MITSUBISHI

Mitsubishi Programmable Controller

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

(Intelligent Function Modules)



Jun. 2013 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: "/NWARNING" 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	A 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]

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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- 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.

Generic term/abbreviation	Description				
■Series					
A 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				
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 compact types of Mitsubishi MELSEC-QnA series programmable controllers				
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				
Q series	Abbreviation for Mitsubishi MELSEC-Q series programmable controllers				
■CPU module type					
CPU module	Generic term for A series, AnS series, QnA series, QnAS series, and Q series CPU modules				
Basic model QCPU	Generic term for the Q00JCPU, Q00CPU, and Q01CPU				
High Performance model	Generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU				
QCPU	* This handbook mainly explains about the Q02CPU, Q02HCPU, Q06HCPU, and Q12HCPU.				
Process CPU	Generic term for the Q02PHCPU, Q06PHCPU, Q12PHCPU, and Q25PHCPU				
Redundant CPU	Generic term for the Q12PRHCPU and Q25PRHCPU				
	Generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU,				
	Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU,				
	Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU,				
	Q20UDEHCPU, Q26UDEHCPU, Q50UDEHCPU, and Q100UDEHCPU				
Universal model QCPU	* This handbook mainly explains about the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU,				
	Q03UDCPU, Q04UDHCPU, and Q06UDHCPU, which can replace the AnS/QnAS series.				
	The specifications and functions of the Q10UDEHCPU to Q100UDEHCPU are the same as those of				
	the modules described above, although the program and memory capacities increase.				
■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,				
AnNCPU	A2NCPUP21/R21, A2NCPUP21/R21-S1, A2NCPUP21-S3(S4), A3NCPU, A3NCPUP21/R21,				
	and A3NCPUP21-S3				
	Generic term for the A2ACPU, A2ACPU-S1, A3ACPU, A2ACPUP21/R21, A2ACPUP21/R21-				
AnACPU	S1, and A3ACPUP21/R21				
	Generic term for the A2UCPU, A2UCPU-S1, A3UCPU, A4UCPU, A2USCPU, A2USCPU-S1,				
AnUCPU	and A2USHCPU-S1				
AnUS(H)CPU	Generic term for the A2USCPU, A2USCPU-S1, A2USHCPU-S1				
A/AnSCPU	Generic term for MELSEC-A series and MELSEC-AnS series programmable controller CPUs				
AnN/AnACPU	Generic term for the AnNCPU and AnACPU				
AnN/AnA/AnSCPU	Generic term for the AnnOPU, AnACPU, and AnSCPU				
QnACPU	Generic term for MELSEC-QnA series programmable controller CPUs				
QnASCPU	Generic term for MELSEC-QriA series programmable controller CPUs				
QII/OUI U	Generic term for MELSEC-QnA series programmable controller CFOS Generic term for MELSEC-QnA series and MELSEC-QnAS series programmable controller				
QnA/QnASCPU	<u> </u>				
	CPUs Congris term for A parios, ApS parios, OpA parios, and OpAS parios programmable controller.				
A/AnS/QnA/QnASCPU	Generic term for A series, AnS series, QnA series, and QnAS series programmable controller				
CODU	CPUs				
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	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: Input signals (either V or I input) and I/O characteristics are changed. 5) Functional specifications: Not changed
	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: 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 renewal 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	Q68ADV	ERNT-ASQT68AD
	ATSOCAD	Q68ADI	-EKINT-ASQ100AD

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 +10	VDC (Input resista	nce value: 1MΩ)		,
Analog input Current		-20 to 0 to +20r	nADC (Input resista	ance value: 250Ω)		
	16-bit signed binary					
Digital output		When 1	1/4000 is set: -4096	to +4095		
Digital output		When 1	1/8000 is set: -8192	to +8191		
When 1/12000 is set: -12288 to +12287						
	Item	Item Specifications				
I/O characteristics	item			ue (when gain 5V/20m	A. offset 0V/0mA)	
"O Gridi deteriolos		Analog input	1/4000	1/8000	1/12000	
		+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 1/4000	-8000 1/8000	-12000 1/12000	
Maximum resolution	Maximum resolution		2.5mV	1.25mV	0.83mV	
Waxiinani recelation	Waxiinam resolution	Current input	10µA	5µA	3.33µA	
					5.55 p. 1	
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)				

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

 							<u> </u>	ompatible, △ . Fai	tial change required, *. incompatible
				Q64AD				Compatibility	Precautions for replacement
		-1	0 to 10VDC (In	out resistan	ce value: 1N	Ω)		0	
		0	to 20mADC (In	out resistan	ce value: 25	0Ω)		U	
16-bit signed binary (Normal resolution mode: -4096 to 4095, High resolution mode: -12288 to 12287, -16384 to 16383)					0				
Analog input range			Normal resolution mode Digital Maximum output value resolutior		•		on mode Maximum resolution	Δ	If the resolution differs between AnS series and Q series modules, it needs to be matched using a sequence
Volt	200	0 to 10V 0 to 5V 1 to 5V	0 to 4000	2.5mV 1.25mV 1.0mV	/ 0 to	16000 12000 —	0.625mV 0.416mV 0.333mV		program or user range settings. (Refer to Appendix 3.)
Voltage		-10 to 10V User range settings	-4000 to 4000	2.5mV 0.375m		to 16000 to 12000	0.625mV 0.333mV		
Curr	rent	0 to 20mA 4 to 20mA User range	0 to 4000 -4000 to 4000	5μA 4μA 1.37μA		12000 — to 12000	1.66μA 1.33μA 1.33μA	0	
		settings	-4000 to 4000	1.37μΑ	-12000	10 12000	1.55μΑ		
	og input nge	Ambien 0 With temperatur	rmal resolution m t temperature to 55°C Without temperature drift on compensation	Ambient temperature 25±5°C	Ambient t	h resolution emperature 55°C Without temperatu drift compensat	Ambient temperature 25±5°C		
Voltage	0 to 10 -10 to 10V 0 to 5 1 to 5 Use range	V V V	±0.4%	±0.1%	±0.3% (±48 digits)	±0.4% (±64 digits	±0.1% (±16 digits)	0	
Current	0 to 20m/ 4 to	4 (± 12 aigns) (±16 digits)	±0.1% (±4 digits)	±0.3% (±36 digits)	±0.4% (±48 digits	±0.1% (±12 digits)		

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 1minute				
Insulation resistance	Between the input terminal and programmable controller power supply: $500VDC,5M\Omega\;\text{or more}$				
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

 	O. Compatible, △. Fartial change required, *. Incompa			
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: $500 VDC, 20 M\Omega \text{ or more}$	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.

A1S64AD				Q64AD				
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 X3	Error flag	Y2 Y3		X2 X3	·	Y2 Y3		
X4		Y4		X4	Use prohibited	Y4 Y5	Use prohibited	
X5 X6		Y5 Y6		X5 X6		Y6		
X7 X8		Y7 Y8		X7 X8	High resolution mode status flag	Y7 Y8		
X9		Y9	Llse prohibited	Х9	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	XB Channel change completed flag		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	XE A/D conversion completed flag		Use prohibited	
XF		YF		XF	Error flag	YF	Error clear request	
X10 X11 X12		Y10 Y11 Y12	Error reset					
X13 X14		Y13 Y14	Liforreset					
X15 X16		Y15 Y16						
X10 X17		Y17						
X18		Y18						
X19		Y19	Use prohibited					
X1A X1B		Y1A Y1B						
X1B X1C		Y1B 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.

	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	R/W		CH2 Average time/average number of times	R/W	
3	CH2 Average time, count	TC/VV	3	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 (Use prohibited)		
7	System area (Use prohibited)		7	System area (Ose prombited)	_	
8	System area (Ose prombited)	_	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	1	13	CH3 Digital output value		
14			14	CH4 Digital output value	1	
15	O t (1 1 - 1 1 1 1		15			
16	System area (Use prohibited)	-	16		-	
17			17	System area (Use prohibited)		
18	Write data error code	Б	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	DAM	
			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	R	
			34	CH3 Maximum value		
			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 199	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	1	
			204	CH2 Industrial shipment settings offset value	1	
			205	CH2 Industrial shipment settings gain value	<u></u>	
			206	CH3 Industrial shipment settings offset value	R/W	
			207	CH3 Industrial shipment settings gain value	1	
			208	CH4 Industrial shipment settings offset value	1	
			209	CH4 Industrial shipment settings gain value	1	

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	TX/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	Α	1S68AD				
Analog input	Voltage	-10 to 0 to +10VDC (nput resistance value: 1N	Μ Ω)			
Analog input	Current	0 to +20mADC (Input resistance value: 250Ω)					
Digital output		16-bit signed binary					
		I/O c	naracteristics				
		Analog input	Digital output	7			
		0 to +10V	0 to +4000	-			
		-10V to +10V	-2000 to +2000	-			
		0V to 5V or 0 to 20n		-			
		1 to 5V or 4 to 20m		-			
		1.0010.1.020	. 0 10 1000	_			
I/O characteris		Maxim	um resolution				
maximam rese	nation	Analog input	Digital output	7			
		0 to +10V	2.5mV	-			
		-10V to +10V	5mV	-			
		0V to 5V	1.25mV	1			
		1 to 5V	1mV	-			
		0 to 20mA	5μΑ	1			
		4 to 20mA	4μA	1			
Overall accuracy			1% at full scale utput value: ±40)				

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

		200-				200 A-DI	0:0		tial change required, ×: Incompatible
		Q68AD			Q68ADI			Compatibility	Precautions for replacement
	-10 to 10VDC (Input resistance value: 1MΩ)				-				The voltage/current cannot be
					0 to	20mADC	;	Δ	mixed for one module.
		-			(Input resist	ance valu	e: 250Ω)		
			16-bi	t signed bin	ary				
			(Normal resolut	ion mode: -4	4096 to 4095	,		0	
		High res	olution mode: -	12288 to 12	287, -16384 t	o 16383)			
	Anala	a innut	Normal reso	olution mode	Hi	igh resolution	on mode		
		g input nge	Digital output	Maximun	_	•	Maximum		
		_	value	resolutio			resolution		
		0 to 10V		2.5mV	0 to 1	6000	0.625mV		
		0 to 5V	0 to 4000	1.25mV	0 to 1	2000 —	0.416mV		If the resolution differs
	Voltage	1 to 5V -10 to 10V		1.0mV 2.5mV	-16000 to	0.16000	0.333mV 0.625mV		between AnS series and Q
		User range	-4000 to 4000	2.5111V	-10000 (0 16000	0.025111V	Δ	series modules, it needs to be
		settings	1000 to 1000	0.375m\	-12000 to	o 12000	0.333mV		matched using a sequence
		0 to 20mA	0 to 4000	5μΑ	0 to 12000		1.66µA		program or user range settings. (Refer to Appendix 3.)
	Current	4 to 20mA	A 0 to 4000	4µA			1.33µA		
	ou.ro.n	User range	-4000 to 4000	1.37µA	-12000 to	o 12000	1.33µA		
		settings					·		
		Normal resolution mod			e High resolution mode				
		Ambient temperature			Ambient temperature		е		
	Analog inpu	IT	to 55°C	Ambient	nt 0 to 55°C Ambient				
	range	With temperatu	Without temperature	temperature	With temperature	Without temperatu	temperature		
		drift	drift	25±5°C	drift	drift	25±5°C		
		compensat	tion compensation		compensation	compensa	tion		
	0 to 1	0V			±0.3%	±0.4%	±0.1%		
	-10				(±48 digits)	(±64 digit			
	10'				, ,	`			
	Voltage 0 to							0	
	1 to								
	rang	10							
	settir	±0.3%		±0.1% (±4 digits)					
	0 to	0 (±12 digit	s) (±10 digits)	(±4 digits)	±0.3%	±0.4%	±0.1%		
	20m				(±36 digits)	(±48 digit	ts) (±12 digits)		
	4 to								
	Current 20m								
	rang								
	settir								
		•	•	•	•	•	•		

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 colute maximam impat	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

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,	000 times	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	×		
0.3 to 0.	×	Wiring change is required.	
R1.25-3 (Solderless terminals with a	×		
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

ltem	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.

	A1S		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	Y0 Y1		X0 X1	Module READY Temperature drift compensation flag	Y0 Y1		
X2 X3	Error flag	Y2 Y3		X2 X3		Y2 Y3	4	
X4		Y4		X4	Use prohibited	Y4	Use prohibited	
X5 X6		Y5 Y6		X5 X6	·	Y5 Y6		
X7		Y7		X7	High resolution mode	Y7		
X8		Y8		X8	status flag Operating condition	Y8	Operating condition	
X9		Y9	Use prohibited	X9	setting completed flag	Y9	setting request	
XA		YA		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 X11		Y10 Y11						
X12		Y12	Error reset					
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						

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				OCOADY//			
Address (decimal)	Name	Read/write	Address (decimal)	Q68ADV/I Name	Read/write		
0	A-D conversion enable/disable	R/W	0	A/D conversion enable/disable setting	R/W		
1	Writing data error code	R	1	CH1 Average time/average number of times			
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		1000	to				
17	CH8 Average time, count		17	CH7 Digital output value	R		
18	System area (Use prohibited)		18	CH8 Digital output value	K		
19	System area (Ose prombited)	_	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	FC/ V V		
24	CH5 Digital output value		24		-		
25	CH6 Digital output value		25				
26	CH7 Digital output value		26	System area (Use prohibited)			
27	CH8 Digital output value		27	- System area (Ose prombited)			
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	46			
			to	System area (Use prohibited)	-		
	157						
	158 Mode switching setting		Mode switching setting	R/W			
		159 Mode switching setting					
160							
			to	System area (Use prohibited)	-		
			201				
			202	CH1 Industrial shipment settings offset value			
			203	CH1 Industrial shipment settings gain value			
			to				
			216	CH8 Industrial shipment settings offset value			
			217	CH8 Industrial shipment settings gain value	R/W		
			218	CH1 User range settings offset value			
			219	CH1 User range settings gain value			
			to				
			232	CH8 User range settings offset value			
			233	CH8 User range settings gain value	1		

2 ANALOG INPUT MODULE REPLACEMENT Memo

2	-	18	

2.4 A1S68AD (Replacing with the Q68AD-G)

2.4.1 Performance specifications comparison

It	em	A1	S68AD		
	Voltage	-10 to 0 to +10VDC (In	put resistance value: 1	ΜΩ)	
Analog input	Current	0 to +20mADC (Inpu	t resistance value: 250	$\Omega(\Omega)$	
Digital output		16-bit signed binary			
		I/O cha	racteristics		
		Analog input 0 to +10V	Digital output 0 to +4000	4	
		-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	 	
		1.13 3.1 01 110 2011//1	1 0 10 1000	_	
I/O characteris		Maximu	m resolution		
		Analog input	Digital output	۱ ا	
		0 to +10V	2.5mV		
		-10V to +10V	5mV		
		0V to +5V	1.25mV		
		1 to 5V	1mV	1	
		0 to 20mA	5μΑ		
		4 to 20mA	4μA		
Overall accuracy	Reference accuracy	Within ±1 (Digital out			
	Temperature coefficient		-		
Maximum conv	version speed	0.5m	s/channel		
(sampling cycle	e)	(The speed is 1ms/channel on all channels if	averaging processing i	s set even for one channel.)	
Response time	se time -				
Absolute maxi	mum innut	Volta	ge: ±35V		
ADSOIDLE IIIAAII	mani input	curre	nt: ±30mA		

