable range of conversion from the ACPU to other PLCs. As it shows, converting to all PLC CPUs is applicable.

Product	Change source	Change destination PLC			
Froduct	PLC	ACPU	QnACPU	QCPU	
GX Developer	ACPU	0	0	0	

(2) Operation of GX Developer

t]-[LD(Edit mode] MAIN 37 Step] MELSOFT series GX D _ 8 × et Edit Fin • New projec Open projec Close projec Save Save gs ... 🖸 🛐 🔁 🔟 🕲 🖆 🖹 🔍 🍳 🖼 🗶 🛛 Program Ctrl+N Ctrl+O 12 I 13 -11F 11F 11F 11F 11F 1F8 aF5 caF5 caF0 F10 aF9 Ctrl+S Delete project Vejify ... Copy ... _ -11 -(M1 Edit Data END Import file Export file Macro Function Blo setup 1 C:\My Documents\...\program 2 C:\MELSEC\LLT\Sample\progra 3 C:\WINDDWS\Desktop\Sample 3 C:\WINDOWS\Desl 4 C:\WINDOWS\Desl otant new <u>G</u>X Dev E<u>x</u>it GX Dev⊶ Project NUM

(a) Select the "Change PLC type" of the "Project" menu.

(b) Specify the target PLC type in the "Change PLC type" dialog.

Change PLC type	×
PLC series	
QCPU(Qmode)	Conned
PLC type	
Q12H 💌	

Click the [OK] button after setting the PLC type.

PLC series setting	
Change PLC type	×
PLC series	οκ
QCPU(Qmode) PLC QCPU(Qmode) QCPU(Amode) QnACPU ACPU	Cancel
MOTION(SCPU) CNC(M6/M7)	
PLC type setting	
Change PLC type	×
PLC series	
QCPU(Qmode)	Canad
PLC type	
Q25PH 💌	
Q01	

(c) Select the conversion method of special relays/registers.



Specify the conversion destination of special relays/registers (ACPU:M9000s/D9000s). Check the [Convert M9000/D9000 $\leftarrow \rightarrow$ SM400/SD400]

- Checked: Converted to the Q dedicated (SM400s/SD400s).
- Not Checked: Converted to the A compatible (SM1000s/SD1000s).

Fixed to "Checked" when selecting the Basic model QCPU.

It is recommended to check the box when specifying the device conversion destination.

Click the [Yes] or [Confirm change] button after specifying the device conversion destination to start the Change PLC type .

- [Yes] : The change is executed without intermediate steps of user confirmation.
- [Confirm change] : Asks the user for confirming the changes.
7.1.3 ACPU Program Conversion Ratio

• Conversion ratio of common instructions (Sequence/basic/application instructions)

The following table shows the conversion ratio when changing the PLC type of the ACPU common instructions to the QCPU.

More than 90% of the common instructions are automatically converted.

		High Performance model QCPU				
Instruction type		Number of instructions	Number of instructions applicable for automatic conversion	Number of instructions requiring manual conversion	Conversion ratio	
	Contact instructions	6	6	0	100%	
	Connection instructions	5	5	0	100%	
Soquence	Output instructions	6	5	1	83%	
instructions	Shift instructions	2	2	0	100%	
Instructions	Master control instructions	2	2	0	100%	
	Termination instructions	2	2	0	100%	
	Other instructions	3	3	0	100%	
Total number	of sequence instructions	26	25	1	96%	
	Comparison operation instructions	36	36	0	100%	
	Arithmetic operation instructions	40	40	0	100%	
D .	BCD ↔ BIN conversion instructions	8	8	0	100%	
Basic	Data transfer instructions	16	16	0	100%	
instructions	Program branch instructions	9	9	0	100%	
	Program switching instructions	1	0	1	0%	
	Link refresh instructions	2	2	0	100%	
Total number	of basic instructions	112	111	1	99%	
	Logical operation instructions	18	18	0	100%	
	Rotation instructions	16	16	0	100%	
	Shift instructions	12	12	0	100%	
	Data processing instructions	20	19	1	95%	
Ammlinetiem	FIFO instructions	4	4	0	100%	
Application	Buffer memory access instructions	8	8	0	100%	
instructions	FOR to NEXT instructions	2	2	0	100%	
	Local station, remote I/O station		0	4	00/	
	Access instructions	4	0	4	0%	
	Display instructions	5	3	2	60%	
	Other instructions	10	2	8	20%	
Total number	Total number of application instructions		84	15	85%	
Total number of instructions	of sequence/basic/application	237	220	17	93%	

Conversion ratio of dedicated instructions

The following table shows the conversion ratio when changing the PLC type of the ACPU dedicated instructions to the QCPU.

			High Performance model QCPU				
	Instruction type	Number of instructions	Number of instructions applicable for automatic conversion	Number of instructions requiring manual conversion	Conversion ratio		
	Direct input/output instructions	3	3	0	100%		
	Structured program instructions	6	2	4	33%		
	Data operation instructions	6	6	0	100%		
	I/O operation instructions	2	2	0	100%		
Dedicated instructions	Real number processing instructions	27	27	0	100%		
	Character string processing instructions	25	24	1	96%		
(Turictional	Data control instructions	6	6	0	100%		
extension)	Clock instructions	2	2	0	100%		
	Extension file register instructions	7	0	7	0%		
	Program switching instructions	4	0	4	0%		
	Instructions for PID control	3	2	1	67%		
	Subtotal	91	74	17	81%		
Dodicated	Instructions for data link	9	5	4	56%		
instructions	Instructions for special function modules	59	0	59	0%		
(FOF HIDDUIES)	Subtotal	68	5	63	7%		
Total number of d	edicated instructions	159	79	80	50%		



The automatic conversion is applied to the instructions of which equivalent functions and instructions exist in the change destination PLCs.

Some instructions are not converted for the following causes.

Refer to Section 7.2 Instruction Conversion to change the program manually.

- (1) The change target PLC does not have the equivalent functions and instructions.
- (2) Instructions to specified modules cause to change the module and buffer memory configuration.
- (3) Multiple instructions with the same name and argument exist. (Example) CHK instruction, etc.
- (4) The conversion causes a mismatch in the instructions. (Example) IX instruction, etc.

7.1.4 Reading (Reusing) Other Format Files

The following explains how to read (appropriate) files in the GPPQ/GPPA format other than that of the GX Developer. Follow this procedure to convert them to the file format of the GX Developer.

(1) Operation Procedure

Select [Project] → [Import file] → [Import from GPPQ format file] [Import from GPPA format file]

(2) Setting screen



(a) Drive/Path, System name, Machine name

Designates the location of data created in GPPQ or GPPA format. Enter the system name and machine name of the data specified in the Drive/Path. Clicking the [Browse] button shows the dialog box for choosing the system name and machine name. Double-click the file to be read to specify.

(b) Source data list

Displays data created in GPPQ or GPPA format.

Check the checkbox of data names to be selected.

For the selected comments, the range of device comment, which can be read with the Common tab or Local tab, are settable.

(c) [Param+prog] button/[Select all] button

- [Param+prog] button Selects only the parameter data and program data of the source data.
- [Select all] button

Selects all data in a source data list.

Comment2 is selected for the A series, and the device memories of the number of data are displayed.

The first data name is selected for comments and file registers in the QnA series.

(d) [Cancel all selections] button

Cancels all the selected data.

(e) <<Common>> tab screen (A series)

Set this when specifying the range for common comments and read data.

Import from Gi	PPA forma	t file					X
Drive/Path	C:\GPP\U	SR					Browse
System name	í —						Execute
Machine	<u> </u>	-					Close
PLC type							
File selection	Common	Local	Г	Merge peri;			
[Read/Write Comment ty C C Range spec PLC/GPPA	the commer ope specification ification Format	its of the set ation(Excludi	range.] ing Extende imment2 GX Devel	ed Comment oper Format	s) If clos the ch specif will be	ed, anged ran ications deleted.	ge
Device X/Y	Start	End		Start	End	-	
Special M Special D						-	
	ļ	Comme	ent1/2 men	nory capacity	, <u>о</u> к	. Bytes	
Device	Start	End		Start	End	-	
						-	
Extended comment memory capacity 0 K Bytes							

(f) <<Local>> tab screen (A series)

Set this when specifying the range for comments by program and read data.

Import from GPF	PA format fi	ile					×
Drive/Path	:\GPP\USR					Bro	wse
System name						Exe	ecute
Machine		- (C	lose
PLC type		- í===					
File selection [Read/Write th If closed, the o PLC/GPPA For	Common L e comments changed rang mat	ocal of the set rai ge specificat	nge.] ions will be GX Develo	erge periph deleted. per Format	eral statemer	it/note	
Device	Start	End		Start	End]	
M	ļ						
L C							
B							
F							
T							
С							
D							
W							
B							
	Comm	ent 1/2 men	nory capaci	ty 🚺	K Bytes		

(g) Merge peripheral statement/note

(h) [Execute] button

Click this button after making the setting.

(3) Setting Procedure

(a) Data selection

- 1) Set a drive/path for reading in GPPQ or GPPA format.
- 2) Click the [Browse] button to set the system name and machine name of the project to be read.
- 3) Check the checkbox of data to be selected by with the [Param+prog] button, [Select all] button, or the mouse.
- 4) Click the [Execute] button after making necessary settings.

(b) Canceling data selection

- When canceling the selected data arbitrarily: Clear the checkmark (✓) in the checkbox with the mouse or space key.
- 2) When canceling all the selected data: Click the [Cancel all selection] button.

(4) Precautions for reading the other format files

	For A series
A6GPP, SW0S-GPPA	Read data with GX Developer after performing the corresponding format conversion with GPPA.
ionnai uala	For the operating methods, refer to the Type SW4IVD-GPPA(GPP) Operating Manual.
For data selection	For device comment selection, you may only choose either comment 2 or comment 1.
GPPA format file reading	Deletes the project data on GX Developer and read the other format file. The area in excess of the program capacity is deleted when read. For the PLC type which cannot use subprograms, subprograms are deleted when read. When the file includes microcomputer programs editted with other than the SFC program (e.g. SW0SRX-FNUP), they are lost.
	For QnA series
Ladder return positions	Returning places are different between GPPQ and GX Developer. Because of this, if the total of return sources and return destinations exceeds 24 lines in a single ladder block, the program is not displayed properly. Corrective action: Add SM400 (normally ON contact) to adjust the return positions.
For data selection	For the device memory and file register, you may select only one data name for each item.

7.2 Instruction Conversion

GX Developer enables instruction conversion using the Change PLC type.

The following explains how to process both applicable instructions and not applicable instructions for the conversion.

7.2.1 List of Instructions Conversion from A to QCPU (Sequence/Basic/Application Instructions)

O: Automatic conversion ×: Manual conversion required

		High Performance model		
Contents	ACPU	QCPU		Reference section
	Instruction name	Instruction name	Conversion	
	+	+	0	
RIN 16 bit addition subtraction	+P	+P	0	
	-	-	0	
	-P	-P	0	
	*	*	0	
BIN 16-bit multiplication division	*P	*P	0	
Bit to bit multiplication, division	1	/	0	
	/P	/P	0	
Ladder block series connection	ANB	ANB	0	
Series connection	AND	AND	0	
	AND<	AND<	0	
	AND<=	AND<=	0	
16-bit data comparison	AND<>	AND<>	0	
	AND=	AND=	0	
	AND>	AND>	0	
	AND>=	AND>=	0	
	ANDD<	ANDD<	0	
	ANDD<=	ANDD<=	0	
32-bit data comparison	ANDD<>	ANDD<>	0	
	ANDD=	ANDD=	0	
	ANDD>	ANDD>	0	
	ANDD>=	ANDD>=	0	
Series connection	ANI	ANI	0	
Conversion from hexadecimal BIN to ASCII	ASC	OUT SM1255	×	7.2.3 (3)
	B+	B+	0	
BCD 4-digit addition subtraction	B+P	B+P	0	
BOD - aight addition, Subtraction	В-	В-	0	
	B-P	B-P	0	
	B*	B*	0	
BCD 4-digit multiplication division	B*P	B*P	0	
	В/	В/	0	
	B/P	B/P	0	
Conversion from BIN data to 4-digit BCD	BCD	BCD	0	
	BCDP	BCDP	0	
Conversion from 4-digit BCD to BIN data	BIN	BIN	0	
	BINP	BINP	0	
Block 16-bit data transfer	BMOV	BMOV	0	
	BMOVP	BMOVP	0	
Bit reset for word devices	BRST	BRST	0	
	BRSTP	BRSTP	0	
Bit set for word devices	BSET	BSET	0	
	BSETP	BSETP	0	
1-bit shift to left of n-bit data	BSFL	BSFL	0	
	BSFLP	BSFLP	0	
1-bit shift to right of n-bit data	BSFR	BSFR	0	
	BSFRP	BSFRP	0	

	Manual conversion required			
Contents	ACPU	ACPU High Performance model QCPU		Reference section
	Instruction name	Instruction name	Conversion	
		CALL		
Sub-routine program calls	CALLP	CALLP	0	
Main Subprogram switching	CHK	OUT SM1255	v v	7 2 3 (3)
Bit device output reverse	CHK	OUT SM1255	~	7.2.3 (3)
Special format failure checks	CHG	OUT SM1255	~	7.2.3 (1)
Deinter branch instructions		001 301233	× ^	7.2.3 (2)
	CLC			7.0.0.(2)
Carry hag reset	CLC	001 51/1255	×	7.2.3 (3)
16-bit data negation transfer			0	
	CMLP	CMLP	0	
	COM	COM	0	
	D+	D+	0	
BIN 32-bit addition, subtraction	D+P	D+P	0	
	D-	D-	0	
	D-P	D-P	0	
	D*	D*	0	
BIN 32-bit multiplication, division	D*P	D*P	0	
	D/	D/	0	
	D/P	D/P	0	
Logical products of 32-bit data	DAND	DAND	0	
Logical products of 52-bit data	DANDP	DANDP	0	
	DB+	DB+	0	
DOD 0 divit addition subtraction	DB+P	DB+P	0	
BCD 8-digit addition, subtraction	DB-	DB-	0	
	DB-P	DB-P	0	
	DB*	DB*	0	
	DB*P	DB*P	0	
BCD 8-digit multiplication, division	DB/	DB/	0	
	DB/P	DB/P	0	
	DBCD	DBCD	0	
Conversion from BIN data to 8-digit BCD	DBCDP	DBCDP	0	
	DBIN	DBIN	0	
Conversion from 8-digit BCD to BIN data	DBINP	DBINP	0	
	DCMI	DCMI	0	
32-bit data negation transfer			0	
	DDEC		0	
32-bit BIN data decrement	DDECP		0	
	DEC		0	
16-bit BIN data decrement		DEC	0	
	DECF	DECF	0	
$8 \rightarrow 256$ -bit decode	DECOR	DECOR	0	
O word data used from the intelligent/or sciel	DECOP	DECOP	0	
2-word data read from the intelligent/special	DFRO	DFRO	0	
	DFROP	DFROP	0	
Interrupt disable instructions	DI	DI	0	
Refresh disable	DI	DI	0	
32-bit BIN data increment	DINC	DINC	0	
	DINCP	DINCP	0	
4-bit groupings of 16-bit data	DIS	DIS	0	
	DISP	DISP	0	
32-bit data transfer	DMOV	DMOV	0	
	DMOVP	DMOVP	0	
Logical sums of 32-bit data	DOR	DOR	0	
	DORP	DORP	0	
Left rotation of 32-bit data	DRCL	DRCL	0	7.7.7
	DRCLP	DRCLP	0	7.7.7
Pight rotation of 22 hit data	DRCR	DRCR	0	7.7.7
Right folation of 32-bit data	DRCRP	DRCRP	0	7.7.7

