



Mitsubishi Programmable Controller

Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series Handbook

(Intelligent Function Modules)



May. 2015 Edition

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

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

In this manual, the safety precautions are classified into two levels: "NARNING" and "NCAUTION".

/ WARNING

Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

!CAUTION

Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "____CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system
 operates safely even when a fault occurs in the external power supply or the programmable
 controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
 - (1) Configure external safety circuits, such as an emergency stop circuit, protection circuit, and protective interlock circuit for forward/reverse operation or upper/lower limit positioning.
 - (2) When the programmable controller 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	AnS series module
(a) The power supply module has over current protection equipment and over voltage protection equipment.	Output OFF	Output OFF
(b) The CPU module self-diagnosis functions, such as the watchdog timer error, detect problems.	Hold or turn off all output according to the parameter setting.	Output OFF

Also, all outputs may be turned on if an error occurs in a part, such as an I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller.

For a fail-safe circuit example, refer to LOADING AND INSTALLATION in the QCPU User's Manual (Hardware Design, Maintenance and Inspection).

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

[Design Precautions]

WARNING

- In an output module, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply.
 - If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to relevant manuals for each network.
 - Failure to do so may result in an accident due to an incorrect output or malfunction.
- When changing data of the running programmable controller from a peripheral connected to the CPU module or from a personal computer connected to an intelligent function module or special function module, configure an interlock circuit in the sequence program to ensure that the entire system will always operate safely.

For program modification and operating status change, read relevant manuals carefully and ensure the safety before operation.

Especially, when a remote programmable controller is controlled by an external device, immediate action cannot be taken if a problem occurs in the programmable controller due to a communication failure.

To prevent this, configure an interlock circuit in the sequence program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

!CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables.
 - Keep a distance of 100mm or more between them.
 - Failure to do so may result in malfunction due to noise.
- When a device such as a lamp, heater, or solenoid valve is controlled through an output module, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on.
 - Take measures such as replacing the module with one having a sufficient current rating.
- After the CPU module is powered on or is reset, the time taken to enter the RUN status varies
 depending on the system configuration, parameter settings, and/or program size. Design circuits so
 that the entire system will always operate safely, regardless of the time.

[Installation Precautions]

CAUTION

- Use the programmable controller in an environment that meets the general specifications in the QCPU User's Manual (Hardware Design, Maintenance and Inspection).
 - Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To mount the module, while pressing the module mounting lever located in the lower part of the module, fully insert the module fixing projection(s) into the hole(s) in the base unit and press the module until it snaps into place.

Incorrect mounting may cause malfunction, failure or drop of the module.

When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.

Tighten the screws within the specified torque range.

Undertightening can cause drop of the screw, short circuit, or malfunction.

Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.

 When using an extension cable, connect it to the extension cable connector of the base unit securely.

Check the connection for looseness.

Poor contact may cause incorrect input or output.

- When using a memory card, fully insert it into the memory card slot.
 - Check that it is inserted completely.
 - Poor contact may cause malfunction.
- Shut off the external power supply (all phases) used in the system before mounting or removing a module. Failure to do so may result in damage to the product. A module can be replaced online (while power is on) on any MELSECNET/H remote I/O station or in the system where a CPU module supporting the online module change function is used.
 - Note that there are restrictions on the modules that can be replaced online, and each module has its predetermined replacement procedure.
 - For details, refer to the relevant sections in the QCPU User's Manual (Hardware Design,
 - Maintenance and Inspection) and in the manual for the corresponding module.
- Do not directly touch any conductive part of the module.
 - Doing so can cause malfunction or failure of the module.

[Wiring Precautions]

WARNING

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

CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100Ω or less.
 - Failure to do so may result in electric shock or malfunction.
- Use applicable solderless terminals and tighten them within the specified torque range.
 If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Check the rated voltage and terminal layout before wiring to the module, and connect the cables correctly.
 - Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Connectors for external devices must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered.
 - Incomplete connections may cause short circuit, fire, or malfunction.
- Tighten the terminal screws within the specified torque range.
 - Undertightening can cause short circuit, fire, or malfunction.
 - Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- Prevent foreign matter such as dust or wire chips from entering the module.
 - Such foreign matter can cause a fire, failure, or malfunction.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring.
 - Do not remove the film during wiring.
 - Remove it for heat dissipation before system operation.
- Mitsubishi programmable controllers must be installed in control panels.
 - Connect the main power supply to the power supply module in the control panel through a relay terminal block.
 - Wiring and replacement of a power supply module must be performed by qualified maintenance personnel with knowledge of protection against electric shock.
 - For wiring methods, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection).

[Startup and Maintenance Precautions]

WARNING

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

CAUTION

- Before performing online operations (especially, program modification, forced output, and operating status change) for the running CPU module from the peripheral device connected, read relevant manuals carefully and ensure the safety.
 - Improper operation may damage machines or cause accidents.
- Do not disassemble or modify the modules.
 - Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm away in all directions from the programmable controller.
 Failure to do so may cause malfunction.
- Shut off the external power supply (all phases) used in the system before mounting or removing a module. Failure to do so may cause the module to fail or malfunction.
 - A module can be replaced online (while power is on) on any MELSECNET/H remote I/O station or in the system where a CPU module supporting the online module change function is used.
 - Note that there are restrictions on the modules that can be replaced online, and each module has its predetermined replacement procedure.
 - For details, refer to this manual and the online module change section in the manual of the module compatible with online module change.
- After the first use of the product, do not mount/remove the module to/from the base unit, and the terminal block to/from the module more than 50 times (IEC 61131-2 compliant) respectively.
 Exceeding the limit of 50 times may cause malfunction.
- Do not drop or apply shock to the battery to be installed in the module.
 - Doing so may damage the battery, causing the battery fluid to leak inside the battery.
 - If the battery is dropped or any shock is applied to it, dispose of it without using.
- Before handling the module, touch a conducting object such as a grounded metal to discharge the static electricity from the human body.
 - Failure to do so may cause the module to fail or malfunction.

[Disposal Precautions]

CAUTION

When disposing of this product, treat it as industrial waste.
 When disposing of batteries, separate them from other wastes according to the local regulations.
 For details on battery regulations in EU member states, refer to the MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection).

[Transportation Precautions]

<u>^</u>CAUTION

When transporting lithium batteries, follow the transportation regulations.
 (Refer to QCPU User's Manual (Hardware Design, Maintenance and Inspection) for details of the controlled models.)

CONDITIONS OF USE FOR THE PRODUCT

- (1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
 - i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
 - ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.
- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT. ("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any
 other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as
 Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation,
 Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or
 Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a
 significant risk of injury to the public or property.

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

REVISIONS

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		Partial correction
		Section 3.1, SAFETY PRECAUTIONS, GENERIC TERMS AND ABBREVIATIONS
		ABBREVIATIONS

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- For the products shown in handbooks for transition, catalogues, and transition examples, refer to the manuals for the relevant products and check the detailed specifications, precautions for use, and restrictions before replacement.
 - For the products manufactured by Mitsubishi Electric Engineering Co., Ltd., Mitsubishi Electric System & Service Co., Ltd., and other companies, refer to the catalogue for each product and check the detailed specifications, precautions for use, and restrictions before use.
 - The manuals and catalogues for our products, products manufactured by Mitsubishi Electric Engineering Co., Ltd., and Mitsubishi Electric System & Service Co., Ltd. are shown in Appendix of each handbook for transition.
- Products shown in this handbook are subject to change without notice.

GENERIC TERMS AND ABBREVIATIONS

Unless otherwise specified, this handbook uses the following generic terms and abbreviations.

■Series Abbreviation for large types of Mitsubishi MELSEC-A series programmable controllers Ans series Abbreviation for compact types of Mitsubishi MELSEC-A series programmable controllers Ans series Generic term for A series and Ans series Cans series Abbreviation for large types of Mitsubishi MELSEC-QnA series programmable controllers Cans series Abbreviation for compact types of Mitsubishi MELSEC-QnA series programmable controllers Cans series Cans serie	Generic term/abbreviation	Description
AnS series Abbreviation for compact types of Mitsubishi MELSEC-A series programmable controllers A/AnS series Generic term for A series and AnS series QnA series Abbreviation for large types of Mitsubishi MELSEC-QnA series programmable controllers QnAS series Abbreviation for large types of Mitsubishi MELSEC-QnA series programmable controllers QnA/Sneries QnA/QnAS series Generic term for QnA series and QnAS series Qeneric term for A series, AnS series, QnA series, and QnAS series Qeneric term for A series, AnS series, QnA series, and QnAS series Qeries Abbreviation for Mitsubishi MELSEC-Q series programmable controllers ©CPU module type CPU module bye CPU module Generic term for A series, AnS series, QnAS series, and Q series CPU modules Basic model QCPU Seneric term for the Q00JCPU, Q00CPU, and Q01CPU High Performance model QCPU This handbook mainly explains about the Q00ZCPU, Q01CPU, Q01ZHCPU, and Q25HCPU CPU CPU CPU Ceneric term for the Q00ZPHCPU, Q06HCPU, Q12ZHCPU, and Q12ZHCPU Generic term for the Q00ZHCPU, Q06HCPU, Q12ZHCPU, Q06HCPU, Q03UDCPU,		
A/AnS series Qeneric term for A series and AnS series QnA series Abbreviation for large types of Mitsubishi MELSEC-QnA series programmable controllers QnAS series Abbreviation for compact types of Mitsubishi MELSEC-QnA series programmable controllers QnA/QnAS series QnA/QnAQnAS series Qeneric term for QnA series and QnAS series Qeneric term for A series, AnS series, QnA series, and QnAS series Qeneric term for A series, AnS series, QnA series, and QnAS series Qeries Qeries Qeries Qeries Qeries Qeneric term for A series, AnS series, QnA series, and QnAS series Qeneric term for A series, AnS series, QnAS Series programmable controller CPUs QnAS QnAS QnAS QnAS QnAS QnAS QnAS Series programmable controller CPUs Qn	A series	
Abbreviation for large types of Mitsubishi MELSEC-QnA series programmable controllers Abbreviation for compact types of Mitsubishi MELSEC-CnA series programmable controllers Abbreviation for compact types of Mitsubishi MELSEC-CnA series programmable controllers Achans/QnA/QnAS series Generic term for A series, and Series, and QnAS series A'AnS/QnA/QnAS series Generic term for A series, AnS series, QnA series, and QnAS series Generic term for A series, AnS series, QnA series, and QnAS series Generic term for A series, AnS series, QnA series, and Q series CPU module Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU module Basic model QCPU Generic term for the Q00CPU, Q00CPU, and Q01CPU This handbook mainly explains about the Q02CPU, Q02HCPU, Q06HCPU, and Q25HCPU Generic term for the Q02PHCPU, Q06PHCPU, Q12HCPU, and Q25PHCPU Redundant CPU Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU Redundant CPU Generic term for the Q02PHCPU, Q06PHCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q04UDHCPU, Q01UDCPU, Q02UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q04UDHCPU, Q04UDVCPU, Q04UDHCPU, Q04UDVCPU, Q06UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q26UDVCPU, Q26UDVCPU, Q26UDVCPU, Q26UDHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDVCPU, Q26UDVCPU, Q26UDHCPU, Q26UDHCPU, Q26UDVCPU, Q26	AnS series	Abbreviation for compact types of Mitsubishi MELSEC-A series programmable controllers
QnAS series Abbreviation for compact types of Mitsubishi MELSEC-QnA series programmable controllers QnA/QnAS series Generic term for QnA series and QnAS series Q series Abereviation for Mitsubishi MELSEC-Q series programmable controllers ■ CPU module type CPU module type CPU module Use Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU modules Basic model QCPU Generic term for the Q0UCPU, Q00CPU, and Q01CPU High Performance model Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU QCPU * This handbook mainly explains about the Q02CPU, Q06HCPU, Q06HCPU, and Q12HCPU. Process CPU Generic term for the Q02CPU, Q06PHCPU, Q12PHCPU, Q06HCPU, and Q25PHCPU QCPU * This handbook mainly explains about the Q02CPU, Q06HCPU, Q06HCPU, and Q25PHCPU QCPU * This handbook mainly explains about the Q02CPU, Q06HCPU, Q06HCPU, and Q25PHCPU QCPU Generic term for the Q12PHCPU, Q06PHCPU, Q12PHCPU, Q06HCPU, and Q25PHCPU QCPU Generic term for the Q12PHCPU, Q106PHCPU, Q101UPCPU, Q06HCPU, and Q25PHCPU QCPU Generic term for the Q12PHCPU, Q10FHCPU, Q10UPCPU, Q01UPCPU, Q01UPCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q00UPCPU, Q01UPCPU, Q10UPCPU, Q12UPCPU, Q13UDHCPU, Q03UDCPU, Q03UDCPU	A/AnS series	Generic term for A series and AnS series
QnA/QnAS series Generic term for QnA series and QnAS series A/Ans/QnA/QnAS series Generic term for A series, AnS series, QnA series, and QnAS series Qc series Abbreviation for Mitsubishi MELSEC-Q series programmable controllers ■CPU module type CPU module Basic model QCPU Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU modules Basic model QCPU Generic term for the Q02/CPU, Q02HCPU, Q06HCPU, and Q12HCPU, and Q25HCPU High Performance model Generic term for the Q02/CPU, Q02HCPU, Q06HCPU, and Q25HCPU QCPU This handbook mainly explains about the Q02/CPU, Q02HCPU, Q06HCPU, and Q12HCPU. Process CPU Generic term for the Q12PRHCPU, Q06HCPU, Q12PHCPU, Q16HCPU, and Q25PHCPU Redundant CPU Generic term for the Q12PRHCPU, Q06UPCPU, Q10UPCPU, Q02UPCPU, Q03UDCPU, Q04UDCPU, Q04UDCPU, Q04UDCPU, Q05UDCPU, Q05U	QnA series	Abbreviation for large types of Mitsubishi MELSEC-QnA series programmable controllers
A/AnS/QnA/QnAS series Q series Abbreviation for Mitsubishi MELSEC-Q series programmable controllers □CPU module type □CPU module Generic term for A series, AnS series, QnAS series, and Q series CPU module Basic model QCPU Generic term for the Q00UCPU, Q00CPU, and Q01CPU High Performance model QCPU □CPU module Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU GCPU □This handbook mainly explains about the Q02CPU, Q02HCPU, Q02HCPU, and Q25HCPU Process CPU Generic term for the Q02PHCPU, Q06HCPU, Q02HCPU, and Q25PHCPU Generic term for the Q02PHCPU, Q06HCPU, Q02HCPU, and Q25PHCPU Generic term for the Q02PHCPU, Q06HCPU, Q02HCPU, Q06HCPU, and Q12HCPU, Redundant CPU Generic term for the Q01PHCPU, Q06HCPU, Q01PHCPU, Q02UCPU, Q03UDCPU, Q03UDVCPU, Q03UDECPU, Q04UDVCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q04UDECPU, Q06UDHCPU, Q06UDVCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDVCPU, Q28UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDVCPU, Q28UDEHCPU, Q30UDEHCPU, and Q100UDEHCPU □CPU module model ACPU Generic term for MELSEC-As series programmable controller CPUs Generic term for MELSEC-Ans series programmable controller CPUs Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A2NCPU-S1, ANNCPU Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A3NCPUP21/R21, and A3NCPUP21/R21 ANCPUP21/R21, A2NCPUP21/R21, A3NCPUP21/R21, A3NCPUP21/R21, A3NCPUP21/R21, A3NCPUP21/R21 AnuS(H)CPU Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A2UCPU-S1, A3UCPU-S1 AnuS(H)CPU Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A4UCPU, A2UCPU-S1, A1NCPUP21/R21, A1N	QnAS series	Abbreviation for compact types of Mitsubishi MELSEC-QnA series programmable controllers
Q series Abbreviation for Mitsubishi MELSEC-Q series programmable controllers □CPU module type Generic term for A series, AnS series, QnAS series, and Q series CPU modules Basic model QCPU High Performance model Generic term for the Q00JCPU, Q00CPU, and Q01CPU High Performance model Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU This handbook mainly explains about the Q02CPU, Q02HCPU, Q06HCPU, and Q12HCPU. Generic term for the Q02PHCPU, Q06HCPU, Q02HCPU, and Q25PHCPU Redundant CPU Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU Generic term for the Q12PRHCPU and Q25PHCPU, Q06HCPU, and Q25PHCPU Generic term for the Q12PRHCPU and Q25PHCPU Generic term for the Q12PRHCPU, Q06UCPU, Q01UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q04UDPCPU, Q04UDPCPU, Q04UDPCPU, Q03UDPCPU, Q05UDPCPU, Q26UDPCPU,	QnA/QnAS series	Generic term for QnA series and QnAS series
©PU module type CPU module Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU modules Basic model QCPU High Performance model Generic term for the Q00JCPU, Q00CPU, and Q01CPU High Performance model Generic term for the Q02PHCPU, Q06HCPU, Q12HCPU, and Q25HCPU This handbook mainly explains about the Q02CPU, Q02HCPU, and Q12HCPU. Process CPU Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU Redundant CPU Generic term for the Q012PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU Generic term for the Q012PHCPU, Q06PHCPU, Q014PHCPU, Q03UDCPU, Q04UDHCPU, Q04UDHCPU, Q04UDHCPU, Q05UDHCPU, Q05UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU ©CPU module model ■CPU	A/AnS/QnA/QnAS series	Generic term for A series, AnS series, QnA series, and QnAS series
CPU module Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU modules Basic model QCPU High Performance model Generic term for the Q002CPU, Q002CPU, Q004CPU, Q12HCPU, and Q25HCPU QCPU This handbook mainly explains about the Q02CPU, Q02HCPU, Q02HCPU, and Q12HCPU, and Q12HCPU Process CPU Generic term for the Q12PHCPU, Q06PHCPU, Q12PHCPU, and Q12HCPU Redundant CPU Generic term for the Q12PHCPU, Q06PHCPU, Q12PHCPU, and Q12HCPU Q03UDVCPU, Q03UDECPU, Q000CPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q03UDECPU, Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q01UDHCPU, Q13UDHCPU, Q13UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q13UDEHCPU, Q20UDHCPU, Q10UDEHCPU, Q16UDHCPU, Q13UDVCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q13UDVCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU ■CPU module model ACPU Generic term for MELSEC-A series programmable controller CPUS AnSCPU Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A2NCPU-S1, A2NCPUP21/R21, A2NCPUP21/R21-S1, A2NCPUP21-S3, A2NCPU, A3NCPUP21/R21, and A3NCPUP21-S3 Generic term for the A2CPU, A2ACPU-S1, A3ACPU, A2ACPUP21/R21, A2ACPUP21/R21-S1, and A3ACPUP21/R21 AnUCPU Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A4UCPU, A2USCPU-S1, and A3USHCPU-S1 ANUS(H)CPU Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A4UCPU, A2USCPU-S1, and A2USHCPU-S1 ANUS(H)CPU Generic term for the A2USCPU, A2USCPU-S1, A3USHCPU-S1 ANN/ANACPU Generic term for the A2USCPU, A2USCPU-S1, A3USHCPU-S1 ANN/ANACPU Generic term for the ANNCPU and AnACPU ANN/ANACPU Generic term for the ANNCPU, ANDCPU, ANDCPU Generic term for the ANNCPU, ANDCPU, ANDCPU Generic term for the ANNCPU, ANDCPU, ANDCPU Generic term for MELSEC-QnAS series programmable controller CPUs Generic	Q series	Abbreviation for Mitsubishi MELSEC-Q series programmable controllers
Basic model QCPU Generic term for the Q00CPU, Q00CPU, and Q01CPU High Performance model Generic term for the Q02CPU, Q02HCPU, Q02HCPU, Q02HCPU, and Q12HCPU QCPU * This handbook mainly explains about the Q02CPU, Q02HCPU, Q06HCPU, and Q12HCPU. Process CPU Generic term for the Q02PHCPU, Q06HCPU, Q012PHCPU, and Q25PHCPU Redundant CPU Generic term for the Q12PRHCPU and Q25PRHCPU Generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q04UDVCPU, Q04UDVCPU, Q04UDVCPU, Q05UDEHCPU, Q05UDEHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q13UDECPU, Q13UDECPU, Q20UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q26UDEHCPU, Q20UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU ACPU Generic term for MELSEC-A series programmable controller CPUS ANCPU Generic term for MELSEC-AnS series programmable controller CPUS ANCPU Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A2NCPU-S1, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A3NCPUP21/R21, A3NCPUP21/R21, A3NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A3NCPUP21/R21, A3NCPUP21/R	■CPU module type	
High Performance model QCPU This handbook mainly explains about the Q02CPU, Q03HCPU, Q03HCPU, and Q25HCPU This handbook mainly explains about the Q02CPU, Q03HCPU, Q03HCPU, and Q12HCPU. Generic term for the Q02PHCPU, Q06HCPU, Q12PHCPU, and Q25PHCPU Generic term for the Q12PRHCPU and Q25PRHCPU Generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q04UDHCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDHCPU, Q10UDHCPU, Q10UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q26UDHCPU,	CPU module	Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU modules
Process CPU Redundant CPU Generic term for the Q02PHCPU, Q06HCPU, Q05HCPU, and Q12HCPU. Redundant CPU Generic term for the Q12PRHCPU and Q25PRHCPU Generic term for the Q12PRHCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q05UDCPU, Q05UDCPU, Q05UDCPU, Q05UDCPU, Q13UDCPU, Q13UDCPU, Q13UDCPU, Q13UDCPU, Q13UDCPU, Q13UDCPU, Q13UDCPU, Q13UDCPU, Q25UDCPU, Q25UDCPU	Basic model QCPU	Generic term for the Q00JCPU, Q00CPU, and Q01CPU
Process CPU Redundant CPU Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU Generic term for the Q12PRHCPU and Q25PRHCPU Generic term for the Q12PRHCPU and Q25PRHCPU Generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q03UDCPU, Q03UDCPU, Q03UDCCPU, Q03UDECPU, Q03UDECPU, Q04UDHCPU, Q04UDHCPU, Q04UDHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDHCPU, Q10UDHCPU, Q10UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q26UDHCPU, A2NCPU-S1, A1NCPUP21-S3, A2NCPU, A2NCPUP21-S3, A2NCPUP21-S3, A2NCPUP21-S3, A2NCPUP21-S3, A2NCPUP21-S3, A2NCPUP21-S3, A2NCPUP21-S3, A2NCPUP21-S3, A3NCPUP21-S3, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP21-S1, A3NCPUP2-S1, A3NCPUP21-S1, A3NCPUP2-S1, A3NCPUP2	High Performance model	Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU
Redundant CPU Generic term for the Q12PRHCPU and Q25PRHCPU Generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q04UDHCPU, Q04UDEHCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU ■CPU module model ACPU Generic term for MELSEC-A series programmable controller CPUs Generic term for MELSEC-AnS series programmable controller CPUs ANSCPU Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A2NCPU-S1, A2NCPUP21/R21, A2NCPUP21/R21-S1, A2NCPUP21-S3, A2NCPU, A3NCPUP21/R21, and A3NCPUP21-S3 Generic term for the A2ACPU, A2ACPU-S1, A3ACPU, A2ACPUP21/R21, A2ACPUP21/R21-S1, and A3ACPUP21/R21 ANUCPU Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A4UCPU, A2USCPU, A2USCPU-S1, and A2USHCPU-S1 ANUS(H)CPU Generic term for the A2USCPU, A2USCPU-S1, A2USHCPU-S1 ANISCPU Generic term for the A2USCPU, A2USCPU-S1, A2USHCPU-S1 ANI/ANACPU Generic term for the ANNCPU and ANACPU ANN/ANACPU Generic term for the ANNCPU, ANACPU Generic term for the ANNCPU, ANACPU Generic term for the ANNCPU, ANACPU Generic term for MELSEC-QNA series programmable controller CPUs Generic term for A series, AnS series, QNA series, and QNAS series programmable controller CPUs	QCPU	* This handbook mainly explains about the Q02CPU, Q02HCPU, Q06HCPU, and Q12HCPU.
Generic term for the Q00UJCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q04UDHCPU, Q04UDCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDCPU, Q06UDCPU, Q06UDCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q26UDCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU ACPU ACPU Generic term for MELSEC-A series programmable controller CPUS Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A2NCPU-S1, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A3NCPUP21/R21, and A3NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21/R21, A3NCPU, A2NCPUP21/R21, A3NCPU, A2NCPUP21/R21, A3NCPU, A2NCPUP21/R21, A3NCPU, A2NCPUP21/R21, A3NCPU, A2NCPUP21/R21, A2NCPUP21/R21, A3NCPU, A2NCPU-S1, A3NCPU, A3NCPU, A2NCPU-S1, A3NCPU, A3NCPU	Process CPU	Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU
Universal model QCPU Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDHCPU, Q10UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q13UDEHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDEHCPU, Q26UDEHCPU	Redundant CPU	Generic term for the Q12PRHCPU and Q25PRHCPU
Universal model QCPU Q06UDVCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q13UDEHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDHCPU, Q26UDHCP		Generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU,
Universal model QCPU Q06UDVCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU, Q13UDEHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDHCPU, Q26UDHCP		Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q04UDEHCPU, Q06UDHCPU,
Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDVCPU, Q26UDEHCPU, Q26UDEHCPU, Q26UDEHCPU, and Q100UDEHCPU ■CPU module model ACPU Generic term for MELSEC-A series programmable controller CPUs AnSCPU Generic term for MELSEC-AnS series programmable controller CPUs Generic term for the A1NCPU, A1NCPUP21/R21, A1NCPUP21-S3, A2NCPU, A2NCPU-S1, A2NCPUP21/R21, A2NCPUP21/R21, A2NCPUP21-S3, A2NCPU, A3NCPUP21/R21, and A3NCPUP21-S3 AnACPU Generic term for the A2ACPU, A2ACPU-S1, A3ACPU, A2ACPUP21/R21, A2ACPUP21/R21-S1, and A3ACPUP21/R21 AnUCPU Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A4UCPU, A2USCPU, A2USCPU-S1, and A2USHCPU-S1 A/ANSCPU Generic term for MELSEC-A series and MELSEC-AnS series programmable controller CPUS ANN/AnACPU Generic term for the ANNCPU, AnACPU, and AnSCPU QnACPU Generic term for MELSEC-QnA series programmable controller CPUS QnASCPU Generic term for MELSEC-QnA series programmable controller CPUS QnAYQnASCPU Generic term for MELSEC-QnA series and MELSEC-QnAS series programmable controller CPUS Generic term for MELSEC-QnA series programmable controller CPUS	Universal model QCPU	
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A/AnS/QnA/QnASCPU Generic term for A series, AnS series, QnA series, and QnAS series programmable controller CPUs	QnA/QnASCPU	
A/AnS/QnA/QnASCPU CPUs		
	A/AnS/QnA/QnASCPU	<u> </u>
	QCPU	Generic term for MELSEC-Q series programmable controller CPUs

Memo		

INTRODUCTION

1.1 Advantages of Transition to Q Series

Advantage 1)Advanced performance of equipments

In addition to the processing performance improvement for Q series CPU, the processing speed for Q series intelligent function module is also increased, so that the equipment capability to improve is possible.

Advantage 2)Compact control panel and space saving

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

Advantage 3)Improved operating efficiency for programming and monitor

Q series intelligent function module prepares the following utility package (GX Configurator-□) sold separately.

(Example)

- GX Configurator-AD Analog input module setting/monitoring tool
- GX Configurator-DA Analog output module setting/monitoring tool
- GX Configurator-TI Temperature input module setting/monitoring tool
- GX Configurator-CT High speed counter module setting/monitoring tool
- GX Configurator-QP Positioning module setting/monitoring tool

Using the utility package is not a must. However, the utility package allows not only for the followings to do, but also reduces sequence programs.

- Initial setting is possible without a program.
- The auto refresh setting allows to read/write buffer memory data of intelligent function module automatically from/to the CPU device memory.
- Checking of the setting status or operating status of intelligent function module is simplified.

1.2 Precautions for Transition from AnS/QnAS Series to Q Series

(1) Be sure to confirm its functions, specifications and instructions by referring the manual of the corresponding Q series module prior to use.

(2) Be sure to check the operation of whole system before the actual operation.

ANALOG INPUT MODULE REPLACEMENT

2.1 List of Analog Input Module Alternative Models for Replacement

AnS/QnAS series		Transition to Q series			
Product	Model	Model	Remarks (Restrictions)		
	A1S64AD	Q64AD	1) External wiring : Cable size is changed. 2) Number of slots : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Not changed 5) Functional specifications: Not changed		
Analog input module	Q68ADV Q68ADI A1S68AD Q68AD-G*1		1) External wiring : Cable size is changed. 2) Number of slots : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications:		
			1) External wiring : Cable size is changed. 2) Number of slots : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Changed. Conversion speed (0.5ms/channel) → sampling cycle (10ms/channel) + response speed (20ms) 5) Functional specifications: Changed (Non-insulation → insulation between channels)		

The Q68AD-G cannot be mounted on the Q series large type base unit (Q3 BL, Q6 BL, Q55BL).

⊠Point -

The existing wiring for the AnS/QnAS series modules can be connected directly to the Q series modules using the upgrade tool (conversion adaptor) manufactured by Mitsubishi Electric Engineering Co., Ltd.

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor	
Analog input module	A1S64AD	Q64AD	ERNT-ASQT64AD	
	A1S68AD (voltage input) Q68ADV		ERNT-ASQT68AD	
	A1S68AD (current input)	Q68ADI	JEUNI-WOOLDOWD	
	A1S68AD	Q68AD-G	ERNT-ASQT68AD-G*1	

Conversion adapter with fixture, which cannot be mounted on the AnS size version Q large type base unit.

Before using the conversion adapter with fixture, be sure to fasten its fixture to the base adapter or DIN rail mounting bracket using screws.

For MELSEC-AnS/QnAS (small type) series to Q series transition related products manufactured by Mitsubishi Electric Engineering Co., Ltd. or Mitsubishi Electric System & Service Co., Ltd., contact your local sales office or representative.

2.2 A1S64AD

2.2.1 Performance specifications comparison

Item			A1S64AD			
Voltage	-10 to 0 to +10VDC (Input resistance value: 1MΩ)					
Analog input Current	-20 to 0 to +20mADC (Input resistance value: 250Ω)					
	16-bit signed binary					
Digital output		When 1	/4000 is set: -4096	to +4095		
Digital output		When 1	/8000 is set: -8192	to +8191		
		When 1/1	2000 is set: -12288	3 to +12287		
	Item	1	Specifi	ications		7
I/O characteristics	nem			ue (when gain 5V/20m	A. offset 0V/0mA)	-
"O Grandoteriotios		Analog input	1/4000	1/8000	1/12000	1
		+10V	+4000	+8000	+12000	†
	I/O characteristics	+5V or +20mA	+2000	+4000	+6000	
		0V or 0mA	0	0	0	
		-5V or -20mA	-2000	-4000	-6000	
		-10V Analog input	-4000	-8000	-12000 1/12000	4
Maximum resolution	Maximum resolution		1/4000 2.5mV	1/8000 1.25mV	0.83mV	-
Maximum recolution	Waxiiiidiii lesolulloii	Current input	10µA	5µA	3.33µA	-
						_
Overall accuracy (Accuracy in respect to maximum digital output value)	±1% When 1/4000 is set: ±40 When 1/8000 is set: ±80 When 12000 is set: ±12	0				

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

								0.0		tial change required, *. Incompatible
					Q64AD				Compatibility	Precautions for replacement
			-1	0 to 10VDC (In	put resistan	ce value: 1N	ΙΩ)		0	
			0	to 20mADC (In	put resistan	ce value: 25	θΩ)		0	
				16-bi Normal resolut olution mode: -		4096 to 4095	•		0	
										If the resolution differs
			1	Normalroa	alutian mada		liab roodust	ion mode		between AnS series and Q
		Analog		Digital	olution mode Maximu		High resoluti gital	Maximum		series modules, it needs to be
		rar	nge	output value	resolutio		it value	resolution	Δ	matched using a sequence
			0 to 10V		2.5mV		16000	0.625mV		program or user range
			0 to 5V	0 to 4000	1.25m\	/ 0 to	12000	0.416mV		settings. (Refer to Appendix 4.)
	Volta	ane	1 to 5V		1.0mV	0 10	12000	0.333mV		, , ,
		ugo	-10 to 10V		2.5mV	-16000	to 16000	0.625mV		
			User range settings	-4000 to 4000	0.375m	V -12000	to 12000	0.333mV		
			0 to 20mA	0 to 4000	0 to 4000 5μA		12000	1.66µA	0	
	Curr	rent	4 to 20mA	0 10 1000	4µA	0.10	12000	1.33µA		
	User ra		User range settings	-4000 to 4000	1.37μΑ	-12000	to 12000	1.33μΑ		
		Normal resolution mode High resolution mode								
				t temperature		Ambient temperature				
	Analo	g input	0	to 55°C	•		55°C	Ambient		
		nge	With temperature	Without temperature	temperature	With temperature	Withou temperate	temperature		
			drift compensati	drift on compensation	25±5°C	drift compensation	drift compensa	25±5°C		
		0 to 10		·			1			
		-10 t	0			±0.3% (±48 digits)	±0.4% (±64 digi			
		10V				(± 10 digito)	(±0 i digi	(±10 digito)		
	Voltage	0 to 5							0	
		1 to 5								
		Use range								
		setting	±0.3%	±0.4%	±0.1%					
		0 to	±12 didits) (±16 digits)	(±4 digits)	±0.3%	±0.4%	±0.1%		
		20m/	4			(±36 digits)	(±48 digi	ts) (±12 digits)		
		4 to					1			
	Current									
		Use								
		rang								
	I L		-		1	1	1		1	l

Item	A1S64AD					
Maximum conversion speed	20ms/channel					
Absolute maximum input	Voltage: ±15V Current: ±30mA					
Analog input points	4 channels/module					
Maximum number of writes for						
E ² PROM	-					
Isolation method	Between the input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated					
Dielectric withstand voltage	Between the input terminal and programmable controller power supply: 500VAC, for 1 minute					
Insulation resistance	Between the input terminal and programmable controller power supply: 500VDC, $5\text{M}\Omega$ or more					
Number of occupied I/O points	32 points (I/O assignment: special 32 points)					
Connected terminal	20-point terminal block					
Applicable wire size	0.75 to 1.5mm ² (Applicable tightening torque: 39 to 59N•cm)					
Applicable solderless terminal	1.25-3, 1.25-YS3, V1.25-3, V1.25-YS3A					
Internal current consumption (5VDC)	0.40A					
Weight	0.25kg					

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

		A. Fartial Change required, A. Incompatible
Q64AD	Compatibility	Precautions for replacement
80μs/channel (When there is temperature drift compensation, the time calculated by adding 160μs will be used regardless of the number of channels used.)	0	The conversion speed of Q64AD to A1S64AD has become quick. And then, on A1S64AD, the noise that did not import on A1S64AD can be imported as analog signal. In this case, use the averaging processing function to remove the effect of noise.
Voltage: ±15V Current: ±30mA	0	
4 channels/module	0	
Max. 100,000 times	0	
Between the I/O terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated	0	
Between the I/O terminal and programmable controller power supply: 500VAC, for 1 minute	0	
Between the I/O terminal and programmable controller power supply: 500VDC, 20MΩ or more	0	
16 points (I/O assignment: intelligent 16 points)	Δ	The number of occupied I/O points has changed to 16 points.
18-point terminal block	×	
0.3 to 0.75mm ²	×	Wiring change is required.
R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.)	×	
0.63A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.18kg	0	

2.2.2 Functional comparison

O: Available, -: Not available

				O : Available, -: Not available
Item	Description	A1S64AD	Q64AD	Precautions for replacement
A/D conversion enable/ disable	Specifies whether to enable or disable the A/D conversion. By disabling the conversion for the channels that are not used, the sampling time can be shortened.	0	0	
Sampling processing	The A/D conversion for analog input values is performed successively for each channel, and the digital output value is output upon each conversion.	0	0	The sampling processing time changes depending on the number of channels used (number of channels set to A/D conversion enable) and whether, with or without the temperature drift compensation function. (a) Without temperature drift compensation function (processing time) = (number of channels used) × 80 (µs/1 channel) (b) With temperature drift compensation function (processing time)= (number of channels used) × 80 (µs/1 channel) +160µs The setting range of average time and
Averaging processing	For each channel, A/D conversion values are averaged for the set number of times or set amount of time, and the average value is output as a digital value.	0	0	count differ. Check the specifications, referring to the Analog-Digital Converter Module User's Manual.
Maximum and minimum values hold function	The maximum and minimum values of the digital output values are retained in the module.	-	0	
Temperature drift compensation function	Errors arising from changes in the ambient temperature of the module are automatically compensated to improve conversion accuracy. The temperature drift compensation function can be performed at (A/D conversion time for all channels) + 160µs.	-	0	
Resolution mode	The resolution can be switched according to the application. The resolution mode setting is applicable to all channels.*1	0	0	
Online module change	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

For the A1S64AD, the resolution for both voltage and current can be selected from 1/4000, 1/8000, or 1/12000. For the Q64AD, the resolution for both voltage and current is 1/4000 in normal resolution mode. In high resolution mode, the resolution for the voltage range -10 to 0 to 10V is 1/16000, and the resolution for the voltage in other ranges and current is 1/12000.

2.2.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the Analog-Digital Converter Module User's Manual.

	A1S6	64AD			Q64	AD	
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0 X1	Watchdog timer error A/D conversion READY	Y0 Y1		X0 X1	Module READY Temperature drift compensation flag	Y0 Y1	
X2	Error flag	Y2		X2		Y2	
X3 X4		Y3 Y4		X3 X4		Y3 Y4	Use prohibited
X5		Y5		X5	Use prohibited	Y5	Ose prombited
X6		Y6		X6		Y6	
X7		Y7		X7		Y7	
X8		Y8		X8	High resolution mode status flag	Y8	
X9		Y9	Use prohibited	Х9	Operating condition setting completed flag	Y9	Operating condition setting request
XA		YA	ose prombited	XA	Offset/gain setting mode flag	YA	User range writing request
ХВ		YB		XB	Channel change completed flag	YB	Channel change request
XC		YC		XC	Use prohibited	YC	Use prohibited
XD		YD		XD	Maximum value/ minimum value reset completed flag	YD	Maximum value/ minimum value reset request
XE	Use prohibited	YE		XE	A/D conversion completed flag	YE	Use prohibited
XF		YF		XF	Error flag	YF	Error clear request
X10		Y10					
X11 X12		Y11 Y12	Error reset				
X12		Y13	Lifor reset				
X14		Y14					
X15		Y15					
X16		Y16					
X17		Y17					
X18 X19		Y18 Y19	Use prohibited				
X1A		Y1A	Ose profibiled				
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

2.2.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the Analog-Digital Converter Module User's Manual.

	A1S64AD			Q64AD		
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write	
0	A/D conversion enable/disable setting		0	A/D conversion enable/disable setting		
1	Average processing specification		1	CH1 Average time/average number of times		
2	CH1 Average time, count	DAM	2	CH2 Average time/average number of times	R/W	
3	CH2 Average time, count			CH3 Average time/average number of times		
4	CH3 Average time, count		4	CH4 Average time/average number of times	_	
5	CH4 Average time, count		5			
6			6	System area (Lice prohibited)		
7	System area (Llas prohibited)		7	System area (Use prohibited)	-	
8	System area (Use prohibited)	-	8			
9			9	Averaging processing setting	R/W	
10	CH1 Digital output value		10	A/D conversion completed flag		
11	CH2 Digital output value		11	CH1 Digital output value		
12	CH3 Digital output value	R	12	CH2 Digital output value	R	
13	CH4 Digital output value		13	CH3 Digital output value		
14			14	CH4 Digital output value	1	
15	1		15			
16	System area (Use prohibited)	-	16	1	-	
17			17	System area (Use prohibited)		
18	Write data error code	_	18			
19	A-D conversion completed flag	R	19	Error code		
20	Resolution setting	R/W	20	Setting range (CH1 to CH4)	R	
		•	21	System area (Use prohibited)	-	
			22	Offset/gain setting mode Offset specification		
			23	Offset/gain setting mode Gain specification	R/W	
			24 to 29	System area (Use prohibited)	-	
			30	CH1 Maximum value		
			31	CH1 Minimum value	†	
			32	CH2 Maximum value		
			33	CH2 Minimum value	_	
			34	CH3 Maximum value	R	
			35	CH3 Minimum value		
			36	CH4 Maximum value		
			37	CH4 Minimum value		
			38 to 157	System area (Use prohibited)	-	
			158 159	Mode switching setting	R/W	
			160 to	System area (Use prohibited)	-	
			200	Pass data classification setting	R/W	
			201	System area (Use prohibited)	-	
			202	CH1 Industrial shipment settings offset value		
			203	CH1 Industrial shipment settings gain value		
			204	CH2 Industrial shipment settings offset value		
			205	CH2 Industrial shipment settings gain value		
			206	CH3 Industrial shipment settings offset value	R/W	
			207	CH3 Industrial shipment settings gain value		
				I	ı	
			208	CH4 Industrial shipment settings offset value		

	Q64AD							
Address (decimal)	Name	Read/write						
210	CH1 User range settings offset value							
211	CH1 User range settings gain value							
212	CH2 User range settings offset value							
213	CH2 User range settings gain value	R/W						
214	CH3 User range settings offset value	I V/ VV						
215	CH3 User range settings gain value							
216	CH4 User range settings offset value							
217	CH4 User range settings gain value							

2.3 A1S68AD (Replacing with the Q68ADV or Q68ADI)

2.3.1 Performance specifications comparison

It	em		A1S6	8AD		
Analog input	Voltage	-10 to		t resistance value: 1M	Ω)	
Analog Input	Current	0 to	+20mADC (Input re	esistance value: 250Ω	.)	
Digital output 16-bit signed binary						
			I/O chara	cteristics		
			Analog input	Digital output		
			0 to +10V	0 to +4000	I	
		<u> </u>	-10V to +10V	-2000 to +2000	I	
		0\	/ to 5V or 0 to 20mA	0 to +4000	I	
		l	to 5V or 4 to 20mA	0 to +4000	I	
		<u> </u>	10 3 V 01 4 10 20111A	0 10 14000		
I/O characteris maximum reso			Maximum	resolution		
			Analog input	Digital output	I	
		<u> </u>	0 to +10V	2.5mV	I	
		<u> </u>	-10V to +10V	5mV	I	
		<u> </u>	0V to 5V	1.25mV		
		 	1 to 5V	1mV	I	
		 	0 to 20mA	5μΑ	I	
			4 to 20mA	4μA	I	
Overall accura	су		Within ±1% (Digital outpu			

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

	Q68AD	V			Q68ADI	0.0	•	Precautions for replacement
	-10 to 10\							•
(Inpu	t resistance	value: 1MΩ)		-				The voltage/current cannot be
			0 to 20mADC				mixed for one module.	
	-			(Input resist	tance valu	ie: 250Ω)		
		16-b	t signed bin	ary				
		(Normal resolut	ion mode: -	4096 to 4095	,		0	
	High res	olution mode: -	12288 to 12	287, -16384 t	o 16383)			
Analog	n innut	Normal reso	olution mode	H	igh resoluti	on mode		
ran		Digital output	Maximun	_	-	Maximum		
	_	value	resolution			resolution		
	0 to 10V	0 to 4000	2.5mV	0 to 1	6000	0.625mV		If the recolution differe
	0 to 5V 1 to 5V	0 to 4000	1.25mV 1.0mV	0 to 1	2000 —	0.416mV 0.333mV		If the resolution differs
Voltage	-10 to 10V		2.5mV	-16000 to	n 16000	0.625mV		between AnS series and Q series modules, it needs to be
	User range	-4000 to 4000					Δ	·
	settings		0.375m\	/ -12000 to	0 12000	0.333mV		matched using a sequence program or user range
	0 to 20mA	0 to 4000	5µA	0 to 1	0 to 12000 1.66µA			settings. (Refer to Appendix 4.)
Current	4 to 20mA	0 10 4000	4µA	0 10 1	2000	1.33µA		Settings. (Neier to Appendix 4.)
	User range	-4000 to 4000	1.37µA	-12000 t	o 12000	1.33µA		
	settings							
	N	ormal resolution n	node	High	n resolution	mode		
	Ambient temperature			Ambient temper		to 55°C		
Analog inpu	t —	to 55°C	Ambient	With	Withou	Ambient		
range		With Without temperature	temperature	temperature	temperati	temperature		
	drift	drift	25±5°C	drift	drift	25±5°C		
	compensa	tion compensation	1	compensation	compensa	ition		
0 to 1				±0.3%	±0.4%	±0.1%		
-10 t				(±48 digits)	(±64 digi			
0 to 5							_	
Voltage 1 to 5							0	
use								
rang	e ±0.3%	±0.4%	±0.1%					
settin	gs (±12 digit		(±4 digits)					
0 to)	, , , ,	, ,	±0.3%	±0.4%			
20m				(±36 digits)	(±48 digi	ts) (±12 digits)		
Current 20m								
use								
rang	e							
settin	gs							

Item	A1S68AD				
Maximum conversion speed	0.5ms/channel (The speed is 1ms/channel on all channels if averaging processing is set even for one channel.)				
Absolute maximum input	Voltage: ±35V				
7 to ocidio maximam input	Current: ±30mA				
Analog input points	8 channels/module				
Maximum number of writes for E ² PROM	-				
Isolation method	Between the input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated				
Dielectric withstand voltage	-				
Insulation resistance	-				
Number of occupied I/O points	32 points (I/O assignment: special 32 points)				
Connected terminal	20-point terminal block				
Applicable wire size	0.75 to 1.5mm ²				
Applicable solderless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A				
Internal current consumption (5VDC)	0.40A				
Weight	0.27kg				

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

	O. Compatible, A. Fartial change required, V. Incompatible			
Q68ADV	Q68ADI	Compatibility	Precautions for replacement	
80μs/channel (When there is temperature drift compensation, the time calculated by adding 160μs will be used regardless of the number of channels used.)			The conversion speed of Q68ADV/I to A1S68AD has become quick. And then, on A1S68AD, the noise that did not import on A1S68AD can be imported as analog signal. In this case, use the averaging processing function to remove the effect of noise.	
±15V	±30mA	0		
8 channel	s/module	0		
Max. 100,	0			
Between the I/O terminal and progr photocouple Between channe	0			
Between the I/O terminal and progr		0		
Between the I/O terminal and progr 500VDC, 20		0		
16 po (I/O assignment: in		Δ	The number of occupied I/O points has changed to 16 points.	
18-point ten	minal block	×		
0.3 to 0.	75mm ²	×	Wiring change is required.	
R1.25-3 (Solderless terminals with a	×	Twiting change is required.		
0.64A	0.64A	Δ	Recalculation of internal current consumption (5VDC) is required.	
0.19kg	0.19kg	0		

2.3.2 Functional comparison

				O : Available, -: Not available
Item	Description	A1S68AD	Q68ADV/I	Precautions for replacement
A/D conversion enable/disable	Specifies whether to enable or disable the A/D conversion for each channel. By disabling the conversion for the channels that are not used, the sampling time can be shortened.	0	0	
Sampling processing	The A/D conversion for analog input values is performed successively for each channel, and the digital output value is output upon each conversion.	0	0	The sampling processing time changes depending on the number of channels used (number of channels set to A/D conversion enable) and whether, with or without the temperature drift compensation function. (a) Without temperature drift compensation function (processing time) = (number of channels used) × 80 (µs/1 channel) (b) With temperature drift compensation function (processing time) = (number of channels used) × 80 (µs/1 channel) + 160µs
Averaging processing	For each channel, A/D conversion values are averaged for the set number of times or set amount of time, and the average value is output as a digital value.	0	0	The setting range of average time and count differ. Check the specifications, referring to the Analog-Digital Converter Module User's Manual.
Maximum and minimum values hold function	The maximum and minimum values of the digital output values are retained in the module.	-	0	
Temperature drift compensation function	Errors arising from changes in the ambient temperature of the module are automatically compensated for to improve conversion accuracy. The temperature drift compensation function can be performed at (A/D conversion time for all channels) + 160µs.	-	0	
Resolution mode	The resolution can be switched according to the application. The resolution mode setting is applicable to all channels.*1	-	0	
Online module change	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

^{*1} For the A1S68AD, the resolution is 1/4000 (fixed).

For the Q68ADV/I, the resolution for both voltage and current is 1/4000 in normal resolution mode. In high resolution mode, the resolution for the voltage range -10 to 0 to 10V is 1/16000, and the resolution for the voltage in other ranges and current is 1/12000.

2.3.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the Analog-Digital Converter Module User's Manual.

A1S68AD					Q68ADV/I			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0 X1	WDT error flag A-D conversion READY Error flag	Y0 Y1		X0 X1	Module READY Temperature drift compensation flag	Y0 Y1		
X2		Y2		X2		Y2		
X3 X4		Y3 Y4		X3 X4		Y3 Y4	l laa probibitad	
X5		Y5		X5	Use prohibited	Y5	Use prohibited	
X6		Y6		X6		Y6		
X7		Y7		X7		Y7		
X8		Y8		X8	High resolution mode status flag	Y8		
X9		Y9	Haa arabibitad	X9	Operating condition setting completed flag	Y9	Operating condition setting request	
XA		YA	Use prohibited	XA	Offset/gain setting mode flag	YA	User range writing request	
ХВ	Use prohibited	YB		XB	Channel change completed flag	YB	Channel change request	
XC		YC		XC	Use prohibited	YC	Use prohibited	
XD		YD		XD	Maximum value/ minimum value reset completed flag	YD	Maximum value/ minimum value reset request	
XE		YE		XE	A/D conversion completed flag	YE	Use prohibited	
XF		YF		XF	Error flag	YF	Error clear request	
X10		Y10						
X11 X12		Y11 Y12	From roadt					
X12 X13		Y13	Error reset					
X14		Y14						
X15		Y15						
X16		Y16						
X17		Y17						
X18		Y18						
X19 X1A		Y19 Y1A	Use prohibited					
X1A X1B		Y1B						
X1C		Y1C						
X1D		Y1D						
X1E		Y1E						
X1F		Y1F						

2.3.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the Analog-Digital Converter Module User's Manual.

A1S68AD				Q68ADV/I			
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write		
0	A-D conversion enable/disable	R/W	0	A/D conversion enable/disable setting			
1	Writing data error code	R	1	CH1 Average time/average number of times	R/W		
2	Average processing specification	R/W	2	CH2 Average time/average number of times			
3			3	CH3 Average time/average number of times			
to	System area (Use prohibited)		to				
8	System area (Ose prombited)	-	8	CH8 Average time/average number of times			
9			9	Averaging process setting			
10	CH1 Average time, count		10	A/D conversion completed flag	_		
11	CH2 Average time, count	R/W	11	CH1 Digital output value			
to		IN/VV	to				
17	CH8 Average time, count		17	CH7 Digital output value	R		
18	System area (Llee prohibited)		18	CH8 Digital output value	K		
19	System area (Use prohibited)	_	19	Error code]		
20	CH1 Digital output value		20	Setting range (CH1 to CH4)	-		
21	CH2 Digital output value		21	Setting range (CH5 to CH8)			
22	CH3 Digital output value		22	Offset/gain setting mode Offset specification	R/W		
23	CH4 Digital output value	R	23	Offset/gain setting mode Gain specification			
24	CH5 Digital output value	K	24		-		
25	CH6 Digital output value		25				
26	CH7 Digital output value		26	Cyptom area (I loo prohibited)			
27	CH8 Digital output value		27	System area (Use prohibited)			
28	A-D conversion completed flag	R/W	28				
29	System area (Use prohibited)	-	29				
			30	CH1 Maximum value			
			31	CH1 Minimum value			
			to		R		
		44	CH8 Maximum value				
			45	CH8 Minimum value			
			46		-		
			to	System area (Use prohibited)			
į.			157				
	158 Made switching setting		Made switching setting	DAM			
Mode switching setting				I wode switching setting	R/W		
	160				-		
ľ				System area (Use prohibited)			
			201				
			202	CH1 Industrial shipment settings offset value			
			203	CH1 Industrial shipment settings gain value			
			to		1		
			216	CH8 Industrial shipment settings offset value]		
			217	CH8 Industrial shipment settings gain value	D/M		
			218	CH1 User range settings offset value	R/W		
			219	CH1 User range settings gain value	1		
			to		1		
			232	CH8 User range settings offset value	1		
			233	CH8 User range settings gain value	1		

2 ANALOG INPUT MODULE REPLACEMENT Memo

2.4 A1S68AD (Replacing with the Q68AD-G)

2.4.1 Performance specifications comparison

Voltage -10 to 0 to +10VDC (Input resistance value: 1MΩ)	
Digital output 16-bit signed binary	
Analog input Digital output	
Analog input Digital output 0 to +10V 0 to +4000 -10V to +10V -2000 to +2000 0V to 5V or 0 to 20mA 0 to +4000 1 to 5V or 4 to 20mA 0 to +4000	
0 to +10V 0 to +4000 -10V to +10V -2000 to +2000 0V to 5V or 0 to 20mA 0 to +4000 1 to 5V or 4 to 20mA 0 to +4000	
0 to +10V 0 to +4000 -10V to +10V -2000 to +2000 0V to 5V or 0 to 20mA 0 to +4000 1 to 5V or 4 to 20mA 0 to +4000	
-10V to +10V -2000 to +2000 0V to 5V or 0 to 20mA 0 to +4000 1 to 5V or 4 to 20mA 0 to +4000	
0V to 5V or 0 to 20mA	
1 to 5V or 4 to 20mA 0 to +4000	
WO shared artifica	
I/O characteristics, Maximum resolution	1
maximum resolution	
Analog input Digital output	
0 to +10V 2.5mV	
-10V to +10V 5mV	
0V to +5V 1.25mV	
1 to 5V 1mV	
0 to 20mA 5μA	
4 to 20mA 4μA	
Reference Within ±1% at full scale	
Overall accuracy (Digital output value: ±40)	
accuracy (Digital output value: ±40)	
Temperature	+
coefficient	
Maximum conversion speed 0.5ms/channel	+
(sampling cycle) (The speed is 1ms/channel on all channels if averaging processing is set even for one channel.)	
(The speed is This/channel on all channels if averaging processing is set even for one channel.)	+
Response time -	
Voltage: ±35V	1
Absolute maximum input current: ±30mA	

 $O \colon Compatible, \triangle \colon Partial \ change \ required, \ \times \colon Incompatible$

		O	68AD-G			Compatibility	Precautions for replacement
			to 10VDC			Companishity	
(Input impedance: $1M\Omega$ or more)							
		· · ·	20mADC	10.07		0	
			ance value: 250	1 0)			
		• •	signed binary	322)			
	(N	Normal resolutio	•	to 4095		0	
	•			-16384 to 16383)			
	riigiriesoi	ation mode12	200 to 12207,	10304 to 10303)			
1	1	Normal reso	lution mode	High resolu	tion mode	1	
Input	Analog input range	Digital output	Maximum	Digital output	Maximum		
linput	7 thatog input range	value	resolution	value	resolution		
	0 to 10V		2.5mV	0 to 16000	0.625mV		
	0 to 5V	0 to 4000	1.25mV	0.4.40000	0.416mV		If the resolution differs
	1 to 5V		1.0mV	0 to 12000	0.333mV		between AnS series and Q
Voltage	1 to 5V (Expanded mode)	-1000 to 4500	1.0mV	-3000 to 13500	0.333mV	Δ	series modules, it needs to be
	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV		matched using a sequence
	Users range setting	-4000 10 4000	0.375m V	-12000 to 12000	0.333mV		program or user range
	0 to 20mA	0 to 4000	5μA	0 to 12000	1.66µA		settings. (Refer to Appendix 4.)
	4 to 20mA		4µA	0 10 12000	1.33µA		
Current	4 to 20mA (Expanded mode)	-1000 to 4500	4μΑ	-3000 to 13500	1.33µA		
	Users range setting	-4000 to 4000	1.37µA	-12000 to 12000	1.33µA		
			accuracy: ±0.1				
			tion mode: ±4	ŭ			
	-	olution mode (0		, -		0	
	High resolution	on mode (Other	than the above	e ranges): ±12 dig	jits		
±71.4ppm/°C (0.00714%/°C)							
10ms/channel							The conversion speed of Q68AD-G to A1S68AD has
20ms						Δ	become slow. If fast conversion speed is required for control, the Q64AD is recommended.
		Volta	age: ±15V				
		curre	ent: ±30mA			0	

Item	A1S68AD				
Analog input points	8 channels/module				
Maximum number of writes for					
E ² PROM	-				
Isolation method	Between the input terminal and programmable controller power supply: photocoupler isolation				
isolation method	Between channels: not isolated				
D: 1 (: :: :: / 1 / 1					
Dielectric withstand voltage	- -				
Insulation resistance	-				
	32 points				
Number of occupied I/O points	(I/O assignment: special 32 points)				
Connected terminal	20-point terminal block				
Applicable wire size	0.75 to 1.5mm ²				
Applicable solderless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A				
Internal current consumption					
(5VDC)	0.4A				
Weight	0.27kg				

 $O: Compatible, \triangle: Partial \ change \ required, \ \times: Incompatible$

Q68AD-G	Compatibility	Precautions for replacement
8 channels/module	0	
Up to 50,000 times	0	
Between the input terminal and programmable controller power supply: transformer isolation Between channels: transformer isolation	0	
Between the input terminal and programmable controller power supply: 500VACrms, for 1 minute Between channels: 1000VACrms, for 1 minute	0	
Between the input terminal and programmable controller power supply: $500VDC,10M\Omega \text{ or more}$ Between channels: $500VDC,10M\Omega$ or more	0	
16 points (I/O assignment: intelligent, 16 points)	Δ	The number of occupied I/O points has changed to 16 points.
40-pin connector	×	
Within 0.3mm ²	×	Wiring change is required.
-	×	
0.46A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.16kg	0	

2.4.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S68AD	Q68AD-G	Precautions for replacement
	Specifies whether to enable or disable the			
	A/D conversion for each channel.			
A/D conversion enable/disable	By disabling the conversion for the	0	0	
	channels that are not used, the sampling			
	time can be shortened.			
	The A/D conversion for analog input values			
Campling processing	is performed successively for each channel,			
Sampling processing	and the digital output value is output upon	0	0	
	each conversion.			
	For each channel, A/D conversion values			The cetting range of everage
	are averaged for the set number of times or			The setting range of average
	set amount of time, and the average value	0	0	time and count differ.
Averaging processing	is output as a digital value.			Check the specifications,
	Moving average takes the average of the			referring to the Analog-Digital
	specified number of digital output values	-	0	Converter Module User's
	measured per sampling time.			Manual.
	The maximum and minimum values of the			
Maximum and minimum values	digital output values are retained in the	-	0	
hold function	module.			
	The resolution can be switched according to			
Resolution mode	the application. The resolution mode is	-	0	
	batch-set for all the channels.*1			
Input signal error detection	The voltage/current outside the setting		_	
function	range is detected.	-	0	
	(1) Process alarm			
	A warning is output if a digital output			
	value falls outside the setting range.			
Warning output function	(2) Rate alarm	-	0	
	A warning is output if the varying rate of			
	a digital output value falls outside the			
	preset varying rate range.			
	Conversion of A/D conversion values to			
	preset percentage values and loading into			
Scaling function	the buffer memory is available.	-	0	
	Programming steps for the scaling can be			
	eliminated.			
	A module can be replaced without the			The Process CPU and
Online module change	· ·	-	0	Redundant CPU support this
	system being stopped.			function.

For the A1S68AD, the resolution is 1/4000 (fixed).

For the Q68AD-G, the resolution for both voltage and current is 1/4000 in normal resolution mode. In high resolution mode, the resolution for the voltage range -10 to 0 to 10V is 1/16000, and the resolution for the voltage in other ranges and current is 1/12000.

2.4.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the Channel Isolated Analog-Digital Converter Module, Channel Isolated Analog-Digital Converter Module (With Signal Conditioning Function) User's Manual.

A1S68AD				Q68AD-G				
Device	Signal name	Device	Signal name	Device	Signal name	Device	Signal name	
No.	Signal name	No.	Signal name	No.	Signal name	No.	Signal name	
X0	WDT error flag	Y0		X0	Module ready	Y0		
X1	A-D conversion READY	Y1		X1		Y1		
X2	Error flag	Y2		X2		Y2		
Х3		Y3		Х3	Use prohibited	Y3		
X4		Y4		X4	Goo promoted	Y4	Use prohibited	
X5		Y5		X5		Y5		
X6		Y6		X6		Y6		
X7		Y7		X7	High resolution mode status flag	Y7		
X8		Y8		X8	Warming output signal	Y8		
X9		Y9		X9	Operating condition setting completed flag	Y9	Operating condition setting request	
XA		YA	Use prohibited	XA	Offset/gain setting mode flag	YA	User range writing request	
ХВ		YB		XB	Channel change completed flag	YB	Channel change request	
XC		YC		XC	Input signal error detection signal	YC	Use prohibited	
					Maximum value/		Maximum value/	
XD		YD		XD	minimum value reset	YD	minimum value reset	
					completed flag		request	
XE	Use prohibited	YE		XE	A/D conversion completed flag	YE	Use prohibited	
XF		YF		XF	Error flag	YF	Error clear request	
X10		Y10				•		
X11		Y11						
X12		Y12	Error reset					
X13		Y13						
X14		Y14						
X15		Y15						
X16		Y16						
X17		Y17						
X18		Y18						
X19		Y19 Y1A	Use prohibited					
X1A X1B		Y1A Y1B						
X1B X1C		Y1C						
X1D		Y1D						
X1E		Y1E						
X1F		Y1F						
AII		1 11		ı				

2.4.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the Channel Isolated Analog-Digital Converter Module, Channel Isolated Analog-Digital Converter Module (With Signal Conditioning Function) User's Manual.

	A1S68AD		Q68AD-G				
Address (decimal)	Name	Read/write	Address (decimal)	Namo	Read/write		
0	A-D conversion enable/disable	R/W	0	A/D conversion enable/disable setting			
4	Writing data array and	В	1	CH1 Average time/Average number of times/			
1	Writing data error code	R	1	Moving average/Time constant settings			
2	Average processing anglification	DW	•	CH2 Average time/Average number of times/			
2	Average processing specification	R/W	2	Moving average/Time constant settings	R/W		
2			2	CH3 Average time/Average number of times/	R/W		
3			3	Moving average/Time constant settings			
to	System area (Llas prohibited)		to				
0	System area (Use prohibited)	-	0	CH8 Average time/Average number of times/			
8			8	Moving average/Time constant settings			
9			9	System area (Use prohibited)	-		
10	CH1 Average time, count		10	A/D conversion completed flag			
11	CH2 Average time, count	D/M/	11	CH1 Digital output value			
to		R/W	to				
17	CH8 Average time, count		17	CH7 Digital output value	<u> </u>		
18	Constant and (Use much history)		18	CH8 Digital output value	R		
19	System area (Use prohibited)	-	19	Error code	İ		
20	CH1 Digital output value		20	Setting range (CH1 to CH4)			
21	CH2 Digital output value		21	Setting range (CH5 to CH8)	İ		
22	CH3 Digital output value		22	Offset/gain setting mode offset specification			
23	CH4 Digital output value		23	Offset/gain setting mode gain specification	İ		
24	CH5 Digital output value	R	24	Averaging process specification (CH1 to CH4)	R/W		
25	CH6 Digital output value		25	Averaging process specification (CH5 to CH8)			
26	CH7 Digital output value		26				
27	CH8 Digital output value		27	Cyatam area (Llas probibited)			
28	A-D conversion completed flag	R/W	28	System area (Use prohibited)	-		
29	System area (Use prohibited)	-	29				
			30	CH1 Maximum value			
			31	CH1 Minimum value			
			to		R		
			44	CH8 Maximum value			
			45	CH8 Minimum value			
			46	System area (Use prohibited)	-		
			47	Input signal error detection extended/input			
			47	signal error detection setting	R/W		
			48	Warning output setting			
			49	Input signal error detection flag			
	ľ		50	Warning output flag (Process alarm)	R		
			51	Warning output flag (Rate alarm)			
			52	System area (Use prohibited)	-		
			53	Scaling enable/disable setting	R/W		
			54	CH1 Scaling value			
			to		R		
			61	CH8 Scaling value	Ī		

	Q68AD-G		
Address	Name	Read/write	
(decimal)		iteau/wiite	
62	CH1 Scaling lower limit value		
63	CH1 Scaling upper limit value		
to		R/W	
76	CH8 Scaling lower limit value		
77	CH8 Scaling upper limit value		
78			
to	System area (Use prohibited)	-	
85	CHA Branco clares lavian lavian livettualita		
86	CH1 Process alarm lower lower limit value		
87	CH1 Process alarm lower upper limit value		
88 89	CH1 Process alarm upper lower limit value		
to	CH1 Process alarm upper upper limit value	-	
114	CH8 Process alarm lower lower limit value	-	
115		-	
116	CH8 Process alarm lower upper limit value CH8 Process alarm upper lower limit value		
117	CH8 Process alarm upper lower limit value CH8 Process alarm upper upper limit value		
118	CH1 Rate alarm warning detection period		
to	CHO Data alama wamina dataatian aasiad		
125	CH8 Rate alarm warning detection period		
126	CH1 Rate alarm upper limit value		
127	CH1 Rate alarm lower limit value		
to	OHO Bata alama wanan Kasifa ya ka	R/W	
140	CH8 Rate alarm upper limit value	R/VV	
141	CH8 Rate alarm lower limit value		
4.40	CH1 Input signal error detection setting		
142	value/CH1 Input signal error detection lower		
	limit setting value		
to	0101		
4.40	CH8 Input signal error detection setting		
149	value/CH8 Input signal error detection lower		
	limit setting value		
150	CH1 Input signal error detection upper limit		
	setting value		
to			
157	CH8 Input signal error detection upper limit		
450	setting value		
158	Mode switching setting		
159			
160	System area (Hee problibited)		
to	System area (Use prohibited)	-	
199	Cave data algorification patting	DAM	
200	Save data classification setting	R/W	
201	System area (Use prohibited)	-	
202	CH1 Factory default gain value		
203	CH1 Factory default gain value		
to	CU9 Egotony default effect value		
216	CH8 Factory default gain value		
217	CH8 Factory default gain value	R/W	
218	CH1 User range settings offset value		
219	CH1 User range settings gain value		
to	CHO Haar range as Warrant off		
232	CH8 User range settings offset value		
233	CH8 User range settings gain value		

3 ANALOG OUTPUT MODULE REPLACEMENT

3.1 List of Analog Output Module Alternative Models for Replacement

AnS/QnAS s	eries		Transition to Q series
Product	Model	Model	Remarks (Restrictions)
	A1S62DA	Q62DAN	Cable size is changed. Number of slots
		Q64DAN	External wiring : Cable size is changed. Number of slots : Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Changed. 4CH/module External power supply (24VDC) is required. Functional specifications: Not changed.
Analog output module	A1S68DAI	Q68DAIN	Cable size is changed. Number of slots : Not changed Nor changed: The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Changed. External power supply (24VDC) is required. 5) Functional specifications: Not changed
	A1S68DAV	Q68DAVN	Cable size is changed. Number of slots: Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Changed. External power supply (24VDC) is required. Functional specifications: Not changed

⊠Point -

(1) Converesion adapter

The existing wiring for the AnS/QnAS series modules can be connected directly to the Q series modules using the upgrade tool (conversion adaptor) manufactured by Mitsubishi Electric Engineering Co., Ltd.