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

		Q	68AD-G			Compatibility	Precautions for replacement
		-10	to 10VDC				
	(Input impedance: $1M\Omega$ or more)						
	0 to 20mADC						
		(Input resista	ance value: 250	0Ω)			
		16-bit s	signed binary				
	1)	Normal resolution	n mode: -4096	to 4095,		0	
	High resolution mode: -12288 to 12287, -16384 to 16383)						
		Normal reso	lution mode	High resolu	ition mode		
In	put Analog input range	Digital output	Maximum	Digital output	Maximum		
		value	resolution	value	resolution		
	0 to 10V		2.5mV	0 to 16000	0.625mV		
	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV		If the resolution differs
	1 to 5V		1.0mV		0.333mV		between AnS series and Q
Vol	tage 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 3.)
	4 to 20mA		4μA		1.33µA		
Cu	rrent 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		
		Reference	accuracy: ±0.1	%			
		Normal resolu	tion mode: ±4	digits			
	High resolution mode (0 to 10V, -10 to 10V): ±16 digits High resolution mode (Other than the above ranges): ±12 digits						
						0	
	±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.	
			age: ±15V 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	
Dielectric withstand voltage	<u>-</u>	
2.0.000.10 minotana ronago		
Insulation resistance		
insulation resistance	- -	
Number of accurried 1/O mainte	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	0.44	
(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	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 seatting are set of succession
	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	
Training calput ranotion	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			
Scaling function	preset percentage values and loading into			
	the buffer memory is available.	_	0	
	Programming steps for the scaling can be			
	eliminated.			
	Cirriniated.			The Process CPU and
Online module change	A module can be replaced without the			Redundant CPU support this
Offilitie module change	system being stopped.	_	0	
	oyotem 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 No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0 X1	WDT error flag A-D conversion READY	Y0 Y1		X0 X1	Module ready	Y0 Y1		
X2	Error flag	Y2		X2		Y2		
Х3		Y3		Х3	Llaa probibited	Y3		
X4		Y4		X4	Use prohibited	Y4	Use prohibited	
X5		Y5		X5		Y5	obe prombited	
X6		Y6		X6	18.1 1.6 1	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		ХВ	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 X13		Y12 Y13	Error reset					
X13		Y14						
X15		Y15						
X16		Y16						
X17		Y17						
X18		Y18						
X19		Y19	Use prohibited					
X1A		Y1A						
X1B		Y1B						
X1C		Y1C						
X1D X1E		Y1D Y1E						
X1E X1F		Y1E Y1F						
A I F		TIF		J				

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)	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/		
	Willing data error code	IX.		Moving average/Time constant settings		
2	Average processing specification	R/W	2	CH2 Average time/Average number of times/		
	Average processing specification	17,77	2	Moving average/Time constant settings	R/W	
3			3	CH3 Average time/Average number of times/	10,44	
				Moving average/Time constant settings		
to	System area (Use prohibited)	_	to			
8	System area (Ode promistica)		8	CH8 Average time/Average number of times/		
				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	R/W	11	CH1 Digital output value		
to			to			
17	CH8 Average time, count		17	CH7 Digital output value	R	
18	System area (Use prohibited)	_	18	CH8 Digital output value		
19	, , ,		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		
23	CH4 Digital output value		23	Offset/gain setting mode gain specification		
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	Custom and (Llas muchibited)		
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		
			77	signal error detection setting	R/W	
			48	Warning output setting		
			49	Input signal error detection flag		
			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		

	Q68AD-G			
Address	Name	Read/write		
(decimal)				
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				
86	CH1 Process alarm lower lower limit value			
87	CH1 Process alarm lower upper limit value			
88	CH1 Process alarm upper lower limit value			
89	CH1 Process alarm upper upper limit value			
to				
114	CH8 Process alarm lower lower limit value			
115	CH8 Process alarm lower upper limit value			
116	CH8 Process alarm upper lower limit value			
117	CH8 Process alarm upper upper limit value			
118	CH1 Rate alarm warning detection period			
to				
125	CH8 Rate alarm warning detection period			
126	CH1 Rate alarm upper limit value			
127	CH1 Rate alarm lower limit value			
to				
140	CH8 Rate alarm upper limit value	R/W		
141	CH8 Rate alarm lower limit value			
	CH1 Input signal error detection setting			
142	value/CH1 Input signal error detection lower			
	limit setting value			
to	9			
	CH8 Input signal error detection setting			
149	value/CH8 Input signal error detection lower			
	limit setting value			
	CH1 Input signal error detection upper limit			
150	setting value			
to				
	CH8 Input signal error detection upper limit	1		
157	setting value			
158		1		
159	Mode switching setting			
160				
to	System area (Use prohibited)	_		
199				
200	Save data classification setting	R/W		
201	System area (Use prohibited)	-		
202	CH1 Factory default offset value			
203	CH1 Factory default gain value			
to	Giri i actory delicant gain value	-		
216	CH8 Factory default offset value			
217	CH8 Factory default gain value	-		
218		R/W		
219	CH1 User range settings offset value			
	CH1 User range settings gain value			
to	CHR Lieur rango cottingo offect value			
232	CH8 User range settings offset value			
233	CH8 User range settings gain value			

Memo	

3 ANALOG OUTPUT MODULE REPLACEMENT

3.1 List of Analog Output Module Alternative Models for Replacement

AnS/QnAS series		Transition to Q series			
Product	Model	Model	Remarks (Restrictions)		
Analog output module	A1S62DA	Q62DAN	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. External power supply (24VDC) is required. Functional specifications: Not changed		
		Q64DAN	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 External power supply (24VDC) is required. 5) Functional specifications: Not changed		
	A1S68DAI	Q68DAIN	Cable size is changed. Number of slots : Not changed Nord 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.		
	A1S68DAV	Q68DAVN	Cable size is changed. Number of slots:		

⊠Point -

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

Product	MELSEC-AnS/QnAS MELSEC-Q series module series module		Conversion adaptor	
	A1S62DA	Q62DAN	ERNT-ASQT62DA	
3	A1S68DAV	Q68DAVN	-ERNT-ASQT68DA	
	A1S68DAI	Q68DAIN	ENNI-AGQ100DA	

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

3.2 A1S62DA (Replacing with the Q62DAN)

3.2.1 Performance specifications comparison

ltem			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			al load resista	to 20mADC	Ω to 1M Ω)			
I/O characteristics	Digital input value *1 The offset valu *2 The offset valu		•		Voltage output value*1 10V 5V 0 -5V -10V	Current output value*2 20mA 12mA 4mA		
Maximum resolution		1/4/ 1/8/ 1/12/	000 1.25mV	(10V) 2.5	µА (20mА) µА (20mА) µА (20mА)			
Overall accuracy (accuracy at maximum analog output value)	±1% (voltage: ±100mV, current: ±200μA)							
Maximum conversion speed	Onversion 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				-				1
Output short protection			Ava	ilable				1

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

		_Q	62DAN		0.0	•	Precautions for replacement
	High reso	16-bit s Normal resolutior lution mode: -12 Voltage: ternal load resist Current:	igned binary n mode: -4096 288 to 12287, -10 to 10VDC ance value: 1k: 0 to 20mADC	-16384 to 16383 Ω to 1M Ω)		0	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 3.)
	(E	xternal load resis	stance value: 0	to 600Ω)			
	log output range 0 to 5V 1 to 5V -10 to 10V User range settings 0 to 20mA 4 to 20mA User range settings	Normal reso Digital input value 0 to 4000 -4000 to 4000 0 to 4000 -4000 to 4000	Maximum resolution 1.25mV 1.0mV 2.5mV 0.75mV 5μA 4μA	High resolu Digital input value 0 to 12000 -16000 to 16000 -12000 to 12000 0 to 12000 -12000 to 12000	mode 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 3.)
		nbient temperatu (voltage: ±10n pient temperatur (voltage: ±30n		0			
80µs/channel					0		
		Volta Curre	0				
		2 chan	nels/module			0	
		Max. 10	00,000 times			0	
		Av	vailable			0	

Ito	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	stance					
Number of occ	upied I/O points	32 points (I/O assignment: special 32 points)				
Connected terr	minal	20-point terminal block				
Applicable wire	e 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)	t consumption	0.80A				
External	Voltage	-				
power supply Current consumption		-				
	Inrush current	-	·			
Weight		0.32kg				

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

0.0	ompatible, \(\triangle\). Fartial change required, \(\triangle\). 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				
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	×	NA/Indoor of control of		
R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.)	×	Wiring change is required.		
0.33A	0			
24VDC +20%, -15%				
Ripple, spike 500mV _{P-P} or less	×	Futamal navian avantu		
0.15A	×	External power supply (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.

	A1S		Q62DAN					
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0	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	X2		CH2 Output enable/ disable flag	
X3		Y3 Y4		Х3	Use prohibited	Y3		
X4				X4		Y4		
X5		Y5		X5		Y5		
X6		Y6		X6		Y6 Y7	Use prohibited	
X7		Y7		X7	High resolution mode	Y /		
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
XB		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		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 promonou					
X16		Y16						
X17		Y17						
X18	-	Y18	Error reset					
X19		Y19						
X1A X1B		Y1A Y1B						
X1B X1C		Y1C	Use prohibited					
X1D	-	Y1D	ose promoned					
X1E		Y1E						
X1F		Y1F						
	l .		I					

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 Q62DAN					
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	R/W	
2	CH2 digital value		2	CH2 Digital value		
3			3			
4			4			
5	System area (Use prohibited)		5	5		
6	System area (Ose prombited)	_	6	System area (Use prohibited)		
7			7	System area (Ose prombhed)	-	
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	R	
12			12	CH2 Set value check code	1	
13			13			
14	System area (Use prohibited)	-	14			
15			15	System area (Use prohibited)	_	
16			16	dystem area (ose prombited)		
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		D 0.47	
			200	Pass data classification setting	R/W	
			201	System area (Use prohibited)	-	
			202	CH1 Industrial shipment settings offset value	-	
			203	CH3 Industrial shipment settings gain value		
			204	CH2 Industrial shipment settings offset value	-	
			205	CH1 Hear range pettings effect 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

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: 2k@ o +20mADC	2 to 1MΩ)				
I/O characteristics	Resolution Voltage output Current output value*2 Voltage output Voltage output Voltage output Voltage output Voltage*1 Voltage*2 Voltage*2 Voltage*1 Voltage*2 Voltage*2 Voltage*2 Voltage*3 Voltage*4 Voltage*4 Voltage*4 Voltage*5 Voltage*6 Voltage*6								
Maximum resolution			000 2.5mV 000 1.25mV 000 0.83mV	(10V) 2.5	μΑ (20mA) μΑ (20mA) μΑ (20mA)				
Overall accuracy (accuracy at maximum analog output value)		(vc	± oltage: ±100m\	1% /, current: ±20	0μΑ)				
Maximum conversion speed	mum 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

					0:0	•	tial change required, ×: Incompatible
		Q	64DAN			Compatibility	Precautions for replacement
	,	Normal resolution		to 4095, -16384 to 16383)		0	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 3.)
		ternal load resist Current: xternal load resis	0 to 20mADC			0	
	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 reso Digital input value 0 to 4000 -4000 to 4000 0 to 4000 -4000 to 4000	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	tion mode 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 3.)
		bient temperatur	nV, current: ±2	0μΑ) ithin ±0.3%		0	
		80µ	s/channel			0	
		Curr	age: ±12V ent: 21mA			0	
			nels/module			0	
			00,000 times			0	
		A	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

	O. O.	ompatible, \(\triangle\). Fartial change required, \(\cdot\). 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 nointe		The number of occupied I/O		
	16 points	Δ	points has changed to 16		
	(I/O assignment: intelligent 16 points)		points.		
	18-point terminal block	×			
	0.3 to 0.75mm ²	×	Wiring change is required.		
	R1.25-3		- willing change is required.		
	(Solderless terminals with an insulation sleeve cannot be used.)	×			
	0.34A	0			
	24VDC +20%, -15%				
	Ripple, spike 500mV _{P-P} or less	×			
	1 11ppio, opino oddin 1 p.p or 1000		External power supply		
	0.24A	×	(24VDC) is required.		
	2.5A, 260µs or less	×			
· <u> </u>	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		
X0	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		X9	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		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	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		115	promised						
X16		Y16							
X17		Y17							
X18 X19		Y18 Y19	Error reset						
X19 X1A	-	Y19 Y1A							
X1B		Y1B							
X1C		Y1C	Use prohibited						
X1D		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		Read/write	Address		Doodhywita
(decimal)	Name	Read/write	(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	System area (656 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	
14	System area (Use prohibited)	_	14	CH4 Set value check code	
15	gyelem area (eee promblea)		15		
16			16	System area (Use prohibited)	_
17			17	System area (eee promisited)	
			18		
			19	Error code	R
			20	Setting range (CH1 to CH4)	
			21	System area (Prohibited)	-
			22	Offset/gain setting mode Offset specification	R/W
			23	Offset/gain setting mode Gain specification	
			24	Offset/gain adjustment value specification	
			25		
			to	System area (Use prohibited)	-
			157		
			158	Mode switching setting	R/W
			159	g coming	
			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	
			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

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3.4 A1S68DAI

3.4.1 Performance specifications comparison

Item	A1S68DAI						
Digital input		_	ned binary ge: 0 to 4096				
Analog output	1))mADC nce value: 0 to 600Ω	2)			
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, △: Partial change required, ×: Incompatible

						0:0	ompatible, △ : Par	tial change required, x: Incompatible
			Q	68DAIN			Compatibility	Precautions for replacement
			16-bit s					
		1)	Normal resolution	0				
		H	ligh resolution m	ode: -12288 to	12287)			
			0 to	20mADC			_	
		(Ex	kternal load resis	stance value: 0	to 600Ω)		0	
			Normal reso	lution mode	High resolu	ution mode		
	Analog	output range	Digital input	Maximum	Digital input	Maximum		
		T	value	resolution	value	resolution	0	
		0 to 20mA	0 to 4000	5µA	0 to 12000	1.66µA	O O	
	Current	4 to 20mA		4µA		1.33µA		
		User range settings	-4000 to 4000	1.5µA	-12000 to 12000	0.83μΑ		
						<u> </u>		
			t temperature 25				0	
		Ambient	temperature 0 t	o 55°C: within :	±0.3% (±60µA)			
	80μs/channel							
							0	
				0				
				21mA				
			8 chan	nels/module			0	

16	em	A1S68DAI				
		AISOODAI				
Number of write		-				
Output short pr	otection	Available				
Isolation metho	od	Between the output terminal and programmable controller power supply: photocoupler isolation Between output channels: not isolated				
Dielectric withs	tand voltage					
Insulation resistance						
Number of occupied 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)	t consumption	0.85A				
Estamal	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		
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	<i>(</i> 0		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		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		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	Osc prombited	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			Q68DAIN	
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		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	1	7	CH7 Digital value	
8	CH8 digital value		8	CH8 Digital value	
9	System area (Use prohibited)	-	9	Custom area (Has prohibited)	
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	1 _	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	
	L		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	Chockgain adjustment value opcomodition	
			to	System area (Use prohibited)	_
			157	oystem area (Ose prombled)	
			158		
			159	Mode switching setting	R/W
			160		
				System area (Use prohibited)	
			to 201	System area (Use prohibited)	-
			201	CH1 Industrial shipment settings offset value	
			202	CH1 Industrial shipment settings gain value	
			203	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	1
			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	1
			214	CH7 Industrial shipment settings offset value	1
			215	CH7 Industrial shipment settings gain value	_
			216	CH8 Industrial shipment settings offset value	_
			217	CH8 Industrial shipment settings gain value	

Q68DAIN							
Address (decimal)	Name	Read/write					
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	R/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	-10 to 0 to 10VDC (External load resistance value: $2k\Omega$ to $1M\Omega$)	
I/O characteristics	Digital input value Analog output value 2000 10V 1000 5V 0 0V -1000 -5V -2000 -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 channels/module	
Number of writes to E ² PROM	-	
Output short protection	Available	
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

1					0:0	•	tial change required, ×: Incompatible
<u> </u>		Q6	8DAVN			Compatibility	Precautions for replacement
16-bit signed binary (Normal resolution mode: -4096 to 4095, High resolution mode: -12288 to 12287, -16384 to 16383)							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 3.)
	-10 to 10VI	DC (External load	d resistance va	alue: 1 k Ω to 1 M Ω))	0	
		Normal reso	lution mode	High resolu	tion mode		15.11
Analog output range		Digital input value	Maximum resolution	Digital input value	Maximum resolution		If the resolution differs between AnS series and Q
	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV	Δ	series modules, it needs to be
	1 to 5V	0 10 4000	1.0mV	0 10 12000	0.333mV		matched using a sequence
Voltage	-10 to 10V		2.5mV	-16000 to 16000	0.625mV		program or user range
	User range settings	-4000 to 4000	0.75mV	-12000 to 12000	0.333mV		settings. (Refer to Appendix 3.)
		t temperature 25 temperature 0 to		, ,		0	
		80µs	:/channel			0	
		±	±12V			0	
		8 chann	nels/module			0	
		Max. 10	0,000 times			0	
		Av	ailable			0	
Between the I/O terminal and programmable controller power supply: photocoupler isolation							
Between output channels: not isolated							
Ве	etween external	power supply ar					
 Between the I/O terminal and programmable controller power supply: 500VAC, for 1 minute							
		power supply an	0				
	Between the I/C			ontroller power su	apply:		
		,	20 Μ Ω or more			0	
Betv	veen external p	ower supply and	analog output	:: 500VDC, 20MΩ	or more		

Ite	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	erless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A	
Internal current (5VDC)	consumption	0.65A	
Enternal	Voltage	-	
External power supply	Current consumption	•	
	Inrush current	-	
Weight		0.22kg	

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

Q68DAVN	Compati	bility 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, \	/1.25-YS3A	Wiring change is required.	
Terminals other than FG: R1.25-3	×		
(Solderless terminals with an insulation sleeve ca	(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

	<u>,</u>			O : 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 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	1) On Q68DAVN, the setting of HOLD/CLEAR is carried out for each channel. 2) For the Q68DAVN, the status is set with the intelligent function module switch setting of GX Developer. 3) 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.	-	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.