Contents	ACPU	High Performan OCPU	ce model	Reference section
	Instruction name	Instruction name	Conversion	
	DROI	DROI	0	7.7.7
Left rotation of 32-bit data	DROLP	DROLP	0	7.7.7
	DROR	DROR	0	7.7.7
Right rotation of 32-bit data	DRORP	DRORP	0	7.7.7
	DSFL	DSFL	0	
1-word shift to left of n-word data	DSFLP	DSFLP	0	
	DSFR	DSFR	0	
1-word shift to right of n-word data	DSFRP	DSFRP	0	
	DSUM	DSUM	0	7.7.7
32 bit data checks	DSUMP	DSUMP	0	7.7.7
2-word data write to the intelligent/special function	DTO	DTO	0	
module	DTOP	DTOP	0	
Timing pulse generation	DUTY	DUTY	0	
20 hit data annuanian	DXCH	DXCH	0	
32-bit data conversion	DXCHP	DXCHP	0	
20 hit data and evolution la signal sum or cretions	DXNR	DXNR	0	
32-bit data non-exclusive logical sum operations	DXNRP	DXNRP	0	
20 kit auglusius la sigel auss as astisse	DXOR	DXOR	0	
32-bit exclusive logical sum operations	DXORP	DXORP	0	
Interrupt enable instruction	EI	EI	0	
Link refresh enable	EI	EI	0	
	ENCO	ENCO	0	
$256 \rightarrow 8$ -bit encode	ENCOP	ENCOP	0	
Sequence program termination	END	END	0	
Main routine program termination	FEND	FEND	0	
	FIFR	FIFR	0	
Reading oldest data from tables	FIFRP	FIFRP	0	
Writing data to the data table	FIFW	FIFW	0	
writing data to the data table	FIFWP	FIFWP	0	
Identical 16 bit data black transfera	FMOV	FMOV	0	
Identical 16-bit data block transfers	FMOVP	FMOVP	0	
FOR to NEXT Instructions	FOR	FOR	0	
1-word data read from the intelligent/	FROM	FROM	O*1	
special function module	FROMP	FROMP	O*1	
16 hit RIN data incroment	INC	INC	0	
	INCP	INCP	0	
Return from interrupt programs	IRET	IRET	0	
Pointer branch instructions	JMP	JMP	0	
Operation start	LD	LD	0	
	LD<	LD<	0	
	LD<=	LD<=	0	
BIN 16-bit data comparison	LD<>	LD<>	0	
	LD=	LD=	0	
	LD>	LD>	0	
	LD>=	LD>=	0	
	LDD<	LDD<	0	
	LDD<=	LDD<=	0	
BIN 32-bit data comparison	LDD<>	LDD<>	0	
	LDD=	LDD=	0	
	LDD>	LDD>	0	
	LDD>=	LDD>=	0	
Operation start	LDI	LDI	0	
ASCII code display instructions	LED	OUT SM1255	×	7.2.3 (3)

*1 Note that the buffer memory address between Q series and A series may differ.

High Performance mo				
Contents	ACPU	QCPU		Reference section
	Instruction name	Instruction name	Conversion	
Character display instructions	LEDA	OUT SM1255	×	7.2.3 (3)
	LEDB	OUT SM1255	×	7.2.3 (3)
Comment display instructions	LEDC	OUT SM1255	×	7.2.3 (3)
Annunciator reset instruction	LEDR	LEDR	0	
Local station data read	LRDP	OUT SM1255	×	7.2.3 (3)
Local station data write	LWTP	OUT SM1255	×	7.2.3 (3)
Master control set, reset	MC	MC	0	
	MCR	MCR	0	
16-bit data transfer	MOV	MOV	0	
Operation regult per	MOVP	MDP	0	
Operation result puch	MPP	MDS	0	
	MPD	MPD	0	
	NEG	NEG	0	
BIN 16-bit data 2's complement	NEGP	NEGP	0	
FOR to NEXT Instructions	NEXT	NEXT	0	
	NOP	NOP	0	
No operation (NOP, NOPLF)	NOPLF	NOPLF	0	
Parallel connection	OR	OR	0	
	OR<	OR<	0	
	OR<=	OR<=	0	
	OR<>	OR<>	0	
BIN 16-bit data comparison	OR=	OR=	0	
	OR>	OR>	0	
	OR>=	OR>=	0	
Ladder block parallel connection	ORB	ORB	0	
	ORD<	ORD<	0	
	ORD<=	ORD<=	0	
BIN 32-bit data comparison	ORD<>	ORD<>	0	
Bin 32-bit data companson	ORD=	ORD=	0	
	ORD>	ORD>	0	
	ORD>=	ORD>=	0	
Parallel connection	ORI	ORI	0	
OUT instruction	OUT (*1)	OUT (*1)	0	
Trailing edge output	PLF	PLF	0	
Leading edge output	PLS	PLS	0	
Print ASCII code instruction	PR	PR	0	
Print comment instruction	PRC	PRC	0	
Left rotation of 16-bit data	RCL	RCL	0	7.7.7
	RCLP	RCLP	0	1.1.1
Right rotation of 16-bit data	RCR		0	1.1.1
Datum from outbrouting program			0	1.1.1
Return from subroutine program			0	7 2 2 (2)
Read from automatic updating buffer memory	RER	OUT SM1255	~	7.2.3 (3)
Read from intelligent device station huffer		001 301233	^	1.2.5 (12)
memory (with handshake)	RIRCV	OUT SM1255	×	7.2.3 (12)
Read from intelligent device station buffer				
memory	RIRD	OUT SM1255	×	7.2.3 (12)
Write to intelligent device station buffer memory				
(with handshake)	RISEND	OUT SM1255	×	7.2.3 (12)
Write to automatic updating buffer memory	RITO	OUT SM1255	×	7.2.3 (12)
Write to intelligent device station buffer memory	RIWT	OUT SM1255	×	7.2.3 (12)
Network parameter setting	RLPA	OUT SM1255	×	7.2.3 (12)
Automatic refresh parameter setting	RRPA	OUT SM1255	×	7.2.3 (12)

*1 The high-speed timer or retentive timer can also be converted according to the parameter setting.

Contents	ACPU	High Performance model QCPU		Reference section
	Instruction name	Instruction name	Conversion	
Left rotation of 16-bit data	ROL	ROL	0	7.7.7
	ROLP	ROLP	0	7.7.7
Right rotation of 16-bit data	ROR	ROR	0	7.7.7
Dit device recet	RORP	RORP	0	1.1.1
Bit device reset	RSI	RSI OUT SM4255	0	700 (2)
Remote I/O station data white	RIUP	001 SW1255	×	7.2.3 (3)
Z segment decode	SEC	SEG	0	
Partial refresh	SEG	SEG	Ŭ V	777
	SER	SER	Ô	7.7.7
16-bit data search	SERP	SERP	0	7.7.7
Bit device set	SET	SET	0	
	SFL	SFL	0	
16-bit data n-bit left shift	SFLP	SFLP	0	
	SFR	SFR	0	
16-bit data n-bit right shift	SFRP	SFRP	0	
	SFT	SFT	0	
Bit device shift	SFTP	SFTP	0	
Catting and respetting status lateb	SLT	OUT SM1255	×	7.2.3 (3)
Setting and resetting status latch	SLTR	OUT SM1255	×	7.2.3 (3)
Carry flag set	STC	OUT SM1255	×	7.2.3 (3)
Sequence program stop	STOP	STOP	0	
Setting and resetting sampling trace	STRA	OUT SM1255	×	7.2.3 (3)
Setting and resetting sampling trace	STRAR	OUT SM1255	×	7.2.3 (3)
16-bit data checks	SUM	SUM	0	
	SUMP	SUMP	0	
Microcomputer program	SUB	OUT SM1255	×	
	SUBP	OUT SM1255	×	
1-word data write to the intelligent/	ТО	ТО	O*1	
special function module	TOP	TOP	O*1	
4-bit linking of 16-bit data	UNI	UNI	0	
		UNIP	0	
Logical products with 16-bit data	WAND	WAND	0	
	WANDP	WANDP	0	
WDT reset	WDTD	WDTD	0	
	WOR	WOR	0	
Logical sums of 16-bit data	WOR	WOR	0	
			0	
16-bit data non-exclusive logical sum operations	WXNRP	WXNRP	0	
	WXOR	WXOR	0	
16-bit exclusive logical sum operations	WXORP	WXORP	0	
	ХСН	ХСН	0	
16-bit data conversion	ХСНР	ХСНР	0	
			5	

*1 Note that the buffer memory address between Q series and A series may differ.

7.2.2 List of Instruction Conversion from A to QCPU (Dedicated Instructions)

O: Automatic conversion ×: Manual conversion required

		High Performan		
Contents	ACPU	QCPU		Reference section
	Instruction name	Instruction name	Conversion	
COS ⁻¹ operation on floating point data	ACOS	ACOS	0	
Floating point data addition	ADD	E+	0	
Conversion from hexadecimal BIN to ASCII	ASC	ASC	0	
SIN ⁻¹ operation on floating point data	ASIN	ASIN	0	
TAN ⁻¹ operation on floating point data	ATAN	ATAN	0	
BCD type COS ⁻¹ operation	BACOS	BACOS	0	
BIN 16-bit dead band controls	BAND	BAND	0	
BCD type SIN ⁻¹ operations	BASIN	BASIN	0	
BCD type TAN ⁻¹ operations	BATAN	BATAN	0	
Conversion from 4-digit BCD to decimal ASCII	BCDDA	BCDDA	0	
BCD type COS operations	BCOS	BCOS	0	
BCD 8-digit square roots	BDSQR	BDSQR	0	
Conversion from BIN 16-bit to decimal ASCII	BINDA	BINDA	0	
Conversion from BIN 16-bit to hexadecimal ASCII	BINHA	BINHA	0	
Block move between extension file registers	BMOVR	OUT SM1255	×	7.2.3 (4)
Forced end of FOR to NEXT instruction loop	BREAK	BREAK	0	
BCD type SIN operations	BSIN	BSIN	0	
BCD 4-digit square roots	BSQR	BSQR	0	
BCD type TAN operations	BTAN	BTAN	0	
Data linking in byte units	BTOW	BTOW	0	
Block exchange between extension file registers	BXCHR	OUT SM1255	×	7.2.3 (4)
	CC1	OUT SM1255	×	723(11)
Consecutive display of the same character	CC2	OUT SM1255	×	7 2 3 (11)
	CCDSP	OUT SM1255	×	7.2.3 (11)
Changing the character color	CCDSPV	OUT SM1255	×	7.2.3 (11)
Special format failure checks	CHK	OUT SM1255	×	7.2.3 (4)
Changing check format of CHK instruction		OUT SM1255	×	7.2.3 (4)
Displaying numerals	CIN0 to CIN9	OUT SM1255	×	7.2.3 (1)
Displaying letters of the alphabet	CINA to CINZ	OUT SM1255	×	7.2.3 (11)
Clearing display of designated area		OUT SM1255	×	7.2.3 (11)
Displaying "-" (hyphen)		OUT SM1255	~	7.2.3 (11)
Displaying "-" (minus)		OUT SM1255	~	7.2.3 (11)
Displaying " (period, decimal point)		OUT SM1255	~	7.2.3 (11)
Displaying spaces		OUT SM1255	~	7.2.3 (11)
Clearing the display area		OUT SM1255	~	7.2.3 (11)
Clearing the V/RAM area		OUT SM1255	~	7.2.3 (11)
Setting the display mode		OUT SM1255	~	7.2.3 (11)
Transforring capyas data to the V/PAM area		OUT SM1255	×	7.2.3 (11)
Sotting pormal display for characters		OUT SM1255	×	7.2.3 (11)
Displaying the surger	CNOK	OUT SM1255	×	7.2.3 (11)
Designating the observator display solar		OUT SM1255	×	7.2.3 (11)
Designating the character display color		COMPD	×	7.2.3 (11)
Reading device comment data			0	7.0.0 (11)
Displaying the cursor		OUT SW1255	×	7.2.3 (11)
		001 501255	×	7.2.3 (11)
COS operations on floating decimal point data			0	700(44)
Displaying a canvas screen	0201		×	7.2.3 (11)
Changing the VRAIN display address	02	OUT SM1255	×	7.2.3 (11)
Consecutive display of the same character		OUT SM1255	×	7.2.3 (11)
		OUT SM1255	×	7.2.3 (11)
Switching between normal and highlighted		OUT SM1255	×	7.2.3 (11)
aisplay for characters		OUT SM1255	×	7.2.3 (11)
Setting highlighted display for characters	CREV	OUT SM1255	×	7.2.3 (11)

		High Performan	ce model	
Contents				Reference section
	Instruction name	Instruction name	Conversion	
	CSCRD	OUT SM1255	×	7.2.3 (11)
Scrolling the screen	CSCRU	OUT SM1255	×	7.2.3 (11)
Conversion from decimal ASCII to BCD 4-digit data	DABCD	DABCD	0	
Conversion from decimal ASCII to BIN 16-bit data	DABIN	DABIN	0	
Reading clock data	DATERD	DATERD	0	
Writing in clock data	DATEWR	DATEWR	0	
BIN 32-bit dead band controls	DBAND	DBAND	0	
Conversion from BCD 8-digit to decimal ASCII data	DBCDDA	DBCDDA	0	
Conversion from BIN 32-bit to decimal ASCII data	DBINDA	DBINDA	0	
Conversion from BIN 32-bit data to hexadecimal	DDWWW	DDMULA		
ASCII data	DBINHA	DBINHA	0	
Conversion from decimal ASCII to BCD 8-digit data	DDABCD	DDABCD	0	
Conversion from decimal ASCII to BIN 32-bit data	DDABIN	DDABIN	0	
Conversion from floating point radian to angle	DEG	DEG	0	
Conversion from BIN 32-bit to floating point data	DFLOAT	DFLT	0	
Conversion from hexadecimal ASCII to BIN 32-bit data	DHABIN	DHABIN	0	
Conversion from floating point to BIN 32-bit data	DINT	DINT	0	
Dissociation of random data	DIS	NDIS	0	
Division of floating decimal point data	DIV	E/	0	
Upper and lower limit controls for BIN 32-bit data	DLIMIT	DLIMIT	0	
Direct output	DOUT	OUT	0	
Direct Reset	DRST	RST	0	
32-bit data searches	DSER	DSER	0	
Direct Set	DSET	SET	0	
Conversion from BIN 32-bit to character string	DSTR	DSTR	0	
Bit tests	DTEST	DTEST	0	
Conversion from character string to BIN 32-bit data	DVAL	DVAL	0	
Zone control for BIN 32-bit data	DZONE	DZONE	0	
	EPR	OUT SM1255	×	7.2.3 (11)
Displaying characters	EPRN	OUT SM1255	×	7.2.3 (11)
	EPRV	OUT SM1255	×	7.2.3 (11)
Writing characters to the VRAM	EPRNV	OUT SM1255	×	7.2.3 (11)
Exponent operations on floating decimal point data	EXP	EXP	0	
Sub-routine program output OFF calls	FCALL	FCALL	0	
Bit device output reverse	FF	FF	0	
Conversion from BIN 16 data to floating decimal point	FLOAT	FLT	0	
Reading VRAM data	GET	OUT SM1255	×	7.2.3 (8), (10), (11)
Conversion from hexadecimal ASCII to BIN 16-bit	HABIN	HABIN	0	
Conversion from ASCII to hexadecimal BIN	HEX	HEX	0	
ASCII code conversion of designated character				/_> /_> /
strings	INPUT	OUT SM1255	×	7.2.3 (7), (9), (11)
	INPUT2	OUT SM1255	×	7.2.3 (9)
Receiving data	INPUT4	OUT SM1255	×	7.2.3 (9)
Conversion from floating decimal point data to BIN 16	INT	INT	0	
	IX	OUT SM1255	×	7.2.3 (4)
Index qualification of a circuit block	IXEND	OUT SM1255	×	7.2.3 (4)
Entering data from number keys	KEY	KEY	0	
Detecting character-string length	LEN	LEN	0	
Upper and lower limit controls for BIN 16-bit data	LIMIT	LIMIT	0	
Setting the cursor position	LOCATE	OUT SM1255	×	7.2.3 (11)
Natural logarithm operations on floating decimal			_	· · · ·
point data	LOG	LOG	0	
Reading word devices in local station	LRDP	OUT SM1255	×	7.2.3 (4)
Writing data to word devices in local station	LWTP	OUT SM1255	×	7.2.3 (4)
Communication with remote terminal modules	MINI	OUT SM1255	×	7.2.3 (10)
Error resetting with remote terminal modules	MINIERR	OUT SM1255	×	7.2.3 (10)
Multiplication of floating decimal point data	MUL	E*	0	- (/
Monitoring PID Control Status	PID57	OUT SM1255	×	7.2.3 (4)
5	•			· · /