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor	
	A1S62DA	Q62DAN	ERNT-ASQT62DA	
Analog output module	A1S68DAV	Q68DAVN	-ERNT-ASQT68DA	
	A1S68DAI	Q68DAIN		

For contact information for inquiries on the upgrade tool manufactured by Mitsubishi Electric Engineering Co., Ltd., refer to Section 2.1.

(2) Inrush Current

Q Series analog output unit is required 24VDC external power supply. Please select in consideration of the inrush current.

If an overcurrent occurs please consider the measures below.

- · The rated current of the external power supply.
- The power supply line is relayed by the relay, and power-on one by one.

3.2 A1S62DA (Replacing with the Q62DAN)

3.2.1 Performance specifications comparison

Item	A1S62DA								
Digital input	Voltage: -4000 to 4000, -8000 to 8000, -12000 to 12000 Current: 0 to 4000, 0 to 8000, 0 to 12000								
Analog output	Voltage: -10 to 0 to +10VDC (External load resistance value: $2k\Omega$ to $1M\Omega$) Current: 0 to $20mADC$ (External load resistance value: 0 to 600Ω)								
I/O characteristics	Digital input value *1 The offset value *2 The offset value		-		Voltage output value*1 10V 5V 0 -5V -10V	Current output value*2 20mA 12mA 4mA			
Maximum resolution		1/4000 2.5mV (10V) 5μA (20mA) 1/8000 1.25mV (10V) 2.5μA (20mA) 1/12000 0.83mV (10V) 1.7μA (20mA)							
Overall accuracy (accuracy at maximum analog output value)	±1% (voltage: ±100mV, current: ±200μA)								
Maximum conversion speed	Within 25ms/2 channels (same time for one channel)								
Absolute maximum output		Voltage: ±12V Current: +28mA							
Analog output points			2 channe	els/module					
Number of writes to E ² PROM				-					
Output short protection			Ava	ilable					

O: Compatible, △: Partial change required, ×: Incompatible

						0:0	•	tial change required, ×: Incompatible
			Q	62DAN			Compatibility	Precautions for replacement
								If the resolution differs
	16 hit signed hippry							between AnS series and Q
	16-bit signed binary Normal resolution mode: -4096 to 4095 High resolution mode: -12288 to 12287, -16384 to 16383							series modules, it needs to be
								matched using a sequence
								program or user range
								settings. (Refer to Appendix 4.)
			Voltage:	-10 to 10VDC				
		(Ext	ernal load resist	ance value: 1k	Ω to 1M Ω)			
			Current:	0 to 20mADC			0	
		(Ex	kternal load resis	stance value: 0	to 600Ω)			
			Normal reso	olution mode	High resolu	tion mode		
		log output	Digital input	Maximum	Digital input	Maximum		
		range	value	resolution	value	resolution		
		0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV		If the resolution differs
		1 to 5V	0 10 4000	1.0mV	0 10 12000	0.333mV		
	Voltage	-10 to 10V		2.5mV	-16000 to 16000	0.625mV		between AnS series and Q
		User range	-4000 to 4000	0.75mV	-12000 to 12000	0.333mV	Δ	series modules, it needs to be
		settings 0 to 20mA		F A		1.66µA		matched using a sequence
		4 to 20mA	0 to 4000	5μA 4μA	0 to 12000	1.33µA		program or user range
	Current	User range		τμ/\		·		settings. (Refer to Appendix 4.)
		settings	-4000 to 4000	1.5µA	-12000 to 12000	0.83μΑ		
		Am	bient temperatu					
	(voltage: ±10mV, current: ±20μA)						0	
		Amb	pient temperatur					
	(voltage: ±30mV, current: ±60μA)							
	80µs/channel						0	
	Voltage: ±12V						0	
				ent: 21mA				
				nels/module			0	
				00,000 times			0	
			A	vailable			0	

lte	em	A1S62DA						
Isolation metho		Between the output terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated						
Dielectric withs	tand voltage	-						
Insulation resis	tance							
Number of occ	upied I/O points	32 points (I/O assignment: special 32 points)						
Connected terr	ninal	20-point terminal block						
Applicable wire	size	0.75 to 1.5mm ²						
Applicable sold	lerless terminal	1.25-3, 1.25-YS3A, V1.25-3, V1.25-YS3A						
Internal current (5VDC)	consumption	0.80A						
External	Voltage	-						
power supply	Current consumption	-						
	Inrush current	-	· ·					
Weight		0.32kg						

O : Compatible, △ : Partial change required, ×: Incompatible

	O. G	Compatible, △ : Partial change required, *: incompatible			
	Q62DAN	Compatibility	Precautions for replacement		
	Between the I/O terminal and programmable controller power supply: photocoupler isolation				
	Between output channels: not isolated	0			
	Between external power supply and analog output: transformer isolation				
	Between the I/O terminal and programmable controller power supply: 500VAC, for 1 minute	0			
	Between external power supply and analog output: 500VAC, for 1 minute	0			
	Between the I/O terminal and programmable controller power supply:				
	500VDC, 20M Ω or more	0			
	Between external power supply and analog output: 500VDC, 20M Ω or more				
	40 mainta		The number of occupied I/O		
	16 points (I/O assignment: intelligent 16 points)	Δ	points has changed to 16		
			points.		
	18-point terminal block	×	Wiring shangs is required		
	0.3 to 0.75mm ²	×			
	R1.25-3		Wiring change is required.		
	(Solderless terminals with an insulation sleeve cannot be used.)	×			
	0.33A	0			
	20/172 20// 177/	_			
	24VDC +20%, -15%	×			
	Ripple, spike 500mV _{P-P} or less		External power supply		
	0.15A	×	(24VDC) is required.		
	2.5A, 250µs or less	×			
·	0.19kg	0			

3.2.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62DA	Q62DAN	Precautions for replacement
Analog output HOLD/CLEAR function	Determines the status of analog output values (hold or clear) when the programmable controller CPU stops or an error occurs.	0	0	
D/A conversion enable/disable function	Specifies whether to enable or disable the D/A conversion.	0	0	
D/A output enable/disable function	Specifies whether to output the D/A conversion value or the offset value.	0	0	
Synchronous output function	Obtains analog output synchronized with the programmable controller CPU.	-	0	
Analog output test while the programmable controller CPU is in the STOP status	Outputs the analog value converted from a digital value when CH Output enable/ disable flag is forcibly turned on while the programmable controller CPU is in the STOP status.	-	0	
Resolution mode	The resolution can be switched according to the application.*1	0	0	
Online module replacement	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

^{*1} For the A1S62AD, any mode (1/4000, 1/8000, or 1/12000) can be selected for both voltage and current input.

For the Q62DAN, the mode is fixed at 1/4000 for both voltage and current input in normal resolution mode. In high resolution mode, the mode is fixed at 1/16000 when the input voltage range is -10 to 10V, and the mode is fixed at 1/12000 when the input voltage range is other than -10 to 10V or current is input.

3.2.3 I/O signal comparison

Sequence program change is required as the I/O signals differs.

For details of the I/O signals and sequence program, refer to the Digital-Analog Converter Module User's Manual.

	A1S62DA				Q62DAN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
Х0	WDT error flag (A1S62DA detection)	Y0		X0	Module ready	Y0	Use prohibited		
X1	D-A conversion READY	Y1		X1		Y1	CH1 Output enable/ disable flag		
X2	Error flag	Y2		X2		Y2	CH2 Output enable/ disable flag		
Х3		Y3		Х3	Use prohibited	Y3			
X4		Y4		X4		Y4			
X5		Y5		X5		Y5	Haranak k kad		
X6 X7		Y6 Y7		X6 X7		Y6 Y7	Use prohibited		
		17			High resolution mode	17			
X8		Y8	Use prohibited	X8	status flag	Y8			
X9		Y9		X9	Operating condition setting completed flag	Y9	Operating condition setting request		
XA		YA		XA	Offset/gain setting mode flag	YA	User range writing request		
ХВ		YB		ХВ	Channel change completed flag	YB	Channel change request		
XC		YC		XC	Set value change completed flag	YC	Set value change request		
XD		YD		XD	Synchronous output mode flag	YD	Synchronous output request		
XE		YE		XE	Use prohibited	YE	Use prohibited		
XF	Use prohibited	YF		XF	Error flag	YF	Error clear request		
X10		Y10	CH1 D-A conversion output enable flag						
X11		Y11	CH2 D-A conversion output enable flag						
X12		Y12							
X13		Y13							
X14		Y14	Use prohibited						
X15		Y15	goo promotou						
X16		Y16							
X17		Y17							
X18		Y18	Error reset						
X19		Y19							
X1A V1B		Y1A Y1B							
X1B X1C		Y1B Y1C	Use prohibited						
X1D		Y1D	ose brouinited						
X1E		Y1E							
X1F		Y1F							
/\ II	l	- 11							

3.2.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memories and sequence program, refer to the Digital-Analog Converter Module User's Manual.

	A1S62DA					
Address (decimal)	Name	Read/write	Address (decimal)	Q62DAN Name	Read/write	
0	Analog output enable/disable channel		0	D/A conversion enable/disable		
1	CH1 digital value	R/W	1	CH1 Digital value	R/W	
2	CH2 digital value	-	2	CH2 Digital value		
3			3			
4			4			
5			5			
6	System area (Use prohibited)	-	6			
7			7	System area (Use prohibited)	-	
8			8			
9	Resolution of digital value		9			
10	CH1 set value check code	R/W	10			
11	CH2 set value check code		11	CH1 Set value check code		
12			12	CH2 Set value check code	R	
13			13			
14	Contain and (Harmark Shited)		14			
15	System area (Use prohibited)	-	15	Custom area (Has prohibited)	-	
16			16	System area (Use prohibited)		
17			17			
			18			
			19	Error code	R	
			20	Setting range (CH1 and CH2)		
			21	System area (Use prohibited)	-	
			22	Offset/gain setting mode Offset specification		
			23	Offset/gain setting mode Gain specification	R/W	
			24	Offset/gain adjustment value specification		
			25			
			to	System area (Use prohibited)	-	
			157			
			158	Mode switching setting	R/W	
			159			
			160			
			to	System area (Use prohibited)	-	
			199			
			200	Pass data classification setting	R/W	
			201	System area (Use prohibited)	-	
			202	CH1 Industrial shipment settings offset value		
			203	CH1 Industrial shipment settings gain value		
			204	CH2 Industrial shipment settings offset value		
			205	CH2 Industrial shipment settings gain value	R/W	
			206	CH1 User range settings offset value		
			207	CH1 User range settings gain value		
			208	CH2 User range settings offset value		
			209	CH2 User range settings gain value		

3 ANALOG OUTPUT MODULE REPLACEMENT MELSEC

Memo		

3.3 A1S62DA (Replacing with the Q64DAN)

3.3.1 Performance specifications comparison

Item			A1S	62DA				
Digital input	Voltage: -4000 to 4000, -8000 to 8000, -12000 to 12000 Current: 0 to 4000, 0 to 8000, 0 to 12000							
Analog output		·	Voltage: -10 t al load resistar Current: 0 t nal load resista	nce value: 2k0 to +20mADC	Ω to 1MΩ)			
I/O characteristics								
Maximum resolution			000 2.5mV 000 1.25mV 000 0.83mV	(10V) 2.5	бµА (20mA) бµА (20mA) ′µА (20mA)			
Overall accuracy (accuracy at maximum analog output value)		±1% (voltage: ±100mV, current: ±200μA)						
Maximum conversion speed	Within 25ms/2 channels (same time for one channel)							
Absolute maximum output	Voltage: ±12V Current: +28mA							
Analog output points			2 channe	els/module				
Number of writes to E ² PROM				-				
Output short protection			Ava	ilable				

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

		e	64DAN		0.0	<u>, </u>	Precautions for replacement
16-bit signed binary (Normal resolution mode: -4096 to 4095, High resolution mode: -12288 to 12287, -16384 to 16383) Voltage: -10 to 10VDC (External load resistance value: $1k\Omega$ to $1M\Omega$) Current: 0 to $20mADC$ (External load resistance value: 0 to 600Ω)							If the resolution differs between AnS series and Q series modules, it needs to be matched using a sequence program or user range settings. (Refer to Appendix 4.)
	og output range 0 to 5V 1 to 5V -10 to 10V User range settings 0 to 20mA 4 to 20mA User range settings	Normal resc Digital input value 0 to 4000 -4000 to 4000 0 to 4000 -4000 to 4000	olution mode Maximum resolution 1.25mV 1.0mV 2.5mV 0.75mV 5µA 4µA 1.5µA	High resolu Digital input value 0 to 12000 -16000 to 16000 -12000 to 12000 0 to 12000 -12000 to 12000	Maximum resolution 0.416mV 0.333mV 0.625mV 0.333mV 1.66µA 1.33µA 0.83µA	Δ	If the resolution differs between AnS series and Q series modules, it needs to be matched using a sequence program or user range settings. (Refer to Appendix 4.)
		nbient temperatu (voltage: ±10r bient temperatur (voltage: ±30r	0				
 80µs/channel							
		Volta Curr	0				
			nels/module			0	
			00,000 times			0	
		Α	vailable			0	

Ite	em	A1S62DA					
Isolation metho	od	Between the output terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated					
Dielectric withs	tand voltage	-					
Insulation resis	tance						
Number of occ	upied I/O points	32 points (I/O assignment: special 32 points)					
Connected terr	ninal	20-point terminal block					
Applicable wire	size	0.75 to 1.5mm ²					
Applicable sold	erless terminal	1.25-3, 1.25-YS3A, V1.25-3, V1.25-YS3A					
Internal current (5VDC)	consumption	0.8A					
External	Voltage	-					
power supply	Current consumption	-					
	Inrush current	· -					
Weight		0.32kg					

O: Compatible, △: Partial change required, ×: Incompatible

0.6	ompatible, 🗠 . Partial change required, 🧸 incompatible			
Q64DAN	Compatibility	Precautions for replacement		
Between the I/O terminal and programmable controller power supply: photocoupler isolation				
Between output channels: not isolated	0			
Between external power supply and analog output: transformer isolation				
Between the I/O terminal and programmable controller power supply: 500VAC, for 1 minute	0			
Between external power supply and analog output: 500VAC, for 1 minute	0			
Between the I/O terminal and programmable controller power supply:				
500VDC, 20M Ω or more	0			
Between external power supply and analog output: 500VDC, 20M Ω or more				
16 points (I/O assignment: intelligent 16 points)	Δ	The number of occupied I/O points has changed to 16		
(I/O assignment. Intelligent to points)		points.		
18-point terminal block	×			
0.3 to 0.75mm ²	×	Minima alaman in un surina d		
R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.)	×	Wiring change is required.		
0.34A	0			
24VDC +20%, -15%				
Ripple, spike 500mV _{P-P} or less	×	External power supply		
0.24A	×	(24VDC) is required.		
2.5A, 260µs or less	×			
 0.20kg	0			

3.3.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62DA	Q64DAN	Precautions for replacement
Analog output HOLD/CLEAR function	Determines the status of analog output values (hold or clear) when the programmable controller CPU stops or an error occurs.	0	0	
D/A conversion enable/disable function	Specifies whether to enable or disable the D/A conversion.	0	0	
D/A output enable/disable function	Specifies whether to output the D/A conversion value or the offset value.	0	0	
Synchronous output function	Obtains analog output synchronized with the programmable controller CPU.	-	0	
Analog output test while the programmable controller CPU is in the STOP status	Outputs the analog value converted from a digital value when CH Output enable/ disable flag is forcibly turned on while the programmable controller CPU is in the STOP status.	0	0	
Resolution mode	The resolution can be switched according to the application.*1	0	0	
Online module replacement	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

^{*1} For the A1S62AD, any mode (1/4000, 1/8000, or 1/12000) can be selected for both voltage and current input.

For the Q64DAN, the mode is fixed at 1/4000 for both voltage and current input in normal resolution mode. In high resolution mode, the mode is fixed at 1/16000 when the input voltage range is -10 to 10V, and the mode is fixed at 1/12000 when the input voltage range is other than -10 to 10V or current is input.

3.3.3 I/O signal comparison

Sequence program change is required as the I/O signals differs.

For details of the I/O signals and sequence program, refer to the Digital-Analog Converter Module User's Manual.

A1S62DA				Q64DAN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
Х0	WDT error flag (A1S62DA detection)	Y0		X0	Module ready	Y0	Use prohibited	
X1	D/A conversion READY	Y1		X1		Y1	CH1 Output enable/ disable flag	
X2	Error flag	Y2		X2		Y2	CH2 Output enable/ disable flag	
Х3		Y3		Х3	Use prohibited	Y3	CH3 Output enable/ disable flag	
X4		Y4		X4		Y4	CH4 Output enable/ disable flag	
X5		Y5		X5		Y5		
X6		Y6		X6		Y6		
X7		Y7		X7		Y7	Use prohibited	
X8		Y8	Use prohibited	X8	High resolution mode status flag	Y8		
X9		Y9		Х9	Operating condition setting completed flag	Y9	Operating condition setting request	
XA		YA		XA	Offset/gain setting mode flag	YA	User range writing request	
ХВ		YB		XB	Channel change completed flag	YB	Channel change request	
XC		YC		XC	Set value change completed flag	YC	Set value change request	
XD		YD		XD	Synchronous output mode flag	YD	Synchronous output request	
XE	Use prohibited	YE		XE	Use prohibited	YE	Use prohibited	
XF		YF		XF	Error flag	YF	Error clear request	
X10		Y10	CH1 D-A conversion output enable flag					
X11		Y11	CH2 D-A conversion output enable flag					
X12]	Y12						
X13		Y13						
X14		Y14	Use prohibited					
X15		Y15	oo promotou					
X16	_	Y16						
X17	-	Y17	From roact					
X18 X19	-	Y18 Y19	Error reset	l				
X19 X1A	-	Y1A						
X1B		Y1B						
X1C	1	Y1C	Use prohibited					
X1D	1	Y1D	p. o					
X1E	1	Y1E						
X1F	1	Y1F						

3.3.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memories and sequence program, refer to the Digital-Analog Converter Module User's Manual.

	A1S62DA		Q64DAN			
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write	
0	Analog output enable/disable channel		0	D/A conversion enable/disable		
1	CH1 digital value	R/W	1	CH1 Digital value		
2	CH2 digital value		2	CH2 Digital value	R/W	
3			3	CH3 Digital value		
4			4	CH4 Digital value		
5	System area (Use prohibited)	_	5			
6	dystem area (ose prombited)		6			
7			7	System area (Use prohibited)	_	
8			8	System area (656 prombited)		
9	Resolution of digital value		9			
10	CH1 set value check code	R/W	10			
11	CH2 set value check code		11	CH1 Set value check code		
12			12	CH2 Set value check code	R	
13			13	CH3 Set value check code	- K	
14	System area (Use prohibited)		14	CH4 Set value check code		
15	System area (Ose prombited)	_	15			
16			16	System area (Use prohibited)		
17			17	System area (Ose prombited)		
			18			
			19	Error code	R	
			20	Setting range (CH1 to CH4)		
			21	System area (Prohibited)	-	
			22	Offset/gain setting mode Offset specification		
			23	Offset/gain setting mode Gain specification	R/W	
			24	Offset/gain adjustment value specification		
			25			
			to	System area (Use prohibited)	-	
			157			
			158	Mode switching setting	R/W	
			159	I wode switching setting	IN/VV	
			160			
			to	System area (Use prohibited)	-	
			199			
			200	Pass data classification setting	R/W	
			201	System area (Use prohibited)	-	
			202	CH1 Industrial shipment settings offset value		
			203	CH1 Industrial shipment settings gain value		
			to			
			208	CH4 Industrial shipment settings offset value		
			209	CH4 Industrial shipment settings gain value	R/W	
			210	CH1 User range settings offset value	17///	
			211	CH1 User range settings gain value		
			to			
			216	CH4 User range settings offset value		
			217	CH4 User range settings gain value	1	

3 ANALOG OUTPUT MODULE REPLACEMENT MELSEC

Memo			

3.4 A1S68DAI

3.4.1 Performance specifications comparison

Item	A1S68DAI					
Digital input		16-bit signed binary Setting range: 0 to 4096				
Analog output	4 to 20mADC (External load resistance value: 0 to 600Ω)					
I/O characteristics		Digital input value 4000 2000	Analog output value 20mA 12mA 4mA			
Maximum resolution of analog value	4μΑ					
Overall accuracy (accuracy at maximum analog output value)	±1.0% (±200μA)					
Conversion speed	Within 4ms/8 channels If the frequency of access from the programmable controller CPU using the FROM/TO instructions is high, the speed may be increased for about 6ms.					
Absolute maximum output			-			
Analog output points		8 channe	ls/module			

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

\sim						compatible, \(\triangle\). Fartial change required, \(\triangle\). Incompatible		
		Q	68DAIN			Compatibility	Precautions for replacement	
	,	16-bit s Normal resolution High resolution m	0					
	(E	0 to xternal load resis	0					
Analog output range Digital input value resolution mode O to 20mA				High resolu Digital input value 0 to 12000 -12000 to 12000	Maximum resolution 1.66µA 1.33µA 0.83µA	0		
Ambient temperature 25±5°C: within ±0.1% (±20μA) Ambient temperature 0 to 55°C: within ±0.3% (±60μA)								
80μs/channel						0		
		,	21mA			0		
		8 chan	nels/module			0		

it	em	A1S68DAI				
	tes to E ² PROM	-				
Output short pr		Available				
Output short pi	TOLCOLIOTI	Available				
Isolation metho	od	Between the output terminal and programmable controller power supply: photocoupler isolation Between output channels: not isolated				
Dielectric withs	stand voltage	-				
Insulation resistance		-				
Number of occupied I/O points		32 points (I/O assignment: special 32 points)				
Connected terr	minal	20-point terminal block (M3.5 × 7 screws)				
Applicable wire	e size	0.75 to 1.5mm ²				
Applicable solo	derless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A				
Internal current (5VDC)	t consumption	0.85A				
Entropol	Voltage					
External power supply	Current consumption	-				
	Inrush current					
Weight		0.22kg				

 $O: Compatible, \triangle: Partial \ change \ required, \ \times: Incompatible$

Q68DAIN	Compatibility	Precautions for replacement	
Max. 100,000 times	0		
Available	0		
Between the I/O terminal and programmable controller power supply: photocoupler isolation			
Between output channels: no isolation	0		
Between external power supply and analog output: transformer isolation			
Between the I/O terminal and programmable controller power supply: 500VAC, for 1 minute	0		
Between external power supply and analog output: 500VAC, for 1 minute	0		
Between the I/O terminal and programmable controller power supply:			
500VDC, 20M Ω or more	0		
Between external power supply and analog output: 500VDC, 20M Ω or more			
16 points (I/O assignment: intelligent 16 points)	Δ	The number of occupied I/O points has changed to 16 points.	
18-point terminal block	×		
0.3 to 0.75mm ²	×		
FG terminal: R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A		Wiring change is required.	
Terminals other than FG: R1.25-3	×		
(Solderless terminals with an insulation sleeve cannot be used.)			
0.38A	0		
24VDC +20%, -15%			
Ripple, spike 500mVp-p or less			
0.27A	×	External power supply (24VDC) is required.	
2.5A, 230µs or less			
0.20kg	0		

3.4.2 Functional comparison

				O : Available, - : Not available
Item	Description	A1S68 DAI	Q68 DAIN	Precautions for replacement
D/A conversion enable/ disable function	Specifies whether to enable or disable the D/A conversion for each channel.	0	0	On Q68DAIN, by disabling the D/A conversion for the channels that are not used, the conversion speed can be shortened.
D/A output enable/disable function	Specifies whether to output the D/A conversion value or the offset value for each channel. The conversion speed stays constant regardless of whether D/A output is enabled or disabled.	0	0	
Synchronous output function	Obtains analog output synchronized with the programmable controller CPU. The analog output will be updated after Synchronous output request (YD) is set to ON and the time specified as "programmable controller CPU processing time +120µs" has elapsed. However, the analog output will be fixed to CH1, and other channels (CH2 to CH8) cannot be used. When the module is mounted on a remote I/O station, the analog output will not be synchronized because of a link scan delay if the synchronous output function is specified.	-	0	
Analog output HOLD/ CLEAR function	Holds an analog value that was output when the programmable controller CPU is in the STOP status or an error occurs.	0	0	 On Q68DAIN, the setting of HOLD/CLEAR is carried out for each channel. For the Q68DAIN, the status is set with the intelligent function module switch setting of GX Developer. Check the execution status of output, referring to the "Analog output status combination list" in the Digital-Analog Converter Module User's Manual.
Analog output test while the programmable controller CPU is in the STOP status	Outputs the analog value converted from a digital value when CH□ Output enable/disable flag is forcibly turned on while the programmable controller CPU is in the STOP status. D/A conversion enable/disable Enable Disable	0	0	
Resolution mode	The resolution can be switched according to the application.*1 The resolution mode is batch-set for all channels.	-	0	
Online module replacement	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

^{*1} For the A1S68DAI, the mode is fixed at 1/4000.

For the Q68DAIN, the mode is fixed at 1/4000 in normal resolution mode. In high resolution mode, the mode is fixed at 1/12000.

3.4.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the Digital-Analog Converter Module User's Manual.

	A1S68DAI			Q68DAIN			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	WDT error flag (A1S68DAI detection)	Y0		X0	Module ready	Y0	Use prohibited
X1	D/A conversion READY	Y1		X1		Y1	CH1 Output enable/ disable flag
X2	Error flag	Y2		X2		Y2	CH2 Output enable/ disable flag
Х3		Y3		Х3		Y3	CH3 Output enable/ disable flag
X4		Y4		X4	Use prohibited	Y4	CH4 Output enable/ disable flag
X5		Y5		X5		Y5	CH5 Output enable/ disable flag
X6		Y6		X6		Y6	CH6 Output enable/ disable flag
X7		Y7	Use prohibited	X7		Y7	CH7 Output enable/ disable flag
X8		Y8		X8	High resolution mode status flag	Y8	CH8 Output enable/ disable flag
X9		Y9		Х9	Operating condition setting completed flag Offset/gain setting mode flag	Y9	Operating condition setting request
XA		YA		XA		YA	User range writing request
XB		YB		XB	Channel change completed flag	YB	Channel change request
XC	Use prohibited	YC		XC	Set value change completed flag	YC	Set value change request
XD	Jose prombhed	YD		XD	Synchronous output mode flag	YD	Synchronous output request
XE		YE		XE	Use prohibited	YE	Use prohibited
XF		YF		XF	Error flag	YF	Error clear request
X10		Y10					_
X11		Y11					
X12		Y12					
X13		Y13	D/A conversion value				
X14		Y14	output enable flag				
X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18	Error reset flag				
X19		Y19					
X1A		Y1A					
X1B		Y1B					
X1C		Y1C	Use prohibited				
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

3.4.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memories and sequence program, refer to the Digital-Analog Converter Module User's Manual.

	A1S68DAI			OCODAIN		
Address	A 1300DAI		Q68DAIN			
(decimal)	Name	Read/write	(decimal)	Name	Read/write	
0	Analog output enable/disable channel		0	D/A conversion enable/disable		
1	CH1 digital value	_	1	CH1 Digital value		
2	CH2 digital value	-	2	CH2 Digital value		
3	CH3 digital value		3	CH3 Digital value		
4	CH4 digital value	R/W	4	CH4 Digital value	R/W	
5	CH5 digital value	-	5	CH5 Digital value		
6	CH6 digital value	-	6	CH6 Digital value		
7	CH7 digital value	-	7	CH7 Digital value		
8	CH8 digital value		8	CH8 Digital value		
9	System area (Use prohibited)	_	9	-		
10	CH1 set value check code		10	System area (Use prohibited)	-	
11	CH2 set value check code	_	11	CH1 Set value check code		
12	CH3 set value check code	_	12	CH2 Set value check code		
13	CH4 set value check code	_	13	CH3 Set value check code		
14	CH5 set value check code	R	14	CH4 Set value check code		
15	CH6 set value check code	_	15	CH5 Set value check code		
16	CH7 set value check code	_	16	CH6 Set value check code	R	
17	CH8 set value check code	-	17	CH7 Set value check code		
		I	18	CH8 Set value check code		
			19	Error code		
			20	Setting range (CH1 to CH4)		
			21	Setting range (CH5 to CH8)		
			22	Offset/gain setting mode Offset specification		
			23	Offset/gain setting mode Gain specification	R/W	
			24	Offset/gain adjustment value specification		
			25			
			to	System area (Use prohibited)	_	
			157			
			158		544	
			159	Mode switching setting	R/W	
			160			
			to	System area (Use prohibited)	-	
			201			
			202	CH1 Industrial shipment settings offset value		
			203	CH1 Industrial shipment settings gain value		
			204	CH2 Industrial shipment settings offset value		
			205	CH2 Industrial shipment settings gain value		
			206	CH3 Industrial shipment settings offset value		
			207	CH3 Industrial shipment settings gain value		
			208	CH4 Industrial shipment settings offset value		
			209	CH4 Industrial shipment settings gain value	D 0.47	
			210	CH5 Industrial shipment settings offset value	R/W	
			211	CH5 Industrial shipment settings gain value	1	
			212	CH6 Industrial shipment settings offset value]	
			213	CH6 Industrial shipment settings gain value	1	
			214	CH7 Industrial shipment settings offset value	1	
			215	CH7 Industrial shipment settings gain value]	
			216	CH8 Industrial shipment settings offset value	1	
			217	CH8 Industrial shipment settings gain value	1	

Q68DAIN						
Address	Name	Read/write				
(decimal)						
218	CH1 User range settings offset value					
219	CH1 User range settings gain value					
220	CH2 User range settings offset value					
221	CH2 User range settings gain value					
222	CH3 User range settings offset value					
223	CH3 User range settings gain value					
224	CH4 User range settings offset value					
225	CH4 User range settings gain value	R/W				
226	CH5 User range settings offset value	TX/VV				
227	CH5 User range settings gain value					
228	CH6 User range settings offset value					
229	CH6 User range settings gain value					
230	CH7 User range settings offset value					
231	CH7 User range settings gain value					
232	CH8 User range settings offset value					
233	CH8 User range settings gain value					

3.5 A1S68DAV

3.5.1 Performance specifications comparison

Item	A1S68DAV						
Digital input	16-bit signed binary Setting range: -2048 to 2047						
Analog output	(Ex		to 10VDC nce value: 2kΩ to 1M	ΙΩ)			
I/O characteristics		Digital input value 2000 1000 0 -1000 -2000	Analog output value 10V 5V 0V -5V -10V				
Maximum resolution of analog value	5mV						
Overall accuracy (accuracy at maximum analog output value)	±1.0% (±100mV)						
Conversion speed		Within 4ms/8 channels If the frequency of access from the programmable controller CPU using the FROM/TO instructions is high, the speed may be increased for about 6ms.					
Absolute maximum output			_				
Analog output points		8 channe	ls/module				
Number of writes to E ² PROM			-				
Output short protection		Ava	lable				
Isolation method	Between the output terminal and programmable controller power supply: photocoupler isolation Between output channels: not isolated						
Dielectric withstand voltage			-				
Insulation resistance			-				

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

		Q6	8DAVN		0.0		Precautions for replacement
	•	16-bit si Iormal resolution	igned binary mode: -4096	to 4095, -16384 to 16383)		Δ	If the resolution differs between AnS series and Q series modules, it needs to be matched using a sequence program or user range settings. (Refer to Appendix 4.)
	-10 to 10VI	OC (External load	d resistance va	llue: 1kΩ to 1MΩ))	0	
		Normal reso	lution mode	High resolu	tion mode		If the resolution differs
Analog	output range	Digital input value	Maximum resolution	Digital input value	Maximum resolution		between AnS series and Q
	0 to 5V 1 to 5V	0 to 4000	1.25mV 1.0mV	0 to 12000	0.416mV 0.333mV	Δ	series modules, it needs to be matched using a sequence
Voltage	-10 to 10V User range settings	-4000 to 4000	2.5mV 0.75mV	-16000 to 16000 -12000 to 12000	0.625mV 0.333mV		program or user range settings. (Refer to Appendix 4.)
		t temperature 25 temperature 0 to		, ,		0	
		80µs	s/channel			0	
		i	±12V			0	
		8 chanr	nels/module			0	
		Max. 10	0,000 times			0	
			ailable			0	
	i i	nd programmable Between output o power supply ar	0				
Between the	e I/O terminal a	nd programmable	e controller por	wer supply: 500V ut: 500VAC, for 1	AC, for 1 minute	0	
I	Between the I/C	terminal and pro 500VDC, 2	ogrammable co 20MΩ or more	ontroller power su	ipply:	0	

Ito	em	A1S68DAV	
Number of occ	upied I/O points	32 points (I/O assignment: special 32 points)	
Connected terr	ninal	20-point terminal block (M3.5 × 7 screws)	
Applicable wire	size	0.75 to 1.5mm ²	
Applicable sold	lerless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A	
Internal current (5VDC)	consumption	0.65A	
Estamal.	Voltage	-	
External power supply	Current consumption	-	
	Inrush current	-	
Weight		0.22kg	

 $O \colon Compatible, \triangle \colon Partial \ change \ required, \ \times \colon Incompatible$

Q68DAVN	Compatibility	Precautions for replacement
16 points		The number of occupied I/O points
(I/O assignment: intelligent 16 points)	Δ	has changed to 16 points.
18-point terminal block	×	
0.3 to 0.75mm ²	×	
FG terminal: R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A		Wiring change is required.
Terminals other than FG: R1.25-3	×	
(Solderless terminals with an insulation sleeve cannot be used.)		
0.38A	0	
24VDC +20%, -15%		
Ripple, spike 500mVp-p or less		
0.20A	×	External power supply is required.
2.5A, 230µs or less		
0.20kg	0	

3.5.2 Functional comparison

O: Available, -: Not available

				○ : Available, - : Not available		
Item	Description	A1S68 DAV	Q68 DAVN	Precautions for replacement		
D/A conversion enable/ disable function	Specifies whether to enable or disable the D/A conversion for each channel.	0	0	On Q68DAVN, by disabling the D/A conversion for the channels that are not used, the conversion speed can be shortened.		
D/A output enable/ disable function	Specifies whether to output the D/A conversion value or the offset value for each channel. The conversion speed stays constant regardless of whether D/A output is enabled or disabled.	0	0			
Synchronous output function	Obtains analog output synchronized with the programmable controller CPU. The analog output will be updated after Synchronous output request (YD) is set to ON and the time specified as "programmable controller CPU processing time + 120µs" has elapsed. However, the analog output will be fixed to CH1, and other channels (CH2 to CH8) cannot be used. When the module is mounted on a remote I/O station, the analog output will not be synchronized because of a link scar delay if the synchronous output function is specified.	-	0			
Analog output HOLD/ CLEAR function	Holds an analog value that was output when the programmable controller CPU is in the STOP status or an error occurs.	0	0	On Q68DAVN, the setting of HOLD/CLEAR is carried out for each channel. For the Q68DAVN, the status is set with the intelligent function module switch setting of GX Developer. Check the execution status of output, referring to "Analog output status combination list" in the Digital-Analog Converter Module User's Manual.		
Analog output test while the programmable controller CPU is in the STOP status	Outputs the analog value converted from a digital value when CH□ Output enable/disable flag is forcibly turned on while the programmable controller CPU is in the STOP status. D/A conversion enable/disable Enable Disable	0	0			
Resolution mode	The resolution can be switched according to the application.* The resolution mode is batch-set for all channels.	1 -	0			
Online module replacement	A module can be replaced without the system being stopped		0	The Process CPU and Redundant CPU support this function.		

^{*1} For the A1S68DAV, the mode is fixed at 1/4000 (-2000 to 2000).

For the Q68DAVN, the mode is fixed at 1/4000 in normal resolution mode. In high resolution mode, the mode is fixed at 1/16000 when the input voltage range is -10 to 10V, and the mode is fixed at 1/12000 when the input voltage range is other than -10 to 10V.

3.5.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the Digital-Analog Converter Module User's Manual.

	A1S6		Q68DAVN					
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0	WDT error flag (A1S68DAV detection)	Y0		X0	Module ready	Y0	Use prohibited	
X1	D/A conversion READY	Y1		X1		Y1	CH1 Output enable/ disable flag	
X2	Error flag	Y2		X2		Y2	CH2 Output enable/ disable flag	
Х3		Y3		Х3		Y3	CH3 Output enable/ disable flag	
X4		Y4		X4	Use prohibited	Y4	CH4 Output enable/ disable flag	
X5		Y5		X5		Y5	CH5 Output enable/ disable flag	
X6		Y6		X6		Y6	CH6 Output enable/ disable flag	
X7		Y7	Use prohibited	X7		Y7	CH7 Output enable/ disable flag	
X8		Y8		X8	High resolution mode status flag	Y8	CH8 Output enable/ disable flag	
X9		Y9		Х9	Operating condition setting completed flag	Y9	Operating condition setting request	
XA		YA		XA	Offset/gain setting mode flag	YA	User range writing request	
XB		YB		XB	Channel change completed flag	YB	Channel change request	
XC	Use prohibited	YC		XC	completed flag		Set value change request	
XD	ood promotion	YD		XD	Synchronous output mode flag	YD	Synchronous output request	
XE		YE		XE	Use prohibited	YE	Use prohibited	
XF		YF		XF	Error flag	YF	Error clear request	
X10		Y10					_	
X11		Y11						
X12		Y12						
X13		Y13	D/A conversion value					
X14		Y14	output enable flag					
X15		Y15						
X16		Y16 Y17						
X17		Y17 Y18	Error rooot flog					
X18 X19		Y18 Y19	Error reset flag	ł				
X1A		Y1A						
X1B		Y1B						
X1C		Y1C	Use prohibited					
X1D		Y1D	500 promotou					
X1E		Y1E						
X1F		Y1F						

3.5.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memories and sequence program, refer to the Digital-Analog Converter Module User's Manual.

	A1S68DAV		Q68DAVN				
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write		
0	Analog output enable/disable channel		0	D/A conversion enable/disable			
1	CH1 digital value		1	CH1 Digital value			
2	CH2 digital value		2	CH2 Digital value			
3	CH3 digital value	1	3	CH3 Digital value			
4	CH4 digital value	R/W	4	CH4 Digital value	R/W		
5	CH5 digital value	1	5	CH5 Digital value			
6	CH6 digital value	1	6	CH6 Digital value			
7	CH7 digital value	1	7	CH7 Digital value			
8	CH8 digital value	1	8	CH8 Digital value			
9	System area (Use prohibited)	-	9	-			
10	CH1 set value check code		10	System area (Use prohibited)	-		
11	CH2 set value check code	1	11	CH1 Set value check code			
12	CH3 set value check code	1	12	CH2 Set value check code			
13	CH4 set value check code		13	CH3 Set value check code			
14	CH5 set value check code	R	14	CH4 Set value check code			
15	CH6 set value check code	1	15	CH5 Set value check code			
16	CH7 set value check code	1	16	CH6 Set value check code	R		
17	CH8 set value check code	1	17	CH7 Set value check code			
			18	CH8 Set value check code			
			19	Error code			
			20	Setting range (CH1 to CH4)			
			21	Setting range (CH5 to CH8)	1		
			22	Offset/gain setting mode Offset specification			
			23	Offset/gain setting mode Gain specification	R/W		
			24	Offset/gain adjustment value specification	1000		
			25	Chockgain adjustment value opecinoation			
			to	System area (Use prohibited)	_		
			157	l distributed			
			158				
			159	Mode switching setting	R/W		
			160				
			to	System area (Use prohibited)			
			201	System area (Ose prombited)	_		
			201	CH1 Industrial shipment settings offset value			
			203	CH1 Industrial shipment settings onset value			
			204	CH2 Industrial shipment settings gain value			
			204	CH2 Industrial shipment settings onset value			
			206				
				CH3 Industrial shipment settings offset value			
			207	CH3 Industrial shipment settings gain value			
			208	CH4 Industrial shipment settings offset value	-		
			209	CH4 Industrial shipment settings gain value	R/W		
			210	CH5 Industrial shipment settings offset value	-		
			211	CH5 Industrial shipment settings gain value	-		
			212	CH6 Industrial shipment settings offset value	-		
			213	CH6 Industrial shipment settings gain value	-		
			214	CH7 Industrial shipment settings offset value	-		
			215	CH7 Industrial shipment settings gain value	-		
			216	CH8 Industrial shipment settings offset value	-		
			217	CH8 Industrial shipment settings gain value			

	Q68DAVN	
Address	Name	Read/write
(decimal)		
218	CH1 User range settings offset value	
219	CH1 User range settings gain value	
220	CH2 User range settings offset value	
221	CH2 User range settings gain value	
222	CH3 User range settings offset value	
223	CH3 User range settings gain value	
224	CH4 User range settings offset value	
225	CH4 User range settings gain value	R/W
226	CH5 User range settings offset value	FC/ V V
227	CH5 User range settings gain value	
228	CH6 User range settings offset value	
229	CH6 User range settings gain value	
230	CH7 User range settings offset value	
231	CH7 User range settings gain value	
232	CH8 User range settings offset value	
233	CH8 User range settings gain value	

Memo		

ANALOG I/O MODULE REPLACEMENT

4.1 List of Analog I/O Module Alternative Models for Replacement

AnS/QnAS	series		Transition to Q series					
Product	Model	Model	Remark (Restrictions)					
Analog I/O module	A1S63ADA	Q64AD2DA	1) External wiring : Cable size is changed. 2) Number of slots : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: External power supply (24VDC) is required. 5) Functional specifications: Simple loop control (Function expressions) becomes unavailable.					
	A1S66ADA	Q64AD2DA	Cable size is changed. Number of slots : Not changed Nor changed: The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Not changed Functional specifications: Not changed					

⊠ Point

The existing wiring for the AnS/QnAS series modules can be connected directly to the Q series modules using the upgrade tool (conversion adaptor) manufactured by Mitsubishi Electric Engineering Co., Ltd.

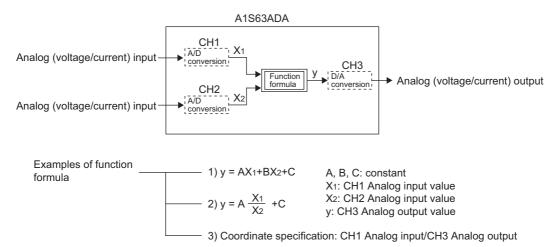
Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor
Analog I/O module	A1S63ADA	Q64AD2DA	ERNT-ASQT63ADA

☑Point -

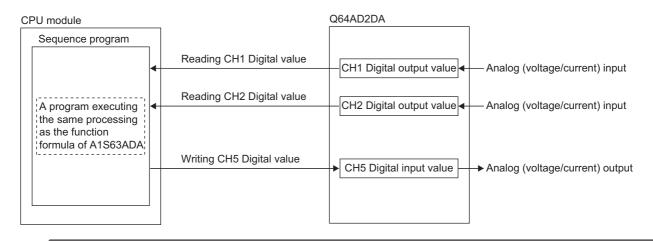
The Q64AD2DA of the replacement modules is not equipped with the simple loop control (Function expressions) function.

Continuous use of the simple loop control (Function expressions) which has been used with the A1S63ADA requires preparation of a sequence program.

· Processing of simple loop control (Function expressions) with the A1S63ADA



· Processing with the Q64AD2DA after the replacement



4.2 A1S63ADA

4.2.1 Performance specifications comparison

O: Compatible, △: Partial change required, ×: Incompatible

											Jonipalic	ne, Δ. Faiti		ed, ×: Incompatible Precautions for
Numbe	e m r of			A1S63	ADA				Q	64AD2DA			Compatibility	replacement
analog points				2 channels	module 'module				4 cha	nnels/modu	le		0	
Analog	Voltage		(Inpu	-10 to 0 to resistance		ΙΩ)		(lı	-10 nput resis	0				
input	Current		-	20 to 0 to 2	0mADC	,			0 t	20mADC			Δ	
				resistance 16 bit signe)Ω)		(Ir Normal resolu	•	tance value le: -96 to 40		6 to 4095,		
Digital	output	,	When 1	4000 is set 8000 is set 2000 is set	:: -8192 to	8191		High resolutio	n mode:	96 to 4595 -384 to 163 383, -3288	,	,	Δ	
		characteristics	Analog input 10 5 20m	(with 9 0 1/4000 V 4000 V 2000		mA and	lnout	Analog input range 0 to 10V 0 to 5V		Maximum resolution 2.5mV	Digital output value 0 to 16000 0 to	Maximum resolution 0.625mV		A resolution other than 1/4000 of the AnS series
I/O characte	eristics	I/O chara	4m. -5 -12m. -10	A -2000	-4000 -8000	-6000 -12000	Voltage		-4000 to 4000	1.0mV 2.5mV	-16000 to 16000	0.333mV 0.625mV	Δ	and Q series requires the support of a sequence
		Resolution	Voltage input Curren	2.5mV	1.25mV 5µA	0.83mV 3.33μA		1 to 5V (extended mode) 0 to 20mA	-1000 to 4500 0 to	1.0mV 5µA	-3000 to 13500 0 to	0.333mV 1.66µA		program or the scaling function.
		L.	α input of a specific specifi					4 to 20mA 4 to 20mA (extended mode)	4000 -1000 to 4500	4μA 4μA	12000 -3000 to 13500	1.33μA 1.33μA		
Resolut	tion												0	
							Ī	Analog inpurange		lormal ution mode	-	esolution ode		
								Ambient temperature	0 to	25+5°C	0 to 55°C	25±5°C		
Overall	су	±1%				-	0 to 10V -10 to 10	_		±0.4% ±0.1% (±64 (±16 digits) digits)				
(accuracy at maximum analog output value)		When 1/4000 is set: ±40 When 1/8000 is set: ±80 When 1/12000 is set: ±120					_	0 to 5V 1 to 5V 1 to 5V (extende mode) 0 to 20m. 4 to 20m. 4 to 20m. (extende mode)	digits A A	(±4	±0.4% (±48 digits)	±0.1% (±12 digits)	0	
Maximu convers speed			When	1/4000 is s 1/8000 is s 1/2000 is s	et: 2ms/ch	annel			500	μs/channel			0	
Absolut	e ım input			Voltage : Current ±						tage ±15V rrent 30mA			0	

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

						O : Compa	atible, △	: Partial cha	•	ed, ×: Incompatible Precautions for
	Item	A1S63ADA	Q64AD2DA						ibility	replacement
Number output po	of analog pints	1 channel/module	2 channels/module						0	
Digital in	put	When 1/4000 is set Voltage: -4000 to 4000 Current: 0 to 4000 When 1/8000 is set Voltage: -8000 to 8000 Current: 0 to 8000 When 1/12000 is set Voltage: -12000 to 12000 Current: 0 to 12000		Normal resolution mode: -96 to 4095, -4096 to 4095, -1096 to 4595 High resolution mode: -384 to 16383, -288 to 12287, -16384 to 16383, -3288 to 13787			0			
Analog output	Voltage Current	-10 to 0 to 10VDC (External load resistance value: 2kΩ to 1MΩ) 0 to 20mADC		(External	load resi	to 10VDC stance value o 20mADC	e: 1kΩ to	1ΜΩ)	- 0	
	acteristics n resolution	Digital input value Analog output 1/4000 1/8000 1/1 1/2000 1	Current Voltage Input	Analog input range 0 to 10V 0 to 5V 1 to 5V -10 to 10V (extended mode) 0 to 20mA 4 to 20mA 4 to 20mA	Normal	mesolution and the mesolution and the mesolution and the mesolution are solution as a second and the mesolution are solution as a second and the mesolution are solution as a second and the mesolution are solution as a second and the mesolution are solution as a second and the mesolution are solution as a second are solu	High r	esolution ode Maximum resolution 0.625mV 0.416mV 0.333mV 0.625mV	Δ	A resolution other than 1/4000 of the AnS series and Q series requires the support of a sequence program or the scaling function.
output va	y at n analog alue)	±1% (Voltage: ±100mV, Current: ±200μA)	A	Inalog input range Ambient emperature 0 to 10V -10 to 10V 1 to 5V 1 to 5V (extended mode) 0 to 20mA 4 to 20mA (extended mode)	Norma r 0 to 55°C	(±4 digits)		1.33µA esolution lode 25±5°C ±0.1% (±16 digits) ±0.1% (±12 digits)	0	
Absolute output	maximum	Voltage: ±12V Current: 28mA				ltage: ±12V rrent: 21mA			0	
Convers	ion speed	When 1/4000 is set: 1ms/channel When 1/8000 is set: 2ms/channel When 1/12000 is set: 3ms/channel	When 1/8000 is set: 2ms/channel 500µs/channel					0		
Output s protectio		Available				Available			0	
Isolation	method	Between input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated	Between I/O terminal and programmable controller power supply: photocoupler isolation Between I/O channels: not isolated Between external power supply and analog I/O channel: not isolated			0				

 \bigcirc : Compatible, \triangle : Partial change required, \times : Incompatible

Item	A1S63ADA	Q64AD2DA	Compat- ibility	Precautions for replacement
Dielectric withstand voltage	Between input terminal and programmable controller power supply: 500VAC 1 minute	Between I/O terminal and programmable controller power supply: 500VACrms 1 minute	0	
Insulation resistance	Between input terminal and programmable controller power supply: $500VDC 5M\Omega$ or higher	Between I/O terminal and programmable controller power supply: $500VDC\ 20M\Omega$ or higher	0	
Conversion speed under simple loop control	When 1/4000 is set: 4ms When 1/8000 is set: 7ms When 1/12000 is set: 9ms	-	×	The Q64AD2DA is not equipped with the simple loop control.
Number of I/O occupied points	32 points (I/O assignment: special 32 points)	16 points (I/O assignment: intelligent 16 points)	Δ	The number of I/O occupied points has been changed to 16 points.
Connection terminal	20-point terminal block	A/D conversion part, D/A conversion part: 18-point terminal block External power supply 24VDC, FG connection: external power supply connector	×	
Applicable wire size	0.75 to 1.5mm ² (Applicable tightening torque: 39 to 59N•cm)	A/D conversion part, D/A conversion part: 0.3 to 0.75mm ² External power supply 24VDC, FG connection: Refer to *1.	×	Wiring needs to be changed.
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-3.5, 2-YS3A, V1.25-M3, V1.25-YS3A, V2-S3, V2-YS3A	A/D conversion part, D/A conversion part: R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.) External power supply 24VDC, FG connection: None	×	
Voltage		24VDC ±15% Ripple, spike 500mV _{P-P} or less	×	The 24VDC
power supply Current consumption	-	0.19A	×	external power supply is
Inrush current		2.5A 150µs or less	×	required.
Internal current consumption (5VDC)	0.8A	0.17A	0	
Weight	0.3kg	0.23kg	0	

The following table shows the specifications of the applicable wire to the external power supply connector.

ltem	Specifications
Applicable wire size	3.3mm ² (AWG12)
Rated multi-wire connection	Solid wire: 0.2 to 0.8mm ² × 2 wires
size	Stranded wire: 0.2 to 0.8mm ² × 2 wires
Screw tightening torque	0.5 to 0.6N•m

4.2.2 Functional comparison

(1) Functions of A/D conversion

Item		Description	A1S63ADA	Q64AD2DA	Precautions for replacement
A/D conversion function	n enable/disable	Allows specifying whether to enable or disable A/D conversion for each channel. Disabling the conversion on unused channels reduces the sampling time.	0	0	
Sampling proc	essing	Sequentially performs A/D conversion on analog input values for each channel, outputting the digital output value each time.	0	0	
	Time average	Performs averaging processing on A/D conversion in units of time for each channel, and performs digital output of its average value.	0	0	The setting range varies between the time average and count average.
Averaging processing	Count average	Performs averaging processing on A/D conversion in units of counts for each channel, and performs digital output of its average value.	0	0	Refer to MELSEC-Q Analog I/O Module User's Manual to check the specifications.
	Moving average	Performs averaging processing on A/D conversion in units of counts for each channel, with the range moving in response to each sampling processing, and performs digital output of its average value.	-	0	
Range switchir	ng function	Allows selection of the input range to be used.	0	0	
Maximum and hold function	minimum values	Holds the maximum value and the minimum value of digital values into the module.	-	0	
Input signal err	or detection	Detects an analog input value that is out of the setting range.	-	0	
Scaling function		Performs scale conversion on digital output values within a specified range between a scaling upper limit value and a scaling lower limit value. This function reduces the time and effort to create a program of the scale conversion.	-	0	Setting the same scaling upper limit value and scaling lower limit value as those of resolution mode of the A1S63ADA allows use of the same digital output values as in the A1S63ADA.
Logging function		Logs (records) digital output values or scaling values (digital operation values). 10000 points of data can be logged for each channel.	-	0	

(2) Functions of D/A conversion

Item	Description	A1S63ADA	Q64AD2DA	Precautions for replacement
D/A conversion enable/disable function	Allows specifying whether to enable or disable D/A conversion for each channel.	0	0	Disabling the D/A conversion on channels that are not to be used in the Q64AD2DA reduces the conversion cycle.
D/A output enable/disable function	Allows specifying whether to output D/A conversion values or offset values for each channel. The conversion speed remains constant irrespective of the output enabled/disabled state.	0	0	
Range switching function	Allows selection of the range to be used.	0	0	
Analog output HOLD/CLEAR function	Allows setting whether to hold (HOLD) or clear (CLEAR) analog output values depending on the CPU module operating status: RUN, STOP, or a stop error.	0	0	For the A1S63ADA, all the channels are set collectively by means of the HLD/CLR terminal on the front side of the module. For the Q64AD2DA, each channel can be set separately by means of the switch setting (GX Works2).
Analog output test at STOP status of the CPU module	Outputs the analog value converted from a digital value when CH□ Output enable/disable flag is forcibly turned on while the CPU module is in the STOP status.	-	0	
Scaling function	Performs scale conversion on digital input values within a specified range between a D/A conversion scaling upper limit value and a D/A conversion scaling lower limit value. This function reduces the time and effort to create a program of the scale conversion.	-	0	Setting the same scaling upper limit value and scaling lower limit value as those of resolution mode of the A1S63ADA allows use of the same digital output values as in the A1S63ADA.
Shift function	Makes it easy to perform fine adjustments at the system startup. This function adds the preset value to a digital input value and stores it into the buffer memory.	-	0	

(3) Common functions

O: Available, -: Not available

Item	Description	A1S63ADA	Q64AD2DA	Precautions for replacement
Resolution mode	Switches resolution mode according to the application, permitting selection of the resolution. The settings of resolution mode are to be shared by all the channels.*1	0	-	
Simple loop control (Function expressions)	Converts analog values that are input in CH1 and CH2 into digital values, and performs calculations of the function expression on the converted values. The calculated result is converted to the analog values to output it from CH3.	0	-	
External power supply shutoff detection flag	Turns on while the external power supply is not supplied. If each channel is set to enable the conversion and Operating condition setting request is turned on and off, A/D conversion and D/A conversion are not performed.	-	0	
Error log function	Records up to the 16 errors and alarms that have occurred in the Q64AD2DA, storing them into the buffer memory.	-	0	
Module error collection function	Collects errors and alarms that have occurred in the Q64AD2DA into the CPU module.	-	0	
Error clear function	Allows error clear through the system monitor at the occurrence of an error.	-	0	Can be used by using GX Works2.
Saving/restoring offset/gain values	Makes it possible to save and restore the offset/gain values of the user range setting.	-	0	
Offset/gain setting function	Corrects errors in analog output values and digital output values.	0	0	
Online module change	Allows module replacement without stopping the system.	-	0	

^{*1} For the A1S63ADA, both voltage and current can be selected from 1/4000, 1/8000, or 1/12000 in the resolution mode settings.

On the other hand, the Q64AD2DA provides two modes: normal resolution mode and high resolution mode. The same digital values as those of the A1S63ADA can be used by setting the same scaling upper limit value and scaling lower limit value as those of resolution mode of the A1S63ADA using the scaling function.

⊠ Point

The Q64AD2DA of the replacement modules is not equipped with the simple loop control (Function expressions) function.

Continuous use of the simple loop control (Function expressions) which has been used with the A1S63ADA requires preparation of a sequence program. (Refer to Section 4.1.)

4.2.3 I/O signal comparison

Because the I/O signals differ between the modules, the sequence program needs to be changed. For details on the I/O signals and the sequence program, refer to Analog Input/Output Module User's Manual Q64AD2DA.

X2	A1S63ADA					Q64AD2DA				
X1		Signal name		Signal name		Signal name		Signal name		
X2						,		·		
X3 CH3 cusput upper limit value hold Y3 CH3 Logging hold flag Y3 CH3 Logging hold request X4 CH3 cutput lower limit value hold Y4 Value hold Y5 Simple loop control in execution Y6 Unusable Y7 Unusable Y7 Unusable Y7 Unusable Y7 Unusable Y7 VA YB YB YC YC XD YD VA YB YC XA XB XB XC YB YC XA XB XB XC YC XC XC XC XC XC XC XC XC XC XC XC XC XC								CH1 Logging hold request		
X3 value hold Y3 Value hold Y4 value hold Y4 value hold Y4 value hold Y5 Simple toop control in execution Y7 Unusable Y7 Unusable Y7 Unusable Y8 Y8 Y8 Y9 Offset/gain selection YA Y8 Y8 Y8 Y8 Y8 Y8 Y9 Y6 Y7 Y9 Unusable Y9 Y9 Y9 Y9 Y9 Y9 Y9 Y9 Y9 Y9 Y9 Y9 Y9	X2		Y2		X2	CH2 Logging hold flag	Y2	CH2 Logging hold request		
Value hold Y4 Value hold Y4 Simple loop control in execution Y5 Simple loop control in execution Y6 V6 V7 V8 V8 V8 V8 V8 V8 V8	X3	value hold	Y3		Х3	CH3 Logging hold flag	Y3	CH3 Logging hold request		
XS	X4	· ·	Y4		X4	CH4 Logging hold flag	Y4	CH4 Logging hold request		
Victor V	X5		Y5		X5	Use prohibited	Y5	· ·		
X7 Y7 V7 V7 V7 V8 V8 X8 X9 V9 V9 V9 V9 V9 V9 V9	X6	Haveable	Y6		X6	External power off flag	Y6	· ·		
X8 X9 Offset/gain selection XA XB XB XP YC XD XD XD XD XD XD XD XD XD XD XD XD XD	X7	_ Unusable	Y7	1	X7		Y7			
XA	X8		Y8	Unusable	X8	High resolution mode	Y8	Use prohibited		
XA XB XB XC YB YC XB YC XC XB YB YC XC XB Use prohibited YB Use prohibited YC XC Maximum and minimum Values reset completion flag XB XD Maximum and minimum Values reset completion flag XE XF XF XF XF XF XI0 XI1 XI1 XI1 XI2 XI3 XI4 XI5 XI6 XI7 XI8 XI8 XI9 XIA XI8 XI9 XIA XIB XIA XIB XIA XIB XIA XIB XIC XID XIC XIC XIC XIC XIC XIC XIC XIC XIC XIC	X9	Offset/gain selection	Y9		Х9		Y9	l		
YC	XA	1 "	YA		XA		YA			
XE XE XF XI0 XI1 XI1 XI2 XI3 Unusable XI4 XI5 XI6 XI7 XI8 XI8 XI9 XIA XIB XID Maximum and minimum values reset completion flag XE A/D conversion completed flag XF Error flag XF Use prohibited XF Error clear request XF YF CH3 D-A conversion value output enable YI1 Simple loop control execution enable Y12 Error reset Y13 CH3 D-A conversion value output enable Y14 Y15 CH3 D-A conversion value output enable YI1 Simple loop control execution enable Y12 Error reset Y13 CH3 D-A conversion value output enable YI1 Simple loop control execution enable Y12 Error reset Y13 CH3 D-A conversion value output enable VII Unusable Y11 VIIII VIII XB		YB		XB	Use prohibited	YB	Use prohibited			
YD	XC		YC		XC		YC			
YE	XD		YD		XD	values reset completion	YD			
Y10	XE		YE		XE	· ·	YE	Use prohibited		
Y10	XF		YF		XF	Error flag	YF	Error clear request		
X11	X10		Y10							
X13	X11		Y11	' '						
X13	X12		Y12	Error reset						
X14 X15 X16 Y16 X17 Y18 X18 Y19 X19 Y1A Offset/gain selection X1B Y1B X1C Y1D X1D Y1E Unusable Unusable Unusable Unusable Unusable	X13	Unusable	Y13	1 ''						
Y16	X14		Y14							
X16 Y16 X17 Y17 X18 Y18 X19 Y19 X1A Y1A Offset/gain selection X1B Y1C X1C Y1D Offset/gain setting X1E Y1E Upusable	X15			Unusable						
X18 Y18 X19 Y19 X1A Y1A Offset/gain selection X1B Y1B X1C Y1C X1D Y1D Offset/gain setting X1E Y1E				Ondodole						
X19 Y19 X1A Y1A Offset/gain selection X1B Y1B X1C Y1C X1D Y1D Offset/gain setting X1E Y1E Upusable										
X1A X1B X1C X1D X1E Y1A Offset/gain selection Y1B Y1C Y1D Offset/gain setting Y1E Unusable										
X1B X1C X1C X1D X1D X1E Y1B Y1B Y1B Y1C Y1C Y1D Offset/gain setting Y1E Unusable		1		0.50						
X1C Y1C Y1D Offset/gain setting Y1E Unusable		1		Oπset/gain selection						
X1D Y1D Offset/gain setting X1E Y1E Unusable		4		-						
X1E Y1E Unusable		1		Offset/gain setting						
I II Inucahla		-		Chaergani actury						
	X1F	+	Y1F	Unusable						

4.2.4 Buffer memory address comparison

Because the assignment of buffer memory differs between the modules, the sequence program needs to be changed.

For details on the buffer memory and the sequence program, refer to Analog Input/Output Module User's Manual Q64AD2DA.