Device No. Signal name No. N		A1S68DAV				Q68DAVN				
XU		Signal name		Signal name		Signal name		Signal name		
X1	X0	_	Y0		X0	Module ready	Y0	Use prohibited		
X2	X1	D/A conversion READY	Y1		X1		Y1	· ·		
X3	X2	Error flag	Y2		X2		Y2	· ·		
X4	Х3		Y3		Х3		Y3	· ·		
X5	X4		Y4		X4	Use prohibited	Y4	CH4 Output enable/		
X6	X5		Y5		X5		Y5	CH5 Output enable/		
Y7	X6		Y6		X6		Y6	CH6 Output enable/		
X8	X7		Y7	Use prohibited	X7		Y7	CH7 Output enable/		
XA XA XB XB XC XC XD XE XF XF X10 X11 X12 X13 X14 X15 X16 X17 X18 X18 XA XA XB XA XB XA XB XA XB XA XB XB XC XC XD XD XC XC XD XC XC XD XC	X8		Y8		X8	_	Y8	CH8 Output enable/		
XA XB XC XD XE XF XF XI XI XI XI XI XI XI XI	X9		Y9		X9		Y9	_ ·		
XB	XA		YA		XA	-	YA			
VC	ХВ		YB		XB	_	YB	Channel change request		
YD XD Synchronous output mode flag YD Synchronous output request	XC	Llas prohibited	YC		XC	-	YC	-		
XF XF Error flag YF Error clear request X10 Y11 Y11 Y12 Y13 D/A conversion value output enable flag Y14 Y15 Y16 Y17 Y18 Y17 Y18 Error reset flag Y19 Y19 Y1A Y1B Y1C Y1D Y1D Y1E Use prohibited Y1D Y1E Y1E Y1E Y1E Y1E YF Error flag YF Error clear request X10 X10 Y10 Y1E	XD	ose prombiled	YD		XD		YD			
X10 Y10 X11 Y11 X12 Y12 X13 Y13 D/A conversion value output enable flag X14 Y14 Y15 X15 Y16 Y16 X17 Y18 Error reset flag X19 X1A Y1A X1B Y1B Y1C X1D Y1D Y1E	XE		YE		XE	Use prohibited	YE	Use prohibited		
X11 X12 X13 Y13 X14 Y14 X15 Y15 X16 Y16 X17 Y18 X18 Y18 X19 Y19 X1A Y1B X1C Y1C X1D Y1E Use prohibited	XF		YF		XF	Error flag	YF	Error clear request		
X12 Y12 X13 Y13 D/A conversion value X14 Y14 output enable flag X15 Y16 Y17 X16 Y17 Y18 X17 Y18 Error reset flag X19 Y1A Y1A X1A Y1B Y1C X1B Y1C Use prohibited X1D Y1D Y1E	X10		Y10							
X13 Y13 D/A conversion value X14 Y14 output enable flag X15 Y15 Y16 X17 Y17 Y18 X18 Y18 Error reset flag X19 Y19 Y1A X1A Y1B Y1B X1C Y1C Use prohibited X1D Y1E Y1E	X11		Y11							
X14 Y14 output enable flag X15 Y15 X16 Y16 X17 Y17 X18 Y18 X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E	X12		Y12							
X15 Y16 X17 Y17 X18 Y18 Error reset flag X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E										
X16 Y16 X17 Y17 X18 Y18 Error reset flag X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E				output enable flag						
X17 Y18 Error reset flag X19 Y19 Y1A X1A Y1B Y1C X1C Y1D Y1D X1E Y1E Y1E										
X18 Y18 Error reset flag X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E										
X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E										
X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E				Enor reset hag						
X1B Y1B X1C Y1C X1D Y1D X1E Y1E										
X1C Y1C Use prohibited X1D Y1D Y1E										
X1D Y1D Y1E		1		Use prohibited						
X1E Y1E		-		osc promoned						
	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		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	Customs and a /l loo muchibited		
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	1	
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		
		•	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	1	
			25	,		
			to	System area (Use prohibited)	_	
			157			
			158			
			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		
			210	CH5 Industrial shipment settings offset value	R/W	
			211	CH5 Industrial shipment settings gain value	1	
			212	CH6 Industrial shipment settings offset value	1	
			213	CH6 Industrial shipment settings gain value		
			214	CH7 Industrial shipment settings offset value	+	
			215	CH7 Industrial shipment settings gain value CH8 Industrial shipment settings offset value	<u> </u>	

Q68DAVN						
Address (decimal)	Name	Read/write				
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	R/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 ANALOG OUTPUT MODULE REPLACEMENT

Memo

TEMPERATURE INPUT MODULE REPLACEMENT

4.1 List of Temperature Input Module Alternative Models for Replacement

AnS/QnAS s	eries		Transition to Q series
Product	Model	Model	Remark (Restrictions)
	A1S68TD	Q64TD	1) External wiring : Cable size is changed. 2) Number of slots : Changed (Two modules are required.) 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
		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. 4) Performance specifications: Not changed : The disconnection detection function is not supported. (Only the Q68TD-G-H02 supports this function.)
Temperature input	A1S62RD3N	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
module		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.
	A1S62RD4N	Q64RD	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: 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.

4.2 A1S68TD (Replacing with the Q64TD)

4.2.1 Performance specifications comparison

(1) Performance specifications comparison

Item		A1S68TD						
Temperature s	ensor input	0 to 1700°C						
Output	Detected temperature value	16-bit signed binary (0 to 17000: value up to the first decimal place × 10)						
Sulput	Scaling value	16-bit signed binary (0 to 2000)						
Thermocouple standards	compliance		JIS C1602-198 ²	1				
Applicable the	rmocouple		Refer to Section 4.2.	1 (2).				
Measured tem accuracy	perature range		Refer to Section 4.2.	.1 (2).				
Overall accura	су	*1						
Maximum conv	version speed	400ms/8 channels						
Isolation method		Between thermocouple input and programmable controller power supply Transformer isolation 500VAC, for 1 minute 500VDC instance		Insulation resistance 5MΩ or more using 500VDC insulation resistance tester				
Disconnection	detection	Available						
Number of tem	Number of temperature sensor input points 8 channels + 1 channel for Pt100/module							
Number of occ	cupied 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	R1.25-3	3, 1.25-YS3, RAV1.25-	3, V1.25-YS3A				
Internal curren (5VDC)	t consumption		0.32A					
Weight			0.28kg					

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

				O . Compatible, △ . Partial change required, *. Inc			
	Q64TD			Compatibility	Precautions for replacement		
_	270 to 1820	°C		0	The measured temperature range differs depending on the thermocouple used.		
16- (-2700 to 18200: value	bit signed bit e up to the f	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	995			As the applicable thermocouples and thermocouple compliance standards		
Refer	to Section 4	Δ	differ, refer to Section 4.2.1 (2) to check the specifications, and use the thermocouple that can be used with the Q64TD.				
Refer	to Section 4	Δ	As they depend on the applicable thermocouple and measured				
	*1	0	temperature range, refer to Section 4.2.1 (2) to check the specifications.				
	40ms/chann	iel		0			
Isolated area Between thermocouple input and programmable controller power supply Between thermocouple input channels Between cold junction compensation input (Pt100) and	Isolation method Transformer isolation Transformer isolation	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			
programmable controller power supply							
	Available			0			
4 channels +	1 channel fo	Δ	To use 5 or more channels, consider replacing the A1S68TD with two Q64TD modules.				
(I/O assignn		Δ	The number of occupied I/O points has changed to 16 points.				
	oint termina	×	_				
	0.3 to 0.75mi	×					
1.25-3, R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.)					.gg rodunou.		
	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) × (Operating ambient temperature variation)

An operating ambient temperature variation indicates a deviation of the operating ambient temperature from the 25±5°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				
Е	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				
T	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
	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
	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% 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.

4.2.2 Functional comparison

O: Available, -: Not available

ltem	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.	0	0	for the Q64TD.
	Converts and stores a measured			The concept of scaling value
Scaling function	temperature value within the scaling range	0	Δ	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.

4.2.3 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.

	A1Se		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		Y6		X6	Use prohibited	Y6	CH3 Gain setting request
X7		Y7	Use prohibited	X7	Ose prombiled	Y7	CH4 Offset setting request
X8		Y8		X8		Y8	CH4 Gain setting request
X9		Y9	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 flag	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	Ose prombited	Y10					
X11		Y11	Set lower/upper limit value update instruction				
X12		Y12	Error reset				
X13		Y13					
X14		Y14					
X15		Y15					
X16		Y16					
X17 X18		Y17 Y18					
X19		Y19	Use prohibited				
X1A		Y1A	200 promotod				
X1B	1	Y1B					
X1C		Y1C					
X1D	1	Y1D					
X1E		Y1E					
X1F		Y1F					

4.2.4 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		
2	Disconnection detection flag	R	2	CH2 Time/count averaging setting	R/W	
3	Out-of-measurement-range flag		3	CH3 Time/count averaging setting		
4	9		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)		11	CH1 Measured temperature value		
12	CH3 Converted temperature value (0.1°C unit)		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)	l R	14	CH4 Measured temperature value		
15	CH6 Converted temperature value (0.1°C unit)	4	15 to 18	System area (Use prohibited)	_	
16	CH7 Converted temperature value (0.1°C unit)	4	19	Error code	_	
17	CH8 Converted temperature value (0.1°C unit)		20	Setting range	R	
18	Crio Converted temperature value (0.1 C unit)			<u> </u>		
	System area (Use prohibited)	-	21 to 46	System area (Use prohibited) Warning output enable/disable setting	- D/M	
19	CH4 Cooling value		47		R/W	
20	CH1 Scaling value		48	Warning output flag		
21	CH2 Scaling value		49	Disconnection detection flag		
22	CH3 Scaling value		50	CH1 Scaling value	R	
23	CH4 Scaling value	_	51	CH2 Scaling value		
24	CH5 Scaling value	R	52	CH3 Scaling value		
25	CH6 Scaling value		53	CH4 Scaling value		
26	CH7 Scaling value		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)	FK/VV	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)	1	82	CH3 Scaling width lower limit value	1	
41	CH6 Upper limit value (0.1°C unit)	1	83	CH3 Scaling width upper limit value	D ///	
42	CH7 Lower limit value (0.1°C unit)		84	CH4 Scaling width lower limit value	R/W	
43	CH7 Upper limit value (0.1°C unit)	1	85	CH4 Scaling width upper limit value	1	
44	CH8 Lower limit value (0.1°C unit)	1	86	CH1 Warning output lower lower limit value	1	
45	CH8 Upper limit value (0.1°C unit)	1	87	CH1 Warning output lower upper limit value	1	
	, , , ,	1	88	CH1 Warning output upper lower limit value		
46	System area (Use prohibited)					

	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	1011
			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	
			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	R/W
			1.10	detection	
			149	System area (Use prohibited)	-
			150 to 153	Conversion setting for disconnection	R/W
			151 to 157	detection (CH1 to CH4)	
				System area (Use prohibited)	-
				Mode switching setting	
			160 161	CH1 Factory default delig value	
			162	CH1 Factory default gain value CH1 User range settings offset value	
			163	CH1 User range settings onset value CH1 User range settings gain value	
			103		
			164	CH1 User range settings thermal EMF offset value (L)	
				CH1 User range settings thermal EMF	
			165	offset value (H)	
				CH1 User range settings thermal EMF gain	
			166	value (L)	
				CH1 User range settings thermal EMF gain	
			167	value (H)	R/W
			168	CH2 Factory default offset value	1011
			169	CH2 Factory default gain value	
			170	CH2 User range settings offset value	
			171	CH2 User range settings gain value	
				CH2 User range settings thermal EMF	
			172	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 (decimal)	Name	Read/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	
400	CH3 User range settings thermal EMF	
180	offset value (L)	
181	CH3 User range settings thermal EMF	
101	offset value (H)	
182	CH3 User range settings thermal EMF gain	
102	value (L)	
183	CH3 User range settings thermal EMF gain	
100	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	
100	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 (Use prohibited)	_
to	,	

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

4.3.1 Performance specifications comparison

(1) Performance specifications comparison

	Item		A1S68TD							
Tempera	emperature sensor input 0 to 1700°C									
	Detected temperature value	(0 to 17000	16-bit signed binary (0 to 17000: value up to the first decimal place × 10)							
Output	Scaling value		16-bit signed binary (0	to 2000)						
Thermod	couple compliance		JIS C1602-198	1						
Applicab	le thermocouple		Refer to Section 4.3	3.1 (2).						
Measure accuracy	ed temperature range		Refer to Section 4.3	3.1 (2).						
Overall a	accuracy	*2								
Maximur	n conversion speed		400ms/8 channe	els						
Isolation	method	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					
Disconne	ection detection		Available							
Number input poi	of temperature sensor	8 cha	nnels + 1 channel for	Pt100/module						
Number	of occupied I/O points	(1/	32 points O assignment: special	32 points)						
External	connection system		20-point terminal t	olock						
	device connector		-							
(sold sep										
	le wire size		0.75 to 1.5mm ² R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A							
	ole solderless terminal current consumption	R1.25-	3, 1.25-YS3, RAV1.25 0.32A	-3, V1.25-YS3A						
Weight			0.28kg							

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

		0.00	ui o o		`	J. Compatible, △.	Partial change required, *. Incompatible
	Q68TD-G-H02	Q se	ries	Q68TD-G-H	101 ^{*1}	Compatibility	Precautions for replacement
		-270 to				0	The measured temperature range differs depending on the thermocouple used.
	16 (-2700 to 18200: valu		ed binar the first		0)	0	
		_	ed binar to 100%	-		Δ	The concept of scaling value differs. To use the scaling values, program needs to be reviewed.
		JIS C160	02-1995 ion 4.3.1	(2)		Δ	Use the thermocouple that can be used on the Q68TD-G-H02/H01, referring to Section 4.3.1 (2).
			ion 4.3.1	. ,		Δ	As they depend on the applicable thermocouple and measured
	*2					0	temperature range, refer to Section 4.3.1 (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	Transi isola Transi	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 channel for Pt100/module						
	16 points (I/O assignment: intelligent 16 points)						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.
		- T				×	Recalculation of internal current
	0.65A			0.49A		Δ	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) × (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 measured temperature	Larger value of ±0.07°C, or ±0.02% of measured temperature					
E	0 to 800	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	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	Larger value of ±0.5°C, or ±0.25% of measured temperature	Larger value of ±0.07°C, or ±0.02% of 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				
В	600 to 800°C*2	±3.0°C	.0.400	±13.0°C				
	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	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.