	ACPU	High Performance model				
Contents		QCPU	-	Reference section		
	Instruction name	Instruction name	Conversion			
PID control	PIDCONT	PIDCONT	0			
PID control data setting	PIDINIT	PIDINIT	0			
Displaying ASCII characters	PR	OUT SM1255	×	7.2.3 (7), (8), (10), (11)		
Sending data up to 00 _H code	PR2	OUT SM1255	×	7.2.3 (9)		
	PR4	OUT SM1255	×	7.2.3 (9)		
Displaying ASCII characters	PRN	OUT SM1255	×	7.2.3 (7), (8), (10), (11)		
Sending designated number of bytes of data	PRN2	OUT SM1255	×	7.2.3 (9)		
	PRN4	OUT SM1255	×	7.2.3 (9)		
Writing ASCII characters to the VRAM		OUT SM1255	×	7.2.3 (11)		
Multime //DAM date		OUT SM1255	×	7.2.3 (11)		
writing VRAW data		OUT SM1255	×	7.2.3 (8), (9), (11)		
Reading present value		OUT SM1255	×	7.2.3 (6)		
		OUT SM1255	×	7.2.3 (6)		
Setting preset data	PVWR1	OUT SM1255	×	7.2.3 (6)		
	PVWR2	OUT SM1255	×	7.2.3 (6)		
Conversion from floating decimal point angle to	RAD	RAD	0			
	0500			700(1)		
Remote I/O station data read	RFRP	OUT SM1255	×	7.2.3 (4)		
Changing the extension file register block number	RSET	OUT SM1255	×	7.2.3 (4)		
Remote I/O station data write	RTOP	OUT SM1255	×	7.2.3 (4)		
Block addition and subtraction	SADD	\$+	0			
Comparison between character strings	SCMP	OUT SM1255	×	7.2.3 (4)		
SIN operation on floating decimal point data	SIN	SIN	0			
Character string transfers	SMOV	\$MOV	0			
Reading communication status	SPBUSY	OUT SM1255	×	7.2.3 (7), (9), (10)		
Forced stop of communication processing	SPCLR	OUT SM1255	×	7.2.3 (7), (9), (10)		
Square root operations for floating decimal point data	SQR	SQR	0			
Reading the display status	STAT	OUT SM1255	×	7.2.3 (11)		
Conversion from BIN 16-bit to character string	STR	STR	0			
Subtraction of floating decimal point data	SUB	E-	0			
	SVWR1	- OUT SM1255	×	7.2.3 (6)		
Setting comparison reference data	SVWR2	OUT SM1255	×	7.2.3 (6)		
Upper and lower byte exchanges	SWAP	SWAP	0			
TAN operation on floating decimal point data	TAN	TAN	0			
Bit test	TEST	TEST	0			
Linking of random data	UNI	NUNI	0			
Conversion from character string to BIN 16-bit						
data	VAL	VAL	0			
Data dissociation in byte units	WTOB	WTOB	0			
	7CHG0	OUT SM1255	×	723(4)		
	ZCHG1	OUT SM1255	~	7.2.3 (4)		
Program switching		OUT SM1255	×	7.2.3 (4)		
		OUT SM1255	×	7.2.3 (4)		
Link refrech of designated network		8 7 C M	×	7.2.3 (4)		
Link terresh of designated hetwork		S.ZCOM	0	7.2.3 (5)		
Reading/writing data from/to special function		OUT SM1255	×	7.2.3 (5)		
module in MELSECINE 1/10 remote I/O station		001 5101255	×	7.2.3 (5)		
Reading from/writing to word devices in the		J.ZNRD	0	7.2.3 (5)		
		J.ZINVK	0	1.2.3 (5)		
Zone control for BIN 16-bit data	ZONE	ZUNE	0	700(1)		
Direct read/write of extension file registers in 1-		OUT SM1255	×	(.2.3 (4)		
word units	∠RWR	OUT SM1255	×	7.2.3 (4)		
Direct read/write of extension file registers in units	ZRRDB	OUT SM1255	×	7.2.3 (4)		
of bytes	ZRWRB	OUT SM1255	×	7.2.3 (4)		

7.2.3 Instructions that May Need a Replacement at Instruction Conversion from ACPU to QCPU

Some instructions are not automatically converted upon the replacement of the ACPU with QCPU. The following table shows the instructions that are not automatically converted. Reviewing the program is recommended.

ltem No.	Ir	nstruction type	ACPU instruction	Corrective action
(1)	Sequence instructions	Output Instructions	СНК	(Counter Measure) Review the program and convert manually. (Supplement) Conversion candidate instruction: [FF] instruction
(2)	Basic instructions	Program switching instructions	СНС	(Counter Measure) Review the program with referring to Section 7.7.9.
		Data Processing Instructions	ASC	(Counter Measure) Review the program and convert manually. (Supplement) Conversion candidate instruction: [\$MOV] instruction
		MELSECNET (II), /B Local, Remote I/O Station Access Instructions	LRDP (Counter Measure) RFRP Reprogram for the network modules to use with RTOP (Counter Measure)	(Counter Measure) Reprogram for the network modules to use with a QCPU.
		Display Instructions (except dedicated instructions)	LED LEDA LEDB LEDC	 (Counter Measure) Setting an external display is recommended since the QCPU does not have the LED display function.
(3)	Application instructions	Special format failure checks instructions	СНК	(Counter Measure) Review the program and convert manually. (Supplement) Conversion candidate instruction: [CHKST], [CHK] instruction
		Status latch instructions	SLT SLTR	(Counter Measure) There is no alternative action.
		Sampling trace instructions	STRA	(Counter Measure) Review the program and convert manually. (Supplement) Conversion candidate instructions: [STRA] → [TRACE] instruction [STRAR] → [TRACER] instruction
		Carry flag instructions	STC CLC	(Counter Measure) Review the program and convert manually. (Supplement) Conversion candidate instructions: [STC] → [SET SM700] instruction [CI CI → [RST SM700] instruction

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M	-	S	EC

Item ACPU No. Instruction type instruction	tive action
CHK (Counter Measure)	
Convert manually with the spec	cial format failure check instruction
[CHK] of the application instruc	tions.
(Supplement)	
CHKEND Conversion candidate instruction	ons:
$[CHK] \rightarrow [CHKCIR]$ in	struction
Structured programs [CHKEND] → [CHKEN]	ND] instruction
IX (Counter Measure)	
Review the program and conve	ert manually.
(Supplement)	
IXEND Conversion candidate instruction	on:
$[IX] \rightarrow [IX]$ instruction	
$[IXEND] \rightarrow [IXEND]$ in	struction
LRDP	
(4) instructions Local Remote I/O Station LWTP (Counter Measure)	
Access Instructions RFRP Reprogram the network module	es to use with the QCPU.
RTOP	
(Counter Measure)	
Character string data Review the program and conve	ert manually.
comparisons instructions SCMP (Supplement)	Reprogram the network modules to use with the QCPU. (Counter Measure) Review the program and convert manually. (Supplement) Conversion candidate instructions: [LD\$=], [AND\$=], [OR\$=] instruction (Counter Measure) Conversion candidate instructions: [LD\$=], [AND\$=], [OR\$=]
Conversion candidate instruction	
instruction	
BMOVR	
BXCHR (Counter Measure)	
Extension file register	ert manually.
instructions ZRRD (Supplement)	
ZRRDB Conversion candidate instruction	ons: [BMOV], [MOV], [RSET]
ZRWR Instruction	
ZCHGU	
Dedicated instructions ZCHG1 (Counter Medsule)	ing to Section 770
(4) Dedicated instructions 2CHG2 Review the program with refer	ing to Section 7.7.9.
(Counter Measure)	
PID control instructions PID57 There is no alternative action	
(Counter Measure)	
Review the program and conve	ert manually
ZCOM (Supplement)	, en an a an a an a a a a a a a a a a a a
Network Conversion candidate instruction	ons: [S (P) ZCOM .In] or [S (P)
(5) dedicated Network instructions ZCOM Unlinestruction	
instructions ZNRD	
ZNWR (Counter Measure)	
ZNFR Reprogram the network module	es to use with the QCPU.
ZNTO	

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MELSEC

Item	1		ACPU	Convective action
No.).		instruction	Corrective action
			PVWR1	
		Control Instructions for high	PVWR2	
(6)		speed counter module type	SVWR1	
(0)			SVWR2	
		AD01-01	PVRD1	(Counter Measure)
			PVRD2	Reprogram for the network modules to use with the OCPU
		Control Instructions for	PRN	
		computer link module type	PR	
(7)		AJ71C24 (S3 S6 S8)/	INPUT	
		AJ71UC24	SPBUSY	
			SPCLR	
		Control Instructions for	PRN	
(8)		memory card interface	PR	
(0)	module type AD59	GET		
	Special		PUT	
	function		PRN2	
	modules		PRN4	
	instructions		PR2	
		Control Instructions for	PR4	
(9)		terminal interface	INPUT2	(Counter Measure)
		moduleType AJ71C21 (S1)		Reprogram for the network modules to use with the QCPU.
			GET	Restructuring the system is required depending on the module to
				be used.
			SPBUST	
		Control Instructions for	PR	
(10)		MELSECNET/MINI-S3	MINI	
(10)		Master Module Type	MINIERR	
		AJ71PT32-S3	SPBUSY	
			SPCLR	

MELSEC

Item			ACPU	
No.	Ir	istruction type	instruction name	Corrective action
			CMODE	
			CPS1	
			CPS2	
			CMOV	
			CLS	
			CLV	
			CSCRV	
			CSCRD	
			CON1	
			CON2	
			COFF	
			LOCATE	
			CNOR	
			CREV	
			CRDSP	
			CRDSPV	
			COLOR	
	Createl	Control instructions for	CCDSP	(Counter Magaura)
	Special			(Counter Measure)
(11)	modulos	AD57 (ST)CRT controller	PRIN	Reprogram for the network modules to use with the QCPO.
	instructions controller module	controller module		Restructuring the system is required depending on the module to
	Instructions			be used.
			FRV	
			FPR	
			EPRNV	
			EPRV	
			CR1	
			CR2	
			CC1	
			CC2	
			CINMT	
			CIND	
			(□:0~9,A~Z)	
			CINSP	
			CINCLR	
			INPUT	
			GET	
	PUT			
			STAT	
			RIFR	
			RIRCV	
	Special		RIRD	(Counter Measure)
(12)	function	CC-Link instructions	RISEND	Convert manually to the same instructions of the Q series.
(12)	modules		RITO	
	instructions		RIWT	
			RLPA	(Counter Measure)
			RRPA	Set parameters with the GX Developer.

7.2.4 Instruction Conversion from QnACPU to QCPU

The automatic conversion is applied to the instructions of which equivalent functions and instructions exist in the change target PLC.

For instructions that are not automatically converted, consider reviewing the program referring to the unconvertible instructions described in Section 7.2.5

Re-program for the modules to use with the QCPU, since the specifications of the special function module instructions differ between QCPU compatible modules and QnACPU compatible modules.

7.2.5 Instructions that May Need a Replacement After Conversion from QnACPU to QCPU

Some instructions are not automatically converted upon the replacement of the QnACPU with the QCPU.

The following table shows the instructions that are not automatically converted and their measures. Reviewing the program is recommended.

Instruction type		QnACPU instruction	Corrective action
	Display instructions	LED LEDC	(Counter Measure) Setting an external display is recommended since the QCPU does not have the LED display function.
	Status latch instructions	SLT	(Counter Measure)
		STRA	(Counter Measure)
Application instructions	Sampling trace instructions	STRAR	Review the program and convert manually. (Supplement) Conversion candidate instructions: $[STRA] \rightarrow [TRACE]$ instruction $[STRAR] \rightarrow [TRACER]$ instruction
	Program trace instructions	PTRA PTRAR PTRAEXE	(Counter Measure) There is no alternative action.
c	Other instructions	EROMWR	(Counter Measure) Review the program and convert manually. (Use the ATA card as a memory card.) (Supplement) Conversion candidate instruction: [EROMWR] → [FWRITE] instruction
PID control instr	uctions	PID57	(Counter Measure) There is no alternative action.
Special function modules instructions Example: G. INPUT, G. PRN, etc.		G (P). [Instruction name]	(Counter Measure) Reprogram for the special function modules to use with the QCPU.

7.3 Precautions for Parameter Replacement

7.3.1 Conversion from ACPU to QCPU

This section explains the parameter conversion upon replacement of the ACPU programs with the QCPU.

<Compatibility>

- O: Common item between ACPU and QCPU, that can be converted directly.
- \triangle : Item that requires re-setting after the conversion, since the functions/specifications are partially different ×: Items to be deleted, since there is no common item between the ACPU and QCPU

Confirm the parameters after the conversion, and correct/re-set as required.