	A1	S63ADA						Q64AD2DA	
Address		lame	Read/write		dress			Name	Read/write
(decimal)	, in	idille	Reau/write	CH1	CH2	CH3	CH4	Name	Reau/write
0	A-D/D-A conversion en	able/disable setting		0	200	400	600	A/D conversion enable/disable setting	R/W
1	A-D conversion averag	ing setting		1	201	401	601	Averaging process method setting	R/W
2	CH1 averaging time/co	unt setting		2	202	402	602	Averaging process (time/number of times) setting	R/W
3	CH2 averaging time/co	unt setting		3	203	403	603		
4	CH3 output upper limit	value setting		to	to	to	to	System area	-
5	CH3 output lower limit v	value setting	R/W	9	209	409	609		
6	Simple loop control type	e setting		10	210	410	610	A/D conversion scaling enable/disable setting	R/W
7	Constant A setting			11	211	411	611	A/D conversion scaling lower limit value	R/W
8	Constant B setting			12	212	412	612	A/D conversion scaling upper limit value	R/W
9	Constant C setting			13	213	413	613	Shifting amount to conversion value	R/W
10	CH3 digital value settin	g		14	214	414	614		
11	CH1 A-D conversion di	gital value		to	to	to	to	System area	-
12	CH2 A-D conversion di	gital value		19	219	419	619		
13	Simple loop control out	put calculation value	R	20	220	420	620	Input signal error detection setting	R/W
14	Resolution setting			21	221	421	621	Input signal error detection setting value	R/W
15	A-D conversion comple	ted flag		22	222	422	622		
16	Error code			to	to	to	to	System area	-
17	Coordinate points settir	ng		29	229	429	629		
18	Point 0	CH1 coordinates		30	230	430	630	Logging enable/disable setting	R/W
19		CH3 coordinates		31	231	431	631	Logging cycle setting value	R/W
20	—Point 1	CH1 coordinates		32	232	432	632	Logging cycle unit setting	R/W
21		CH3 coordinates		33	233	433	633	Logging data setting	R/W
22	Point 2	CH1 coordinates		34	234	434	634	Logging points after trigger	R/W
23		CH3 coordinates		35	235	435	635	Level trigger condition setting	R/W
24	Point 3	CH1 coordinates		36	236	436	636	Trigger data	R/W
25	- Politics	CH3 coordinates		37	237	437	637	Trigger setting value	R/W
26	Point 4	CH1 coordinates	R/W	38	238	438	638		
27	701111 4	CH3 coordinates	- R/VV	to	to	to	to	System area	-
28	Point 5	CH1 coordinates		99	299	499	699		
29		CH3 coordinates		100	300	500	700	Digital output value	R
30	Point 6	CH1 coordinates		101	301	501	701	System area	-
31		CH3 coordinates		102	302	502	702	Scaling value	R
32	Point 7	CH1 coordinates		103	303	503	703	System area	-
33		CH3 coordinates		104	304	504	704	Maximum digital output value	R
34	Point 8	CH1 coordinates	_	105	305	505		System area	-
35	3	CH3 coordinates	_	106		506		Minimum digital output value	R
36	Point 9	CH1 coordinates	_	107	307	507		System area	-
37		CH3 coordinates		108	308	508		Maximum scaling value	R
				109		509		System area	-
				110	310	510		Minimum scaling value	R
				111	311	511	711	System area	-
				112	312	512		Setting range	R
				113	313	513	713	A/D conversion completed flag	R
				114	314	514	714	Input signal error detection flag	R
				115	315	515	715		
				to	to	to	to	System area	-
				119	319	519	719	Oldest pointer	Р
				120	320	520	720	Oldest pointer	R
				121	321	521 522	721 722		R R
								Logging data points	
				123	323	523	723	Trigger pointer	R

	Q64AD2DA							
Add	iress	(decir	nal)		Name			
CH1	CH2	CH3	CH4		Name		Read/write	
124	324	524	724					
to	to	to	to	System area			-	
189	389	589	789					
190	390	590	790	Latest error co	Latest error code			
191	391	591	791		First two digits of the year	Last two digits of the year	R	
192	392	592	792	Error time	Month	Day	R	
193	393	593	793		Hour	Minute	R	
194	394	594	794		Second	Day of the week	R	
195 to 199	395 to 399	595 to 599	795 to 799	System area			-	

Address	(decimal)		Name		Read/write			
CH5	CH6							
800	1000	D/A conversion	on enable/disat	ole setting	R/W			
801	1001	System area			-			
802	1002	Digital input v	alue		R/W			
803	1003							
to	to	System area			-			
809	1009							
810	1010		on scaling enab	ole/disable	R/W			
		setting						
811	1011		on scaling lowe		R/W			
812	1012		on scaling uppe		R/W			
813	1013	Shifting amou	int to input valu	ie	R/W			
814	1014							
to	to	System area			-			
899	1099							
900	1100	Set value che	Set value check code					
901	1101	System area	System area					
902	1102	Real conversi	R					
903	1103							
to	to	System area			-			
911	1111							
912	1112	Setting range			R			
913	1113	HOLD/CLEAF	R function setti	ng	R			
914	1114							
to	to	System area			-			
989	1189							
990	1190	Latest error c	ode		R			
991	1191		First two digits of the	Last two digits of the	R			
			year	year				
992	1192	Error time	Month	Day	R			
993	1193		Hour	Minute	R			
994	1194		Second	Day of the week	R			
995	1195							
to	to	System area	-					
999	1199							

	Q64AD2DA	
Address (decimal)	Name	Read/write
1200		
to	System area	-
1599		
1600	Level data 0	R/W
1601	Level data 1	R/W
1602	Level data 2	R/W
1603	Level data 3	R/W
1604	Level data 4	R/W
1605	Level data 5	R/W
1606	Level data 6	R/W
1607	Level data 7	R/W
1608	Level data 8	R/W
1609	Level data 9	R/W
1610	20voi data o	1011
to	System area	_
1699	System area	
1700	CH1 Digital output value	R
1700	· ·	
	CH2 Digital output value	R
1702	CH3 Digital output value	R
1703	CH4 Digital output value	R
1704		
to	System area	-
1709		
1710	CH1 Scaling value	R
1711	CH2 Scaling value	R
1712	CH3 Scaling value	R
1713	CH4 Scaling value	R
1714		
to	System area	-
1719		
1720	CH1 Maximum digital output value	R
1721	CH1 Minimum digital output value	R
1722	CH2 Maximum digital output value	R
1723	CH2 Minimum digital output value	R
1724	CH3 Maximum digital output value	R
1725	CH3 Minimum digital output value	R
1726	CH4 Maximum digital output value	R
1727	CH4 Minimum digital output value	R
1728		
to	System area	-
1739	^	
1740	CH1 Maximum scaling value	R
1741	CH1 Minimum scaling value	R
1742	CH2 Maximum scaling value	R
1743	CH2 Minimum scaling value	R
1743	CH3 Maximum scaling value	R
1744	CH3 Minimum scaling value	R
1746	CH4 Maximum scaling value	R
1746	•	R
1747	CH4 Minimum scaling value	K
	Country of the Countr	
to	System area	-
1763	OUE Octobro de de la colonia	
1764	CH5 Set value check code	R
1765	CH6 Set value check code	R
1766	<u></u>	
to	System area	-
1773		
1774	CH5 Real conversion digital value	R
4	CH6 Real conversion digital value	R
1775		
1775		
	System area	-

Q64AD2DA								
Address (decimal)		Name		Read/write				
1790	Latest error c	ode						
		First two	Last two					
1791		digits of the	digits of the					
		year	year	R				
1792	Error time	Month	Day	, K				
1793		Hour	Minute					
1794		Second	Day of the					
1701		Cooona	week					
1795								
to	System area			-				
1799								

Q64AD2DA									
Address (decimal)		Na	ame		Read/write				
1800	Latest add	dress of err	or history		R				
1801									
to	System ar	-							
1809 1810									
1810		Error cod	First two	Last two					
1811			digits of	digits of					
1011			the year	the year					
1812	History 1	Error	Month	Day	R				
1813		time	Hour	Minute					
4044			0	Day of					
1814			Second	the week					
1815		•							
to	System ar	rea			-				
1819									
1820		Error cod							
			First two	Last two					
1821			digits of	digits of					
1822	History 2	Error	the year Month	the year	R				
1822	-	time	Hour	Day Minute	-				
1023	-			Day of					
1824			Second	the week					
1825		L	1	I .					
to	System ar	rea			-				
1829									
1830		Error cod	е						
			First two	Last two					
1831			digits of	digits of					
	History 3	Error	the year	the year	R				
1832			1		•	time	Month	Day	
1833			Hour	Minute					
1834			Second	Day of the week					
1835									
to	System ar	rea			-				
1839									
1840		Error cod		T					
10/11			First two	Last two					
1841			digits of the year	digits of the year					
1842	History 4	Error	Month	Day	R				
1843	1	time	Hour	Minute	1				
	1			Day of	1				
1844			Second	the week					
1845									
to	System ar	rea			-				
1849									
1850		Error cod							
10=1			First two	Last two					
1851			digits of	digits of					
1852	History 5	Error	the year Month	the year	R				
1852	-	time	Hour	Day Minute					
1000	-		rioui	Day of					
1854	<u> </u>		Second	the week					
1855									
to	System ar	-							
1859									

		Q64AD2D	A		
Address (decimal)		Na	ime		Read/write
1860		Error code			
			First two	Last two	
1861			digits of	digits of	
1862	History 6	Error	the year Month	the year Day	R
1863	1	time	Hour	Minute	
1003	1		Tioui	Day of	
1864			Second	the week	
1865		•			
to	System ar	rea			-
1869					
1870	<u> </u>	Error code			
4074			First two	Last two	
1871			digits of the year	digits of the year	
1872	History 7	Error	Month	Day	R
1873	t	time	Hour	Minute	
	1			Day of	
1874			Second	the week	
1875		_	_]
to	System ar	rea			-
1879					
1880	<u> </u>	Error code		T-	
1001			First two	Last two	
1881			digits of the year	digits of the year	
1882	History 8	Error	Month	Day	R
1883	1	time	Hour	Minute	
				Day of	
1884			Second	the week	
1885					
to	System ar	rea			-
1889					
1890	1	Error code		Ir	
1891			First two digits of	Last two digits of	
1031		Error	the year	the year	R
1892	History 9		Month	Day	
1893	†	time	Hour	Minute	
1001	_	-		Day of	
1894			Second	the week	
1895					
to	System ar	rea			-
1899		I=	_		
1900	1	Error code		Last too	4
1901			First two digits of	Last two digits of	
1301	History		the year	the year	
1902	10	Error	Month	Day	R
1903	t	time	Hour	Minute	1
1904	İ		Second	Day of	1
1905		<u> </u>		the week	
to	System ar	rea			_
1909					
1910		Error code	е		
	Ī		First two	Last two	
1911			digits of	digits of	
	History	Error	the year	the year	R
1912	11	time	Month	Day	.``
1913	1		Hour	Minute	
1914			Second	Day of	
				the week	

		Q64AD2I	λ		
Address (decimal)	Name			Read/write	
1915					
to	System a	rea			-
1919	1				
1920		Error co	de		
			First two	Last two	
1921			digits of	digits of	
	History	Error	the year	the year	R
1922	12	time	Month	Day	
1923		unic	Hour	Minute	
1924			Second	Day of	
1005				the week	
1925	Custom				
to 1929	System a	iea			-
1930		Error oo	do		
1930		Error co	First two	Last two	
1931			digits of	digits of	
	History		the year	the year	
1932	13	Error	Month	Day	R
1933	1	time	Hour	Minute	
1024	1		Cooper d	Day of	
1934			Second	the week	
1935			•		
to	System a	rea			-
1939					
1940		Error co	de		
			First two	Last two	
1941			digits of	digits of	
1010	History	Error	the year	the year	R
1942	14	time	Month	Day	
1943			Hour	Minute	
1944			Second	Day of the week	
1945					
to	System a	rea			-
1949	1				
1950		Error co	de		
			First two	Last two	
1951			digits of	digits of	
	History	Error	the year	the year	R
1952	15	time	Month	Day	.,
1953	1		Hour	Minute	
1954			Second	Day of	
1955				the week	<u> </u>
1955 to	System a	rea			_
1959	, c, c, c, iii a				
1960		Error co	de		-
	1		First two	Last two	1
1961			digits of	digits of	
	History		the year	the year	
1962	16	Error time	Month	Day	R
1963		uiiie	Hour	Minute	
1964			Second	Day of	
		1		the week	
5000	CUAL				
to 14999	CH1 Log	R			
15000	-	<u> </u>			
to	CH2 Logging data				R
24999	CH2 Logging data				
25000					
to	CH3 Logs	ging data			R
34999]	. =			
					1

Q64AD2DA					
Address (decimal)	Name	Read/write			
35000					
to	CH4 Logging data	R			
44999					
45000					
to	System area	-			
49999					

4.3 A1S66ADA

4.3.1 Performance specifications comparison

O : Compatible, Δ : Partial change required, \star : Incompatible

Ite	em	A1S66ADA	Q64AD2DA Compatible	Precautions for
Number analog in points	of	4 channels/module	4 channels/module	replacement
Analog	Voltage	-10 to 0 to 10VDC (Input resistance value: 1MΩ)	-10 to 10VDC (Input resistance value: 1MΩ)	
input	Current	0 to 20mADC (Input resistance value: 250Ω)	0 to 20mADC (Input resistance value: 250Ω)	
Digital o	utput	12 bit binary value 0 to 4095	Normal resolution mode: -96 to 4095, -4096 to 4095, -1096 to 4595 High resolution mode: -384 to 16383, -288 to 12287, -16384 to 16383, -3288 to 13787	
I/O characte	ristics	Analog input range Digital output value Resolution Voltage 0 to 10V 0 to 5V 1 to 5V -10 to 10V 2.5mV 1.25mV 1.0mV 5.0mV 5μA 4 to 20mA Current 0 to 20mA 4 to 20mA 4 to 20mA	Analog input range	A resolution other than 1/4000 of the AnS series and Q series requires the support of a sequence program or the scaling function.
Resolution	on		0	
(accurac	m analog	Within ±1% (±40)	Analog input range	
Maximur conversion speed		400µs or less/4 channels (Sampling cycle: 80µs/channel)	500µs/channel	
Absolute maximur		Voltage ±15V Current 30mA	Voltage ±15V Current 30mA	

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

It	tem	A1S66ADA	O∶ Compatible, △∶ Part Q64AD2DA	Compatibility	Precautions for
Number	of analog				replacement
output po	oints	2 channels/module 12 bit binary value 0 to 4000	2 channels/module Normal resolution mode: -96 to 4095, -4096 to 4095, -1096 to 4595 High resolution mode: -384 to 16383, -288 to 12287, -16384 to 16383, -3288 to 13787	0	
Analog output	Voltage Current	-10 to 10VDC (External load resistance value: $2k\Omega$ to $1M\Omega$) 0 to 20mADC (External load resistance value: 0 to 600Ω)	-10 to 10VDC (External load resistance value: $1 k\Omega$ to $1 M\Omega$) 0 to 20mADC (External load resistance value: 0 to 600Ω)	0	
I/O chara	acteristics	, Digital	Normal resolution High resolution	0	
		Analog output range Paragraphic	Analog input range mode mode		Because of the resolution difference between the AnS series and L series, the
Maximun resolution			1 to 5V	Δ	support of a sequence program, user range settings, or the scaling function is required. (Refer to Appendix 4.)
			4 to 20mA (extended mode)		
Overall a (accurac maximun output va	y at n analog	±1% (Voltage: ±100mV, Current: ±200μA)	Analog input range mode mode mode Ambient temperature 55°C 25±5°C 55°C 25±5°C □ 0 to 10V □ 10 to 10V □ 1 to 5V □ 1 to 5V (extended mode) 0 to 20mA □ 1 to 20mA □ 25±5°C □ 25±	0	
Conversi	ion speed	240µs or less/2 channels (Sampling cycle: 80µs/channel)	500μs/channel	0	
	maximum	Voltage ±12V Current 28mA	Voltage ±12V Current 21mA	0	
Output si		Available	Available	0	
Isolation		Between input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated	Between I/O terminal and programmable controller power supply: photocoupler isolation Between I/O channels: not isolated Between external power supply and analog I/O channel: not isolated	0	
Dielectric voltage	withstand	Between input terminal and programmable controller power supply: 500VAC 1 minute	Between I/O terminal and programmable controller power supply: 500VACrms 1 minute	0	

 \bigcirc : Compatible, \triangle : Partial change required, \times : Incompatible

Item		A1S66ADA	Q64AD2DA	Compatibility	Precautions for replacement
Insulation resistance		Between input terminal and programmable controller power supply: 500VDC 5MΩ or higher	Between I/O terminal and programmable controller power supply: $500VDC\ 20M\Omega$ or higher	0	
Number of I/O occupied points		64 points (input 64 points, output 64 points) (I/O assignment: output 64 points)	16 points (I/O assignment: intelligent 16 points)	Δ	The number of I/O occupied points has been changed to 16 points.
Connection terminal		20-point terminal block	A/D conversion part, D/A conversion part: 18-point terminal block External power supply 24VDC, FG connection: external power supply connector	×	Wiring needs to be changed.
Applicab	ole wire size	0.75 to 1.25mm ² (Applicable tightening torque: 39 to 59N•cm)	A/D conversion part, D/A conversion part: 0.3 to 0.75mm ² External power supply 24VDC, FG connection: Refer to *1.	×	
Applicab solderles	ole ss terminal	1.25-3, 1.25-YS3, 2-3.5, 2-YS3A V1.25-M3, V1.25-YS3A, V2-S3, V2-YS3A	A/D conversion part, D/A conversion part: R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.) External power supply 24VDC, FG connection: None	×	
	Voltage	21.6 to 26.4VDC	24VDC ±15% Ripple, spike 500mV _{P-P} or less	0	
External power supply	Current consumpt ion	0.16A	0.19A	0	
	Inrush current	-	2.5A 150µs or less	Δ	The inrush current is higher.
Internal consumption (5VDC)		0.21A	0.17A	0	
Weight		0.33kg	0.23kg	0	

^{*1} The following table shows the specifications of the applicable wire to the external power supply connector.

Item	Specifications
Applicable wire size	3.3mm ² (AWG12)
Rated multi-wire connection	Solid wire: 0.2 to 0.8mm ² × 2 wires
size	Stranded wire: 0.2 to 0.8mm ² × 2 wires
Screw tightening torque	0.5 to 0.6N•m

4.3.2 Functional comparison

(1) Functions of A/D conversion

	tem	Description	A1866ADA	Q64AD2DA	Precautions for replacement
	tem		AISOUADA	Q04ADZDA	Precautions for replacement
A/D conversion	enable/disable	Allows specifying whether to enable or disable A/D conversion			
function		for each channel. Disabling the conversion on unused channels	-	0	
		reduces the sampling time.			
Sampling proce	essing	Sequentially performs A/D conversion on analog input values	-	0	
		for each channel, outputting the digital output value each time.			
		Performs averaging processing on A/D conversion in units of			
	Time average	time for each channel, and performs digital output of its average value.	-	0	
Averaging processing	Count average	Performs averaging processing on A/D conversion in units of counts for each channel, and performs digital output of its average value.	-	0	
processing	Moving average	Performs averaging processing on A/D conversion in units of counts for each channel, with the range moving in response to each sampling processing, and performs digital output of its average value.	-	0	
Range switchin	g function	Allows selection of the input range to be used.	0	0	
Maximum and I hold function	minimum values	Holds the maximum value and the minimum value of digital values into the module.	-	0	
Input signal erro	or detection	Detects an analog input value that is out of the setting range.	-	0	
Scaling function		Performs scale conversion on digital output values within a specified range between a scaling upper limit value and a scaling lower limit value. This function reduces the time and effort to create a program of the scale conversion.	-	0	Setting the same scaling upper limit value and scaling lower limit value as those of resolution mode of the A1S66ADA allows use of the same digital output values as in the A1S66ADA.
Logging function		Logs (records) digital output values or scaling values (digital operation values). 10000 points of data can be logged for each channel.	-	0	

(2) Functions of D/A conversion

Item	Description	A1S66ADA	Q64AD2DA	Precautions for replacement
D/A conversion enable/disable function	Allows specifying whether to enable or disable D/A conversion for each channel. In the Q64AD2DA, disabling the D/A conversion on unused channels reduces the conversion cycle.	-	0	
D/A output enable/disable	Allows specifying whether to output D/A conversion values or 0V/0mA for each channel. The conversion speed remains constant irrespective of the output enabled/disabled state.	0	-	The output with D/A output
function	Allows specifying whether to output D/A conversion values or offset values for each channel. The conversion speed remains constant irrespective of the output enabled/disabled state.	-	0	disabled differs each other.
Range switching function	Allows selection of the range to be used.	0	0	
Analog output HOLD/CLEAR function	Allows setting whether to hold (HOLD) or clear (CLEAR) analog output values depending on the CPU module operating status: RUN, STOP, or a stop error.	-	0	
Analog output test at STOP status of the CPU module	Outputs the analog value converted from a digital value when CH□ Output enable/disable flag is forcibly turned on while the CPU module is in the STOP status.	-	0	
Scaling function	Performs scale conversion on digital input values within a specified range between a D/A conversion scaling upper limit value and a D/A conversion scaling lower limit value. This function reduces the time and effort to create a program of the scale conversion.	-	0	Setting the same scaling upper limit value and scaling lower limit value as those of resolution mode of the A1S66ADA allows use of the same digital output values as in the A1S66ADA.
Warning output function	Outputs a warning when a digital output value is out of the preset range.	-	0	
Wave output function	Takes in the waveform data prepared beforehand (digital input value), and performs analog output at the set conversion cycle.	-	0	

(3) Common functions

Item	Description	A1S66ADA	Q64AD2DA	Precautions for replacement
External power supply READY flag	Turns on when the external power supply 24VDC is supplied. If external power supply READY flag (X7) is off, A/D conversion and D/A conversion are not performed.	-	0	
Error log function	Records up to the 16 errors and alarms that have occurred in the Q64AD2DA, storing them into the buffer memory.	-	0	
Module error collection function	Collects errors and alarms that have occurred in the Q64AD2DA into the CPU module.	-	0	
Error clear function	Allows error clear through the system monitor at the occurrence of an error.	-	0	Can be used by using GX Works2.
Saving/restoring offset/gain values	Makes it possible to save and restore the offset/gain values of the user range setting.	-	0	
Offset/gain setting function	Corrects errors in analog output values and digital output values.	0	0	
Online module change	Allows module replacement without stopping the system.	-	0	

4.3.3 I/O signal comparison

Because the I/O signals differ between the modules, the sequence program needs to be changed. For details on the I/O signals and the sequence program, refer to Analog Input/Output Module User's Manual Q64AD2DA.

	A1S6	6ADA		Q64AD2DA			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0		Y0		X0	Module ready	Y0	Use prohibited
X1		Y1		X1	CH1 Logging hold flag	Y1	CH1 Logging hold request
X2		Y2		X2	CH2 Logging hold flag	Y2	CH2 Logging hold request
Х3		Y3		Х3	CH3 Logging hold flag	Y3	CH3 Logging hold request
X4		Y4	1	X4	CH4 Logging hold flag	Y4	CH4 Logging hold request
X5		Y5		X5	Use prohibited	Y5	CH5 Output enable/ disable flag
X6	CH3 digital output value	Y6	CH1 digital value setting	X6	External power off flag	Y6	CH6 Output enable/ disable flag
X7		Y7		X7	Input signal error detection signal	Y7	Use prohibited
X8		Y8		X8	High resolution mode status flag	Y8	- Ose proffibiled
X9		Y9		X9	Operating condition setting completion flag	Y9	Operating condition setting request
XA		YA		XA		YA	
XB		YB	1	XB	Use prohibited	YB	Use prohibited
XC		YC		XC		YC	
XD	YD	YD	Usage disable	XD	Maximum and minimum values reset completion flag	YD	Maximum and minimum values reset request
XE	Usage disable	YE		XE	A/D conversion completed flag	YE	Use prohibited
XF		YF	CH1 D/A conversion value output enable flag	XF	Error flag	YF	Error clear request
X10		Y10					
X11		Y11					
X12		Y12					
X13		Y13					
X14		Y14					
X15	CH4 digital output value	Y15	CH2 digital value setting				
X16]	Y16					
X17		Y17					
X18	-	Y18					
X19		Y19					
X1A X1B		Y1A Y1B	-				
X1B X1C		Y1B Y1C					
X1C X1D	4	Y1D	Usage disable				
X1D X1E	Usage disable	Y1E	- Osaye disable				
	- Souge disable	Y1F	CH2 D/A conversion value				
X1F	X1F		output enable flag				

	A1S66ADA									
Device	0: 1	Device	0							
No.	Signal name	No.	Signal name							
X20		Y20								
X21	1	Y21								
X22		Y22								
X23	1	Y23								
X24		Y24								
X25	CH5 digital output value	Y25								
X26	CH3 digital output value	Y26								
X27		Y27								
X28		Y28								
X29		Y29								
X2A		Y2A								
X2B		Y2B								
X2C		Y2C								
X2D	Usage disable	Y2D								
X2E	Osage disable	Y2E								
X2F		Y2F	Usage disable							
X30		Y30	Godge diodole							
X31		Y31								
X32		Y32								
X33		Y33								
X34		Y34								
X35	CH6 digital output value	Y35								
X36	January and American	Y36								
X37		Y37								
X38		Y38								
X39		Y39								
X3A		Y3A								
X3B		Y3B								
X3C		Y3C								
X3D	Usage disable	Y3D								
X3E		Y3E								
X3F		Y3F								

4.3.4 Buffer memory address comparison

The A1S66ADA sends and receives data to and from the CPU module through I/O signals, while the Q64AD2DA sends and receives data to and from the CPU module through buffer memory. Accordingly, the sequence program for sending and receiving data needs to be changed.

For details on the buffer memory and the sequence program, refer to Analog Input/Output Module User's Manual Q64AD2DA.

	Q64AD2DA										
Address (decimal)				Name	Read/write						
CH1	CH2	CH3	CH4	Name	Read/write						
0	200	400	600	A/D conversion enable/disable setting	R/W						
1	201	401	601	Averaging process method setting	R/W						
2	202	402	602	Averaging process (time/number of times) setting	R/W						
3	203	403	603								
to	to	to	to	System area	-						
9	209	409	609								
10	210	410	610	A/D conversion scaling enable/disable setting	R/W						
11	211	411	611	A/D conversion scaling lower limit value	R/W						
12	212	412	612	A/D conversion scaling upper limit value	R/W						
13	213	413	613	Shifting amount to conversion value	R/W						
14	214	414	614								
to	to	to	to	System area	-						
19	219	419	619								
20	220	420	620	Input signal error detection setting	R/W						
21	221	421	621	Input signal error detection setting value	R/W						
22	222	422	622								
to	to	to	to	System area	-						
29	229	429	629								
30	230	430	630	Logging enable/disable setting	R/W						
31	231	431	631		R/W						
32	232	432	632	Logging cycle unit setting	R/W						
33	233	433		Logging data setting	R/W						
34	234	434	634		R/W						
35	235	435	635	Level trigger condition setting	R/W						
36	236	436	636	Trigger data	R/W						
37	237	437	637	Trigger setting value	R/W						
38	238	438	638								
to	to	to	to	System area	-						
99	299	499	699	-							
100	300	500	700	Digital output value	R						
101	301	501	701	System area	-						
102	302	502	702	Scaling value	R						
103	303	503	703	System area	-						
104	304	504	704	Maximum digital output value	R						
105	305	505	705	System area	-						
106	306	506	706	Minimum digital output value	R						
107	307	507	707	System area	-						
108	308	508	708	Maximum scaling value	R						
109	309	509	709	System area	-						
110	310	510	710	Minimum scaling value	R						
111	311	511	711	System area	-						
112	312	512	712	Setting range	R						
113	313	513	713	A/D conversion completed flag	R						
114	314	514	714	Input signal error detection flag	R						
115	315	515	715	-							
to	to	to	to	System area	-						
119	319	519	719								
120	320	520	720	Oldest pointer	R						
121	321	521	721	Latest pointer	R						
				· ·	I						

Q64AD2DA											
Address (decimal)				Name			Read/write				
CH1	CH2	СНЗ	CH4		Reau/Wille						
122	322	522	722	Logging data	R						
123	323	523	723	Trigger pointer			R				
124	324	524	724								
to	to	to	to	System area	-						
189	389	589	789								
190	390	590	790	Latest error code			R				
191	391	591	791		First two digits of the year	Last two digits of the year	R				
192	392	592	792	Error time	Month	Day	R				
193	393	593	793		Hour	Minute	R				
194	394	594	794		Second	Day of the week	R				
195	395	595	795								
to	to	to	to	System area	-						
199	399	599	799								

	Q64AD2DA						
Address	(decimal)		Name		Read/write		
CH5	CH6		Name		Read/write		
800	1000	D/A conversion	on enable/disa	ble setting	R/W		
801	1001	System area			-		
802	1002	Digital input v	Digital input value				
803	1003						
to	to	System area			-		
809	1009						
810	1010	D/A conversion setting	on scaling ena	ble/disable	R/W		
811	1011	D/A conversion	on scaling lowe	er limit value	R/W		
812	1012	D/A conversion	on scaling upp	er limit value	R/W		
813	1013	Shifting amou	unt to input valu	ue	R/W		
814	1014						
to	to	System area			-		
899	1099						
900	1100	Set value che	R				
901	1101	System area	-				
902	1102	Real convers	R				
903	1103						
to	to	System area	System area				
911	1111						
912	1112	Setting range			R		
913	1113	HOLD/CLEA	R function setti	ng	R		
914	1114						
to	to	System area			-		
989	1189						
990	1190	Latest error c	ode		R		
991	1191		First two digits of the year	Last two digits of the year	R		
992	1192	Error time	Month	Day	R		
993	1193	1	Hour	Minute	R		
994	1194		Second	Day of the week	R		
995	1195						
to	to	System area			-		
999	1199						

	Q64AD2DA	
Address (decimal)	Name	Read/write
1200		
to	System area	_
1599		
1600	Level data 0	R/W
1601	Level data 1	R/W
1602	Level data 2	R/W
1603	Level data 3	R/W
1604	Level data 4	R/W
1605	Level data 5	R/W
1606	Level data 6	R/W
1607	Level data 7	R/W
1608	Level data 8	R/W
1609	Level data 9	R/W
1610		
to	System area	-
1699		
1700	CH1 Digital output value	R
1701	CH2 Digital output value	R
1702	CH3 Digital output value	R
1703	CH4 Digital output value	R
1704		
to	System area	-
1709		
1710	CH1 Scaling value	R
1711	CH2 Scaling value	R
1712	CH3 Scaling value	R
1713	CH4 Scaling value	R
1714		
to	System area	-
1719		
1720	CH1 Maximum digital output value	R
1721 1722	CH1 Minimum digital output value CH2 Maximum digital output value	R R
1722	CH2 Minimum digital output value	R
1723	CH3 Maximum digital output value	R
1724	CH3 Minimum digital output value	R
1726	CH4 Maximum digital output value	R
1727	CH4 Minimum digital output value	R
1728	or 14 William digital output value	- 10
to	System area	_
1739	System area	
1740	CH1 Maximum scaling value	R
1741	CH1 Minimum scaling value	R
1742	CH2 Maximum scaling value	R
1743	CH2 Minimum scaling value	R
1744	CH3 Maximum scaling value	R
1745	CH3 Minimum scaling value	R
1746	CH4 Maximum scaling value	R
1747	CH4 Minimum scaling value	R
1748	-	
to	System area	-
1763		
1764	CH5 Set value check code	R
1765	CH6 Set value check code	R
1766		
to	System area	-
1773		
1774	CH5 Real conversion digital value	R
1775	CH6 Real conversion digital value	R
1776		
to	System area	-
1789		
		•

Q64AD2DA						
Address (decimal)		Name				
1790	Latest error c	ode				
1791		First two digits of the year	Last two digits of the year	R		
1792	Error time	Month	Day	K		
1793		Hour	Minute			
1794		Second	Day of the week			
1795 to 1799	System area			-		

Q64AD2DA						
Address (decimal)		N	ame		Read/write	
1800	Latest add	lress of er	ror history		R	
1801						
to	System ar	ea			-	
1809						
1810	1	Error cod	First two	Last two		
1811			digits of	digits of		
1011			the year	the year		
1812	History 1		Month	Day	R	
1813		time	Hour	Minute		
1814			Second	Day of		
1815				the week		
to	System ar	ea			_	
1819	Oystoni ai	ca				
1820		Error cod	e			
.020	1		First two	Last two		
1821			digits of	digits of		
			the year	the year		
1822	History 2	time	Month	Day	R	
1823		une	Hour	Minute		
1824			Second	Day of the week		
1825		<u> </u>	1	ule week		
to	System area				-	
1829						
1830		Error cod	е			
	History 3		First two	Last two		
1831		Error	digits of	digits of		
			the year	the year	R	
1832	1	time	Month	Day		
1833	1		Hour	Minute		
1834			Second	Day of the week		
1835			-1			
to	System ar	ea			-	
1839						
1840	<u> </u>	Error cod		,		
4044			First two	Last two		
1841			digits of the year	digits of the year		
1842	History 4		Month	Day	R	
1843	†	time	Hour	Minute	-	
	†			Day of	1	
1844			Second	the week		
1845						
to	System ar	ea			-	
1849		I =				
1850	1	Error cod		II acces		
1851			First two	Last two digits of		
1001			digits of the year	the year		
1852	History 5		Month	Day	R	
1853	t	time	Hour	Minute	1	
4054	t		Carrent	Day of	1	
1854			Second	the week		
1855						
to	System area				-	
1859						

		Q64AD2D	4			
Address (decimal)		Na	ime		Read/write	
1860		Error code	9			
			First two	Last two		
1861			digits of	digits of		
1000	History 6	Error	the year	the year	R	
1862		time	Month	Day		
1863			Hour	Minute		
1864			Second	Day of the week		
1865		•	•	•		
to	System ar	rea			-	
1869						
1870		Error code		L		
4074			First two	Last two		
1871			digits of the year	digits of the year		
1872	History 7	Error	Month	Day	R	
1873		time	Hour	Minute		
1073			Tioui	Day of		
1874			Second	the week		
1875						
to	System ar	rea			-	
1879						
1880		Error code				
1001			First two	Last two		
1881			digits of	digits of		
4000	History 8	Error	the year	the year	R	
1882 1883		time	Month Hour	Day Minute		
1003			Houi	Day of		
1884			Second	the week		
1885			•			
to	System ar	-				
1889						
1890		Error code				
1001			First two	Last two		
1891			digits of	digits of		
1892	History 9	Error	the year Month	the year Day	R	
1893		time	Hour	Minute		
1093			Tioui	Day of		
1894			Second	the week		
1895						
to	System ar	ea			_	
1899						
1900		Error code	9			
	1		First two	Last two	1	
1901			digits of	digits of		
	History	Error	the year	the year	R	
1902	10	time	Month	Day	'`	
1903		31110	Hour	Minute		
1904			Second	Day of the week		
1905		<u> </u>	I			
to	System ar	ea			_	
1909						
1910		Error code	9			
			First two	Last two		
1911			digits of	digits of		
	History	Error	the year	the year	R	
1912	11	time	Month	Day	'`	
1913		31110	Hour	Minute		
1914			Second	Day of		
				the week		

		Q64AD2I	DA			
Address (decimal)	Name				Read/write	
1915						
to	System a	rea			-	
1919						
1920		Error co	de			
	İ		First two	Last two		
1921			digits of	digits of		
	History	Error	the year	the year	R	
1922	12	time	Month	Day		
1923		unio	Hour	Minute		
1924			Second	Day of		
4005				the week		
1925	System of	-00				
to 1929	System a	еа			-	
1930		Error co	do			
1950		LITOI CO	First two	Last two		
1931			digits of	digits of		
	History		the year	the year		
1932	13	Error	Month	Day	R	
1933	t	time	Hour	Minute	-	
4004	†		Caraci	Day of	1	
1934	1		Second	the week		
1935			•			
to	System a	rea			-	
1939						
1940	1	Error co		_		
40.4			First two	Last two		
1941			digits of the year	digits of		
1942	History 14	Error	Month	the year	R	
1943	17	time	Hour	Day Minute		
1940			Tioui	Day of	1	
1944			Second	the week		
1945						
to	System a	rea			-	
1949						
1950		Error co	de			
			First two	Last two		
1951			digits of	digits of		
1050	History	Error	the year	the year	R	
1952 1953	15	time	Month	Day Minute		
1955			Hour	Day of		
1954			Second	the week		
1955		<u> </u>		1	 	
to	System a	rea			-	
1959	1					
1960		Error co	de		<u> </u>	
	1		First two	Last two	1	
1961			digits of	digits of		
	History	Error	the year	the year	R	
1962	16	time	Month	Day] '`	
1963	ļ		Hour	Minute]	
1964			Second	Day of the week		
5000	-			ine week		
to	CH1 Logg	R				
14999] 2099	'`				
15000	1				 	
to	CH2 Logg	R				
24999						
25000						
to	CH3 Logg	jing data			R	
34999	L					

Q64AD2DA						
Address (decimal)	Name	Read/write				
35000						
to	CH4 Logging data	R				
44999						
45000						
to	System area	-				
49999						

TEMPERATURE INPUT MODULE REPLACEMENT

5.1 List of Temperature Input Module Alternative Models for Replacement

AnS/QnAS s	eries		Transition to Q series
Product	Model	Model	Remark (Restrictions)
	A1S68TD	Q64TD	External wiring: Cable size is changed. Changed (Two modules are required.) The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Changed (4CH/module) Functional specifications: Not changed
Temperature input module		Q68TD-G-H01 Q68TD-G-H02	External wiring : Connector wiring and cable size are changed. Number of slots: : Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Not changed Functional specifications: The disconnection detection function is not supported. (Only the Q68TD-G-H02 supports this function.)
	A1S62RD3N A1S62RD4N	Q64RD	1) External wiring : Cable size is changed. 2) Number of slots: : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Changed (4CH/module) 5) Functional specifications: Not changed
		Q64RD-G	1) External wiring : Cable size is changed. 2) Number of slots: : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Changed (4CH/module) 5) Functional specifications: Transformer isolation is provided between channels.
		Q64RD	1) External wiring : Cable size is changed. 2) Number of slots: : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Changed (4CH/module) 5) Functional specifications: Not changed
		Q64RD-G	External wiring : Cable size is changed. Number of slots: : Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Changed (4CH/module) Functional specifications: Transformer isolation is provided between channels.

⊠Point -

The existing wiring for the AnS/QnAS series modules can be connected directly to the Q series modules using the upgrade tool (conversion adaptor) manufactured by Mitsubishi Electric Engineering Co., Ltd.

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor	
	A1S68TD	Q68TD-G-H01	ERNT-ASQT68TD-H01*1	
Temperature input module	AISOOID	Q68TD-G-H02	ERNT-ASQT68TD-H02*1*2	
Tomporataro imparimonaro	A1S62RD3(N)	Q64RD	ERNT-ASQT62RD	
	A1S62RD4(N)	Q04ND		

^{*1} Conversion adapter with fixture. Before using the conversion adapter with fixture, be sure to fasten its fixture to the base adapter or DIN rail mounting bracket using screws.

^{*2} Cannot be mounted on the AnS size version Q large type base unit.

5.2 A1S68TD (Replacing with the Q64TD)

5.2.1 Performance specifications comparison

(1) Performance specifications comparison

			A1S68TD					
Temperature sensor input			0 to 1700°C					
ter	etected emperature alue	16-bit signed binary (0 to 17000: value up to the first decimal place × 10)						
Sc	caling value		6-bit signed binary (0	to 2000)				
Thermocouple comstandards	mpliance		JIS C1602-1981	1				
Applicable thermod	couple		Refer to Section 5.2.	1 (2).				
Measured tempera accuracy	ature range		Refer to Section 5.2.	1 (2).				
Overall accuracy		*1						
Maximum conversi	sion speed	400ms/8 channels						
Isolation method		Between thermocouple input and programmable controller power supply Between thermocouple input channels Between cold junction compensation input (Pt100) and programmable controller power supply	Isolation method Transformer isolation Not isolated	Dielectric withstand voltage 500VAC, for 1 minute	Insulation resistance 5MΩ or more using 500VDC insulation resistance tester			
Disconnection dete	ection	Available						
Number of tempera	ature sensor	8 channels + 1 channel for Pt100/module						
· ·	umber of occupied I/O points 32 points (I/O assignment: special 32 points)							
External connectio	connection system 20-point terminal block							
Applicable wire siz	ze	0.75 to 1.5mm ²						
Applicable solderle		R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A						
Internal current cor (5VDC)	nsumption		0.32A					
Weight			0.28kg					

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

				O. Compatible	, △ : Partial change required, ×: incompatible
	Q64TD			Compatibility	Precautions for replacement
-	270 to 1820	0	The measured temperature range differs depending on the thermocouple used.		
16- (-2700 to 18200: value	-bit signed bi	0			
	-bit signed bit 100 (0 to 1	Δ	The concept of scaling value differs. To use the scaling values, program needs to be reviewed.		
J	IS C1602-19		As the applicable thermocouples and thermocouple compliance standards		
Refer	to Section 5	Δ	differ, refer to Section 5.2.1 (2) to check the specifications, and use the thermocouple that can be used with the Q64TD.		
Refer	to Section 5	Δ	As they depend on the applicable thermocouple and measured		
*1				0	temperature range, refer to Section 5.2.1 (2) to check the specifications.
40ms/channel			0		
Isolated area Between thermocouple input and programmable controller power supply Between thermocouple input channels Between cold junction compensation input (Pt100) and programmable controller power supply	Isolation method Transformer isolation Transformer isolation Not isolated	Dielectric withstand voltage 1780VACrms/3 cycles (Altitude 2000m)	Insulation resistance 500VDC , $100\text{M}\Omega$ or more 500VDC , $10\text{M}\Omega$ or more $-$	0	
результые сельные реше сарру	Available		<u> </u>	0	
4 channels +		Δ	To use 5 or more channels, consider replacing the A1S68TD with two Q64TD modules.		
16 points (I/O assignment: intelligent 16 points)				Δ	The number of occupied I/O points has changed to 16 points.
18-р	oint termina	×			
).3 to 0.75mi	×	Wiring change is required.		
1 (Solderless terminals with	.25-3, R1.25 h an insulatio	×	gg		
	0.50A			Δ	Recalculation of internal current consumption (5VDC) is required.
	0.25kg			0	

^{*1} Calculate the accuracy in the following method.

 $(Accuracy) = (Conversion\ accuracy) + (Temperature\ characteristics) \times (Operating\ ambient\ temperature\ variation)$

An operating ambient temperature variation indicates a deviation of the operating ambient temperature from the $25\pm5^{\circ}$ C range.

^{+ (}Cold junction compensation accuracy)

(2) Applicable thermocouple and measured temperature range accuracy

A1S68TD							
JIS	Measured temperature range	Conversion accuracy at 25±0.5°C	Temperature characteristics				
В	800 to 1700°C	±2.5°C	±0.4°C				
R	300 to 1600°C	±2°C	±0.3°C				
S	300 to 1600°C	±2°C	±0.3°C				
K	0 to 1200°C	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.07°C, or ±0.02% of measured temperature				
E	0 to 800°C	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.07°C, or ±0.02% of measured temperature				
J	0 to 750°C	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.07°C, or ±0.02% of measured temperature				
Т	0 to 350°C	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.07°C, or ±0.02% of measured temperature				

		Q64TD		
JIS	Measured temperature range*1	Conversion accuracy (At operating ambient temperature 25±5°C)	Temperature characteristics (Per operating ambient temperature variation of 1°C)	Max. temperature error at ambient temperature 55°C
	0 to 600°C	_ *3	_ *3	_ *3
5	600 to 800°C*2	±3.0°C	.0.400	±13.0°C
В	800 to 1700°C*2	±2.5°C	±0.4°C	±12.5°C
	1700 to 1820°C	_ *3	_ *3	_ *3
-	-50 to 0°C	_ *3	_ *3	_ *3
5	0 to 300°C*2	±2.5°C	±0.4°C	±12.5°C
R	300 to 1600°C*2	±2.0°C	±0.3°C	±9.5°C
	1600 to 1760°C	_ *3	_ *3	_ *3
	-50 to 0°C	_ *3	_ *3	_ *3
	0 to 300°C*2	±2.5°C	±0.4°C	±12.5°C
S	300 to 1600°C*2	±2.0°C	±0.3°C	±9.5°C
	1600 to 1760°C	_ *3	_ *3	_ *3
	-270 to -200°C	_ *3	_ *3	_ *3
	-200 to 0°C*2	Larger value of ±0.5°C, or ±0.5% of measured temperature	Larger value of ±0.06°C, or ±0.2% of measured temperature	±11.0°C
K	0 to 1200°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±9.0°C
	1200 to 1370°C	_ *3	_ *3	_ *3
	-270 to -200°C	_ *3	_ *3	_ *3
	-200 to 0°C*2	Larger value of ±0.5°C, or ±0.5% of measured temperature	Larger value of ±0.06°C, or ±0.15% of measured temperature	±8.5°C
E	0 to 900°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±6.75°C
	900 to 1000°C	_ *3	_ *3	_ *3
	-210 to -40°C	_ *3	_ *3	_ *3
J	-40 to 750°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±5.625°C
	750 to 1200°C	_ *3	_ *3	_ *3
	-270 to -200°C	_ *3	_ *3	_ *3
	-200 to 0°C*2	Larger value of ±0.5°C, or ±0.5% of measured temperature	Larger value of ±0.06°C, or ±0.1% of measured temperature	±6.0°C
Т	0 to 350°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±2.625°C
	350 to 400°C	_ *3	_ *3	_ *3
	-270 to -200°C	_ *3	_ *3	_ *3
	-200 to 0°C*2	Larger value of ±0.5°C, or ±0.5% of measured temperature	Larger value of ±0.06°C, or ±0.2% of measured temperature	±11.0°C
N	0 to 1250°C ^{*2}	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±9.375°C
	1250 to 1300°C	_ *3	_ *3	_ *3

^{*1} If a value entered from the thermocouple is outside the measured temperature range given in the table, it is handled as the maximum/minimum value of the measured temperature range.

^{*2} The accuracy only in the temperature ranges of Class 1 to 3 (shaded areas) in JIS C1602-1995 apply.

^{*3} Temperature can be measured, but accuracy is not guaranteed.

5.2.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S68TD	Q64TD	Precautions for replacement
Temperature conversion function	Imports temperature data.			
(Temperature conversion value	(Stores imported temperature data in the	0	0	
storage)	buffer memory.)			
Conversion enable/disable	Sets whether to enable/disable a	0	0	
function	conversion per channel.	O	0	
	Detects a disconnection of the connected			A channel set to be conversion
Disconnection detection function	thermocouple of each channel.	0	0	enabled automatically detects
	Thermocouple of each channel.			disconnection.
				For the Q64TD, input type is set
Input type selection function	Sets an input type for each channel.		0	with the intelligent function
input type selection function	Sets an input type for each channel.	0		module switch setting of GX
				Developer.
Warning output function	Outputs a warning when the temperature	0	0	
warning output function	exceeds the set temperature range.	O)	
Temperature conversion system	Processes the detected temperature by	0	0	Averaging processing is added
Temperature conversion system	specified method.	O	0	for the Q64TD.
	Converts and stores a measured	0	Δ	The concept of scaling value
Scaling function	temperature value within the scaling range			differs. To use the scaling values,
	into the value between 0 to 2000.			program needs to be reviewed.
Dt100 cold innation componenties	Sets whether the cold junction			
Pt100 cold junction compensation	compensation using the Pt100 attached to	-	0	
enable/disable setting function	the terminal is performed or not.*1			
	Performs linear correction by individually			
Offset/gain setting function	compensating any given 2 points (offset	-	0	
	value/gain value) within the effective range.			
	A module can be replaced without the			The Process CPU and
Online module replacement	system being stopped.	-	0	Redundant CPU support this
	System being stopped.			function.

^{*1} For the A1S68TD, the setting is fixed to "enabled".

For the Q64TD, the setting can be selected. By setting "disabled" and providing an ice bath externally, the cold junction temperature compensation accuracy can be improved.

5.2.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the Thermocouple Input Module/Channel Isolated Thermocouple/Micro Voltage Input Module User's Manual.

	A1S68TD				Q64TD				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X0	Watchdog timer error flag	Y0		X0	Module ready	Y0	Use prohibited		
X1	A/D conversion READY flag	Y1		X1	CH1 Offset/gain setting status signal	Y1	CH1 Offset setting request		
X2	Error flag	Y2		X2	CH2 Offset/gain setting status signal	Y2	CH1 Gain setting request		
Х3	Disconnection detection flag	Y3		Х3	CH3 Offset/gain setting status signal	Y3	CH2 Offset setting request		
X4	Out-of-measurement- range flag	Y4		X4	CH4 Offset/gain setting status signal	Y4	CH2 Gain setting request		
X5		Y5		X5		Y5	CH3 Offset setting request		
X6	1	Y6		X6	Use prohibited	Y6	CH3 Gain setting request		
X7		Y7	Use prohibited	X7	Ose prombited	Y7	CH4 Offset setting request		
X8		Y8		X8		Y8	CH4 Gain setting request		
Х9		Y9		Х9	Operating condition setting completion signal	Y9	Operating condition setting request		
XA		YA		XA	Offset/gain setting mode status flag	YA	User range write request		
XB		YB		XB	Use prohibited	YB			
XC		YC		XC	Disconnection detection flag	YC	Use prohibited		
XD		YD		XD	Warning output signal				
XE		YE		XE	Conversion completion flag	YE			
XF	Llaa probibitad	YF		XF	Error flag	YF	Error clear request		
X10	Use prohibited	Y10							
X11		Y11	Set lower/upper limit value update instruction						
X12		Y12	Error reset						
X13		Y13							
X14		Y14							
X15		Y15							
X16 X17		Y16 Y17							
X17		Y18							
X19		Y19	Use prohibited						
X1A		Y1A	p						
X1B		Y1B							
X1C		Y1C							
X1D		Y1D							
X1E X1F		Y1E Y1F							
ΛΠ		1 11							

5.2.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of buffer memories and sequence programs, refer to the Thermocouple Input Module/ Channel Isolated Thermocouple/Micro Voltage Input Module User's Manual.

	A1S68TD			Q64TD			
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write		
0	A/D conversion enable/disable setting	R/W	0	Conversion enable/disable setting			
1	Error code		1	CH1 Time/count averaging setting	1		
2	Disconnection detection flag	R	2	CH2 Time/count averaging setting	R/W		
3	Out-of-measurement-range flag	1	3	CH3 Time/count averaging setting			
4			4	CH4 Time/count averaging setting			
5			5				
6			6				
7	System area (Use prohibited)	-	7	System area (Use prohibited)	-		
8			8				
9			9	Averaging processing specification	R/W		
10	CH1 Converted temperature value (0.1°C unit)		10	Conversion completion flag			
11	CH2 Converted temperature value (0.1°C unit)	1	11	CH1 Measured temperature value	1		
12	CH3 Converted temperature value (0.1°C unit)	4	12	CH2 Measured temperature value	R		
13	CH4 Converted temperature value (0.1°C unit)		13	CH3 Measured temperature value			
14	CH5 Converted temperature value (0.1°C unit)	J R	14	CH4 Measured temperature value			
15	CH6 Converted temperature value (0.1°C unit)	-1	15 to 18	System area (Use prohibited)	_		
16	CH7 Converted temperature value (0.1°C unit)		19	Error code			
17	CH8 Converted temperature value (0.1°C unit)	4	20	Setting range	R		
18	one converted temperature value (c.1 o dille)		21 to 46	System area (Use prohibited)	_		
19	System area (Use prohibited)	-	47	Warning output enable/disable setting	R/W		
20	CH1 Scaling value		48	Warning output flag	1000		
21	CH2 Scaling value		49	Disconnection detection flag			
22	CH3 Scaling value		50	CH1 Scaling value			
23	CH4 Scaling value		51	CH2 Scaling value	R		
24		R	52		-		
	CHS Scaling value		53	CH3 Scaling value CH4 Scaling value			
25	CH5 Scaling value			-			
26	CH7 Scaling value	4	54 to 61	System area (Use prohibited)			
27	CH8 Scaling value		62	CH1 Scaling range lower limit value			
28	A/D conversion completion flag		63	CH1 Scaling range upper limit value			
29	System area (Use prohibited)	-	64	CH2 Scaling range lower limit value			
30	CH1 Lower limit value (0.1°C unit)		65	CH2 Scaling range upper limit value	R/W		
31	CH1 Upper limit value (0.1°C unit)		66	CH3 Scaling range lower limit value			
32	CH2 Lower limit value (0.1°C unit)		67	CH3 Scaling range upper limit value			
33	CH2 Upper limit value (0.1°C unit)		68	CH4 Scaling range lower limit value			
34	CH3 Lower limit value (0.1°C unit)		69	CH4 Scaling range upper limit value			
35	CH3 Upper limit value (0.1°C unit)		70 to 77	System area (Use prohibited)	-		
36	CH4 Lower limit value (0.1°C unit)		78	CH1 Scaling width lower limit value			
37	CH4 Upper limit value (0.1°C unit)	R/W	79	CH1 Scaling width upper limit value			
38	CH5 Lower limit value (0.1°C unit)		80	CH2 Scaling width lower limit value			
39	CH5 Upper limit value (0.1°C unit)		81	CH2 Scaling width upper limit value			
40	CH6 Lower limit value (0.1°C unit)		82	CH3 Scaling width lower limit value			
41	CH6 Upper limit value (0.1°C unit)		83	CH3 Scaling width upper limit value	R/W		
42	CH7 Lower limit value (0.1°C unit)		84	CH4 Scaling width lower limit value			
43	CH7 Upper limit value (0.1°C unit)		85	CH4 Scaling width upper limit value			
44	CH8 Lower limit value (0.1°C unit)		86	CH1 Warning output lower lower limit value			
45	CH8 Upper limit value (0.1°C unit)		87	CH1 Warning output lower upper limit value			
46	System area (Use prohibited)		88	CH1 Warning output upper lower limit value			
47	Oystem area (Ose prombited)	1 -	89	CH1 Warning output upper upper limit value	1		

	A1S68TD		Q64TD				
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write		
48	System area (Use prohibited)		90	CH2 Warning output lower lower limit value			
49	System area (Ose prombited)	-	91	CH2 Warning output lower upper limit value			
			92	CH2 Warning output upper lower limit value			
			93	CH2 Warning output upper upper limit value			
			94	CH3 Warning output lower lower limit value			
			95	CH3 Warning output lower upper limit value	R/W		
			96	CH3 Warning output upper lower limit value	IVV		
			97	CH3 Warning output upper upper limit value			
			98	CH4 Warning output lower lower limit value			
			99	CH4 Warning output lower upper limit value			
			100	CH4 Warning output upper lower limit value			
			101	CH4 Warning output upper upper limit value			
			102 to 117	System area (Use prohibited)	-		
			118	CH1 Offset temperature set value			
			119	CH1 Gain temperature set value			
			120	CH2 Offset temperature set value			
			121	CH2 Gain temperature set value	R/W		
			122	CH3 Offset temperature set value	IVVV		
			123	CH3 Gain temperature set value			
			124	CH4 Offset temperature set value			
			125	CH4 Gain temperature set value			
			126 to 147	System area (Use prohibited)	-		
			148	Conversion setting for disconnection detection	R/W		
			149	System area (Use prohibited)	_		
			140	Conversion setting for disconnection			
			150 to 153	detection (CH1 to CH4)	R/W		
			154 to 157	System area (Use prohibited)	_		
				Mode switching setting			
			160	CH1 Factory default offset value			
			161	CH1 Factory default gain value			
			162	CH1 User range settings offset value			
			163	CH1 User range settings gain value			
				CH1 User range settings thermal EMF			
			164	offset value (L)			
			165	CH1 User range settings thermal EMF			
				offset value (H)			
			166	CH1 User range settings thermal EMF gain value (L)			
			167	CH1 User range settings thermal EMF gain			
				value (H)	R/W		
			168	CH2 Factory default offset value			
			169	CH2 Factory default gain value			
			170	CH2 User range settings offset value			
			171	CH2 User range settings gain value			
			172	CH2 User range settings thermal EMF offset value (L)			
				CH2 User range settings thermal EMF			
			173	offset value (H)			
			.=.	CH2 User range settings thermal EMF gain			
			174	value (L)			
				CH2 User range settings thermal EMF gain			
			175	value (H)			
				(/			

	Q64TD					
Address	Name	Read/write				
(decimal)	Name	Reau/write				
176	CH3 Factory default offset value					
177	CH3 Factory default gain value					
178	CH3 User range settings offset value					
179	CH3 User range settings gain value					
180	CH3 User range settings thermal EMF offset value (L)					
181	CH3 User range settings thermal EMF offset value (H)					
182	CH3 User range settings thermal EMF gain value (L)					
183	CH3 User range settings thermal EMF gain value (H)	R/W				
184	CH4 Factory default offset value					
185	CH4 Factory default gain value					
186	CH4 User range settings offset value					
187	CH4 User range settings gain value					
188	CH4 User range settings thermal EMF offset value (L)					
189	CH4 User range settings thermal EMF offset value (H)					
190	CH4 User range settings thermal EMF gain value (L)					
191	CH4 User range settings thermal EMF gain value (H)					
192	System area (Lise prohibited)					
to	System area (Use prohibited)	-				

Memo

5.3 A1S68TD (Replacing with the Q68TD-G-H02 or Q68TD-G-H01)

5.3.1 Performance specifications comparison

(1) Performance specifications comparison

	Item	A1S68TD							
Гетрегаtur	e sensor input		0 to 1700°C						
	etected	(0 to 1700)	16-bit signed bin						
Output Tel	mperature value	(0 to 17000	of value up to the first of	decimal place × 10)					
•	caling value	16-bit signed binary (0 to 2000)							
Thermocoup standards	ple compliance		JIS C1602-198	1					
Applicable t	hermocouple	Refer to Section 5.3.1 (2).							
Measured to accuracy	emperature range	Refer to Section 5.3.1 (2).							
Overall accu	uracy	*2							
Maximum c	onversion speed		400ms/8 channe	els					
Isolation me	ethod	Isolated area Between thermocouple input and programmable controller power supply Between thermocouple input channels Between cold junction compensation input (Pt100) and programmable controller power supply	Isolation method Transformer isolation Not isolated	Dielectric withstand voltage 500VAC, for 1 minute	Insulation resistance 5MΩ or more using 500VDC insulation resistance tester -				
Disconnecti	on detection		Available						
Number of to input points	emperature sensor	8 cha	nnels + 1 channel for	Pt100/module					
Number of o	occupied I/O points	(1/	32 points O assignment: special	32 points)					
External cor	nnection system		20-point terminal t	olock					
External dev sold separa	vice connector ately)		-						
Applicable v	vire size		0.75 to 1.5mm	2					
Applicable s	solderless terminal	R1.25-	3, 1.25-YS3, RAV1.25						
Internal curr (5VDC)	rent consumption		0.32A						
Weight			0.28kg						

 $O{:}\ Compatible, \Delta{:}\ Partial\ change\ required,\ \times{:}\ Incompatible$

	0			`	J. Compatible, △.	Partial change required, *. Incompatible
Q68TD-G-H02	Q se	ries	Q68TD-G-H	101 ^{*1}	Compatibility	Precautions for replacement
	-270 to 1				0	The measured temperature range differs depending on the thermocouple used.
16 (-2700 to 18200: valu	bit signue up to			0)	0	
16 (0 t	Δ	The concept of scaling value differs. To use the scaling values, program needs to be reviewed.				
Pofo	Δ	Use the thermocouple that can be used on the Q68TD-G-H02/H01, referring to Section 5.3.1 (2).				
	to Secti				Δ	As they depend on the applicable thermocouple and measured
	*2				0	temperature range, refer to Section 5.3.1 (2) to check the specifications.
640ms/8 channels*3			320ms/8 char	nnels ^{*3}	0	•
Isolated area Between thermocouple input and programmable controller power supply Between thermocouple input channels Between cold junction compensation input (Pt100) and programmable controller power supply	isola	former ation former ation	Dielectric withstand voltage 500VACrms, for 1 minute 1000VACrms, for 1 minute	Insulation resistance 500VDC, 10MΩ or more	0	
Available (all the channels are independed	nt)		Not availa	ble	Δ	The Q68TD-G-H01 supports the disconnection monitor function.
8 channels +	1 chann	nel for Pt	100/module		0	
16 points (I/O assignment: intelligent 16 points)					Δ ×	The number of occupied I/O points has changed to 16 points.
40-pin connector						
A6CON4 0.3mm ² (22 AWG) or less					×	Wiring change is required.
0.5111	-	wvG) UI	1000		×	
0.65A			0.49A		Δ	Recalculation of internal current consumption (5VDC) is required.
 0.22kg			0.18kg		0	

- *1 Restrictions on mountable slot position apply to the Q68TD-G-H01. For details, refer to the user's manual for the Q68TD-G-H01/H02.
- *2 Calculate the accuracy in the following method.
 - $(Accuracy) = (Conversion\ accuracy) + (Temperature\ characteristics) \times (Operating\ ambient\ temperature\ variation)$
 - + (Cold junction compensation accuracy)
 - An operating ambient temperature variation indicates a deviation of the operating ambient temperature from the 25±5°C range.
- *3 A measured temperature value is stored in the buffer memory at every 320ms/640ms, regardless of the number of conversion enable channels.

(2) Applicable thermocouple and measured temperature range accuracy

A1S68TD						
JIS	Measured temperature range	Conversion accuracy at 25±0.5°C	Temperature characteristics			
В	800 to 1700	±2.5°C	±0.4°C			
R	300 to 1600	±2°C	±0.3°C			
S	300 to 1600	±2°C	±0.3°C			
К	0 to 1200	Larger value of ±0.5°C, or ±0.25% of	Larger value of ±0.07°C, or ±0.02% of			
K		measured temperature	measured temperature			
E	0 to 800	Larger value of ±0.5°C, or ±0.25% of	Larger value of ±0.07°C, or ±0.02% of			
L	0 10 600	measured temperature	measured temperature			
	0 to 750	Larger value of ±0.5°C, or ±0.25% of	Larger value of ±0.07°C, or ±0.02% of			
J	0 to 750	measured temperature	measured temperature			
т	0 to 350	Larger value of ±0.5°C, or ±0.25% of	Larger value of ±0.07°C, or ±0.02% of			
	0 to 350	measured temperature	measured temperature			

Q68TD-G-H02, Q68TD-G-H01						
JIS	Measured temperature range*1	Conversion accuracy (At operating ambient temperature 25±5°C)	Temperature characteristics (Per operating ambient temperature variation of 1°C)	Max. temperature error at ambient temperature 55°C		
	0 to 600°C	_ *3	_ *3	_ *3		
Б.	600 to 800°C*2	±3.0°C	.0.4%0	±13.0°C		
В	800 to 1700°C*2	±2.5°C	±0.4°C	±12.5°C		
	1700 to 1820°C	_ *3	_ *3	_ *3		
-	-50 to 0°C	_ *3	_ *3	_ *3		
_	0 to 300°C*2	±2.5°C	±0.4°C	±12.5°C		
R	300 to 1600°C*2	±2.0°C	±0.3°C	±9.5°C		
	1600 to 1760°C	_ *3	_ *3	_ *3		
	-50 to 0°C	_ *3	_ *3	_ *3		
	0 to 300°C*2	±2.5°C	±0.4°C	±12.5°C		
S	300 to 1600°C*2	±2.0°C	±0.3°C	±9.5°C		
	1600 to 1760°C	_ *3	_ *3	_ *3		
	-270 to -200°C	_ *3	_ *3	_ *3		
	-200 to 0°C*2	Larger value of ±0.5°C, or ±0.5% of measured temperature	Larger value of ±0.06°C, or ±0.2% of measured temperature	±11.0°C		
K	0 to 1200°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±9.0°C		
	1200 to 1370°C	_ *3	_ *3	_ *3		
	-270 to -200°C	_ *3	_ *3	_ *3		
	-200 to 0°C*2	-200 to 0°C*2 Larger value of ±0.5°C, or ±0.5% Larger value of measured temperature of measured temperature		±8.5°C		
E	0 to 900°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±6.75°C		
	900 to 1000°C	_ *3	_ *3	_ *3		
	-210 to -40°C	_ *3	_ *3	_ *3		
J	-40 to 750°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±5.625°C		
	750 to 1200°C	_ *3	_ *3	_ *3		
	-270 to -200°C	_ *3	_ *3	_ *3		
	-200 to 0°C*2	Larger value of ±0.5°C, or ±0.5% of measured temperature	Larger value of ±0.06°C, or ±0.1% of measured temperature	±6.0°C		
Т	0 to 350°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±2.625°C		
	350 to 400°C	_ *3	_ *3	_ *3		
	-270 to -200°C	_ *3	_ *3	_ *3		
	-200 to 0°C*2	Larger value of ±0.5°C, or ±0.5% of measured temperature	Larger value of ±0.06°C, or ±0.2% of measured temperature	±11.0°C		
N	0 to 1250°C*2	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.06°C, or ±0.02% of measured temperature	±9.375°C		
	1250 to 1300°C	_ *3	_ *3	_ *3		

^{*1} If a value entered from the thermocouple is outside the measured temperature range given in the table, it is handled as the maximum/minimum value of the measured temperature range.

^{*2} The accuracy only in the temperature ranges of Class 1 to 3 (shaded areas) in JIS C1602-1995 apply.

^{*3} Temperature can be measured, but accuracy is not guaranteed.

5.3.2 Functional comparison

O: Available, \triangle : Partial change required, -: Not available

Item	Description	A1S68TD	Q68TD-G- H02/H01	Precautions for replacement
Temperature conversion function	Imports temperature data.			
(Temperature conversion value	(Stores imported temperature data in the	0	0	
storage)	buffer memory.)			
Conversion enable/disable	Sets whether to enable/disable a	0	0	
function	conversion per channel.	Ü		
Disconnection detection function	Detects a disconnection of the connected	0	H02: O	The Q68TD-G-H01 supports the
Disconnection detection function	thermocouple of each channel.		H01: △	disconnection monitor function.
				For the Q68TD-G-H02/H01, input
Input type selection function	Sets an input type for each channel.	0	\circ	type is set with the intelligent
input type selection function	Sets an input type for each channel.	O		function module switch setting of
				GX Developer.
Warning output function	Outputs a warning when the temperature	0	0	
Warning output function	exceeds the set temperature range.)	
Temperature conversion system	Processes the detected temperature by	0	0	Averaging processing is added
Temperature conversion system	specified method.	U	0	for the Q68TD-G-H02/H01.
	Converts a measured temperature value	0	Δ	The concept of scaling value
Scaling function	into a percent value (%) in set width.			differs. To use the scaling values,
	, , ,			program needs to be reviewed.
Pt100 cold junction compensation	Sets whether the cold junction			
enable/disable setting function	compensation using the Pt100 attached to	-	0	
	the terminal is performed or not.*1			
	Performs linear correction by individually			
Offset/gain setting function	compensating any given 2 points (offset	-	0	
	value/gain value) within the effective range.			
	A module can be replaced without the			The Process CPU and
Online module replacement	system being stopped.	-	_	Redundant CPU support this
	-7			function.

^{*1} For the A1S68TD, the setting is fixed to "enabled".

For the Q68TD-G-H01/H02, the setting can be selected. By setting "disabled" and providing an ice bath externally, the cold junction temperature compensation accuracy can be improved.

5.3.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the Thermocouple Input Module/Channel Isolated Thermocouple/Micro Voltage Input Module User's Manual.

	A1S68TD				Q68TD-G-H02,	Q68TD-	-G-H01
Device	Signal name	Device	Signal name	Device	Signal name	Device	Signal name
No.	Signal name	No.	Signal name	No.	Signal name	No.	Signal name
X0	Watchdog timer error flag	Y0		X0	Module ready	Y0	
X1	A/D conversion READY flag	Y1		X1		Y1	
X2	Error flag	Y2		X2		Y2	
Х3	Disconnection detection flag	Y3		Х3		Y3	
X4	Out-of-measurement- range flag	Y4		X4	Use prohibited	Y4	Use prohibited
X5	-	Y5		X5		Y5	
X6		Y6		X6		Y6	
X7		Y7		X7		Y7	
X8		Y8		X8		Y8	
X9		Y9		X9	Operating condition setting completion flag	Y9	Operating condition setting request
XA		YA	Use prohibited	XA	Offset/gain setting mode status flag	YA	User range write request
ХВ		YB		ХВ	Channel change completion flag	YB	Channel change request
XC		YC		XC	Q68TD-G-H02: Disconnection detection signal Q68TD-G-H01: Disconnection status monitor signal	YC	Use prohibited
XD		YD		XD	Warning output signal	YD	
XE	Use prohibited	YE		XE	Conversion completion flag	YE	
XF		YF		XF	Error flag	YF	Error clear request
X10		Y10					
X11		Y11	Set lower/upper limit value update instruction				
X12		Y12	Error reset	1			
X13		Y13					
X14		Y14					
X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Use prohibited				
X1A		Y1A					
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

5.3.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of buffer memories and sequence programs, refer to the Thermocouple Input Module/ Channel Isolated Thermocouple/Micro Voltage Input Module User's Manual.