4.3.2 Functional comparison

O: Available, △: 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.	Ŭ	Ŭ	
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 colection function	Sets an input type for each channel.		\cap	type is set with the intelligent
Input type selection function	Sets an input type for each channel.	0		function module switch setting of
				GX Developer.
Warning output function	Outputs a warning when the temperature	0	0	
Warring output function	exceeds the set temperature range.		0	
Temperature conversion system	Processes the detected temperature by	0	0	Averaging processing is added
Temperature conversion system	specified method.	O	O	for the Q68TD-G-H02/H01.
	Converts a measured temperature value		Δ	The concept of scaling value
Scaling function	into a percent value (%) in set width.	0		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.	-	0	Redundant CPU support this
				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.

4.3.3 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.

	A1S6	S8TD		Q68TD-G-H02, Q68TD-G-H01				
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		
X1	A/D conversion READY flag	Y1		X1		Y1		
X2	Error flag	Y2		X2		Y2		
X3	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	
XB		YB		XB	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	ΥE		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					
X13		Y13						
X14		Y14						
X15		Y15						
X16		Y16						
X17 X18		Y17 Y18						
X19		Y19	Use prohibited					
X1A		Y1A	ooc promoned					
X1B		Y1B						
X1C		Y1C						
X1D		Y1D						
X1E		Y1E						
X1F		Y1F						

4.3.4 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	Nama	Read/write	Address	Nome	Doodlywite	
(decimal)	Name	Read/write	(decimal)	Name	Read/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	
1	Effor code	R		time constant setting		
2	Disconnection detection flag	K	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 (Thermocouple type)		
7	System area (Use prohibited)	-	22	Setting range 3 (Offset/gain setting)	1	
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 specification)	-	
11	CH2 Converted temperature value (0.1°C unit)		27	Offset/gain setting mode (Gain specification)	R/W	
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)		to			
15	CH6 Converted temperature value (0.1°C unit)		43	CH8 Gain temperature setting value		
16	CH7 Converted temperature value (0.1°C unit)		44	System area (Use prohibited)	-	
17	CH8 Converted temperature value (0.1°C unit)			Q68TD-G-H02: Cold junction compensation setting status	R	
			45	Q68TD-G-H01: System area (Use	+	
18	System area (Use prohibited)	_		prohibited)	-	
19	, s, s. s. s. s. (s. s. p. s. m. n. s.)		46	Warning output enable/disable setting	R/W	
20	CH1 Scaling value		47	Warning output flag (Process alarm)		
21	CH2 Scaling value		48	Warning output flag (Rate alarm)		
22	CH3 Scaling value			Q68TD-G-H02: Disconnection detection	, ,	
	CHA Caslina value		49	flag Q68TD-G-H01: Disconnection status	R	
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		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)	-	to			
30	CH1 Lower limit value (0.1°C unit)		77	CH8 Scaling range upper limit value		
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)	R/W	to]	
34	CH3 Lower limit value (0.1°C unit)		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	
44	CLIG Lippor limit value (0.1°C unit)		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 159	Mode switching setting	R/W
48	System area (Use prohibited)	-	160 to	System area (Use prohibited)	-
	1		103	Q68TD-G-H02: Conversion setting for	+
49			164 to	disconnection detection	
		L	165	Q68TD-G-H01: Disconnection state	
				conversion setting	
				Q68TD-G-H02: Conversion setting value for	R/W
			166 to	disconnection detection	
			173	Q68TD-G-H01: Conversion setting value for	
			170	disconnection state	
			174 to	System area (Use prohibited)	-
			190	CH1 Factory default offset value	
			191	CH1 Factory default diser value	
			192	CH1 User range settings offset value	
			193	CH1 User range settings onset value	
			193	CH1 User range settings gain value CH1 User range settings thermal EMF	
			194		
				offset value (L) CH1 User range settings thermal EMF	4
			195		
				offset value (H)	
			196	CH1 User range settings thermal EMF gain	
				value (L)	4
			197	CH1 User range settings thermal EMF gain value (H)	
			to		R/W
			246	CH8 Factory default offset value	
			247	CH8 Factory default gain value	
			248	CH8 User range settings offset value	
			249	CH8 User range settings gain value	
			250	CH8 User range settings thermal EMF	
			200	offset value (L)	
			251	CH8 User range settings thermal EMF	
			201	offset value (H)	
			252	CH8 User range settings thermal EMF gain value (L)	
			252	CH8 User range settings thermal EMF gain	1
			253	Lughua (LI)	

value (H)

4.4 A1S62RD3N (Replacing with the Q64RD)

4.4.1 Performance specifications comparison

Item		A1S62RD3N			
Measuring met	thod	3-wire type			
		16-bit signed binary:			
	Tomporatura	-1800 to 6000			
	Temperature conversion	Value up to the first decimal place × 10			
Output	value	32-bit signed binary:			
		-180000 to 600000			
		Value up to the third decimal place × 1000			
	Scaling value	-			
		Pt100			
		(JIS C1604-1997, IEC 751-am2, JIS C1604-1989, DIN 43760-1980)			
Applicable plat	inum RTD	JPt100			
		(JIS C1604-1981)			
		-180 to 600°C			
Measured	Pt100	(27.10 to 313.71Ω)			
temperature		-180 to 600°C			
range	JPt100	(25.80 to 317.28Ω)			
Accuracy		±1%			
		(accuracy at full scale)			
Resolution		0.025°C			
Conversion spe	eed	40ms/channel			
Analog input pe	oints	2 channels/module			
Output current	for temperature	1mA			
detection					
Isolation metho	nd	Between platinum RTD input and programmable controller power supply: photocoupler isolation			
		Between platinum RTD input and channel: not isolated			
Dielectric withs	stand voltage	Between platinum RTD input and programmable controller power supply: 500VAC, for 1 minute			
Disconnection	detection	Detected per channel			
		32 points			
Number of occ	supied I/O points	(I/O assignment: special 32 points)			
External conne		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			

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

			0.1	•	tial change required, x: incompatible
	G	064RD		Compatibility	Precautions for replacement
	3/4-	wire type		0	
	16-bit s	igned binary:			
		00 to 8500			
V	•	rst decimal place × 10		0	
	32-bit s	igned binary:			
	-20000	00 to 850000			
Va	lue up to the thi	d decimal place × 1000			
	16-bit s	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				
A	mbient tempera (accuracy relativ Ambient tempera	0			
	(accuracy relativ				
	0	.025°C		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	
	16 (I/O assignment	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 terminals with an insulation sleeve cannot be 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	

 \bigcirc : Compatible, \triangle : Partial change required, \times : 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.) Wire Q64RD	0	
0.60A	Δ	Recalculation of internal current consumption (5VDC) is required.
 0.17kg	0	

4.4.2 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.

4.4.3 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	<u> </u>	Y5	CH3 Offset setting request
X6		Y6		X6	I I a a manada 9a 9a ad	Y6	CH3 Gain setting request
X7		Y7	Use prohibited -	X7	Use prohibited	Y7	CH4 Offset setting request
X8		Y8		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	Llas prohibited
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 Y13	Error code reset flag				
X13 X14		Y14					
X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Jse prohibited				
X1A		Y1A					
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

4.4.4 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	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)	_	
14 15	System area (Use prohibited)	-	14 15	CH4 Measured temperature value (16bit)		
16			16			
17		 -	17	System area (Use prohibited)	-	
18	CLIA Detected temperature value (22kit) (L)		18			
19	CH1 Detected temperature value (32bit) $\frac{(27)}{(H)}$		19	Error code		
20	CH2 Detected temperature value (L)	R	20	Setting range	R	
21	(32bit) (H)		21	3 2 3		
22	, , , , , , , , , , , , , , , , , , , ,		22			
23			23			
24			24			
25			25			
26				26		
27	System area (Use prohibited)	_	27			
28	cyclem area (coe premanea)		28			
29			29			
30				30		
31			31			
32			32	System area (Use prohibited)	-	
34	Write data error code	R/W	34			
35	Conversion completed flag	R	35			
36	Type specification of platinum RTD	R/W	36			
	New Section of Section (1)	1	37			
			38			
			39			
			40			
			41			
			42			
			43			
			44			

	Q64RD		
Address	Name		Read/write
(decimal)	Name		Read/write
45	System area (Use prohibited)		_
46			D 444
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49 50	Disconnection detection flag CH1 Scaling value		
51	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 littlit value	(H)	
64	CH1 Scaling range upper limit value	(L)	
65	Citt Scaling range upper limit value	(H)	
66	CH2 Scaling range lower limit value	(L)	
67	Criz Scaling range lower limit value	(H)	
68	CH2 Scaling range upper limit value	(L)	
69	Criz Scaling range upper limit value	(H)	
70	CH3 Scaling range lower limit value	(L)	
71	Or 10 Ceaning range lower in the value	(H)	
72	CH3 Scaling range upper limit value	(L)	
73	or to county range apper mint value	(H)	
74	CH4 Scaling range lower limit value	(L)	
75	OTH County range lower mile 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	CH2 Scaling width lower limit value		
81	CH2 Scaling width upper limit value		R/W
82	CH3 Scaling width lower limit value		
83	CH3 Scaling width upper limit value		
84	CH4 Scaling width lower limit value		
85	CH4 Scaling width upper limit value	(1.5	
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 to	value	(H)	
116	CH4 Warning output upper upper limit	/L \	
116	CH4 Warning output upper upper limit	(L)	
117	value	(H)	
118	CH1 Offset temperature set value	(L)	
119	•	(H)	
120	CH1 Gain temperature set value	(L)	
121		(H)	

	Q64RD				
Address (decimal)	Name	Read/write			
to					
132	CH4 Gain temperature set value	(L)			
133	133				
134	Extended averaging processing				
	specification				
135 to 147	System area (Use prohibited)		-		
148	Conversion setting for disconnection	R/W			
140	detection	10,77			
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)	FC/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)			

4.5 A1S62RD3N (Replacing with the Q64RD-G)

4.5.1 Performance specifications comparison

Ite	em	A1S62RD3N	
Measuring met	hod	3-wire type	
		16-bit signed binary:	
Output		-1800 to 6000	
	Temperature conversion	Value up to the first decimal place × 10	
	value	32-bit signed binary:	
		-180000 to 600000	
		Value up to the third decimal place × 1000	
	Scaling value	-	
		Pt100	
Applicable RTD)	(JIS C1604-1997, IEC 751-am2, JIS C1604-1989, DIN 43760-1980)	
		JPt100	
		(JIS C1604-1981)	
	Pt100	-180 to 600°C	
Measured	Pt100	$(27.10 \text{ to } 313.71\Omega)$	
temperature	JPt100	-180 to 600°C	
range	371100	$(25.80 \text{ to } 317.28\Omega)$	
	Ni100	-	
Accuracy		±1%	
		(accuracy at full scale)	
Resolution		0.025°C	
Conversion spe	eed	40ms/channel	
Analog input po	oints	2 channels/module	
Output current	for temperature	1mA	
detection			
Isolation metho	d	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	Detected per channel	
Number of occu	upied I/O points	32 points	
		(I/O assignment: special 32 points)	
External conne	ction system	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: Compatible, \triangle : Partial change required, \times : Incompatible

			U:		artial change required, ×: Incompatible
	Q64	RD-G		Compatibility	Precautions for replacement
	3/4-wi	re type		0	
Val 32-t	6-bit signed bingue up to the first bit signed binary and to the third	0			
	16-bit sig	ned binary		0	
(Δ	As the compliance standards for the applicable RTD differ, change the RTD to the one that can be used with the Q64RD-G.			
	(DIN 437				
	-180 to	0			
	-60 to	0			
	0.02	25°C		0	
		channel		0	
	4 channe	els/module		0	
		mA		0	
Isolated area Between temperature- measuring resistor input and programmable controller power supply Between temperature- measuring resistor input channels	Photocoupler isolation Transformer isolation	Dielectric withstand voltage 1780VACrms/3 cycles (Altitude 2000m)	Insulation resistance $10M\Omega$ or more using 500VDC insulation resistance tester	0	
	Detected p	0			
16 points (I/O assignment: intelligent 16 points)					The number of occupied I/O points has changed to 16 points.
		rminal block		×	
		0.75mm ²		×	Wiring change is required.
(Solderless term		R1.25-3 sulation sleeve cannot be	e 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 coemicient	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.	
Internal current consumption (5VDC)	0.49A	
Weight	0.27kg	

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

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

4.5.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62RD3N	Q64RD-G	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	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 bustorage 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.

4.5.3 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.

	A1S6		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	l laa aaabibitad	Y6	CH3 Gain setting request
X7		Y7	11	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	
XC		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			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					

4.5.4 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	oystem area (Ose prombited)	_
8				8		
9				9	Averaging processing specification	R/W
10	CH1 Detected temperature value (16bit) CH2 Detected temperature value (16bit)		R	10	Conversion completion flag	
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	CH1 Detected temperature value			15		
16 17				16 17	System area (Use prohibited)	-
18				18		
19	CH1 Detected temperature value (L) (32bit) (H)			19	Error code	
20		(L)	R	20	Setting range 1	R
21		(H)		21	Setting range 2	┤ ``
22	()	` /		22	3 - 3 -	
23				23		
24				24		
25				25		
26				26		
27	System area (Use prohibited)		_	27		
28	gradin area (eee premistica)			28		
29				29		
30				30		
31				31		
32				32	System area (Lice prohibited)	
33	Write data error code	_	R/W	33 34	System area (Use prohibited)	_
35	5 Conversion completed flag		R	35		
36			R/W	36		
- 00	Type openioadon of platinam TCD		1011	37		
				38		
				39		
				40		
				41		
				42		
				43		

	Q64RD-G		
Address	Name		Read/write
(decimal)			
45	System area (Use prohibited)		_
46	` ' '		
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49	Disconnection detection flag		
50 to 53	CH1 to CH4 Scaling value		
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	Of the Coaling range lower limit value	(H)	
64	CH1 Scaling range upper limit value	(L)	
65	Citt Scaling range upper littlit value	(H)	
to			
76	CH4 Scaling range upper limit value	(L)	
77		(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)	
90	CH1 Warning output upper lower limit	(L)	R/W
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		(L)	
119	CH1 Offset temperature set valuer	(H)	
120		(L)	
121	CH1 Gain temperature set value	(H)	
to		(' ')	
132		(1.)	
133	CH4 Gain temperature set value	(L) (H)	
134	Extended averaging processing specific	` '	
	Extended averaging processing specific	auull	
135 to 147	System area (Use prohibited)		-
148	Conversion setting for disconnection detection		R/W
149	System area (Use prohibited)		-
. 10	- January		1

Q64RD-G						
Address	QUILD O					
(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						
159	Mode 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)	TX/ V V			
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		ı				
254	4-wire type CH4 User range settings	(L)				
255	gain resistance value	(H)				

4.6 A1S62RD4N (Replacing with the Q64RD)

4.6.1 Performance specifications comparison

Item		A1S62RD4N			
Measuring met	thod	4-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 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 spe	eed	40ms/channel			
Analog input po	oints	2 channels/module			
Output current detection	for temperature	1mA			
Isolation metho	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			

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

		CADD	<u> </u>		tial change required, *: Incompatible
		64RD		_	Precautions for replacement
		wire type		0	
		gned binary:			
		0 to 8500			
V	alue up to the fir	0			
	32-bit si				
\/a		0 to 850000			
val		d decimal place × 1000			
	16-bit si	0			
	F	Pt100			As the compliance standards
	(JIS C 1604-19	997, IEC751 1983)			for the applicable platinum
	Ji	Δ	RTD differ, change the		
	(JIS C		platinum RTD to the one that		
			can be used with the Q64RD.		
	-200				
		0			
	-180				
Ambient temperature 0 to 55°C: ±0.25%					
		e to maximum value)		0	
A	mbient tempera	ture 25±5°C: ±0.08%			
(accuracy relativ	e to maximum value)			
	0.	025°C		0	
	40ms	s/channel		0	
	4 chanr	nels/module		0	
		1mA		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	looidtion	(7 tititudo 2000111)	500VDC insulation		
Between platinum RTD input channels	Not isolated	-	resistance tester		
 _	Detected	per channel		0	
 	16	points			The number of occupied I/O
		intelligent 16 points)		Δ	points has changed to 16
\			points.		
		erminal block		×	
		0.75mm ²		×	Wiring change is required.
		3, R1.25-3		×	
(Solderless te	rminals with an				

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 1) A1 A1S62RD4N CH1 Pt100 2) B1 b1/a2 SLD A2 Pt100 4) 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	

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

\sim	. Compatible, Δ .	artial change required, ". Incompatible
Q64RD	Compatibility	Precautions for replacement
1) b1 SLD 0.60A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.471		consumption (3vDC) is required.
0.17kg	0	

4.6.2 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.		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	This function detects connected platinum RTD or cable breakage.	0	0	For the Q64RD, a disconnection 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.