		Name	Compati- bility	Remarks
sity	Sec	quence program capacity	\bigtriangleup	No need to care about the program capacity.
apac	Microcomputer program capacity		×	No microcomputer program is available.
mory c	Cor	nment capacity	\bigtriangleup	Not required, since comments can be created for all devices.
Me	File	register capacity	\bigtriangleup	Resetting is required since the specifications are different.
etting	WD	T setting	\bigtriangleup	This becomes default (200ms).
RAS se	Оре	eration mode when these is an error	\bigtriangleup	This becomes default (All stop).
PLC F	Anr	nunciator display mode	×	No compatible function is available.
ting	RU	N - PAUSE contact	\bigtriangleup	Re-setting is required.
n sett	Out	put mode at STOP to RUN	\bigtriangleup	This becomes default (Output before STOP).
syster	Dat bate	a communications request ch processing	\bigtriangleup	Use COM instructions or set the communication reserved time for the special register (SD315) as required.
PLC	Inte	errupt counter setting	\bigtriangleup	Re-setting is required.
I/O	I/O assignment		\bigtriangleup	Reviewing is required for the base unit with other than 8 slots.
	No.	of device points	0	This resets to default. Correcting program is not required, since the device points are more than those of ACPU.
		Latch relay L	0	M and L are different devices. "L" on the program is converted to "L".
		Data register D	0	
bu		Link relay B	0	
setti	0	Link register W	0	
Device s	Latch range	Low-speed timer High-speed timer Extension low-speed timer Extension high-speed timer	Δ	Converted as one device. Reviewing is required, since all the range from lowest device No. to highest device No. is included in the latch range.
		Retentive timer Extension retentive timer	Δ	Converted as one device. Reviewing is required, since all range from lowest device No. to highest device No. is included in the latch range.
		Counter Extension counter	Δ	Converted as one device. Reviewing is required, since the latch range covers all range from lowest device No. to highest device No.
meter	ME	LSECNET (II), /B	×	Parameters are deleted, since the QCPU is not compatible with the MELSECNET (II), /B.
rk para	ME	LSECNET/10 (H)	0	For AnUCPU, converted to the MELSCECNET/10 mode. Parameter re-setting is required for the AnNCPU and AnACPU.
Netwo	ME	LSECNET/MINI	×	Parameters are deleted, since the QCPU is not compatible with the MELSECNET/MINI.

7.3.2 Conversion from QnACPU to QCPU

This section explains the parameter conversion upon replacement of the QnACPU program with the QCPU.

The symbols in the table indicate the following meanings:

<Compatibility>

- O: Common item between QnACPU and QCPU, therefore can be converted directly
- \bigtriangleup : Item that requires re-setting after the conversion, since the functions/specifications are partially different
- $\times:$ Items to be deleted, since there is no common item between the QnACPU and QCPU

Confirm the parameters after the conversion, and correct/re-set as required.

		Name	Compati- bility	Remarks
e setting	Label		0	
PLC nam	Comm	ent	0	
	r limit ting	Low speed	0	
	Time set	High speed	0	
	PAUSE Itact	RUN	0	
etting	RUN-F con	PAUSE	0	
n se	Remot	e reset	0	
sten	Output	t mode at STOP to RUN	0	
sys	Comm	on pointer No.	0	
PLC	Gener	al data processing	\bigtriangleup	Use COM instructions or set the communication reserved time for the special register (SD315) as required.
	No. of	vacant slots	0	
	pt	Interrupt counter setting No.	\bigtriangleup	Re-setting is required.
	erru g	I28 Fixed scan interval	0	
	n int ettin	I29 Fixed scan interval	0	
	'ster s	I30 Fixed scan interval	0	
	S	I31 Fixed scan interval	0	
ŋ	File register			Confirmation is required, since the usable target memory is changed.
e settir	Comm	ent file used in a command	\bigtriangleup	Confirmation is required, since the usable target memory is changed.
LC file	Device	e initial value		Confirmation is required, since the usable target memory is changed.
д	File for	r local device	\bigtriangleup	Confirmation is required, since the usable target memory is changed.

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		Name	Compati- bility	Remarks
	Input r	elay	0	
	Output relay		0	
	Interna	al relay	0	
	Latch I	relay	0	
	Link re	lay	0	
	Annun	ciator	0	
ting	Link sp	pecial relay	0	
set	Edge r	elay	0	
ice	Step re	elay	0	
Jev	Timer		0	
	Retent	ive timer	0	
	Counte	er	0	
	Data re	egister	0	
	Link re	egister	0	
	Link sp	pecial register	0	
	Total o	f device	0	
	βL	WDT setting	0	
	T settir	Initial execution monitoring time	0	
	MD	Low speed execution monitoring time	0	
	ck	Carry out battery check	0	
	Error che	Carry out fuse blown check	0	
		Carry out I/O module comparison	0	
	de when error	Computation error	0	
		Expanded command error	0	
ng		Fuse blown	0	
S settii	on mo	I/O module comparison error	0	
C RA	peration there	Special module access error	0	The name changes to "Intelligent module program execution error".
Ц	0	Memory card access error	0	
		Memory card operation error	0	
	Consta	ant scanning	0	
	iator node	F No. display	×	The QCPU does not incorporate this display function.
	nnunc splay r	Comment display	×	The QCPU does not incorporate this display function.
	A di:	Occurrence time	×	The QCPU does not incorporate this display function.
	own y	Drive	0	
	eak d	File name	0	
	Br	History No.	0	
	Low sp	beed program execution time	0	

	Name	Compati- bility	Remarks
I/O	assignment	\bigtriangleup	Reviewing is required if the QCPU base unit has other than 8 slots.
Boo	ot file setting	0	
Pro	gram setting	0	
ŋg	SFC program start mode	0	
C setti	Start conditions	0	
ß	Output mode when the block is stopped	0	
	MELSECNET (II), /B	×	Parameters are deleted, since the QCPU is not compatible with the MESECNET (II), /B.
ametei	MELSECNET/10 (H)	0	Converted to the MELSECNET/10 mode.
rk para	MELSECNET/MINI	×	Parameters are deleted, since the QCPU is not compatible with the MESECNET/MINI.
Vetwo	CC-Link	\bigtriangleup	CC-Link parameters are deleted for the 5 th unit and the following units.
	Ethernet	0	The "Use the KeepAlive" of "TCP Existence confirmation setting" in the "Ethernet operations" is automatically set.

7.4 Special Relay Replacement

The special relay is an internal relay that has a set application in a PLC. This section explains how to replace special relays when replacing the ACPU programs to the QCPU.

7.4.1 Replacing the ACPU with the QCPU

The QCPU uses a different special relay from the one for the ACPU. With the Change PLC type, the automatic conversion is applied to the replacement of the ACPU special relay (M9000 and after) with the QCPU special relay (SM).

(1) Operation procedure

The following dialog box is displayed after changing PLC type. Click [Yes] to execute the Change PLC type after checking "Convert M9000/D9000←→SM400/SD400".

Change	PLC type
	Change the PLC type to Q12H. Are you sure to change all of the data to match the PLC type? (To check all data, select confirm change)
(Convert M9000/D9000 - <> SM400/SD400 YesY) Confirm change(<u>C</u>)

⊠Point ·

Some ACPU special relays are not compatible with the QCPU. (Refer to Section 7.4.3.) Those special relays not compatible with the QCPU are converted to dummy special relays (SM1255) ^{*1} when changing PLC type. Search the dummy special relays (SM1255) and correct the programs as required.

*1 For the Basic model QCPU, it is converted to the SM999.

7.4.2 Replacing the QnACPU with the QCPU

Basically, special relays for the QnACPU can be used without modification in the QCPU. Note that, however, some of them are not compatible with the QCPU.

7.4.3 Special Relay Replacement List

Specia	al relay	Compati-	Name	Meaning	Explanation
M9000	SM60	Δ	Fuse blown	OFF : Normal ON : Module with blown fuse	 Turned on when there is one or more output modules of which fuse has been blown. Remains ON if the condition is restored to normal thereafter. Output modules of remote I/O stations are also checked fore fuse condition.
M9002	SM61		I/O module verification error	OFF : Normal ON : Error	 Turned on if the status of I/O module is different form entered status when power is turned on. Remains ON if the condition is restored to normal thereafter. I/O module verification is done also to remote I/O station modules. Reset is enabled only when special registers SD1400 to SD1407 (SD150 to SD157) are reset.
M9004	SM1255 SM999	×	NIMI link error	OFF : Normal ON : Error	-
M9005	SM53	Δ	AC DOWN detection	OFF : AC DOWN not detected ON : AC DOWN detected	 Turns ON if an instantaneous power failure of within 20ms occurs during use of the AC power supply module. Reset when power is switched OFF, then ON. Turns ON if an instantaneous power failure of within 10ms occurs during use of the DC power supply module. Reset when power is switched OFF then ON
M9006	SM52	0	Battery low	OFF : Normal ON : Battery low	 Turns ON when the battery voltage drops to or below the specified. Turns OFF when the battery voltage returns to normal thereafter.
M9007	SM51	Δ	Battery low latch	OFF : Normal ON : Battery low	 Turns ON when the battery voltage drops to or below the specified. Remains ON if the battery voltage returns to normal thereafter.
M9008	SM1	\bigtriangleup	Self-diagnosis error	OFF : No error ON : Error	 Turned on when error is found as a result of self- diagnosis.
M9009	SM62	0	Annunciator detection	OFF : No F number detected ON : F number detected	 Turned on when OUT F of SET F instruction is executed. Switched off when SD63 data is zeroed.
M9011	SM56	Δ	Operation error flag	OFF : No error ON : Error	 Turned on when operation error occurs during execution of application instruction. Remains ON if the condition is restored to normal thereafter.
M9012	SM700	0	Carry flag	OFF : Carry OFF ON : Carry ON	Carry flag used in application instruction.
M9016	SM1255 SM999	×	Data memory clear flag	OFF : Ignored ON : Output claered	-
M9017	SM1255 SM999	×	Data memory clear flag	OFF : Ignored ON : Output claered	-
M9020	SM420	0	User timing clock No.0		Relay which repeats on/off at intervals of predetermined
M9021	SM421	0	User timing clock No.1		scan.When power is turned on or reset is per-formed, the
M9022	SM422	0	User timing clock No.2	n2 scan n2 scan	clock starts with off. Set the intervals of on/off by DUTY instruction.
M9023	SM423	0	User timing clock No.3	n1 scan	│
M9024	SM424	0	User timing clock No.4		n2: OFF scan interval
M9025	SM210	0	Clock data set request	OFF : Ignored ON : Set request present used	• Writes the clock data stored in SD210 to SD213 to the CPU module after the END instruction is executed in the scan in which SM210 turned from OFF to ON.
M9026	SM211	0	Clock data error	OFF : No error ON : Error	Switched on by clock data (SD210 to SD213) error
M9027	SM212	×	Clock data display	OFF : Ignored ON : Display	-
M9028	SM213	0	Clock data read request	OFF : Ignored ON : Read request	 Reads clock data to SD210 to SD213 in BCD when SM213 is on.

Specia	al relay	Compati-	Name	Meaning	Explanation
ACPU	QCPU	bility			
M9029	SM1255 SM999	×	Batch processing of data communications requests	on conducted ON : Batch processing conducted	-
M9030	SM410	0	0.1 second clock	0.05s	
M9031	SM411	0	0.2 second clock	0.1s	 0.1 second, 0.2 second, 1 second and 2 second, clocks are generated. Not turned on or off per scan but turned on and off even
M9032	SM412	0	1 second clock	0.5s	during scan if corresponding time has elapsed.Starts with off when PLC power supply is turned on or CPU module reset is performed.
M9033	SM413	0	2 second clock	1s1s	
M9034	SM1255 SM999	x	1 minute clock	ns ns	 Substituted with 2n second clock (SM414). The following describes the operations of SM414. Alternates between ON and OFF according to the seconds specified at SD414. (Default: n = 30) Not turned on or off per scan but turned on and off even during scan if corresponding time has elapsed. Starts with off when PLC power supply is turned on or CPU module reset is performed.
M9036	SM400	0	Always ON	ON OFF	Used as dummy contacts of initialization and application instruction in sequence program
M9037	SM401	0	Always OFF	ON OFF	 SM400 and SM401 are turned on and off without regard to position of RUN/STOP switch. SM402 and SM403 are under the same condition as RUN status except when
M9038	SM402	0	ON for 1 scan only after RUN	ON1 scan	the RUN/STOP switch is at STOP position, and turned off and on. Switched off if the RUN/STOP switch is in STOP position. SM402 is on for one scan only and SM402 is off for an ensure scale if the fundamental
M9039	SM403	0	RUN flag (After RUN, OFF for 1 scan only)	ON ← ▶ OFF 1 scan	STOP position.
M9040	SM206	0	PAUSE enable coil	OFF : PAUSE disabled ON : PAUSE enabled	 If SM206 is on when the remote PAUSE or PAUSE
M9041	SM204	0	PAUSE status contact	OFF : PAUSE not in effect ON : PAUSE in effect	contact is turned on by the GX Developer, the CPU module goes to PAUSE status and SM204 turns on.
M9042	SM203	0	STOP status contact	OFF : STOP not in effect ON : STOP in effect	 Switched on when the RUN/STOP switch is in STOP position.
M9043	SM805	0	Sampling trace completed	OFF : Sampling trace in progress ON : Sampling trace completed	• Turned on upon completion of sampling trace performed the number of times preset by parameter after <u>STRA</u> instruction is executed. Reset when <u>STRAR</u> instruction is executed.
M9044	SM803	0	Sampling trace	$OFF \rightarrow ON$: <u>STRA</u> Same as execution $ON \rightarrow OFF$: <u>STRAR</u> Same as execution	 Turning on/off SM803 can execute STRA/ STRAR instruction. (SM803 is forcibly turned on/off by a peripheral device.) When switched from OFF to ON: STRA instruction When switched from ON to OFF: STRAR instruction
M9045	SM1255	×	Watchdog timer (WDT)	OFF : Does not reset WDT	
M9046	SM802	0	Sampling trace	OFF : Trace not in progress ON : Trace in progress	Switched on during sampling trace.
M9047	SM801	0	Sampling trace preparations	OFF : Sampling trace suspended ON : Sampling trace started	Sampling trace is not executed unless SM801 is turned ON. Sampling trace is suspended when SM801 goes OFF.
M9049	SM701	0	Selection of number of characters output	OFF : Output until NULL code encountered ON : 16 characters output	 When SM701 is OFF, characters up to NULL (00H) code are output. When SM701 is ON, ASCII codes of 16 characters are output.
M9051	SM1255 SM999	×	CHG instruction execution disable	OFF : Enabled ON : Disable	-

Specia ACPU	al relay QCPU	Compati- bility	Name	Meaning	Explanation
				OFF : 7SEG segment	
M9052	SM1255	×	SEG instruction switch	display	-
	SM999			ON : I/O partial refresh	
				OFF : STEP RUN not in	
M9054	SM205	0	STEP RUN flag	effect	 Switched on when the RUN key switch is in STEP RUN
		_		ON : STEP RUN in effect	position.
			Status latch completion	OFF · Not completed	
M9055	SM808	×	flag	ON : Completed	-
			- 5	OFF : Other than when P.	
	SM1255			I set being requested	
M9056	SM999	×	Main side P, I set request	ON : P, I set being	-
				requested	
				OFF : Other than when P,	
	SM1255			I set being requested	
M9057	SM999	×	Sub side P, I set request	ON : P, I set being	-
				requested	
	SM1255		Main side P, I set	Momentarily ON at P, I	
M9058	SM999	×	completion	set completion	-
M0050	SM1255		Sub program P, I set	Momentarily ON at P, I	
M9029	SM999	×	completion	set completion	-
				OFF : Other than when P,	
MOOCO	SM1255		Sub program 2 P, I set	I set being requested	
1019060	SM999	×	request	ON : P, I set being	-
				requested	
				OFF : Other than when P,	
M0064	SM1255		Sub program 3 P, I set	I set being requested	
1019061	SM999	×	request	ON : P, I set being	-
				requested	
				OFF : Divided processing	
M9065	SM711	~	Divided processing	not underway	
1013000	000711	^	execution detection	ON : During divided	
				processing	
M9066	SM712	×	Divided processing	OFF : Batch processing	_
			request flag	ON : Divided processing	
				OFF : Read time not	
M9070	SM1255	×	A8UPU/A8PUJrequired	shortened	_
	SM999		search time	ON : Read time	
				shortened	
				OFF : Empty spaces in	
	014055		Communication request	communication request	
M9081	SM1255	×	registration area BUSY	registration area	_
	SM999		signal	ON : No empty spaces in	
				communication request	
M0084	SM1255	~	Error check		
1013004	SM999	^	LITOI CHECK	ON : No error check	
M9091	SM1	×	Instruction error flag		-
				OFF : Replacement	
M9094	SM251	×	I/O change flag	ON : No replacement	-
			_	OFF : SFC programs not	
M9100	M9100 SM320		Presence/absence of	used	Turned on if the SFC program is registered.
			SFC program	ON : SFC programs used	I urned off if it is not.
					 The value in SM320 is set as the initial value.
					(The relay automatically turns ON when the SFC
M9101	SM321	0	Start/stop SEC program	OFF : SFC programs stop	 Program is present.) When this relay turns from ON to OEE, execution of the
1018101	5101321		Stativision SLC blogially	ON : SFC programs start	SFC program stops.
					When this relay turns from OFF to ON, execution of the
					SFC program resumes.