	A1S68TD			Q68TD-G-H02, Q68TD-G-H01		
Address	Name	Read/write	Address	Name	Read/write	
(decimal)	Name	Reau/write	(decimal)	Name	Reau/write	
0	A/D conversion enable/disable setting	R/W	0	Conversion enable/disable setting		
1	Error code		1 to 8	CH1 to CH8 Time/count/moving average/	R/W	
	Enorcode	R	1 10 0	time constant setting		
2	Disconnection detection flag		9	System area (Use prohibited)	-	
3	Out-of-measurement-range flag		10	Conversion completion flag		
4			11 to 18	CH1 to CH8 Measured temperature value		
5			19	Error code	R	
6			20 to 21	CH1 to CH8 Setting range 1/2		
_	System area (Use prohibited)	-		(Thermocouple type)		
7			22	Setting range 3 (Offset/gain setting)		
8			23	System area (Use prohibited)	-	
9			24 to 25	CH1 to CH8 Averaging processing selection		
10	CH1 Converted temperature value (0.1°C unit)		26	Offset/gain setting mode (Offset		
	, ,	<u> </u>		specification)		
11	CH2 Converted temperature value (0.1°C unit)		27	Offset/gain setting mode (Gain	R/W	
40	CH2 Constants of toward and two value (0.4°C visit)	1	00	specification)		
12	CH3 Converted temperature value (0.1°C unit)		28	CH1 Offset temperature setting value		
13	CH4 Converted temperature value (0.1°C unit)	R	29	CH1 Gain temperature setting value		
14	CH5 Converted temperature value (0.1°C unit)	1	to	CLIQ Cain temperature patting value		
15	CH6 Converted temperature value (0.1°C unit)	<u> </u>	43	CH8 Gain temperature setting value		
16	CH7 Converted temperature value (0.1°C unit)	<u> </u>	44	System area (Use prohibited) Q68TD-G-H02: Cold junction compensation		
17	CH8 Converted temperature value (0.1°C unit)			setting status	R	
			45	Q68TD-G-H01: System area (Use	 	
18	System area (Use prohibited)	_		prohibited)	-	
19	oystem area (ose prombited)		46	Warning output enable/disable setting	R/W	
20	CH1 Scaling value		47	Warning output flag (Process alarm)	1000	
21	CH2 Scaling value	†	48	Warning output flag (Rate alarm)		
		<u>.</u>		Q68TD-G-H02: Disconnection detection	1	
22	CH3 Scaling value			flag	R	
		+	49	Q68TD-G-H01: Disconnection status		
23	CH4 Scaling value	R		monitor flag		
24	CH5 Scaling value	•	50 to 57	CH1 to CH8 Scaling value		
25	CH6 Scaling value	†	58	Scaling valid/invalid setting	R/W	
26	CH7 Scaling value	†	59 to 61	System area (Use prohibited)	-	
27	CH8 Scaling value	1	62	CH1 Scaling range lower limit value		
28	A/D conversion completion flag	1	63	CH1 Scaling range upper limit value		
29	System area (Use prohibited)	-	to		1	
30	CH1 Lower limit value (0.1°C unit)		77	CH8 Scaling range upper limit value	1	
31	CH1 Upper limit value (0.1°C unit)]	78	CH1 Scaling width lower limit value]	
32	CH2 Lower limit value (0.1°C unit)]	79	CH1 Scaling width upper limit value	R/W	
33	CH2 Upper limit value (0.1°C unit)	D^^/	to		1	
34	CH3 Lower limit value (0.1°C unit)	R/W	93	CH8 Scaling width upper limit value		
35	CH3 Upper limit value (0.1°C unit)		94	CH1 Process alarm lower lower limit value		
36	CH4 Lower limit value (0.1°C unit)]	95	CH1 Process alarm lower upper limit value		
37	CH4 Upper limit value (0.1°C unit)		96	CH1 Process alarm upper lower limit value		

	A1S68TD			Q68TD-G-H02, Q68TD-G-H01	
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write
38	CH5 Lower limit value (0.1°C unit)		97	CH1 Process alarm upper upper limit value	
39	CH5 Upper limit value (0.1°C unit)		to		_
40	CH6 Lower limit value (0.1°C unit)		125	CH8 Process alarm upper upper limit value	
4.4	01011 1: 11 10 100 10		126 to	CH1 to CH8 Rate alarm warning detection	
41	CH6 Upper limit value (0.1°C unit)	R/W	133	period	R/W
42	CH7 Lower limit value (0.1°C unit)		134	CH1 Rate alarm upper limit value	
43	CH7 Upper limit value (0.1°C unit)		135	CH1 Rate alarm lower limit value	
44	CH8 Lower limit value (0.1°C unit)		to		
45	CH8 Upper limit value (0.1°C unit)		149	CH8 Rate alarm lower limit value	
46			150 to 157	System area (Use prohibited)	-
47			158 to	Mode switching setting	R/W
48	System area (Use prohibited)	-	160 to	System area (Use prohibited)	-
			100	Q68TD-G-H02: Conversion setting for	
49			164 to	disconnection detection	
		l e	165	Q68TD-G-H01: Disconnection state	
			.00	conversion setting	
				Q68TD-G-H02: Conversion setting value for	R/W
			166 to	disconnection detection	
			173	Q68TD-G-H01: Conversion setting value for	
				disconnection state	
			174 to	System area (Use prohibited)	-
			190	CH1 Factory default offset value	
			191	CH1 Factory default gain value	
			192	CH1 User range settings offset value	
			193	CH1 User range settings gain value	
			194	CH1 User range settings thermal EMF offset value (L)	
			195	CH1 User range settings thermal EMF	=
			196	offset value (H) CH1 User range settings thermal EMF gain	_
				value (L) CH1 User range settings thermal EMF gain	
			197 to	value (H)	R/W
			246	CH8 Factory default offset value	1
			247	CH8 Factory default gain value	
			248	CH8 User range settings offset value	
			249	CH8 User range settings gain value	1
				CH8 User range settings thermal EMF	
			250	offset value (L)	
			0.7.1	CH8 User range settings thermal EMF	1
			251	offset value (H)	
			252	CH8 User range settings thermal EMF gain value (L)	1
				CH8 User range settings thermal EMF gain	1
			253	Judius (II)	

value (H)

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5.4 A1S62RD3N (Replacing with the Q64RD)

5.4.1 Performance specifications comparison

Ite	em	A1S62RD3N			
Measuring meth		3-wire type			
Output	Temperature conversion value	16-bit signed binary: -1800 to 6000 Value up to the first decimal place × 10 32-bit signed binary: -180000 to 600000 Value up to the third decimal place × 1000			
	Scaling value	-			
Applicable platinum RTD		Pt100 (JIS C1604-1997, IEC 751-am2, JIS C1604-1989, DIN 43760-1980) JPt100 (JIS C1604-1981)			
Measured	Pt100	-180 to 600°C (27.10 to 313.71Ω)			
temperature range					
Accuracy ±1% (accuracy at full scale)					
Resolution		0.025°C			
Conversion spe	ed	40ms/channel			
Analog input po	ints	2 channels/module			
Output current f detection	or temperature	1mA			
Isolation metho	d	Between platinum RTD input and programmable controller power supply: photocoupler isolation Between platinum RTD input and channel: not isolated			
Dielectric withst	and voltage	Between platinum RTD input and programmable controller power supply: 500VAC, for 1 minute			
Disconnection of	detection	Detected per channel			
Number of occupied I/O points		32 points (I/O assignment: special 32 points)			
External connec	· ·	20-point terminal block			
Applicable wire	size	0.75 to 1.5mm ²			
Applicable solde	erless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A			

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

		20400		•	tial change required, *: incompatible
		Q64RD			Precautions for replacement
		wire type		0	
		igned binary:			
		00 to 8500			
V	•	rst decimal place × 10		0	
		igned binary:			
		00 to 850000			
Va		rd decimal place × 1000			
	16-bit s	igned binary		0	
	(JIS C 1604-1 J (JIS C	Δ	As the compliance standards for the applicable platinum RTD differ, change the platinum RTD to the one that can be used with the Q64RD.		
	-200	to 850°C		0	
	-180 to 600°C				
A	mbient tempera				
	accuracy relative	0			
ļ .	Ambient tempera				
	accuracy relative				
	0	0			
	40m	s/channel		0	
	4 chan	nels/module		0	
		1mA		0	
Isolated area Between platinum RTD input and programmable controller power supply Between platinum RTD input channels	Isolation method Photocoupler isolation Not isolated	Dielectric withstand voltage 1780VACrms/3 cycles (Altitude 2000m)	Insulation resistance 10MΩ or more using 500VDC insulation resistance tester	0	
	Detecte	d per channel		0	
		6 points : intelligent 16 points)		Δ	The number of occupied I/O points has changed to 16 points.
	18-point	terminal block		×	
	0.3 to	0.75mm ²		×	Wiring change is required
		3, R1.25-3			Wiring change is required.
(Solderless te	rminals with an	insulation sleeve cannot b	e used.)	×	

Item	A1S62RD3N	
Cables between module and platinum RTD	Make sure that the conductor resistance value between the Pt100 and A1S62RD3N is 10Ω or less per conductor. All channels become the same specifications. $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Internal current consumption (5VDC)	0.49A	
Weight	0.27kg	

 $O \colon \textbf{Compatible}, \triangle \colon \textbf{Partial change required, } \times : \textbf{Incompatible}$

Q64RD	Compatibility	Precautions for replacement
The conductor resistance value must meet the condition of 1) + 2) \leq 2k Ω or less. (When a 3-wire type Pt100 is connected, the difference between 1) and 2) in the conductor resistance value must be 10 Ω or less.) $ \begin{array}{c} $	0	
0.60A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.17kg	0	, , , , , , , , , , , , , , , , , , , ,

5.4.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62RD3N	Q64RD	Precautions for replacement
Conversion enable/disable	Enables/disables a detection of	0	0	
specification of each channel	temperature.		O	
Sampling/averaging processing selection	Processes the detected temperature by specified method.	0	0	The setting ranges of time and count averages differ. Check the specifications, referring to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.
Detected temperature value storage	Stores temperature data in the buffer memory. (Values up to the first decimal place and the third decimal place are stored.)	0	0	
Disconnection detection	Detects a disconnection of connected platinum RTD or a cable.	0	0	The Q64RD detects disconnection per channel.
Specification of platinum RTD type	Specifies a platinum RTD type used.	0	0	
Range switching function (temperature)	Switches the measured temperature range.	-	0	
Warning output function	Outputs a warning when the temperature exceeds the set temperature range.	-	0	
Scaling function	Converts a measured temperature value into a percent value (%) in set width.	-	0	
Online module replacement	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

5.4.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

	A1S62RD3N				Q64RD				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X0	WDT error flag	Y0		X0	Module ready	Y0	Use prohibited		
X1	READY flag	Y1		X1	CH1 Offset/gain setting status signal	Y1	CH1 Offset setting request		
X2	Write data error flag	Y2		X2	CH2 Offset/gain setting status signal	Y2	CH1 Gain setting request		
Х3	CH1: Disconnection- detected flag	Y3		Х3	CH3 Offset/gain setting status signal	Y3	CH2 Offset setting request		
X4	CH2: Disconnection- detected flag	Y4		X4	CH4 Offset/gain setting status signal	Y4	CH2 Gain setting request		
X5		Y5		X5		Y5	CH3 Offset setting request		
X6		Y6		X6	l la a mualailaida d	Y6	CH3 Gain setting request		
X7		Y7	I I a a complete to a	X7	Use prohibited	Y7	CH4 Offset setting request		
X8		Y8	Use prohibited	X8		Y8	CH4 Gain setting request		
Х9		Y9		X9	Operating condition setting completion signal	Y9	Operating condition setting request		
XA		YA		XA	Offset/gain setting mode status flag	YA	User range write request		
XB		YB		XB	Use prohibited	YB			
хс		YC		XC	Disconnection detection signal	YC			
XD		YD		XD	Warning output signal	YD	Use prohibited		
XE		YE		XE	Conversion completion flag	YE			
XF	Use prohibited	YF		XF	Error flag	YF	Error clear request		
X10		Y10							
X11		Y11							
X12		Y12	Error code reset flag						
X13		Y13							
X14 X15		Y14 Y15							
X16		Y16							
X17		Y17							
X18		Y18							
X19		Y19	Use prohibited						
X1A		Y1A	•						
X1B		Y1B							
X1C		Y1C							
X1D		Y1D							
X1E		Y1E							
X1F		Y1F							

5.4.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memories and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

	A1S62RD3N			Q64RD		
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write	
0	Conversion enable/disable specification		0	Conversion enable/disable setting		
1	Averaging processing specification		1	CH1 Time/count/moving average/time constant setting		
2	CH1 Averaging time/count		CH2 Time/count/moving average/time constant setting	R/W		
3	CH2 Averaging time/count		CH3 Time/count/moving average/time constant setting			
4			CH4 Time/count/moving average/time constant setting			
5			5			
6	System area (Use prohibited)	-	6	System area (Llee prohibited)		
7			7	System area (Use prohibited)	-	
8			8			
9			9	Averaging processing setting	R/W	
10	CH1 Detected temperature value (16bit)	R	10	Conversion completion flag		
11	CH2 Detected temperature value (16bit)	11	11	CH1 Measured temperature value (16bit)		
12			12	CH2 Measured temperature value (16bit)	R	
13			13	CH3 Measured temperature value (16bit)	_	
14	System area (Use prohibited)	-	14	CH4 Measured temperature value (16bit)		
15	, , ,		15			
16			16	System area (Use prohibited)	-	
17			17			
18	CH1 Detected temperature value (32bit) (L)		18	Error code		
19 20	CH2 Detected temperature value (L)	R	19 20	Setting range	R	
21	(32bit) (H)		21	Setting range	+	
22	(32511)		22			
23			23			
24			24			
25			25			
26			26	-		
27	Out to see a control of the second by the self		27			
28	System area (Use prohibited)	-	28			
29			29			
30			30			
31			31			
32			32	System area (Use prohibited)	_	
33			33	, , , , , , , , , , , , , , , , , , , ,		
34	Write data error code	R/W	34			
35	Conversion completed flag	R	35			
36	Type specification of platinum RTD	R/W	36 37			
			38			
			39			
			40			
			41			
			42			
			43			
				1	i	

	Q64RD		
Address	Name		Read/write
(decimal)	Name		Read/Write
45	System area (Use prohibited)		_
46			
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49	Disconnection detection flag		
50 51	CH1 Scaling value CH2 Scaling value		
52	CH3 Scaling value		
53	CH4 Scaling value		
54	CH1 Measured temperature value	(L)	
55	(32bit)	(H)	R
56	CH2 Measured temperature value	(L)	
57	(32bit)	(H)	
58	CH3 Measured temperature value	(L)	
59	(32bit)	(H)	
60	CH4 Measured temperature value	(L)	
61	(32bit)	(H)	
62	CH1 Scaling range lower limit value	(L)	
63	Citt Scaling range lower little value	(H)	
64	CH1 Scaling range upper limit value	(L)	
65	orri coding range apper innit value	(H)	
66	CH2 Scaling range lower limit value	(L)	
67	ornz coamig rango lower mine value	(H)	
68	CH2 Scaling range upper limit value	(L)	
69	oriz coamig rango appor mine rando	(H)	
70	CH3 Scaling range lower limit value	(L)	
71	and a coming range range mineralized	(H)	
72	CH3 Scaling range upper limit value	(L)	
73	0 0 11	(H)	
74	CH4 Scaling range lower limit value	(L)	
75		(H)	
76	CH4 Scaling range upper limit value	(L)	
77	OLIA O a library visible Lavore Brait value	(H)	
78	CH1 Scaling width lower limit value		
79	CH1 Scaling width upper limit value		
80 81	CH2 Scaling width upper limit value		R/W
82	CH2 Scaling width upper limit value CH3 Scaling width lower limit value		F/VV
83	-		
84	CH3 Scaling width upper limit value CH4 Scaling width lower limit value		
85	CH4 Scaling width upper limit value		
86	CH1 Warning output lower lower limit	(L)	
87	value	(L)	
88	CH1 Warning output lower upper limit	(L)	
89	value	(H)	
90	CH1 Warning output upper lower limit	(L)	
91	value	(H)	
92	CH1 Warning output upper upper limit	(L)	
93	value	(H)	
to		/	
116	CH4 Warning output upper upper limit	(L)	
117	value	(H)	
118	CHA Offeet towns and the characters	(L)	
119	CH1 Offset temperature set value	(H)	
120	CH1 Coin tomperature and walks	(L)	
121	CH1 Gain temperature set value	(H)	

Q64RD						
Address (decimal)	Name		Read/write			
to						
132	CH4 Gain temperature set value	(L)				
133	Cri4 Gairi temperature set value	(H)	R/W			
134	Extended averaging processing					
134	specification					
135 to 147	System area (Use prohibited)		-			
148	Conversion setting for disconnection		R/W			
140	detection					
149	System area (Use prohibited)		-			
150	CH1 Conversion setting value for	(L)				
151	disconnection detection	(H)				
to						
156	CH4 Conversion setting value for	(L)				
157	disconnection detection	(H)				
158	Mode switching setting	(L)	R/W			
159	wode switching setting	(H)	FX/VV			
160	3-wire type CH1 Factory default offset	(L)	•			
161	value	(H)				
to						
254	4-wire type CH4 User range settings	(L)				
255	gain resistance value	(H)				

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5.5 A1S62RD3N (Replacing with the Q64RD-G)

5.5.1 Performance specifications comparison

Item		A1S62RD3N	
Measuring met	nod	3-wire type	
		16-bit signed binary: -1800 to 6000	
	Temperature	Value up to the first decimal place × 10	
Output	conversion value	32-bit signed binary:	
	value	-180000 to 600000	
		Value up to the third decimal place × 1000	
	Scaling value	-	
		Duran.	
		Pt100	
Applicable RTD		(JIS C1604-1997, IEC 751-am2, JIS C1604-1989, DIN 43760-1980)	
		JPt100	
		(JIS C1604-1981)	
	D4400	-180 to 600°C	
Measured	Pt100	$(27.10 \text{ to } 313.71\Omega)$	
temperature	JPt100	-180 to 600°C	
range	(25.80 to 317.28Ω)		
	Ni100	-	
Accuracy		±1%	
		(accuracy at full scale)	
Resolution		0.025°C	
Conversion spe		40ms/channel	
Analog input po		2 channels/module	
Output current to detection	or temperature	1mA	
		Between platinum RTD input and programmable controller power supply: photocoupler isolation	
Isolation metho	d	Between platinum RTD input and channel: not isolated	
Dielectric withstand voltage		Between platinum RTD input and programmable controller power supply: 500VAC, for 1 minute	
Disconnection of	detection	Detected per channel	
Number of occu	pied I/O points	32 points	
		(I/O assignment: special 32 points)	
External connection	-	20-point terminal block	
Applicable wire	size	0.75 to 1.5mm ²	
Applicable sold	erless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

			O:		artial change required, ×: Incompatible
	Q64	RD-G		Compatibility	Precautions for replacement
	3/4-wi	re type		0	
Valı 32-t	6-bit signed bingue up to the first bit signed binary and to the third	0			
	16-hit sig	ned binary		0	
Pt100 (JIS C 1604-1997, IEC751 1983) JPt100 (JIS C 1604-1981) Ni100 (DIN 43760 1987)					As the compliance standards for the applicable RTD differ, change the RTD to the one that can be used with the Q64RD-G.
	•	850°C			
	-180 tc	0			
	-60 to				
	*	*1		0	
	0.02	25°C		0	
	40ms/c	channel		0	
	4 channe	els/module		0	
	1r	mA		0	
Isolated area Between temperature- measuring resistor input and programmable controller power supply	Isolation method Photocoupler isolation	Dielectric withstand voltage 1780VACrms/3 cycles (Altitude 2000m)	Insulation resistance $10 M\Omega \text{ or more using} \\ 500 VDC \text{ insulation}$	0	
Between temperature- measuring resistor input channels	Transformer isolation	(Attitude 2000III)	resistance tester		
	0				
Detected per channel 16 points (I/O assignment: intelligent 16 points)					The number of occupied I/O points has changed to 16 points.
18-point terminal block					
).75mm ²		×	Wiring change is required.
1.25-3, R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.)					2 : 2 2 :

Accuracy (accuracy relative to the maximum value in the selection range) of the Q64RD-G is as follows.

Accuracy		Specifications	
Reference accuracy		Within ±0.04%	
	Pt100/JPt100 (-20 to 120°C)	±70ppm/°C (±0.0070%/°C)	
Tomporature coefficient	Pt100/JPt100 (0 to 200°C)	±65ppm/°C (±0.0065%/°C)	
Temperature coefficient	Pt100/JPt100 (-200 to 850°C)	±50ppm/°C (±0.0050%/°C)	
	Ni100 (-60 to 180°C)	±70ppm/°C (±0.0070%/°C)	

Item	A1S62RD3N	
Cable between module and RTD	Make sure that the conductor resistance value between the Pt100 and A1S62RD3N is 10Ω or less per conductor. All channels become the same specifications. $\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Internal current consumption (5VDC)	0.49A	
Weight	0.27kg	

	O. Compatible, 2. Fartial change required, A. Incompatible			
Q64RD-G	Compatibility	Precautions for replacement		
The conductor resistance value must meet the condition of 1) + 2) \leq 2k Ω or less. (When a 3-wire type Pt100 is connected, the difference between 1) and 2) in the conductor resistance value must be 10 Ω or less.) $ \begin{array}{c} Q64RD-G \\ a1 \\ A1 \\ B1 \\ b1 \\ SLD \end{array} $ Wire $ \begin{array}{c} Q64RD-G \\ a1 \\ A1 \\ B1 \\ B1 \\ B1 \\ B1 \\ B1 \\ B1 \\ B1 \\ B$	Compatibility	Precautions for replacement		
0.62A	Δ	Recalculation of internal current consumption (5VDC) is required.		
0.20kg	0			

5.5.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62RD3N	Q64RD-G	Precautions for replacement
Conversion enable/disable specification of each channel	Enables/disables a detection of temperature.	0	0	
Sampling/averaging processing selection	Processes the detected temperature by specified method.	0	0	The setting ranges of time and count averages differ. Check the specifications, referring to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.
Detected temperature value storage	Stores temperature data in the buffer memory.	0	0	
Disconnection detection	Detects a disconnection of the connected RTD or cable.	0	0	
Specification of RTD type	Specifies a RTD type used.	0	0	
Range switching function (temperature)	Switches the measured temperature range.	-	0	
Warning output function	Outputs a warning when the temperature exceeds the set temperature range.	-	0	
Scaling function	Converts a measured temperature value into a percent value (%) in set width.	-	0	
Online module replacement	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

5.5.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

	A1S62RD3N			Q64RD-G			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	WDT error flag	Y0		X0	Module ready	Y0	Use prohibited
X1	READY flag	Y1		X1	CH1 Offset/gain setting status signal	Y1	CH1 Offset setting request
X2	Write data error flag	Y2		X2	CH2 Offset/gain setting status signal	Y2	CH1 Gain setting request
Х3	CH1: Disconnection- detected flag	Y3		Х3	CH3 Offset/gain setting status signal	Y3	CH2 Offset setting request
X4	CH2: Disconnection- detected flag	Y4		X4	CH4 Offset/gain setting status signal	Y4	CH2 Gain setting request
X5	-	Y5		X5	-	Y5	CH3 Offset setting request
X6		Y6		X6	1 1 1-9-9-9- d	Y6	CH3 Gain setting request
X7		Y7		X7	Use prohibited	Y7	CH4 Offset setting request
X8		Y8	Use prohibited	X8		Y8	CH4 Gain setting request
X9		Y9		Х9	Operating condition setting completion signal	Y9	Operating condition setting request
XA		YA		XA	Offset/gain setting mode status flag	YA	User range write request
XB		YB		XB	Use prohibited	YB	
хс		YC		XC	Disconnection detection signal	YC	
XD		YD		XD	Warning output signal	YD	Use prohibited
XE		YE		XE	Conversion completion flag	YE	
XF	Use prohibited	YF		XF	Error flag	YF	Error clear request
X10		Y10					
X11		Y11					
X12		Y12	Error code reset flag				
X13 X14		Y13 Y14					
X14 X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Use prohibited				
X1A		Y1A					
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

5.5.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

	A1S62RD3N			Q64RD-G		
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write	
0	Conversion enable/disable specification		0	Conversion enable/disable setting		
1	Averaging processing selection		1	CH1 Time/count/moving average/time constant setting		
2	CH1 Averaging time/count	R/W	2	CH2 Time/count/moving average/time constant setting	R/W	
3	CH2 Averaging time/count		3	CH3 Time/count/moving average/time constant setting		
4			4	CH4 Time/count/moving average/time constant setting		
5			5			
6	System area (Use prohibited)	-	6	System area (Use prohibited)		
7			7	System area (Ose prombited)	-	
8			8			
9			9	Averaging processing specification	R/W	
10	CH1 Detected temperature value (16bit)	R	10	Conversion completion flag		
11	CH2 Detected temperature value (16bit)		11	CH1 Measured temperature value (16bit)		
12			12	CH2 Measured temperature value (16bit)	R	
13			13	CH3 Measured temperature value (16bit)		
14	System area (Use prohibited)	-	14	CH4 Measured temperature value (16bit)		
15			15			
16 17			16 17	System area (Use prohibited)	-	
18	CH1 Detected temperature value (L)		18			
19	H1 Detected temperature value (L) 18 22bit) (H) 19 Error code		Error code	+		
20	CH2 Detected temperature value (L)	R	20	Setting range 1	R	
21	(32bit) (H)		21	Setting range 2	┤ ``	
22	(C-2.1)		22			
23			23			
24			24			
25			25			
26			26			
27	System area (Use prohibited)		27			
28	l distributed	_	28			
29			29			
30			30			
31			31			
32			32	O t		
33	Write data error and	DAM	33	System area (Use prohibited)	-	
34	Write data error code Conversion completed flag	R/W R	34 35			
36	Type specification of platinum RTD	R/W	36			
30	Type specification of platinum TCTB	17/77	37			
			38			
			39			
			40			
			41			
			42			
			43			
			44			

	Q64RD-G		
Address	Name		Read/write
(decimal)			
45	System area (Use prohibited)		-
46	11.		D 44/
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49	Disconnection detection flag		
50 to 53	CH1 to CH4 Scaling value	143	
54	CH1 Measured temperature value	(L)	R
55	(32bit)	(H)	
to			
60	CH4 Measured temperature value	(L)	
61	(32bit)	(H)	
62	CH1 Scaling range lower limit value	(L)	
63	<u> </u>	(H)	
64	CH1 Scaling range upper limit value	(L)	
65	3 - 3 - 4 F	(H)	
to			
76	CH4 Scaling range upper limit value	(L)	
77	0 0 11	(H)	
78	CH1 Scaling width lower limit value		
79	CH1 Scaling width upper limit value		
to			
85	CH4 Scaling width upper limit value		
86	CH1 Warning output lower lower limit	(L)	
87	value	(H)	
88	CH1 Warning output lower upper limit	(L)	
89	value	(H)	R/W
90	CH1 Warning output upper lower limit	(L)	10,44
91	value	(H)	
92	CH1 Warning output upper upper limit	(L)	
93	value	(H)	
to			
116	CH4 Warning output upper upper limit	(L)	
117	value	(H)	
118	CH1 Offset temperature set valuer	(L)	
119	Of 11 Office temperature set value	(H)	
120	CH1 Gain temperature set value	(L)	
121	Of the Salin Compensations Set value	(H)	
to			
132	CH4 Gain temperature set value	(L)	
133	Grif Gairi terriperature set value	(H)	
134	Extended averaging processing specific	ation	
135 to	System area (Llas prohibited)		
147	System area (Use prohibited)		-
148	Conversion setting for disconnection detection		R/W
149	System area (Use prohibited)		-
	· · · · · ·		

	Q64RD-G						
Address							
(decimal)	Name		Read/write				
150	CH1 Conversion setting value for	(L)					
151	disconnection detection	(H)					
to							
156	CH4 Conversion setting value for	(L)					
157	disconnection detection	(H)					
158	Mode switching setting						
159	wode switching setting						
160	3-wire type CH1 Factory default offset	(L)					
161	value	(H)					
162	3-wire type CH1 Factory default gain	(L)					
163	value	(H)					
164	3-wire type CH1 User range settings	(L)					
165	offset value	(H)					
166	3-wire type CH1 User range settings	(L)					
167	gain value	(H)					
168	3-wire type CH1 User range settings	(L)					
169	offset resistance value	(H)	R/W				
170	3-wire type CH1 User range settings	(L)	1000				
171	gain resistance value	(H)					
172	4-wire type CH1 Factory default offset	(L)					
173	value	(H)					
174	4-wire type CH1 Factory default gain	(L)					
175	value	(H)					
176	4-wire type CH1 User range settings	(L)					
177	offset value	(H)					
178	4-wire type CH1 User range settings	(L)					
179	gain value	(H)					
180	4-wire type CH1 User range settings	(L)					
181	offset resistance value	(H)					
182	4-wire type CH1 User range settings	(L)					
183	gain resistance value	(H)					
to							
254	4-wire type CH4 User range settings	(L)					
255	gain resistance value	(H)					

Memo		

5.6 A1S62RD4N (Replacing with the Q64RD)

5.6.1 Performance specifications comparison

It	tem	A1S62RD4N	
Measuring me	ethod	4-wire type	
Temperature conversion value		16-bit signed binary: -1800 to 6000 Value up to the first decimal place × 10 32-bit signed binary: -180000 to 600000 Value up to the third decimal place × 1000	
	Scaling value	-	
Applicable pla	itinum RTD	Pt100 (JIS C1604-1997, IEC 751-am2, JIS C1604-1989, DIN 43760-1980) JPt100 (JIS C1604-1981)	
Measured temperature	Pt100	-180 to 600°C (27.10 to 313.71Ω)	
range JPt100		-180 to 600°C (25.80 to 317.28Ω)	
Accuracy		±1% (accuracy at full scale)	
Resolution		0.025°C	
Conversion sp	peed	40ms/channel	
Analog input p	ooints	2 channels/module	
Output current detection	t for temperature	1mA	
Isolation meth	od	Between platinum RTD input and programmable controller power supply: photocoupler isolation Between platinum RTD input and channel: not isolated	
Dielectric withstand voltage		Between platinum RTD input and programmable controller power supply: 500VAC, for 1 minute	
Disconnection	detection	Batch-detected at all channels.	
Number of occ	cupied I/O points	32 points (I/O assignment: special 32 points)	
External conne	-	20-point terminal block	
Applicable wire	e size	0.75 to 1.5mm ²	
Applicable sol	derless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

		•	tial change required, *. Incompatible		
		64RD		Compatibility	Precautions for replacement
	3/4-\	wire type		0	
	16-bit si	gned binary:			
	-2000	0 to 8500			
V	alue up to the fir	0			
	32-bit si	gned binary:			
	-200000	0 to 850000			
Val	ue up to the thir	d decimal place × 1000			
	16-bit si	gned binary		0	
		Pt100			As the compliance standards
					for the applicable platinum
		997, IEC751 1983) Pt100		Δ	RTD differ, change the
					platinum RTD to the one that
(JIS C 1604-1981)					can be used with the Q64RD.
	-200	to 850°C			
-200 to 850°C					
-180 to 600°C					
Ambient temperature 0 to 55°C: ±0.25%					
		e to maximum value)		0	
Ambient temperature 25±5°C: ±0.08%					
(e to maximum value)			
	0.	025°C		0	
	40ms	s/channel		0	
	4 chann	nels/module		0	
		1mA		0	
		IIIIA		0	
Isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance		
Between platinum RTD input					
and programmable controller	Photocoupler isolation	1780VACrms/3 cycles (Altitude 2000m)	10M Ω or more using	0	
power supply	isolation	(Fillitade 2000iii)	500VDC insulation		
Between platinum RTD input	Not isolated	-	resistance tester		
channels					
Detected per channel				0	
16 points				The number of occupied I/O	
				Δ	points has changed to 16
 (I/O assignment: intelligent 16 points)					points.
	18-point t	erminal block		×	
	0.3 to	0.75mm ²		×	Wiring change is required
		3, R1.25-3			Wiring change is required.
(Solderless te		insulation sleeve cannot be	e used.)	×	

Item	A1S62RD4N	
Cable between module and platinum RTD	Set the total resistance value of a conductor where the current runs to 70Ω or less. Example: Pt100 is connected to CH1 and CH2 Wire A1 A1S62RD4N A1 Pt100 B1 b1/a2 SLD A2 Pt100 B2 b2/a3 Lay wiring so that the following condition is met. 1) + 2) + 3) + 4) ≤ 70 (Ω) indicates the direction of current.	
Internal current consumption (5VDC)	0.39A	
Weight	0.27kg	

	O. Compatible, △.	Partial change required, x. incompatible
Q64RD	Compatibility	Precautions for replacement
The conductor resistance value must meet the condition of 1) + 2) \leq 2k Ω or less.		
(When a 3-wire type Pt100 is connected, the difference between 1) and 2) in the		
conductor resistance value must be 10Ω or less.)		
2) Wire a1 A1 B1 b1 SLD	0	
2) A1 A1 B1 b1 SLD		
0.60A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.17kg	0	

5.6.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62RD4N	Q64RD	Precautions for replacement
Conversion enable/disable	Enables/disables a detection of	0	0	
specification of each channel	temperature.	Ü		
Sampling/averaging processing selection	Processes the detected temperature by specified method.	0	0	The setting ranges of time and count averages differ. Check the specifications, referring to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.
Detected temperature value	Stores temperature data in the buffer	0	0	
storage	memory.		O	
Disconnection detection	This function detects connected platinum	0	0	For the Q64RD, a disconnection
Disconnection detection	RTD or cable breakage.			is detected per channel.
Specification of platinum RTD type	Specifies a platinum RTD type used.	0	0	
Range switching function	Switches the measured temperature range.	-	0	
Warning output function	Outputs a warning when the temperature exceeds the set temperature range.	-	0	
Scaling function	Converts a measured temperature value into a percent value (%) in set width.	-	0	
Online module replacement	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

5.6.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

	A1S62RD4N			Q64RD			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	WDT error flag	Y0		X0	Module ready	Y0	Use prohibited
X1	READY flag	Y1		X1	CH1 Offset/gain setting status signal	Y1	CH1 Offset setting request
X2	Write data error flag	Y2		X2	CH2 Offset/gain setting status signal	Y2	CH1 Gain setting request
Х3	Σ disconnection-detected flag (CH1 and CH2)	Y3		Х3	CH3 Offset/gain setting status signal	Y3	CH2 Offset setting request
X4		Y4		X4	CH4 Offset/gain setting status signal	Y4	CH2 Gain setting request
X5		Y5		X5		Y5	CH3 Offset setting request
X6		Y6		X6	Llaa probibited	Y6	CH3 Gain setting request
X7		Y7	I loo waabibitod	X7	Use prohibited	Y7	CH4 Offset setting request
X8		Y8	Use prohibited	X8	X8		CH4 Gain setting request
X9		Y9		Х9	Operating condition setting completion signal	Y9	Operating condition setting request
XA		YA		XA	Offset/gain setting mode status flag	YA	User range write request
XB		YB		XB	Use prohibited	YB	
XC		YC		XC	Disconnection detection signal	YC	
XD		YD		XD	Warning output signal	YD	Use prohibited
XE	Use prohibited	YE		XE	Conversion completion flag	YE	
XF		YF		XF	Error flag	YF	Error clear request
X10		Y10					
X11		Y11					
X12		Y12	Error code reset flag				
X13 X14		Y13 Y14					
X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Use prohibited				
X1A		Y1A					
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F		J			

5.6.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

	A1S62RD4N			Q64RD		
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write	
0	Conversion enable/disable specification		0	Conversion enable/disable setting		
1	Averaging processing specification		1	CH1 Time/count/moving average/time constant setting		
2	CH1 Averaging time/count	R/W	2	CH2 Time/count/moving average/time constant setting	R/W	
3	CH2 Averaging time/count		3	CH3 Time/count/moving average/time constant setting		
4			4	CH4 Time/count/moving average/time constant setting		
5			5			
6	System area (Use prohibited)	-	6	System area (Use prohibited)		
7			7	l discondinated (OSC prombited)		
8			8			
9			9	Averaging processing setting	R/W	
10	CH1 Detected temperature value (16bit)	R	10	Conversion completion flag		
11	CH2 Detected temperature value (16bit)		11	CH1 Measured temperature value (16bit)	_	
12			12	CH2 Measured temperature value (16bit)	R	
13			13	CH3 Measured temperature value (16bit)	4	
14 15	System area (Use prohibited)	-	14 15	CH4 Measured temperature value (16bit)		
16			16			
17			17	System area (Use prohibited)	-	
18	CH1 Detected temperature value (L)		18			
19	(32bit) (H)		19	Error code	+	
20	CH2 Detected temperature value (L)	R	R	20	Setting range	R
21	(32bit) (H)		21			
22	,		22			
23			23			
24			24			
25			25			
26			26			
27	System area (Use prohibited)	_	27			
28	gystem area (ose prombhea)		28			
29			29			
30			30			
31			31			
32			32	System area (Use prohibited)	-	
33 34	Write data error code	R/W	33 34			
35	Conversion completed flag	R/W R	35			
36	Type specification of platinum RTD	R/W	36			
- 00	1.7FC openious of plasma III IVID	1077	37			
			38			
			39			
			40			
			41			
			42			
			43			
			44	1	1	

	Q64RD		
Address			5
(decimal)	Name		Read/write
45	System area (Use prohibited)		_
46	, , ,		_
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49	Disconnection detection flag		
50	CH1 Scaling value		
51 52	CH2 Scaling value CH3 Scaling value		
53	CH4 Scaling value		
54	CH1 Measured temperature value	(L)	
55	(32bit)	(H)	R
56	CH2 Measured temperature value	(L)	
57	(32bit)	(H)	
58	CH3 Measured temperature value	(L)	
59	(32bit)	(H)	
60	CH4 Measured temperature value	(L)	
61	(32bit)	(H)	
62	CH1 Scaling range lower limit value	(L)	
63		(H)	
64	CH1 Scaling range upper limit value	(L)	
65 66		(H) (L)	
67	CH2 Scaling range lower limit value	(L) (H)	
68		(L)	
69	CH2 Scaling range upper limit value	(H)	
70		(L)	
71	CH3 Scaling range lower limit value	(H)	
72	CH2 Cooling range upper limit value	(L)	
73	CH3 Scaling range upper limit value	(H)	
74	CH4 Scaling range lower limit value	(L)	
75	Offit Ocaling range lower limit value	(H)	
76	CH4 Scaling range upper limit value	(L)	
77		(H)	
78	CH1 Scaling width lower limit value		
79	CH1 Scaling width upper limit value		
80 81	CH2 Scaling width lower limit value CH2 Scaling width upper limit value		R/W
82	CH3 Scaling width lower limit value		FX/ V V
83	CH3 Scaling width upper limit value		
84	CH4 Scaling width lower limit value		
85	CH4 Scaling width upper limit value		
86	CH1 Warning output lower lower limit	(L)	
87	value	(H)	
88	CH1 Warning output lower upper limit	(L)	
89	value	(H)	
90	CH1 Warning output upper lower limit	(L)	
91	value	(H)	
92	CH1 Warning output upper upper limit	(L)	
93	value	(H)	
to	CHA Warning autout was a sure ?	/1.\	
116	CH4 Warning output upper upper limit	(L)	
117	value	(H)	
118 119	CH1 Offset temperature set value	(L)	
119		(H) (L)	
121	CH1 Gain temperature set value	(L) (H)	
121	I	(1.1)	

Q64RD					
Address (decimal)	Name		Read/write		
to					
132	CH4 Gain temperature	(L)			
133	Cri4 Gain temperature	(H)	R/W		
Extended averaging processing					
104	specification				
135 to 147	System area (Use prohibited)		-		
Conversion setting for disconnection			R/W		
140	detection				
149	System area (Use prohibited)		-		
150	CH1 Conversion setting value for	(L)			
151	disconnection detection	(H)			
to					
156	CH4 Conversion setting value for	(L)			
157	disconnection detection	(H)			
158	Mode switching setting		R/W		
159	wode switching setting		10,00		
160	3-wire type CH1 Factory default offset	(L)			
161	value	(H)			
to		•			
254	4-wire type CH4 User range settings	(L)			
255	gain resistance value	(H)			

Memo		

5.7 A1S62RD4N (Replacing with the Q64RD-G)

5.7.1 Performance specifications comparison

Item		A1S62RD4N			
Measuring me	thod	4-wire type			
Temperature conversion value		16-bit signed binary: -1800 to 6000 Value up to the first decimal place × 10 32-bit signed binary: -180000 to 600000 Value up to the third decimal place × 1000			
	Scaling value	-			
Applicable RTD		Pt100 (JIS C1604-1997, IEC 751-am2, JIS C1604-1989, DIN 43760-1980) JPt100 (JIS C1604-1981)			
	Pt100	-180 to 600°C			
Measured temperature range	JPt100	(27.10 to 313.71Ω) -180 to 600°C (25.80 to 317.28Ω)			
range	Ni100	-	1		
Accuracy		±1% (accuracy at full scale)			
Resolution		0.025°C			
Conversion speed		40ms/channel			
Analog input p		2 channels/module			
Output current detection	for temperature	1mA			
Isolation method	od	Between platinum RTD input and programmable controller power supply: photocoupler isolation Between platinum RTD input and channel: not isolated			
Dielectric withstand voltage		Between platinum RTD input and programmable controller power supply: 500VAC, for 1 minute			
Disconnection detection		Batch-detected at all channels.			
Number of occupied I/O points		32 points (I/O assignment: special 32 points)			
External conne	ection system	20-point terminal block			
Applicable wire	e size	0.75 to 1.5mm ²			
Applicable solo	derless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A			

			0.0	•	uai change required, x. incompatible
	Q64F	RD-G		Compatibility	Precautions for replacement
	3/4-wir	• •		0	
16	-bit signed bina	ry: -2000 to 8500			
Valu	e up to the first	decimal place × 10		0	
32-b	it signed binary:	-200000 to 850000			
Value	up to the third of	decimal place × 1000			
	16-bit sign	ed binary		0	
	Pt1	00			As the compliance standards
(.		7, IEC751 1983)			for the applicable RTD differ,
	JPt ²			Δ	change the RTD to the one
	(JIS C 16			_	that can be used with the
	Ni1				Q64RD-G.
	(DIN 437)	60 1987)			
	-200 to	850°C			
				-	
	-180 to	600°C		0	
	_				
	*-	l		0	
	0.02	5°C		0	
	40ms/c	hannel		0	
	4 channel	s/module		0	
	1m	nA		0	
 Isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance		
Between temperature-measuring resistor input and programmable	Photocoupler		10MO or more using		
controller power supply	isolation	1780VACrms/3 cycles	10M Ω or more using 500VDC insulation	0	
Between temperature-measuring	Transformer	(Altitude 2000m)	resistance tester		
resistor input channels	isolation				
	0				
Detected per channel					The number of occupied I/O
16 points (I/O assignment: intelligent 16 points)					points has changed to 16 points.
18-point terminal block					
	0.3 to 0.	75mm ²		×	Wiring change is required.
	1.25-3, I	R1.25-3		×	Training origings is required.
 (Solderless term	inals with an ins	ulation sleeve cannot be	used.)		

^{*1} Accuracy (accuracy relative to the maximum value in the selection range) of the Q64RD-G is as follows.

	Accuracy	Specifications
Reference accuracy		Within ±0.04%
	Pt100/JPt100 (-20 to 120°C)	±70ppm/°C (±0.0070%/°C)
Temperature coefficient	Pt100/JPt100 (0 to 200°C)	±65ppm/°C (±0.0065%/°C)
remperature coemcient	Pt100/JPt100 (-200 to 850°C)	±50ppm/°C (±0.0050%/°C)
	Ni100 (-60 to 180°C)	±70ppm/°C (±0.0070%/°C)

Cable across module - platinum resistance thermometer	Set the total resistance value of a conductor where the current runs to 70Ω or less. Example: Pt100 is connected to CH1 and CH2 Wire 1) A1 A1 B1 B1 b1/a2 SLD A2 Pt100 B2 b2/a3 Lay wiring so that the following condition is met. 1) + 2) + 3) + 4) ≤ 70 (Ω) \rightarrow indicates the direction of current.	
Internal current consumption (5VDC)	0.39A	
Weight	0.27kg	

Q64RD-G	•	Precautions for replacement
The conductor resistance value must meet the condition of 1) + 2) \leq 2k Ω or less. (When a 3-wire type Pt100 is connected, the difference between 1) and 2) in the conductor resistance value must be 10 Ω or less.)		
1) b1 SLD Wire Q64RD-G a1 A1 B1 b1 SLD	0	
0.62A	Δ	Recalculation of internal current consumption (5VDC) is required.
 0.20kg	0	

5.7.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62RD4N	Q64RD-G	Precautions for replacement
Conversion enable/disable	Enables/disables a detection of	0	0	
specification of each channel	temperature.	O	O	
Sampling/averaging processing selection	Processes the detected temperature by specified method.	0	0	The setting ranges of time and count averages differ. Check the specifications, referring to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.
Detected temperature value storage	Stores temperature data in the buffer memory.	0	0	
Disconnection detection	Detects a disconnection of the connected RTD or cable.	0	0	For the Q64RD-G, a disconnection is detected per channel.
Type specification of RTD	Specifies a RTD type used.	0	0	
Range switching function	Range switching function Switches the measured temperature range.		0	
Warning output function	Outputs a warning when the temperature exceeds the set temperature range.		0	
Scaling function	Converts a measured temperature value into a percent value (%) in set width.		0	
Online module replacement	A module can be replaced without the		0	The Process CPU and Redundant CPU support this function.

5.7.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

A1S62RD4N				Q64RD-G			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	WDT error flag	Y0		X0	Module ready	Y0	Use prohibited
X1	READY flag	Y1		X1	CH1 Offset/gain setting status signal	Y1	CH1 Offset setting request
X2	Write data error flag	Y2		X2	CH2 Offset/gain setting status signal	Y2	CH1 Gain setting request
Х3	Σ disconnection-detected flag (CH1 and CH2)	Y3		Х3	CH3 Offset/gain setting status signal	Y3	CH2 Offset setting request
X4		Y4		X4	CH4 Offset/gain setting status signal	Y4	CH2 Gain setting request
X5		Y5		X5		Y5	CH3 Offset setting request
X6		Y6		X6	Use prohibited	Y6	CH3 Gain setting request
X7		Y7	I loo probibited	X7	Ose prombited	Y7	CH4 Offset setting request
X8		Y8	Use prohibited	X8		Y8	CH4 Gain setting request
X9		Y9		X9	Operating condition setting completion signal	Y9	Operating condition setting request
XA		YA		XA	Offset/gain setting mode status flag	YA	User range write request
XB		YB		XB	Use prohibited	YB	
XC		YC		XC	Disconnection detection signal	YC	
XD		YD		XD	Warning output signal	YD	Use prohibited
XE	Use prohibited	YE		XE	Conversion completion flag	YE	
XF		YF		XF	Error flag	YF	Error clear request
X10		Y10					
X11		Y11					
X12 X13		Y12 Y13	Error code reset flag				
X13		Y14					
X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Use prohibited				
X1A		Y1A					
X1B		Y1B					
X1C X1D		Y1C Y1D					
X1E		Y1E					
X1F		Y1F					

5.7.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory and sequence program, refer to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.

	A1S62RD4N			Q64RD-G	
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write
0	Conversion enable/disable specification		0	Conversion enable/disable setting	
1	Averaging processing specification		1	CH1 Time/count/moving average/time constant setting	
2	CH1 Averaging time/count	R/W	2	CH2 Time/count/moving average/time constant setting	R/W
3	CH2 Averaging time/count		3	CH3 Time/count/moving average/time constant setting	
4			4	CH4 Time/count/moving average/time constant setting	
5			5		
6	System area (Use prohibited)	-	6	System area (Use prohibited)	_
7			7	gystem area (Ose promistica)	
8			8		
9			9	Averaging processing specification	R/W
10	CH1 Detected temperature value (16bit)	R	10	Conversion completion flag	_
11	CH2 Detected temperature value (16bit)		11	CH1 Measured temperature value (16bit)	
12			12 13	CH2 Measured temperature value (16bit) CH3 Measured temperature value (16bit)	R
14		-	14	CH4 Measured temperature value (16bit)	_
15	System area (Use prohibited)		15	Cri4 Measured temperature value (100it)	
16			16		
17			17	System area (Use prohibited)	-
18	CH1 Detected temperature value (23bit) (L)		18		
19	CH1 Detected temperature value (32bit) $\frac{(-7)}{(H)}$	_	19	Error code	
20	(1)	R	20	Setting range 1	R
21	CH2 Detected temperature value (32bit) $\frac{(-7)}{(H)}$		21	Setting range 2	
22			22		
23			23		
24			24		
25			25		
26			26		
27	System area (Use prohibited)	_	27		
28	System area (See promoted)		28		
29			29		
30			30	System area (Use prohibited)	-
31			31		
32			32		
33	Wester data among and	D.444	33		
34	Write data error code	R/W	34		
35 36	Conversion completed flag Type specification of platinum RTD	R	35		
30	Type specification of platinum RTD	R/W	36 37		
			38		
			30		

	Q64RD-G		
Address	Name		Read/write
(decimal)	Nemis		rtoda, mito
39			
40			
41			
42	System area (Use prohibited)	-	
43			
44			
46			
47	Warning output enable/disable setting		R/W
48	Warning output flag		1077
49	Disconnection detection flag		
50 to 53	CH1 to CH4 Scaling value		
54	CH1 Measured temperature value	(L)	
55	(32bit)	(H)	R
to		` '	
60	CH4 Measured temperature value	(L)	
61	(32bit)	(H)	
62	CH1 Scaling range lower limit value	(L)	
63	CH1 Scaling range lower limit value	(H)	
64	CH1 Scaling range upper limit value	(L)	
65	Citt Scaling range upper limit value	(H)	
to			
76	CH4 Scaling range upper limit value	(L)	
77	0 0 11	(H)	
78	CH1 Scaling width lower limit value		
79	CH1 Scaling width upper limit value		
to			
85	CH4 Scaling width upper limit value	14.	
86	CH1 Warning output lower lower limit	(L)	
87	value	(H)	
88	CH1 Warning output lower upper limit	(L)	
89	value CH1 Warning output upper lower limit	(H)	R/W
90	value	(L)	
91 92	CH1 Warning output upper upper limit	(H) (L)	
93	value	(L) (H)	
to	value	(11)	
116	CH4 Warning output upper upper limit	(L)	
117	value	(H)	
118		(L)	
119	CH1 Offset temperature set value	(H)	
120	CHA Cain tames are trans	(L)	
121	CH1 Gain temperature set value	(H)	
to			
132	CH4 Gain tomporature act value	(L)	
133	CH4 Gain temperature set value	(H)	
134	Extended averaging processing specific	ation	
135 to	System area (Use prohibited)		
147			_
148	Conversion setting for disconnection detection		R/W
149	System area (Use prohibited)		-
150	CH1 Conversion setting value for	(L)	R/W
151	disconnection detection	(H)	17/77

	Q64RD-G		
Address (decimal)	Name		Read/write
to			
156	CH4 Conversion setting value for	(L)	
157	disconnection detection	(H)	
158	Mode switching setting		
159	wide switching setting		
160	3-wire type CH1 Factory default offset	(L)	
161	value	(H)	
162	3-wire type CH1 Factory default gain	(L)	
163	value	(H)	
164	3-wire type CH1 User range settings	(L)	
165	offset value	(H)	
166	3-wire type CH1 User range settings	(L)	
167	gain value	(H)	
168	3-wire type CH1 User range settings	(L)	
169	offset resistance value	(H)	
170	3-wire type CH1 User range settings	(L)	R/W
171	gain resistance value	(H)	1000
172	4-wire type CH1 Factory default offset	(L)	
173	value	(H)	
174	4-wire type CH1 Factory default gain	(L)	
175	value	(H)	
176	4-wire type CH1 User range settings	(L)	
177	offset value	(H)	
178	4-wire type CH1 User range settings	(L)	
179	gain value	(H)	
180	4-wire type CH1 User range settings	(L)	
181	offset resistance value	(H)	
182	4-wire type CH1 User range settings	(L)	
183	gain resistance value	(H)	
to			
254	4-wire type CH4 User range settings	(L)	
255	gain resistance value	(H)	

6

HEATING-COOLING TEMPERATURE CONTROL MODULE/TEMPERATURE CONTROL MODULE REPLACEMENT

6.1 List of Heating-cooling Temperature Control Module/Temperature Control Module Alternative Models for Replacement

AnS/QnAS	series	Transition to Q series				
Product	Model	Model	Remark (Restrictions)			
	A1S64TCTRT Thermocouple, standard control	Q64TCTTN	Cable size is changed. Number of slots : Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Not changed Functional specifications: Changed (Refer to Section 6.3.)			
	A1S64TCTRT Thermocouple, heating-cooling control	Q64TCTTN	1) External wiring : Cable size is changed. 2) Number of slots : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Not changed 5) Functional specifications: Changed (Refer to Section 6.3.)			
	A1S64TCTRT Platinum resistance thermometer, standard control	Q64TCRTN	1) External wiring : Cable size is changed. 2) Number of slots : Not changed 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Not changed 5) Functional specifications: Changed (Refer to Section 6.3.)			
Heating-cooling temperature control module Temperature control module	A1S64TCTRT Platinum resistance thermometer, heating-cooling control	Q64TCRTN	Cable size is changed. Number of slots : Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Not changed Functional specifications: Changed (Refer to Section 6.3.)			
	A1S64TCTRTBW Thermocouple, standard control	Q64TCTTBWN	Cable size is changed. Cable size is changed. Changed (2 slots are required. I/O assignment:			
	A1S64TCTRTBW Thermocouple, heating-cooling control	Q64TCTTBWN	1) External wiring 2) Number of slots Changed (2 slots are required. I/O assignment: 16 empty points for the first half, 16 intelligent points for the second half) The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Not changed Functional specifications: Changed (Refer to Section 6.3.)			

AnS/QnAS	series		Transition to Q series
Product	Model	Model	Remark (Restrictions)
	A1S64TCTRTBW Platinum resistance thermometer, standard control	Q64TCRTBWN	1) External wiring 2) Number of slots 2) Changed (2 slots are required. I/O assignment: 16 empty points for the first half, 16 intelligent points for the second half) 3) Program 3) The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Not changed 5) Functional specifications: Changed (Refer to Section 6.3.)
	A1S64TCTRTBW Platinum resistance thermometer, heating-cooling control	Q64TCRTBWN	1) External wiring : Cable size is changed. 2) Number of slots : Changed (2 slots are required. I/O assignment:
	A1S64TCTT-S1 Thermocouple, standard control	Q64TCTTN	Cable size is changed. Number of slots : Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Not changed Functional specifications: Changed (Refer to Section 6.3.)
Heating-cooling temperature control module Temperature control module	A1S64TCTTBW-S1 Thermocouple, standard control	Q64TCTTBWN	1) External wiring : Cable size is changed. 2) Number of slots : Changed (2 slots are required. I/O assignment: 16 empty points for the first half, 16 intelligent points for the second half) 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Not changed 5) Functional specifications: Changed (Refer to Section 6.3.)
	A1S64TCRT-S1 Platinum resistance thermometer, standard control	Q64TCRTN	Cable size is changed. Number of slots : Not changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Not changed Functional specifications: Changed (Refer to Section 6.3.)
	A1S64TCRTBW-S1 Platinum resistance thermometer, standard control	Q64TCRTBWN	1) External wiring : Cable size is changed. 2) Number of slots : Changed (2 slots are required. I/O assignment: 16 empty points for the first half, 16 intelligent points for the second half) 3) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Not changed 5) Functional specifications: Changed (Refer to Section 6.3.)
	A1S62TCTT-S2 Thermocouple, heating-cooling control	Q64TCTTN	Cable size is changed. Number of slots : Not changed Not changed : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Changed (2CH/module → 4CH/module) Functional specifications: Changed (Refer to Section 6.3.)
	A1S62TCTTBW-S2 Thermocouple, heating-cooling control	Q64TCTTBWN	Cable size is changed. Changed (2 slots are required. I/O assignment:

AnS/QnAS series		Transition to Q series		
Product	Model	Model	Remark (Restrictions)	
Heating-cooling temperature control module Temperature control module	A1S62TCRT-S2 Platinum resistance thermometer, heating-cooling control	Q64TCRTN	Cable size is changed. Number of slots : Not changed Nor changed: The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. Performance specifications: Changed (2CH/module → 4CH/module) Functional specifications: Changed (Refer to Section 6.3.)	
	A1S62TCRTBW-S2 Platinum resistance thermometer, heating-cooling control	Q64TCRTBWN	Cable size is changed. Changed (2 slots are required. I/O assignment:	

The existing wiring for the AnS/QnAS series modules can be connected directly to the Q series modules using the upgrade tool (conversion adaptor) manufactured by Mitsubishi Electric Engineering Co., Ltd.

(1) One slot type (can be mounted on the Q large type base unit)

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor	
	A1S64TCTT-S1	Q64TCTTN	ERNT-ASQT64TCTT	
	A1S64TCTRT*1	Q041CTIN		
	A1S64TCRT-S1	OCATODINI	EDNIT A COTCATODT	
Temperature control module	A1S64TCTRT*2	Q64TCRTN	ERNT-ASQT64TCRT	
remperature control module	A1S62TCTT-S2	OCATOTTN	ERNT-ASQT62TCTT	
	A1S64TCTRT ^{*3}	Q64TCTTN		
	A1S62TCRT-S2	OCATODIN	EDNIT ACOTOSTODI	
	A1S64TCTRT*4	Q64TCRTN	ERNT-ASQT62TCRT	

- *1 With the standard control and thermocouple input used
- *2 With the standard control and platinum resistance thermometer input used
- *3 With the heating-cooling control and thermocouple input used
- *4 With the heating-cooling control and platinum resistance thermometer input used
- (2) Two slot type

(cannot be mounted on the Q large type base unit or AnS size version Q large type base unit)

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor*1	
	A1S64TCTTBW-S1	Q64TCTTBWN	ERNT-ASQT64TCTTBW	
	A1S64TCTRTBW ^{*2}	Q041CTTBVVN		
Discourse the state of the	A1S64TCRTBW-S1	OCATODTDWN	EDNIT ACOTOATODIDAY	
Disconnection detection	A1S64TCTRTBW ^{*3}	Q64TCRTBWN	ERNT-ASQT64TCRTBW	
function-equipped temperature control module	A1S62TCTTBW-S2	Q64TCTTBWN	ERNT-ASQT62TCTTBW	
temperature control module	A1S64TCTRTBW ^{*4}	Q041CTTBVVN		
	A1S62TCRTBW-S2	OCATODTDWN	ERNT-ASQT62TCRTBW	
	A1S64TCTRTBW ^{*5}	Q64TCRTBWN	ERNT-ASQ1021CR16W	

- *1 These models refer to the set product consisting of an one slot type conversion adapter "ERNT-ASQT64TC " and a disconnection detection connector conversion cable.
- *2 With the standard control and thermocouple input used
- *3 With the standard control and platinum resistance thermometer input used
- *4 With the heating-cooling control and thermocouple input used
- *5 With the heating-cooling control and platinum resistance thermometer input used

6.2 Performance Specifications Comparison

6.2.1 A1S64TCTRT(BW) (thermocouple connection)

Control output	ltem			Specifications		
Number of temperature input points Applicable temperature sensor (Refer to Section 6.2.1 (1)) Indication accuracy (ambient temperature compensation temperature process value (PV): -100°C or more compensation temperature) Accuracy (ambient temperature) Accuracy (ambient temperature) (ambient temperature) (ambient temperature) (b 55°C) Sampling cycle Control output cycle Input impedance input filter Operation at sensor input disconnection Temperature by Standard control: PID ON/OFF pulse or two-position control Heating-cooling control: Can be set by auto-funing. PID constants range PID constants range PID constants range PID constants range PID constants range Output signal Accuracy (Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 digit (Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 d			em	A1S64TCTRT	A1S64TCTRTBW	
Number of temperature injust points Heating-cooling control: 2 channels/module	Control ou	Control output		Transistor output		
Applicable temperature sensor	Number	of tomporature inn	uut nointo	Standard control: 4	channels/module	
Indication accuracy Indicatio	Number o	n temperature imp	out points	Heating-cooling control: 2 channels/module		
Indication accuracy Cold junction temperature Cold junction temperature process value (PV): -100°C or more Compensation accuracy: (ambient temperature) (ambient temperature) (ambient temperature) (ambient temperature) (ambient temperature) (ambient temperature) (b 55°C) Compensation accuracy: (ambient temperature) (ambient temperature: (ambient temperature) (b 55°C) Compensation accuracy: (ambient temperature: (ambient temperature: (ambient temperature: (b 55°C) Compensation accuracy: (ambient temperature: (ambient temperature: (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Compensation accuracy: (ambient temperature: (b 55°C) (b 55°C) Constant regardless of the number of channels used) Control output 50°C Constant regardless of the number of channels used) Control output 50°C Constant regardless of the number of channels used) Control output 50°C Constant regardless of the number of channels used) Control output 50°C Constant regardless of the number of channels used) Control output 50°C Constant regardless of the number of channels used) Control output 50°C Control output 60°C Control outpu	Applicable	e temperature ser	nsor	(Refer to Section 6.2.1 (1).)		
Cold junction temperature Cold junction Cold junction temperature Cold junction temperature Cold junction temperature Cold junction temperature Cold junction Cold junction temperature Cold junction temperature Cold junction temperature Cold junction temperature Cold junction Cold junction temperature Cold junction temperature Cold ju		Indication accur	raav.	(Ambient temperature: 25±5°C) Full scale × (±0.3%) ± 1 digit		
temperature compensation accuracy: (ambient temperature) of to 55°C (PV): -100°C or more temperature process value (PV): -100 to -150°C (ambient temperature) of to 55°C (PV): -100 to -150°C (PV): -200 to -150°C (PV): -		indication accur	acy	(Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 digit		
Accuracy: (ambient temperature: 0 to 55°C) Temperature process value (PV): -150 to -150°C Temperature process value (PV): -200 to -150°C Temperature process value (PV): -200 to -150°C Temperature process value (PV): -200 to -150°C Temperature process value (PV): -200 to -150°C Temperature process value (PV): -200 to -150°C Temperature sensor of channels used)		-	' '	Within ±1.0°C		
temperature: 0 to 55°C) Temperature process value (PV): -200 to -150°C O.5s (Constant regardless of the number of channels used)	Accuracy	componeation	' '	Within ±2.0°C		
Control output cycle 1 to 100s Input impedance 1MΩ Input filter 0 to 100s Sensor correction value setting -50.00 to 50.00% Operation at sensor input disconnection Upscale processing Temperature control method Standard control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse PID constants range PID constants setting Standard control: Can be set by auto-tuning or self-tuning. Heating-cooling control: 0.0 to 1000.0% Heating-cooling control: 0.1 to 1000.0% Heating-cooling control: 0.1 to 1000.0% Integral time (I) 1 to 3600s Set value (SV) setting range Within the temperature range set for the temperature sensor to be used ON/OFF pulse ON/OFF pulse Rated load voltage 10.2 to 30VDC (peak voltage 30.0V) Max. load current 0.1A/point, 0.4A/common Max. inrush current 0.4A, 10ms Leakage current at OFF 0.1mA or less Max. voltage drop at ON 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less		temperature: 0	· ·	Within ±3.0°C		
Input impedance	Sampling	cycle		0.5s (Constant regardless of the number of channels used)		
Input filter 0 to 100s Sensor correction value setting -50.00 to 50.00% Operation at sensor input disconnection Upscale processing Temperature control method Standard control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse or two-position control Heating-cooling control: Oan be set by auto-tuning. Standard control: Can be set by auto-tuning or self-tuning. Heating-cooling control: 0.1 to 1000.0% Heating-co	Control ou	Control output cycle		1 to 100s		
Sensor correction value setting Operation at sensor input disconnection Temperature control method Department of the sensor input disconnection Temperature control method Department of the sensor input disconnection Standard control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse Standard control: Can be set by auto-tuning or self-tuning. Heating-cooling control: Can be set by auto-tuning. Proportional band (P) Integral time (I) Derivative time (D) Set value (SV) setting range Within the temperature range set for the temperature sensor to be used ON/OFF pulse Rated load voltage Rated load voltage Max. load current O.1A/point, 0.4A/common Max. inrush current D.4A, 10ms Leakage current at OFF Max. voltage drop at ON Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less	Input impe	Input impedance		1ΜΩ		
Operation at sensor input disconnection Upscale processing Temperature control method Standard control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse PID constants range PID constants setting Standard control: Can be set by auto-tuning or self-tuning. Heating-cooling control: 0.0 to 1000.0% Proportional band (P) Standard control: 0.1 to 1000.0% Integral time (I) 1 to 3600s Derivative time (D) 0 to 3600s Set value (SV) setting range Within the temperature range set for the temperature sensor to be used ON/OFF pulse Rated load voltage Rated load voltage 10.2 to 30VDC (peak voltage 30.0V) Max. load current 0.1A/point, 0.4A/common Max. inrush current 0.4A, 10ms Leakage current at OFF 0.1mA or less Max. voltage drop at ON 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less	Input filter	r		0 to 100s		
Temperature control method Standard control: PID ON/OFF pulse or two-position control Heating-cooling control: PID ON/OFF pulse PID constants setting Proportional band (P) Integral time (I) Derivative time (D) Set value (SV) setting range Output signal Rated load voltage Rated load voltage Max. Inrush current Leakage current at OFF Max. voltage drop at ON Response time Standard control: Can be set by auto-tuning or self-tuning. Heating-cooling control: 0.0 to 1000.0% Heating-cooling control: 0.1 to 1000.0% Integral time (I) 1 to 3600s Oto 3600s ON/OFF pulse ON/OFF pulse 0.1A/point, 0.4A/common 1.0VDC (TyP) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less	Sensor co	orrection value se	tting	-50.00 to 9	50.00%	
Heating-cooling control: PID ON/OFF pulse PID constants setting	Operation	at sensor input o	disconnection	Upscale processing		
PID constants setting Heating-cooling control: Can be set by auto-tuning. Proportional band (P) Standard control: 0.0 to 1000.0% Heating-cooling control: 0.1 to 1000.0% Heating-cooling control: 0.1 to 1000.0% Heating-cooling control: 0.1 to 1000.0% Heating-cooling control: 0.1 to 1000.0% Integral time (I)	Temperati	ure control metho	od	·		
PID constants range Proportional band (P) Integral time (I) Derivative time (D) Set value (SV) setting range Within the temperature range set for the temperature sensor to be used Output signal Rated load voltage Rated load voltage Max. load current D.1A/point, 0.4A/common Max. inrush current Leakage current at OFF Max. voltage drop at ON Response time Proportional band (P) Heating-cooling control: 0.1 to 1000.0% It to 3600s ON/OFF pulse ON/OFF pulse 10.2 to 30VDC (peak voltage 30.0V) Advice the temperature sensor to be used ON/OFF pulse 10.2 to 30VDC (peak voltage 30.0V) Max. load current O.4A, 10ms 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less			PID constants setting			
Derivative time (D) Set value (SV) setting range Within the temperature range set for the temperature sensor to be used Ovitour signal Rated load voltage Rated load voltage Nax. load current Max. inrush current Leakage current at OFF Max. voltage drop at ON Response time Oto 3600s Within the temperature range set for the temperature sensor to be used ON/OFF pulse 10.2 to 30VDC (peak voltage 30.0V) Max. load current 0.1A/point, 0.4A/common 0.1MA or less 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less	PID constants range		Proportional band (P)			
Set value (SV) setting range Within the temperature range set for the temperature sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to be used Overline Sensor to Sens			Integral time (I)	1 to 3600s		
Transistor output Output signal ON/OFF pulse	D		Derivative time (D)	0 to 3600s		
Transistor output Rated load voltage 10.2 to 30VDC (peak voltage 30.0V) Max. load current 0.1A/point, 0.4A/common Max. inrush current 0.4A, 10ms Leakage current at OFF 0.1mA or less 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less	Set value	(SV) setting rang	je	Within the temperature range set for the temperature sensor to be used		
Transistor output Max. load current Max. inrush current 0.1A/point, 0.4A/common Max. inrush current 0.4A, 10ms Leakage current at OFF 0.1mA or less 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less			Output signal	ON/OFF	pulse	
Transistor output Max. inrush current Leakage current at OFF Max. voltage drop at ON Response time O.4A, 10ms 0.4A, 10ms 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A OFF→ON: 2ms or less, ON→OFF: 2ms or less			Rated load voltage	10.2 to 30VDC (peak voltage 30.0V)		
Transistor output Leakage current at OFF 0.1mA or less 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less	Transistor output		Max. load current	0.1A/point, 0.4A/common		
Leakage current at OFF 0.1mA or less Max. voltage drop at ON 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less			Max. inrush current	0.4A, 10ms		
Max. voltage drop at ON 2.5VDC (MAX) at 0.1A Response time OFF→ON: 2ms or less, ON→OFF: 2ms or less			Leakage current at OFF	0.1mA or less		
			Max. voltage drop at ON	•	•	
Number of writes to E ² PROM Max. 10 ¹² times (number of FeRAM read/write)			Response time	OFF→ON: 2ms or less, ON→OFF: 2ms or less		
	Number o	Number of writes to E ² PROM		Max. 10 ¹² times (number of FeRAM read/write)		

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

Specifications			
Q64TCTTN Q64TCT	TBWN	Compatibility	Precautions for replacement
Transistor output		0	
Standard control: 4 channels/module		0	
Heating-cooling control: 2 channels/module		U	
(Refer to Section 6.2.1 (1).)		0	
(Ambient temperature: 25±5°C) Full scale × (±0.3		0	
(Ambient temperature: 0 to 55°C) Full scale × (±0.	7%) ^{*1}	J	
Within ±1.0°C*1			
Within ±2.0°C*1		0	
Within ±3.0°C*1			
0.5s (Constant regardless of the number of channel	s used)	0	
1 to 100s		0	
1ΜΩ		0	
0 to 100s		0	
-50.00 to 50.00%		0	
Upscale processing		0	
PID ON/OFF pulse or two-position control		0	
Standard control: Can be set by auto-tuning or self- Heating-cooling control: Can be set by auto-tuni	-	0	
0.0 to 1000.0%		0	
0 to 3600s		0	
0 to 3600s		0	
Within the temperature range set for the temperature sens	or to be used	0	
 ON/OFF pulse		0	
10 to 30VDC		0	
0.1A/point, 0.4A/common		0	
0.4A, 10ms		0	
0.1mA or less		0	
1.0VDC (TYP) at 0.1A			
 2.5VDC (MAX) at 0.1A		0	
 OFF→ON: 2ms or less, ON→OFF: 2ms or les	s	0	
Max. 10 ¹² times (number of read/write from/to a non-vola	tile memory)	0	

^{*1} Calculate the accuracy in the following method (only when it is not affected by noise).