4.6.3 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.

	A1S62		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
X3	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 I a a second the transfer	X7	Use prohibited	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		хс	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				
X14		Y14					
X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19			Use prohibited				
X1A		Y1A					
X1B X1C		Y1B Y1C					
X1C X1D		Y1C Y1D					
X1E		Y1E					
X1F		Y1F					

4.6.4 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	Joystem area (Ose 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)	
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	(32bit) (H)	1	19	Error code	
20	CH2 Detected temperature value (L)	R	20	Setting range	R
21	(32bit) (H)	1	21		
22	(====)		22		
23			23		
24			24		
25			25		
26			26		
27	System area (Use prohibited)		27		
28	System area (Ose prombited)	_	28		
29			29		
30			30		
31			31		
32			32	System area (Use prohibited)	-
33	Maite data array and	D/4/	33	, , ,	
34 35	Write data error code	R/W R	34 35		
36	Conversion completed flag Type specification of platinum RTD	R/W	36		
30	Type specification of platfillull KTD	FV/VV	37		
			38		
			39		
			40		
			41		
			42		
			43		

	Q64RD		
Address	Name		Read/write
(decimal) 45			
46	System area (Use prohibited)		-
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49	Disconnection detection flag		
50	CH1 Scaling value		
51	CH2 Scaling value		
52 53	CH3 Scaling value 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 64		(H) (L)	
65	CH1 Scaling range upper limit value	(L) (H)	
66		(L)	
67	CH2 Scaling range lower limit value	(H)	·
68	0110 0 15 15 15 15	(L)	
69	CH2 Scaling range upper limit value	(H)	,
70	CH3 Scaling range lower limit value	(L)	
71	Cris Scaling range lower limit value	(H)	
72	CH3 Scaling range upper limit value	(L)	
73	The seaming range appearance	(H)	
74	CH4 Scaling range lower limit value	(L)	•
75 76		(H) (L)	
77	CH4 Scaling range upper limit value	(L)	
78	CH1 Scaling width lower limit value	(11)	
79	CH1 Scaling width upper limit value		
80	CH2 Scaling width lower limit value		
81	CH2 Scaling width upper limit value		R/W
82	CH3 Scaling width lower limit value		
83	CH3 Scaling width upper limit value		
84	CH4 Scaling width lower limit value		
85	CH4 Scaling width upper limit value	/1.5	
86 87	CH1 Warning output lower lower limit value	(L)	
88	CH1 Warning output lower upper limit	(H) (L)	
89	value	(L) (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	CH1 Offset temperature set value	(L)	
119 120		(H)	
120	CH1 Gain temperature set value	(L) (H)	
121	<u>I</u>	(11)	

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

4.7 A1S62RD4N (Replacing with the Q64RD-G)

4.7.1 Performance specifications comparison

Item		A1S62RD4N		
Measuring met	thod	4-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 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) -180 to 600°C	_	
temperature range	JPt100	(25.80 to 317.28Ω)		
Ni100		-		
Accuracy		±1% (accuracy at full scale)		
Resolution		0.025°C		
Conversion speed		40ms/channel		
Analog input p	oints	2 channels/module		
Output current detection	for temperature	1mA		
Isolation metho	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 connection 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		

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

	Q64F	RD-G		•	Precautions for replacement
	3/4-wir	e type		0	
	-	ry: -2000 to 8500			
Valu	e up to the first	decimal place × 10		0	
	-	-200000 to 850000			
Value		decimal place × 1000			
	16-bit sign	0			
	Pt1				As the compliance standards
(,		7, IEC751 1983)			for the applicable RTD differ,
	JPt [*]		Δ	change the RTD to the one	
	(JIS C 16		that can be used with the		
	Ni1 (DIN 437)		Q64RD-G.		
	(DIN 437)				
	-180 to			0	
	-60 to				
		0			
	0.02			0	
	40ms/c			0	
	4 channel	s/module		0	
	1m	۰,۸			
	111	IA		0	
Isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance		
Between temperature-measuring resistor input and programmable	Photocoupler		40MO		
controller power supply	isolation	1780VACrms/3 cycles	10MΩ or more using 500VDC insulation	0	
Between temperature-measuring	Transformer	(Altitude 2000m)	resistance tester		
resistor input channels isolation					
	0				
		The number of occupied I/O			
16 points (I/O assignment: intelligent 16 points)					points has changed to 16 points.
	×				
	0.3 to 0.	75mm ²		×	Wiring change is required
	1.25-3, I	R1.25-3		×	Wiring change is required.
(Solderless term	inals with an ins	sulation sleeve cannot be	used.)	^	

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 coemicient	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/a2 SLD A2 Pt100 4) 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, \triangle : Partial change required, \times : Incompatible

		tial change required, x: 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 10Ω or less.)		
Q64RD-G		
Wire a1		
2) A1		
B1		
1) b1	0	
SLD		
Wire Q64RD-G		
a1		
2)		
Pt100 A1		
© B1		
1) b1		
SLD		
		Recalculation of internal
0.62A	Δ	current consumption (5VDC) is
		required.
0.20kg	0	

4.7.2 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)	
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	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.

4.7.3 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	Llaa probibited	Y6	CH3 Gain setting request
X7		Y7	I I a a second the transfer	X7	Use prohibited	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		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					

4.7.4 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.

Address (Ideclimal)	A1S62RD4N				Q64RD-G	
1		Name	Read/write		Name	Read/write
1	0	Conversion enable/disable specification		0	Conversion enable/disable setting	
CH1 Averaging time/count	1	Averaging processing specification		1	I	
CH2 Averaging time count	2	CH1 Averaging time/count	R/W	2		R/W
4	3	CH2 Averaging time/count		3		
CH1 Detected temperature value (16bit) CH2 Detected temperature value (16bit) R 10 CH3 Detected temperature value (16bit) R 11 CH2 Detected temperature value (16bit) R 11 CH2 Measured temperature value (16bit) R 12 CH3 Measured temperature value (16bit) R 13 CH3 Measured temperature value (16bit) R 14 CH4 Measured temperature value (16bit) R 15 16 16 17 System area (Use prohibited) CH2 Detected temperature value (32bit) (L)	4			4		
7	5			5		
Name	6	System area (Use prohibited)	-	6	System area (Lise prohibited)	_
9 Averaging processing specification R/W	7			7	System area (Ose prombited)	_
10	8			8		
11	9			9		R/W
11	10	CH1 Detected temperature value (16bit)	R			
13		CH2 Detected temperature value (16bit)	11		. , ,	
14						R
15						
15		System area (Use prohibited)	_		CH4 Measured temperature value (16bit)	
17		, , , , , , , , , , , , , , , , , , ,				
17					System area (Use prohibited)	_
19		1				
19						
21 Setting range 2		(H)	R			
22 23 24 25 26 26 27 28 29 30 30 31 32 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 37 37 37 37 37 37						- R
23		(H)			Setting range 2	
24						
25						
26						
27						
28						
29 30 30 31 31 32 33 32 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		System area (Use prohibited)	-			
30 31 31 32 33 32 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						
31 31 32 32 33 33 34 Write data error code R/W 35 Conversion completed flag R 36 Type specification of platinum RTD R/W 37					System area (Use prohibited)	_
32 32 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 37						
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						
34 Write data error code R/W 34 35 Conversion completed flag R 35 36 Type specification of platinum RTD R/W 36 37						
35 Conversion completed flag R 35 36 Type specification of platinum RTD R/W 36 37		Write data error code	R/W			
36 Type specification of platinum RTD R/W 36 37						
37		. •				
38				37		
				38		

	Q64RD-G		
Address	Name		Read/write
(decimal)			
39			
40			
41			
42	System area (Use prohibited)	_	
43	,		
44			
45			
46			
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49	Disconnection detection flag		
50 to 53	CH1 to CH4 Scaling value	1	
54	CH1 Measured temperature value	(L)	R
55	(32bit)	(H)	
to		1	
60	CH4 Measured temperature value	(L)	
61	(32bit)	(H)	
62	CH1 Scaling range lower limit value	(L)	
63	5 5 1 1 1 1	(H)	
64	CH1 Scaling range upper limit value	(L)	
65	3 - 3 - 4,1	(H)	
to		1	
76	CH4 Scaling range upper limit value	(L)	
77	J J	(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)	
91	value	(H)	
92	CH1 Warning output upper upper limit	(L)	
93	value	(H)	
to		1	
116	CH4 Warning output upper upper limit	(L)	
117	value	(H)	
118	CH1 Offset temperature set value	(L)	
119		(H)	
120	CH1 Gain temperature set value	(L)	
121		(H)	
to		/1.5	
132	CH4 Gain temperature set value	(L)	
133	·	(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)	
151	disconnection detection	(L) (H)	R/W
131	a.s.s.modion dotodion	(' ')	<u> </u>

	Q64RD-G		
Address	Nama		Doodhuuito
(decimal)	Name		Read/write
to			
156	CH4 Conversion setting value for	(L)	
157	disconnection detection	(H)	
158	Made switching setting		
159	Mode 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)	TV/ V V
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)	

5

HEATING-COOLING TEMPERATURE CONTROL MODULE/TEMPERATURE CONTROL MODULE REPLACEMENT

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

AnS/Qn.	AS series	Transition to Q series			
Product	Model	Model	Remark (Restrictions)		
	A1S64TCTRT Thermocouple, standard 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 5.3.)		
	A1S64TCTRT Thermocouple, heating-cooling control	Q64TCTTN	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: Not changed Functional specifications: Changed (Refer to Section 5.3.)		
Heating-cooling temperature control module Temperature control module	A1S64TCTRT Platinum resistance thermometer, standard control	Q64TCRTN	Cable size is changed. Number of slots : Not changed Nord changed The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: Not changed Functional specifications: Changed (Refer to Section 5.3.)		
	A1S64TCTRT Platinum resistance thermometer, heating-cooling 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 5.3.)		
	A1S64TCTRTBW 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 5.3.)		
	A1S64TCTRTBW Thermocouple, heating-cooling 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 5.3.)		

AnS/QnA	S 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) 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) Program 4) Performance specifications: Not changed (Refer to Section 5.3.)
	A1S64TCTRTBW Platinum resistance thermometer, heating-cooling control	Q64TCRTBWN	Cable size is changed. 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 5.3.)
	A1S64TCTT-S1 Thermocouple, standard control	Q64TCTTN	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: Not changed Functional specifications: Changed (Refer to Section 5.3.)
Heating-cooling temperature control module	A1S64TCTTBW-S1 Thermocouple, standard control	Q64TCTTBWN	1) External wiring 2) Number of slots 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) Program 4) Performance specifications: Not changed 5) Functional specifications: Changed (Refer to Section 5.3.)
Temperature control module	A1S64TCRT-S1 Platinum resistance thermometer, standard 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: Not changed Functional specifications: Changed (Refer to Section 5.3.)
	A1S64TCRTBW-S1 Platinum resistance thermometer, standard control	Q64TCRTBWN	Cable size is changed. 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 5.3.)
	A1S62TCTT-S2 Thermocouple, heating-cooling control	Q64TCTTN	 External wiring : Cable size is changed. Number of slots : Not changed Program : 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 5.3.)
	A1S62TCTTBW-S2 Thermocouple, heating-cooling control	Q64TCTTBWN	1) External wiring 2) Number of slots 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) Program 4) Performance specifications: Changed (2CH/module → 4CH/module) 5) Functional specifications: Changed (Refer to Section 5.3.)

AnS/QnAS	series		Transition to Q series		
Product	Model	Model	Remark (Restrictions)		
Heating-cooling temperature control	A1S62TCRT-S2 Platinum resistance thermometer, heating-cooling control	Q64TCRTN	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 (2CH/module → 4CH/module) Functional specifications: Changed (Refer to Section 5.3.)		
module Temperature control module	A1S62TCRTBW-S2 Platinum resistance thermometer, heating-cooling control	Q64TCRTBWN	External wiring: Cable size is changed. 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. 4) Performance specifications: Changed (2CH/module → 4CH/module) 5) Functional specifications: Changed (Refer to Section 5.3.)		