Specia	al relay	Compati-	Name		Meaning		Explanation							
M9102	SM322	0	SFC program start status	OFF : In ON : Co	itial Start ntinue		•	The SFC program start mode in the SFC setting of the PLC parameter dialog box is set as the initial value. At initial start: OFF At continue start: ON						
M9103	SM323	0	Presence/absence of continuous transition	OFF : C transition ON : Co transition	ontinuous n not effe ntinuous n effective	s ctive e	•	Set whether continuous transition will be performed for the block where the "continuous transition bit" of the SFC information device is not set.						
M9104	SM324	0	Continuous transition suspension flag	OFF : W complete ON : Wr	/hen trans ed nen no tra	sition is ansition	•	OFF during operation in the continuous transition mode or during continuous transition, and ON when continuous transition is not executed. Always ON during operation in the no continuous transition mode.						
M9108	SM90	0	Step transition watchdog timer start (equivalent of SD90)											
M9109	SM91	0	Step transition watchdog timer start (equivalent of SD91)	OFF: Watchdog timer reset ON: Watchdog timer reset start										
M9110	SM92	0	Step transition watchdog timer start (equivalent of SD92)					 Turns ON when the measurement of the step transition watchdog timer is started. Turning this relay OFF resets the step transition watchdog timer. 						
M9111	SM93	0	Step transition watchdog timer start (equivalent of SD93)				•							
M9112	SM94	0	Step transition watchdog timer start (equivalent of SD94)											
M9113	SM95	0	Step transition watchdog timer start (equivalent of SD95)											
M9114	SM96	0	Step transition watchdog timer start (equivalent of SD96)											
M9180	SM825	0	Active step sampling trace completion flag	OFF: Tra ON: Tra	ace starte ce comple	ed eted	•	Set when sampling trace of all specified blocks is completed. Reset when sampling trace is started.						
M9181	SM822	0	Active step sampling trace execution flag	OFF: Tra execute ON: Tra under w	ace not b d ce execu ay	eing tion	 Set when sampling trace is being executed. Reset when sampling trace is completed or suspended 							
M9182	SM821	0	Active step sampling trace permission	OFF: Tra suspenc ON: Tra	ace disab I ce enable	ole/	•	Selects sampling trace execution enable/disable. ON : Sampling trace execution is enabled. OFF : Sampling trace execution is disabled. If turned off during sampling traceexecution,trace is suspended.						
M9196	SM325	0	Operation output at block stop	OFF: Coil output OFF OON: Coil output ON			•	Selects the operation output when block stop is executed. ON : Retains the ON/OFF status of the coil being used by using operation output of the step being executed at block stop. OFF : All coil outputs are turned off. (Operation output by the SET instruction is retained regardless of the ON/OFF status of SM325.)						
	SM1255 SM999	×		M9117	M9118	I/O numbers to be dis- played								
M9197	SM1255 SM999	×	Switch between blown	OFF	OFF	X/Y0 to 7F0	1							
	SM1255 SM999	×	fuse and I/O verification error display	ON	OFF	X/Y800 to FF0	ĺ	-						
M0100	SM1255 SM999	×		OFF	ON	X/Y1000 to 17F0								
1019190	SM1255 SM999	×		ON	ON	X/Y1800 to 1FF0	ĺ							

Specia ACPU	al relay QCPU	Compati- bility	Name	Meaning	Explanation
M9199	SM1255 SM999	×	Data recovery of online sampling trace/status latch	OFF: Data recovery disabled ON: Data recovery enabled	_
M9200	SM1255 SM999	×	ZNRD instruction (LRDP instruction for ACPU) reception (for master station)	OFF: Not accepted ON: Accepted	_
M9201	SM1255 SM999	×	ZNRD instruction (LRDP instruction for ACPU) completion (for master station)	OFF: Not completed ON: End	_
M9202	SM1255 SM999	×	ZNWR instruction (LWTP instruction for ACPU) reception (for master station)	OFF: Not accepted ON: Accepted	_
M9203	SM1255 SM999	×	ZNWR instruction (LWTP instruction for ACPU) completion (for master station)	OFF: Not completed ON: End	-
M9204	SM1255 SM999	×	ZNRD instruction (LRDP instruction for ACPU) reception (for local station)	OFF: Not completed ON: End	_
M9205	SM1255 SM999	×	ZNWR instruction (LWTP instruction for ACPU) reception (for local station)	OFF: Not completed ON: End	-
M9206	SM1255 SM999	×	Host station link parameter error	OFF: Normal ON: Abnormal	-
M9207	SM1255 SM999	×	Link parameter check results	OFF : Match ON : Mismatch	_
M9208	SM1255 SM999	×	Sets master station B and W transmission range (for lower link master stations only)	OFF: Transmits to tier2 and tier 3 ON: Transmits to tier2 only	_
M9209	SM1255 SM999	×	Link parameter check command (for lower link master stations only)	OFF: Executing the check function ON: Check non- execution	_
M9210	SM1255 SM999	×	Link card error (for master station)	OFF: Normal ON: Abnormal	-
M9211	SM1255 SM999	×	Link module error (for local station use)	OFF: Normal ON: Abnormal	-
M9224	SM1255 SM999	×	Link status	OFF: Online ON: Offline,station-to-station test, or self-loopback test	-
M9225	SM1255 SM999	×	Forward loop error	OFF: Normal ON: Abnormal	-
M9226	SM1255 SM999	×	Reverse loop error	OFF: Normal ON: Abnormal	-
M9227	SM1255 SM999	×	Loop test status	OFF: Not being executed ON: Forward or reverse loop test execution underway	_
M9232	SM1255 SM999	×	Local station operation status	OFF: RUN or STEP RUN status ON: STOP or PAUSE status	_
M9233	SM1255 SM999	×	Local station error detect status	OFF: No errors ON: Error detection	-

Special relay ACPU QCPU		Compati-	Name	Meaning	Explanation
M9235	SM1255 SM999	×	Local station, remote I/O station parameter error detect status	OFF: No errors ON: Error detection	_
M9236	SM1255 SM999	×	Local station, remote I/O station initial communications status	OFF: No communications ON: Communications underway	-
M9237	SM1255 SM999	×	Local station, remote I/O station error	OFF: Normal ON: Abnormal	-
M9238	SM1255 SM999	×	Local station, remote I/O station forward or reverse loop error	OFF: Normal ON: Abnormal	_
M9240	SM1255 SM999	×	Link status	OFF: Online ON: Offline, station-to- stationtest, or self- loopback test	_
M9241	SM1255 SM999	×	Forward loop line error	OFF: Normal ON: Abnormal	_
M9242	SM1255 SM999	×	Reverse loop line error	OFF: Normal ON: Abnormal	-
M9243	SM1255 SM999	×	Loopback implementation	OFF: Loopback not being conducted ON: Loopback implementation	_
M9246	SM1255 SM999	×	Data not received	OFF: Reception ON: No reception	_
M9247	SM1255 SM999	×	Data not received	OFF: Reception ON: No reception	-
M9250	SM1255 SM999	×	Parameters not received	OFF: Reception ON: No reception	_
M9251	SM1255 SM999	×	Link relay	OFF: Normal ON: Abnormal	_
M9252	SM1255 SM999	×	Loop test status	OFF: Not being executed ON: Forward or reverse loop test execution underway	_
M9253	SM1255 SM999	×	Master station operation status	OFF: RUN or STEP RUN status ON: STOP or PAUSE status	_
M9254	SM1255 SM999	×	Local station other than host station operation status	OFF: RUN or STEP RUN status ON: STOP or PAUSE status	_
M9255	SM1255 SM999	×	Local station other than host station error	OFF: Normal ON: Abnormal	-

7.5 Special Register Replacement

A special register is an internal register that has a set application in a PLC. This section explains how to replace (reuse) the special registers of the A series programs with the Q series.

7.5.1 Replacing the ACPU with the QCPU

The QCPU uses a different special register from the one for the ACPU. With the Change PLC type, the automatic conversion is applied to the replacement of the ACPU special register (D9000 and after) with the QCPU special register (SD).

(1) Operation procedure

The following dialog box is displayed after changing PLC type. Click [Yes] to execute the Change PLC type after checking "Convert M9000/D9000←→SM400/SD400".

Change	PLC type
	Change the PLC type to Q12H. Are you sure to change all of the data to match the PLC type? (To check all data, select confirm change)
(Convert M9000/D9000 - <> SM400/SD400 Yes(Y) Confirm change(C) No(N)

⊠Point

Some ACPU special registers are not compatible with the QCPU. (Refer to Section 7.5.3.) Those special registers not compatible with the QCPU are converted to dummy special registers (SD1255) ^{*1} when changing PLC type. Search the dummy special registers (SD1255) and correct the programs as required.

*1 For the Basic model QCPUs, converted to the SD999.

7.5.2 Replacing the QnACPU with the QCPU

Basically, special registers for the QnACPU can be used without modification in the QCPU. Note that, however, some of them are not compatible with the QCPU.

7.5.3 Special Register Replacement List

Specia	l register	Compati-	Namo	Mooning	Explanation							
ACPU	QCPU	bility	Name	Meaning	Explanation							
D9000	SD60	0	Fuse blown	Number of module with blown fuse	 When fuse blown modules are detected, the first I/O number of the lowest number of the detected modules is stored in hexadecimal. (Example: When fuses of Y50 to 6F output modules have blown, "50" is stored in hexadecimal) To monitor the number by peripheral devices, perform monitor operation given in hexadecimal. (Cleared when all contents of SD1300 to SD1307 (SD130~SD137) are reset to 0.) Fuse blow check is executed also to the output modules of remote I/O stations. 							
D9001	SD1255 SD999	×	Fuse blown	Number of module with blown fuse	_							
D9002	SD61	0	I/O module verification error	I/O module verification error module number	 If I/O modules, of which data are different from data entered, are detected when the power is turned on, the first I/O number of the lowest number unit among the detected units is stored in hexadecimal. (Storing method is the same as that of SD60.) To monitor the number by peripheral devices, perform monitor operation given in hexadecimal. (Cleared when all contents of SD1400~SD1407 (SD150~SD157) are reset to 0.) I/O module verify check is executed also to the modules of remote I/O terminals. 							
D9004	SD1255	×	MINI link errors	Stores setting status	-							
D9005	SD53	0	AC DOWN counter	Number of times for AC	 When the AC power supply module is used, 1 is added at occurrence of an instantaneous power failure of within 20ms. It is reset when power is switched from OFF to ON. When the DC power supply module is used, 1 is added at occurrence of an instantaneous power failure of within 10ms. It is reset when power is switched from OFF to ON. 							
D9008	SD0		Self-diagnosis error	Self-diagnosis error number	When error is found as a result of self-diagnosis, error number is stored in BIN code.							
D9009	SD62	0	Annunciator detection	F number at which external failure has occurred	 When one of F0 to 2047 is turned on by <u>OUT F</u> or <u>SET F</u>, the F number, which has been detected earliest among the F numbers which have turned on, is stored in BIN code. SD62 can be cleared by <u>RST F</u> or <u>LEDR</u> instruction. If another F number has been detected, the clearing of SD62 causes the next number to be stored in SD62. 							
D9010	SD1255 SD999	×	Error step	Step number at which operation error has occurred.	_							
D9011	SD1255 SD999	×	Error step	Step number at which operation error has occurred.	-							
D9014	SD1255 SD999	×	I/O control mode	I/O control mode number	-							

Specia	l register	Compati-	Name	Meaning	Explanation						
ACPU D9015	QCPU SD203	o	Operating status of CPU	Operating status of CPU	The operation status of CPU as shown below are stored in SD203. b15 to b12 b11 to b8 b7 to b4 b3 to b0 femote RUN/STOP by computer 0 RUN 1 STOP 2 PAUSE*1 3 STEP RUN (Remains the same in remote RUN/STOP by parameter setting 0 Except below 1 Instruction execution *1: When the CPU mdoule is in RUN mode and SM1040 is off, the CPU module remains in RUN mode if changed to PAUSE mode.						
D9016	SD1255 SD999	×	Program number	0: Main program (ROM) 1: Main program (RAM) 2: Subprogram 1 (RAM) 3: Subprogram 2 (RAM) 4: Subprogram 3 (RAM) 5: Subprogram 1 (ROM) 6: Subprogram 2 (ROM) 7: Subprogram 3 (ROM) 8: Main program (E ² PROM) 9: Subprogram 1 (E ² PROM) A: Subprogram 2 (E ² PROM) B: Subprogram 3 (E ² PROM)	_						
D9017	SD1255 SD999	×	Scan time	Minimum scan time (10 ms units)	 If scan time is smaller than the content of SD520, the value is newly stored at each END. Namely, the minimum value of scan time is stored into SD520 in BIN code. 						
D9018	SD1255 SD999	×	Scan time	Scan time (10 ms units)	 At every END, the scan time is stored in BIN code and always rewritten. 						
D9019	SD1255 SD999	×	Scan time	Maximum scan time (10 ms units)	 If scan time is larger than the content of SD526, the value is newly stored at each END. Namely, the maximum value of scan time is stored into SD526 in BIN code. 						
D9020	SD1255 SD999	×	Constant scan	Constant scan time (User sets in 10 ms units)	-						
D9021	SD1255 SD999	×	Scan time	Scan time (1 ms units)	At every END, the scan time is stored in BIN code and always rewritten.						
D9022	SD412	0	1 second counter	Count in units of 1s.	 When the PLC CPU starts running, it starts counting 1 every second. It starts counting up from 0 to 32767, then down to -32768 and then again up to 0. Counting repeats this routine. 						
D9025	SD210	0	Clock data	Clock data (year, month)	Stores the year (2 lower digits) and month in BCD.						
D9026	SD211	0	Clock data	Clock data (day, hour)	Stores the day and hour in BCD. 15 to b12b11 to b8b7 to b4b3 to b0 Example:						