Accuracy (°C) = full scale × indication accuracy + cold junction temperature compensation accuracy

(Example) Accuracy at the input range of 38 (-200.0 to 400.0 $^{\circ}$ C), the operating ambient temperature of 35 $^{\circ}$ C, and the temperature process value (PV) of 300 $^{\circ}$ C

(Full scale) × (indication accuracy) + cold junction temperature compensation accuracy

= $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$

= ±5.2°C

Item		Specifi	ications	
item		A1S64TCTRT	A1S64TCTRTBW	
Insulation method		Between input terminal and programmable co	ontroller power supply: Transformer insulation	
insulation metriod		Between input channels	s: Transformer insulation	
Dielectric withstand volt	ane	Between input terminal and programmable of	controller power supply: 500VAC, for 1 minute	
Diciccine withstand voit	age	Between input channel	s: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable co	ntroller power supply: 500VDC, 10MΩ or more	
insulation resistance		Between input channels	: 500VDC, 10MΩ or more	
			U.R.D.Co., LTD.	
Heater disconnection	Current sensor		CTL-12-S36-8	
		_	CTL-6-P(-H)	
detection specifications			- "	
	Input accuracy		Full scale × (±1.0%)	
	Number of alert		3 to 255	
	delay			
Number of equipped I/O) nainta	22 points (I/O gooign)	nent: enecial 32 nainte)	
Number of occupied I/O	points	32 points (I/O assignin	nent: special 32 points)	
Connection terminal		20-point te	rminal block	
Applicable wire size		0.75 to	1.5mm ²	
Applicable solderless terminal		R1.25-3, 1.25-YS3, R	AV1.25-3, V1.25-YS3A	
Internal current consum	ption	0.33A (0.19A)*2	0.39A (0.25A)* ²	
Weight		0.26kg	0.28kg	
-		· ·		

^{*2} Current value when the temperature conversion function is not used in an unused channel under heating-cooling control.

34.5(W) × 130(H) × 93.6(D)mm

(1) List of thermocouple type, temperature measurement range, and resolution

	0	С	°F	
Thermocouple type	Temperature measurement range	Resolution	Temperature measurement range	Resolution
R	0 to 1700	1	0 to 3000	1
	0 to 500 0 to 800 0 to 1300	1	0 to 1000 0 to 2400	1
К	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
J	0 to 500 0 to 1000 0 to 800 1 0 to 1600 0 to 1200 0 to 2100		0 to 1600	1
J	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
Т	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0 to 700 -300 to 400	1
	-200.0 to 400.0 0.0 to 400.0	0.1	0.0 to 700.0	0.1

(To the next page)

External dimensions

 $O: Compatible, \triangle: Partial \ change \ required, \ \times: Incompatible$

	Specifications			Dungaritions for replacement
	Q64TCTTN	Q64TCTTBWN	Compatibility	Precautions for replacement
	Between input terminal and programmable co	ontroller power supply: Transformer insulation	0	
	Between input channels	: Transformer insulation	0	
	Between input terminal and programmable c	ontroller power supply: 500VAC, for 1 minute	0	
	Between input channels	s: 500VAC, for 1 minute	O	
	Between input terminal and programmable co	ntroller power supply: 500VDC, 20M Ω or more	0	
	Between input channels:	500VDC, 20M Ω or more)	
		U.R.D.Co., LTD.		
		CTL-12-S36-8		
		CTL-12-S36-10		
		CTL-12-S56-10	0	
	-	CTL-6-P(-H)		
		Full scale × (±1.0%)		
		3 to 255		
	16 points/slot	32 points/2 slots		The number of occupied I/O
	(I/O assignment: intelligent 16 points)	(default I/O assignment	Δ	points and slots are different.
	(I/O assignment. Intelligent 10 points)	Vacancy for 16 points + intelligent 16 points)		points and slots are different.
	18-point terminal block	Two 18-point terminal blocks		
	22 to 18 AWG R1.25-3		×	Wiring change is required.
				Recalculation of internal
	0.29A	0.33A	Δ	current consumption (5VDC) is
				required.
	0.17kg	0.28kg	0	
	27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm		

(From the previous page)

Thermocouple	°C		°F	
type	Temperature measurement range	Resolution	Temperature measurement range	Resolution
S	0 to 1700	1	0 to 3000	1
В	400 to 1800	1	800 to 3000	1
E	0 to 400 0 to 1000	1	0 to 1800	1
	0.0 to 700.0	0.1	-	-
N	0 to 1300	1	0 to 2300	1
U	0 to 400 -200 to 200	1	0 to 700 -300 to 400	1
	0.0 to 600.0	0.1	-	-
	0 to 400 0 to 900	1	0 to 800 0 to 1600	1
L	0.0 to 400.0 0.0 to 900.0	0.1	-	-
PLII	0 to 1200	1	0 to 2300	1
W5Re/W26Re	0 to 2300	1	0 to 3000	1



6.2.2 A1S64TCTRT(BW) (platinum resistance thermometer connection)

Item		Specifications	
ľ	tem -	A1S64TCTRT A1S64TCTRTBW	
Control output		Transistor output	
Number of temperature	input points	Standard control: 4 channels/module	
Number of temperature input points		Heating-cooling control: 2 channels/module	
Applicable temperature	sensor	(Refer to Section 6.2.2 (1).)	
Indication accuracy		(Ambient temperature: 25±5°C) Full scale × (±0.3%) ± 1 digit	
indication accuracy		(Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 digit	
Sampling cycle		0.5s (Constant regardless of the number of channels used)	
Control output cycle		1 to 100s	
Input impedance		1ΜΩ	
Input filter		0 to 100s	
Sensor correction value	esetting	-50.00 to 50.00%	
Operation at sensor input disconnection		Upscale processing	
Temperature control method		Standard control: PID ON/OFF pulse or two-position control	
		Heating-cooling control: PID ON/OFF pulse	
	PID constants setting	Standard control: Can be set by auto-tuning or self-tuning.	
	T ID conclaims coming	Heating-cooling control: Can be set by auto-tuning.	
	Proportional band (P)	Standard control: 0.0 to 1000.0%	
PID constants range	. , ,	Heating-cooling control: 0.1 to 1000.0%	
	Integral time (I)	1 to 3600s	
	Derivative time (D)	0 to 3600s	
Set value (SV) setting ra	ange	Within the temperature range set for the temperature sensor to be used	
	Output signal	ON/OFF pulse	
	Rated load voltage	10.2 to 30VDC (peak voltage 30.0V)	
	Max. load current	0.1A/point, 0.4A/common	
	Max. inrush current	0.4A, 10ms	
Transistor output	Leakage current at OFF	0.1mA or less	
	Max. voltage drop at	1.0VDC (TYP) at 0.1A	
	ON	2.5VDC (MAX) at 0.1A	
	Response time	OFF \rightarrow ON: 2ms or less, ON \rightarrow OFF: 2ms or less	
Number of writes to E ² F	PROM	Max. 10 ¹² times (number of FeRAM read/write)	

Specifications	Compatibility	Precautions for replacement
Q64TCRTN Q64TCRTBWN	Companionity	riecautions for replacement
Transistor output	0	
Standard control: 4 channels/module	0	
Heating-cooling control: 2 channels/module	U	
(Refer to Section 6.2.2 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1		
(Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1		
0.5s (Constant regardless of the number of channels used)	0	
1 to 100s	0	
1ΜΩ	0	
 0 to 100s	0	
-50.00 to 50.00%	0	
Upscale processing	0	
PID ON/OFF pulse or two-position control	0	
Standard control: Can be set by auto-tuning or self-tuning.	0	
Heating-cooling control: Can be set by auto-tuning.	0	
0.0 to 1000.0%	0	
0 to 3600s	0	
0 to 3600s	0	
Within the temperature range set for the temperature sensor to be used	0	
ON/OFF pulse	0	
10 to 30VDC	0	
0.1A/point, 0.4A/common	0	
0.4A 10ms	0	
0.1mA or less	0	
1.0VDC (TYP) at 0.1A		
 2.5VDC (MAX) at 0.1A	0	
 OFF→ON: 2ms or less, ON→OFF: 2ms or less	0	
Max. 10 ¹² times (number of read/write from/to a non-volatile memory)	0	

^{*1} Calculate the accuracy in the following method (only when it is not affected by noise).

Accuracy (°C) = full scale × indication accuracy + cold junction temperature compensation accuracy

(Example) Accuracy at the input range of 38 (-200.0 to 400.0 $^{\circ}$ C), the operating ambient temperature of 35 $^{\circ}$ C, and the temperature process value (PV) of 300 $^{\circ}$ C

(Full scale) × (indication accuracy) + cold junction temperature compensation accuracy = $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$ = $\pm 5.2^{\circ}\text{C}$

ltom		Specific	cations	
Item		A1S64TCTRT	A1S64TCTRTBW	
nsulation method		Between input terminal and programmable co		
Insulation method		Between input channels	: Transformer insulation	
Dielectric withstand voltage		Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric withstand voltage		Between input channels	s: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable cor	ntroller power supply: 500VDC, $10M\Omega$ or more	
Insulation resistance		Between input channels:	500VDC, 10M Ω or more	
			U.R.D.Co., LTD.	
Heater disconnection			CTL-12-S36-8	
Heater disconnection	connection ion specifications Input accuracy Full scale × (±1.0%)			
detection specifications				
detection specifications			Full scale × (±1.0%)	
	Number of alert		3 to 255	
	delay		3 (3 233	
		22		
Number of occupied I/O	points	32 points (I/O assignment: special 32 points)		
Connection terminal		20-point ten	minal block	
Applicable wire size		0.75 to 1		
Applicable solderless te	rminal	R1.25-3, 1.25-YS3, RA		
7 tppilodole solderiess te		101.20 0, 1.20 100, 10	(V 1.20 0, V 1.20 1 00/V	
Internal current consum	ption	0.33A (0.19A)* ²	0.39A (0.25A)* ²	
Weight		0.26kg	0.28kg	
External dimensions		34.5(W) × 130(H	H) × 93.6(D)mm	
			<u> </u>	

^{*2} Current value when the temperature conversion function is not used in an unused channel under heating-cooling control.

(1) List of usable platinum resistance thermometer, temperature measurement range, and resolution

Platinum resistance	°C		°F		
thermometer type	Temperature measurement range	Resolution	Temperature measurement range	Resolution	
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1	
FIIOU	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	
JPt100	-200.0 to 500.0	0.1	-300 to 900	1	
JP(100	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	

	Specifi	Specifications		Precautions for replacement	
	Q64TCRTN	Q64TCRTBWN	Compatibility	Frecautions for replacement	
	Between input terminal and programmable controller power supply: Transformer insulation		0		
	Between input channels	: Transformer insulation)		
	Between input terminal and programmable c	ontroller power supply: 500VAC, for 1 minute	0		
	Between input channels	s: 500VAC, for 1 minute)		
	Between input terminal and programmable co	ntroller power supply: 500VDC, 20M Ω or more	0		
	Between input channels:	500VDC, 20M Ω or more)		
		U.R.D.Co., LTD.			
		CTL-12-S36-8			
		CTL-12-S36-10			
		CTL-12-S56-10	0		
	-	CTL-6-P(-H)			
		Full scale × (±1.0%)			
		3 to 255			
	16 points/slot	32 points/2 slots		The number of occupied I/O	
	(I/O assignment: intelligent 16 points)	(default I/O assignment	Δ	points and slots are different.	
	(I/O assignment. Intelligent 10 points)	Vacancy for 16 points + intelligent 16 points)		points and slots are different.	
	18-point terminal block	Two 18-point terminal blocks			
	22 to 18 AWG R1.25-3		×	Wiring change is required.	
				Recalculation of internal	
	0.29A	0.33A	Δ	current consumption (5VDC) is	
				required.	
	0.17kg	0.28kg	0		
	27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm			



6.2.3 A1S64TCTT(BW)-S1

	ltem		Specifications		
	Item		A1S64TCTT-S1 A1S64TCTTBW-S1		
Control ou	tput		Transistor output		
Number of	f temperature inpu	nt points	4 channels/module		
Applicable	temperature sens	sor	(Refer to Section 6.2.3 (1).)		
	Indication accuracy		(Ambient temperature: 25±5°C) Full scale × (±0.3%) ± 1 digit		
Indication accurac		acy	(Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 digit		
Cold junction temperature compensation accuracy: (ambient	Temperature process value (PV): -100°C or more	Within ±1.0°C			
	accuracy:	Temperature process value (PV): -150 to -100°C	Within ±2.0°C		
temperature: 0 to 55°C)		Temperature process value (PV): -200 to -150°C	Within ±3.0°C		
Sampling	Sampling cycle		0.5s (Constant regardless of the number of channels used)		
Control ou	Control output cycle		1 to 100s		
Input impe	Input impedance		1ΜΩ		
Input filter	nput filter		0 to 100s		
Sensor co	rrection value sett	ing	-50.00 to 50.00%		
Operation	at sensor input di	sconnection	Upscale processing		
Temperatu	ire control method		PID ON/OFF pulse or two-position control		
		PID constants setting	Can be set by auto-tuning.		
PID consta	ants range	Proportional band (P)	0.0 to 1000.0%		
	Integral time (I)		1 to 3600s		
		Derivative time (D)	0 to 3600s		
Set value	(SV) setting range		Within the temperature range set for the temperature sensor to be used		
		Output signal	ON/OFF pulse		
		Rated load voltage	10.2 to 30VDC		
Transistor output		Max. load current	0.1A/point, 0.4A/common		
		Max. inrush current	nt 0.4A, 10ms		
		Leakage current at OFF	0.1mA or less		
	Max. voltage		1.0VDC (TYP) at 0.1A		
		ON	2.5VDC (MAX) at 0.1A		
		Response time	OFF \rightarrow ON: 2ms or less, ON \rightarrow OFF: 2ms or less		
Number of	f writes to E ² PROI	М	Max. 100,000 times		

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

Specifications	Compatibility	Precautions for replacement
Q64TCTTN Q64TCTTBWN		
Transistor output	0	
4 channels/module	0	
(Refer to Section 6.2.3 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1		
(Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1		
Within ±1.0°C*1		
Within ±2.0°C*1	0	
Within ±3.0°C*1		
0.5s (Constant regardless of the number of channels used)	0	
1 to 100s	0	
1ΜΩ	0	
0 to 100s	0	
-50.00 to 50.00%	0	
Upscale processing	0	
PID ON/OFF pulse or two-position control	0	
Can be set by auto-tuning or self-tuning.	0	
0.0 to 1000.0%	0	
0 to 3600s	0	
0 to 3600s	0	
Within the temperature range set for the temperature sensor to be used	0	
ON/OFF pulse	0	
10 to 30VDC	0	
0.1A/point, 0.4A/common	0	
0.4A, 10ms	0	
0.1mA or less	0	
1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A	0	
OFF \rightarrow ON: 2ms or less, ON \rightarrow OFF: 2ms or less	0	
Max. 10 ¹² times (number of read/write from/to a non-volatile memory)	0	

^{*1} Calculate the accuracy in the following method (only when it is not affected by noise).

Accuracy (°C) = full scale × indication accuracy + cold junction temperature compensation accuracy

(Example) Accuracy at the input range of 38 (-200.0 to 400.0° C), the operating ambient temperature of 35°C, and the temperature process value (PV) of 300° C

(Full scale) × (indication accuracy) + cold junction temperature compensation accuracy = $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$ = $\pm 5.2^{\circ}\text{C}$

ltem		Specifications		
nem		A1S64TCTT-S1	A1S64TCTTBW-S1	
Insulation method		Between input terminal and programmable controller power supply: Transformer insulation		
modiation motified		Between input channels:		
Dielectric withstand volta	age	Between input terminal and programmable co		
		Between input channels	: 500VAC, for 1 minute	
In a state of the		Between input terminal and programmable con	troller power supply: 500VDC, $10M\Omega$ or more	
Insulation resistance		Between input channels:	500VDC, 10M Ω or more	
			115 B 2 1 T 5	
	C		U.R.D.Co., LTD.	
Heater disconnection detection specifications	Current sensor		CTL-12-S36-8	
		-	CTL-6-P(-H)	
actorion opcombations	Input accuracy		Full scale × (±1.0%)	
	Number of alert	1	2 to 255	
	delay		3 to 255	
Newshar of a constant 1/0		00 mainta (1/0 maningara	automorial 00 mainte)	
Number of occupied I/O	points	32 points (I/O assignment: special 32 points)		
Connection terminal		20-point terr	minal block	
Applicable wire size		0.75 to 1	I.5mm ²	
Applicable solderless terminal		R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
Internal current consumption		0.33A	0.42A	
Weight		0.27kg	0.30kg	
External dimensions		34.5(W) × 130(H	I) × 93.6(D)mm	

(1) List of thermocouple type, temperature measurement range, and resolution

	0	C	°F	
Thermocouple type	Temperature measurement range	Resolution	Temperature measurement range	Resolution
R	0 to 1700	1	0 to 3000	1
	0 to 500 0 to 800 0 to 1300	1	0 to 1000 0 to 2400	1
К	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
J	0 to 500 0 to 800 0 to 1200	1	0 to 1000 0 to 1600 0 to 2100	1
ŭ	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
Т	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0 to 700 -300 to 400	1
	-200.0 to 400.0 0.0 to 400.0	0.1	0.0 to 700.0	0.1

(To the next page)

Specific	cations	Compatibility	Dunantiana farananta
Q64TCTTN	Q64TCTTBWN	Compatibility	Precautions for replacement
Between input terminal and programmable co	ontroller power supply: Transformer insulation	0	
Between input channels	: Transformer insulation	O	
Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	0	
Between input channels	s: 500VAC, for 1 minute	O	
Between input terminal and progra	ammable controller power supply:		
500VDC, 20	$M\Omega$ or more	0	
Between input channels:	500VDC, 20M Ω or more		
	U.R.D.Co., LTD.		
	CTL-12-S36-8		
	CTL-12-S36-10		
_	CTL-12-S56-10	0	
	CTL-6-P(-H)		
	Full scale × (±1.0%)		
	3 to 255		
16 points/slot	32 points/2 slots		The number of occupied I/O
(I/O assignment: intelligent 16 points)	(default I/O assignment	Δ	points and slots are different.
, ,	Vacancy for 16 points + intelligent 16 points)		points and slots are different.
18-point terminal block	Two 18-point terminal blocks		
22 to 18	8 AWG	×	Wiring change is required.
R1.25-3			
0.29A	0.33A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.17kg	0.28kg	0	
27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm	-	

(From the previous page)

Thermocouple	°C		°F	
type	Temperature measurement range	Resolution	Temperature measurement range	Resolution
S	0 to 1700	1	0 to 3000	1
В	400 to 1800	1	800 to 3000	1
E	0 to 400 0 to 1000	1	0 to 1800	1
	0.0 to 700.0	0.1	-	-
N	0 to 1300	1	0 to 2300	1
U	0 to 400 -200 to 200	1	0 to 700 -300 to 400	1
	0.0 to 600.0	0.1	-	-
L	0 to 400 0 to 900	1	0 to 800 0 to 1600	1
	0.0 to 400.0 0.0 to 900.0	0.1	-	-
PLII	0 to 1200	1	0 to 2300	1
W5Re/W26Re	0 to 2300	1	0 to 3000	1



6.2.4 A1S64TCRT(BW)-S1 (platinum resistance thermometer connection)

	tem	Specifications		
'	tem	A1S64TCRT-S1	A1S64TCRTBW-S1	
Control output		Transistor output		
Number of temperature	input points	4 channe	els/module	
Applicable temperature	sensor	(Refer to Sec	ction 6.2.4 (1).)	
La dia a dia a dia a dia a dia a		(Ambient temperature: 25±5°C	C) Full scale × (±0.3%) ± 1 digit	
Indication accuracy		(Ambient temperature: 0 to 55°	°C) Full scale × (±0.7%) ± 1 digit	
Sampling cycle		0.5s (Constant regardless of	the number of channels used)	
Control output cycle		1 to	100s	
Input impedance		11	ΜΩ	
Input filter		0 to	100s	
Sensor correction value	esetting	-50.00 to	o 50.00%	
Operation at sensor input disconnection		Upscale processing		
Temperature control method		PID ON/OFF pulse or two-position control		
	PID constants setting	Can be set by auto-tuning.		
DID constants range	Proportional band (P)	0.0 to 1000.0%		
PID constants range	Integral time (I)	1 to 3600s		
	Derivative time (D)	0 to 3600s		
Set value (SV) setting ra	ange	Within the temperature range set for	or the temperature sensor to be used	
	Output signal	ON/OF	F pulse	
	Rated load voltage	10.2 to	30VDC	
	Max. load current	0.1A/point, 0	0.4A/common	
	Max. inrush current	0.4A,	, 10ms	
Transistor output	Leakage current at OFF	0.1mA	or less	
	Max. voltage drop at	1.0VDC (T	YP) at 0.1A	
	ON	2.5VDC (M	IAX) at 0.1A	
	Response time	OFF→ON: 2ms or less	, ON→OFF: 2ms or less	
Number of writes to E ² F	PROM	Max. 100	,000 times	

Specifications	— Compatibility	Precautions for replacement
Q64TCRTN Q64TCRTBWN		
Transistor output	0	
4 channels/module	0	
(Refer to Section 6.2.4 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1	_	
(Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1	Ŭ	
0.5s (Constant regardless of the number of channels used)	0	
1 to 100s	0	
1ΜΩ	0	
0 to 100s	0	
-50.00 to 50.00%	0	
Upscale processing	0	
PID ON/OFF pulse or two-position control	0	
Can be set by auto-tuning or self-tuning.	0	
0.0 to 1000.0%	0	
0 to 3600s	0	
0 to 3600s	0	
Within the temperature range set for the temperature sensor to be used	0	
ON/OFF pulse	0	
10 to 30VDC	0	
0.1A/point, 0.4A/common	0	
0.4A 10ms	0	
0.1mA or less	0	
1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A	0	
OFF→ON: 2ms or less, ON→OFF: 2ms or less	0	
Max. 10 ¹² times (number of read/write from/to a non-volatile memory)	0	

^{*1} Calculate the accuracy in the following method (only when it is not affected by noise).

Accuracy (°C) = full scale × indication accuracy + cold junction temperature compensation accuracy

(Example) Accuracy at the input range of 38 (-200.0 to 400.0° C), the operating ambient temperature of 35°C, and the temperature process value (PV) of 300° C

(Full scale) × (indication accuracy) + cold junction temperature compensation accuracy = $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$ = $\pm 5.2^{\circ}\text{C}$

Item		Specific	cations	
пеш		A1S64TCRT-S1	A1S64TCRTBW-S1	
Inculation output		Between input terminal and programmable controller power supply: Transformer insulation		
Insulation output		Between input channels	: Transformer insulation	
Dielectric withstand volta	200	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric Withstand Voit	age	Between input channels	: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable cor	ntroller power supply: 500VDC, 10M Ω or more	
insulation resistance		Between input channels:	500VDC, 10M Ω or more	
			U.R.D.Co., LTD.	
	Current sensor		CTL-12-S36-8	
Heater disconnection		_	CTL-6-P(-H)	
detection specifications		_		
	Input accuracy		Full scale × (±1.0%)	
	Number of alert		3 to 255	
	delay		3 to 233	
Number of occupied I/O	points	32 points (I/O assignm	ent: special 32 points)	
Connection terminal		20-point terminal block		
Applicable wire size		0.75 to		
Applicable solderless te	rminal	R1.25-3, 1.25-YS3, RA		
7.55		11.120 0, 1.20 1.00, 1.0		
Internal current consumption		0.33A	0.42A	
'				
Weight		0.27kg	0.30kg	
External dimensions		34.5(W) × 130(H	H) × 93.6(D)mm	

(1) List of usable platinum resistance thermometer, temperature measurement range, and resolution

Platinum resistance	٥	С	°F		
thermometer type	Temperature measurement range	Resolution	Temperature measurement range	Resolution	
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1	
P1100	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	
JPt100	-200.0 to 500.0	0.1	-300 to 900	1	
JF1100	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	

Specifications			Precautions for replacement
Q64TCRTN	Q64TCRTBWN	Compatibility	Precautions for replacement
Between input terminal and programmable co	ontroller power supply: Transformer insulation	0	
Between input channels	: Transformer insulation)	
Between input terminal and programmable c	ontroller power supply: 500VAC, for 1 minute	0	
Between input channels	s: 500VAC, for 1 minute)	
Between input terminal and programmable co	ntroller power supply: 500VDC, 20M Ω or more	0	
Between input channels:	500VDC, 20M Ω or more)	
	U.R.D.Co., LTD.		
	CTL-12-S36-8		
	CTL-12-S36-10		
	CTL-12-S56-10	0	
-	CTL-6-P(-H)	U	
	Full scale × (±1.0%)		
	3 to 255		
16 points/slot	32 points/2 slots		The number of occupied I/O
(I/O assignment: intelligent 16 points)	(default I/O assignment	Δ	points and slots are different.
(I/O assignment. Intelligent 10 points)	Vacancy for 16 points + intelligent 16 points)		points and slots are different.
18-point terminal block	Two 18-point terminal blocks		
22 to 1	8 AWG	×	Wiring change is required.
R1.25-3			
			Recalculation of internal
0.29A	0.33A	Δ	current consumption (5VDC) is
			required.
0.17kg	0.28kg	0	
27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm		



6.2.5 A1S62TCTT(BW)-S2

	Item Specifications			
	item		A1S62TCTT-S2 A1S62TCTTBW-S2	
Control ou	Control output		Transistor output	
Number of	temperature inpu	erature input points 2 channels/module		
Applicable	temperature sens	sor	(Refer to Section 6.2.5 (1).)	
	la dia dia a		(Ambient temperature: 25±5°C) Full scale × (±0.3%) ± 1 digit	
	Indication accur	acy	(Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 digit	
	Cold junction temperature	Temperature process value (PV): -100°C or more	Within ±1.0°C	
Accuracy	compensation accuracy: (ambient	Temperature process value (PV): -150 to -100°C	Within ±2.0°C	
	temperature: 0 to 55°C)	Temperature process value (PV): -200 to -150°C	Within ±3.0°C	
Sampling of	cycle		0.5s (Constant regardless of the number of channels used)	
Control output cycle 1 to 100s		1 to 100s		
Input impe	dance		1ΜΩ	
Input filter			0 to 100s	
Sensor cor	rrection value sett	ing	-50.00 to 50.00%	
Operation	at sensor input di	sconnection	Upscale processing	
Temperatu	re control method		PID ON/OFF pulse or two-position control	
		PID constants setting	Can be set by auto-tuning.	
PID consta	ants range	Proportional band (P)	0.0 to 1000.0%	
		Integral time (I)	1 to 3600s	
		Derivative time (D)	0 to 3600s	
Set value ((SV) setting range		Within the temperature range set for the temperature sensor to be used	
		Output signal	ON/OFF pulse	
		Rated load voltage	10.2 to 30VDC	
		Max. load current	0.1A/point, 0.4A/common	
Transistor	output	Max. inrush current	0.4A 10ms	
	ou.pu.	Leakage current at OFF	0.1mA or less	
		Max. voltage drop at	1.0VDC (TYP) at 0.1A	
		ON	2.5VDC (MAX) at 0.1A	
		Response time	OFF→ON: 2ms or less, ON→OFF: 2ms or less	
Number of	writes to E ² PROI	VI	Max. 100,000 times	

 $O\colon Compatible, \triangle\colon Partial\ change\ required,\ \times\colon Incompatible$

Specifications	Competibility	Draggitions for replacement
Q64TCTTN Q64TCTTBWN	Companishing	Precautions for replacement
Transistor output	0	
4 channels/module	0	
(Refer to Section 6.2.5 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1		
(Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1	0	
Within ±1.0°C ^{*1}		
Within ±2.0°C ^{*1}	0	
Within ±3.0°C ^{*1}		
0.5s (Constant regardless of the number of channels used)	0	
1 to 100s	0	
1ΜΩ	0	
0 to 100s	0	
-50.00 to 50.00%	0	
Upscale processing	0	
PID ON/OFF pulse or two-position control	0	
Can be set by auto-tuning or self-tuning.	0	
0.0 to 1000.0%	0	
0 to 3600s	0	
0 to 3600s	0	
Within the temperature range set for the temperature sensor to be used	0	
ON/OFF pulse	0	
10 to 30VDC	0	
0.1A/point, 0.4A/common	0	
0.4A, 10ms	0	
0.1mA or less	0	
1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A	0	
OFF→ON: 2ms or less, ON→OFF: 2ms or less	0	
Max. 10 ¹² times (number of read/write from/to a non-volatile memory)	0	

^{*1} Calculate the accuracy in the following method (only when it is not affected by noise).

Accuracy (°C) = full scale × indication accuracy + cold junction temperature compensation accuracy

(Example) Accuracy at the input range of 38 (-200.0 to 400.0 $^{\circ}$ C), the operating ambient temperature of 35 $^{\circ}$ C, and the temperature process value (PV) of 300 $^{\circ}$ C

(Full scale) × (indication accuracy) + cold junction temperature compensation accuracy = $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$ = $\pm 5.2^{\circ}\text{C}$

Item		Specific	cations	
item		A1S62TCTT-S2	A1S62TCTTBW-S2	
Insulation output		Between input terminal and programmable controller power supply: Transformer insulation		
insulation output		Between input channels:	: Transformer insulation	
Dielectric withstand volt	200	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric Withstand Voit	age	Between input channels	: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable con	troller power supply: 500VDC, 10MΩ or more	
insulation resistance		Between input channels:	500VDC, 10M Ω or more	
Heater disconnection detection specifications	Current sensor	-	U.R.D.Co., LTD. CTL-12-S36-8 CTL-6-P(-H)	
, , , , , , , , , , , , , , , , , , ,	Input accuracy		Full scale × (±1.0%)	
	Number of alert delay		3 to 255	
Number of occupied I/O	points	32 points (I/O assignment)	ent: special 32 points)	
Connection terminal		20-point terr	minal block	
Applicable wire size		0.75 to 1.5mm ²		
Applicable solderless terminal		R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
Internal current consumption		0.19A	0.28A	
Weight		0.25kg	0.28kg	
External dimensions		34.5(W) × 130(H	H) × 93.6(D)mm	

(1) List of thermocouple type, temperature measurement range, and resolution

	0	С	°F		
Thermocouple type	Temperature measurement range	Resolution	Temperature measurement range	Resolution	
R	0 to 1700	1	0 to 3000	1	
	0 to 500 0 to 800 0 to 1300	1	0 to 1000 0 to 2400	1	
К	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	200.0 to 400.0 0.0 to 400.0 0.0 to 500.0		0.1	
J	0 to 500 0 to 800 0 to 1200	1	0 to 1000 0 to 1600 0 to 2100	1	
, and the second	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1	
Т	-200 to 400 -200 to 200 0 to 200 0 to 400		0 to 700 -300 to 400	1	
	-200.0 to 400.0 0.0 to 400.0	0.1	0.0 to 700.0	0.1	

(To the next page)

Specific	Compatibility	Precautions for replacement	
Q64TCTTN	Q64TCTTBWN	Companibility	Precautions for replacement
Between input terminal and programmable co	ontroller power supply: Transformer insulation		
Between input channels	: Transformer insulation	0	
Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	0	
Between input channels	s: 500VAC, for 1 minute	0	
Between input terminal and programmable cor	ntroller power supply: 500VDC, 20M Ω or more	0	
Between input channels:	500VDC, 20M Ω or more		
	U.R.D.Co., LTD.		
	CTL-12-S36-8		
	CTL-12-S36-10		
	CTL-12-S56-10	0	
-	CTL-6-P(-H)		
]	Full scale × (±1.0%)		
	3 to 255		
16 points/slot	32 points/2 slots		The number of occupied I/O
(I/O assignment: intelligent 16 points)	(default I/O assignment	Δ	points and slots are different.
(I/O assignment. Intelligent 16 points)	Vacancy for 16 points + intelligent 16 points)		points and slots are different.
18-point terminal block	Two 18-point terminal blocks		
22 to 1	×	Wiring change is required.	
R1.2	25-3		
			Recalculation of internal
0.29A	0.33A	Δ	current consumption (5VDC) is
			required.
0.17kg	0.28kg	0	
27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm	-	

(From the previous page)

Thermocouple	°C		°F		
type	Temperature measurement range	Resolution	Temperature measurement range	Resolution	
S	0 to 1700	1	0 to 3000	1	
В	400 to 1800	1	800 to 3000	1	
E	0 to 400 E 0 to 1000		0 to 1800	1	
	0.0 to 700.0	0.1	-	-	
N	0 to 1300	1	0 to 2300	1	
U	0 to 400 -200 to 200	1	0 to 700 -300 to 400	1	
	0.0 to 600.0	0.1	-	-	
L	0 to 400 0 to 900	1	0 to 800 0 to 1600	1	
_	0.0 to 400.0 0.0 to 900.0	0.1	-	-	
PLII	0 to 1200	1	0 to 2300	1	
W5Re/W26Re	0 to 2300	1	0 to 3000	1	



6.2.6 A1S62TCRT(BW)-S2

Item		Specifications		
II.	leili	A1S62TCRT-S2 A1S62TCRTBW-S2		
Control output		Transistor output		
Number of temperature	input points	2 channels/module		
Applicable temperature	sensor	(Refer to Section 6.2.6 (1).)		
Indication converse.		(Ambient temperature: 25±5°C) Full scale × (±0.3%) ± 1 digit		
Indication accuracy		(Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 digit		
Sampling cycle		0.5s (Constant regardless of the number of channels used)		
Control output cycle		1 to 100s		
Input impedance		1ΜΩ		
Input filter		0 to 100s		
Sensor correction value	setting	-50.00 to 50.00%		
Operation at sensor inp	ut disconnection	Upscale processing		
Temperature control me	thod	PID ON/OFF pulse or two-position control		
	PID constants setting	Can be set by auto-tuning.		
DID constants range	Proportional band (P)	0.0 to 1000.0%		
PID constants range	Integral time (I)	1 to 3600s		
	Derivative time (D)	0 to 3600s		
Set value (SV) setting ra	ange	Within the temperature range set for the temperature sensor to be use	ed	
	Output signal	ON/OFF pulse		
	Rated load voltage	10.2 to 30VDC		
	Max. load current	0.1A/point, 0.4A/common		
	Max. inrush current	0.4A, 10ms		
Transistor output	Leakage current at	0.1mA or less		
	Max. voltage drop at	1.0VDC (TYP) at 0.1A		
	ON	2.5VDC (MAX) at 0.1A		
	Response time	OFF→ON: 2ms or less, ON→OFF: 2ms or less		
Number of writes to E ² F	PROM	Max. 100,000 times		
	-			

 $O\colon Compatible, \triangle\colon Partial\ change\ required,\ \star\colon Incompatible$

Specifications	Compatibility	Precautions for replacemen	
Q64TCRTN Q64TCRTBWN	Compatibility	Precautions for replacement	
Transistor output	0		
4 channels/module	0		
(Refer to Section 6.2.6 (1).)	0		
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1	0		
(Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1	0		
0.5s (Constant regardless of the number of channels used)	0		
1 to 100s	0		
1ΜΩ	0		
0 to 100s	0		
-50.00 to 50.00%	0		
Upscale processing	0		
PID ON/OFF pulse or two-position control	0		
Can be set by auto-tuning or self-tuning.	0		
0.0 to 1000.0%	0		
0 to 3600s	0		
0 to 3600s	0		
Within the temperature range set for the temperature sensor to be used	0		
ON/OFF pulse	0		
10 to 30VDC	0		
0.1A/point, 0.4A/common	0		
0.4A, 10ms	0		
0.1mA or less	0		
1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A	0		
OFF→ON: 2ms or less, ON→OFF: 2ms or less	0		
Max. 10 ¹² times (number of read/write from/to a non-volatile memory)	0		

^{*1} Calculate the accuracy in the following method (only when it is not affected by noise).

Accuracy (°C) = full scale × indication accuracy + cold junction temperature compensation accuracy

(Example) Accuracy at the input range of 38 (-200.0 to 400.0° C), the operating ambient temperature of 35°C, and the temperature process value (PV) of 300° C

(Full scale) × (indication accuracy) + cold junction temperature compensation accuracy = $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$

= ±5.2°C

Item		Specific	cations	
Item		A1S62TCRT-S2	A1S62TCRTBW-S2	
Inculation output		Between input terminal and programmable controller power supply: Transformer insulation		
Insulation output		Between input channels	: Transformer insulation	
Dielectric withstand volta	200	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric Withstand Volta	ay e	Between input channels	s: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable cor	ntroller power supply: 500VDC, $10M\Omega$ or more	
insulation resistance		Between input channels:	500VDC, 10MΩ or more	
			U.R.D.Co., LTD.	
	Current sensor		CTL-12-S36-8	
Heater disconnection		_	CTL-6-P(-H)	
detection specifications				
	Input accuracy		Full scale × (±1.0%)	
	Number of alert		3 to 255	
	delay		0 10 200	
Number of occupied I/O	points	32 points (I/O assignm	ent: special 32 points)	
0 " ' ' '		00 :11		
Connection terminal		20-point ter		
Applicable wire size		0.75 to		
Applicable solderless te	rminal	R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
Internal current consumption		0.19A	0.28A	
Weight		0.25kg	0.28kg	
External dimensions	<u> </u>	34.5(W) × 130(H	ŭ	
		37.3(VV) ^ 130(11) ^ 33.0(D)IIIIII		

(1) List of usable platinum resistance thermometer, temperature measurement range, and resolution

Platinum resistance	٥(C	°F		
thermometer type	Temperature measurement range	Resolution	Temperature measurement range	Resolution	
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1	
	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	
JPt100	-200.0 to 500.0	0.1	-300 to 900	1	
JPITOU	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	

Specific	Compatibility	Precautions for replacement		
Q64TCRTN	Q64TCRTBWN	Compatibility	Precautions for replacement	
Between input terminal and programmable co	ontroller power supply: Transformer insulation	0		
Between input channels	: Transformer insulation)		
Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	0		
Between input channels	s: 500VAC, for 1 minute)		
Between input terminal and programmable cor	ntroller power supply: 500VDC, 20M Ω or more	0		
Between input channels:	500VDC, 20M Ω or more)		
	U.R.D.Co., LTD.			
	CTL-12-S36-8			
	CTL-12-S36-10			
_	CTL-12-S56-10	0		
-	CTL-6-P(-H)	-		
	Full scale × (±1.0%)			
	3 to 255			
16 points/slot	32 points/2 slots		The number of occupied I/O	
(I/O assignment: intelligent 16 points)	(default I/O assignment	Δ	points and slots are different.	
(I/O assignment: intelligent to points)	Vacancy for 16 points + intelligent 16 points)		points and slots are different.	
18-point terminal block	Two 18-point terminal blocks			
22 to 18	×	Wiring change is required.		
R1.25-3				
			Recalculation of internal	
0.29A	0.33A	Δ	current consumption (5VDC) is	
			required.	
0.17kg	0.28kg	0		
27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm	-		

6.3 Functional Comparison

Item		Description		
Auto tuning fun	ction	The temperature control module automatically sets the optimal PID constants.		
Self-tuning fund	etion	The temperature control module constantly monitors the control status, and if the control is affected by disturbance, automatically changes and/or sets PID		
		constants for the optimum control.		
Forward/revers	e action selection function	Heating control (reverse action) or cooling control (forward action) can be selected and controlled.		
RFB limiter fun	ction	Suppresses the manipulated value overshoot which frequently occurs when the set value (SV) is changed or the control target is changed.		
Sensor correcti	on function	Reduces the difference between the measured value and actual temperature to zero when these two are different due to measurement conditions, etc.		
Unused channe	el setting	Sets not to execute PID operation for channels that do not perform temperature control.		
PID control ford	ced stop	Forcibly stops an PID operation in the channel where temperature control is in process.		
Heater disconn	ection detection function	Measures the current that flows in the heater main circuit and detects disconnection.		
Output off-time	current error detection function	An error of when the transistor output is off can be detected by measuring whether there is current flowing in the heater main circuit.		
Loop disconnec	ction detection function	Detects errors in the control system (control loop) caused by a load (heater) disconnection, abnormal external operation device (such as magnet relay), or sensor disconnection.		
Data storage in	E ² PROM	By backing up the buffer memory contents to E ² PROM, the load of sequence program can be reduced.		
Alert function		Monitors the process value (PV) and alerts the user.		
Output setting a	at CPU stop error	Whether to hold or clear temperature control output when a CPU stop error occurs can be selected.		
Control function	۱	A control status can be specified by setting output signals and buffer memory.		
Online module	change	A module can be changed without stopping the system.		
	Cooling method setting function	An auto tuning operation formula can be set according to the selected cooling system (water-cooling or air-cooling).		
Heating- cooling control	Overlap/dead band function	An temperature area can be set near the temperature where heating output and cooling output is switched: An overlap area where both are output or a dead band area where neither is output.		
	Temperature conversion function (using unused channels)	Utilizing input channels that are not used for the control (monitor channel 1, 2), temperature conversion can be performed.		

O: Available -: Not available

Temperature control module/Heating-cooling temperature control module							
A1S64TCTRT, A1S64TCTRTBW	A1S64TCTT-S1, A1S64TCTTBW-S1	A1S64TCRT-S1, A1S64TCRTBW-S1	A1S62TCTT-S2, A1S62TCTTBW-S2	A1S62TCRT-S2, A1S62TCRTBW-S2	Q64TCTTN, Q64TCTTBWN, Q64TCRTN, Q64TCRTBWN		
0	0	0	0	0	0		
0	-	-	-	-	0		
0	0	0	-	-	0		
0	0	0	0	0	0		
0	0	0	0	0	0		
0	0	0	0	0	0		
0	0	0	0	0	0		
O (BW only)	O (BW only)	O (BW only)	O (BW only)	O (BW only)	O (BW only)		
O (BW only)	O (BW only)	O (BW only)	O (BW only)	O (BW only)	O (BW only)		
0	0	0	-	-	0		
O (FeRAM)	0	0	0	0	0		
0	0	0	0	0	0		
-	-	-	-	-	0		
0	0	0	0	0	0		
-	-	-	-	-	O *1		
0	-	-	0	0	0		
0	-	-	0	0	0		
0	-	-	-	-	0		

^{*1} Online module change is possible only with the QnPH and QnPRH CPU types.

6.4 I/O Signal Comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the user's manual for each module.

6.4.1 A1S64TCTRT(BW) and Q series modules (standard control)

A1S64TCTRT(BW)				Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	
X0	Watchdog timer error flag	Y0		X0	Module READY flag	Y0	Use prohibited
X1	Temperature control module READY flag	Y1		X1	Setting/operation mode status	Y1	Setting/operation mode instruction
X2	Write error flag	Y2		X2	Write error flag	Y2	Error reset instruction
X3	Hardware error flag	Y3		X3	Hardware error flag	Y3	Use prohibited
X4	CH1 tuning status flag	Y4		X4	CH1 Auto tuning status	Y4	CH1 Auto tuning instruction
X5	CH2 tuning status flag	Y5		X5	CH2 Auto tuning status	Y5	CH2 Auto tuning instruction
X6	CH3 tuning status flag	Y6		X6	CH3 Auto tuning status	Y6	CH3 Auto tuning instruction
X7	CH4 tuning status flag	Y7		X7	CH4 Auto tuning status	Y7	CH4 Auto tuning instruction
X8	FeRAM write complete flag	Y8	Use prohibited	X8	E ² PROM write completion flag	Y8	E ² PROM backup instruction
X9	Default value write complete flag	Y9		X9	Default value write completion flag	Y9	Default setting registration instruction
XA	FeRAM write incomplete flag	YA		XA	E ² PROM write failure flag	YA	Use prohibited
XB	Use prohibited	YB		ХВ	Setting change completion flag	YB	Setting change instruction
XC	CH1 Alert occurrence flag	YC		XC	CH1 Alert occurrence flag	YC	CH1 PID control forced stop instruction
XD	CH2 Alert occurrence flag	YD		XD	CH2 Alert occurrence flag	YD	CH2 PID control forced stop instruction
XE	CH3 Alert occurrence flag	YE		XE	CH3 Alert occurrence flag	YE	CH3 PID control forced stop instruction
XF	CH4 Alert occurrence flag	YF		XF	CH4 Alert occurrence flag	YF	CH4 PID control forced stop instruction
X10		Y10		X10	Module READY flag	Y10	Use prohibited
X11		Y11	Setting/operation mode command	X11	Setting/operation mode status	Y11	Setting/operation mode instruction
X12		Y12	Error reset command	X12	Write error flag	Y12	Error reset instruction
X13		Y13	Use prohibited	X13	Hardware error flag	Y13	Use prohibited
X14	Use prohibited	Y14	CH1 Auto-tuning command	X14	CH1 Auto tuning status	Y14	CH1 Auto tuning instruction
X15		Y15	CH2 Auto-tuning command	X15	CH2 Auto tuning status	Y15	CH2 Auto tuning instruction
X16		Y16	CH3 Auto-tuning command	X16	CH3 Auto tuning status	Y16	CH3 Auto tuning instruction
X17		Y17	CH4 Auto-tuning command	X17	CH4 Auto tuning status	Y17	CH4 Auto tuning instruction

A1S64TCTRT(BW)				Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X18		Y18	FeRAM backup command	X18	E ² PROM write completion flag	Y18	E ² PROM backup instruction
X19		Y19	Default setting registration command	X19	Default value write completion flag	Y19	Default setting registration instruction
X1A		Y1A	CH1 Forced PID control stop command	X1A	E ² PROM write failure flag	Y1A	Use prohibited
X1B	Use prohibited	Y1B	CH2 Forced PID control stop command	X1B	Setting change completion flag	Y1B	Setting change instruction
X1C		Y1C	CH3 Forced PID control stop command	X1C	CH1 Alert occurrence flag	Y1C	CH1 PID control forced stop instruction
X1D		Y1D	CH4 Forced PID control stop command	X1D	CH2 Alert occurrence flag	Y1D	CH2 PID control forced stop instruction
X1E		Y1E	Use prohibited	X1E	CH3 Alert occurrence flag	Y1E	CH3 PID control forced stop instruction
X1F		Y1F	ose prombited	X1F	CH4 Alert occurrence flag	Y1F	CH4 PID control forced stop instruction

For the Q64TCTTN and Q64TCRTN, X0 to XF and Y0 to YF are applied.

For the Q64TCTTBWN and Q64TCRTBWN, X10 to X1F and Y10 to Y1F are applied.

Depending on the use of the Q64TCTTN, Q64TCTTBWN, Q64TCRTN, and Q64TCRTBWN, some of the I/O signals listed in the table are prohibited to use.

For details, refer to the user's manual for the module used.



6.4.2 A1S64TCTRT(BW) and Q series modules (heating-cooling control)

	A1S64T0	TPT/RW/		Q64TCTTN, Q64TCRTN*1				
	A130410	TRI(BW)		Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0	Watchdog timer error flag	Y0		X0	Module READY flag	Y0	Use prohibited	
X1	Temperature control module READY flag	Y1		X1	Setting/operation mode status	Y1	Setting/operation mode instruction	
X2	Write error flag	Y2		X2	Write error flag	Y2	Error reset instruction	
Х3	Hardware error flag	Y3		Х3	Hardware error flag	Y3	Use prohibited	
X4	CH1 tuning status flag	Y4		X4	CH1 Auto tuning status	Y4	CH1 Auto tuning instruction	
X5	CH2 tuning status flag	Y5		X5	CH2 Auto tuning status	Y5	CH2 Auto tuning instruction	
X6 X7	Use prohibited	Y6 Y7		X6 X7	Use prohibited	Y6 Y7	Use prohibited	
X8	FeRAM write complete flag	Y8	Use prohibited	X8	E ² PROM write completion flag	Y8	E ² PROM backup instruction	
Х9	Default value write complete flag	Y9		X9	Default value write completion flag	Y9	Default setting registration instruction	
XA	FeRAM write incomplete flag	YA		XA	E ² PROM write failure flag	YA	Use prohibited	
ХВ	Use prohibited	YB		XB	Setting change completion flag	YB	Setting change instruction	
XC	CH1 Alert occurrence flag	YC		XC	CH1 Alert occurrence flag	YC	CH1 PID control forced stop instruction	
XD	CH2 Alert occurrence flag	YD		XD	CH2 Alert occurrence flag	YD	CH2 PID control forced stop instruction	
XE XF		YE YF		XE XF	Use prohibited	YE YF	Use prohibited	
X10		Y10		X10	Module READY flag	Y10	Use prohibited	
X11		Y11 X11		Setting/operation mode status	Y11	Setting/operation mode instruction		
X12		Y12	Error reset command	X12	Write error flag	Y12	Error reset instruction	
X13		Y13	Use prohibited	X13	Hardware error flag	Y13	Use prohibited	
X14		Y14	CH1 Auto-tuning command	X14	CH1 Auto tuning status	Y14	CH1 Auto tuning instruction	
X15	Use prohibited	Y15	CH2 Auto-tuning command	X15	CH2 Auto tuning status	Y15	CH2 Auto tuning instruction	
X16 X17	Y16 Y17		Use prohibited	X16 X17	Use prohibited	Y16 Y17	Use prohibited	
X18		Y18	FeRAM backup command	X18	E ² PROM write completion flag	Y18	E ² PROM backup instruction	
X19		Y19	Default setting registration command	X19	Default value write completion flag	Y19	Default setting registration instruction	
X1A		Y1A	CH1 Forced PID control stop command	X1A	E ² PROM write failure flag	Y1A	Use prohibited	

A1S64TCTRT(BW)					Q64TCTTN, Q64TCRTN* ¹ Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X1B		Y1B	CH2 Forced PID control stop command	X1B	Setting change completion flag	Y1B	Setting change instruction		
X1C	Use prohibited	Y1C		X1C	CH1 Alert occurrence flag	Y1C	CH1 PID control forced stop instruction		
X1D	ose prombited	Y1D	Use prohibited	X1D	CH2 Alert occurrence flag	Y1D	CH2 PID control forced stop instruction		
X1E X1F		Y1E Y1F		X1E X1F	Use prohibited	Y1E Y1F	Use prohibited		

^{*1} For the Q64TCTTN and Q64TCRTN, X0 to XF and Y0 to YF are applied.

For the Q64TCTTBWN and Q64TCRTBWN, X10 to X1F and Y10 to Y1F are applied.

Depending on the use of the Q64TCTTN, Q64TCTTBWN, Q64TCRTN, and Q64TCRTBWN, some of the I/O signal listed in the table are prohibited to use.

For details, refer to the user's manual for the module used.



6.4.3 A1S64TCTT(BW)-S1/A1S64TCRT(BW)-S1 and Q series modules

	A1S64TCTT(BW)-S1,	A1S64T0	CRT(BW)-S1	Q64TCTTN, Q64TCRTN*1				
Davisa		Davis		Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0	Watchdog timer error flag	Y0		X0	Module READY flag	Y0	Use prohibited	
X1	Temperature control module READY flag	Y1		X1	Setting/operation mode status	Y1	Setting/operation mode instruction	
X2	Write error flag	Y2		X2	Write error flag	Y2	Error reset instruction	
Х3	Hardware error flag	Y3		Х3	Hardware error flag	Y3	Use prohibited	
X4	CH1 tuning status flag	Y4		X4	CH1 Auto tuning status	Y4	CH1 Auto tuning instruction	
X5	CH2 tuning status flag	Y5		X5	CH2 Auto tuning status	Y5	CH2 Auto tuning instruction	
X6	CH3 Auto tuning status	Y6		X6	CH3 Auto tuning status	Y6	CH3 Auto tuning instruction	
X7	CH4 Auto tuning status	Y7		X7	CH4 Auto tuning status	Y7	CH4 Auto tuning instruction	
X8	E ² PROM write completion flag	Y8	Use prohibited	X8	E ² PROM write completion flag	Y8	E ² PROM backup instruction	
X9	Default value write complete flag	Y9		X9	Default value write completion flag	Y9	Default setting registration instruction	
XA	FeRAM write incomplete flag	YA		XA	E ² PROM write failure flag	YA	Use prohibited	
ХВ	Use prohibited	YB		ХВ	Setting change completion flag	YB	Setting change instruction	
XC	CH1 Alert occurrence flag	YC		XC	CH1 Alert occurrence flag	YC	CH1 PID control forced stop instruction	
XD	CH2 Alert occurrence flag	YD		XD	CH2 Alert occurrence flag	YD	CH2 PID control forced stop instruction	
XE	CH3 Alert occurrence flag	YE		XE	CH3 Alert occurrence flag	YE	CH3 PID control forced stop instruction	
XF	CH4 Alert occurrence flag	YF		XF	CH4 Alert occurrence flag	YF	CH4 PID control forced stop instruction	
X10		Y10		X10	Module READY flag	Y10	Use prohibited	
X11		Y11	Setting/operation mode command	X11	Setting/operation mode status	Y11	Setting/operation mode instruction	
X12		Y12	Error reset command	X12	Write error flag	Y12	Error reset instruction	
X13		Y13	Use prohibited	X13	Hardware error flag	Y13	Use prohibited	
X14		Y14	CH1 Auto-tuning command	X14	CH1 Auto tuning status	Y14	CH1 Auto tuning instruction	
X15		Y15	CH2 Auto-tuning command	X15	CH2 Auto tuning status	Y15	CH2 Auto tuning instruction	
X16	Use prohibited	Ise prohibited Y16		X16	CH3 Auto tuning status	Y16	CH3 Auto tuning instruction	
X17		Y17	CH4 Auto tuning instruction	X17	CH4 Auto tuning status	Y17	CH4 Auto tuning instruction	
X18		Y18		X18	E ² PROM write completion flag	Y18	E ² PROM backup instruction	
X19		Y19	instruction Default setting registration command	X19	Default value write completion flag	Y19	Default setting registration instruction	
X1A		Y1A	CH1 Forced PID control stop command	X1A	E ² PROM write failure flag	Y1A	Use prohibited	

A1S64TCTT(BW)-S1, A1S64TCRT(BW)-S1					Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X1B		Y1B	CH2 Forced PID control	X1B	Setting change	Y1B	Setting change		
ΛID			stop command	X I D	completion flag	110	instruction		
X1C		Y1C	CH3 Forced PID control	X1C	CH1 Alert occurrence	Y1C	CH1 PID control forced		
XIO		110	stop command		flag	110	stop instruction		
X1D	Use prohibited	Y1D	CH4 Forced PID control	X1D	CH2 Alert occurrence	Y1D	CH2 PID control forced		
ΛID	Use profibiled	טוז	stop command		flag	110	stop instruction		
V1E	X1E X1F	Y1E		X1E	CH3 Alert occurrence	Y1E	CH3 PID control forced		
A I L		116	Use prohibited	AIL	flag	116	stop instruction		
V1E		Y1F	Ose prombiled	X1F	CH4 Alert occurrence	Y1F	CH4 PID control forced		
A I F		TIF		XIF	flag	TIF	stop instruction		

^{*1} For the Q64TCTTN and Q64TCRTN, X0 to XF and Y0 to YF are applied.

For the Q64TCTTBWN and Q64TCRTBWN, X10 to X1F and Y10 to Y1F are applied.

Depending on the use of the Q64TCTTN, Q64TCTTBWN, Q64TCRTN, and Q64TCRTBWN, some of the I/O signal listed in the table are prohibited to use.

For details, refer to the user's manual for the module used.



6.4.4 A1S62TCTT(BW)-S2/A1S62TCRT(BW)-S2 and Q series modules

A1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2					Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Q64TCTTBWN, Signal name	Device No.	Signal name		
X0	Watchdog timer error flag	Y0		X0	Module READY flag	Y0	Use prohibited		
X1	Temperature control module READY flag	Y1		X1	Setting/operation mode status	Y1	Setting/operation mode instruction		
X2	Write error flag	Y2		X2	Write error flag	Y2	Error reset instruction		
X3	Hardware error flag	Y3		X3	Hardware error flag	Y3	Use prohibited		
X4	CH1 tuning status flag	Y4		X4	CH1 Auto tuning status	Y4	CH1 Auto tuning instruction		
X5	CH2 tuning status flag	Y5		X5	CH2 Auto tuning status	Y5	CH2 Auto tuning instruction		
X6 X7	Use prohibited	Y6 Y7		X6 X7	Use prohibited	Y6 Y7	Use prohibited		
X8	E ² PROM write completion flag	Y8	Use prohibited	X8	E ² PROM write completion flag	Y8	E ² PROM backup instruction		
X9	Default value write complete flag	Y9		Х9	Default value write completion flag	Y9	Default setting registration instruction		
XA	FeRAM write incomplete flag	YA		XA	E ² PROM write failure flag	YA	Use prohibited		
XB	Use prohibited	YB		XB	Setting change completion flag	YB	Setting change instruction		
XC	CH1 Alert occurrence flag	YC		XC	CH1 Alert occurrence flag	YC	CH1 PID control forced stop instruction		
XD	CH2 Alert occurrence flag	YD		XD	CH2 Alert occurrence flag	YD	CH2 PID control forced stop instruction		
XE XF		YE YF		XE XF	Use prohibited	YE YF	Use prohibited		
X10		Y10		X10	Module READY flag	Y10	Use prohibited		
X11		Y11	Setting/operation mode command	X11	Setting/operation mode status	Y11	Setting/operation mode instruction		
X12		Y12	Error reset command	X12	Write error flag	Y12	Error reset instruction		
X13		Y13	Use prohibited	X13	Hardware error flag	Y13	Use prohibited		
X14		Y14	CH1 Auto-tuning command	X14	CH1 Auto tuning status	Y14	CH1 Auto tuning instruction		
X15	Use prohibited Y15 Y16 Y17		CH2 Auto-tuning command	X15	CH2 Auto tuning status	Y15	CH2 Auto tuning instruction		
X16 X17			Use prohibited	X16 X17	Use prohibited	Y16 Y17	Use prohibited		
X18		Y18	FeRAM backup command	X18	E ² PROM write completion flag	Y18	E ² PROM backup instruction		
X19		Y19	Default setting registration command	X19	Default value write completion flag	Y19	Default setting registration instruction		
X1A		Y1A	CH1 Forced PID control stop command	X1A	E ² PROM write failure flag	Y1A	Use prohibited		

A1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2					Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X1B		Y1B	CH2 Forced PID control stop command	X1B	Setting change completion flag	Y1B	Setting change instruction		
X1C	Use prohibited	Y1C		X1C	CH1 Alert occurrence flag	Y1C	CH1 PID control forced stop instruction		
X1D	ose prombited	Y1D	Use prohibited	X1D	CH2 Alert occurrence flag	Y1D	CH2 PID control forced stop instruction		
X1E X1F		Y1E Y1F		X1E X1F	Use prohibited	Y1E Y1F	Use prohibited		

^{*1} For the Q64TCTTN and Q64TCRTN, X0 to XF and Y0 to YF are applied.

For the Q64TCTTBWN and Q64TCRTBWN, X10 to X1F and Y10 to Y1F are applied.

Depending on the use of the Q64TCTTN, Q64TCTTBWN, Q64TCRTN, and Q64TCRTBWN, some of the I/O signal listed in the table are prohibited to use.

For details, refer to the user's manual for the module used.

6.5 Buffer Memory Address Comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the user's manual for each module.

6.5.1 A1S64TCTRT(BW) and Q series modules (standard control)

				A1S64TCTRT(BW)		
	Address (h	exadecimal)	Maria	Donall control	
CH1	CH2	CH3	CH4	- Name	Read/write	
		0		Error code		
1	2	3	4	Decimal point position		
5	6	7	8	Alert detail		
9	Α	В	С	Temperature process value (PV)		
D	Е	F	10	Manipulated value (MV)	- R	
11	12	13	14	Temperature rise judgment flag		
15	16	17	18	Transistor output flag		
19	1A	1B	1C	Measured heater current value		
	1	D		Cold junction temperature process value		
	1	E		MAN mode shift completion flag		
	1	F		System area (Use prohibited)	-	
20	40	60	80	Input range		
21	41	61	81	Stop mode setting		
22	42	62	82	Set value (SV) setting		
23	43	63	83	Proportional band (P) setting		
24	44	64	84	Integral time (I) setting		
25	45	65	85	Derivative time (D) setting		
26	46	66	86	Setting of Alert alarm 1		
27	47	67	87	Setting of Alert alarm 2		
28	48	68	88	Setting of Alert alarm 3		
29	49	69	89	Setting of Alert alarm 4		
2A	4A	6A	8A	Upper output limiter		
2B	4B	6B	8B	Lower output limiter		
2C	4C	6C	8C	Output variation limiter		
2D	4D	6D	8D	Sensor compensation value setting		
2E	4E	6E	8E	Adjustment sensitivity (dead band) setting	R/W	
2F	4F	6F	8F	Control output period setting	IV/V/	
30	50	70	90	Primary delay digital filter setting		
31	51	71	91	Control response parameter		
32	52	72	92	AUTO/MAN mode switching		
33	53	73	93	MAN output setting		
34	54	74	94	Setting change rate limiter		
35	55	75	95	AT bias		
36	56	76	96	Direct/reverse action setting		
37	57	77	97	Upper setting limiter		
38	58	78	98	Lower setting limiter		
39	59	79	99	CT selection	1	
3A	5A	7A	9A	Heater disconnection alert setting	1	
3B	5B	7B	9B	Loop disconnection detection judgment time	1	
3C	5C	7C	9C	Loop disconnection detection dead band	1	
3D	5D	7D	9D	Unused channel setting		

			Q64TCT	CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN				
	Address (h	exadecimal)		Name	Read/write			
CH1	CH2	CH3	CH4	Name	iteau/write			
		0		Write data error code				
1	2	3	4	Decimal point position				
5	6	7	8	Alert definition				
9	Α	В	С	Temperature process value (PV)]			
D	Е	F	10	Manipulated value (MV)	R			
11	12	13	14	Temperature rise judgment flag	, K			
15	16	17	18	Transistor output flag				
19	1A	1B	1C	Set value (SV) monitor				
	1	D		Cold junction temperature process value*1				
	1	E		MAN mode shift completion flag				
	1	F		System area (Use prohibited)	-			
 20	40	60	80	Input range				
21	41	61	81	Stop mode setting	1			
22	42	62	82	Set value (SV) setting	-			
23	43	63	83	Proportional band (P) setting				
24	44	64	84	Integral time (I) setting				
25	45	65	85	Derivative time (D) setting				
26	46	66	86	Alert set value 1				
27	47	67	87	Alert set value 2				
28	48	68	88	Alert set value 3				
29	49	69	89	Alert set value 4	•			
2A	4A	6A	8A	Upper limit output limiter	1			
2B	4B	6B	8B	Lower limit output limiter				
2C	4C	6C	8C	Output variation limiter setting	R/W			
2D	4D	6D	8D	Sensor correction value setting				
2E	4E	6E	8E	Adjustment sensitivity (dead band) setting				
2F	4F	6F	8F	Control output cycle setting				
30	50	70	90	Primary delay digital filter setting				
31	51	71	91	Control response parameter	1			
32	52	72	92	AUTO/MAN mode shift	1			
33	53	73	93	MAN output setting				
34	54	74	94	Setting change rate limiter	1			
35	55	75	95	AT bias				
36	56	76	96	Forward/reverse action setting				
37	57	77	97	Upper limit setting limiter				
38	58	78	98	Lower limit setting limiter				
39	59	79	99	System area (Use prohibited)	-			
3A	5A	7A	9A	Heater disconnection alert setting				
3B	5B	7B	9B	Loop disconnection detection judgment time	DAA			
3C	5C	7C	9C	Loop disconnection detection dead band	R/W			
3D	5D	7D	9D	Unused channel setting				

^{*1} For the Q64TCRT(BW)N, this area is prohibited to use.

A1S64TCTRT(BW)							
Address (hexadecimal)				Name	Read/write		
CH1	CH2	CH3	CH4	Name	Reau/write		
3E	5E	7E	9E	Self-tuning setting	R/W		
3F	5F	7F	9F	Self-tuning flag	R		
	А	0		Mode setting for Alert alarm 1			
	Α	1		Mode setting for Alert alarm 2			
	A	2		Mode setting for Alert alarm 3			
	A	3		Mode setting for Alert alarm 4			
	Α	4		Alert dead band setting			
	A	5		Alert delay count			
	۸	e		Heater disconnection/output off-time current error			
	A6			detection delay count	R/W		
	А	7		Temperature rise completion range setting			
	А	8		Temperature rise completion soak time setting			
	А	9		PID continuation flag			
	A	A		Heater voltage compensation setting			
AB	AC	AD	AE	Heater current reference value]		
	А	F		Transistor output monitor ON delay time setting			
	В0			CT monitor method switching			
B1	B2	В3	B4	Control output monitor	R		
	B5			System area (Use prohibited)	-		
	В	6		Cold junction temperature compensation selection	R/W		
	В	7		Control switching monitor	R		

⊠Point

Default values for A series modules and Q series modules may be different.

To apply an A series program using a default value to a Q series module, review the program.

For details, refer to the user's manual for the Q series module used.