5.2 Performance Specifications Comparison

5.2.1 A1S64TCTRT(BW) (thermocouple connection)

			Specifica	tions		
	It	em	A1S64TCTRT	A1S64TCTRTBW		
Control ou	Control output		Transistor	output		
Numbered	f tamparatura inn	ut nainta	Standard control: 4 c	channels/module		
number of	f temperature inp	ut points	Heating-cooling control:	2 channels/module		
Applicable	temperature ser	nsor	(Refer to Sectio	n 5.2.1 (1).)		
	la dia atia a a a 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:	Temperature process value (PV): -150 to -100°C	Within ±2	2.0°C		
	(ambient temperature: 0 to 55°C)	Temperature process value (PV): -200 to -150°C	Within ±3	3.0°C		
Sampling of	cycle		0.5s (Constant regardless of the	e number of channels used)		
Control ou	Control output cycle		1 to 100s			
Input impe	Input impedance		1ΜΩ	2		
Input filter			0 to 100s			
Sensor co	rrection value se	tting	-50.00 to 50.00%			
Operation	at sensor input of	lisconnection	Upscale processing			
Temperatu	ure control metho	d	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 Heating-cooling control: Ca			
PID consta	ants range	Proportional band (P)	Standard control: 0 Heating-cooling control			
		Integral time (I)	1 to 360	00s		
		Derivative time (D)	0 to 360	00s		
Set value	(SV) setting rang	е	Within the temperature range set for the	he temperature sensor to be used		
		Output signal	ON/OFF	pulse		
Transistor output Rated load voltage Max. load current Max. inrush current Leakage current at OFF Max. voltage drop at ON		Rated load voltage	10.2 to 30VDC (pea	k 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	age drop at ON 1.0VDC (TYP) at 0.1A 2.5VDC (MAX) at 0.1A			
		Response time	OFF→ON: 2ms or less, ON→OFF: 2ms or less			
Number of	f writes to E ² PRC	DM	Max. 10 ¹² times (number	of FeRAM read/write)		

Specifications			
Q64TCTTN Q	64TCTTBWN	Compatibility	Precautions for replacement
Transistor output		0	
Standard control: 4 channels/mode	ule	0	
 Heating-cooling control: 2 channels/m	nodule	U	
 (Refer to Section 5.2.1 (1).)		0	
 (Ambient temperature: 25±5°C) Full scale	× (±0.3%)*1	0	
(Ambient temperature: 0 to 55°C) Full scale	× (±0.7%)*1	O	
Within ±1.0°C*1			
Within ±2.0°C*1		0	
Within ±3.0°C*1			
0.5s (Constant regardless of the number of cl	hannels 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 co	ontrol	0	
Standard control: Can be set by auto-tuning of Heating-cooling control: Can be set by au	_	0	
0.0 to 1000.0%		0	
0 to 3600s		0	
0 to 3600s		0	
Within the temperature range set for the temperature	e 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		0	
 2.5VDC (MAX) at 0.1A		J	
 OFF→ON: 2ms or less, ON→OFF: 2ms		0	
 Max. 10 ¹² times (number of read/write from/to a no	on-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

	A1S64TCTRT Between input terminal and programmable co Between input channels:	A1S64TCTRTBW ntroller power supply: Transformer insulation	
	, , , ,	ntroller power supply: Transformer insulation	
	Between input channels:		
		Transformer insulation	
	Between input terminal and programmable co	introller power supply: 500VAC, for 1 minute	
	Between input channels	: 500VAC, for 1 minute	
	Between input terminal and programmable con	troller power supply: 500VDC, $10M\Omega$ or more	
	Between input channels:	500VDC, 10MΩ or more	
		U.R.D.Co., LTD.	
sensor		CTL-12-S36-8	
	_	CTL-6-P(-H)	
,		Full scale × (±1.0%)	
r of alert		3 to 255	
		0 10 200	
	32 points (I/O assignment: special 32 points)		
	20-point terminal block		
	R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
	*2	*2	
	0.33A (0.19A) ²	0.39A (0.25A) ²	
	0.26kg	0.28kg	
	34.5(W) × 130(H	I) × 93.6(D)mm	
	ccuracy	Between input channels:	CTL-12-S36-8 CTL-6-P(-H) Couracy r of alert 32 points (I/O assignment: special 32 points) 20-point terminal block 0.75 to 1.5mm² R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A 0.33A (0.19A)*2 0.39A (0.25A)*2

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

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

	•	°C		
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
3	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	
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 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)	O	
]	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	22 to 18 AWG		
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	-	

(From the previous page)

Thermocouple	°(°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	0.0 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
· ·	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



5.2.2 A1S64TCTRT(BW) (platinum resistance thermometer connection)

	4	Specifications	
ı	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 5.2.2 (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	setting	-50.00 to 50.00%	
Operation at sensor inp	ut disconnection	Upscale processing	
Townstature control method		Standard control: PID ON/OFF pulse or two-position control	
Temperature control method		Heating-cooling control: PID ON/OFF pulse	
	PID constants setting Proportional band (P)	Standard control: Can be set by auto-tuning or self-tuning.	
		Heating-cooling control: Can be set by auto-tuning.	
		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	0.1mA or less	
	OFF		
	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)	

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

Specifications		
Q64TCRTN Q64TCRTBWN	Compatibility	Precautions for replacement
Transistor output	0	
Standard control: 4 channels/module		
Heating-cooling control: 2 channels/module	0	
(Refer to Section 5.2.2 (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° 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	
Item		A1S64TCTRT	A1S64TCTRTBW	
Insulation method		Between input terminal and programmable controller power supply: Transformer insulation		
msulation method		Between input channels	: Transformer insulation	
Dielectric withstand volta	ane	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric Withstand Voite	aye	Between input channels	s: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable cor	ntroller power supply: 500VDC, $10M\Omega$ or more	
modiation 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			
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	rminai	R1.25-3, 1.25-YS3, RA	AV1.25-3, V1.25-YS3A	
Internal current consumption		0.33A (0.19A)* ²	0.39A (0.25A)* ²	
		, ,	, ,	
Weight		0.26kg	0.28kg	
External dimensions		34.5(W) × 130(F	H) × 93.6(D)mm	

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		-300 to 1100	1	
P(100	-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	
JFIIOU	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	

Specific	cations	Compatibility	Dunas di una fau mania como ma
Q64TCRTN	Q64TCRTBWN	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 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)	O	
	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.
(170 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	3 AWG	×	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	-	

5.2.3 A1S64TCTT(BW)-S1

	Item		Specifications		
			<u> </u>	TCTTBW-S1	
Control ou	ıtput		Transistor output		
Number o	Number of temperature input points		4 channels/module		
Applicable	plicable temperature sensor		(Refer to Section 5.2.3 (1).)		
			(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	
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	cycle		0.5s (Constant regardless of the number of chann	nels used)	
Control output cycle			1 to 100s		
Input impedance			1ΜΩ		
Input filter			0 to 100s		
Sensor co	rrection value sett	ing	-50.00 to 50.00%		
Operation	at sensor input di	sconnection	Upscale processing		
Temperatu	ure 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 se	ensor to be used	
		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 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	rless	
Number o	f writes to E ² PRO	M	Max. 100,000 times		

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

		rtial change required, **. Incompatib
Specifications Q64TCTTN Q64TCTTBWN	Compatibility	Precautions for replacement
Transistor output	0	
4 channels/module	0	
	0	
(Refer to Section 5.2.3 (1).)	0	
 (Ambient temperature: 25±5°C) Full scale × (±0.3%)*1		
 (Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1	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	0	
 2.5VDC (MAX) at 0.1A		
 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 $^{\circ}$ 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	Specifications		
Item		A1S64TCTT-S1	A1S64TCTTBW-S1		
Insulation method		Between input terminal and programmable controller power supply: Transformer insulation			
		Between input channels:			
Dielectric withstand volt	age	Between input terminal and programmable co			
		Between input channels	: 500VAC, for 1 minute		
		Between input terminal and programmable con	itroller power supply: 500VDC, $10M\Omega$ or more		
Insulation resistance		Between input channels:	500VDC, 10M Ω or more		
			11000 170		
	0		U.R.D.Co., LTD.		
	Current sensor		CTL-12-S36-8		
Heater disconnection detection specifications		-	CTL-6-P(-H)		
detection opeomoditions	Input accuracy	1	Full scale × (±1.0%)		
	Number of alert		0.4.055		
	delay		3 to 255		
N 1 6 : 11/0					
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	1.5mm 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	l) × 93.6(D)mm		

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

	0	С	°F	
Thermocouple type	Temperature measurement range	Resolution		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
, 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
-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)

Specif	ications		nange required, w. moompatible
Q64TCTTN	Q64TCTTBWN	Compatibility	Precautions for replacement
Between input terminal and programmable of	ontroller power supply: Transformer insulation	0	
Between input channel	s: Transformer insulation)	
Between input terminal and programmable of	controller power supply: 500VAC, for 1 minute	0	
·	s: 500VAC, for 1 minute	0	
	rammable controller power supply:		
500VDC, 2	$DM\Omega$ or more	0	
Between input channels	: 500VDC, 20MΩ or more		
	U.R.D.Co., LTD.		
	CTL-12-S36-8		
	CTL-12-S36-10		
	CTL-12-S56-10	0	
-	CTL-6-P(-H)	0	
	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.
(1/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 to1	8 AWG	×	Wiring change is required.
R1	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	-	

(From the previous page)

Thermocouple	°C		°F	
type	Temperature 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
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



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

Item		Specific	cations	
	tem	A1S64TCRT-S1	A1S64TCRTBW-S1	
Control output		Transistor output		
Number of temperature	input points	4 channels/module		
Applicable temperature	sensor	(Refer to Secti	ion 5.2.4 (1).)	
Indication accuracy		(Ambient temperature: 25±5°C)) Full scale × (±0.3%) ± 1 digit	
mulcation accuracy		(Ambient temperature: 0 to 55°C	C) Full scale × (±0.7%) ± 1 digit	
Sampling cycle		0.5s (Constant regardless of the	he number of channels used)	
Control output cycle		1 to 1	100s	
Input impedance		1M	ΙΩ	
Input filter		0 to 1	100s	
Sensor correction value	esetting	-50.00 to 50.00%		
Operation at sensor input disconnection		Upscale processing		
Temperature control method		PID ON/OFF pulse or two-position control		
	PID constants 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 r	ange	Within the temperature range set for the temperature sensor to be used		
	Output signal	ON/OFF	= pulse	
	Rated load voltage	10.2 to 3	30VDC	
	Max. load current	0.1A/point, 0.	4A/common	
	Max. inrush current	0.4A, ²	10ms	
Transistor output	Leakage current at OFF	0.1mA (or less	
	Max. voltage drop at	1.0VDC (TY	(P) at 0.1A	
	ON	2.5VDC (MA	,	
	Response time	OFF→ON: 2ms or less,		
Number of writes to E ² F	PROM	Max. 100,0	000 times	

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

Specifications		rtar shange required, . meempatik
Q64TCRTN Q64TCRTBWN	Compatibility	Precautions for replacement
Transistor output	0	
4 channels/module	0	
(Refer to Section 5.2.4 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1		
(Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1	→ ○	
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		Specifications		
l(em		A1S64TCRT-S1	A1S64TCRTBW-S1	
Insulation output		Between input terminal and programmable controller power supply: Transformer insulation		
insulation output		Between input channels	: Transformer insulation	
Dielectric withstand volta	ane	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dicicotile Withstand Voite		Between input channels	:: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable cor		
Triodiation resistance	1	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			
		32 points (I/O assignment: special 32 points)		
Number of occupied I/O	points			
Commontion torreinal		20	esia al bla alc	
Connection terminal		20-point ten		
Applicable wire size		0.75 to ²		
Applicable solderless terminal		R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A		
Internal current consumption		0.33A	0.42A	
Weight		0.27kg	0.30kg	
External dimensions		34.5(W) × 130(F	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 Resolution		Temperature	Resolution	
	measurement range		measurement range		
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	
JPT100	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	

Specific	cations	Compatibility	Dunas di una fau mania como ma
Q64TCRTN	Q64TCRTBWN	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 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)	O	
	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.
(170 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	3 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	-	



5.2.5 A1S62TCTT(BW)-S2

Item			Specifications	
	item		A1S62TCTT-S2 A1S62TCTTBW-S2	
Control ou	tput		Transistor output	
Number of	Number of temperature input points		2 channels/module	
Applicable	temperature sens	sor	(Refer to Section 5.2.5 (1).)	
			(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	Sampling cycle		0.5s (Constant regardless of the number of channels used)	
Control output cycle			1 to 100s	
Input impedance			1ΜΩ	
Input filter	Input 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. in		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	1.0VDC (TYP) at 0.1A	
		ON Response time	2.5VDC (MAX) at 0.1A	
NI		Response time	OFF→ON: 2ms or less, ON→OFF: 2ms or less Max. 100,000 times	
Number of	f writes to E ² PRO	VI	iviax. 100,000 titles	

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

Specifications	Compatibility	Precautions for replacement
Q64TCTTN Q64TCTTBWN	Compatibility	Precautions for replacement
Transistor output	0	
4 channels/module	0	
(Refer to Section 5.2.5 (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	

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

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 volta	ane	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric Withstand Voite	age	Between input channels	: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable cor	troller power supply: 500VDC, 10MΩ or more	
modation 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 assignment: special 32 points)		
Connection 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		0.19A	0.28A	
Weight		0.25kg	0.28kg	
External dimensions		34.5(W) × 130(H	I) × 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 1000		
	0 to 800	1	0 to 2400	1	
	0 to 1300		0 10 2400		
K	-200.0 to 400.0				
	0.0 to 400.0	0.1	0.0 to 1000.0	0.1	
	0.0 to 500.0	0.1		0.1	
	0.0 to 800.0				
	0 to 500		0 to 1000		
	0 to 800	1	0 to 1600	1	
J	0 to 1200		0 to 2100		
J	0.0 to 400.0				
	0.0 to 500.0	0.1	0.0 to 1000.0	0.1	
	0.0 to 800.0				
	-200 to 400				
	-200 to 200	1	0 to 700	1	
-	0 to 200	l l	-300 to 400		
Т	0 to 400				
	-200.0 to 400.0	0.1	0.0 to 700.0	0.4	
	0.0 to 400.0	0.1	0.0 to 700.0	0.1	

(To the next page)

Specific	Compatibility	D		
Q64TCTTN	Q64TCTTBWN	Compatibility	Precautions for replacement	
Between input terminal and programmable controller power supply: Transformer insulation		0		
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 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	×	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	-		

(From the previous page)

Thermocouple	°(°F		
type	Temperature 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	
_	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	



5.2.6 A1S62TCRT(BW)-S2

Item		Specifications		
	tem	A1S62TCRT-S2 A1S62	2TCRTBW-S2	
Control output		Transistor output		
Number of temperature	input points	2 channels/module		
Applicable temperature	sensor	(Refer to Section 5.2.6 (1).)		
Indication accuracy		(Ambient temperature: 25±5°C) Full scale × (±0.3	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 char	nnels 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 inp	ut disconnection	Upscale processing		
Temperature control me	ethod	PID ON/OFF pulse or two-position control		
	PID constants setting	Can be set by auto-tuning.		
PID 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 r	ange	Within the temperature range set for the temperature s	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		
	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→ON: 2ms or less, ON→OFF: 2ms o	r less	
Number of writes to E ² F	PROM	Max. 100,000 times		

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

	, , , , , , , , , , , , , , , , , , , ,	nange required, w. meempatible
Specifications	Compatibility	Precautions for replacemen
Q64TCRTN Q64TCRTBWN		
Transistor output	0	
4 channels/module	0	
(Refer to Section 5.2.6 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1	_ 0	
(Ambient temperature: 0 to 55°C) Full scale \times ($\pm 0.7\%$) *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 = $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$

= ±5.2°C

Item		Specific	cations		
Item		A1S62TCRT-S2	A1S62TCRTBW-S2		
Inculation output		Between input terminal and programmable co	ntroller power supply: Transformer insulation		
Insulation output		Between input channels	: Transformer insulation		
Dielectric withstand volta	ane	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute		
Dielectric Withstand Voite	aye	Between input channels	:: 500VAC, for 1 minute		
Insulation resistance		Between input terminal and programmable cor	ntroller power supply: 500VDC, $10M\Omega$ or more		
modiation 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		3 10 201		
Number of occupied I/O	points	32 points (I/O assignm	32 points (I/O assignment: special 32 points)		
On an antine to make all		00 7 2 2 4 4 5 7	and a state of		
Connection terminal		20-point ten			
Applicable wire size		0.75 to ²			
Applicable solderless te	rminal	R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A		
Internal current consum	ption	0.19A	0.28A		
Weight		0.25kg	0.28kg		
External dimensions		34.5(W) × 130(F	H) × 93.6(D)mm		

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

Platinum resistance	٥(C	°F		
thermometer type	Temperature Resolution		Temperature	Resolution	
31	measurement range		measurement range		
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1	
11100	-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	cations	Compatibility	Dunas di una fan mania assurant	
Q64TCRTN	Q64TCRTBWN	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 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)	O		
	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.	
(170 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	3 AWG	×	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	-		

5.3 Functional Comparison

ltem		Description		
Auto tuning fun	ction	The temperature control module automatically sets the optimal PID constants.		
Self-tuning fund	ction	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 fund	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 for	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	1	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, A1S64TCTT A1S64TCTRTBW A1S64TCTTI		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.