7 PROGRAM REPLACEMENT

Specia ACPU	l register QCPU	Compati- bility	Name	Meaning	Explanation							
					 Stores the minute and second in BCD. 							
D9027	SD212	0	Clock data	Clock data (minute, second)	b15 to b12b11 to b8b7 to b4b3 to b0 Example: 35 min., 48 sec. H3548 Minute Second							
D9028	SD213	Δ	Clock data	Clock data (higher digits of year, day of week)	Stores the year (two digits) and the day of the week in SD213 in the BCD code format as shown below. b15 to b12 b11 to b8 b7 to b4 b3 to b0 Example: 1993, Friday 1905H Day of the week 0 Sunday 1 Monday 2 Tuesday Wednesday 4 Thursday 5 Friday 6 Saturday							
D9035	SD648	0	Extension file register	Use block No.	 Stores the block No. of the extension file register being used in BCD code. 							
D9036	SD1255 SD999 SD1255	×	Extension file registerfor designation of device	Device number when individual devices from extension file register are	_							
20001	SD999	^		directly accessed								
D9038	SD207	Δ		Priorities 1 to 4	 Sets priority of ERROR LEDs which illuminate (or flicker) to indicate errors with error code numbers. Configuration of the priority setting areas is as shown below. 							
D9039	SD208	Δ	LED display priority ranking	Priorities 5 to 7	b15 to b12 b11 to b8 b7 to b4 b3 to b0 SD207 Priority 4 Priority 3 Priority 2 Priority 1 SD208 Priority 7 Priority 6 Priority 5 • For details, refer to the applicable QCPU User's Manual (Function Explanation, Program Fundamentals) and the ACPU Programming manual (Fundamentals).							
D9044	SD1255 SD999	×	For sampling trace	Step or time during sampling trace	-							
D9049	SD1255 SD999	×	Work area for SFC	Block number of extension file register	_							
D9050	SD1255 SD999	×	SFC program error number	Error code generated by SFC program	_							
D9051	SD1255 SD999	×	Error block	Block number where error occurred	-							
D9052	SD1255 SD999	×	Error step	Step number where error occurred	_							
D9053	SD1255 SD999	×	Error transition	Transition condition number where error occurred	_							
D9054	SD1255 SD999	×	Error sequence step	Sequence step number where error occurred	_							
D9055	SD1255 SD999	×	Status latch	Status latch step	-							
D9060	SD1255 SD999	×	Software version	Software version of internal software	_							
D9072	SD1255 SD999	×	PLC communications check	Computer link data check	-							
D9081	SD1255 SD999	×	Number of empty blocks in communications request registrtion area	Number of empty blocks in communications request registration area	_							
D9085	SD1255 SD999	×	Register for setting time check value	1 s to 65535 s	_							
D9090	SD1255 SD999	×	Number of special functions modules over	Number of special functions modules over	_							
D9091	SD1255 SD999	×	Detailed error code	Self-diagnosis detailed error code	_							

Specia	register	Compati-	Name	Meaning	Explanation									
ACPU	QCPU	bility												
D9094	SD1255	×	Head I/O number of I/O	Head I/O number of I/O	-									
	SD1255													
D9095	SD999	×	DIP switch information	DIP switch information	-									
D9100	SD130	\triangle			• The numbers of output modules whose fuses have blown									
D9101	SD131	~			(If the module numbers are set by parameter, the									
D0100	00400				parameter-set numbers are stored.)									
D9102	50132			Bit pattern in units of 16	b15 b14 b13 b12 b11 b19 b8 b7 b6 b5 b4 b3 b2 b1 b0 SD130 0 0 1 0 0 0 1 0 </td									
D9103	SD133	Δ	Fuse blown module	points, indicating the	SD131 1 0 0 0 0 1 100 0 0 0 0 0 0 0 0 0 0									
D9104	SD134			modules whose fuses have blown	SD137 0 0 0 1 17780 0 0 0 0 0 0 0 17730 0 0 0									
D9105	SD135	\bigtriangleup			Indicates fuse blow.									
D9106	SD136	Δ			 Fuse blow check is executed also to the output module of remote I/O station. 									
D9107	SD137				Not cleared even if the blown fuse is replaced with a new one.									
	SD1255				This flag is cleared by error resetting operation.									
D9108	SD999	\triangle			Convert to the corresponding special register (SD90 to SD96).									
D9109	SD1255	\triangle			• Set the set value of the step transition watchdog timer									
	SD999 SD1255				when the watchdog timer times out.									
D9110	SD999	\bigtriangleup			b15 to b8 b7 to b0									
D9111	SD1255 SD999	\bigtriangleup	Step transfer monitoring timer setting	Timer setting valve and the f number at time out										
D9112	SD1255				F number setting Timer time limit setting									
	SD999 SD1255				By turning on any of SM90 to SM96, the monitoring timer									
D9113	SD999	\bigtriangleup			starts. If the transfer condition following a step which									
D9114	SD1255				time, set annunciator (F) is tuned on.									
Batta	SD999				When I/O modules, of which data are different from those									
D9116	SD150				entered at power-on, have been detected, the I/O module numbers (in units of 16 points) are entered in bit									
D9117	SD151	Δ			pattern. (Preset I/O module numbers set in parmeters									
D9118	SD152	Δ			when parameter setting has been performed.)									
D9119	SD153	Δ			b15b14b13b12b11b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0									
D9120	SD154		I/O module verification	points, indicating the	SD150 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0									
D9121	SD155		error	modules with verification										
D9122	SD156			enois.	SD157 0 ((***) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0									
D9123	SD157	Δ			 I/O module verify check is executed also to remote I/O station modules. Not cleared even if the module status becomes normal again. This flag is cleared by error resetting operation. 									
D9124	SD63	Δ	Annunciator detection quantity	Annunciator detection quantity	 When one of F0 to 2047 is turned on by SET F 1 is added to the contents of SD63. When RST F or LEDR instruction is executed, 1 is subtracted from the contents of SD63. Quantity, which has been turned on by SET F is stored into SD63 in BIN code. The value of SD63 is maximum 8. 									

Specia ACPU	l register QCPU	Compati- bility	Name	Meaning							Ex	plar	nati	on						
D9125	SD64	0			• When any of F0 to 2047 is turned on by <u>SET F</u> , the annunciator numbers (F numbers) that are turned on in order are registered into SD64~SD71.															
D9126	SD65	0			 I ne F number turned off by [RST F] is erased from any of SD64 to SD71, and the F numbers stored after the erased F number are shifted to the preceding registerers. By executing LEDR instruction, the contents of SD64 to 														of ers.	
D9127	SD66	0		•		 By executing <u>LEDR</u> instruction, the contents of SD64 to SD71 are shifted upward by one. When there are 8 annunciator detections, the 9th one is not stored into SD64 to SD71 even if detected. 										not				
D9128	SD67	0		Annunciator detection number			SET	SET F25	SET F99	RST F25	F15	F70	F65	F38	F11	T SE 0 F15	T SE		DR	1
D9129	SD68	0	Annunciator detection number			SD62 SD63	0	50 1 50	50 2 50	50 3 50	50 2 50	50 3 50	50 4 50	50 5	50 6 50	50 7 50	50 8 50	50 8 50	99 8 99	
D9130	SD69	0				SD65	0	0	25 0	25 99	99 0	99 15	99 15	99 15	99 15	99 15	99 15	99 15	15 70	
D9131	SD70	0				SD67 SD68	0	0	0	0	0	0	70 0	70 65	70 65	70 65	70 65	70 65	65 38	
						SD69	0	0	0	0	0	0	0	0	38	38	38	38	110	
D9132	SD71	0				SD70 SD71	0	0	0	0	0	0	0	0	0	110 0	110 151	110 151	151 210	
				0 : Forward loop, during	ŀ															<u> </u>
D9204	SD1255 SD999	×	Link status	 data link 1: Reverse loop, during data link 2: Loopback implemented in forward/reverse directions 3: Loopback implemented only in forward direction 4: Loopback implemented only inreverse direction 5: Data link disabled 								_	-							
D9205	SD1255	×	Station implementing	Station that implemented																
D9206	SD1255 SD999	×	Station implementing loopback	Station that implemented reverse loopback								-	-							
D9210	SD1255	×	Number of retries	Stored as cumulative								_	-							
D9211	SD1255 SD999	×	Number of times loop selected	Stored as cumulative value								_								
D9212	SD1255 SD999	×	Local station operation	Stores conditions for up																
D9213	SD1255 SD999	×	Local station operation	Stores conditions for up to numbers 17 to 32																
D9214	SD1255	×	Local station operation	Stores conditions for up								-								
D9215	SD999 SD1255	×	Local station operation	Stores conditions for up																
D9216	SD999 SD1255		status Local station error detect	to numbers 49 to 64 Stores conditions for up																
D9217	SD999 SD1255 SD999	×	status Local station error detect	to numbers 1 to 16 Stores conditions for up to numbers 17 to 32																
D9218	SD1255 SD999	×	status Local station error detect status	Stores conditions for up to numbers 33 to 48								-	-							
D9219	SD1255 SD999	×	Local station error detect status	Stores conditions for up to numbers 49 to 64																

Specia ACPU	l register QCPU	Compati- bility	Name	Meaning	Explanation
D9220	SD1255	×	Local station parameters non-conforming; remote I/O	Stores conditions for up	
	SD999		station I/O allocation error	to numbers 1 to 16	
D9221	SD1255	×	Local station parameters non-conforming; remote I/O	Stores conditions for up	
	SD999		station I/O allocation error	to numbers 17 to 32	_
D9222	SD1255 SD999	×	Local station parameters non-conforming; remote I/O	Stores conditions for up	
			station I/O allocation error	to numbers 33 to 48	
D9223	SD1255 SD999	×	Local station parameters	Stores conditions for up	
			station I/O allocation error	to numbers 49 to 64	
D9224	SD1255	×	Local station and remote	Stores conditions for up	
	SD999		communications underway	to numbers 1 to 16	
D9225	SD1255	×	Local station and remote	Stores conditions for up	
	SD999		communications underway	to numbers 17 to 32	_
D9226	SD1255	~	Local station and remote	Stores conditions for up	
	SD999	^	communications underway	to numbers 33 to 48	
D9227	SD1255	~	Local station and remote	Stores conditions for up	
	SD999	~	communications underway	to numbers 49 to 64	
D9228	SD1255	×	Local station and remote	Stores conditions for up	
D0000	SD999 SD1255		Local station and remote	Stores conditions for up	
D9229	SD999	×	I/O station error	to numbers 17 to 32	_
D9230	SD1255 SD999	×	I/O station error	to numbers 33 to 48	
D9231	SD1255	×	Local station and remote	Stores conditions for up	
Dagaa	SD999 SD1255		Local station and remote	Stores conditions for up	
D9232	SD999	×	I/O station loop error	to numbers 1 to 8	
D9233	SD1255 SD999	×	Local station and remote	Stores conditions for up to numbers 9 to 16	
D9234	SD1255	×	Local station and remote	Stores conditions for up	
	SD999 SD1255		I/O station loop error	to numbers 17 to 24 Stores conditions for up	
D9235	SD999	SD999 ×	I/O station loop error	to numbers 25 to 32	_
D9236	SD1255	×	Local station and remote	Stores conditions for up	
00227	SD333	×	Local station and remote	Stores conditions for up	
D9237	SD999	~	I/O station loop error	to numbers 41 to 48	
D9238	SD9999	×	I/O station loop error	to numbers 49 to 56	
D9239	SD1255	×	Local station and remote	Stores conditions for up	
D9240	SD1255 SD999	×	Number of times	Storeg oursulative total of	
			communications errors	receive errors	-
D0244	SD1255			Stores conditions for up	
D9241	SD999	×	Local station link type	to numbers 33 to 48	-
D9242	SD1255 SD999	×	Local station link type	to numbers 49 to 64	
D9243	SD1255	×	Station number information	Stores station number (0	_
Dealt	SD999 SD1255		Number of link device	Stores number of slave	
D9244	SD999	×	stations	stations	-
D9245	SD1255	×	Number of times communications errors	Stores cumulative total of	_
	SD999		detected	receive errors	
7.6 Precautions for Replacing the MELSAP-II with the MELSAP3

The basic operation of the MELSAP3 is the same as the MELSAP-II, but the specifications are partially defferent.

This section provides the precautions for the replacement.

7.6.1 Starting SFC Program

The SFC program can be started by using the special relay for starting/stopping the SFC program. That special replay for the ACPU (M9101) is replaced with the special relay for the QCPU (SM321) upon converting from the ACPU to QCPU. The specifications of the special relay differ between the two CPUs.

Specif	Brocoutions for replacement		
MELSAP-II (M9101) MELSAP3 (SM321)			
Switches on and off with user	SFC program starts up at default,	When starting/stopping the SFC program	
operation.	since system is automatically turned	according to user conditions, turn the SM321	
	on.	to on/off with program.	

7.6.2 Block Information (SFC Information Device)

The MELSAP-II and MELSAP3 have different method of executing the "Block START/STOP" and "Reading of the number of active steps and active step numbers" with block information (SFC information device).

	Specifications		Proputions for replacement
	MELSAP-II	MELSAP3	Precautions for replacement
Block START/	[START]	[START]	[START]
STOP methods	Switching the block active bit on	Switching the block START/END	Adjusting program is not
	executes forced start.	bit on starts the concerned block	required when replacing the SFC
	[STOP]	forcibly.	program of the ACPU with the
	Switching the block clear bit on	[STOP]	QCPU, since in that case, the
	stops the block, and switching	Switching the block START/END	"Block active bit" is replaced with
	from on to off executes forced	bit off stops the concerned block	the "Block START/END bit".
	termination.	forcibly.	[STOP]
			Add the program that resets the
			"Block START/END bit" to the
			"Block clear bit".
			Delete the program that switches
			the "Block clear bit "on/off.
The number of	Reads the number of active	Reads only the number of active	To read the active step numbers,
active steps	steps in the corresponding block	steps in the corresponding block.	use the "Active step batch
and active step	and active step numbers.		readout instructions (MOV,
numbers			DMOV, BMOV)".
reading			

7.7 Precautions for Program Replacement

7.7.1 List of Applicable Devices

Devi	ice name	e	Q	CPU	QnACPU	
				Q02		
				Q02H		
				Q06H	_	
			Q00JCPU: 256 points	Q12H	Q2A: 512 points	
Number of	I/O point	s ^{*9}	Q00CPU: 1024 points	Q25H > 4096 points	Q2A-S1: 1024 points	
		-	Q01CPU: 1024 points	Q12PH	Q3A: 2048 points	
				Q25PH	Q4A: 4096 points	
				012PRH		
				025PRH		
Number of	I/O devic	:e				
noints ^{*8}	., 0 00110	.0	2048 points	8192	points	
Internal rela	av			8192 points ^{*1}		
Latch relay	, ,		2048 points ^{*1}	8192 p	points ^{*1}	
	Sequer	nce		· ·		
Step	program	n	-	-	-	
relay	SFC		2048 points ^{*6}	8192	points	
Annunciato	or		1024 points ^{*1}	2048 p	points ^{*1}	
Edge relay			1024 points ^{*1}	2048 p	points ^{*1}	
link relay			2048 points ^{*1}	8192 p	points ^{*1}	
Special rela	ays for lin	ık	1024 points	2048 points		
Timer	<u> </u>		512 points ^{*1}	2048 points ^{*1}		
Retritive tin	ner		· · · · ·	0 point ^{*1}		
Counter			512 points ^{*1}	1024 points*1		
Data regist	er		11136 points*1	12288 points*1		
link registe	r		2048 points ^{*1}	8192 points ^{*1}		
Link specia	al register		1024 points	2048	points	
Function in	puts			16 points (FX0 to FXF) *7		
Function ou	utputs			16 points (FY0 to FYF) *7		
Special rela	ау		1000 points	2048	points	
Function re	gisters			5 points (FD0 to FD4)		
Special reg	jister		1000 points	2048	points	
link direct d	device			Specified from J□\G□		
Special dire	ect device	es		Specified from U□\G□		
Index regio	tor	Z	10 points (Z0 to Z9)	16 points	(Z0~Z15)	
index regis	lei	V*2	-	-		
Eilo rogisto	r		32768 points/block*5	32768 points/block		
File register			(R0 to R32767)	(R0 to R32767)		
Accumulate	or ^{*3}		-			
Nesting			15 points			
Pointer			300 points 4096 points		points	
Interrupt po	Interrupt pointer		128 points	256 points 48 points		
SFC block			126 points*6	^{*6} 320 points		
SFC transit	tion devic	e	-	- 512 points		
Decimal co	onstant			K-2147483648 to K2147483647		
Hexadecim	nal consta	ant		H0 to HFFFFFFF		
Real consta	ant ^{*6}			E±1.17550–38 to E±3.40282+38		
Character s	string			"QnACPU","ABCD" ⁴		

*1 The number of points for use can be changed with parameters.