6 HEATING-COOLING TEMPERATURE CONTROL MODULE/

	Q64TCTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN						
	Address (hexadecimal)				Name	Read/write	
	CH1	CH2	CH3	CH4	Nume	rtead/Write	
	3E	5E	7E	9E	E ² PROM's PID constants read instruction	R/W	
	3F	5F	7F	9F	Automatic backup setting after auto tuning of PID constants		
			.0				
		Α	.1		System area (Use prohibited)	_	
			.2				
			.3				
			4		Alert dead band setting		
		A	.5		Number of alert delay		
		А	.6		Heater disconnection/output off-time current error detection		
					delay count	R/W	
		A			Temperature rise completion range setting		
			.8		Temperature rise completion soak time setting		
			.9		PID continuation flag		
	AD		A	۸.	Heater disconnection correction function selection		
	AB	AC	AD	AE	System area (Use prohibited)	-	
	AF B0			Transistor output monitor ON delay time setting CT monitor method switching	R/W		
	B1	B2	B3	B4	Manipulated value (MV) for output with another analog module	R	
	B1 B2 B3 B4			54	Resolution of the manipulated value for output with another	K	
		В	5		analog module	R/W	
		В	6		Cold junction temperature compensation selection	R/W	
			57		Control switching monitor	-	
	B8	В9	BA	BB	Auto tuning mode selection	R/W	
		BC t	o BF		System area (Use prohibited)	_	
	C0	D0	E0	F0	Alert 1 mode setting		
	C1	D1	E1	F1	Alert 2 mode setting		
						R/W	
	C2	D2	E2	F2	Alert 3 mode setting		
	C3	D3	E3	F3	Alert 4 mode setting		
	C4 to CF	D4 to DF	E4 to EF	F4 to FF	System area (Use prohibited)	-	
	100 to 107				Heater current process value	R	
		108 t	o 10F		CT input channel assignment setting		
	110 to 117 118 to 11F				CT selection	R/W	
					Reference heater current value		
			0				
	23E	25E	27E	29E	Self-tuning setting	R/W	
	23F	25F	27F	29F	Self-tuning flag	R	



6.5.2 A1S64TCTRT(BW) and Q series modules (heating-cooling control)

A1S64TCTRT(BW)							
Address (h	exadecimal)	Nama	Dood/weite				
CH1	CH2	Name	Read/write				
	0	Error code					
1	2	Decimal point position					
5	6	Alert detail					
9	А	Temperature process value (PV)					
D	Е	Manipulated value for heating (MVh)	R				
11	12	Temperature rise judgment flag					
15	16	Heating transistor output flag					
19	1A	Measured heater current value					
1	D	Cold junction temperature process value					
1	IE						
•	IF	System area (Use prohibited)	-				
20	40	Input range					
21	41	Stop mode setting					
22	42	Set value (SV) setting					
23	43	Heating proportional band (Ph) setting					
24	44	Integral time (I) setting					
25	45	Derivative time (D) setting	R/W				
26	46	Setting of Alert alarm 1	17/7/				
27	47	Setting of Alert alarm 2					
28	48	Setting of Alert alarm 3					
29	49	Setting of Alert alarm 3 Setting of Alert alarm 4					
		-					
2A	4A	Heating upper output limiter					
2B	4B	System area (Use prohibited)	-				
2C	4C	O a series and a s	DAM				
2D	4D	Sensor compensation value setting	R/W				
2E	4E	System area (Use prohibited)	-				
2F	4F	Heating control output period setting					
30	50	Primary delay digital filter setting	R/W				
31	51	Control response parameter					
32	52	System area (Use prohibited)	-				
33	53						
34	54	Setting change rate limiter	R/W				
35	55	System area (Use prohibited)	_				
36	56						
37	57	Upper setting limiter					
38	58	Lower setting limiter	R/W				
39	59	CT selection	1,000				
3A	5A	Heater disconnection alert setting					
3B	5B	System area (Use prohibited)	_				
3C	5C	System area (Ose prombited)					
3D	5D	Unused channel setting	R/W				

		CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN		
	exadecimal)	Name	Read/write	
CH1	CH2	- Hamo	Troughwitto	
	0	Write data error code		
1	2	Decimal point position		
5	6	Alert definition		
9	А	Temperature process value (PV)		
D	E	Manipulated value for heating (MVh)	R	
11	12	Temperature rise judgment flag	IX	
15	16	Heating transistor output flag		
19	1A	Set value (SV) monitor		
1	ID	Cold junction temperature process value*1		
1	1E	MAN mode shift completion flag		
	1F	System area (Use prohibited)	-	
20	40	Input range		
21	41	Stop mode setting		
22	42	Set value (SV) setting		
23	43	Heating proportional band (Ph) setting		
24	44	Integral time (I) setting		
25	45	Derivative time (D) setting	R/W	
26	46	Alert set value 1		
27	47	Alert set value 2		
28	48	Alert set value 3		
29	49	Alert set value 4		
2A	4A	Heating upper limit output limiter		
2B	4B	System area (Use prohibited)	-	
2C	4C	Output variation limiter setting		
2D	4D	Sensor correction value setting		
2E	4E	Adjustment sensitivity (dead band) setting		
2F	4F	Heating control output cycle setting		
30	50	Primary delay digital filter setting	R/W	
31	51	Control response parameter		
32	52	AUTO/MAN mode shift		
33	53	MAN output setting		
34	54	Setting change rate limiter		
35	55	AT bias		
36	56	System area (Use prohibited)	-	
37	57	Upper limit setting limiter	R/W	
38	58	Lower limit setting limiter	FX/ VV	
39	59	System area (Use prohibited)	-	
3A	5A	Heater disconnection alert setting	R/W	
3B	5B	System area (Use prohibited)		
3C	5C	System area (Ose promoned)		
3D	5D	Unused channel setting	R/W	

^{*1} For the Q64TCRT(BW)N, this area is prohibited to use.

		A1S64TCTRT(BW)		
Address (h	exadecimal)	News	December 11	
CH1	CH2	Name	Read/write	
3E	5E	Overland and a (Haramarahili itani)		
3F	5F	System area (Use prohibited)	-	
P	0	Mode setting for Alert alarm 1		
A	.1	Mode setting for Alert alarm 2		
A	.2	Mode setting for Alert alarm 3		
A	3	Mode setting for Alert alarm 4		
A	4	Alert dead band setting		
A	15	Alert delay count		
	\ 6	Heater disconnection/output off-time current error		
F	Ю	detection delay count	R/W	
A	.7	Temperature rise completion range setting		
A	.8	Temperature rise completion soak time setting		
A	. 9	PID continuation flag		
A	A	Heater voltage compensation setting		
AB	AC	Heater current reference value		
A	F	Transistor output monitor ON delay time setting		
E	30	CT monitor method switching		
B1	B2	Heating control output monitor	R	
t	0			
E	36	Cold junction temperature compensation selection	R/W	
E	37	Control switching monitor	R	
B8	B9	Temperature conversion setting	R/W	
t	0			
C0	C1	Manipulated value for cooling (MV)		
C2	C3	Cooling control output monitor	R	
C4 C5		Cooling transistor output flag		
to				
	F	Cooling type setting		
D0	E0	Cooling proportional band (Pc) setting		
D1	E1	Cooling upper output limiter	R/W	
D2	E2	Cooling control output period setting	_	
D3	E3	Overlap/dead band		

⊠ Point -

Default values for A series modules and Q series modules may be different.

To apply an A series program using a default value to a Q series module, review the program.

For details, refer to the user's manual for the Q series module used.

6 HEATING-COOLING TEMPERATURE CONTROL MODULE/

Address (he		CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN			
CH1	CH2	Name	Read/write		
3E	5E	E2DDOMIs DID corretents read instruction			
3F	5F	E ² PROM's PID constants read instruction Automatic backup setting after auto tuning of PID constants	R/W		
AO		Automatic backup setting after auto turning of FID constants			
A1					
A2		System area (Use prohibited)	-		
A2 A3					
A4		Alert dead band setting			
A5		Number of alert delay			
7.0		Heater disconnection/output off-time current error detection			
A6		delay count			
Δ.7	•	·	R/W		
A7		Temperature rise completion range setting			
A8		Temperature rise completion soak time setting			
A9		PID continuation flag			
AA		Heater disconnection correction function selection	-		
AB	AC	System area (Use prohibited)	-		
AF		Transistor output monitor ON delay time setting	R/W		
BO		CT monitor method switching			
B1	B2	Manipulated value of heating (MVh) for output with another	R		
		analog module			
B5		Resolution of the manipulated value for output with another			
De .		analog module	R/W		
B6		Cold junction temperature compensation selection			
B7		Control switching monitor	R		
B8	B9	Auto tuning mode selection	R/W		
BC to		System area (Use prohibited)	-		
C0	D0	Alert 1 mode setting			
C1	D1	Alert 2 mode setting	R/W		
C2	D2	Alert 3 mode setting			
C3	D3 D4 to DF	Alert 4 mode setting			
C4 to CF		System area (Use prohibited)	-		
100 to		Heater current process value	R		
108 to		CT input channel assignment setting CT selection	R/W		
110 to			K/VV		
to		Reference heater current value			
2B8	2B9	Temperature conversion setting	R/W		
to		System area (Use prohibited)	-		
2C0	2C1	Manipulated value for cooling (MVc)	R		
to		manipulated value for cooling (WVC)	11		
		Manipulated value of cooling (MVc) for output with another			
2C4	2C5	analog module	R		
to					
2C8	2C9	Cooling transistor output flag	R		
to		3			
2CI		Cooling method setting			
2D0	2E0	Cooling proportional band (Pc) setting			
2D1	2E1	Cooling upper limit output limiter	R/W		
2D2	2E2	Cooling control output cycle setting			
2D3	2E3	Overlap/dead band setting			



6.5.3 A1S64TCTT(BW)-S1/A1S64TCRT(BW)-S1 and Q series modules

				64TCTT(BW)-S1, A1S64TCRT(BW)-S1		
CH1	Address (h CH2	exadecimal CH3	CH4	Name	Read/write	
<u> </u>		0	3111	Write data error code	R/W	
1	2	3	4	Decimal point position		1
5	6	7	8	Alert details		
9	Α	В	С	Temperature process value (PV)		
D	Е	F	10	Manipulation value (MV)		
11	12	13	14	Increased temperature determination flag	R	
15	16	17	18	Transistor output flag		
19	1A	1B	1C	Heater current process value		
	1	D	ı	Cooling contact temperature process value*1		
	1	E		Switch to manual mode completion flag		
		 F		System area (Use prohibited)	-	
20	40	60	80	Input range		
21	41	61	81	Stop mode setting		
22	42	62	82	Set value (SV) setting		
23	43	63	83	Proportional band (P) setting		
24	44	64	84	Integral time (I) setting		
25	45	65	85	Derivative time (D) setting		
26	46	66	86	Alert alarm 1 set value		
27	47	67	87	Alert alarm 2 set value		
28	48	68	88	Alert alarm 3 set value		
29	49	69	89	Alert alarm 4 set value		
2A	4A	6A	8A	Upper output limiter		
2B	4B	6B	8B	Lower output limiter		
2C	4C	6C	8C	Output variation limiter		
2D	4D	6D	8D	Sensor compensation value setting		
2E	4E	6E	8E	Adjustment sensitivity (blind section) setting		
2F	4F	6F	8F	Control output period setting	R/W	
30	50	70	90	First-order delay digital filter setting		
31	51	71	91	Control response parameter		
32	52	72	92	AUTO/MAN mode switch		
33	53	73	93	Manual output setting		
34	54	74	94	Setting change rate limiter		
35	55	75	95	AT bias		
36	56	76	96	Forward/reverse action setting		
37	57	77	97	Upper setting limiter		
38	58	78	98	Lower setting limiter		
39	59	79	99	CT selection		
3A	5A	7A	9A	Heater disconnection alert setting		
3B	5B	7B	9B	Open-loop detection time		
3C	5C	7C	9C	Open-loop detection dead band		
3D	5D	7D	9D	Unused channel setting		

^{*1} For the A1S64TCRT(BW)-S1, this area is prohibited to use.

^{*2} For the Q64TCRT(BW) and Q64TCRT(BW)N, this area is prohibited to use.

Address (hexadecimal)				Nome	Dood/unite
CH1	CH2	CH3	CH4	Name	Read/write
		0		Write data error code	
1	2	3	4	Decimal point position	
5	6	7	8	Alert definition	
9	Α	В	С	Temperature process value (PV)	
D	Е	F	10	Manipulated value (MV)	R
11	12	13	14	Temperature rise judgment flag	
15	16	17	18	Transistor output flag	
19	1A	1B	1C	Set value (SV) monitor	
	1	ID		Cold junction temperature process value*2	
	1	IE		MAN mode shift completion flag	
	1	IF		System area (Use prohibited)	-
20	40	60	80	Input range	
21	41	61	81	Stop mode setting	
22	42	62	82	Set value (SV) setting	
23	43	63	83	Proportional band (P) setting	
24	44	64	84	Integral time (I) setting	
25	45	65	85	Derivative time (D) setting	
26	46	66	86	Alert set value 1	
27	47	67	87	Alert set value 2	
28	48	68	88	Alert set value 3	
29	49	69	89	Alert set value 4	
2A	4A	6A	8A	Upper limit output limiter	
2B	4B	6B	8B	Lower limit output limiter	
2C	4C	6C	8C	Output variation limiter setting	R/W
2D	4D	6D	8D	Sensor correction value setting	
2E	4E	6E	8E	Adjustment sensitivity (dead band) setting	
2F	4F	6F	8F	Control output cycle setting	
30	50	70	90	Primary delay digital filter setting	
31	51	71	91	Control response parameter	
32	52	72	92	AUTO/MAN mode shift	
33	53	73	93	MAN output setting	
34	54	74	94	Setting change rate limiter	
35	55	75	95	AT bias	
36	56	76	96	Forward/reverse action setting	
37	57	77	97	Upper limit setting limiter	
38	58	78	98	Lower limit setting limiter	
39	59	79	99	System area (Use prohibited)	-
3A	5A	7A	9A	Heater disconnection alert setting	
3B	5B	7B	9B	Loop disconnection detection judgment time	R/W
3C	5C	7C	9C	Loop disconnection detection dead band	1777
3D	5D	7D	9D	Unused channel setting	

A1S64TCTT(BW)-S1, A1S64TCRT(BW)-S1						
Address (hexadecimal))	Name	Read/write	
CH1	CH2	CH3	CH4	Name	Read/write	
3E	5E	7E	9E	System area (Use prohibited)		
3F	5F	7F	9F	- System area (Ose prombited)	-	
	А	.0		Alert alarm 1 mode setting		
	А	.1		Alert alarm 2 mode setting		
	А	2		Alert alarm 3 mode setting		
	А	3		Alert alarm 4 mode setting		
	А	4		Alert blind section setting		
	А	5		Number of alert delays		
A6				Number of delays for heater disconnection/current		
	^	.0		error detection when output is turned off	R/W	
	А	.7		Temperature increase complete range setting		
	А	.8		Temperature increase complete soak time setting		
	А	9		PID continue flag		
	A	A		Heater voltage compensation function setting		
AB	AC	AD	AE	Standard heater current value		
	Α	F		Transistor output monitor on delay time setting		
	В0			CT monitor method switch		
B1	B2	В3	B4	Manipulation value (MV) (0 to 4000)	R	
	B5			System area (Use prohibited)	-	
				Cold junction temperature compensation selection*1		
	В	6		(This area can be used with the software version F or	R/W	
				later.)		

For the A1S64TCRT(BW)-S1, this area is prohibited to use.

⊠Point -

Default values for A series modules and Q series modules may be different.

To apply an A series program using a default value to a Q series module, review the program.

For details, refer to the user's manual for the Q series module used.

	Q64TCTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN								
	Address (hexadecimal)				Name	Bood/write			
	CH1	CH2	CH3	CH4	Name	Read/write			
	3E	5E	7E	9E	E ² PROM's PID constants read instruction	R/W/-			
	3F	5F	7F	9F	Automatic backup setting after auto tuning of PID constants	R/VV/-			
		Д	0						
		Д	.1		1				
		Α	.2		System area (Use prohibited)	-			
		Α	.3						
		Α	.4		Alert dead band setting				
			λ 5		Number of alert delay				
		<u> </u>			Heater disconnection/output off-time current error detection				
		Α	ه.		delay count				
		Δ	.7		Temperature rise completion range setting	R/W			
			.8		Temperature rise completion range setting				
					PID continuation flag				
		A9 AA			Heater disconnection correction function selection				
	AB	AC	AD	AE	System area (Use prohibited)				
	AD.			_	Transistor output monitor ON delay time setting				
	AF B0				CT monitor method switching	R/W			
	B1	B2	B3	B4	Manipulated value (MV) for output with another analog module	R			
	ы	DZ	БЗ	D4	Resolution of the manipulated value for output with another	K			
	B5 B6				analog module				
					Cold junction temperature compensation selection	R/W			
		В	37		Control switching monitor	R			
	B8	В9	ВА	BB	Auto tuning mode selection	R/W			
			o BF		System area (Use prohibited)	-			
	C0	D0	E0	F0	Alert 1 mode setting				
	C1	D1	E1	F1	Alert 2 mode setting	-			
	C2	D2	E2	F2	Alert 3 mode setting	R/W			
	C3	D3	E3	F3	Alert 4 mode setting				
	C4 to CF	D4 to DF	E4 to EF	F4 to FF	System area (Use prohibited)	-			
		100 t	o 107		Heater current process value	R			
	108 to 10F 110 to 117 118 to 11F				CT input channel assignment setting				
					CT selection	R/W			
					Reference heater current value				
			0						
	23E	25E	27E	29E	Self-tuning setting	R/W			
	23F	25F	27F	29F	Self-tuning flag	R			



6.5.4 A1S62TCTT(BW)-S2/A1S62TCRT(BW)-S2 and Q series modules

	Α	1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2		
Address (I	nexadecimal)	Name	Read/write	
CH1	CH2	Name	Reau/write	
	0	Write data error code		
1	2	Decimal point position		
5	6	Alert occurrence details		
9	А	Temperature process value (PV)		
D	E	Heating manipulation value (MV)	R	
11	12	Increased temperature determination flag		
15	16	Heating transistor output flag		
19	1A	Heater current process value		
	1D	Cooling contact temperature process value*1		
	1E			
	1F	System area (Use prohibited)	-	
20	40	Input range		
21	41	Stop mode setting		
22	42	Set value (SV) setting		
23	43	Heating proportional band (Ph) setting		
24	44	Integral time (I) setting		
25	45	Derivative time (D) setting	R/W	
26	46	Alert set value 1		
27	47	Alert set value 2		
28	48	Alert set value 3		
29	49	Alert set value 4		
2A	4A	Heating-cooling upper output limiter setting		
2B	4B	Cyatam area (Han prohibited)		
2C	4C	System area (Use prohibited)	-	
2D	4D	Sensor compensation value setting	R/W	
2E	4E	System area (Use prohibited)	-	
2F	4F	Heating control output cycle setting		
30	50	First-order delay digital filter setting	R/W	
31	51	Control response parameter		•
32	52	System area (Use prohibited)	_	
33	53	Gystem area (Ose prombited)		
34	54	Setting change rate limiter	R/W	
35	55	System area (Use prohibited)	_	
36	56			
37	57	Upper setting limiter		
38	58	Lower setting limiter	R/W	
39	59	CT selection		
3A	5A	Heater wire breakage alert setting		
3B	5B	System area (Use prohibited)	_	
3C	5C			
3D	5D	Not used channel setting	R/W	

^{*1} For the A1S62TCRT(BW), this area is prohibited to use.

^{*2} For the Q64TCRT(BW)N, this area is prohibited to use.

Add	dress (hexadecimal)	Nome	Bood/write
CH1	CH2	Name Name	Read/write
	0	Write data error code	
1	2	Decimal point position	
5	6	Alert definition	
9	A	Temperature process value (PV)	
D	E	Manipulated value for heating (MVh)	
11	12	Temperature rise judgment flag	R
15	16	Heating transistor output flag	
19	1A	Set value (SV) monitor	
	1D	Cold junction temperature process value*2	
	1E	MAN mode shift completion flag	
	1F	E ² PROM's PID constants read/write completion flag	
20	40	Input range	
21	41	Stop mode setting	
22	42	Set value (SV) setting	
23	43	Heating proportional band (Ph) setting	
24	44	Integral time (I) setting	
25	45	Derivative time (D) setting	
26	46	Alert set value 1	
27	47	Alert set value 2	
28	48	Alert set value 3	
29	49	Alert set value 4	
2A	4A	Upper limit output limiter	D.0.4
2B	4B	Lower limit output limiter	R/W
2C	4C	Output variation limiter setting	
2D	4D	Sensor correction value setting	
2E	4E	Adjustment sensitivity (dead band) setting	
2F	4F	Heating control output cycle setting	
30	50	Primary delay digital filter setting	
31	51	Control response parameter	
32	52	AUTO/MAN mode shift	
33	53	MAN output setting	
34	54	Setting change rate limiter	
35	55	AT bias	
36	56	System area (Use prohibited)	-
37	57	Upper limit setting limiter	R/W
38	58	Lower limit setting limiter	FX/VV
39	59	System area (Use prohibited)	-
3A	5A	Heater disconnection alert setting	R/W
3B	5B	System area (Use prohibited)	
3C	5C	System area (Use prombhed)	_
3D	5D	Unused channel setting	R/W

	A1S	62TCTT(BW)-S2, A1S62TCRT(BW)-S2		
Address (h	exadecimal)	Name	Read/write	
CH1	CH2	Name	Reau/write	
3E	5E	System area (Use prohibited)		
3F	5F	- System area (Ose prombited)	-	
A	10	Alert alarm 1 mode setting		
A	.1	Alert alarm 2 mode setting		
A	\ 2	Alert alarm 3 mode setting		
A	.3	Alert alarm 4 mode setting		
A	4	Alert blind section setting		
A	. 5	Number of alert delays		
^	.6	Number of delays for heater wire breakage/current		
<i>F</i>	Ю	error detection when output is turned off	R/W	
A	.7	Temperature increase complete range setting		
A	.8	Temperature increase complete soak time setting		
A	.9	PID continue flag		
Д	A	Heater voltage compensation function setting		
AB	AC	Standard heater current value		
Α	F	Transistor output monitor ON delay time setting		
Е	30	CT monitor method switch		
B1	B2	Heating manipulated value (MV) (0 to 4000)	R	
E	35			
	36	Cyctom area (Llos probibited)		
	37	System area (Use prohibited)	-	
B8	В9			
	0			
C0	C1	Cooling manipulated value (MV)		
C2	C3	Cooling manipulated value (MV) (0 to 4000)	R	
C4 C5		Cooling transistor output flag	-	
CF		Cooling method setting		
D0	E0	Cooling proportional band (Pc) setting	╡	
D1	E1	Cooling upper output limiter	R/W	
D2	E2	Cooling control output cycle setting		
D3	E3	Overlap/dead band		

⊠Point -

Default values for A series modules and Q series modules may be different.

To apply an A series program using a default value to a Q series module, review the program.

For details, refer to the user's manual for the Q series module used.

6 HEATING-COOLING TEMPERATURE CONTROL MODULE/

		CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN	
Address (h CH1	exadecimal) CH2	Name	Read/write
3E	5E	E ² PROM's PID constants read instruction	R/W
3F	5F	Automatic backup setting after auto tuning of PID constants	R/VV
A	\ 0		
,	\1	Custom and (Hear ashibited)	
,	\2	System area (Use prohibited)	-
A	\ 3		
Į.	\4	Alert dead band setting	
Į.	\ 5	Number of alert delay	
,	1 6	Heater disconnection/output off-time current error detection	
,	10	delay count	DAM
A	\ 7	Temperature rise completion range setting	R/W
Į.	\ 8	Temperature rise completion soak time setting	
,	\ 9	PID continuation flag	
A	NA .	Heater disconnection correction function selection	
AB	AC	System area (Use prohibited)	-
A	\F	Transistor output monitor ON delay time setting	
	30	CT monitor method switching	R/W
		Manipulated value of heating (MVh) for output with another	
B1	B2	analog module	R
_		Resolution of the manipulated value for output with another	
E	35	analog module	-
E	36	Cold junction temperature compensation selection	R/W
	37	Control switching monitor	R
B8	B9	Auto tuning mode selection	R/W
	to BF	System area (Use prohibited)	
C0 D0		Alert 1 mode setting	
C1	D1	Alert 2 mode setting	
C2	D2	Alert 3 mode setting	R/W
C3	D3	Alert 4 mode setting	
1	to		
100 1	to 107	Heater current process value	R
	to 10F	CT input channel assignment setting	
	to 117	CT selection	R/W
	to 11F	Reference heater current value	
	to		
2B8	2B9	Temperature conversion setting	R/W
	to		
2C0	2C1	Manipulated value for cooling (MVc)	R
1	to		
2C4	2C5	Manipulated value of cooling (MVc) for output with another	R
		analog module	
	to		
2C8	2C9	Cooling transistor output flag	R
	to		
	CF	Cooling method setting	
2D0	2E0	Cooling proportional band (Pc) setting	
2D1	2E1	Cooling upper limit output limiter	R/W
2D2	2E2	Cooling control output cycle setting	
2D3	2E3	Overlap/dead band setting	

7

HIGH-SPEED COUNTER MODULE REPLACEMENT

7.1 List of High-Speed Counter Module Alternative Models for Replacement

AnS/QnAS	series		Transition to Q series
Product	Model	Model	Remarks (Restrictions)
		QD62	1) External wiring : Terminal block wiring → Connector wiring Cable size is changed. 2) Number of slots : Not changed 3) Counting speed : Can be switched (200KPPS, 100KPPS, or 10KPPS). 4) Counting range : 32-bit signed binary (-2147483648 to 2147483647) Program does not need to be reviewed. 5) Program : The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 6) Performance specifications: Not changed 7) Function specifications: Limit switch output function → Coincidence output function (Two coincidence detection output points can be
High-speed counter	A1SD61	QD62-H01* ¹	set.) 1) External wiring : Terminal block wiring → Connector wiring Cable size is changed. 2) Number of slots : Not changed 3) Counting speed : Changed (50KPPS) 4) Counting range : 32-bit signed binary (-2147483648 to 2147483647) Program does not need to be reviewed. 5) Program : The number of occupied I/O points, I/O signals and buffer memory addresses are changed. 6) Performance specifications: Not changed 7) Function specifications: Limit switch output function → Coincidence output function (Two coincidence detection output points can be set.)
module		QD62-H02 ^{*1}	1) External wiring : Terminal block wiring → Connector wiring Cable size is changed. 2) Number of slots : Not changed : Changed (1-phase input: 10KPPS, 2-phase input: 7KPPS) 4) Counting range : 32-bit signed binary (-2147483648 to 2147483647) Program does not need to be reviewed. 5) Program : The number of occupied I/O points, I/O signals and buffer memory addresses are changed. 6) Performance specifications: Not changed 7) Function specifications: Limit switch output function → Coincidence output function (Two coincidence detection output points can be set.)
	A1SD62 QD62		1) External wiring : Terminal block wiring → Connector wiring Cable size is changed. 2) Number of slots : Not changed : Can be switched (200KPPS, 100KPPS, or 10KPPS). 4) Counting range : 24-bit binary (0 to 16777215) → 32-bit signed binary (-2147483648 to 2147483647) Program needs to be reviewed. 5) Program : The number of occupied I/O points, I/O signals and buffer memory addresses are changed. 6) Performance specifications: Not changed 7) Function specifications: Not changed

AnS/QnAS	series		Transition to Q series
Product	Model	Model	Remarks (Restrictions)
	A1SD62E	QD62E	1) External wiring : Terminal block wiring → Connector wiring Cable size is changed. 2) Number of slots : Not changed : Can be switched (200KPPS, 100KPPS, or 10KPPS). 4) Counting range : 24-bit binary (0 to 16777215) → 32-bit signed binary (-2147483648 to 2147483647) Program needs to be reviewed. 5) Program : The number of occupied I/O points, I/O signals and buffer memory addresses are changed. 6) Performance specifications: Not changed
High-speed counter module	A1SD62D, A1SD62D-S1	QD62D	7) Function specifications: Not changed 1) External wiring : Terminal block wiring → Connector wiring Cable size is changed. 2) Number of slots : Not changed 3) Counting speed : Can be switched (500KPPS, 200KPPS, 100KPPS, or 10KPPS). 4) Counting range : 24-bit binary (0 to 16777215) → 32-bit signed binary (-2147483648 to 2147483647) Program needs to be reviewed. 5) Program : The number of occupied I/O points, I/O signals and buffer memory addresses are changed. 6) Performance specifications: Not changed 7) Function specifications: Not changed

^{*1} An input filter system of the QD62-H01 and QD62-H02 is the same as that of A/AnS series high-speed counter modules. For this reason, modules can be replaced without considering the specifications of the existing pulse generator such as an encoder.

When replacing the A1SD61, select a module based on the specifications such as the counting speed.

⊠Point -

1) Module replacement

A pulse generator, such as an encoder, that is connected to an AnS series module can be connected to a Q series module. Check the operation of the device before actually used in the system because the operating environment (the external wiring method) differs.

2) Counting range of the counter

Counting range differs between AnS series modules and Q series modules.

To change the counting range so that the ranges will be the same in the modules before and after the replacement, program needs to be reviewed.

A1SD62(E/D/D-S1): 0 to 16, 777, 215 (24-bit unsigned binary)

A1SD61, QD62(E/D), QD62-H01/H02: -2,147,483,648 to 2,147,483,647(32-bit signed binary)

Wiring

An external wiring method differs between AnS series modules and Q series modules.

A1SD61, A1SD62 (E/D/D-S1): Wiring using a terminal block

QD62(E/D), QD62-H01/H02: Wiring using a connector

In module replacement, continuous use of the I/O signal wire with solderless terminal which has been used for the A1S61 or A1SD62 (E/D/D-S1) requires the change of the external wiring method as in (a) (b).

(a) Using the upgrade tool (a conversion adaptor)

The existing wiring for A1S61 and A1SD62 (E/D/D-S1) can be connected directly to the Q series modules using the upgrade tool (conversion adaptor) manufactured by Mitsubishi Electric Engineering Co., Ltd.

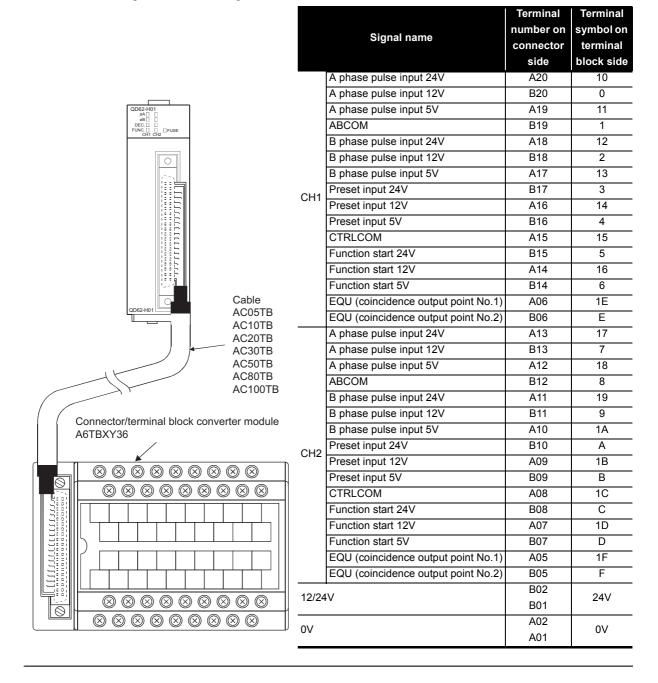
Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor	
	A1SD61	QD62 QD62-H01	ERNT-ASQTD61*1 — ERNT-ASQTD62*1	
Lligh anged counter module	Alobot	QD62-H02		
High-speed counter module	A1SD62	QD62		
	A1SD62E	QD62E		
	A1SD62D	QD62D	ERNT-ASQTD62D*1	

^{*1} Conversion adapter with fixture. Before using the conversion adapter with fixture, be sure to fasten its fixture to the base adapter or DIN rail mounting bracket using screws.

(b) Using the connector/terminal block converter module

Used for replacement when the Q series large type base unit and the conversion adapters manufactured by Mitsubishi Electric Engineering Co., Ltd. cannot be used due to the restrictions such as a system configuration and an installation location.

I/O cables with solderless terminal of the existing module can be continuously used without being aware of the existing wire size by rewiring the I/O cables with solderless terminal to the connector/terminal block converter module and connecting them by dedicated cables. This method, therefore, is helpful when there is not a sufficient space. The following figure shows the wiring method for using the connector/terminal block converter module.



7.2 A1SD61

7.2.1 Performance specifications comparison

(1) Comparison between A1SD61 and QD62

O: Compatible, △: Partial change required, ×: Incompatible

								(ا: Compatibl		change required, ×: Incompatible
Item				A1SD61		QD62		Compat- ibility	Precautions for replacement		
Nu	Number of occupied I/O points		32 points (I/O assignment: special 32 points)		(I/O assiç	16 points (I/O assignment: intelligent 16 points)		Δ	*1		
Nu	mber of chanr	nel	ls		1 channel			2 channels		0	
Со	Counting speed switch settings		ritch settings	50	DΚ	10K	200K (100K to 200KPPS)	100K (10K to 100KPPS)	10K (10KPPS or less)	0	Set the counting speed of the QD62 with the intelligent function module switch setting of GX Developer.
		Р	hase		1-	-phase inp	ut, 2-phase	input		0	
	Count input signal		ignal level φA, φB)			5VDC 12VDC 24VDC	2 to 5mA			0	*2
			ounting	1-phase input	50KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0	
			peed (Max.)	2-phase input	50KPPS	7KPPS	200KPPS	100KPPS	10KPPS		
		ra	ounting ange	32-bit signed binary (-2147483648 to 2147483647)						0	
		_	уре				inter + ring c	ounter funct	ion	0	
_		N	linimum coun	it pulse width, Duty ratio: 50%					-		
Performance specifications of 1 channel	Counter		(200KPPS)		-		2.5	2.5 (Unit : µm phase dif	ference	0	
Performance :			(100KPPS)	-		5 5 (Unit : μ s) (Minimum phase difference in 2-phase input: 2.5 μ s)		0			
			(50KPPS)		10 (Unit :			-	_	Δ	Set the counting speed of the QD62 to "100K".

O: Compatible, △: Partial change required, ×: Incompatible

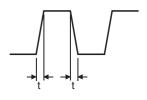
ltem		A1SD61		QD62		Compat- ibility	Precautions for replacement	
(Counting	g speed	switch setting)	50KPPS	10KPPS	200KPPS 100KPPS	10KPPS	-	
		Minimum count	t pulse width, Duty ratio: 50%				-	
Coun	Counter	(10KPPS) 1-phase input	100 50 50 (Unit :		100 50 50 (Unit:)		0	
specifications of 1 channel Magn CPU Magn		(10KPPS) 2-phase input	142 71 71 (Unit : μs) (2-phase input)		in 2-phase input:			
S Magr	Magnitude comparison between CPU and high-speed counter module	Comparison	32-bit signed binary			0		
du comp		range						
high-s		Comparison result	a contact: Dog ON address ≤ Count value ≤ Dog OFF address b contact Dog OFF address ≤ Count value ≤ Dog ON address		Set value < count Set value = count Set value > count	value	Δ	Two points can be set.
Exter input		Preset Function start	12/24VDC, 3/6mA 5VDC, 5mA		5/12/24VDC, 2 to	5mA	Δ	Since the external input specifications differ, check the specifications of external device.
Exter	External	Coincidence output	-		Transistor (sink type points/chann 12/24VDC, 0.5A/ 2A/commor	el point,	Δ	
outpu		Limit switch output	output 12/24VDC, 0.1A	Transistor (open collector) output 12/24VDC, 0.1A/point, 0.8A/common			Δ	Output currents differ.
Internal c (5VDC)	current c	onsumption	0.35A		0.30A		0	
Weight			0.27kg		0.11kg		0	

- *1 A program used before replacement can be utilized by setting the start I/O signal numbers of the modules mounted to the right of the QD62 so that they can be the same as that of the module before replacement.

 (Set the start number at "Start XY" of the I/O assignment tab. The number of occupied points of the QD62 cannot be changed.)
- *2 The rise/fall time of a pulse affects the counting speed. Countable counting speeds are as follows. Counting a pulse greater than t = 50μs may result in a miscount.

 (For the QD62)

Rise/fall time	Common to 1-phase input and 2-phase input				
Counter speed switch setting	200K	100K	10K		
t = 1.25µs or less	200KPPS	100KPPS	10KPPS		
t = 2.5µs or less	100KPPS	100KPPS	10KPPS		
t = 25µs or less	-	10KPPS	10KPPS		
t = 500µs	-	-	500KPPS		



(2) Comparison between A1SD61 and QD62-H01

 $O\colon Compatible, \triangle\colon Partial\ change\ required,\ \textbf{x}\colon Incompatible$

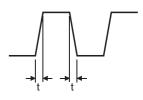
Item		A1SD61		QD62-H01	Compat- ibility	Precautions for replacement		
Number of occupied I/O points		32 points (I/O assignment: special 32 points)		16 points (I/O assignment: intelligent 16 points)	Δ	*1		
Nui	mber of chann	els		1 channel		2 channels	0	
Coi	unting speed s	swit	ch settings	50K	10K	50K	0	Set "2" at the intelligent function module switch setting.
		Ph	nase	1-phase	input, 2-pha	ase input	0	
	Count input signal		gnal level Α, φΒ)		5VDC 12VDC 24VDC }2 to 5mA			
		sp		1-phase input 50KPPS 2-phase input 50KPPS	10KPPS 7KPPS	1-phase input 50KPPS 2-phase input 50KPPS	0	*2
			ounting nge	32-bit signed binary	(-21474836	648 to 2147483647)	0	
		_	ре	UP/DOWN preset		ng counter function	0	
		Mi	nimum cou	nt pulse width, Duty ratio: 5	0%		-	
Performance specifications of 1 channel	Counter		Minimum count pulse width	20 10 10 (Unit : μs) (1-phase and 2-phase input) Set input rise time to 5μs or less.			0	
pecific	Magnitude		omparison nge	32-t	oit signed bi	ary		
Performance s	comparison between CPU and A1SD61/ QD62-H01	Comparison result		a contact: Dog ON address ≤ Cour Dog OFF addres b contact Dog OFF address ≤ Cou Dog ON address	ss nt value ≤	Set value < count value Set value = count value Set value > count value	0	
	External input	lFunction		12/24VDC, 3/6m 5VDC, 5mA	A	5/12/24VDC, 2 to 5mA	Δ	Since the external input specifications differ, check the specifications of external device.
	External output		oincidence itput	-	Transistor (sink type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common		Δ	Output currents differ.
	·	ou	mit switch tput	Transistor (open collector 12/24VDC, 0.1A/po 0.8A/common		-		
	ernal current c	ons	sumption	0.35A		0.30A	0	
We	ight			0.27kg		0.11kg	0	

- *1 A program used before replacement can be utilized by setting the start I/O signal numbers of the modules mounted to the right of the QD62-H01 so that they can be the same as that of the module before replacement.

 (Set the start number at "Start XY" of the I/O assignment tab. The number of occupied points of the QD62-H01 cannot be changed.)
- *2 The rise/fall time of a pulse affects the counting speed. Countable counting speeds are as follows. Counting a pulse greater than t = 50μs may result in a miscount.

 (For the QD62-H1)

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



(3) Comparison between A1SD61 and QD62-H02

 $O\colon \text{Compatible}, \Delta\colon \text{Partial change required, } \textbf{x}\colon \text{Incompatible}$

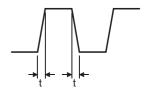
Item		n	A1SD61		QD62-H02	Compat- ibility	Precautions for replacement
Nur	Number of occupied I/O points		32 points (I/O assignment: special 32 points)		16 points (I/O assignment: intelligent 16 points)	Δ	*1
Nur	mber of chann	iels	1 channel		2 channels	0	
Cou	unting speed s	switch settings	50K	10K	10K	0	Set "2" at the intelligent function module switch setting.
		Phase	1-phase	input, 2-ph	ase input	0	
	Count input signal	Signal level (φA, φB)		5VDC 12VDC 24VDC }21		0	
		. ,	1-phase input 50KPPS 2-phase input 50KPPS	10KPPS 7KPPS	1-phase input 10KPPS 2-phase input 7KPPS	0	*2
		Counting range	32-bit signed binar	y (-2147483)	648 to 2147483647)	0	
		Туре			ng counter function	0	
		Minimum cour	nt pulse width, Duty ratio: 5	50%		-	
ns of 1 channel	Counter	Minimum count pulse width	142 50 50 (1-phase input) (2-phase input) (Unit: µs)				
atio			Set input i	rise time to 5	δμs or less.		
ecific	Magnitude	Comparison range	32-	bit signed bi	nary	0	
Performance specifications of 1 channel	comparison between CPU and A1SD61/ QD62-H02	Comparison result	a contact: Dog ON address ≤ Coul Dog OFF addres b contact Dog OFF address ≤ Coul Dog ON addres	ss int value ≤	Set value < count value Set value = count value Set value > count value	Δ	Two points can be set.
	External input	Preset Function start	12/24VDC, 3/6m 5VDC, 5mA	ıA	5/12/24VDC, 2 to 5mA	Δ	Since the external input specifications differ, check the specifications of external device.
	External output	Coincidence output	-		Transistor (sink type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common	Δ	Output currents differ.
	·	Limit switch output	Transistor (open collect 12/24VDC, 0.1A/p 0.8A/common	oint,	-		
	ernal current co DC)	onsumption	0.35A		0.30A	0	
We	ight		0.27kg		0.11kg	0	

- *1 A program used before replacement can be utilized by setting the start I/O signal numbers of the modules mounted to the right of the QD62-H02 so that they can be the same as that of the module before replacement.

 (Set the start number at "Start XY" of the I/O assignment tab. The number of occupied points of the QD62-H02 cannot be changed.)
- *2 The rise/fall time of a pulse affects the counting speed. Countable counting speeds are as follows. Counting a pulse greater than t = 50μs may result in a miscount.

 (For the QD62-H02)

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



7.2.2 Functional comparison

O: Available, -: Not available

ltem	Description	A1SD61	QD62 QD62-H01 QD62-H02	Precautions for replacement
Preset function	Changes the counter present value to a specified value.	0	0	
Disable function	Terminates counting.	0	0	
Ring counter function	Repeatedly executes counting between user's setting values.	0	0	For Q series modules, values are set with the intelligent function module switch setting of GX Developer.
Linear counter function	If the count exceeds the range, this function detects an overflow.	-	0	
Coincidence output function	Outputs a signal when the counter present value matches the preset value.	-	0	No.1 and No.2 coincidence output points can be set for each channel.
Limit switch output function	Outputs the ON/OFF signal when the present value of the limit switch output command counter matches the output status preset to a channel.	0	-	Use the coincidence output function instead. Note that the specifications (such as set point) are different.
Coincidence detection interrupt function	Generates an interrupt signal to the programmable controller CPU when coincidence is detected.	1	0	
Latch counter function	Latches the present value at the time a signal is input.	0	0	
Sampling counter function	Counts the pulse that was input during the sampling time set.	0	0	
Periodic pulse counter function	The function allows storing the present value in the periodic pulse count present value and the previous value in the periodic pulse count previous value for each period time set.	0	0	

7.2.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the High-Speed Counter Module User's Manual.

	A1S	D61			QD62, QD62-F	101, QD6	62-H02
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	Watchdog timer error flag	Y0		X0	Module ready	Y0	CH1 Coincidence signal No.1 reset command
X1	CH1 limit switch output status flag	Y1		X1	CH1 Counter value large (point No.1)	Y1	CH1 Preset command
X2	CH2 limit switch output status flag	Y2		X2	CH1 Counter value coincidence (point No.1)	Y2	CH1 Coincidence signal enable command
X3	CH3 limit switch output status flag	Y3		Х3	CH1 Counter value small (point No.1)	Y3	CH1 Down count command
X4	CH4 limit switch output status flag	Y4		X4	CH1 External preset request detection	Y4	CH1 Count enable command
X5	CH5 limit switch output status flag	Y5		X5	CH1 Counter value large (point No.2)	Y5	CH1 External preset detection reset command
X6	CH6 limit switch output status flag	Y6		X6	CH1 Counter value coincidence (point No.2)	Y6	CH1 Counter function selection start command
X7	CH7 limit switch output status flag	Y7	Han work he't and	X7	CH1 Counter value small (point No.2)	Y7	CH1 Coincidence signal No.2 reset command
X8	CH8 limit switch output status flag	Y8	Use prohibited	X8	CH2 Counter value large (point No.1)	Y8	CH2 Coincidence signal No.1 reset command
Х9	Limit switch output enable flag	Y9		Х9	CH2 Counter value coincidence (point No.1)	Y9	CH2 Preset command
XA	External preset command detection flag	YA		XA	CH2 Counter value small (point No.1)	YA	CH2 Coincidence signal enable command
ХВ	Error flag	YB		XB	CH2 External preset request detection	YB	CH2 Down count command
XC	Fuse/external power cutoff detection flag	YC		XC	CH2 Counter value large (point No.2)	YC	CH2 Count enable command
XD	Sampling/periodic counter flag	YD		XD	CH2 Counter value coincidence (point No.2)	YD	CH2 External preset detection reset command
XE		YE		XE	CH2 Counter value small (point No.2)	YE	CH2 Counter function selection start command
XF		YF		XF	Fuse broken detection flag	YF	CH2 Coincidence signal No.2 reset command
X10		Y10	Count enable command				
X11		Y11	Decrement count command				
X12		Y12	Preset command	1			
X13	Use prohibited	Y13	Ring counter command	1			
X14		Y14	Counter function selection start command				
X15		Y15	Limit switch output command				
X16		Y16	External preset command detection reset command				
X17		Y17	Error reset command	1			

	A1SD61										
Device	Signal name	Device	Signal name								
No.	Signal name	No.	Signal name								
X18		Y18									
X19		Y19									
X1A		Y1A									
X1B	Use prohibited	Y1B	Use prohibited								
X1C	Ose prombited	Y1C	Ose prombited								
X1D		Y1D									
X1E		Y1E									
X1F		Y1F									

7.2.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the High-Speed Counter Module User's Manual.

	A1SD61			QD62, QD62-H01, QD62-H02							
A al alua a a				Add	ress						
Address	Name		Read/write	(dec	imal)	Name		Read/write			
(decimal)				CH1	CH2						
0	Present value	(L)		0	32	Drocet value setting	(L)	R/W			
1	Present value	(H)	R	1	33	Preset value setting	(H)	R/VV			
2	Counter function selection count	(L)	T K	2	34	Present value	(L)	R			
3	value	(H)		3	35	Fresent value		I N			
4	Pulse input mode setting			4 36		Coincidence output point set No.1	(L)				
5	Counter function selection setting			5	37	Confidence output point set No. 1	(H)	R/W			
6	Preset value setting	(L)		6	38	Coincidence output point set No.2	(L)				
7	Treset value setting	(H)		7	39	Complete Set 140.2	(H)				
8	Ring counter value setting	(L)		8	40	Overflow detection flag		R			
9	(F			9	41	Counter function selection setting		R/W			
10	Sampling/periodic time setting		_	10	42	Sampling/periodic setting					
11	Write data error code		=	11	43	Sampling/periodic counter flag	(L)				
				12	44	Latch count value		R			
12 to 28	CH1 limit switch output data setting		13	45		(H)					
		-	14	46	Sampling count value	(L)					
				15	47		(H)				
29 to 45	CH2 limit switch output data setting	16		48	Periodic pulse count previous value	(L)					
			-	17	49		(H)	<u> </u> -			
40.4- 00			D 444	18	50	Periodic pulse count present value	(L)				
46 to 62	CH3 limit switch output data setting		R/W	19	51		(H)				
			_	20	52	Ring counter minimum value	(L) (H)	-			
63 to 79	CH4 limit switch output data setting			22	53 54		(L)	R/W			
03 10 79	CH4 IIIIII SWIICH Output data Setting			23	55	Ring counter maximum value	(H)	-			
			-	24 to	56 to		(11)	_			
80 to 96	CH5 limit switch output data setting			31	63	System area (Use prohibited)		-			
			=	31	00			1			
97 to 113	CH6 limit switch output data setting										
07 10 110	orio mini ovinori odipat data ootinig										
114 to 130	CH7 limit switch output data setting										
1011			-								
131 to	CH8 limit switch output data setting										
147											

7.3 A1SD62(E/D/D-S1)

7.3.1 Performance specifications comparison

(1) Comparison between A1SD62 and QD62

O: Compatible, △: Partial change required, ×: Incompatible

	lten	n		A1SD62			QD62		Compat- ibility	Precautions for replacement
Nur	Number of occupied I/O points			32 points (I/O assignment: special 32 points)			16 points gnment: inte points)	lligent 16	Δ	The number of occupied I/O points has changed to 16 points.
Nur	Number of channels				2 c	hannels			0	
Counting speed switch settings			10	00K	10K	200K 100K 10K (100K to (10K to (10KPPS) 200KPPS) 100KPPS) or less)		0	Set the counting speed of the QD62 with the intelligent function module switch setting of GX Developer.	
<u> </u>		Phase		1-phase input, 2-phase input						
of 1 channel	Count input signal	Signal level (φA, φB)			5VDC 12VDC 24VDC	2 to 5mA	2 to 5mA			
		Counting speed (Max.)	1-phase input 2-phase	100KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0	
spec			input	1001(113	71013	2001(113	1001(113	101(113		
Performance specifications	Counter	Counting range		it unsigned to 16,777,2	•		bit signed bir 3648 to 214	•	Δ	Since the QD62 uses 32-bit signed binary values, sequence program needs to be changed.
Δ.		Туре		UP/DOWN	preset cou	nter + ring c	ounter functi	on	0	

 $O\colon \text{Compatible}, \triangle\colon \text{Partial change required, } \textbf{x}\colon \text{Incompatible}$

	Item		A1SD62	QD62	Compat- ibility	Precautions for replacement
		Minimum coun	t pulse width, Duty ratio: 50%		-	·
		(200KPPS)	•	2.5 2.5 (Unit : μ s) (Minimum phase difference in 2-phase input: 1.25 μ s)		
Counter	Counter	(100KPPS)	(Minimum phase difference	Unit : μs) se in 2-phase input: 2.5μs)	0	
Performance specifications of 1 channel company of		(10KPPS) 1-phase input	20 (Unit : \mu s)	$50 \ 50$ (Unit : μ s) (Minimum phase difference		
Performano		(10KPPS) 2-phase input	(1-phase input) 142 71 71 (Unit : μs) (2-phase input)	in 2-phase input: 25μs)		
Magnitud		Comparison range	24-bit unsigned binary	32-bit signed binary	0	
between and high- speed co module	-	Comparison result		count value count value count value	0	
External	input	Preset	5/12/24VD0		0	
		Function start	5/12/24VD0		0	
External	output	Coincidence output	Transistor (sin 12/24VDC, 0.5A/ţ 1 point/channel	ok type) output point, 2A/common 2 points/channel	0	
Internal curre	Internal current consumption (5VDC)		0.1A	0.3A	Δ	Recalculation of internal current consumption (5VDC) is required.
Weight			0.25kg	0.11kg	0	

(2) Comparison between A1SD62E and QD62E

O: Compatible, △: Partial change required, ×: Incompatible

							<u> </u>		: Compatible		change required, ×: Incompatible		
	Iter	n			A1SD62E			QD62E		Compat- ibility	Precautions for replacement		
					32 points			16 points			The number of occupied I/O		
Nu	mber of occup	ied	I I/O points	(I/O ass	signment: s		(I/O assignment: intelligent 16			Δ	points has changed to 16		
				points)				points)			points.		
Nu	mber of chann	els	5			2 cł	nannels	T	T	0			
Со	unting speed s	swif	tch settings	10	00K	10K	200K (100K to 200KPPS)	100K (10K to 100KPPS)	10K (10KPPS or less)	0	Set the counting speed of the QD62E with the intelligent function module switch setting of GX		
									Developer.				
	Count input		hase		1		ut, 2-phase i	nput		0			
	Count input signal		ignal level λΑ, φΒ)	5VDC 12VDC 24VDC }2 to 5mA						0			
		С	ounting	1-phase input	100KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0			
		s	peed (Max.)	2-phase input	100KPPS	7KPPS	200KPPS	100KPPS	10KPPS				
		Coo			it unsigned to 16,777,2	-		oit signed bir 3648 to 214	-	Since the QD62E uses 32 bit signed binary values, sequence program needs be changed.			
		T	уре	1	UP/DOWN	preset cour	nter + ring co	ounter functi	on	0			
		M	linimum cou	nt pulse w	idth, Duty ra	atio: 50%				-			
Performance specifications of 1 channel		(200KPP			-		(Minimu	2.5 (Unit: £	ference				
Performance speci	Counter		(100KPPS)	(N	Minimum ph		(Unit : μs)	se input: 2.5	ius)	0			
		(10KPF 1-phase input		50	00 50 (Unit :	: μs)	50	00 50 (Unit : μ m phase dif	(s)				
			(10KPPS) 2-phase input	71,	42 71 (Unit 2)		-	hase input:					

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

	Item		A1SD62E	QD62E	Compat- ibility	Precautions for replacement
nnel	Magnitude	Comparison	24-bit unsigned binary	32-bit signed binary	0	
specifications of 1 channel	comparison between CPU and high-speed counter module	Comparison result	Set value	< count value = count value > count value	0	
	External	Preset		DC, 2 to 5mA	0	
2	input	Function start	5/12/24VI	DC, 2 to 5mA	0	
Performance	External output	Coincidence output	`	urce type) output point, 0.4A/common 2 points/channel	0	
Int	Internal current consumption (5VDC)		0.1A	0.33A	Δ	Recalculation of internal current consumption (5VDC) is required.
We	Weight		0.25kg	0.11kg	0	

(3) Comparison between A1SD62D and QD62D

O: Compatible, △: Partial change required, ×: Incompatible

	Ite	m	A1S	SD62D			QD6	52D		Compat- ibility	Precautions for replacement
Nui	mber of occ	upied I/O	(I/O assignm	points nent: sp pints)	ecial 32	(I/O ass	16 po signment: in	oints telligent 16 _l	Δ	The number of occupied I/O points has changed to 16 points.	
Nu	mber of cha	nnels				2 channe	ls			0	
	unting speed tings	d switch	200K		10K	500K (200K to 500KPPS)	(200K to (100K to (10K to 500KPPS) 200KPPS) 100KPPS) or less)			0	Set the counting speed of the QD62D with the intelligent function module switch setting of GX Developer.
	Count	Phase			1-phas	e input, 2-p	hase input			0	
	input	Signal level					rential line d			0	
	signal	(φA, φB)		S31 [m	anufactur	ed by Texas	s Instrument	ts] or equiva	lent)		
		Counting speed (Max.)	input 2-phase	KPPS KPPS	10KPPS 7KPPS	500KPPS	200KPPS	100KPPS	10KPPS	0	
		Counting range	24-bit uns (0 to 16	5,777,2 ⁻	15)			0 21474836	Δ	Since the QD62D uses 32-bit signed binary values, sequence program needs to be changed.	
<u> </u>		Туре				t counter +	ring counter	r function		0	
anne		Minimum cou	nt pulse width,	, Duty r	atio: 50%	-					
formance specifications of 1 channel	Counter	(500KPPS) -						Jnit : μs) use differenc nput: 0.5μs)	е		
Performa		(200KPPS)	(M	linimum		5 2.5 (Unit	: μs) 2-phase inp	ut: 1.25µs)		0	
		(100KPPS)		-		- (M	10 5 5 (L	Jnit : μs) ase differenc	e		

 $O \colon \mathsf{Compatible}, \Delta \colon \mathsf{Partial} \ \mathsf{change} \ \mathsf{required}, \ \mathsf{x} \colon \mathsf{Incompatible}$

	lte	em	A1SD62D			QD	62D		Compat- ibility	Precautions for replacement
(Co	ounting speed	switch settings)	200K	10K	500K	200K	100K	10K	-	
		Minimum count	pulse width, Duty rat	io: 50%					-	
Performance specifications of 1 channel	Counter	(10KPPS) 1-phase input	100 50 50 (Unit : (1-phase inp	<i>μ</i> s) ut)	_	100 50 50 (Unit : μs) (Minimum phase difference				
		(10KPPS) 2-phase input	142 71 71 (Unit :			n 2-phase i		0		
e speci	Magnitude comparison	Comparison range	24-bit unsigned	binary		32-bit sigr	ned binary		0	
Performano	between CPU and high-speed counter module	Comparison result	nt value nt value nt value			0				
		Preset			DC in	DC input: 5/12/24VDC, 2 to 5mA				TI 00000 1
	External input Function start		5/12/24VDC, 2 t	o 5mA		al input: El. fferential lir conne	ne driver m		0	The QD62D supports both DC input and differential input.
	External	Coincidence			or (sink typ					
	output	output			0.5A/point	, 2A/comm	on		0	
	Catput	output	1 point/chan	nel		2 points	/channel			
	ernal current (consumption	0.25A			0.3	8A		Δ	Recalculation of internal current consumption (5VDC) is required.
We	eight eight		0.25kg			0.1	2kg		0	

(4) Comparison between A1SD62D-S1 and QD62D

O: Compatible, △: Partial change required, ×: Incompatible

	If	tem	A1SD62D	·S1		QD6	62D		Compat- ibility	Precautions for replacement
Nui		cupied I/O	32 point (I/O assignment: points)		(I/O ass	16 po signment: in		Δ	The number of occupied I/O points has changed to 16 points.	
Nu	mber of ch	annels	2 channels						0	
Counting speed switch settings			200K	10K	500K (200K to 500KPPS)				0	Set the counting speed of the QD62D with the intelligent function module switch setting of GX Developer.
	Count	Phase	1-phase input, 2-phase input							
	input Signal level EIA Standard RS-422-A Differential line driver level signal (φA, φB) (AM26LS31 [manufactured by Texas Instruments] or equivalent)							0		
	signal	(φA, φB)	<u> </u>	manufactu	red by Texa	s Instrumen	ts] or equiva	alent)		
		Counting speed (Max.)	1-phase input 200KPP 2-phase input 200KPP	10KPPS 7KPPS	500KPPS	200KPPS	100KPPS	10KPPS	0	
		Counting range	24-bit unsigned binary 32-bit signed binary (0 to 16,777,215) (-2147483648 to 2147483647)							Since the QD62D uses 32-bit signed binary values, sequence program needs to be changed.
<u> </u>		Туре	UP/D	OWN prese	et counter +	ring counte	r function		0	
anne		Minimum count	pulse width, Duty	atio: 50%	-					
ormance specifications of 1 channel	Counter	(500KPPS)	-			linimum pha n 2-phase ir				
Performa		(200KPPS)	(Minim	2.	5 2.5 (Unit		out: 1 25us)		0	
		(100KPPS)	-	ani pilase u	- (M	ifference in 2-phase input: 1.25μs) 10 5 5 (Unit : μs) (Minimum phase difference in 2-phase input: 2.5μs)				

 $\bigcirc : Compatible, \triangle : Partial \ change \ required, \ \textbf{x} : Incompatible$

	lte	em	A1SD62D-S	1	QD62D				Compati- bility	Precautions for replacement
(Co	ounting speed	switch settings)	200K	10K	500K	200K	100K	10K	-	
		Minimum count	pulse width, Duty rat	io: 50%					-	
	Counter	(10KPPS) 1-phase input	100 50 50 (1-phase inp			100 50 50 (Unit : μs)				
Performance specifications of 1 channel		(10KPPS) 2-phase input	71 71 (Unit : (2-phase inp		1		ase differer nput: 25µs		0	
e speci	Magnitude comparison	Comparison range	24-bit unsigned	binary		32-bit sigr	ned binary		0	
Performanc	between CPU and high-speed counter module	Comparison result	Set value < count value Set value = count value						0	
	External Preset input		EIA Standard RS Differential line dri (AM26LS31 or equ	ver level uivalent)	Differenti	al input: El fferential lir	4VDC, 2 to A Standard ne driver m	RS-422-	0	The QD62D supports both DC input and differential input.
		Function start	5/12/24VDC, 2 to			conne	ectea.			
	External	Coincidence	11		or (sink typ	oe) output , 2A/comm	on		0	
	output	output	1 point/chani		J.J. Politi	2 points				
	Internal current consumption (5VDC)		0.25A			·	8A		Δ	Recalculation of internal current consumption (5VDC) is required.
We	eight		0.25kg			0.1	2kg		0	

7.3.2 Functional comparison

O: Available, -: Not available

Item	Description	A1SD62 (E/D/D-S1)	QD62(E/D)	Precautions for replacement
Preset function	Changes the counter present value to a specified value.	0	0	
Disable function	Terminates counting.	0	0	
Ring counter function	Repeatedly executes counting between user's setting values.	0	0	For the QD62(E/D), values are set with the intelligent function module switch setting of GX Developer.
Linear counter function	If the count exceeds the range, this function detects an overflow.	-	0	
Coincidence output function	Outputs a signal when the counter present value matches the preset value.	0	0	No.1 and No.2 coincidence output points can be set for each channel.
Coincidence detection interrupt function	Generates an interrupt signal to the programmable controller CPU when coincidence is detected.	-	0	
Latch counter function	Latches the present value at the time a signal is input.	0	0	
Sampling counter function	Counts the pulses that are input during the sampling time set.	0	0	
Periodic pulse counter function	The function allows storing the present value in the periodic pulse count present value and the previous value in the periodic pulse count previous value for each period time set.	0	0	

7.3.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the High-Speed Counter Module User's Manual.

	A1SD62(I	E/D/D-S	1)		QD62	2(E/D)	
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	CH1 Counter value large (point No.1)	Y0		X0	Module ready	Y0	CH1 Coincidence signal No.1 reset command
X1	CH1 Counter value coincidence (point No.1)	Y1		X1	CH1 Counter value large (point No.1)	Y1	CH1 Preset command
X2	CH1 Counter value small (point No.1)	Y2		X2	CH1 Counter value coincidence (point No.1)	Y2	CH1 Coincidence signal enable command
Х3	CH1 External preset request detection	Y3		Х3	CH1 Counter value small (point No.1)	Y3	CH1 Down count command
X4	CH2 Counter value large (point No.1)	Y4		X4	CH1 External preset request detection	Y4	CH1 Count enable command
X5	CH2 Counter value coincidence (point No.1)	Y5		X5	CH1 Counter value large (point No.2)	Y5	CH1 External preset detection reset command
X6	CH2 Counter value small (point No.1)	Y6		X6	CH1 Counter value coincidence (point No.2)	Y6	CH1 Counter function selection start command
X7	CH2 External preset request detection	Y7		X7	CH1 Counter value small (point No.2)	Y7	CH1 Coincidence signal No.2 reset command
X8*1	CH1 Counter value large (point No.2)	Y8	Use prohibited	X8	CH2 Counter value large (point No.1)	Y8	CH2 Coincidence signal No.1 reset command
X9*1	CH1 Counter value coincidence (point No.2)	Y9		Х9	CH2 Counter value coincidence (point No.1)	Y9	CH2 Preset command
XA ^{*1}	CH1 Counter value small (point No.2)	YA		XA	CH2 Counter value small (point No.1)	YA	CH2 Coincidence signal enable command
XB ^{*1}	CH2 Counter value large (point No.2)	YB		XB	CH2 External preset request detection	YB	CH2 Down count command
XC*1	CH2 Counter value coincidence (point No.2)	YC		XC	CH2 Counter value large (point No.2)	YC	CH2 Count enable command
XD*1	CH2 Counter value small (point No.2)	YD		XD	CH2 Counter value coincidence (point No.2)	YD	CH2 External preset detection reset command
XE	Fuse/external power cutoff detection flag	YE		XE	CH2 Counter value small (point No.2)	YE	CH2 Counter function selection start command
XF		YF		XF	Fuse broken detection flag	YF	CH2 Coincidence signal No.2 reset command
X10		Y10	CH1 Coincidence signal reset command				
X11		Y11	CH1 Preset command				
X12		Y12	CH1 Coincidence signal enable command				
X13		Y13	CH1 Down count command				
X14	Use prohibited	Y14	CH1 Count enable command				
X15		Y15	CH1 Count value read request				
X16		Y16	CH1 Count function selection start command				
X17		Y17	CH2 Coincidence signal reset command				
X18		Y18	CH2 Preset command				

	A1SD62(I	E/D/D-S1	1)
Device	Signal name	Device	Signal name
No.	orginal manno	No.	orginal flamo
X19		Y19	CH2 Coincidence signal
713		113	enable command
X1A		Y1A	CH2 Down count command
X1B		Y1B	CH2 Count enable command
X1C	Use prohibited	Y1C	CH2 Count value read
ХІО	, , , , , , , , , , , , , , , , , , , ,	110	request
X1D		Y1D	CH2 Count function
XID		1	selection start command
X1E		Y1E	Use prohibited
X1F		Y1F	Ose prombited

^{*1} These signals are use-prohibited in the A1SD62D-S1.

7.3.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the High-Speed Counter Module User's Manual.

		A1SD62(E/D/D-S1)			QD62(E/D)				
Add	ress				Add	ress			
(dec	imal)	Name		Read/write	(dec	imal)	Name		Read/write
CH1	CH2				CH1	CH2			
1	33	Preset value setting	(L)		0	32	Preset value setting	(L)	R/W
2	34	Freset value setting	(H)	R/W	1	33	Freset value setting	(H)	FC/VV
3	35	Pulse input mode setting			2	34	Present value (L		R
4	36	Present value	(L)	R	3	35	Tresent value		IX.
5	37	Fresent value	(H)	K	4	36	Coincidence output point set No.1	(L)	
6	38	Coincidence output point setting	(L)		5	37	Confedence output point set No. 1	(H)	R/W
7	39	No.1	(H)	R/W	6	38	Coincidence output point set No.2		17///
8	40	Counter function selection setting		IX/VV	7	39	Coincidence output point set No.2 (H)		
9	41	Sampling/periodic time setting			8	40	Overflow detection flag		R
10	42	External preset detection reset com	mand		9	41	Counter function selection setting		
11 ^{*1}	43 ^{*1}	Point No.2 coincidence signal reset command		W	10	42	Sampling/periodic setting		R/W
12 ^{*1}	44*1	Coincidence output point setting	(L)	DAM	11	43	Sampling/periodic counter flag		
13 ^{*1}	45 ^{*1}	No.2	(H)	- R/W	12	44	Lately according to	(L)	
14	46		(L)		13	45	Latch count value	(H)	
15	47	Latch count value	(H)	1	14	46		(L)	
16	48		(L)	1	15	47	Sampling count value	(H)	R
17	49	Sampling count value	(H)		16	48	Periodic pulse count previous	(L)	
18	50	Periodic pulse count previous	(L)	R	17	49	value	(H)	
19	51	value	(H)		18	50	Desire discondense and a second and a second and a	(L)	
20	52	Desirable contract contract contract	(L)	1	19	51	Periodic pulse count present value	(H)	
21	53	Periodic pulse count present value	(H)		20	52	Die e counte e minimum velve	(L)	
2	2	Sampling/periodic counter flag		1	21	53	Ring counter minimum value	(H)	R/W
					22	54	Dia a countan manina manina manina	(L)	R/VV
					23	55	Ring counter maximum value	(H)	
					24	56			
					to	to	System area (Use prohibited)		-
					31	63	63		

^{*1} These addresses are use-prohibited in the A1SD62D-S1.

POSITIONING MODULE REPLACEMENT

8.1 List of Positioning Module Alternative Models for Replacement

AnS	series		Transi	tion to Q series
Product	Model	Model		Remarks (Restrictions)
	A1SD70	QD73A1	2) Number of slots 3) Program	•
				(LED indication and function setting method)
	A1SD75P1-	QD75P1N*1 (when an open collector is connected)	2) Number of slots	 Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the
	S3	QD75D1N*1 (when a differential driver is connected)	4) Performance specificati 5) Function specificati	specifications change. fications: Not changed
	A1SD75P2-	QD75P2N*1 (when an open collector is connected)	2) Number of slots	Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the
Positioning	S3	QD75D2N*1 (when a differential driver is connected)	Performance specificati Function specificati	specifications change. fications: Not changed
module ^{*3}	A1SD75P3-	QD75P4N*1 (when an open collector is connected)	2) Number of slots	Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the
	S3	QD75D4N*1 (when a differential driver is connected)	4) Performance specificati 5) Function specificati	specifications change. fications: Not changed
	A1SD75M1	QD75M1	2) Number of slots 3) Program	 : Connector and wiring are changed. : Not changed : I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the specifications change. fications: Upward compatible ions: Partly changed (Example: Manual pulse generator 1/axis → 1/module)
	A1SD75M2	QD75M2	2) Number of slots 3) Program	Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the specifications change. fications: Upward compatible

AnS	series		Trans	ition to Q series
Positioning module	A1SD75M3	QD75M4	'	 Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the specifications change. Cifications: Upward compatible ations: Partly changed (Example: Manual pulse generator 1/axis → 1/module)

- *1 The QD75P\(\sigma\) and QD75D\(\sigma\) are the upward-compatibility for the QD75P\(\sigma\) and QD75D\(\sigma\) and their programs are the same when they are replaced.
 - Change the sequence program as necessary with checking the processing timing, because performances such as the starting time and data update cycle are improved.
- *2 When the A1SD70 being used in the setting that the negative voltage is output when the positioning address increases is replaced with the QD73A1, the wiring change between the A1SD70 and an encoder is required. For details, refer to Section 8.4.6.
- *3 The production of the A1SD71-S2/S7 was discontinued at the end of October 2004. For details, refer to the technical bulletin T12-0016.
 - When replacing the existing A1SD71-S2/S7 with "QD75P/QD75D", refer to the technical bulletin "FA-A-0060".