5.4 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.

5.4.1 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
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 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	O3C Profilbited	X1F	CH4 Alert occurrence flag	Y1F	CH4 PID control forced 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 signals listed in the table are prohibited to use.

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



5.4.2 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	
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 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	CH2 Auto-tuning command	X15	CH2 Auto tuning status	Y15	CH2 Auto tuning instruction	
X16 X17	Y16 Y17 Y18 Y19		Use prohibited	X16 X17	Use prohibited	Y16 Y17	Use prohibited	
X18			FeRAM backup command	X18	E ² PROM write completion flag	Y18	E ² PROM backup instruction	
X19			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 profilbited	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.



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

	A1S64TCTT(BW)-S1,	A1S64T0	CRT(BW)-S1	Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN			
Device No.	Signal name	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		ХС	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 tur		CH2 Auto tuning status	Y15	CH2 Auto tuning instruction	
X16	Use prohibited	Y16	CH3 Auto tuning instruction	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	E ² PROM backup instruction	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

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 stop command	X1B	Setting change completion flag	Y1B	Setting change instruction		
X1C		Y1C	CH3 Forced PID control stop command	X1C	CH1 Alert occurrence	Y1C	CH1 PID control forced stop instruction		
X1D	Use prohibited	Y1D	CH4 Forced PID control stop command	X1D	CH2 Alert occurrence	Y1D	CH2 PID control forced stop instruction		
X1E		Y1E	stop command	X1E	CH3 Alert occurrence	Y1E	CH3 PID control forced stop instruction		
X1F	X1F	Y1F	Use prohibited	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 signal listed in the table are prohibited to use.

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



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

	A1S62TCTT(BW)-S2,	A1S62T0	CRT(BW)-S2	Q64TCTTN, Q64TCRTN*1				
	, , , , ,		, , =	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	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		YE		XE	Use prohibited	YE	Use prohibited	
XF		YF		XF		YF		
X10	-	Y10	Catting a /an a mations made	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	ibited CH2 Auto-tuning		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	

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	Y1	Y1B	CH2 Forced PID control stop command	X1B	Setting change completion flag	Y1B	Setting change instruction		
X1C	Llaa prohibitad	Y1C		X1C	CH1 Alert occurrence flag	Y1C	CH1 PID control forced stop instruction		
X1D	Use prohibited	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.



5.5 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.

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

				A1S64TCTRT(BW)	
	Address (h	exadecimal)		Nama	Boodhawita
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	1000
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	
3A	5A	7A	9A	Heater disconnection alert setting	
3B	5B	7B	9B	Loop disconnection detection judgment time	_
3C	5C	7C	9C	Loop disconnection detection dead band	
3D	5D	7D	9D	Unused channel setting	

	Address (h	exadecimal)		TN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN	
CH1	CH2	CH3	CH4	— Name	Read/write
	<u> </u>	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)	
11	12	13	14	Temperature rise judgment flag	R
15	16	17	18	Transistor output flag	
19	1A	1B	1C	Set value (SV) monitor	
	1	D		Cold junction temperature process value*1	
	1	ΙΕ		MAN mode shift completion flag	
		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	IV VV
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	Read/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			
	А	1		Mode setting for Alert alarm 2			
	Α	2		Mode setting for Alert alarm 3			
	А	3		Mode setting for Alert alarm 4			
	А	4		Alert dead band setting			
	А	5		Alert delay count			
A6				Heater disconnection/output off-time current error			
				detection delay count	R/W		
A7				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			
	A	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.

Q64TCTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN						
	Address (h	exadecimal)		Name	Read/write	
CH1	CH2	CH3	CH4	Hame	rtodd/Wiito	
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		
	A	۸0				
	A	\1		System area (Use prohibited)	_	
	A	\2		System area (Goo promision)		
	A	\3				
		۸4		Alert dead band setting		
	A	\5		Number of alert delay		
	A	۸6		Heater disconnection/output off-time current error detection		
				delay count	R/W	
		.7		Temperature rise completion range setting		
		18		Temperature rise completion soak time setting		
		19		PID continuation flag		
		A		Heater disconnection correction function selection		
AB	AC	AD	AE	System area (Use prohibited)	-	
AF				Transistor output monitor ON delay time setting	R/W	
	1	30		CT monitor method switching		
B1	B2	В3	B4	Manipulated value (MV) for output with another analog module	R	
	Е	35		Resolution of the manipulated value for output with another	R/W	
		10		analog module	DAM	
		36 37		Control switching monitor	R/W	
DO			DD	Control switching monitor		
B8	B9	BA	BB	Auto tuning mode selection	R/W	
		to BF	1	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	1000	
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 t	o 10F		CT input channel assignment setting		
		o 117		CT selection	R/W	
		o 11F		Reference heater current value		
		0				
23E	25E	27E	29E	Self-tuning setting	R/W	
23F	25F	27F	29F	Self-tuning flag	R	
				·· a ·· a ·· a	• •	



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

A1S64TCTRT(BW)							
Address (h	exadecimal)	Name	Do a diamita				
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	ΙΕ						
1	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					
27	47	Setting of Alert alarm 2					
28	48	Setting of Alert alarm 3					
29	49	Setting of Alert alarm 4					
2A	4A	Heating upper output limiter					
2B	4B	0 1 41 177 1					
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 period setting					
30	50	Primary delay digital filter setting	R/W				
31	51	Control response parameter					
32	52	System area (Use prohibited)					
33	53	System area (Ose prombited)	-				
34	54	Setting change rate limiter	R/W				
35	55	System area (Use prohibited)	_				
36	56	System area (Ose prombited)	_				
37	57	Upper setting limiter					
38	58	Lower setting limiter	R/W				
39	59	CT selection	1000				
3A	5A	Heater disconnection alert setting					
3B	5B	System area (Use prohibited)					
3C	5C		-				
3D	5D	Unused channel setting	R/W				

		CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN	
	nexadecimal)	Name Name	Read/write
CH1	CH2		
	0	Write data error code	
11	2	Decimal point position	
5	6	Alert definition	
9	A	Temperature process value (PV)	
D	E	Manipulated value for heating (MVh)	R
11	12	Temperature rise judgment flag	
15	16	Heating transistor output flag	
19	1A	Set value (SV) monitor	
•	1D	Cold junction temperature process value*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	FC/ VV
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	DAM
38	58	Lower limit setting limiter	R/W
39	59	System area (Use prohibited)	-
3A	5A	Heater disconnection alert setting	R/W
3B	5B	System area (Lise prohibited)	
3C	5C	System area (Use prohibited)	-
3D	5D	Unused channel setting	R/W

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

		A1S64TCTRT(BW)		
Address (h	exadecimal)	Name	Read/write	
CH1	CH2	Name	Read/Wille	
3E	5E	System area (Use prohibited)	_	
3F	5F	System area (Ose prombited)	-	
A	۸0	Mode setting for Alert alarm 1		
A	\1	Mode setting for Alert alarm 2		
Α	\2	Mode setting for Alert alarm 3		
Α	\3	Mode setting for Alert alarm 4		
Α	\4	Alert dead band setting		
A	\ 5	Alert delay count		
	.6	Heater disconnection/output off-time current error		
	NO .	detection delay count	R/W	
Α	.7	Temperature rise completion range setting		
A	۸8	Temperature rise completion soak time setting		
A	v 9	PID continuation flag		
Д	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			
Е	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		
	0			
C	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.

	Address (h	exadecimal)	CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN		
	CH1	CH2	Name Name	Read/write	
	3E	5E	E ² PROM's PID constants read instruction		
•	3F	5F	Automatic backup setting after auto tuning of PID constants	R/W	
		40	Automatic backup setting after auto turning of PID constants		
		\1			
-	A2		System area (Use prohibited)	-	
		\3			
		\4	Alert dead band setting		
		\5	Number of alert delay		
			Heater disconnection/output off-time current error detection		
	A	46	delay count		
	Δ.	\7	Temperature rise completion range setting	R/W	
-		<u> </u>	Temperature rise completion soak time setting		
-					
		49 VA	PID continuation flag Heater disconnection correction function selection		
-	AB	AC	System area (Use prohibited)	-	
		AF	Transistor output monitor ON delay time setting	R/W	
	Ŀ	30	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	DAM	
	_	20	analog module	R/W	
	B6 B7		Cold junction temperature compensation selection		
	B8	B9	Control switching monitor	R/W	
		to BF	Auto tuning mode selection System area (Use prohibited)	R/VV	
	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		
	C4 to CF	D4 to DF	System area (Use prohibited)		
		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		
ŀ		to			
	2B8	2B9	Temperature conversion setting	R/W	
ŀ		to	System area (Use prohibited)	-	
	2C0	2C1	Manipulated value for cooling (MVc)	R	
		to			
	204	205	Manipulated value of cooling (MVc) for output with another	-	
	2C4	2C5	analog module	R	
	f	to			
	2C8	2C9	Cooling transistor output flag	R	
	t	to			
	20	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		



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

			A1S6	64TCTT(BW)-S1, A1S64TCRT(BW)-S1		
	Address (h	exadecimal)				
CH1	CH2	CH3	CH4	- Name	Read/write	
		0		Write data error code	R/W	
1	2	3	4	Decimal point position		
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		Cooling contact temperature process value*1		
	1	E		Switch to manual mode 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	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	R/W	
2F	4F	6F	8F	Control output period setting	R/VV	
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 (h	exadecimal)		TN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN	Bood/swite
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	E	F	10	Manipulated value (MV)	Б.
11	12	13	14	Temperature rise judgment flag	R
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	1F		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	
3D	5D	7D	9D	Unused channel setting	

A1S64TCTT(BW)-S1, A1S64TCRT(BW)-S1							
	Address (he	exadecimal)		Name	Read/write		
CH1	CH2	CH3	CH4	Name	Reau/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			
	Α	.2		Alert alarm 3 mode setting			
	А	.3		Alert alarm 4 mode setting			
	Α	4		Alert blind section setting			
	Α	.5		Number of alert delays			
	۸	.6		Number of delays for heater disconnection/current			
	A	10		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			
	А	A		Heater voltage compensation function setting			
AB	AC	AD	AE	Standard heater current value			
	А	F		Transistor output monitor on delay time setting			
	В0			CT monitor method switch			
B1	B2	В3	B4	Manipulation value (MV) (0 to 4000)	R		
	В	15		System area (Use prohibited)	-		
	В	6		Cold junction temperature compensation selection*1 (This area can be used with the software version F or later.)	R/W		

^{*1} 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.

				Q64TCTT	IN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN		
	CH1	Address (h CH2	exadecimal) CH3	CH4	Name	Read/write	
	3E	5E	7E	9E	E ² PROM's PID constants read instruction		
	3F	5F	7F	9F	Automatic backup setting after auto tuning of PID constants	R/W/-	
	31	-	\(\frac{1}{6} \)	91	Automatic backup setting after auto turning of PID constants		
			1		System area (Use prohibited)	-	
			12				
			.3				
			۸4		Alert dead band setting		
		<i>P</i>	15		Number of alert delay		
		A	۸6		Heater disconnection/output off-time current error detection		
					delay count	R/W	
			.7		Temperature rise completion range setting		
			. 8		Temperature rise completion soak time setting		
			19		PID continuation flag		
		. Α	A		Heater disconnection correction function selection		
	AB	AC	AD	AE	System area (Use prohibited)	-	
	AF				Transistor output monitor ON delay time setting	R/W	
			30	ı	CT monitor method switching		
	B1	B2	B3	B4	Manipulated value (MV) for output with another analog module	R	
	B5				Resolution of the manipulated value for output with another		
					analog module		
	В6				Cold junction temperature compensation selection	R/W	
		E	37		Control switching monitor	R	
	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	r/vv	
	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				CT input channel assignment setting		
					CT selection	R/W	
		118 t	o 11F		Reference heater current value		
		t	0				
	23E	25E	27E	29E	Self-tuning setting	R/W	
	23F	25F	27F	29F	Self-tuning flag	R	



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

A1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2										
	hexadecimal)	Name	Read/write							
CH1	CH2	Numo	reda/Wite							
	0	Write data error code								
1	2	Decimal point position								
5	6	Alert occurrence details								
9	A	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	Cychon and (Han machibited)								
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 (Llea prohibited)								
33	53	System area (Use prohibited)	-							
34	54	Setting change rate limiter	R/W							
35	55	System area (Use prohibited)								
36	56	System area (Ose prombited)	_							
37	57	Upper setting limiter								
38	58	Lower setting limiter	R/W							
39	59	CT selection	IV/VV							
3A	5A	Heater wire breakage alert setting								
3B	5B	System area (Use prohibited)	_							
3C	5C	System area (Ose promibileu)	_							
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.

Address (he		Name	Read/write
CH1	CH2	Name	ixeau/wiite
()	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)	
11	12	Temperature rise judgment flag	R
15	16	Heating transistor output flag	
19	1A	Set value (SV) monitor	
1	D	Cold junction temperature process value*2	
1	E	MAN mode shift completion flag	
1	F	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	-
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	7
33	53	MAN output setting	7
34	54	Setting change rate limiter	7
35	55	AT bias	7
36	56	System area (Use prohibited)	-
37	57	Upper limit setting limiter	5.1.1
38	58	Lower limit setting limiter	R/W
39	59	System area (Use prohibited)	-
3A	5A	Heater disconnection alert setting	R/W
3B	5B		
3C	5C	System area (Use prohibited)	-
3D	5D	Unused channel setting	R/W

A1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2								
Address (h	exadecimal)	Nama	Doodlewite					
CH1	CH2	Name	Read/write					
3E	5E	Custom area (Llee prohibited)						
3F	5F	System area (Use prohibited)	-					
,	A0	Alert alarm 1 mode setting						
	A1	Alert alarm 2 mode setting						
	A2	Alert alarm 3 mode setting						
	A 3	Alert alarm 4 mode setting						
	A 4	Alert blind section setting						
	4 5	Number of alert delays						
	A.C.	Number of delays for heater wire breakage/current						
,	A6	error detection when output is turned off	R/W					
	47	Temperature increase complete range setting						
	48	Temperature increase complete soak time setting						
	49	PID continue flag						
,	4A	Heater voltage compensation function setting						
AB	AC	Standard heater current value						
	AF.	Transistor output monitor ON delay time setting						
	B0	CT monitor method switch						
B1	B2	Heating manipulated value (MV) (0 to 4000)	R					
ı	B5							
	B6	System area (Use prohibited)	-					
	B7							
B8	B9							
	to							
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.