*2 "V" is used for edge relays for the QCPU/QnACPU.

*3 The format of instructions that use the accumulator for the AnNCPU/AnACPU/AnUCPU is changed for the Q/QnACPU.

*4 For the Q00JCPU, Q00CPU, and Q01CPU, they can be used with the \$MOV instruction.

*5 The Q00JCPU does not have file registers.

AnUCPU	AnACPU	AnNCPU	
-	-	A1N: 256 points	
A2U: 512 points	A2A: 512 points	A2N: 512 points	
A2U-S1: 1024 points	A2A-S1: 1024 points	A2N-S1: 1024 points	
A3U: 2048 points	A3A: 2048 points	A3N: 2048 points	
A4U: 4096 points	-	-	
8192 points	Same I/O device points of	f applicable CPU module	
Total 91	02 points	Total 2048 points	
	ez points	-	
	-		
2048	points	256 points	
	-		
8192 points	4096 points	1024	
	56 points		
Total 2048 points		Total 256 points	
1024	points	256 points	
8192 points	6144 points	1024 points	
8192 points	4096 points	1024 points	
	56 points		
	-		
	256 points		
	-		
	256 points		
	-		
7	-		
/ points ($\angle, \angle 1 (0 \angle 0)$	1 point (\angle)	
	v, v i lu voj	r point (V)	
8192 points/block (R0 to R8191)			
	2 points		
8 points			
	256 points		
	32 points		
	-		
	-		
	K-214/483648 to K214/483647		
	_		
	—		

*6 Applicable to the first 5 digits of serial number (Q00JCPU, Q00CPU and Q01CPU) of 04122 or higher.

*7 Each 5 points of FX0 to FX4 and FY0 to FY4 can be used on the programs.

*8 The number of points that can be used on the programs

*9 The number of accessible points to actual I/O modules

7.7.2 I/O Control Method

O: Usable, -: Not usable

I/O control method			QCPU	QnACPU	AnUCPU	AnACPU	AnNCPU
Refresh mode		0	0	0	0	O*2	
		Pertial refresh instructions	0	0	0	0	0
	Direct I/O	Dedicated instructions*1	-	-	0	0	-
	method	Direct access input	0	0	-	-	-
		Direct access output	0	0	-	-	-
Direct mode		-	_	_	_	O*2	

*1 The direct output dedicated instructions include the DOUT, DSET and SRST instruction and do not include the direct input dedicated instructions.

*2 The DIP switch on the AnNCPU enables to switch between refresh mode and direct mode.

7.7.3 Usable Data Format for Instructions

Setting	data	QCPU	QnACPU	AnUCPU	AnACPU	AnNCPU
	Bit device	0		0	0	0
Bit data	Mord dovice	(\mathbf{D}			
	word device	(Bit designat	ion required)	—	—	—
				0	0	0
	Dit dovice	0)	(Digit	(Digit	(Digit
Word data	Bit device	(Digit designa	tion required)	designation	designation	designation
				required)	required)	required)
	Word device	()	0	0	0
				0	0	0
	Bit device	0)	(Digit	(Digit	(Digit
Double-word data		(Digit designa	tion required)	designation	designation	designation
				required)	required)	required)
	Word device	()	0	0	0
Real number data		0	*1	0	0	\bigtriangleup
Character string data		0	*2	_	_	-

O: Usable, \triangle : Condicional usable, -: Not usable

*1 Applicable to the first 5 digits of serial number (Q00J/Q00/Q01CPU) of 04122 or higher.

*2 For the Q00J/Q00/Q01CPU, it can be used with the \$MOV instruction.

7.7.4 Timer

Function		QCPU/QnACPU	AnUCPU AnACPU AnNCPU	
Low-speed • 100ms (Default) Measure- ment unit Changeable in the range of 1 to 1000ms (Parameter) Low-speed • 100ms (Default)		 100ms (Default) Changeable in the range of 1 to 1000ms (Parameter) (QnACPU: 10 to 1000ms) 	Fixed to 100ms	
timer	Specifying method			
High spood	Measure- ment unit	10ms (Default) Changeable in the range of 0.1 to 100ms (parameter) (QnACPU: 1 to 100ms)	Fixed to 10ms	
timer	Specifying method	Specifying the high speed timer H K100	H H → K100 →	
	Measure- ment unit	The same measurement unit as low- speed timer	Fixed to 100ms	
Retentive timer	Retentive timer Specifying method K100 ST0			
	Measure- ment unit	 The same measurement unit as high- speed timer 		
High-speed retentive timer	Specifying method	Specifying the high speed timer H K100 ST0	• None	
Setting range for set value		• 1 to 32767	• 1 to 32767	
Processing the s	et value 0	Instant-ON	Infinite (No time up)	
Updating presen	t value			
ON/OFF processing for contact		When executing the OUT Tn instruction	When executing the END processing	

(1) Precautions for using timer

(a) Q/QnACPU timer ladder programming method

Set the number of points for the timer and retentive timer in the Device setting of the parameter setting. To use the low-speed timer, high-speed timer, retentive timer and high-speed retentive timer separately, add "H" or "S" to the OUT instruction in programming.

Ex.) Low-speed timer	:OUT	Т0	Kn
High-speed timer	:OUTH	Т0	Kn
Low-speed retentive timer	:OUT	ST0	Kn
High-speed retentive timer	:OUTH	ST0	Kn

(b) ACPU timer ladder programming method

Set the total number of points of timer, and the first device number of low-speed timer, high-speed timer and retentive timer in the Device setting of the parameter setting.

The default setting is as follows:

Number of points of timer: 256

First device number of low-speed timer: 0 (T0 to T199)

First device number of high-speed timer: 200 (T200 to T255)

First device number of retentive timer: 0.

When using the retentive timer, change the setting to reserve necessary number of points.

7.7.5 Counter

Function	QCPU/QnACPU	AnUCPU AnACPU AnNCPU
Specifying method		
Updating present value		
ON/OFF processing for	When executing the OUT Cn instruction	 When executing the END instruction
contact		

7.7.6 Display Instructions

Instruction	QCPU/QnACPU	AnUCPU AnACPU AnNCPU
PR ¹¹	 With SM701 OFF: Outputs characters before 00_H. With SM701 ON: Outputs 16 characters. 	 With M9049 OFF: Outputs characters before 00_H. With M9049 ON: Outputs 16 characters.
PRC *1	 With SM701 OFF: Outputs comments in 32 characters. With SM701 ON: Outputs first 16 characters of comment. 	Outputs comment in 16 characters.

*1 Not applicable for the Q00J/Q00/Q01CPU

7.7.7 Instructions where Format is Changed (Excluding AnACPU/AnUCPU Dedicated Instructions)

Instructions using the accumulator for the AnUCPU/AnACPU/AnNCPU are changed in their format, since the QCPU/QnACPU do not have the accumulator (A0, A1). The accumulator A0 is converted to SD718, the accumulator A1 is converted to SD719.

Function	QCPU/Qn/	ACPU	AnUCPU/AnACPU/AnNCPU		
Function	Format of instructions	Remarks	Format of instructions	Remarks	
	- ROR D n	D: Rotation data	- ROR n	 Rotation data is set in A0. 	
16-bit data	- RCR D n	 D: Rotation data Use SM700 for carry flag 	- RCR n-	 Rotation data is set in A0. Use M9012 for carry flag. 	
Left relation of 40	- ROL D n	D: Rotation data	- ROL n	Rotation data is set in A0.	
Left rotation of 16- bit data		 D: Rotation data Use SM700 for carry flag 	- RCL n	 Rotation data is set in A0. Use M9012 for carry flag. 	
	- DROR D n	D: Rotation data		Rotation data is set in A0, A1.	
Right rotation of 32-bit data		 D: Rotation data Use SM700 for carry flag 		 Rotation data is set in A0, A1. Use M9012 for carry flag. 	
	-DROLD n-	D: Rotation data	-DROL n-	Rotation data is set in A0, A1.	
Left rotation of 32- bit data		 D: Rotation data Use SM700 for carry flag 		 Rotation data is set in A0, A1. Use M9012 for carry flag. 	
16-bit data search	- SER S1S2 D n -	 Search result is stored in D, D +1 device 	- SER S1 S2 n -	Search result is stored in A0, A1.	
32-bit data search	-DSER S1 S2 D n	 Search result is stored in D, D +1 device 	-DSER S1 S2 n	Search result is stored in A0, A1.	
16-bit data checks	- SUM S D-	Check result is stored in D device		Check result is stored in A0.	
32-bit data checks	-DSUM S D-	Check result is stored in D device		Check result is stored in A0.	
Partial refresh	- RFS D n-	 Add dedicated instruction 	- SEG D n-	 Only when M9052 is on.^{*2} 	
8-characters ASCII conversion	- \$MOV (Charactor strings) D		- ASC (Charactor strings) D	*3	
Carry flag set	- SET SM700-	 No dedicated instruction 	-STC -	*3	
Carry flag reset	- RST SM700-	 No dedicated instruction 		*3	
Jump to END instruction	GOEND	Add dedicated instruction	- CJ P255	 P255: END instruction specification^{*3} 	
CHK instruction ^{*1}	+ СНКЅТ- + - - ++ -СНК	Add CHKST instruction	H	*3	

*1 Not applicable to the Q00J/Q00/Q01CPU

*2 Deleting or adjusting is required, since it becomes the instruction of different function.

*3 Converted to "SM1255" as unconvertible instruction.

7.7.8 AnACPU/AnUCPU Dedicated Instruction

(1) Display method of dedicated instruction

The dedicated instructions for the AnACPU/AnUCPU using LEDA, LEDB, LEDC, and LEDR instructions are changed into instructions in the same format as basic instructions and application instructions for the QCPU/QnACPU.

Replace or delete instructions that has been converted to the OUT SM1255/OUT SM999.



(2) Dedicated instruction with changed instruction name

For the AnACPU/AnUCPU, some instruction names are the same as the basic instructions/application instructions. Those names have been changed for the QCPU/QnACPU.

Function	QCPU/QnACPU	AnACPU/AnUCPU
Floating decimal point addition	E+	ADD
Floating decimal point subtraction	E-	SUB
Floating decimal point multiplication	E*	MUL
Floating decimal point division	E/	DIV
Data dissociation	NDIS	DIS
Data linking	NUNI	UNI
Check pattern updates	CHKCIR,CHKEND	CHK,CHKEND

7.7.9 Setting Method when Multiple Sequence Programs are Created

For the ACPU, some programs include main program and subprogram, and main programs have SFC programs. When replacing those programs with the QCPU, they are separated into different programs. For the separated programs in the QCPU, the Program setting of the parameter setting is required. This section provides precautions after replacement of program settings, etc.

(1) Program files at replacement

(a) When the main program and subprogram are operated as one program in CPU

Register in the order of MAIN, SUB1, SUB2 in the Program setting of the PLC parameter of GX Developer, and set all the execution types to "Scan". Default upon the registration is "Scan".



(b) When ACPU has interrupt program

For the ACPU, the main program and subprogram have the same interrupt program. For the QCPU, delete interrupt programs except one of them, since the QCPU can assign one interrupt pointer per program.

When programs of the same interrupt pointer exist, CPU will result in error when interrupt condition is satisfied.

Register in order of MAIN, SUB1 in the PLC parameter program setting of the GX Developer, and set all execution type to "Scan".



(c) When main program contains SFC program

For the ACPU, the SFC program operates as the microcomputer program of main program. Since the QCPU deals the SFC program as one program, the SFC program is converted to "MAIN-SFC". Accordingly, two separate programs are created when the ACPU is converted; "MAIN", converted from main program, and "MAIN-SFC".

Register in the order of MAIN, MAIN-SFC in the Program setting of the parameter setting of GX Developer, and set all execution types to "Scan".

Refer to Section 7.6 for precautions of replacing from the ACPU SFC (MELSAP-II) to the QCPU (MELSAP3).



(2) Program setting of the GX Developer

The following explains required program settings for executing multiple programs. The execution type of program is set in Program setting of the PLC parameter setting of the GX Developer.

A CPU module executes the programs of the specified execution type in the setting order.



(a) Program name

Set a name for a program to be executed with a CPU module.

(b) Execution type

Select the execution type of files set in the program name.

- Initial execution type (Initial)
 This type of programs is executed only one time, when switching the power supply from off to on
 or STOP status to RUN status.
- Scan execution type (Scan)
 This type of programs is executed every scan, after having executed the initial execution type program.
- Low speed execution type (Low speed)
 This type of programs is executed only when the constant scan or low speed type program execution time is set.

4) Stand-by type (Wait)

This type of program is executed only when demanded.

5) Fixed scan execution type (Fixed scan)

This type of program is executed per interval set in the "Fixed scan interval" and "In unit".

Fixed scan interval

Sets the program execution interval of fixed execution type program. Setting range depends on the unit set in the fixed scan interval.

- For "ms": 0.5 to 999.5ms (0.5ms unit)
- For "s": 1 to 60s (1s unit)
- Unit

Selects the unit ("ms" or "s") for the fixed scan interval.

7.7.10 Precautions for File Register Replacement

This section provides precautions for replacing the ACPU or QnACPU using file registers with the QCPU.

	ACPU	QnACPU	QCPU
Storage destination	Memory cassette	Memory card (Up to 2 cards, 4 drives)	Standard RAMMemory card (1card)
Maximum number of points	f points Depends on applicable memory cassette used 1018k points × 2 (When using two 2M memory cards)		Standard RAM: Up to 128k points (Depending on CPU type name) 1017k points (When using a 2M memory card)
Number of points for 1 block	8k points	32k points	32k points

(1) Changing storage destination after replacement

(a) Changing storage destination after replacement of the ACPU

The value whose capacity has been set with the parameter of ACPU is not converted, since the storage destination is different.

Set the storage destination and capacity (points) in the file setting of the PLC parameter setting. Be sure to select "Use the following file" when setting the storage destination. Selecting "Use the following file" makes the file equivalent to the ACPU.

(b) Changing storage destination after replacement of the QnACPU

Drive No. for storing file registers differs between the QnACPU and QCPU. Set the parameters (Standard RAM, memory card (RAM), memory card (ROM)) according to the drive where the file register is stored.

(2) Maximum number of points

1) Maximum number of points after replacement of the ACPU

For the ACPU with the memory cassette A4UMCA-128, the memory capacity is 1MB. When replacing the ACPU with the QCPU, installing the SRAM card of 1MB or more secures the file register capacity of the ACPU.