8.2 A1SD75P1-S3/P2-S3/P3-S3

8.2.1 Performance specifications comparison

O: Compatible, △: Partial change required, ×: Incompatible

	Model	A1SD75P1-	A1SD75P2-	A1SD75P3-	QD75P1N	QD75P2N	QD75P4N	•	Precautions for
Item		S3	S3	S3	QD75D1N	QD75D2N	QD75D4N	ibility	replacement
Number of co	ontrol axes	1	2	3	1	2	4	0	
Number of po	ositioning data		600/axis*1			600/axis		0	
Position control interpolation	2-axis linear interpolation	Not available	Available	Available	Not available	Available	Available (3-/4-axis linear interpolation : available)	0	
function	2-axis circular interpolation	Not available	Available	Available	Not available	Available	Available		
	Position control		Available			Available			
	Speed control		Available			Available			
Positioning system	Speed- position switching control		Available			Available		0	
	Position- speed switching control		Available			Available			

O: Compatible, △: Partial change required, ×: Incompatible

			O: Com	patible,∆: Parti	al change re	quired, ×: Incompatible
Model Item	A1SD75P1- A1SD75P2- A1SD75P3 S3 S3 S3	- QD75P1N QD75D1N	QD75P2N QD75D2N	QD75P4N QD75D4N	Compat- ibility	Precautions for replacement
	<absolute system=""></absolute>	<absolute sy<="" td=""><td>/stem></td><td>•</td><td></td><td></td></absolute>	/stem>	•		
	-214748364.8 to 214748364.7 (µm)	-214748364.	8 to 2147483	64.7 (µm)		
	/-13421772.8 to 13421772.7 (µm)					
	-21474.83648 to 21474.83647 (inch)	-21474.8364	8 to 21474.83	3647 (inch)		
	/-1342.17728 to 1342.17727 (inch)			, ,		
	0 to 359.99999 (degree)	0 to 359.999	99 (degree)			
	/0 to 359.99999 (degree)		, ,			
	-2147483648 to 2147483647 (pulse)	-2147483648	3 to 21474836	647 (pulse)		
	/-134217728 to 134217727 (pulse)			,		
	<incremental system=""></incremental>	<incrementa< td=""><td>l system></td><td></td><td></td><td></td></incrementa<>	l system>			
	-214748364.8 to 214748364.7 (µm)		8 to 2147483	64.7 (µm)		
	/-13421772.8 to 13421772.7 (µm)			ν,		
	-21474.83648 to 21474.83647 (inch)	-21474.8364	8 to 21474.83	3647 (inch)		
	/-1342.17728 to 1342.17727 (inch)			, ,		
Positioning range*2	-21474.83648 to 21474.83647 (degree) -21474.8364	8 to 21474.83	3647 (degree)	0	
r comorning range	/-1342.17728 to 1342.17727 (degree	´		(1.5		
	-2147483648 to 2147483647 (pulse)		3 to 21474836	647 (pulse)		
	/-134217728 to 134217727 (pulse)			(1)		
	<pre><!--n speed-position switching control--></pre>	<in speed-po<="" td=""><td>osition switchi</td><td>na control</td><td></td><td></td></in>	osition switchi	na control		
	0 to 214748364.7 (µm)		position-spee	J		
	/0 to 13421772.7 (µm)	control>	,	· · · · · · · · · · · · · · · · · ·		
	0 to 21474.83647 (inch)	0 to 2147483	364.7 (um)			
	/0 to 1342.17727 (inch)	0 to 21474.8	,			
	0 to 21474.83647 (degree)		3647 (degree)		
	/0 to 1342.17727 (degree)	0 to 2147483		,		
	0 to 2147483647 (pulse)		(1-1-1)			
	/0 to 134217727 (pulse)	<in speed-po<="" td=""><td>osition switchi</td><td>na control</td><td></td><td></td></in>	osition switchi	na control		
	,	(ABS mode)		J		
		0 to 359.999	99 (degree)			
	0.01 to 6000000.00 (mm/min)	_	0000.00 (mm	/min)		
	/0.01 to 375000.00 (mm/min)		,	,		
	0.001 to 600000.000 (inch/min)	0.001 to 200	0000.000 (inc	ch/min)		
*0	/0.001 to 37500.000 (inch/min)		•	,		
Speed command range*2	0.001 to 600000.000 (degree/min)	0.001 to 200	0000.000 (de	gree/min)	0	
	/0.001 to 37500.000 (degree/min)		•	,		
	1 to 1000000 (pulse/s)	1 to 1000000) (pulse/s)			
	/1 to 62500 (pulse/s)		" ,			
Machine OPR function	Aveilable (0.000 III II)		-1- (0.000	- 411 - \		
(OPR method)	Available (6 OPR methods)	Availal	ole (6 OPR m	etnods)	0	
JOG operation	Available		Available		0	

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

Item	Model	A1SD75P1- A1SD75P2- A1SD75P3- S3 S3 S3	QD75P1N QD75P2N QD75P4N QD75D1N QD75D2N QD75D4N		Precautions for replacement
Manual pulse function	egenerator	1 generator/axis	1 generator/module	Δ	On QD75P□N/QD75D□N, the manual pulse generator cannot be used by each axis independent. When connecting the manual pulse generator for each axis is required, use one axis module. The manual pulse generator itself can use the same one. The operation for inputting one pulse differs. Set the parameter so that movement amount may be same.
Starting time		20ms	1.5 to 2.0ms (when other axes are starting: 1.5 to 2.0ms + 0.1ms to 0.5ms)	0	The starting time becomes fast. Check the processing timing.
	Automatic trapezoidal acceleration/ deceleration S-curve	Available	Available	0	
processing	acceleration/ deceleration	Available	Available		
Acceleration /deceleration time	Number of patterns Setting range Sudden stop deceleration	Acceleration time and deceleration time can be set independently. (4 patterns each) Switching is possible. 1 to 65535ms or 1 to 8388608ms Changeover between 1 to 65535ms/ 1 to 8388608ms possible	Acceleration time and deceleration time can be set independently. (4 patterns each) 1 to 8388608ms 1 to 8388608ms	0	
Compensation	n	Electronic gears, backlash compensation, near pass*3	Electronic gears, backlash compensation, near pass*3	Δ	Refer to *3.
Error display		17-segment LED	Error LED	×	To check details of diagnostics, use GX Developer.
History data s error, warning	storage (Start, g)	Provided (4 types, 16 items/module)	Provided (3 types, 16 items/axis)	0	The start history at error is integrated into the start history.
Data storage	destination	Flash ROM (battery-less backup)	Flash ROM (battery-less backup)	0	

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

		-		_	quired, ×: Incompatible
Model Item	A1SD75P1- A1SD75P2- A1SD75P3- S3 S3 S3	QD75D1N QD75D2N C	QD75P4N C QD75D4N	ompat- ibility	Precautions for replacement
	10136-3000VE (Soldering type, supplied)	A6CON1 (Soldering type, straight-o sold separately) A6CON2	out type,		As the connectors
Connection connector	10136-6000EL (IDC type, sold separately)	(Crimping type, straight-o sold separately) A6CON4 (Soldering type, straight-out out type, sold separat	t/diagonal-		differ, wiring change is required. The connectors of QD75P□N/
Applicable wire size	10136-3000VE: 24 to 30 AWG (approx. 0.05 to 0.2 mm ²) 10136-6000EL:	A6CON1, A6CON4: 0.3 (22 AWG) A6CON2: 24 AWG	3mm ²	Δ	QD75D□N are sold separately.
	28 AWG (approx. 0.08 mm ²)	AUCUNZ. 24 AVVG	7		
Command pulse output system	Differential driver/Open collector	QD75P□N: Open colle QD75D□N: Differential	driver		The differential driver and the open collector are separate module. In initial condition, A1SD75P□-S3 outputs with positive logic, and QD75P□/D□ outputs with negative logic.
Maximum output pulse	When connected to open collector: 200kpps When connected to differential driver: 400kpps	When connected to open of 200kpps When connected to different 4Mpps		0	
Maximum connection distance between servos	When connected to open collector: 2m When connected to differential driver: 10m	When connected to open co When connected to differen 10m	tial driver:	0	
Internal current consumption (A) (5VDC)	0.7A or less (when connected to differential driver: 0.78A)*4	QD75P1N: QD75P2N: Q 0.29A 0.30A QD75D1N: QD75D2N: Q 0.43A 0.45A	QD75P4N: 0.36A QD75D4N: 0.66A	Δ	
Flash ROM write count	Max. 100,000 times	Max. 100,000 times		0	When QD75P□N/ QD75D□N carries out the flash write 26 times from the sequence program, an error occurs. The error reset enables to perform the flash write.
Number of occupied I/O points	32 points (I/O assignment: special 32 points)	32 points (I/O assignment: intelligent 3	32 points)	0	
Number of module occupied slots	1	1		0	
Weight	0.35kg	0.14kg 0.14kg	QD75P4N: 0.16kg QD75D4N: 0.16kg	0	

O: Compatible, △: Partial change required, ×: Incompatible

				U: Com		equired, ×: Incompatible	
Item	Model	A1SD75P1- A1SD75P2- A1SD75F S3 S3 S3	QD75P1N QD75D1N	QD75P2N QD75D2N	QD75P4N QD75D4N	Compat- ibility	Precautions for replacement
	STRT signal	Available (External start signal)	(integr	Not available ated into CHG	e G signal)	Δ	When using both the speed-position switching control and the external start, input the external start signal to the interrupt module, and start using the direct output.
I/O signal for external devices	CHG signal	Speed-position switching signal	start or s	command sign speed-position able with para	switching	Δ	The input response time differs. (Refer to Section 8.2.5.)
	In-position (INP)	Available (for monitoring purpose)		Not available	3	Δ	No INP signal. When it is required for monitor, monitor using the input module.
	Signal logic switching	Available (only Command pulse output signa	1)	Available		0	The default logic of pulse output differs.
	Near-point watchdog signal	Available		Available		Δ	The input response time differs. (Refer to Section 8.2.5.)
Peripheral	Connection with peripheral devices	Direct connection	controller C	ction via progra PU, Q corresp nunication mod ing MELSECN I/O module	onding serial dule, Q	0	The connection type differs.
devices (data setting, etc.)	AD75TU	Connectable		Not connectab	ile	×	AD75TU cannot be used. Use GX Configurator-QP.
	GX Configurator	GX Configurator-AP	G)	K Configurator	-QP	Δ	Available GX Configurator differs.

^{*1} With A1SD75P□-S3, Nos.1 to 100 data items/axis of positioning data can be set using the buffer memory and Nos.1 to 600 data/axis can be set with QD75P□N/QD75D□N.

The positioning data in the buffer memory is not backed up.

^{*2} Indicates the standard mode/stepping motor mode about A1SD75P□-S3.

^{*3} The near pass function is valid only during the continuous path control. (A1SD75P□-S3: Selected with parameters, QD75P□N/QD75D□N: Standard function)

 $QD75P\square N/QD75D\square N$ does not have address pass mode. When being asked for passing the positioning address, continue with continuous running. (However, it will stop once.)

^{*4} This is the internal current consumption when the A1SD75P3-S3 is connected to a differential driver.

8.2.2 Functional comparison

(1) Functions deleted from the A1SD75P1-S3/P2-S3/P3-S3

When the following functions are used with the A1SD75P□-S3, change the program.

Deleted function	Precautions for replacement
Stepping motor mode	The setting is not required when using stepping motor due to it's performance gain.
Fast machine OPR	With the QD75P\(\text{DN/QD75D}\(\text{DN}\), there is no possible function for replacement.
Special start (stop)	Execute it separately for the start two times.
	In the QD75P\(\text{DN/QD75D\(\text{DN}\)}\), the start block area on the buffer memory is expanded to five blocks (0
Indirect designation	to 4).
	Each start block can be directly designated with positioning start No. (7000 to 7004).
Block transfer	With the A1SD75P□-S3, this interface is used to set positioning data No. 101 to 600 that do not exist
	on the buffer memory.
Positioning data I/F	Since all positioning data can be set in the buffer memory with the QD75P□N/QD75D□N, this
	function is deleted.
Chart history during a sure	The contents are the same as the start history.
Start history during errors	Therefore, the QD75P□N/QD75D□N stores only the start history.
Cystom monitor data	These data were deleted because they can be displayed in system monitor "Module's detailed
System monitor data	information" of GX Developer.
(Module name, OS type, OS version)	(Refer to the GX Developer Operating Manual.)



(2) Functions changed from the A1SD75P1-S3/P2-S3/P3-S3

When the following functions are used with the A1SD75P \square -S3, make sure that there is no operation problem after the module is replaced with the QD75P \square N/QD75D \square N.

Changed function		Description				
	1. The software stroke limit check of	arc address is carried out only whe	en a sub point is designated.			
	It is not carried out when a center	point is designated.				
	2. The software stroke limit check during speed control is carried out in the following cases:					
	• When the software stroke limit is applied to the current feed value with Pr.14 and the current feed value is					
	updated with Pr.21					
	When the software stroke limit is approximately appro	•				
Software stroke limit	3. If an attempt is made to change the	-				
function		red as an error and the current valu	ue is not changed.			
	4. Error code change					
	A1SD75P□-S3:					
	There are 3 types of errors for eac QD75PDN/QD75DDN:	ch software stroke upper limit and lo	ower limit (error code: 509 to 512).			
	Errors for the software stroke upp	er limit are integrated into one (erro	or code: 507).			
	Errors for the software stroke lower	er limit are integrated into one (erro	r code: 508).			
	Error codes 509 to 512 are delete	d.				
Current value changing M	1. An error occurs when the designa	ted new current value is out of the	software stroke limit range.			
code function	2. The M code setting value is valid	during the positioning data current	value changing instruction.			
	1. An error occurs when the comma	nd frequency value calculated from	the speed limit value exceeds the			
Acceleration/deceleration	maximum command frequency of	the positioning module being used				
speed control	2. Only two-word type (1 to 8388608	ms) can be used as the setting value	ue for the acceleration/deceleration			
	time.					
	1. "Peripheral side (emergency) stop	" is deleted from the stop causes o	f Stop group 2 "sudden stop			
	selection".					
	"Test mode fault" in the stop caus	es of Stop group 3 "sudden stop se	lection" is changed to be in the stop			
Stop process and restart	causes of Stop group 2 "sudden stop selection".					
after stop positioning	2. "Stop (QD75 peripheral)" is added to the stop causes of Stop group 3 "sudden stop selection".					
operation stop	3. Error code 100 (Peripheral device	stop during operation) is deleted.				
	4. "Programmable controller CPU er	ror occurrence" is added to the stop	causes of Stop group 2 "Sudden			
	stop selection".					
	•					
		A1SD75P□-S3	QD75P□N/QD75D□N			
READY signal (X0)	OFF	A1SD75P□-S3 Normal (READY)	QD75P□N/QD75D□N Not READY/WDT error			
READY signal (X0)	·					
READY signal (X0) Manual pulse generator operation	OFF ON	Normal (READY) Not READY/WDT error	Not READY/WDT error			
Manual pulse generator operation	OFF ON The number of connectable manual p	Normal (READY) Not READY/WDT error ulse generators is changed from 1	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module.			
Manual pulse generator	OFF ON	Normal (READY) Not READY/WDT error ulse generators is changed from 1	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module.			
Manual pulse generator operation	OFF ON The number of connectable manual p	Normal (READY) Not READY/WDT error ulse generators is changed from 1 g d" and "Step error occurring" is cha	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. unged to "Error occurring".			
Manual pulse generator operation	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3:	Normal (READY) Not READY/WDT error ulse generators is changed from 1 g d" and "Step error occurring" is cha	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. unged to "Error occurring".			
Manual pulse generator operation	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev	Normal (READY) Not READY/WDT error ulse generators is changed from 1 g d" and "Step error occurring" is cha	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. unged to "Error occurring".			
Manual pulse generator operation Axis operation status	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de	Normal (READY) Not READY/WDT error ulse generators is changed from 1 gd" and "Step error occurring" is charged direction, the control is internated eleration stop)	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. anged to "Error occurring". ally changed into the continuous			
Manual pulse generator operation Axis operation status	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates	Normal (READY) Not READY/WDT error ulse generators is changed from 1 gd" and "Step error occurring" is charged direction, the control is internated eleration stop)	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. anged to "Error occurring". ally changed into the continuous			
Manual pulse generator operation Axis operation status	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N:	Normal (READY) Not READY/WDT error ulse generators is changed from 1 g d" and "Step error occurring" is char rerse direction, the control is internated error stop) in reverse direction with interpolation	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. anged to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status Continuous path control	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera	Normal (READY) Not READY/WDT error ulse generators is changed from 1 and "Step error occurring" is characterise direction, the control is internated error at the control is internated error occurring in reverse direction with interpolation is the same as that of the A1SI	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. anged to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control.	Normal (READY) Not READY/WDT error ulse generators is changed from 1 and "Step error occurring" is charged in the celeration stop) in reverse direction with interpolation is the same as that of the A1SI the near pass function is available.	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. anged to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status Continuous path control	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera	Normal (READY) Not READY/WDT error ulse generators is changed from 1 and "Step error occurring" is charged in the celeration stop) in reverse direction with interpolation is the same as that of the A1SI the near pass function is available.	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. anged to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status Continuous path control Near pass	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera For the continuous path control, only Positioning address pass is not condu	Normal (READY) Not READY/WDT error ulse generators is changed from 1 and "Step error occurring" is charged in the celeration and the celeration stop) in reverse direction with interpolation is the same as that of the A1SI the near pass function is available.	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. Inged to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera	Normal (READY) Not READY/WDT error ulse generators is changed from 1 and "Step error occurring" is charged in the celeration and the celeration stop) in reverse direction with interpolation is the same as that of the A1SI the near pass function is available.	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. langed to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera For the continuous path control, only Positioning address pass is not condu	Normal (READY) Not READY/WDT error ulse generators is changed from 1 and "Step error occurring" is charged in the celeration and the celeration stop) in reverse direction with interpolation is the same as that of the A1SI the near pass function is available.	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. langed to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera For the continuous path control, only Positioning address pass is not conductable.) The interpolation target axis can be referenced.	Normal (READY) Not READY/WDT error ulse generators is changed from 1 and "Step error occurring" is chase erse direction, the control is internated error at the celeration stop) in reverse direction with interpolation is the same as that of the A1SI the near pass function is available. Incted.	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. Inged to "Error occurring". ally changed into the continuous on, the control remains as the			
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed • Circular interpolation	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera For the continuous path control, only Positioning address pass is not conductable.) The interpolation target axis can be referenced.	Normal (READY) Not READY/WDT error ulse generators is changed from 1 generators are direction, the control is internal celeration stop) in reverse direction with interpolation is the same as that of the A1SE the near pass function is available. Indeed, andomly set with a positioning idented.	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. Inged to "Error occurring". ally changed into the continuous on, the control remains as the D75P□-S3.)			
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	OFF ON The number of connectable manual p "Step stopped" is changed to "Stoppe • A1SD75P□-S3: If the reference axis operates in rev positioning control. (restart after de • QD75P□N/QD75D□N: Even if the reference axis operates continuous path control. (In single-axis operation, the opera For the continuous path control, only Positioning address pass is not condu The interpolation target axis can be re 1. "Step stopped" is changed to "Sto	Normal (READY) Not READY/WDT error ulse generators is changed from 1 get and "Step error occurring" is charged in the control is internal celeration stop) in reverse direction with interpolation is the same as that of the A1SI the near pass function is available. Incted. andomly set with a positioning ident opped" and "Step error occurring" is	Not READY/WDT error Normal (READY) generator/axis to 1 generator/module. Inged to "Error occurring". ally changed into the continuous on, the control remains as the D75P□-S3.)			

Changed function		Description					
Command in position	The command in-position width is ex	panded.					
Command in-position function	AD75A1SD75P□-S3: 1 to 327670	000					
TUTCUOTI	• QD75P□N/QD75D□N: 1 to 2147	483647					
Positioning start No.	7004 to 7010 (block start designation	n) and 8000 to 8049 (indirect designa	ition) are deleted.				
block start data	With QD75P□N/QD75D□N, the nur	mber of blocks has been change to 5	(7000 to 7004).				
DIOCK Start data	(With the A1SD75P□-S3, this data i	s called "Positioning start information	".)				
Start history	The configuration of "start information" and "start No." is changed so that the start No. can be directly checked.						
Basic parameter1	When the programmable controller (CPU is powered ON or is reset, the va	alid value is only the first value after				
"Pr.5 Pulse output mode"	the programmable controller READY	signal (Y0) turns from OFF to ON.					
		A1SD75P□-S3	QD75P□N/QD75D□N				
Detailed parameters	0	Software stroke limit invalid for	Software stroke limit valid for				
"Pr.15 Software stroke limit	(Factory setting) manual operation manual operation						
valid/invalid setting"	1	Software stroke limit valid for Software stroke limit invalid for					
G	l l	manual operation	manual operation				

8.2.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the Type QD75P\(\text{D}\)N/QD75D\(\text{D}\)N Positioning Module User's Manual.

In	out (X)		Output (Y)				
Signal name	A1SD75P□-S3	QD75P□N/ QD75D□N	Signal name	A1SD75P□-S3	QD75P□N/ QD75D□N		
(A1SD75/QD75) READY	X00*	X00*	Axis 1 Positioning start	Y10	Y10		
Axis 1 Start complete	X01	X10	Axis 2 Positioning start	Y11	Y11		
Axis 2 Start complete	X02	X11	Axis 3 Positioning start	Y12	Y12		
Axis 3 Start complete	X03	X12	Axis 4 Positioning start	-	Y13		
Axis 4 Start complete	-	X13	Axis 1 Stop	Y13	Y04		
Axis 1 BUSY	X04	X0C	Axis 2 Stop	Y14	Y05		
Axis 2 BUSY	X05	X0D	Axis 3 Stop	Y1C	Y06		
Axis 3 BUSY	X06	X0E	Axis 4 Stop	-	Y07		
Axis 4 BUSY	-	X0F	Axis 1 Forward run JOG start	Y16	Y08		
Axis 1 Positioning complete	X07	X14	Axis 1 Reverse run JOG start	Y17	Y09		
Axis 2 Positioning complete	X08	X15	Axis 2 Forward run JOG start	Y18	Y0A		
Axis 3 Positioning complete	X09	X16	Axis 2 Reverse run JOG start	Y19	Y0B		
Axis 4 Positioning complete	-	X17	Axis 3 Forward run JOG start	Y1A	Y0C		
Axis 1 Error detection	X0A	X08	Axis 3 Reverse run JOG start	Y1B	Y0D		
Axis 2 Error detection	X0B	X09	Axis 4 Forward run JOG start	-	Y0E		
Axis 3 Error detection	X0C	X0A	Axis 4 Reverse run JOG start	-	Y0F		
Axis 4 Error detection	-	X0B	Programmable controller READY	Y1D	Y00		
Axis 1 M code ON	X0D	X04	Axis 1 Execution prohibition flag	-	Y14		
Axis 2 M code ON	X0E	X05	Axis 2 Execution prohibition flag	-	Y15		
Axis 3 M code ON	X0F	X06	Axis 3 Execution prohibition flag	-	Y16		
Axis 4 M code ON	-	X07	Axis 4 Execution prohibition flag	-	Y17		
Synchronization flag	-	X01		V00 to V05	V01 to V02		
Use prohibited	X10 to X1F	X02, X03, X18 to X1F	Use prohibited	Y00 to Y0F, Y1E to Y1F	Y01 to Y03, Y18 to Y1F		

^{*} The ON/OFF status for READY is different between the QD75P\(\text{D}\)75D\(\text{D}\)N and A1SD75P\(\text{D}\)-S3.

	Not READY/WDT error	READY
QD75P□N/	OFF	ON
QD75D□N	OFF	ON
A1SD75P□-S3	ON	OFF

■ Precautions for replacement

The initial value of the command pulse of A1SD75P□-S3 is positive logic but, QD75P□N/D□N is negative logic.

Replaced at the time, please do the logic of the change in the parameters.

8.2.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the Type QD75P\(\text{D}\)N/QD75D\(\text{D}\)N Positioning Module User's Manual.

area shows the differences between A1SD75P□-S3 and QD75P□N/QD75D□N.

	Buffer memory address							
Item of A1SD75P□-S3	A1SD75P□-S3 QD75P□N/QD75D□N							
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3		
Pr.1 Unit setting	0	150	300	0	150	300		
Pr.2 1 No. of pulses per rotation (Ap)	1	151	301	1	151	301		
Pr.3 1 Movement amount per rotation (Al)	2	152	302	2	152	302		
Pr.4 Unit magnification (Am)	3	153	303	3	153	303		
Pr.5 Pulse output mode	4	154	304	4	154	304		
Pr.6 Rotation direction setting	5	155	305	5	155	305		
Pr.7 Speed limit value	6	156	306	10	160	310		
	7	157	307	11	161	311		
Pr.8 Acceleration time 0	8	158	308	12	162	312		
	9	159	309	13	163	313		
Pr.9 Deceleration time 0	10 11	160 161	310 311	14 15	164 165	314 315		
	12	162	312	6	156	306		
Pr.10 Bias speed at start	13	163	313	7	157	307		
Pr.11 Stepping motor mode selection	14	164	314	-	-	-		
Pr.12 Backlash compensation amount	15	165	315	17	167	317		
Pr.13 Software stroke limit upper limit value	16	166	316	18	168	318		
	17	167	317	19	169	319		
Pr.14 Software stroke limit lower limit value	18 19	168 169	318 319	20 21	170 171	320 321		
Pr.15 Software stroke limit selection	20	170	320	22	172	322		
Pr.16 Software stroke limit valid/invalid setting	21	171	321	23	173	323		
	22	172	322	24	174	324		
Pr.17 Command in-position width	23	173	323	25	175	325		
Pr.18 Torque limit setting value	24	174	324	26	176	326		
Pr.19 M code ON signal output timing	25	175	325	27	177	327		
Pr.20 Speed switching mode	26	176	326	28	178	328		
Pr.21 Interpolation speed designation method	27	177	327	29	179	329		
Pr.22 Current feed value during speed control	28	178	328	30	180	330		
Pr.23 Manual pulse generator selection	29	179	329	-	-	-		
Pr.24 Logic selection for pulse output to the drive unit	30	180	330	-	-	-		
Pr.25 Size selection for acceleration/deceleration time	31	181	331	-	-	-		
Pr.26 Acceleration time 1	36 37	186 187	336 337	36 37	186 187	336 337		
Pr.27 Acceleration time 2	38	188	338	38	188	338		
	39 40	189 190	339 340	39 40	189 190	339 340		
Pr.28 Acceleration time 3	40	190	340	40	190	340		
Pr.29 Deceleration time 1	42	192	342	42	192	342		
	43	193	343	43	193	343		

	Buffer memory address						
Item of A1SD75P□-S3	Α	1SD75P□-S			5P□N/QD75	D□N	
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3	
Pr.30 Deceleration time 2	44	194	344	44	194	344	
<u>- 1.35</u> 20000 4.601 4.110 <u>2</u>	45	195	345	45	195	345	
Pr.31 Deceleration time 3	46 47	196 197	346 347	46 47	196 197	346 347	
	48	198	348	48	198	348	
Pr.32 JOG Speed limit value	49	199	349	49	199	349	
Pr.33 JOG operation acceleration time selection	50	200	350	50	200	350	
Pr.34 JOG operation deceleration time selection	51	201	351	51	201	351	
Pr.35 Acceleration/deceleration process selection	52	202	352	52	202	352	
Pr.36 S-curve ratio	53	203	353	53	203	353	
Pr.37 Sudden stop deceleration time	54	204	354	54	204	354	
- Oddden stop deceleration time	55	205	355	55	205	355	
Pr.38 Stop group 1 sudden stop selection	56	206	356	56	206	356	
Pr.38 Stop group 2 sudden stop selection	57	207	357	57	207	357	
Pr.40 Stop group 3 sudden stop selection	58	208	358	58	208	358	
Pr.41 Positioning complete signal output time	59	209	359	59	209	359	
Pr.42 Allowable circular interpolation error width	60 61	210	360	60 61	210 211	360 361	
Pr.43 External start function selection	01	211	361	01	211	361	
	62	212	362	62	212	362	
(QD75PDN/QD75DDN: Pr.42 External command function							
selection)	66	216	266	_			
Pr.44 Near pass mode selection for path control		216	366		-	-	
Pr.45 OPR method	70	220	370	70	220	370	
Pr.46 OPR direction	71	221	371	71	221	371	
Pr.37 OP address	72	222	372	72 72	222	372	
	73 74	223 224	373 374	73 74	223 224	373 374	
Pr.48 OPR speed	75	225	375	75	225	375	
	76	226	376	76	226	376	
Pr.49 Creep speed	77	227	377	77	227	377	
Pr.50 OPR retry	78	228	378	78	228	378	
Pr.51 OPR dwell time	79	229	379	79	229	379	
Pr.52 Setting for the movement amount after near-point dog	80	230	380	80	230	380	
ON	81	231	381	81	231	381	
Pr.53 OPR acceleration time selection	82	232	382	82	232	382	
Pr.54 OPR deceleration time selection	83	233	383	83	233	383	
Pr.55 OP shift amount	84 85	234	384	84 85	234	384	
Pr.56 OPR torque limit value	85 86	235 236	385 386	85 86	235 236	385	
Pr.57 Speed designation during OP shift	88	238	388	88	238	388	
Pr.58 Dwell time during OPR retry	89	239	389	89	239	389	
[F1.30] Dwell time during Of IC letty	00	200	555	55	200	000	

		Buffer memory address					
Item of A1SD75P□-S3		A1SD75P□-S3	QD75P□N/QD75D□N				
		Common for axis 1, 2, 3	Common for axis 1, 2, 3, 4				
Md.1 In test mode flag		450	1200				
Md.2 Module name		451	-				
Md.3 OS type		452 453 454 455	-				
Md.4 OS version		456 457	-				
Md.5 Clock data (Hour: minute)		460	-				
Md.6 Clock data (Second: 100ms)		461	-				
(Pointer number)		(0)	to (15)				
Md.7 Start axis		400 1- 507	4040 to 4007				
(QD75P□N/QD75D□N: Md.3 Start information)		462 to 537	1212 to 1287				
Md.8 Operation type			40404 4000				
(QD75PDN/QD75DDN: Md.4 Start No.)	ory	463 to 538	1213 to 1288				
Md.9 Start time (Hour: minute)	Start history	464 to 520	1214 to 1289				
(QD75PDN/QD75DDN: Md.5 Start (Hour))	Start	464 to 539	1214 to 1289				
Md.10 Start time (Second: 100ms)		465 to 540	1215 to 1200				
(QD75PDN/QD75DDN: Md.6 Start (Minute: second))		465 to 540	1215 to 1290				
Md.11 Error judgment	466 to 541		1216 to 1291				
Md.12 Start history pointer		542	1292				
(Pointer number)		(0) to (15)	-				
Md.13 Start axis	ō	543 to 618	-				
Md.14 Operation type	Start history at error	544 to 619	-				
Md.15 Start time (Hour: minute)	tory a	545 to 620	-				
Md.16 Start time (Second: 100ms)	t his	546 to 621	-				
Md.17 Error judgment	Star	547 to 622	-				
Md.18 Start history pointer at error		623	-				
(Pointer number)		(0)	to (15)				
Md.19 Axis in which the error occurred		624 to 684	1293 to 1353				
Md.20 Axis error No.		625 to 685	1294 to 1354				
Md.21 Axis error occurrence time (Hour: minute) (QD75P□N/QD75D□N: Md.11 Axis error occurrence							
		626 to 686	1295 to 1355				
(Hour))	Error history						
Md.22 Axis error occurrence time (Second: 100ms)							
(QD75PDN/QD75DDN: Md.12 Axis error occurrence		627 to 687	1296 to 1356				
(Minute: second))							
Md.23 Error history pointer		688	1357				

		Buffer mem	ory address	
Item of A1SD75P□-S3		A1SD75P□-S3	QD75P□N/QD75D□N	
		Common for axis 1, 2, 3	Common for axis 1, 2, 3, 4	
(Pointer number)		(0) to	(15)	
Md.24 Axis in which the warning occurred		689 to 749	1358 to 1418	
Md.25 Axis warning No.		690 to 750	1359 to 1419	
Md.26 Axis warning occurrence time (Hour: minute)	2			
(QD75P□N/QD75D□N: Md.16 Axis warning	history	691 to 751	1360 to 1420	
occurrence				
(Hour))	Warning			
Md.27 Axis warning occurrence time (Second: 100ms)	>			
(QD75PDN/QD75DDN: Md.17 Axis warning		3692 to 752	1361 to 1421	
occurrence (Minute: second))				
Md.28 Warning history pointer		753	1422	

	Buffer memory address							
Item of A1SD75P□-S3	A	\1SD75P□-S	3	QD7	5P□N/QD75	D□N		
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3		
Md.29 Current feed value	800	900	1000	800	900	1000		
	801 802	901 902	1001 1002	801 802	901 902	1001 1002		
Md.30 Machine feed value	803	903	1002	803	903	1002		
TALON South	804	904	1004	804	904	1004		
Md.31 Feedrate	805	905	1005	805	905	1005		
Md.32 Valid M code	806	906	1006	808	908	1008		
Md.33 Axis error No.	807	907	1007	806	906	1006		
Md.34 Axis warning No.	808	908	1008	807	907	1007		
Md.35 Axis operation status	809	909	1009	809	909	1009		
Md.36 Current speed	810	910	1010	810	910	1010		
- Ourient speed	811	911	1011	811	911	1011		
Md.37 Axis feedrate	812	912	1012	812	912	1012		
	813 814	913 914	1013 1014	813 814	913 914	1013 1014		
Md.38 Speed-position switching control positioning amount	815	915	1015	815	915	1015		
Md.39 External input/output signal	816	916	1016	816	916	1016		
Md.40 Status	817	917	1017	817	917	1017		
MJ 44 Tarrest velve	818	918	1018	818	918	1018		
Md.41 Target value	819	919	1019	819	919	1019		
Md.42 Target speed	820	920	1020	820	920	1020		
	821 822	921 922	1021 1022	821	921	1021		
Md.43 OP absolute position	823	923	1022	-	-	-		
	824	924	1024	824	924	1024		
Md.44 Movement amount after near-point dog ON	825	925	1025	825	925	1025		
Md.45 Torque limit stored value	826	926	1026	826	926	1026		
Md.46 Special start data instruction code setting value	827	927	1027	827	927	1027		
Md.47 Special start data instruction parameter setting value	828	928	1028	828	928	1028		
Md.48 Start positioning data No. setting value	829	929	1029	829	929	1029		
Md.49 In speed limit flag	830	930	1030	830	930	1030		
Md.50 In speed change processing flag	831	931	1031	831	931	1031		
Md.51 Start data pointer being executed	832	932	1032	834	934	1034		
Md.52 Last executed positioning data No.	833	933	1033	837	937	1037		
Md.53 Repeat counter								
(QD75PDN/QD75DDN: Md.41 Special start repetition	834	934	1034	832	932	1032		
counter)								
Md.54 Positioning data No. being executed	835	935	1035	835	935	1035		
Md.55Block No. being executed	836	936	1036	836	936	1036		
Md.56 Positioning data being executed	838 to 847	938 to 947	1038 to 1047	838 to 847	938 to 947	1038 to 1047		
Deceleration starting flag	-	-	-	899	999	1099		

	ory address	y address				
Item of A1SD75P□-S3		\1SD75P□-S			5P□N/QD75	
Olaska data antiina (hann)	Axis 1	1100	Axis 3	Axis 1	Axis 2	Axis 3
Cd.1 Clock data setting (hour)						
Cd.2 Clock data setting (minute, second)		1101			-	
Cd.3 Clock data writing		1102			-	
Cd.4 Target axis		1103			-	
Cd.5 Positioning data No.		1104			-	
Cd.6 Write pattern		1105			-	
Cd.7 Read/write request		1106			-	
Cd.8 Read/write positioning data I/F		1108 to 1137			-	
Cd.9 Flash ROM write request		1138			1900	
Cd.10 Parameter initialization request		1139			1901	
Cd.11 Positioning start No.	1150	1200	1250	1500	1600	1700
Cd.12 Axis error reset	1151	1201	1251	1502	1602	1702
Cd.13 Restart command	1152	1202	1252	1503	1603	1703
Cd.14 M code OFF request	1153	1203	1253	1504	1604	1704
Cd.15 New current value	1154	1204	1254	1506	1606	1706
Cu. 13 New Current Value	1155	1205	1255	1507	1607	1707
Cd.16 New speed value	1156 1157	1206 1207	1256 1257	1514 1515	1614 1615	1714 1715
Cd.17 Speed change request	1158	1208	1258	1516	1616	1716
Cd.18 Positioning operation speed override	1159	1209	1259	1513	1613	1713
Cd 10 IOC aroad	1160	1210	1260	1518	1618	1718
Cd.19 JOG speed	1161	1211	1261	1519	1619	1719
Cd.20 Speed-position switching enable flag	1163	1213	1263	1528	1628	1728
Cd.21 Speed-position switching control movement amount	1164 1165	1214 1215	1264 1265	1526 1527	1626 1627	1726
change register						1727
Cd.22 Manual pulse generator enable flag	1167 1168	1217 1218	1267 1268	1524 1522	1624 1622	1724 1722
Cd.23 Manual pulse generator 1 pulse input magnification	1169	1210	1269	1522	1623	1722
Cd.24 OPR request flag OFF request	1170	1220	1270	1521	1621	1721
Cd.25 External start valid						
(QD75P□N/QD75D□N: Cd.8 External command valid)	1171	1221	1271	1505	1605	1705
Cd.26 Step valid flag	1172	1222	1272	1545	1645	1745
Cd.27 Step mode	1173	1223	1273	1544	1644	1744
Cd.28 Step start information	1174	1224	1274	1546	1646	1746
Cd.29 Skip command	1175	1225	1275	1547	1647	1747
Cd.30 New torque value	1176	1226	1276	1525	1625	1725
Cd.31 Positioning starting point No.	1178	1228	1278	1501	1601	1701
Cd.32 Interrupt request during continuous operation	1181	1231	1281	1520	1620	1720
Ca.32 Interrupt request during continuous operation	1184	1231	1284	1508	1608	1720
Cd.33 New acceleration time value	1185	1235	1285	1509	1609	1709
Cd.34 New deceleration time value	1186 1187	1236 1237	1286 1287	1510 1511	1610 1611	1710 1711
Cd.35 Acceleration/deceleration time change during speed change, enable/disable selection	1188	1238	1288	1512	1612	1712

		Buffer memory address													
		Item of A1SD75P□-S3				A1SD7	5P□-S3		0	-		75P□N	P□N/QD75D□N		
				Ax	is 1		is 2		is 3	Ax	is 1	Ax	is 2	Ax	is 3
	Da	.1 Operation pattern .2 Control system .3 Acceleration time No.		1300		23	00	33	800	20	00	80	000	140	000
	Da	.4 Deceleration time No.													
	Da. No.	9 M code/condition data		13	01	23	01	33	801	20	01	80	01	140	001
£		.8 Dwell time/JUMP ination positioning data No.	No.1	13	02	23	02	33	802	20	02	80	02	140	002
data	Not	used			03	23	03	33	803	20		80	03		003
Positioning data*1	Da	7 Command speed			04		04		304		04		04		004
sitior					605 606		05		805		05		05		005
Pos		.5 Positioning address/			60 0 607		06 07		806 807	20	06 07		106 107		006 007
					08		08		808		08		08		008
	Da	.6 Arc address			09		09		809	20			09		009
		No.2	1310 to		o 1319	2310 t	o 2319	3310 to 3319		2010 to 2019		8010 to 8019		14010 to 14019	
	No.3			1320 t	o 1329	2320 t	o 2329	3320 to 3329		2020 to 2029		8020 to 8029		14020 to 14029	
		to		to		to		to		to		to		1	:0
		No.100		2200 +	o 2299	3200 t	o 3299	4200 t	o 4299	2000 +	o 2999	8000 t	o 8999	14990 to	
		NO. 100	1	2290 (0 2299	0200 10 0200		4290 (0 4299	2990 (0 2999	09901	0 0999	149	999
		Da.10 Shape													
		Da.11 Start data No.	101												
	data*2	Da.12 Special start	1st point	4300	4350	4550	4600	4800	4850	26000	26050	27000	27050	28000	28050
	λ ģ	instruction													
	Start block	Da.13 Parameter													
	Start	2nd point	•	4301	4351	4551	4601	4801	4851	26001	26051	27001		28001	28051
		3rd point		4302	4352	4552	4602	4802	4852			27002			
io		to 50th point		4349	4399	4599	o 4649	4849	to 4899	26049	26099		27099		28099
rmat		Da.14 Condition target		1010	1000	1000	1010	10.10	1000	20010	20000	27010	2.000	200 10	20000
info		Da.15 Condition operator		44	00	46	50	49	000	26°	100	27	100	28	100
start		Da. 15 Condition operator		44	.02	46	52	49	002	26	102	27	102	28.	102
Positioning start information*3		Da.16 Address	No.1	44	03	46	53	49	003	26 ⁻	103 104	27	103 104	28	103
ositi	data	Da.17 Parameter 1			.05		55		05		105		105		105
<u> </u>	tion d	Da.18 Parameter 2		44	-06		56 57)06)07	26	106 107	27	106 107	28	106 107
	Condition	4407							10 to		10 to		10 to		
	O No.2 4410 to 4		0 4419	4660 t	o 4669	4910 t	o 4919	26	119	27	119		119		
		No.3 4420 to 4429		o 4429	4670 t	o 4679	4920 t	o 4929		20 to		20 to		20 to	
		to			to		:0		to	26129 to			129 to		129 to
											90 to		90 to		90 to
	No.10			4490 t	o 4499	4740 to 4749		4990 to 4999			199		199		199

^{*1} With the QD75P\(\text{DN/QD75D\(\text{DN}\)}\), the positioning data buffer memory addresses are No. 1 to 600.

^{*2} With the QD75P\(\text{D}\text{N/QD75D\(\text{D}\text{N}}\), it is called "block start data".

^{*3} With the QD75P\(\text{DN/QD75D\(\text{DN}\)}\), the "block start data" and "condition data" in are called "start block 0". There are five start blocks: 0 to 4.

				Buffer memory address								
	Item of A1SD75P□-S3			A1SD75P□-S	3	QD75P□N/QD75D□N						
			Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3				
Desitioning		Start No.8001	4500	4750	5000	-	-	-				
Positioning	Indirect	Start No.8002	4501	4751	5001	-	-	-				
start	designation	to	to	to	to	to	to	to				
information		Start No.8050	4549	4799	5049	-	-	-				
Dragrammal	ala controllar	Condition judgment target		5050		30000						
CPU memor	ble controller	Condition judgment target		to		to						
CPU memoi	y area	data of the condition data		5099		30099						
Target axis			5100			-						
Head position	ning block No	O.		5101		-						
No. of read/write data items				5102		-						
Read/write request			5103			-						
Read/write b	olock			5110 to 6109		-						

8.2.5 External interface specifications comparison

The following table lists the differences of the external interface specifications between the A1SD75PU-S3 and QD75PUN/QD75DUN.

O: Compatible, △: Partial change required

	Item ^{*1}	Difference*2	Compat- ibility	Precautions for replacement
	Drive unit READY	-	0	
	Upper/lower limit signal	-	0	
	Stop signal	-	0	
Input	Near-point dog signal	Input resistance: $4.7 \text{k}\Omega \rightarrow 4.3 \text{k}\Omega$ Response time: $4 \text{ms} \rightarrow 1 \text{ms}$	Δ	<when for="" is="" machine="" method="" near-point="" opr="" signal="" the="" used="" watchdog=""> The input response time for the QD75P□/D□ is shorter than the A1SD75P□-S3. If a sensor, which the chattering time when the near-point watchdog signal is turned on is long, is used, an error may occurs due to the false detection of the ON/OFF status.*4 Check specifications for the sensor.</when>
	External command signal (CHG)	Input resistance: $4.7k\Omega \rightarrow 4.3k\Omega$ Response time: $4ms \rightarrow 1ms$	Δ	
	Zero signal	Input resistance: $3.5 \text{k}\Omega \rightarrow 4.7 \text{k}\Omega$ (at input of 24V) $0.5 \text{k}\Omega \rightarrow 0.62 \text{k}\Omega$ (at input of 5V) Response time: $0.8 \text{ms} \rightarrow 1 \text{ms}^{*3}$ ON voltage: $2.5 \text{V} \rightarrow 2.0 \text{V}$ (at input of 5V)	Δ	Including the response time differences, reconfirming is required.
	Manual pulse generator	ON current: 3.5mA → 2mA	0	
Output	Pulse	-	0	
	Deviation counter clear	-	0	

- *1 For the external start and in-position signal of which QD75PDN/QD75DDN does not have, they are not described.
- *2 The column of interface specifications differences is described as the form, [Specifications of A1SD75P \square -S3] \rightarrow [Specifications of QD75P \square N/QD75D \square N].
- *3 The response time difference (0.2 ms) of A1SD75P□-S3 and QD75P□N/QD75D□N is the time difference of 1pls part for creep speed of 5000pps.
 - When the accuracy is required, it is required for the creep speed to be low enough value.
- *4 If the chattering time is long when the near-point watchdog signal is turned on, the OFF status may be detected shortly after the ON status of the signal is detected (under changing into the creep speed). In this case, the QD75P\(\text{\

8.3 A1SD75M1/M2/M3

8.3.1 Performance specifications comparison

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

O: Compatible, △: Pi							patible, △ : Parti	ial change re	equired, x: Incompatible
Item	Model	A1SD75M1	A1SD75M2	A1SD75M3	QD75M1	QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Number of co	ontrol axes	1	2	3	1	2	4	0	
Number of po	ositioning data		600/axis ^{*1}			600/axis		0	
Position control	2-axis linear interpolation	Not available	Available	Available	Not available	Available	Available		
interpolation functions	2-axis circular interpolation	Not available	Available	Available	Not available	Available	Available	0	
	Position control		Available			Available			
	Speed control		Available			Available			
Positioning system	Speed- position switching control		Available			Available		0	
	Position- speed switching control		Not available			Available			
Positioning ra	In Absolute system>		0						
Speed comm	nand range	0.001 to 600	000.00 (mm/n 000.000 (inch 000.000 (degi) (pulse/s)	/min)			0		
Machine OPR function (OPR method) Available (6 OPR methods) Available (4 OPR methods)		ethods)	Δ	Corresponding to the OP unpassed error is required. Return the motor more than one rotation once at the error and perform the OPR start again.					
JOG operation	on		Available			Available		0	

O : Compatible, △ : Partial change required, ×: Incompatible

O: Compatible, △: Partial change required, ×: Incompatible								
Item	Model	A1SD75M1 A1SD75M2 A1SD75M3	QD75M1	QD75M2	QD75M4	Compat- ibility	Precautions for replacement	
Manual pulse generator function		1 generator/axis	1 g	enerator/mod	ule	Δ	On QD75M□, the manual pulse generator cannot be used by each axis independent. When connecting the manual pulse generator for each axis is required, use one axis module. The manual pulse generator itself can use the same one. The operation for inputting one pulse differs. Set the parameter so that movement amount may be same.	
Acceleration /deceleration		Available		Available		0		
process	S-pattern acceleration/ deceleration	Available		Available				
Acceleration /deceleration time	Number of patterns setting range	Acceleration time and deceleration time can be set independently. (4 patterns each) Switching is possible. 1 to 65535ms or 1 to 8388608ms	can be set independently. (4 patterns each) Switching is possible. 1 to 8388608ms		dently. h)	0		
Compensatio	-	Electronic gears, backlash compensation, near pass*2		nic gears, bansation, near		Δ	Refer to *2.	
Error display		17-segment LED		Error LED		×	To check details of diagnostics, use GX Developer.	
History data s error, warning	storage (Start, g)	Provided (4 types, 16 items/module)	(3 typ	Provided bes, 16 items/	axis)	0	The start history at error is integrated into the start history.	
Data storage	destination	Flash ROM (battery-less backup)	(batt	Flash ROM ery-less back	(up)	0		

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

		,		,	,	O : Comp	atible,∆ : Parti	al change re	equired, ×: Incompatible
Item	Model	A1SD75M1	A1SD75M2	A1SD75M3	QD75M1	QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Connection connector		(Solde	10136-3000VE Soldering type, supplied) 10136-6000EL DC type, sold separately)		A6CON1, A6CON4 (Soldering type, sold separately) A6CON2 (Crimping type, sold separately) A6CON3 (IDC type, sold separately)			×	As the connectors differ, wiring
Applicable wire size		(appro	000VE: 24 to ox. 0.05 to 0.2 3-6000EL: 28 oprox. 0.08mr	2mm ²) AWG	A6CON1, A6CON4: 0.3mm ² A6CON2: 24 to 28 AWG A6CON3: 28 AWG (twisted wire), 30 AWG (single wire)		0	change is required. The connectors of QD75M□ is sold separately.	
SSCNET con Maximum ext distance of S	tension			Refer to Sect				Δ	Shape of a bus connector differs.
Internal curre	nt		0.7A or less			0.40A		0	
Flash ROM v	rite count	Max	x. 100,000 tin	nes	Max. 100,000 times		0	When QD75M carries out the flash write 26 times from the sequence program, an error occurs. The error reset enables to perform the flash write.	
Number of oc	ccupied I/O	(I/O assign	32 points ment: specia	I 32 nointe)	(I/O assignm	32 points	at 32 points)	0	
Number of m	odule	(I/O assign	1	1 32 points)	(I/O assignment: intelligent 32 points)		it 32 points)	0	
occupied slot	S				0.15kg 0.15kg 0.16kg				
I/O signal for external devices	START signal		0.35kg Available		(integra	Not available ted into CHG	signal)	Δ	When using both the speed-position switching control and the external start, input the external start signal to the interrupt module and start using the direct output.
	CHG signal	Speed-po	osition switchi	ng signal	start or sp	nmand signa need-position ble with parar	switching	0	
Peripheral	Connection with peripheral devices	Di	rect connecti	on	controller CP	ion via progra U, Q correspo unication mod g MELSECNI I/O module	onding serial Iule, Q	0	The connection type differs.
devices (data setting, etc.)	AD75TU		Connectable		N	ot connectabl	e	×	AD75TU cannot be used. Use GX Configurator-QP.
	GX Configurator	GX	GX Configurator-AP		GX Configurator-QP*3			0	Available GX Configurator differs.

- *1 No.1 to 100 data items/axis of positioning data can be set using the buffer memory and No.1 to 600 data/axis can be set with QD75MD.
 - The positioning data in the buffer memory is not backed up.
- *2 The near pass function is valid only during the continuous path control. (A1SD75M□: Selected with parameters, QD75M□: Standard function)
 - QD75M does not have address pass mode. If passing the positioning address, continue with continuous operation. (However, it will stop once.)
- *3 GX Configurator-QP is available with SW2D5C-QD75P or later version.

8.3.2 Functional comparison

(1) Functions deleted from the A1SD75M1/A1SD75M2/A1SD75M3

When the following functions are used with the A1SD75M \square , change the program.

Deleted function	Precautions for replacement						
Creep speed out of range error	With the QD75M□, there is no the error code of the left column.						
(error code: 208)	THE REPORT OF THE PROPERTY OF THE PARTY OF T						
Fast machine OPR	With the QD75M□, there is no possible function for replacement.						
Special start (stop)	Execute it separately for the start two times.						
Indirect designation	In the QD75M□, the start block area on the buffer memory is expanded to five blocks (0 to 4). Each						
munect designation	start block can be directly designated with positioning start No. (7000 to 7004).						
Block transfer	With the A1SD75M□, this interface is used to set positioning data No. 101 to 600 that do not exist on						
Desitioning data I/E	the buffer memory. Since all positioning data can be set in the buffer memory with the QD75M□, this						
Positioning data I/F	function is deleted.						
Start history during arrors	The contents are the same as the start history.						
Start history during errors	Therefore, the QD75M□ stores only the start history.						
System monitor data	These data were deleted because they can be displayed in system monitor "Module's detailed						
System monitor data (Modula name, OS type, OS varsian)	information" of GX Developer.						
(Module name, OS type, OS version)	(Refer to the GX Developer Operating Manual.)						



(2) Functions changed from the A1SD75M1/A1SD75M2/A1SD75M3

When the following functions are used with the A1SD75M \square , make sure that there is no operation problem after the module is replaced with the QD75M \square .

Changed function		Description						
	The software stroke limit check	k of arc address is carried out only	y when a sub point is designated.					
	It is not carried out when a ce	nter point is designated.						
	2. The software stroke limit check during speed control is carried out in the following cases:							
	• When the software stroke limit is applied to the current feed value with Pr.14 and the current feed							
	value is updated with Pr.21							
	When the software stroke limit	is applied to the machine feed value	ue					
		ge the current value but the design						
		e attempt is considered as an erro						
Software stroke limit function	changed.	·						
	4. Error code change							
	A1SD75M□:							
	There are 3 types of errors for	each software stroke upper limit a	and lower limit (error code: 509 to					
	512).							
	QD75M□:							
	Errors for the software stroke	upper limit are integrated into one	(error code: 507).					
	Errors for the software stroke	lower limit are integrated into one	(error code: 508).					
	Error codes 509 to 512 are de							
Current value changing M code		ignated new current value is out o						
function		alid during the positioning data cur						
Acceleration/deceleration speed		Bms) can be used as the setting va	alue for the acceleration/					
control	deceleration time.							
	1. "Peripheral side (emergency) stop" is deleted from the stop causes of Stop group 2 "sudden stop							
	selection".							
0	"Test mode fault" in the stop causes of Stop group 3 "sudden stop selection" is changed to be in							
Stop process and restart after stop	the stop causes of Stop group 2 "sudden stop selection".							
positioning operation stop		2. "Stop (QD75 peripheral)" is added to the stop causes of Stop group 3 "sudden stop selection".						
	3. Error code 100 (Peripheral device stop during operation) is deleted.4. "Programmable controller CPU error occurrence" is added to the stop causes of Stop group 2							
	=	D error occurrence is added to the	e stop causes or Stop group 2					
	"Sudden stop selection".	A1SD75M□	QD75M□					
READY signal (X0)	OFF	Normal (READY)	Not READY/WDT error					
TELLET Orginal (70)	ON	Not READY/WDT error	Normal (READY)					
		ial pulse generators is changed from						
Manual pulse generator operation	generator/module.	an paneo generatero io enangea m						
Axis operation status		opped" and "Step error occurring" i	s changed to "Error occurring".					
	• A1SD75M□:	pper and outperforming	<u> </u>					
	If the reference axis operates in	n reverse direction, the control is in	nternally changed into the					
	continuous positioning control.		, ,					
Continuous path control	• QD75M□:							
·	Even if the reference axis operates in reverse direction with interpolation, the control remains as							
	the continuous path control.							
	(In single axis energtion the er	peration is the same as that of the	A1SD75M□)					
	(iii sirigle-axis operation, the of	refation is the same as that of the	, ,					
News	<u> </u>	only the near pass function is avail-	· · · · · · · · · · · · · · · · · · ·					
Near pass	<u> </u>	only the near pass function is avail-	· · · · · · · · · · · · · · · · · · ·					
<u> </u>	For the continuous path control, of	only the near pass function is avail-	· · · · · · · · · · · · · · · · · · ·					
	For the continuous path control, of Path of positioning address pass	only the near pass function is availis not conducted.	able.					
2-axis interpolation	For the continuous path control, of Path of positioning address pass	only the near pass function is avail-	able.					
2-axis interpolation • 2-axis linear interpolation	For the continuous path control, of Path of positioning address pass	only the near pass function is availis not conducted.	able.					
2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	For the continuous path control, of Path of positioning address pass The interpolation target axis can lead to the continuous path control, or path control or path control, or	only the near pass function is availis not conducted.	able. identifier.					
2-axis interpolation	For the continuous path control, of Path of positioning address pass The interpolation target axis can lead to the continuous path control, or path control or path control, or	only the near pass function is available is not conducted. The property of th	able. identifier.					
2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	For the continuous path control, of Path of positioning address pass The interpolation target axis can lead to "Step Stopped" is changed to "Step Stopped".	only the near pass function is available is not conducted. Dee randomly set with a positioning stopped" and "Step error occurring parameters. Start information (02H) is deleted.	able. identifier.					

Changed function		Description			
	The command in-position width is	expanded.			
Command in-position function	• A1SD75M□: 1 to 32767000				
	• QD75M□: 1 to 2147483647				
Positioning start No.	7004 to 7010 (block start designa	tion) and 8000 to 8049 (indirect de	esignation) are deleted.		
Displantant data	With QD75M□, the number of blo	ocks has been change to 5 (7000 t	o 7004).		
Block start data	(With the A1SD75M□, this data is	s called "Positioning start informati	on".)		
Chart biston.	The configuration of start information and start No. is changed so that the start No. can be directly				
Start history	checked.				
		A1SD75M□	QD75M□		
Detailed parameters	0	Software stroke limit invalid for	Software stroke limit valid for		
"Pr.15 Software stroke limit valid/	(Factory setting)	manual operation	manual operation		
invalid setting"	1	Software stroke limit valid for	Software stroke limit invalid for		
	1	manual operation	manual operation		

8.3.3 I/O signal comparison

Sequence program change is required as the I/O signals differ.

For details of the I/O signals or sequence program, refer to the Type QD75M Positioning Module User's Manual.

Inp	out (X)		Output (Y)					
Signal name	A1SD75M□	QD75M□	Signal name	A1SD75M□	QD75M□			
(A1SD75/QD75) READY	X00*	X00*	Axis 1 Positioning start	Y10	Y10			
Axis 1 Start complete	X01	X10	Axis 2 Positioning start	Y11	Y11			
Axis 2 Start complete	X02	X11	Axis 3 Positioning start	Y12	Y12			
Axis 3 Start complete	X03	X12	Axis 4 Positioning start	-	Y13			
Axis 4 Start complete	-	X13	Axis 1 Stop	Y13	Y04			
Axis 1 BUSY	X04	X0C	Axis 2 Stop	Y14	Y05			
Axis 2 BUSY	X05	X0D	Axis 3 Stop	Y1C	Y06			
Axis 3 BUSY	X06	X0E	Axis 4 Stop	-	Y07			
Axis 4 BUSY	-	X0F	All axes servo ON	Y15	Y01			
Axis 1 Positioning complete	X07	X14	Axis 1 Forward run JOG start	Y16	Y08			
Axis 2 Positioning complete	X08	X15	Axis 1 Reverse run JOG start	Y17	Y09			
Axis 3 Positioning complete	X09	X16	Axis 2 Forward run JOG start	Y18	Y0A			
Axis 4 Positioning complete	-	X17	Axis 2 Reverse run JOG start	Y19	Y0B			
Axis 1 Error detection	X0A	X08	Axis 3 Forward run JOG start	Y1A	Y0C			
Axis 2 Error detection	X0B	X09	Axis 3 Reverse run JOG start	Y1B	Y0D			
Axis 3 Error detection	X0C	X0A	Axis 4 Forward run JOG start	-	Y0E			
Axis 4 Error detection	-	X0B	Axis 4 Reverse run JOG start	-	Y0F			
Axis 1 M code ON	X0D	X04	Programmable controller READY	Y1D	Y00			
Axis 2 M code ON	X0E	X05	Axis 1 Execution prohibition flag	-	Y14			
Axis 3 M code ON	X0F	X06	Axis 2 Execution prohibition flag	-	Y15			
Axis 4 M code ON	-	X07	Axis 3 Execution prohibition flag	-	Y16			
Synchronization flag	-	X01	Axis 4 Execution prohibition flag	-	Y17			
Use prohibited	X10 to X1F	X02, X03, X18 to X1F	Use prohibited	Y00 to Y0F, Y1E to Y1F	Y02, Y03, Y18 to Y1F			

The ON/OFF status for READY is different between the QD75M□/and A1SD75M□.

	Not READY/WDT error	READY
QD75M□	OFF	ON
A1SD75M□	ON	OFF

8.3.4 Buffer memory address comparison

Sequence program change is required as the assignment of buffer memory differs. For details of the buffer memory or sequence program, refer to the Type QD75M Positioning Module User's Manual.

area shows the differences between A1SD75M□ and QD75M□.

			Buffer mem	ory address		
Item of A1SD75M□		A1SD75M□			QD75M□	
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3
Pr.1 Unit setting	0	150	300	0	150	300
Pr.2 No. of pulses per rotation (AP)	1	151	301	2	152	302
P1.2 No. of pulses per rotation (AF)	<u>'</u>	101	301	3	153	303
Pr.3 Movement amount per rotation (AL)	2	152	302	4 5	154 155	304 305
Pr.4 Unit magnification (AM)	3	153	303	1	151	301
D. T. Ou and Facility and the	6	156	306	10	160	310
Pr.7 Speed limit value	7	157	307	11	161	311
Pr.8 Acceleration time 0	8	158	308	12	162	312
11.0 Acceleration time o	9	159	309	13	163	313
Pr.9 Deceleration time 0	10	160	310	14	164	314
	11	161	311	15	165	315
Pr.10 Bias speed at start	12 13	162	312	6 7	156	306
D 40 D all all annual and the second	15	163 165	313	17	157 167	307 317
Pr.12 Backlash compensation amount						
Pr.13 Software stroke limit upper limit	16	166	316	18 19	168	318 319
value	17	167	317	-	169	319
Pr.14 Software stroke limit lower limit	18	168	318	20	170	320
value	19	169	319	21	171	321
Pr.15 Software stroke limit selection	20	170	320	22	172	322
Pr.16 Software stroke limit valid/invalid	21	171	321	23	173	323
setting						
Pr.17 Command in-position width	22	172	322	24	174	324
	23	173	323	25	175	325
Pr.18 Torque limit setting value	24	174	324	26	176	326
Pr.19 M code ON signal output timing	25	175	325	27	177	327
Pr.20 Speed switching mode	26	176	326	28	178	328
Pr.21 Interpolation speed designation method	27	177	327	29	179	329
Pr.22 Current feed value during speed control	28	178	328	30	180	330
Pr.23 Manual pulse generator selection	29	179	329	33	-	-
Pr.25 Size selection for acceleration/	31	181	331	-	-	-
deceleration time				0.4	404	20.4
Speed-position function selection	36	186	336	34 36	184 186	334 336
Pr.26 Acceleration time 1	36 37	187	336	36	187	336
	38	188	338	38	188	338
Pr.27 Acceleration time 2	39	189	339	39	189	339
	40	190	340	40	190	340
Pr.28 Acceleration time 3	41	191	341	41	191	341

	Buffer memory address								
Item of A1SD75M□		A1SD75M□		,	QD75M□				
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3			
Pr.29 Deceleration time 1	42	192	342	42	192	342			
T1.25 Deceleration time 1	43	193	343	43	193	343			
Pr.30 Deceleration time 2	44 45	194 195	344 345	44 45	194 195	344 345			
	46	195	346	46	195	346			
Pr.31 Deceleration time 3	47	197	347	47	197	347			
	48	198	348	48	198	348			
Pr.32 JOG speed limit value	49	199	349	49	199	349			
Pr.33 JOG operation acceleration time selection	50	200	350	50	200	350			
Pr.34 JOG operation deceleration time selection	51	201	351	51	201	351			
Pr.35 Acceleration/deceleration process selection	52	202	352	52	202	352			
Pr.36 S-pattern proportion	53	203	353	53	203	353			
Dr 27 Suddon aton decoloration time	54	204	354	54	204	354			
Pr.37 Sudden stop deceleration time	55	205	355	55	205	355			
Pr.38 Stop group 1 sudden stop selection	56	206	356	56	206	356			
Pr.39 Stop group 2 sudden stop selection	57	207	357	57	207	357			
Pr.40 Stop group 3 sudden stop selection	58	208	358	58	208	358			
Pr.41 Positioning complete signal output		000	050	50	000	050			
time	59	209	359	59	209	359			
Pr.42 Allowable circular interpolation	60	210	360	60	210	360			
error width	61	211	361	61	211	361			
Pr.43 External start function selection									
	62	212	362	62	212	362			
(QD75M□: Pr.42 External command	02	2.2	302	02		332			
function selection)									
Pr.150 Setting for the restart allowable	64 65	214	364 365	64	214	364 365			
range when servo OFF to ON	65	215	365	65	215	365			
Pr.44 Near pass mode selection for path	66	216	366	-	-	-			
control									
Pr.45 OPR method	70	220	370	70	220	370			
Pr.46 OPR direction	71	221	371	71	221	371			
	72	222	372	72	222	372			
Pr.47 OP address	73	223	373	73	223	373			
Pr.48 OPR speed	74	224	374	74	224	374			
	75	225	375	75	225	375			
Pr.49 Creep speed	76	226	376	76 77	226	376			
	77	227	377	77	227	377			
Pr.50 OPR retry	78	228	378	78	228	378			
OPR dwell time	-	-	-	79	229	379			
Pr.52 Setting for the movement amount	80	230	380	80	230	380			
after near-point dog ON	81	231	381	81	231	381			
Pr.53 OPR acceleration time selection	82	232	382	82	232	382			
Pr.54 OPR deceleration time selection	83	233	383	83	233	383			
Pr.55 OP shift amount	84 85	234 235	384 385	84 85	234 235	384 385			
Pr.56 OPR torque limit value	86	235	386	86	235	386			
1 1.00 Of 17 torque inflit value	33	_55			_55	230			

	Buffer memory address							
Item of A1SD75M□		A1SD75M□			QD75M□			
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3		
Pr.57 Speed designation during OP shift	88	238	388	88	238	388		
Pr.58 Dwell time during OPR retry	89	239	389	89	239	389		
Pr.59 Absolute position restoration selection	91	241	391	-	-	-		
Pr.100 Servo series	100	250	400	30100	30200	30300		
Pr.101 Amplifier setting	101	251	401	30101	30201	30301		
Pr.102 Regenerative brake resistor	102	252	402	30102	30202	30302		
Pr.103 Motor type	103	253	403	30103	30203	30303		
Pr.104 Motor capacity	104	254	404	30104	30204	30304		
Pr.105 Motor speed	105	255	405	30105	30205	30305		
Pr.106 Feedback pulse	106	256	406	30106	30206	30306		
Pr.107 Rotation direction	107	257	407	30107	30207	30307		
Pr.108 Auto tuning	108	258	408	30108	30208	30308		
Pr.109 Servo response setting	109	259	409	30109	30209	30309		
Maker setting	-	-	-	30110	30210	30310		
Maker setting	-	-	-	30111	30211	30311		
Pr.112 Load inertia ratio	112	262	412	30112	30212	30312		
Pr.113 Position loop gain 1	113	263	413	30113	30213	30313		
Pr.114 Speed loop gain 1	114	264	414	30114	30214	30314		
Pr.115 Position loop gain 2	115	265	415	30115	30215	30315		
Pr.116 Speed loop gain 2	116	266	416	30116	30216	30316		
Pr.117 Speed integral compensation	117	267	417	30117	30217	30317		
Pr.118 Notch filter selection	118	268	418	30118	30218	30318		
Pr.119 Feed forward gain	119	269	419	30119	30219	30319		
Pr.120 In-position range	120	270	420	30120	30220	30320		
Pr.121 Electromagnetic brake sequence output	121	271	421	30121	30221	30321		
Pr.122 Monitor output mode selection	122	272	422	30122	30222	30322		
Pr.123 Optional function 1	123	273	423	30123	30223	30323		
Pr.124 Optional function 2	124	274	424	30124	30224	30324		
Pr.125 Adaptive vibration suppression control/low pass filter	125	275	425	30125	30225	30325		
Maker setting	-	-	-	30126	30226	30326		
Pr.127 Monitor output 1 offset	127	277	427	30127	30227	30327		
Pr.128 Monitor output 2 offset	128	278	428	30128	30228	30328		
Pr.129 Pre-alarm data selection	129	279	429	30129	30229	30329		
Pr.130 Zero speed	130	280	430	30130	30230	30330		
Pr.131 Error excessive alarm level	131	281	431	30131	30231	30331		
Pr.132 Optional function 5	132	282	432	30132	30232	30332		
Pr.133 Optional function 6	133	283	433	30133	30233	30333		
Pr.134 PI-PID control switch-over position droop	134	284	434	30134	30234	30334		
Maker setting	-	-	-	30135	30235	30335		

	Buffer memory address								
Item of A1SD75M□		A1SD75M□		QD75M□					
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3			
Pr.136 Speed differential compensation	136	286	436	30136	30236	30336			
Maker setting	-	-	-	30137	30237	30337			
Pr.138 Encoder output pulses	138	288	438	30138	30238	30338			
Pr.149 Servo parameter transmission setting	149	299	449	-	-	-			
Maker setting	-	-	-	30139	30239	30339			
Maker setting	-	-	-	30140	30240	30340			
Maker setting	-	-	-	30141	30241	30341			
Maker setting	-	-	-	30142	30242	30342			
Slight vibration suppression control selection 1	-	-	-	30143	30243	30343			
Slight vibration suppression control selection 2	-	-	-	30144	30244	30344			
Induction voltage compensation	-	-	-	30145	30245	30345			
Maker setting	-	-	-	30146	30246	30346			
Maker setting	-	-	-	30147	30247	30347			
Maker setting	-	-	-	30148	30248	30348			
Gain changing selection	-	-	-	30149	30249	30349			
Gain changing condition	-	-	-	30150	30250	30350			
Gain changing time constant	-	-	-	30151	30251	30351			
Ratio of load inertia moment to servo motor inertia moment 2	-	-	-	30152	30252	30352			
Position loop gain 2 changing ratio	-	-	-	30153	30253	30353			
Speed loop gain 2 changing ratio	-	-	-	30154	30254	30354			
Speed integral compensation changing ratio	-	-	-	30155	30255	30355			
Maker setting	-	-	-	30156	30256	30356			
Maker setting	-	-	-	30157	30257	30357			
Maker setting	-	-	-	30158	30258	30358			
Maker setting	-	-	-	30159	30259	30359			
Optional function C	-	-	-	30160	30260	30360			
Machine resonance suppression filter	-	-	-	30161	30261	30361			
Maker setting	-	-	-	30162	30262	30362			
Maker setting	-	-	-	30163	30263	30363			
Maker setting	-	-	-	30164	30264	30364			
Maker setting	-	-	-	30165	30265	30365			
Maker setting	-	-	-	30166	30266	30366			

Item of A1SD75M□		Buffer memory address	
		A1SD75M□ QD75M□	
		Common for axis 1,2,3	Common for axis 1,2,3,4
Md.1 In test mode flag		450	1200
Md.2 Module name		451	-
Md.3 OS type		452 453 454 455	-
Md.4 OS version		456 457	-
Md.5 Clock data (Hour: minute)		460	-
Md.6 Clock data (Second: 100ms)		461	-
(Pointer number)		(0) to (15)	
Md.7 Start axis	Start history	462 to 537	1212 to 1287
(QD75M□: Md.3 Start information)			
Md.8 Operation type		463 to 538	1213 to 1288
(QD75M□: Md.4 Start No.)			
Md.9 Start time (Hour: minute)		464 to 539	1214 to 1289
(QD75M□: Md.5 Start (Hour))			
Md.10 Start time (Second: 100ms)		465 to 540	1215 to 1290
(QD75M□: Md.6 Start (Minute: second))			
Md.11 Error judgment		466 to 541	1216 to 1291
Md.12 Start history pointer		542	1292
(Pointer number)	Start history at error	(0) to (15)	-
Md.13 Start axis		543 to 618	-
Md.14 Operation type		544 to 619	-
Md.15 Start time (Hour: minute)		545 to 620	-
Md.16 Start time (Second: 100ms)		546 to 621	-
Md.17 Error judgment		547 to 622	-
Md.18 Start history pointer at error		623	-
(Pointer number)		(0) to (15)	
Md.19 Axis in which the error occurred	Error history	624 to 684	1293 to 1353
Md.20 Axis error No.		625 to 685	1294 to 1354
Md.21 Axis error occurrence time (Hour: minute)		626 to 686	1295 to 1355
(QD75MD: Md.11 Axis error occurrence (Hour))			
Md.22 Axis error occurrence time (Second:	rror	627 to 687	1296 to 1356
100ms)	"		
(QD75M□: Md.12 Axis error occurrence			
(Minute: second))			
Md.23 Error history pointer		688	1357

		Buffer mem	ory address
Item of A1SD75M□		A1SD75M□	QD75M□
		Common for axis 1,2,3	Common for axis 1,2,3,4
(Pointer number)		(0) to	0 (15)
Md.24 Axis in which the warning occurred		689 to 749	1358 to 1418
Md.25 Axis warning No.		690 to 750	1359 to 1419
Md.26 Axis warning occurrence time (Hour:	Ŋ		
minute)	history	691 to 751	1360 to 1420
(QD75D: Md.16 Axis warning occurrence (Hour))	ing h		
Md.27 Axis warning occurrence time (Second:	Warning l		
100ms)	>	692 to 752	1361 to 1421
(QD75M□: Md.17 Axis warning occurrence		092 10 732	1301 10 1421
(Minute: second))			
Md.28 Warning history pointer		753	1422

			Buffer mem	ory address		
Item of A1SD75M□		A1SD75M□	Bullet mem	ory address	QD75M□	
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3
Md.29 Current feed value	800	900	1000	800	900	1000
Ma.25 Carrent leed value	801	901	1001	801	901	1001
Md.30 Machine feed value	802 803	902 903	1002 1003	802 803	902 903	1002 1003
	804	904	1003	804	904	1003
Md.31 Feedrate	805	905	1005	805	905	1005
Md.32 Valid M code	806	906	1006	808	908	1008
Md.33 Axis error No.	807	907	1007	806	906	1006
Md.34 Axis warning No.	808	908	1008	807	907	1007
Md.35 Axis operation status	809	909	1009	809	909	1009
Md.36 Current speed	810	910	1010	810	910	1010
Ma.so Current speed				811	911	1011
Md.37 Axis feedrate	812	912	1012	812	912	1012
	813	913	1013	813	913	1013
Md.38 Speed-position switching control	814	914	1014	814	914	1014
positioning amount	815	915	1015	815	915	1015
Md.39 External input signal	816	916	1016	816	916	1016
Md.40 Status	817	917	1017	817	917	1017
Md.41 Target value	818	918	1018	818	918	1018
	819	919	1019	819	919	1019
Md.42 Target speed	820 821	920 921	1020 1021	820 821	920 921	1020 1021
	822	922	1021	021	921	1021
Md.43 OP absolute position	823	923	1023	-	-	-
Md.44 Movement amount after near-point	824	924	1024	824	924	1024
dog ON	825	925	1025	825	925	1025
Md.45 Torque limit stored value	826	926	1026	826	926	1026
Md.46 Special start data instruction code	827	927	1027	827	927	1027
setting value	021	921	1027	021	921	1027
Md.47 Special start data instruction	000	000	4000	000	000	4000
parameter setting value	828	928	1028	828	928	1028
Md.48 Start positioning data No. setting	000	000	4000	000	000	4000
value	829	929	1029	829	929	1029
Md.49 In speed control flag	830	930	1030	830	930	1030
Md.50 In speed change processing flag	831	931	1031	831	931	1031
Md.51 Start data pointer being executed	832	932	1032	834	934	1034
Md.52 Last executed positioning data No.	833	933	1033	837	937	1037
Md.53 Repeat counter						
(QD75M□: Md.41 Special start repetition	834	934	1034	832	932	1032
counter)						
Md.54 Positioning data No. being	05-	007	400-	06-	007	100-
executed	835	935	1035	835	935	1035
Md.55 Block No. being executed	836	936	1036	836	936	1036
Md.56 Positioning data being executed	838 to 847	938 to 947	1038 to 1047	838 to 847	938 to 947	1038 to 1047
Md.100 OPR re-travel value	848	948	1048	848	948	1048
	849	949	1049	849	949	1049
Md.101 Real current value	850 851	950 951	1050 1051	850 851	950 951	1050 1051
	•••	1				

	Buffer memory address						
Item of A1SD75M□		A1SD75M□			QD75M□		
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3	
Md.102 Deviation counter value	852	952	1052	852	952	1052	
Wa. 102 Deviation counter value	853	953	1053	853	953	1053	
Md.103 Motor rotation	854 855	954	1054	854	954	1054 1055	
Mater current	856	955 956	1055 1056	855 856	955 956	1055	
Md.104 Motor current							
Md.105 Auto tuning	857	957	1057	857	957	1057	
Md.106 Load inertia ratio	858	958	1058	858	958	1058	
Md.107 Position loop gain 1	859	959	1059	859	959	1059	
Md.108 Speed loop gain 1	860	960	1060	860	960	1060	
Md.109 Position loop gain 2	861	961	1061	861	961	1061	
Md.110 Speed loop gain 2	862	962	1062	862	962	1062	
Pr.111 Speed integral compensation	863	963	1063	863	963	1063	
Md.112 Servo amplifier software No.	864 to 869	964 to 969	1064 to 1069	864 to 869	964 to 969	1064 to 1069	
Md.113 Parameter error (No.1 to 15)	870	970	1070	870	970	1070	
Md.114 Parameter error (No.16 to 31)	871	971	1071	871	971	1071	
Md.115 Parameter error (No.32 to 47)	872	972	1072	872	972	1072	
Parameter error (No.48 to 63)		-		873	973	1073	
Parameter error (No.64 to 75)		-		874	974	1074	
Maker setting		-		875	975	1075	
<u> </u>		T	1	876	976	1076	
Md.116 Servo status	873	973	1073	877	977	1077	
Md.117 Regenerative load ratio	876	976	1076	878	978	1078	
Md.118 Effective load ratio	877	977	1077	879	979	1079	
Md.119 Peak load ratio	878	978	1078	880	980	1080	
Md.121 Absolute position restoration mode	879	979	1079				
Md.120 FeRAM access count	880 to 883	980 to 983	1080 to 1083				
Deceleration start flag				899	999	1099	

			Buffer mem	ory address		
Item of A1SD75M□		A1SD75M□			QD75M□	
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3
Cd.1 Clock data setting (hour)		1100			-	
Cd.2 Clock data setting (minute, second)		1101			-	
Cd.3 Clock data writing		1102			-	
Cd.4 Target axis		1103			-	
Cd.5 Positioning data No.		1104			-	
Cd.6 Write pattern		1105			-	
Cd.7 Read/write request		1106			-	
Cd.8 Read/write positioning data I/F		1108 to 1137			-	
Cd.9 Flash ROM write request		1138			1900	
Cd.10 Parameter initialization request		1139			1901	
Cd.11 Positioning start No.	1150	1200	1250	1500	1600	1700
Cd.12 Axis error reset	1151	1201	1251	1502	1602	1702
Cd.13 Restart command	1152	1202	1252	1503	1603	1703
Cd.14 M code OFF request	1153	1203	1253	1504	1604	1704
Cd.15 New current value	1154	1204	1254	1506	1606	1706
Ca.10 Non Canoni value	1155 1156	1205 1206	1255 1256	1507 1514	1607 1614	1707 1714
Cd.16 New speed value	1157	1200	1257	1514	1615	1714
Cd.17 Speed change request	1158	1208	1258	1516	1616	1716
Cd.18 Positioning operation speed override	1159	1209	1259	1513	1613	1713
Cd.19 JOG speed	1160	1210	1260	1518	1618	1718
	1161	1211	1261	1519	1619	1719
Cd.20 Speed-position switching enable flag	1163	1213	1263	1528	1628	1728
Cd.21 Speed-position switching control	1164	1214	1264	1526	1626	1726
movement amount change register	1165	1215	1265	1527	1627	1727
Cd.22 Manual pulse generator enable flag	1167	1217	1267	1524	1624	1724
Cd.23 Manual pulse generator 1 pulse	1168	1218	1268	1522	1622	1722
input magnification	1169	1219	1269	1523	1623	1723
Cd.24 OPR return request flag OFF request	1170	1220	1270	1521	1621	1721
Cd.25 External start valid						
(QD75M□: Cd.8 External command valid)	1171	1221	1271	1505	1605	1705
Cd.26 Step valid flag	1172	1222	1272	1545	1645	1745
Cd.27 Step mode	1173	1223	1273	1544	1644	1744
Cd.28 Step start information	1174	1224	1274	1546	1646	1746
Cd.29 Skip command	1175	1225	1275	1547	1647	1747
Cd.30 New torque value	1176	1226	1276	1525	1625	1725
Cd.31 Positioning starting point No.	1178	1228	1278	1501	1601	1701
Cd.100 Servo OFF command	1179	1229	1279	1551	1651	1751
Cd.101 Torque output setting value	1180	1230	1280	1552	1652	1752

	Buffer memory address							
Item of A1SD75M□		A1SD75M□			QD75M□			
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3		
Cd.32 Interrupt request during	1181	1231	1281	1520	1620	1720		
continuous operation	1101	1231	1201	1320	1620	1720		
	1184	1234	1284	1508	1608	1708		
Cd.33 New acceleration time value	1185	1235	1285	1509	1609	1709		
	1186	1236	1286	1510	1610	1710		
Cd.34 New deceleration time value	1187	1237	1287	1511	1611	1711		
Cd.35 Acceleration/deceleration time								
change during speed change, enable/	1188	1238	1288	1512	1612	1712		
disable selection								
Deceleration start flag valid		-			1905			
Stop command processing for deceleration					1907			
stop selection		-			1907			
Servo OFF command	-			1551	1651	1751		
Torque output setting value		-		1552	1652	1752		
Servo amplifier data read		-		1553	1653	1753		

				1				Buff	er mem	ory add	iress				
		Item of A1SD75M□				A1SD	75M□			.,		QD7	5M□		
				Ax	is 1		s 2	Axi	s 3	Ax	is 1		is 2	Ax	is 3
	Da Da Da	.2 Control system .3 Acceleration time No.			00		00		00		000		000		000
				40	04	22	04	22	04	200	104	00	104	4.44	204
_		9 M code/condition data 8 Dwell time/JUMP nation positioning data	No.1		01	23	01	33	01		001	80	02		001
ata _*	Not u	ısed		13	03	23	03	33	03	20	03	80	03	14(003
g de	1400				04	23		33			04		04		004
nin	Da	.7 Command speed			05	23			05	_	05		05		005
Positioning data*1	Da	5 Positioning address/		13	06	23	06	33	06	20	06	80	06	140	006
Ъ		ement amount			07	23		33			07		07		007
		6 Arc address			08	23 23		33 33			108 109		08 09		008
		No.2			o 1319	2310 t	o 2319	3310 to	o 3319	2010 t	o 2019	8010 t	o 8019		10 to 019
		No.3		1320 t	1320 to 1329 2320 to 2329 3320 to 3329 2020 to		o 2029	8020 t	o 8029		20 to 029				
		to			:0	t	0	t	0	1	to	1	to		to
		No.100		2290 t	o 2299	3290 t	o 3299	4290 to	o 4299	2990 t	o 2999	8990 t	o 8999		90 to
		Da.10 Shape												148	999
	Start block data*2	Da.11 Start data No. Da.12 Special start instruction Da.13 Parameter	1st point	4300	4350	4550	4600	4800	4850	26000	26050	27000	27050	28000	28050
	Star	2nd point		4301	4351	4551	4601	4801	4851	26001	26051	27001	27051		
	0,	3rd point		4302	4352	4552	4602	4802	4852					28002	28052
_* _		to			.0		0		0		to		to		10
ation		50th point		4349	4399	4599	4649	4849	4899	26049	26099	27049	27099	28049	28099
Positioning start information*3		Da.14 Condition target Da.15 Condition operator		44	00	46	50	49	00	26	100	27	100	28 ⁻	100
oning (Da.16 Address	No.1		02		52 53	49 49			102 103		102 103		102 103
Positi	data	Da.17 Parameter 1			04 05	46 46	54 55	49 49			104 105		104 105		104 105
	Condition data	Da.18 Parameter 2		44	06 07		56 57	49 49	06	26	106 107		106 107	28	106 107
	Cor	No.2			o 4419	4660 t		4910 to		261	10 to 119	271	10 to 119	281	10 to 119
		No.3		4420 t	o 4429	4670 t	o 4679	4920 to	o 4929	261	20 to 129	271	20 to 129	2812	20 to 129
		to		f	:0	f	0	t	0		to		to		129
		No.10			o 4499	4740 t		4990 to		261	90 to 199	271	90 to 199	2819	90 to 199
	1									20	100	21	100	20	100

^{*1} With the QD75M \square , the positioning data buffer memory addresses are No. 1 to 600.

^{*2} With the QD75MD, it is called "block start data".

^{*3} With the QD75MD, the "block start data" and "condition data" in are called "start block 0". There are five start blocks: 0 to 4.

					Buffer mem	ory address			
	Item of A1SD75M□			A1SD75M□			QD75M□		
			Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3	
Positioning		Start No.8001	4500	4750	5000	-	-	-	
· ·	Indirect	Start No.8002	4501	4751	5001	-	-	-	
start	designation	to	to	to	to	to	to	to	
information		Start No.8050	4549	4799	5049	-	-	-	
Dragramma	ala aantrallar	Condition judgment target	5050			30000			
· ·	ole controller			to			to		
CPU memor	y area	data of the condition data	5099			30099			
Target axis			5100			-			
Head position	ning block No	O.	5101			-			
No. of read/write data items			5102			-			
Read/write request			5103			-			
Read/write b	olock			5110 to 6109		-			

8.3.5 External interface specifications comparison

The following table lists the differences of the external interface specifications between the A1SD75M \square and QD75M \square .

(1) Electrical specifications comparison

O : Compatible, \triangle : Partial change required

	Item	Difference*	compati- bility	Precautions for replacement	
	Upper/lower limit signal	OFF current:1.5mA→1.0mA	٨	Check whether the OFF current value met	
	Opper/lower limit signal	Input resistance: $4.7k\Omega\rightarrow6.8k\Omega$	Δ	satisfied values	
	Stop signal	OFF current:1.5mA→1.0mA		Check whether the OFF current value met	
	Stop signal	Input resistance: $4.7k\Omega\rightarrow6.8k\Omega$	Δ	satisfied values	
	Near-point dog signal	OFF current:1.5mA→1.0mA		Check whether the OFF current value met	
Innut		Input resistance: $4.7k\Omega \rightarrow 6.8k\Omega$		satisfied values	
Input		Response time: 4ms→1ms		Satisfied values	
		OFF current:1.5mA→1.0mA		Check whether the OFF current value met	
	External command signal (CHG)	Input resistance: $4.7k\Omega\rightarrow6.8k\Omega$	Δ		
		Response time: 4ms→1ms		satisfied values	
	Manual pulse generator	ON current: 3.5mA→1.0mA			
	Manual pulse generator	Input resistance:1.5k→1.2kΩ	0		

The column of interface specifications differences is described as the form, [Specifications of A1SD75M \square] \rightarrow [Specifications of QD75M \square].

(2) Signal layout comparison

When using with QD75M□, change the connector and wiring.

	A1SI	D75M□	QD75M□		
Name	Logic (Initial setting)	Logic switching by parameter	Logic (Initial setting)	Logic switching by parameter	
Manual pulse generator A phase	Negative logic	Not allowed	Negative logic	Allawad	
Manual pulse generator B phase*1	(multiple of 4)	Not allowed	(multiple of 4)	Allowed	
Near-Point signal	Negative logic	Not allowed	Negative logic	Allowed	
Stop signal	Negative logic	Not allowed	Negative logic	Allowed	
Upper limit	Negative logic	Not allowed	Negative logic	Allowed	
Lower limit	Negative logic	Not allowed	Negative logic	Allowed	
External start*2	Negative logic	Not allowed	Negative logic	Allowed	
Speed-position switching signal*2	Negative logic	Not allowed	rvegative logic	Allowed	

^{*1} The following shows comparisons about manual pulse generator A phase/B phase.

	A1SD75M□	QD75M□
Number of connections	1 generator/axis	1 generator/module
		Allowed
Mode change (Parameter)	Not allowed	1 x mode, 2 x mode,
		4 x mode, PLS/SIGN mode

^{*2} With the QD75M\(\sigma\), the "external start signal" and "speed-position switching signal" are combined into the "external command signal/switching signal".

(3) Supported servo amplifier

(a) For continuous use of a servo amplifier connected with the existing A1SD75M/AD75M

The following table shows whether or not the existing servo amplifier can be continuously used with positioning modules replaced.

A1SD75M□/AD75M□ Supported amplifier model	QD75M□ Availability	Remarks
MR-J□-B	Available	Needs to change the SSCNET cables (refer to (b) in the next page.)
MR-H□-B	Available	Discontinued model
MR-J2□-B	Available	- Discontinueu model
MR-J2S□-B	Available	Needs to change the SSCNET cables (refer to (b) in the next page.)
WII 1-020LI-D	Available	Model to be discontinued at the end of September 2015

⊠Point -

(1) Selecting suitable products to replace the existing servo amplifier

When replacing the existing servo amplifier, select a positioning module in the following combinations.

Additionally, the servo motor needs to be replaced.

Positioning module: QD77MS□ + servo amplifier: MR-J3□-B

• Positioning module: QD77MS□ + servo amplifier: MR-J4□-B

(2) Selecting suitable products to replace the existing servo amplifier without servo motor replacement

When replacing the existing servo amplifier alone without servo motor replacement, select a module in the following combination.

Positioning module: QD75M

MR-J4-B-RJ020

+ Servo amplifier: (Conversion Unit for SSCNET of MR-J2S-B Compatible Servo Amplifier)

MR-J4-T20

+ Converter module: (Conversion Unit for SSCNET of MR-J2S-B)

For replacing servo amplifiers and servo motors, data such as positioning parameters and positioning data need to be changed.

When replacing them, contact the department in charge of Mitsubishi electric servo products.

For replacing the MR-J2So-B, refer to "Transition from MELSERVO-J2-Super/J2M Series to J4 Series Handbook" (L(NA)03093).

(b) For SSCNET cables applicable to the servo amplifiers

The following tables show applicable SSCNET cables when the existing servo amplifier is continuously used.

Replacing positioning modules from the A1SD75M or AD75M to the QD75M requires the change of SSCNET cables.

Table 1. With the servo amplifier MR-J, J2, or J2S

SSCNET cable		Between QD75 and MR-J/ J2/J2S amplifier	Between AD75 and MR-J/ J2/J2S amplifier	Between MR-J/J2/J2S amplifier and MR-J/J2/J2S amplifier
MR-J2HBUS□M		0	×	0
MR-J2HBUS□M-A		×	0	×
MR-HBUS□M		×	×	×
MR-J2CN1		0	×	0
MR-J2CN1-A	*1	×	0	×
MR-HBCNS		×	×	×

^{*1} Connector set for making the cable by user

Table 2. With the servo amplifier MR-H

SSCNET cable		Between QD75M and MR-H amplifier	Between AD75M and MR-H amplifier	Between MR-H amplifier and MR-H amplifier
MR-J2HBUS□M		×	×	×
MR-J2HBUS□M-A		0	×	×
MR-HBUS□M	MR-HBUS□M		0	0
MR-J2CN1		×	×	×
MR-J2CN1-A *1		0	×	×
MR-HBCNS		×	0	0

^{*1} Connector set for making the cable by user

8.4 A1SD70

8.4.1 Performance specifications comparison

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

O: Compatible, △: Partial change required, ×: Incompatible					
Item	Model	A1SD70	QD73A1	Compat- ibility	Precautions for replacement
Number of co	ontrol axes	1 axis	1 axis	0	
Docitioning	Capacity	1 data	1 data	0	
Positioning data Setting method		Sequence program	Sequence program	0	
	Mode	Position control mode (Positioning, two-phase trapezoidal positioning) Speed-position control switch mode	Position control mode (Positioning, two-phase trapezoidal positioning) Speed-position control switch mode	0	
	System	Position control mode: Absolute system/incremental system Speed-position control switch mode: Incremental system	Position control mode: Absolute system/incremental system Speed-position control switch mode: Incremental system	0	
	Position command	-2147483648 to 2147483647 (pulse) (32-bit signed binary)	-2147483648 to 2147483647 (pulse) (32-bit signed binary)	0	
Positioning	Speed command	1 to 400,000 (pulse/s)	1 to 4,000,000 (pulse/s)	0	The specification has improved. (Upward-compatibility)
rositioning	Acceleration/ deceleration	Automatic trapezoidal acceleration/ deceleration	Automatic trapezoidal acceleration/ deceleration	0	
	Automatic acceleration/ deceleration	Acceleration time: 2 to 9999 (ms) Deceleration time: 2 to 9999 (ms)	Acceleration time: 2 to 9999 (ms) Deceleration time: 2 to 9999 (ms)	0	
	In-position range	1 to 2047 pulse	1 to 20479 pulse	0	The specification has improved. (Upward-compatibility)
	Backlash compensation	×	×	0	
	Error correction function	×	x	0	
Speed comm	and output	0 to ±10VDC (Adjustable to set in the range of ±5 to ±10VDC)	0 to ±10VDC (Adjustable to set in the range of ±5 to ±10VDC)	0	
Positioning	Pulse frequency	Open collector : 100kpulse/s TTL: 100kpulse/s Differential output: 100kpulse/s	Open collector: 200kpulse/s TTL: 200kpulse/s Differential output: 1Mpulse/s	0	The specification has improved. (Upward-compatibility)
feedback pulse input	Connectable encoder type	Open collector, TTL, or differential output	Open collector, TTL, or differential output	0	
	Multiplica-tion setting	The number of input feedback pulses can be multiplied by 4, 2, 1, or 1/2.	The number of input feedback pulses can be multiplied by 4, 2, 1, or 1/2.	0	
OPR control		Available (2 method)	Available (2 method)	0	The setting method is changed from a hardware switch to PLC parameter of a CPU module. The function is the same though the setting method is changed.
JOG operation		0	0	0	
Starting time		Absolute system: 4.4ms*1 Incremental system: 4.5ms*1 JOG operation: 4.3ms OPR (near-point dog method): 4.4ms OPR (count method): 5.1ms	Absolute system: 1.2ms*1 Incremental system: 1.2ms*1 JOG operation: 1.2ms OPR (near-point dog method): 1.2ms OPR (count method): 1.2ms	0	The specification has improved. (Upward-compatibility)
M function		×	×	0	
Internal curre (5VDC)	nt consumption	5VDC 0.3A	5VDC 0.52A	×	The recalculation of internal current consumption (5VDC) is required.

O: Compatible, △: Partial change required, ×: Incompatible

Model Item	A1SD70	QD73A1	Compat- ibility	Precautions for replacement
External supply voltage/ current terminal block	+15VDC, 0.2A -15VDC, 0.02A	-		An external power supply is not required.
Number of occupied I/O points	48 points (Number of I/O slots: 2 slots occupied) (I/O assignment: First half 16 points, empty slot, Second half 32 points, special function module)	48 points (Number of I/O slots: 2 slots occupied) (I/O assignment: First half 16 points, empty slot, Second half 32 points, intelligent function module)	0	
Weight	0.4kg	0.2kg		

^{*1} For the A1SD70, 0.2ms is added to the starting time in two-phase trapezoidal positioning mode. For the QD73A1, an extra time is not added even in two-phase trapezoidal positioning mode.

8.4.2 Function comparison

(1) Function comparison between the A1SD70 and the QD73A1

O: Compatible, -: Not available

	Function		Description	A1SD70	QD73A1	Precautions for replacement
		Positioning	Positioning is executed from the current position to a specified	0	0	Refer to Section
		control	position at a specified speed.	0	O	8.4.6.
	Position	Two phase	Positioning is executed to the address specified in			
	control	Two-phase trapezoidal	"Da.2 Positioning address P1" at "Da.3 Positioning speed V1",			
	mode	positioning control	then to the address specified in "Da.4 Positioning address P2" at	0	0	
Major		control	"Da.5 Positioning speed V2" by one positioning start signal.			
positioning			Operation starts according to the positioning speed set beforehand			
control			by one start signal, then the operation switches to position control			
			by Speed-position switching command signal. If the operation			
	Speed-po	sition	stopped by Stop signal after the input of Speed-position switching	0	0	Refer to Section
	control sw	vitch mode	command signal, the positioning can be continued by Speed-			8.4.6.
			position mode restart signal. In addition, the positioning address			
			(movement amount) can be changed if it is before the input of			
			Speed-position switching command signal.			
			Positioning is executed in the specified direction at specified			
			speed while a JOG operation command is on. Turning on the	n the		
JOG operation			signal starts operation at a specified speed and speed control	0	0	
			operation is continued until Stop signal is input.			
			A workpiece is returned to an original point following an OPR start			
OPR contro	OPR control		command from a CPU module, and the current value is corrected	0	0	
			to an OP address after the completion of OPR.			
			This function multiplies the feedback pulse frequency from the			
Multiplication	on setting		pulse generator by 4, 2, 1, or 1/2.	0	0	
Electronic	noar function	nn.	This function controls moving distance and speed by multiplying	_	0	
Electronic (gear furicil	ווכ	command pulse output.	0	0	
			This function clears the accumulated pulses in the deviation			
			counter. When the servomotor power is turned off due to an			
Deviation c	ounter clea	ar function	emergency stop during positioning, clearing the accumulated	0	0	
			pulses in the deviation counter prevents servomotor rotation at			
			power recovery.			
0 1 1	· ·		This function forces to change speed from a program during	_	_	Refer to Section
Speed char	nge functio	n	positioning control or JOG operation.	0	0	8.4.6.
O		£	This function changes the current feed value to a specified value	_	_	Refer to Section
Current vai	Current value change function		from a sequence program on the condition other than while BUSY.	0	0	8.4.6.
			This function turns on In-position signal while the accumulated			
In position	function		pulse amount in the deviation counter is within the specified in-			
In-position	iunction		position range. In-position signal can be used as the signal right	0	0	
			before positioning completion.			
Zoro/zoir -	diuntmast		This function adjusts analog voltage contained in accumulated	-	-	Refer to Section
Zero/gain a	lujusiment		pulses.	0	0	8.4.6.



Positioning execution time (BUSY signal (X14) ON to Positioning complete signal (X15) ON) of the QD73A1 and A1SD70 may differ because their internal processing methods are different. As a result, the timing when In-position signal (X16) turns on may also vary.

Adjust positioning execution time using the following methods if the difference of the positioning execution time (or the timing when In-position signal (X16) turns on) affects the system.

- Adjusting the QD73A1's positioning parameter, "Pr.6 Acceleration time" or "Pr.7 Deceleration time".
- Increasing gain by changing the accumulated pulse amount setting through the QD73A1's zero/ gain adjustment



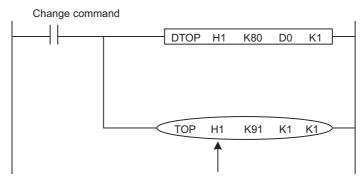
(2) Changed function from the A1SD70

Though the functions of the A1SD70 and the QD73A1 are same, the setting methods and buffer memory addresses for the functions are partly changed.

To use following functions, changes or corrections of the programs or setting methods are required. For details, refer to the user's manual for the QD73A1.

Changed function	Change description
Major positioning control	Program corrections of the QD73A1 are required because buffer memory addresses for the positioning
wajor positioning control	address, positioning speed, and positioning pattern differ from those of the A1SD70.
	• A1SD70
	Amount of movement from the near-point dog ON (buffer memory address: 108, 109), the absolute value of
	the moving amount is stored.
OPR function	• QD73A1
	Near point the amount of movement of the dog after the ON (buffer memory address: 108, 109), the value
	obtained by adding the homing direction rating Will be paid. Near point movement amount after dog ON
	(absolute value) (Buffer Memory Address: 118, 119) in, the amount of movement Absolute value is stored.
	• A1SD70
	For Velocity/position axis travel distance change area, the value is reflected during speed control.
Speed-position control switch	Setting value: 0 to 2147483647 (valid within the stroke range)
mode (speed control	• QD73A1
operation)	For New speed-position movement amount, the value is cleared to 0 when the next operation starts and
,	reflected when Speed-position switching command signal is turned on.
	Setting value: 1 to 2147483647 (valid within the stroke range)
	• A1SD70
	The speed change is requested by writing a new speed value in Velocity change area of the buffer memory.
	• QD73A1
Speed change function	The speed change is requested by writing a new speed value in the buffer memory and writing "1" to Speed
	change request (buffer memory address: 91).
	* To use the speed change function, an additional program is required.*1
	• A1SD70
Current value change	The current value is changed by writing a new address in Present value change area of the buffer memory.
function	• QD73A1
	The current value is changed by writing a new address in New current value of the buffer memory and
	writing "1" to Current value change request (buffer memory address: 90).
	• A1SD70
	The adjustment is performed using the volumes for zero/gain adjustment.
	• QD73A1
	The adjustment is performed by either of following methods.
Zero/gain adjustment	1) Using the UP/DOWN switch for zero/gain adjustment
	The function is the same as the A1SD70 though the QD73A1 uses the UP/DOWN switch instead of the
	volumes.
	2) Using the buffer memory
	To use the buffer memory for the adjustment, create a program. 1
	• A1SD70
	The setting is configured with slide switches or encoder interface setting pin (hardware setting)
	1) Slide switches
	Rotation direction, accumulated pulse, multiplication setting, zero-return direction, zero-return mode, and
	zero/gain adjustment mode setting/clear
Mode switch	2) Encoder interface setting pin
Wode Switch	Encoder output types
	• QD73A1
	The setting is configured with Switch setting in I/O assignment of PLC parameter (GX Developer).
	When using GX Works2, set it with the intelligent function module switch setting.)
	* Though the setting method is changed from a hardware switch to parameters of software, the same level
	of settings are available because the function is upward compatible.
LED	Refer to *2.

*1 Example of an additional program (using a buffer memory address for the speed change function)



* Create the above due to the speed demand.

*2 Details of LEDs are shown in the table below.

LED name	A1SD70	QD73A1	Remarks*3	
RUN	-	RUN		
Minor error	ERR.1	ERR.	Used for both minor errors and major errors.	
Major error	ERR.2	ERR.		
Encoder phase A	φА	φА		
Encoder phase B	φВ	φВ		
Encoder phase Z	φZ	φZ		
BUSY	BUSY	BUSY		
Zero adjustment status	-	ZERO	The contents indicated with "ZERO" of the QD73A1 differ from the ones indicated with "ZERO" of the A1SD70.	
Gain adjustment status	-	GAIN	indicated with ZERO of the ATSD10.	
Servo READY	SV RDY	-	Can be checked with an input signal "X1B".	
Near-zero point dog	DOG	-	Can be checked with an input signal "X1C".	
Stop	STOP	-	Can be checked with an input signal "X1D".	
Upper limit LS	FLS	-	Can be checked with an input signal "X1E".	
Lower limit LS	RLS	-	Can be checked with an input signal "X1F".	
In-Position	IN-POS	-	Can be checked with an input signal "X16".	
Error counter polarity	POLE	-	Can be checked with buffer memory addresses "106, 107".	
Error counter value	on		The LED "POLE" of the A1SD70 indicates ON when the deviation counter	
Error counter value	2 ⁿ	-	value is "-", and indicates OFF when the deviation counter value is "+".	
PC READY	PC RDY	-	Check the on/off status of an output signal "Y2D" with a device monitor.	
			Can be checked with an input signal "X12".	
Zero-return request	ZERO	-	The contents indicated with "ZERO" of the A1SD70 differ from the ones	
			indicated with "ZERO" of the QD73A1.	
Excessive error	EEX	-	Can be checked with an input signal "X17".	
WDT error	WDT ERR	-	Can be checked with an input signal "X10".	
During velocity operation	V-MODE	-	Can be checked with an input signal "X2D".	

^{*3} The I/O signals shown in the table are the ones when the QD73A1 is mounted on the slots "0, 1" of a main base unit.

Power supply module		
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8.4.3 I/O signals comparison

Some I/O signals are added a function.

When an additional function is used, an addition or change of a sequence program is required. For details of the I/O signals or sequence program, refer to the MELSEC-Q QD73A1 Positioning Module User's Manual.

Input (X)			Output (Y)			
Signal name	A1SD70	QD73A1	Signal name	A1SD70	QD73A1	
Unused	X00	X00	Unused	Y00	Y00	
	to	to		to	to	
(The first half slot is Empty 16 points.)*1	X0F	X0F	(The first half slot is Empty 16 points.)*1	Y0F	Y0F	
WDT error, H/W error	X10	X10	Zero/gain adjustment data writing request	-	Y1A	
Module READY	X11	X11	Zero/gain adjustment change request	-	Y1B	
OPR request	X12	X12	Set value change request	-	Y1C	
OPR complete	X13	X13	OPR start	Y20	Y20	
BUSY	X14	X14	Absolute positioning start	Y21	Y21	
Positioning complete	X15	X15	Forward start	Y22	Y22	
In-position	X16	X16	Reverse start	Y23	Y23	
Excessive error	X17	X17	Forward JOG start	Y24	Y24	
Error detection	X18	X18	Reverse JOG start	Y25	Y25	
Overflow	X19	X19	Speed-position mode restart	Y26	Y26	
Underflow	X1A	X1A	Stop	Y27	Y27	
Servo READY	X1B	X1B	Error reset	Y28	Y28	
Near-point dog	X1C	X1C	Overflow reset	Y29	Y29	
External stop	X1D	X1D	Underflow reset	Y2A	Y2A	
Upper limit signal	X1E	X1E	Speed-position switching enable	Y2C	Y2C	
Lower limit signal	X1F	X1F	PLC READY	Y2D	Y2D	
OPR start complete	-	X20		Y10	Y10	
A beautiful assisting in a start sound to		V04		to	to	
Absolute positioning start complete	-	X21		Y1F	Y19	
Forward start complete				Y2B	Y1D	
(for the incremental positioning and the	-	X22	*1		to	
speed-position control switching)			Use prohibited*1	Y2E, Y2F	Y1F	
Develope atom accordate						
Reverse start complete		X23			VOE VOE	
(for the incremental positioning and the	-	A23		-	Y2E, Y2F	
speed-position control switching)						
Synchronization flag	-	X24			Į.	
Zero/gain adjustment data writing complete			1			
flag	-	X2A				
Zero/gain adjustment change complete flag	_	X2B				
Set value change complete flag	_	X2C	1			
Operating status of the speed-position		7.20	1			
control switch mode	-	X2D				
CONTROL SWITCH HIDGE			1			
	X20	X25 to X29				
Use prohibited*1	to	V0E V0E	1			
	X2F	X2E, X2F				

^{*1} A "Use prohibited" area is reserved for the system use and cannot be used by a user.

If it is turned on/off through a sequence program, the normal operation of the module cannot be guaranteed.

8.4.4 Buffer memory address comparison

Sequence program change is required because the assignment of buffer memory differs between the modules.

For details of the buffer memory or sequence program, refer to the MELSEC-Q QD73A1 Positioning Module User's Manual.

area shows the differences between the A1SD70 and the QD73A1.

Itom			Buffer memory address		
	Item		A1SD70	QD73A1	
	Ctrake limit upper limit		0	0	
Fixed parameter	Stroke limit upper limit		1	1	
	Stroke limit lower limit		2	2	
	Stroke limit lower limit		3	3	
		Numerator of command	4	4	
		pulse multiplication	4	4	
	Electronic gear	Denominator of			
		command pulse	5	5	
		multiplication			
	Speed limit value		20	20	
	Speed littlit value		21	21	
Variable parameter	Acceleration time		22	22	
variable parameter	Deceleration time		23	23	
	In-position range		24	24	
	Positioning mode		25	25	
	OP address		40	40	
	01 4441000		41	41	
	OPR speed		42	42	
OPR data	от тереви		43	43	
OT IT data	Creep speed		44	44	
			45	45	
	-	nt amount after near-point	46	46	
	dog ON		47	47	
	Positioning pattern		60	301	
	Positioning address P ₁		61	302	
	3 · · · · · · · · · · · · · · · · · · ·		62	303	
	Positioning speed V ₁		63	304	
Positioning data			64	305	
	Positioning address P ₂		65	306	
			66	307	
	Positioning speed V ₂		67	308	
			68	309	
	New current value		80	80	
			81	81	
	New speed value		82	82	
	<u> </u>		83	83	
	JOG speed (area)		84	84	
			85	85	
Control change area	Deviation counter clear		86	86	
J	Analog output adjustme	ent area T	87	87	
	New speed-position mo	vement amount	88	88	
	Current value character	aguant	89	89	
	Current value change re	equest	-	90	
	Speed change request		-	91	
	Analog output adjustme	ent area 2	-	92	
				93	

		Buffer memory address		
	ltem	A1SD70	QD73A1	
	Zero/gain adjustment specification	-	94	
Zero/gain adjustment	Zero/gain adjustment value specification	-	95	
area	Factory default zero/gain adjustment value restoration request	-	96	
	Current feed value	100 101	100 101	
	Actual current value	102 103	102 103	
	Error code (ERR.1)	104	104	
Monitor area	Error code (ERR.2)	105	105	
	Deviation counter value	106 107	116 ^{*1} 117 ^{*1}	
	Deviation counter value (address)	-	106 ^{*2} 107 ^{*2}	
	Movement amount after near-point dog ON	108 109	108 109	
	Speed-position switching command	110	110	
	Control mode	111	111	
	Zero/gain execution status	-	112	
	Zero/gain adjustment status	-	113	
	Feedrate	-	114 115	
	(Record 0) Error code	-	120	
	(Record 0) Error occurrence (Year : Month)	-	121	
Franchiston	(Record 0) Error occurrence (Day : Hour)	-	122	
Error history	(Record 0) Error occurrence (Minute : Second)	A1SD70	123	
	(Record 1 to 15)	-	124 to 183	
	Error history pointer	-	184	

^{*1} A value of the same specification as A1SD70 is stored. The buffer memory address name of the QD73A1 changes Deviation counter value (pulse). Deviation counter value (pulse) supports the QD73A1 whose serial number (first five digits) is "15042" or later.

^{*2} When electronic gear setting is 1/1, the value will be the same as Deviation counter value (pulse).

8.4.5 Interface specifications comparison with external devices

For the external interface specifications, the following shows the differences between the A1SD70 and the QD73A1.

O: Compatible, △: Partial change required

				0	D: Compatible, △: Partial change required		
	Item		A1SD70	QD73A1	Compati- bility	Precautions for replacement	
	External power supply		+15VDC, 0.2A	-	0	An external power supply terminal block is not available because an external power supply is not required.	
		Servo READY	0	0	0		
		Stop signal	0	0	0		
		Near-point dog signal	0	0	0		
Input	External input signal	Upper limit signal	0	0	0		
прас	input oignar	Lower limit signal	0	0	0		
		Speed- position switching command	0	0	0		
	Positioning feedback pulse input		(Pulse frequency) Open collector: 100kpulse/s or less TTL: 100kpulse/s or less Differential: 100kpulse/s or less	(Pulse frequency) Open collector: 200kpulse/s or less TTL: 200kpulse/s or less Differential: 1Mpulse/s or less	0	The specification has improved. (Upward-compatibility)	
Output	Servo ON		0	0	0		
	Speed comm signal)	nand (analog	0	0	0		

8.4.6 Precautions for the replacement of the A1SD70 by the QD73A1

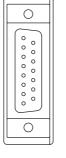
The following shows precautions for the replacement of the A1SD70 by the QD73A1.

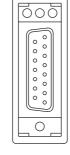
Item	A1SD70	QD73A1	Precautions
Number of occupied slots	2 s	lots	*1
Number of occupied I/O points	48 points (I/O assignment: First half slot: Empty 16 points Second half slot: special function module, 32 points)	*2	
Buffer memory address	Addresses are partly changed.New items are added due to the specific	*3	
Mode setting	Hardware switch setting	Parameter setting of a CPU module ("I/O assignment" → "Switch setting")	*4
LED	Items indicated with the LEDs differ betv	veen the A1SD70 and the QD73A1.	*5
External wiring	The existing connectors can be used.	*6*7	
Operation of when Servo READY signal is off	The A1SD70 counts the feedback pulse, and outputs the voltage proportional to the deviation counter.	The QD73A1 clears the deviation counter to 0, and outputs 0V.	*8

- The module occupying 2 slots cannot be mounted on the Q series large type base unit.

 Because the same base unit of the existing module is used for the QD73A1, when mounting the QD73A1 on the Q series large type base unit, use 2 base units by adding an extension base unit.
- *2 When the first half slot for the existing A1SD70 is set to "empty 0 points", configure the I/O assignment setting of parameters in either of following ways so that addresses of the QD73A1 remain the same as the A1SD70 even after the replacement.
 - 1) Set Empty 0 point to the first half slot.
 - 2) Set the same address of the A1SD70 to the second half slot of the QD73A1 in the start XY setting.
- *3 Changes or corrections of the programs are required.
 For details, refer to the MELSEC-Q QD73A1 Positioning Module User's Manual.
- *4 The method of mode setting, which is required for the positioning, is changed from a hardware switch to the switch setting in I/O assignment of PLC parameter.
 - Configure the same setting as the A1SD70 by referring to the MELSEC-Q QD73A1 Positioning Module User's Manual.
- *5 Items indicated with the LEDs can be checked with I/O signals of the QD73A1.

 If necessary, install lamps corresponding to the LED indications externally and indicate the on/off status of the I/O signals using a program.
- *6 The position where a module is mounted is changed because the dimensions of a base unit of the QD73A1 differ. In addition, the connector direction is reverse shown as below.





QD73A1

A1SD70

Check whether the wiring is enough even after the replacement because the connector position is changed though the existing connectors can be used without the wiring change.

*7 When the A1SD70 being used in the setting that the positive voltage is output when the positioning address increases (slide switch 1 (rotation direction setting): on) is replaced with the QD73A1, the cables between the A1SD70 and an encoder can be used.

When the A1SD70 being used in the setting that the negative voltage is output when the positioning address increases (slide switch 1 (rotation direction setting): off) is replaced with the QD73A1, the wiring change between the A1SD70 and an encoder is required.

When the A1SD70 is replaced with the QD73A1 whose serial number (first five digits) is "15042" or later, the cables between the A1SD70 and the encoder can be used by changing the intelligent function module switch setting.

- <Replacement with the QD73A1 whose serial number (first five digits) is "15041" or earlier>
 - Change the wiring between the A1SD70 and the encoder so that each phase A and B is reversed.

No	Slide switch 1 of the A1SD70 (rotation direction setting)	Rotation direction of the motor and encoder	Wiring between the A1SD70 ar	nd encoder	Wiring when the A1SD70 is replace	d to the QD73A1
1	- OFF	Same direction	Phase A A A A A A A A A A A A A A A A A A A	Phase A Phase B Encoder	Phase Phase B QD73A1	Phase Phase B Encoder
2		Reverse direction	Phase A Phase B A1SD70	Phase A Phase B Encoder	Phase Phase B QD73A1	Phase A Phase B Encoder

- <Replacement with the QD73A1 whose serial number (first five digits) is "15042" or later>
 - Set b0 (switch 3) of the intelligent function module switch to 1.
- *8 The operation for the QD73A1 while the signal is off was changed from the operation for the A1SD70 due to the safety consideration of when Servo READY signal is turned on.

The QD73A1 whose serial number (first five digits) is "15042" or later operates the same as the A1SD70 by setting b4 (switch 3) of the intelligent function module switch to 1.

POSITION DETECTION MODULE REPLACEMENT

9.1 Position Detection Module Replacement

The A1S62LS position detection module should be considered to be replaced with the absocoder type position sensing module, VS-Q62, manufactured by NSD Corporation (partner company's product).

The absocoder type position sensing module, VS-Q62, can be directly mounted on a Q series base unit.

(1) Finding a replacement module model from the position detection module and absocoder model being used

The existing absocoder can be continuously used by selecting the VS-Q62 for replacement as shown below according to the position detection module and absocoder model being used.

Absocoder model	Q series position detection module for replacement		Existing A series position detection module			dule	
	VS-Q62	V6-Q62B	A61LS	A62LS	A62LS-S5	A63LS	A1S62LS
VRE-P062SAC	-	VS-Q62B-V1PG	0	-	0	-	-
VRE-P028SAC	-	V3-Q02D-V11 G	0	-	-	0	0
MRE-32SP062SAC			-	0	-	0	0
MRE-G□SP062FAC (□: 64/128/160/256/320)	VS-Q62B-M2PG	VS-Q62B-M2PG	-	0	0	-	-
VLS-256PWB			-	0	0	-	-
VLS-512PWB]		-	0	0	-	-
VLS-1024PW	VS-Q62-L	VS-Q62B-L	-	0	0	-	-
VLS-512PYB	V3-Q02-L	V3-Q02D-L	-	-		-	-
VLS-1024PYB	1		-	0	0	-	-
VLS-2048PY			-	0	-	-	-

VS-Q62: Varilimit type (scaling, positioning, switch output)

VS-Q62B: Converter type (position detection function)

(2) Connection cables

The existing cables can be used continuously. No new wiring is required.

(3) Remote setting module

Select the following remote setting module targeted for the VS-Q62.

	VS-Q62	VS-Q62B	A61LS	A62LS	A62LS-B5	A63LS	A1S62LS
VS-T62	VS-Q62-EDWU		-	-	-	0	0
Module standard equipment	(remote setting module)		-	0	0	1	-

POSITION DETECTION MODULE REPLACEMENT Memo

REPLACEMENT OF OTHER MODULES

10.1Replacement of Other Modules

This section lists AnS series modules not introduced in previous chapters and describes their alternative methods. The AnS series modules listed in this section require some special alternative methods because there are no Q series alternative models, or their functions and specifications differ from those of Q series modules.

Product	Model	Alternative method
Pulse catch module	A1SP60	Consider using the interrupt module, Ql60, as an alternative.
ruise Calcii illoudie	AISFOU	An interrupt program needs to be prepared.
Analog timer module	A1ST60	Consider programmed timer control by indirectly specifying
Analog limer module	AISTOO	internal timer.
		There are no alternative models. Consider using our partner
	A1SD35ID1	manufacturer's products (Balluff ID system BIS M series),
ID interface module		which can be connected to Mitsubishi programmable
ID IIIterrace module		controllers.
	A1SD35ID2	For details of a system transition method, refer to the
		technical bulletin (FA-A-0062).
Mamon, aard interface module	A1SD59J-S2	Create a file register in a memory card or the standard RAM,
Memory card interface module	A 13D393-32	and use it as a substitute.
Dummy modulo	A18C62	Replace the module with the QG60 and set I/O assignment in
Dummy module	A1SG62	parameter.

Memo	

APPENDICES

Appendix 1 External Dimensions

For external dimensions of modules shown in this handbook, refer to the user's manual for each module.

Appendix 2 Spare Parts Storage

(1) The general specifications of programmable controllers are as follows. Please do not store spare parts under a high temperature or high humidity condition, even within the range guaranteed by the specifications.

Storage ambient temperature	-20 to 75°C
Storage ambient humidity	10 to 90%, no condensation

- (2) Store in a place avoiding direct sunlight.
- (3) Store under condition with less dust or no corrosive gas.
- (4) The battery capacity of a A6BAT battery or a lithium-coin battery (commercially available) for memory card will be decreased by its self-discharging even when not used. Replace it with new one in 5 years as a guideline.
- (5) For a power supply module, CPU module with built-in power supply, or analog module that use any aluminum electrolytic capacitor, which is indicated in the table below, take the following measures since the characteristics will be deteriorated when the aluminum electrolytic capacitor is left un-energized for a long time.

Product	Model (AnS series)			
CPU module	A1SJHCPU			
(Power supply built-in type)	ATSJECTU			
Power supply module	A1S61PN, A1S62PN, A1S63P			
Analog modulo	A1S64AD, A1S68AD, A1S62DA, A1S68DAI, A1S68DAV, A1S63ADA,			
Analog module	A1S66ADA			

[Countermeasures for preventing aluminum electrolytic capacitor characteristics deterioration]

Apply the rated voltage to the aluminum electrolytic capacitor for several hours once a year to activate it. Or, rotate products at the periodic inspection (in every 1 year or two).

[Reference]

The life of an aluminum electrolytic capacitor, even if not used, under a normal temperature decreases approximately at 1/4 speed of the case when it is energized.

Appendix 3 Relevant Manuals

Appendix 3.1 Replacement handbooks

(1) Transition guide

No.	Manual name	Manual number	Ta	rget	
NO.	Mailuai Ilaille	Manual number	A (large)	AnS (small)	
1	MELSEC-A/QnA Series Transition Guide	L(NA)08077E	0	×	
2	MELSEC-AnS/QnAS Series Transition Guide	L(NA)08236E	×	0	

(2) Transition from MELSEC-A/QnA(large type) to Q series handbook

No.	Manual namo	Manual number	Ia	rget	
	Manual name	Wallual Hullibel	A (large)	AnS (small)	
-	Transition from MELSEC-A/QnA (Large Type) Series to Q Series	L-08043ENG	0	×	
_ I	Handbook (Fundamentals)	L-00043LING	O	^	
' -	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q	L-08219ENG	×		
	Series Handbook (Fundamentals)	L-002 19ENG	^	0	
-	Transition from MELSEC-A/QnA (Large Type) Series to Q Series	L-08046FNG	0	×	
2	Handbook (Intelligent Function Modules)	L-00040ENG	0	~ 	
-	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q	L-08220ENG	×		
	Series Handbook (Intelligent Function Modules)	L-00220EING		0	
3	Transition from MELSEC-A/QnA (Large Type), AnS/QnAS	L-08048ENG	0		
3 ((Small Type) Series to Q Series Handbook (Network Modules)	L-00046ENG		0	
4	Transition from MELSEC-A/QnA (Large Type), AnS/QnAS	L-08050ENG	0		
	(Small Type) Series to Q Series Handbook (Communications)	L-00030ENG	0	0	
5	Transition from MELSEC-A0J2H Series to Q Series Handbook	L-08060ENG	0	0	
6	Transition from MELSECNET/MINI-S3, A2C(I/O) to CC-Link	L-08061ENG	0	_	
	Handbook	L-0806 IENG	0	0	
7	Transition from MELSEC-I/OLINK to CC-Link/LT Handbook	L-08062ENG	0	0	
′ -	Transition from MELSEC-I/OLINK to AnyWire DB A20 Handbook	L08263ENG	0	0	
-	Transition of CPUs in MELSEC Redundant System Handbook	L 00447ENO	_		
8	(Transition from Q4ARCPU to QnPRHCPU)	L-08117ENG	0	×	

(3) Transition Examples

No.	Manual name	Manual number	A (large)	rget	
NO.	Wallual Hallie	Wallual Hullibel	A (large)	AnS (small)	
1	MELSEC-A/QnA (Large), AnS/QnAS (Small) Transition	L(NA)08121E	0	0	
	Examples	L(NA)00121E	0	0	

(4) Others

No.	Manual name (technical bulletin)	Manual number	Target		
NO.	manual name (technical bulletin)	Wallual Hullibel	A (large) AnS (small)	AnS (small)	
1	Procedures for Replacing Positioning Module AD71 with QD75	FA-A-0060	0	0	

Appendix 3.2 AnS series

No.	Manual name	Manual number	Model code
1	A/D Converter Module Type A1S64AD User's Manual	IB-66336	13J676
2	Analog-Digital Converter Module Type A1S68AD User's Manual	IB-66576	13J757
3	D/A Converter Module Type A1S62DA User's Manual	IB-66335	13J673
4	Digital-Analog Converter Module Type A1S68DAV/DAI User's Manual	IB-66587	13J810
5	Thermocouple Input Module Type A1S68TD User's Manual	IB-66571	13J781
6	Type A68RD3N/4N,A1S62RD3N/4N Pt100 Input Module User's Manual	SH-080193	13JR46
	A1S62TCTT-S2 Heating-Cooling Temperature Control Module		
7	A1S62TCTTBW-S2 Heating-Cooling Temperature Control Module with Wire	SH-3643	13JL35
	Breakage Detection Function User's Manual		
	A1S62TCRT-S2 Heating-Cooling Temperature Control Module		
8	A1S62TCRTBW-S2 Heating-Cooling Temperature Control Module with Wire	SH-3644	13JL36
	Breakage Detection Function User's Manual		
	Temperature Control Module Type A1S64TCTRT/Temperature Control		
9	Module with Disconnection Detection Function Type A1S64TCTRTBW	SH-080549ENG	13JR79
	User's Manual		
	A1S64TCRT-S1 Temperature Control Module/A1S64TCRTBW-S1		
10	Temperature Control Module with Disconnection Detection Function User's	IB-66756	13JL03
	Manual		
	A1S64TCTT-S1 Temperature Control Module/A1S64TCTTBW-S1		
11	Temperature Control Module with Disconnection Detection Function User's	IB-66747	13J891
	Manual		
12	Positioning Module Type A1SD70 User's Manual	IB-66367	13JE04
13	A1SD75M1/M2/M3, AD75M1/M2/M3 Positioning Module User's Manual	IB-66715	13J870
14	A1SD75P1-S3/P2-S3/P3-S3, AD75P1-S3/P2-S3/P3-S3 Positioning Module	IB-66716	13J871
14	User's Manual	16-00710	133071
15	Type A1S62LS User's Manual	IB-66647	13J837
16	High Speed Counter Module Type A1SD61 User's Manual	IB-66337	13J674
17	High Speed Counter Module Type A1SD62, A1SD62E, A1SD62D(S1) User's	IB-66593	13J816
	Manual	ID-00090	100010
18	Pulse catch module type A1SP60 User's Manual (Hardware)	IB-66477	13JE61
19	Analog timer module type A1ST60 User's Manual (Hardware)	IB-66479	13JE57
21	Analog input/Output Module Type A1S63ADA User's Manual	IB-66435	13JE30
22	Analog Input/Output Module Type A1S66ADA User's Manual	IB-66819	13JL41
23	MELSECNET/MINI-S3 Master Module Type AJ71PT32-S3, AJ71T32-S3,	IB-66565	13JE64
	A1SJ71PT32-S3, A1SJ71T32-S3 User's Manual		
24	AS-i Master module type A1SJ71AS92 User's Manual	SH-080085	13JR15
25	A1SD59J-S2/MIF Memory Card Interface Module User's Manual	SH-080056	13JR05

Appendix 3.3 Q series

No.	Manual name	Manual number	Model code	
1	iQ Platform Programmable Controllers MELSEC-Q Series [QnU]	L-08101E	_	
_	Analog-Digital Converter Module User's Manual	011 000055	1.0.1700	
2	Q64AD/Q68ADV/Q68ADI/GX Configurator-AD (SW2D5C-QADU-E)	SH-080055	13JR03	
	Channel Isolated High Resolution Analog-Digital Converter Module /			
•	Channel Isolated High Resolution Analog-Digital Converter Module (With	011 000077	13JR51	
3	Signal Conditioning Function) User's Manual	SH-080277		
	Q64AD-GH/Q62AD-DGH/GX Configurator-AD (SW2D5C-QADU-E)			
	Channel Isolated Analog-Digital Converter Module/Channel Isolated			
	Analog-Digital Converter Module (With Signal Conditioning Function)	011 0000475N0	13JR96	
4	User's Manual	SH-080647ENG		
	Q68AD-G/Q66AD-DG/GX Configurator-AD (SW2D5C-QADU-E)			
	Digital-Analog Converter Module User's Manual			
5	Q62DAN/Q64DAN/Q68DAVN/Q68DAIN/Q62DA/Q64DA/Q68DAV/	SH-080054	13JR02	
	Q68DAI/GX Configurator-DA (SW2D5C-QDAU-E)			
	Channel Isolated Digital-Analog Converter Module User's Manual	CU 000004F	13JR52	
6	Q62DA-FG/GX Configurator-DA (SW2D5C-QDAU-E)	SH-080281E	13JR52	
7	Channel Isolated Digital-Analog Converter Module User's Manual	SH-080648ENG	13JR97	
,	Q66DA-G/GX Configurator-DA (SW2D5C-QDAU-E)	311-060046ENG	133137	
	Analog Input/Output Module User's Manual			
8	Q64AD2DA/Configurator-DA (SW2D5C-QADU-E)/GX Configurator-DA	SH-080793ENG	13JZ25	
	(SW2D5C-QDAU-E)			
9	RTD Input Module Channel Isolated RTD Input Module User's Manual	SH-080142	13JR31	
<u> </u>	Q64RD/Q64RD-G/GX Configurator-TI (SW1D5C-QTIU-E)	011-000142	1331331	
10	Channel Isolated RTD Input Module User's Manual	SH-080722ENG	13JZ06	
10	Q68RD3-G/GX Configurator-TI (SW1D5C-QTIU-E)	011 0007222110	133200	
	Thermocouple Input Module Channel Isolated Thermocouple/Micro			
11	Voltage Input Module User's Manual	SH-080141	13JR30	
	Q64TD/Q64TDV-GH/GX Configurator-TI (SW1D5C-QTIU-E)			
12	Channel Isolated Thermocouple Input Module User's Manual	SH-080795ENG	13JZ26	
12	Q68TD-G-H01/Q68TD-G-H02/GX Configurator-TI (SW1D5C-QTIU-E)	0.1.0007.002110		
	Temperature Control Module User's Manual		13JR21	
13	Q64TCTT/Q64TCTTBW/Q64TCRT/Q64TCRTBW/GX Configurator-TC	SH-080121		
	(SW0D5C-QTCU-E)			
14	High-Speed Counter Module User's Manual	SH-080036	13JL95	
	QD62/QD62E/QD62D/GX Configurator-CT (SW0D5C-QCTU-E)		<u> </u>	
	High Speed Counter Module User's Manual (Hardware)	IB-0800421	13JY78	
	QD62-H01/QD62-H02			
16	Type QD75P/QD75D Positioning Module User's Manual	SH-080058	13JR09	
	QD75P1/QD75P2/QD75P4/QD75D1/QD75D2/QD75D4			
17	Type QD75M Positioning Module User's Manual	IB-0300062	1XB752	
40	QD75M1/QD75M2/QD75M4	011 004075510	42 1766	
18	QD73A1 Positioning Module User's Manual	SH-081075ENG	13JZ69	

Appendix 3.4 Programming tool

No.	Manual name	Manual number	Model code
1	GX Developer Version 8 Operating Manual	SH-080373E	13JU41

Appendix 4 How to Change Resolution After Analog I/O Module is Replaced

This section describes how to change the resolution of an analog I/O module after the module is replaced from AnS series to Q series.

(1) Resolution of AnS series and Q series analog I/O modules

Each AnS series analog I/O module have different resolutions. Please check the resolution of the module in this handbook or user's manual.

If the resolution differs between AnS series and Q series modules, it needs to be matched by a user (by creating a sequence program or changing user range settings).

	Resolution of Q series analog I/O module			
Resolution of AnS series	Normal resolution	High resolution mode		Hoor range
analog I/O module	mode	Current	Voltage	User range
	1/4000	1/12000	1/16000	(Voltage: 1/12000)
1/4000	0	-	-	-
1/8000	△*1	△*1	△*1	-

O: Measure required by user, △: Measure not required by user

1/12000

(2) Example of sequence program to change a resolution

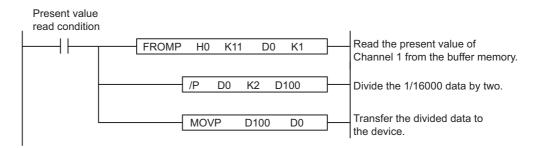
(Condition)

(a) Resolution of an AnS series analog I/O module: 1/8000

(b) Device that stores a present value read from the analog I/O module: D0

(c) Device that is used for resolution change operation: D100, D101

* Two-/four-word data is used in the four arithmetic operations instruction. Use unused device areas so that existing device data are not affected by this operation.



^{*1} Change the resolution in a sequence program. (Refer to Appendix 4 (2).)

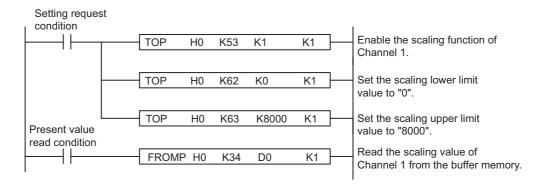
^{*2} Set a user range in high resolution mode.

(3) Using the scaling function (for example in the Q68AD-G) to change a resolution

If the module after replacement (for example, the Q68AD-G) supports the scaling function^{*1}, a resolution can be changed using this function. (Condition)

- (a) Resolution of an AnS series analog I/O module: 1/8000 (Only one channel is used.)
- (b) Q series analog I/O module: Q68AD-G

(Example of sequence program to set the function and read the scaling value)



(Buffer memory areas of the Q68AD-G)

Address Hexadecimal Decimal		Description	Default	Read/Write	
		Desc iption	Derault		
35 _H	53	Scaling enable/disable setting	00FF _H	R/W	
36 _H	54	CH1 Scaling value	0		
37 _H	55	CH2 Scaling value	0		
38 _H	56	CH3 Scaling value	0		
39 _H	57	CH4 Scaling value	0	R	
3A _H	58	CH5 Scaling value	0	IX.	
3B _H	59	CH6 Scaling value	0		
3C _H	60	CH7 Scaling value	0		
3D _H	61	CH8 Scaling value	0		
3E _H	62	CH1 Scaling lower limit value	0		
3F _H	63	CH1 Scaling upper limit value	0	R/W	
40 _H	64	CH2 Scaling lower limit value	0	FV/VV	
41 _H	65	CH2 Scaling upper limit value	0		

^{*1} For details of the scaling function, refer to the user's manual for the module used.

WARRANTY

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

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

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

2. Onerous repair term after discontinuation of production

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

3. Overseas service

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

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

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation 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.



Mitsubishi Programmable Controller

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