2) Maximum number of points after replacement of the QnACPU

When two memory cards have been installed and files have been switched in using, the maximum number of points may not be secured after replacing the QnACPU with the QCPU.

(3) Number of points for one block

1) Number of points for one block after replacement of the ACPU

For the ACPU with the extension file registers, the number of points for one block is 8k points. For the QCPU, the number of points for one block is 32k points.

2) Number of points for one block after replacement of the QnACPU Definition of file register capacity is the same for the QnACPU and QCPU. When the storage destination and maximum number of points are the same, program adjustment for file registers is not required.

7.7.11 Boot Run Method (Writing Programs to ROM)

The ROM operation of the ACPU corresponds to the boot run of the QCPU. The overview of the boot run is explained below.

Refer to QCPU User's Manual (Function Explanation, Program Fundamentals) for details.

(1) QCPU boot run procedure

Step 1: Setting Boot file

In the Boot file setting of the PLC parameter of the GX Developer, set the file name and storage destination of the sequence program and parameter to be executed.

Step 2: Writing to standard ROM

Using the GX Developer, write the sequence program and parameter to the standard ROM.

Step 3: Setting the switch of the QCPU

Using the DIP switch of the QCPU, set the storage destination of parameter in the standard ROM.

Step 4: Executing the program

Reset with the RESET/L.CLR switch. The operation starts with the BOOT LED lit.

8 EXTERNAL DIMENSIONS

8.1 Q Series External Dimensions and Mounting Dimensions



Unit: mm (inch)

Base		Dimensions			Dimensions	for mounting	
unit	Н	W	D * 1	H1	H2	W1	W2
Q32SB		114 (4.49)				101 (3.98)	0.5
Q33SB		142 (5.59)				129 (5.08)	(0.33)
Q35SB		197.5 (7.78)				184.5 (7.26)	(0100)
Q33B		189 (7.44)				169 (6.65)	
Q35B		245 (9.65)				224.5 (8.84)	
Q38B		328 (12.92)	0.0*2	80	7	308 (12.13)	
Q312B	98 (3.86)	439 (17.30)	98 - (3.86)	80 (3.15)	(0.28)	419 (16.50)	
Q52B	(0.00)	106 (4.17)	(0.00)	(0.10)	(0.20)	83.5 (3.29)	15.5
Q55B		189 (7.44)				167 (6.57)	(0.61)
Q63B		189 (7.44)				167 (6.57)	
Q65B		245 (9.65)				222.5 (8.76)	
Q68B		328 (12.92)				306 (12.05)	
Q612B		439 (17.30)				417 (16.42)	
QA1S65B	130	315 (12.41)	110 ^{*3}	110	10	295 (11.61)	
QA1S68B	(5.12)	420 (16.55)	(4.33)	(4.33)	(0.39)	400 (15.75)	10
QA65B	250 (9.84)	352 (13.86)	130 ^{*4} (5.12)	200 (7.87)	25 (0.98)	332 (13.07)	(0.39)

*1 D (depth) varies depending on the module to be mounted. Therefore, confirm the external dimensions of each module.

*2 For mounting Q series module of which depth is 90 mm.

*3 For mounting AnS series module of which depth is 93.6 mm.

*4 For mounting A series module of which depth is 121 mm.

8.2 Q Series External Dimensions and Mounting Dimensions when Mounted with the Upgrade Tool



Unit: mm (inch)

Base adapter		Dimensions			Dimension	MELSEC-A series		
Base adapter	Н	W	D * 1	H1	H2	W1	W2	unit
ERNT-AQB38		480 (18.89)				460 (18.11)		A38B, A38HB
ERNT-AQB68		466 (18.35)				446 (17.56)		A68B
ERNT-AQB58		411 (16.18)				391 (15.39)		A58B
ERNT-AQB35	0.40	382 (15.04)	166 0*2	000	05	362 (14.25)	40	A35B
ERNT-AQB65	240 (9.44)	352 (13.86)	(6 54)	(7.87)	(0.98)	332 (13.07)	10 (0.39)	A65B
ERNT-AQB55	(0.11)	297 (11.69)	(0.04)	(1.01)	(0.00)	277 (10.90)	(0.00)	A55B
ERNT-AQB32		247 (9.73)				227 (8.93)		A32B
ERNT-AQB62		238 (9.37)				218 (8.58)		A62B
ERNT-AQB52		183 (7.20)				163 (6.42)		A52B

*1 D (depth) varies depending on the upgrade tool (Conversion adapter) to be used. Therefore, confirm the external dimensions of a upgrade adapter.

*2 For using the upgrade tool (Conversion adapter) ERNT-AQTY22. The upgrade tool is manufactured by Mitsubishi Electric Engineering Co., Ltd.

8.3 A Series External Dimensions and Mounting Dimensions



Unit: mm (inch)

MELSEC

Base		Dimensions			Dimensions	s for mounting	
unit	Н	W	D * 1	H1	H2	W1	W2
A32B		247 (9.72)				227 (8.94)	
A32B-S1		268 (10.56)				248 (9.76)	
A35B		382 (15.04)				362 (14.25)	
A38B		480 (18.90)				460 (18.11)	
A38HB		480 (18.90)				460 (18.11)	
A38HBEU		480 (18.90)				460 (18.11)	
A32RB		494 (19.45)				474 (18.66)	
A33RB	250	570 (22.44)	130 ^{*2}	200	25	550 (21.65)	10
A37RHB	250	497 (19.57)	(5.12)	(7.87)	(0.98)	477 (18.78)	(0.39)
A52B		183 (7.20)				163 (6.42)	
A55B		297 (11.69)				277 (10.91)	
A58B		411 (16.18)				391 (15.39)	
A62B		238 (9.37)				218 (8.58)	
A65B		352 (13.86)				332 (13.07)	
A68B		466 (18.35)				446 (17.56)	
A68RB		522 (20.55)				502 (19.76)	

*1 D (depth) varies depending on the module to be mounted. Therefore, confirm the external dimensions of each module to be mounted.

*2 For mounting A series module of which depth is 121 mm.

APPENDICES

Appendix 1 Related Manuals

Appendix 1.1 Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook

No.	Manual Name	Manual Number	Model Code
1	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Fundamentals)	L-08043ENG	_
2	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Intelligent Function Modules)	L-08046ENG	_
3	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Network Modules)	L-08048ENG	_
4	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Communications)	L-08050ENG	_

Appendix 1.2 A/QnA Series

No.	Manual Name	Manual Number	Model Code
1	MELSEC-A/QnA Catalog	L-08033E	_
2	MELSEC-A/QnA Data Book	L-08029E	_
3	Type A1N/A2N (S1) / A3NCPU User's Manual	IB-66543	13JE83
4	Type A2A (S1) / A3ACPU User's Manual	IB-66544	13JE84
5	Type A2U (S1) / A3U/A4UCPU User's Manual	IB-66436	13JE25
6	Q2A CPU (S1) / Q3ACPU/Q4ACPU User's Manual	IB-66608	13J821
7	Type A2CCPU (P21/R21) , A2CCPU-DC24V, A2CCPUC24 (-PRF) , A2CJCPU User's Manual	IB-66545	13JE85
8	Type ACPU/QCPU-A (A Mode) (Fundamentals) Programming Manual	IB-66249	13J740
9	Type ACPU/QCPU-A (A Mode) (Common Instructions) Programming Manual	IB-66250	13J741
10	Type AnSHCPU/AnACPU/AnUCPU/QCPU-A (A Mode) Programming Manual (Dedicated Instructions)	IB-66251	13J742
11	Type AnACPU/AnUCPU/QCPU-A (A mode) Programming Manual (PID Control Instructions)	IB-66258	13J744
12	Type MELSAP-II(SFC) Programming Manual	IB-66361	13JF40
13	QnACPU Programming Manual (Fundamentals)	IB-66614	13JF46
14	QnACPU Programming Manual (Special Function Module)	SH-4013	13JF56
15	QCPU(Q Mode)/QnACPU Programming Manual (Common Instructions)	SH-080039	13JF58
16	QCPU(Q Mode)/QnACPU Programming Manual (PID Control Instructions)	SH-080040	13JF59
17	QCPU(Q Mode)/QnACPU Programming Manual (SFC)	SH-080041	13JF60
18	I/O module type Building block User's Manual	IB-66140	13J643
19	A/D converter module type A68AD User's Manual	IB-66054	13J607
20	A/D converter module type A68AD-S2 User's Manual	IB-66213	13J647
21	Analog-Digital Converter Module type A68ADN User's Manual	IB-66307	13J668
22	Analog-Digital Converter Module type A616AD User's Manual	IB-66171	13J645
23	D/A converter module type A62DA User's Manual	IB-66053	13J608

No.	Manual Name	Manual Number	Model Code
24	D/A converter module type A62DA-S1 User's Manual	IB-66177	13J648
25	Digital-Analog Converter Module type A68DAV/DAI(S1) User's Manual	IB-66285	13J667
26	Digital-Analog Converter Module type A616DAV User's Manual	IB-66172	13J650
27	Digital-Analog Converter Module type A616DAI User's Manual	IB-66173	13J651
28	Pt100 input module type A68RD3/4 User's Manual	IB-66308	13J670
29	Type A68RD3N/4N, A1S62RD3N/4N Pt100 Input Module User's Manual	SH-080193	13JR46
30	Temperature-Digital Converter Module type A616TD User's Manual	IB-66174	13J654
31	High speed counter module type AD61-S1 User's Manual	IB-66052	13J610
32	Positioning module type AD70 User's Manual	IB-66309	13J663
33	Positioning Module Type AD72 User's Manual	IB-66095	13J622
34	A1SD75P1-S3/P2-S3/P3-S3,AD75P1-S3/P2-S3/P3-S3 Positioning Module User's Manual	IB-66716	13J871
35	Positioning module type A1SD75M/M2/M3, AD75M1/M2/M3 User's Manual	IB-66715	13J870
36	Type MELSECNET, MELSECNET/B Data Link System Reference Manual	IB-66350	13JF70
37	Control & Communication Link System Master/Local Module Type AJ61BT11/A1SJ61BT11 User's Manual	IB-66721	13J872
38	For A Ethernet Interface Module User's Manual	SH-080192	13JR45
39	For QnA Ethernet Interface Module User's Manual	SH-080146	13JR33
40	Computer Link Module (Com.link func./Print. func.) User's Manual	SH-3511	13JF77
41	Serial Communications Module User's Manual (Modem Function Additional Version)	SH-66612	13J825
42	Intelligent Communication Module type AD51-S3 User's Manual	IB-66189	13J655
43	Intelligent communication module type AD51H-S3 User's Manual	IB-66401	13JE16
44	MELSECNET/MINI-S3 Master Module Type AJ71PT32-S3, AJ71T32-S3, A1SJ71PT32-S3, A1SJ71T32-S3 User's Manual	SH-66565	13JE64
45	MELSEC-I/O Link Remote I/O System Master Module type AJ51T64/ A1SJ51T64 User's Manual	SH-66574	13J748
46	Type MELSECNET/10 Network system (PLC to PLC network) Reference Manual	IB-66440	13JE33
47	For QnA/Q4AR MELSECNET/10 Network System Reference Manual	IB-66690	13JF78
48	Control & Communication Link System Master/Local Module type AJ61QBT11/A1SJ61QBT11 User's Manual	IB-66722	13J873
49	Positioning Module Type AD71(S1/S2/S7)/A1SD71-S2(S7) User's Manual	IB-66563	13JE98
50	PC fault detection module type AS91, A1SS91, A0J2-S91 User's Manual	IB-66626	13J828

Appendix 1.3 Q Series

No.	Manual Name	Manual Number	Model Code
1	MELSEC-Q Catalog	L-08033E	
2	MELSEC-Q Data Book	L-08029E	-
3	QCPU User's Manual(Hardware Design, Maintenance and Inspection)	SH-080483ENG	13JP73
4	QCPU User's Manual (Function Explanation, Program Fundamentals)	SH-080484ENG	13JP74
5	QA65B Extension Base Unit User's Manual	IB-0800158	13JR26
6	QCPU(Q Mode)/QnACPU Programming Manual (Common Instructions)	SH-080039	13JF58
7	QCPU(Q Mode)/QnACPU Programming Manual (PID Control Instructions)	SH-080040	13JF59
8	QCPU(Q Mode)/QnACPU Programming Manual (SFC)	SH-080041	13JF60
9	I/O Module Type Building Block User's Manual	SH-080042	13JL99
10	Analog-Digital Converter Module User's Manual Q64AD/Q68ADV/Q68ADI/ GX Configurator-AD	SH-080055	13JR03
11	Channel Isolated High Resolution Analog-Digital Converter Module Channel Isolated High Resolution Analog-Digital Converter Module (With Signal Conditioning Function) User's Manual	SH-080277	13JR51
12	Digital-Analog Converter Module User's Manual	SH-080054	13JR02
13	Channel Isolated Digital-Analog Converter Module User's Manual	SH-080281E	13JR52
14	Temperature Control Module User's Manual	SH-080121	13JR21

APPENDICES

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No	Manual Nama	Manual Number	Model Code
NO.			Model Code
15	Thermocouple Input Module Channel Isolated Thermocouple/Micro Voltage	SH-080141	13JR30
16	PTD Input Module Channel Isolated PTD Input Module Liser's Manual	SH-080142	13 IP31
10		011-0001-42	1001001
17	High-Speed Counter Module User's Manual	SH-080036	13JL95
18	Channel Isolated Pulse Input Module User's Manual	SH-080313E	13JR54
19	Type QD75P/QD75D Positioning Module User's Manual	SH-080058	13JR09
20	Type QD70 Positioning Module User's Manual	SH-080171	13JR39
21	User's Manual Type QD75M Positioning Module (Details)	IB-0300062	ICT752
22	Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)	SH-080049	13JF92
23	Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network)	SH-080124	13JF96
24	CC-Link System Master/Local Module User's Manual QJ61BT11N	SH-080394E	13JR64
25	Q Corresponding Ethernet Interface Module User's Manual (Basic)	SH-080009	13JL88
26	Q Corresponding Serial Communication Module User's Manual (Basic)	SH-080006	13JL86
27	Q Corresponding Intelligent Communication Module User's Manual	SH-080089	13JR16
28	FL-net(OPCN-2) Interface Module User's Manual	SH-080350E	13JR61
29	AS-i Master module type A1SJ71AS92 User's Manual	SH-080085	13JR15

Appendix 1.4 Programming Tool

No.	Manual Name	Manual Number	Model Code
1	GX Developer Version 8 Operating Manual	SH-080373E	13JU41
2	GX Developer Version 8 Operating Manual (SFC)	SH-080374E	13JU42
3	GX Simulator Version 6 Operating Manual	SH-080169	13JU17
4	Type SW4IVD-GPPA (GPP) Operating Manual	IB-66855	13JL62

Appendix 1.5 Related Catalog Manufactured by Mitsubishi Electric Engineering Co., Ltd.

No.	Catalog name	Catalog Namber
1	Mitsubishi Programmable Logic Controller Upgrade Tool	SAN C033E-04Z

Memo

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company. However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
 Even within the gratis warranty term, repairs shall be charged for in the following cases.
 - Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 - 2. Failure caused by unapproved modifications, etc., to the product by the user.
 - 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 - 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 - 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 - 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 - 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
- Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

- (1) In using the Mitsubishi MELSEC programmable logic controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable logic controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- (2) The Mitsubishi programmable logic controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable logic controller applications.

In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable logic controller range of applications.

However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

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Mitsubishi Programmable Logic Controller

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