	Address (he		CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN		
	CH1	CH2	Name	Read/write	
	3E	5E	E ² PROM's PID constants read instruction		
1	3F	5F	Automatic backup setting after auto tuning of PID constants	R/W	
	ЭF A		Automatic backup setting after auto tuning of FID constants		
-	A				
-	A		System area (Use prohibited)	-	
-	A				
-	A		Alert dead band setting		
-	A		Number of alert delay		
-	A	5	Heater disconnection/output off-time current error detection		
	A	6			
-	Δ.	7	delay count	R/W	
-	A		Temperature rise completion range setting		
_	A		Temperature rise completion soak time setting		
Ļ	A		PID continuation flag		
ļ	A		Heater disconnection correction function selection		
Į	AB	AC	System area (Use prohibited)	-	
	A	F	Transistor output monitor ON delay time setting	R/W	
	В	0	CT monitor method switching	FX/ V V	
	B1	B2	Manipulated value of heating (MVh) for output with another	R	
	DI	DZ	analog module		
	В	5	Resolution of the manipulated value for output with another		
	В		analog module	<u> </u>	
	В	6	Cold junction temperature compensation selection	R/W	
	В	7	Control switching monitor	R	
	B8	B9	Auto tuning mode selection	R/W	
	BC to	o BF	System area (Use prohibited)	-	
	C0	D0	Alert 1 mode setting	R/W	
	C1	D1	Alert 2 mode setting		
	C2	D2	Alert 3 mode setting	R/VV	
Ī	C3	D3	Alert 4 mode setting		
	to	o			
	100 to	o 107	Heater current process value	R	
	108 to	10F	CT input channel assignment setting		
	110 to	o 117	CT selection	R/W	
	118 to	o 11F	Reference heater current value		
	to	0			
	2B8	2B9	Temperature conversion setting	R/W	
	to	0			
	2C0	2C1	Manipulated value for cooling (MVc)	R	
	to	0			
	2C4	2C5	Manipulated value of cooling (MVc) for output with another analog module	R	
		0			
	to		Cooling transistor output flag	R	
	2C8			1.	
	2C8	2C9	Cooling transistor output hay		
	2C8	2C9			
	2C8 to 2C	2C9 o CF	Cooling method setting		
	2C8 to 2C 2D0	2C9 CF 2E0	Cooling method setting Cooling proportional band (Pc) setting	DAM	
	2C8 to 2C	2C9 o CF	Cooling method setting	R/W	

HIGH-SPEED COUNTER MODULE REPLACEMENT

6.1 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 set.)
High-speed counter	A1SD61	QD62-H01 ^{*1}	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 3) Counting speed : 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

HIGH-SPEED COUNTER MODULE REPLACEMENT

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 3) Counting speed : 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
High-speed counter module	A1SD62D, A1SD62D-S1	QD62D	1) External wiring : Terminal block wiring → Connector wiring Cable size is changed. 2) Number of slots : Not changed : 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

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)

3) Wiring

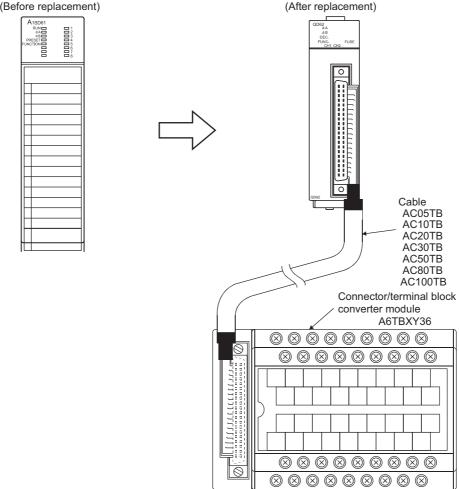
An external wiring method differs between AnS series modules and Q series modules.

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

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

To use I/O signal lines of an AnS series module with solderless terminal after replacement, take appropriate measures such as use of a connector/terminal block converter module.

(Replacing the A1SD61 with the QD62)
(Before replacement)



For wiring of the connector/terminal block converter module, refer to the following. High-Speed Counter Module User's Manual (SH-080036)

* This manual is for the QD62(E/D). However, the QD62-H01/H02 use the same wiring method. For replacement with the QD62-H01/H02, refer to this manual as well.

6.2 A1SD61

6.2.1 Performance specifications comparison

(1) Comparison between A1SD61 and QD62

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

Item				A1SD61			QD62		Compat- ibility	Precautions for replacement
Nui	mber of occup	pied I/O points	(I/O ass	32 points (I/O assignment: special 32 points)			16 points (I/O assignment: intelligent 16 points)			*1
Nui	mber of chan	nels		1 channel			2 channels		0	
Cor	Counting speed switch settings		51	0K	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.
		Phase		1	· ·	ut, 2-phase	input		0	
	Count input signal	Signal level (φA, φB)			5VDC 12VDC 24VDC	2 to 5mA			0	*2
		Counting speed (Max.)	1-phase input 2-phase	50KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0	
		speed (Max.)	input	50KPPS	7KPPS	200KPPS	100KPPS	10KPPS		
		Counting range	32	32-bit signed binary (-2147483648 to 2147483647)				0		
		Туре		UP/DOWN preset counter + ring counter function						
_		Minimum cou	nt pulse wid	t pulse width, Duty ratio: 50%						
Performance specifications of 1 channel	Counter	(200KPPS)	-		2.5 (Minimu	2.5 (Unit :) um phase dinase input: 1	ference	0	
Performance		(100KPPS		-		5 (Minimu	Unit:	ference	0	
		(50KPPS)		0 10 (Unit :			-		Δ	Set the counting speed of the QD62 to "100K".

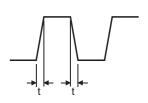
 $O \colon \mathsf{Compatible}, \triangle \colon \mathsf{Partial} \ \mathsf{change} \ \mathsf{required}, \ \mathsf{x} \colon \mathsf{Incompatible}$

Item		n	A1SD61 QD62		Compat- ibility	Precautions for replacement
(Cour	nting speed	switch setting)	50KPPS 10KPPS		-	торішостісті
(000.	nung opood		t pulse width, Duty ratio: 50%	20014 1 0 10014 1 0 1014 1 0	_	
С	Counter	(10KPPS) 1-phase input	100 50 50 (Unit : μs) (1-phase input)	$ \begin{array}{c c} & 100 \\ \hline & 50 \\ \hline & 50 \\ \hline & (Unit : \mu s) \end{array} $ (Minimum phase difference	0	
of 1 channel		(10KPPS) 2-phase input	$ \begin{array}{c c} & 142 \\ \hline & 71 & 71 \\ \hline & 142 \\$	in 2-phase input: 25μs)		
ations o	Magnitude	Comparison range	32-bit s	0		
rmance specific	comparison between CPU and high-speed counter module	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 value Set value = count value Set value > count value	Δ	Two points can be set.
g		Preset	<u> </u>			Since the external input
	External	Function start	12/24VDC, 3/6mA 5VDC, 5mA	5/12/24VDC, 2 to 5mA	Δ	specifications differ, check the specifications of external device.
E	External	Coincidence output	-	Transistor (sink type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common	Δ	
	output	Limit switch output	Transistor (open collector) output 12/24VDC, 0.1A/point, 0.8A/common	-	Δ	Output currents differ.
Intern (5VD)		consumption	0.35A	0.30A	0	
Weigh			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 $t = 50\mu s$ 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

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

Item		1	A1SD61 QD62-H01			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	nber of chann	els	1 channel		2 channels	0	
Cou	ınting speed s	witch settings	50K	10K	50K	0	Set "2" at the intelligent function module switch setting.
		Phase	1-phase	input, 2-pha	ase input	0	
	Count input signal	Signal level (φA, φB)		5VDC 12VDC 24VDC }2 t		0	
			1-phase input 50KPPS 2-phase input 50KPPS	10KPPS 7KPPS	1-phase input 50KPPS 2-phase input 50KPPS	0	*2
		Counting range	32-bit signed binary	(-21474836	648 to 2147483647)	0	
		Туре			ng counter function	0	
		Minimum cour	nt pulse width, Duty ratio: 5	0%		-	
specifications of 1 channel	Counter	Minimum count pulse width	10	10 (Unit:)		0	
catic			Set input r	ise time to 5	iμs or less.		
specifi	Magnitude	Comparison range	32-bit signed binary				
Performance	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 addres	ss nt value ≤	Set value < count value Set value = count value Set value > count value	0	
		Preset					Since the external input
	External input	Function start	12/24VDC, 3/6m 5VDC, 5mA	Α	5/12/24VDC, 2 to 5mA	Δ	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 collector 12/24VDC, 0.1A/po 0.8A/common		-		
	rnal current co	onsumption	0.35A		0.30A	0	
Wei			0.27kg		0.11kg	0	

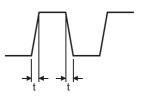


- *1 A program used before replacement can be utilized by setting the start I/O signal numbers of the modules mounted to the right of the QD62-H01 so that they can be the same as that of the module before replacement.

 (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

Item		A1SD6	61		QD62-H		Compat-	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)		ibility	*1		
Nur	nber of chann	els		1 chann	nel		2 chann	els	0	
Cou	ınting speed s	wit	ch settings	50K		10K	10K		0	Set "2" at the intelligent function module switch setting.
		Ph	nase	1-p	hase	input, 2-pha	ase input		0	
	Count input signal	(φ/	gnal level A, øB)			5VDC 12VDC 24VDC	}2 to 5mA		0	
			ounting	1-phase input 50KP		10KPPS	1-phase input	10KPPS	0	*2
			eed (Max.) ounting	2-phase input 50KP	PPS	7KPPS	2-phase input	7KPPS		
		raı	nge				648 to 21474836		0	
		-	pe				ng counter funct	ion	0	
		Mi	nimum coui	nt pulse width, Duty ra	itio: 50	0%			-	
is of 1 channel	Counter		Minimum count pulse width	100 50 50 (1-phase input	b ut)		71 71 2-phase input) (Unit: μ s		0	
ation			Set input rise time to 5µs or less.							
ecifica	Magnitude		mparison nge	32-bit signed binary					0	
0	comparison between CPU and A1SD61/ QD62-H02		omparison sult	a contact: Dog ON address ≤ Count value ≤ Dog OFF address b contact Dog OFF address ≤ Count value ≤ Dog ON address Dog ON address					Δ	Two points can be set.
	External 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.		
	External output	Coincidence output		-	Transistor (sink type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common				Δ	Output currents differ.
		ou	nit switch tput	12/24VDC, 0.	Transistor (open collector) output 12/24VDC, 0.1A/point, 0.8A/common					
	rnal current c	ons	umption	0.35 <i>A</i>	4		0.30	Λ	0	
We				0.27kg	g		0.11k	g	0	

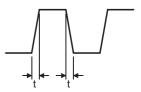


- *1 A program used before replacement can be utilized by setting the start I/O signal numbers of the modules mounted to the right of the QD62-H02 so that they can be the same as that of the module before replacement.

 (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



6.2.2 Functional comparison

O: Available, -: Not available

ltem	Description Changes the counter present value to a	A1SD61	QD62 QD62-H01 QD62-H02	Precautions for replacement
Preset function	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.	-	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	

6.2.3 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-H01, QD62-H02					
Device No.	Signal name	me Device Signal name			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		
Х3	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	Use prohibited	X7	CH1 Counter value small (point No.2)	Y7	CH1 Coincidence signal No.2 reset command		
X8	CH8 limit switch output status flag	Y8	Ose prombited	X8	CH2 Counter value large (point No.1)	Y8	CH2 Coincidence signal No.1 reset command		
X9	Limit switch output enable flag	Y9		X9	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		
XB	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						
X13	Use prohibited	Y13	Ring counter command						
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						

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

6.2.4 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.

Address (decimal) Present value (L) 1 Counter function selection count (L) 3 value (H) 4 Pulse input mode setting 5 Counter function selection setting 6 Preset value setting (L) 7 Present value setting (L) 9 Ring counter value setting (L) 9 Ring counter value setting (L) 10 Sampling/periodic time setting (L) 11 Write data error code 12 to 28 CH1 limit switch output data setting 11 Write data error code 12 to 28 CH2 limit switch output data setting 12 to 45 CH2 limit switch output data setting 8 Ro to 96 CH5 limit switch output data setting 11 CH8 limit switch output data setting		A1SD61					QD62, QD62-H01, QD62-H02	2	
Classification Clas	A al alua a a				Add	ress			
O Present value (L) 1 Present value (L) 2 Counter function selection count (L) 3 value 4 Pulse input mode setting 5 Counter function selection setting 6 Preset value setting (L) 7 Preset value setting (L) 8 Ring counter value setting (L) 9 Sampling/periodic time setting 11 Write data error code 12 to 28 CH1 limit switch output data setting 11 Write data error code 12 to 28 CH2 limit switch output data setting 11 R/W 12 to 45 CH2 limit switch output data setting 12 to 45 CH3 limit switch output data setting 13 to 79 CH4 limit switch output data setting 14 to 130 CH7 limit switch output data setting 15 Counter function selection setting (L) 16 Sampling/periodic time setting (L) 17 Sampling/periodic setting (L) 18 Sampling/periodic setting (L) 19 Sampling/periodic setting (L) 11 data sampling/periodic setting (L) 12 to 28 CH2 limit switch output data setting 11 data setting (L) 12 to 28 CH3 limit switch output data setting (L) 15 Sampling count value (L) 16 data data setting (L) 17 data data setting (L) 18 So Periodic pulse count previous value (L) (H) 18 So Periodic pulse count previous value (L) (H) 18 So Periodic pulse count previous value (L) (H) 18 So Periodic pulse count previous value (L) (H) (H) 18 So Periodic pulse count previous value (L) (H) (H) 18 So Periodic pulse count previous value (L) (H) (H) 18 So Periodic pulse count previous value (L) (H) (H) 18 So Periodic pulse count previous value (L) (H) (H) (H) 18 So Periodic pulse count previous value (L) (H) (H) (H) (H) (H) (H) (H) (H) (H) (H		Name		Read/write	(dec	imal)	Name		Read/write
1 Present value (H) (H) (L) (H) (H) (H) (H) (H) (H) (H) (H) (H) (H	(decimai)				CH1	CH2			
2 Counter function selection count (L) 3 value (H) 4 Pulse input mode setting 5 Counter function selection setting 6 Preset value setting (L) 7 Preset value setting (L) 8 Ring counter value setting (L) 9 Sampling/periodic time setting 11 Write data error code 12 to 28 CH1 limit switch output data setting 12 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting 80 to 96 CH5 limit switch output data setting 11 CH6 limit switch output data setting	0	Procent value	(L)		0	32	Proset value setting	(L)	D/M/
2 Counter function selection count 3 value 4 Pulse input mode setting 5 Counter function selection setting 6 Preset value setting 7 Preset value setting (L) 8 Ring counter value setting (L) 9 Ring counter value setting (L) 10 Sampling/periodic time setting 11 Write data error code 11 to 28 CH1 limit switch output data setting 11 Write data error code 12 to 28 CH3 limit switch output data setting 12 to 28 CH3 limit switch output data setting 4 36 Coincidence output point set No.1 (L) 8 4 0 Overflow detection flag 9 4 1 Counter function selection setting 10 42 Sampling/periodic centing 11 43 Sampling/periodic counter flag 11 Latch count value 11 Latch count value 12 to 28 CH3 limit switch output data setting 11 44 46 15 47 16 48 17 49 18 50 19 51 18 51 18 50 19 51 18 51 18 50 19 51 18 50 19 51 18 51 1	1	Tresent value	(H)	R	1	33	Treset value setting	(H)	17/77
3 value (H) 4 Pulse input mode setting 5 Counter function selection setting 6 Preset value setting (L) 7 Preset value setting (L) 9 Ring counter value setting (H) 10 Sampling/periodic time setting 11 Write data error code 12 to 28 CH1 limit switch output data setting 12 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting 8 R/W 10 CH4 limit switch output data setting 11 CH6 limit switch output data setting 11 CH6 limit switch output data setting 11 CH6 limit switch output data setting 11 CH8 limit switch output data setting				, '`			Present value		R
5 Counter function selection setting 6 Preset value setting 7 7 Preset value setting 8 Ring counter value setting 9 Ring counter value setting 10 Sampling/periodic time setting 11 Write data error code 12 to 28 CH1 limit switch output data setting 12 to 45 CH2 limit switch output data setting 14 6 to 62 CH3 limit switch output data setting 15 37 Coincidence output point set No. 2 (L) (H) 18 8 40 Overflow detection flag R 9 41 Counter function selection setting 10 42 Sampling/periodic setting 11 43 Sampling/periodic counter flag 11 44 65 Sampling count value (L) (H) 12 to 48 CH2 limit switch output data setting 16 48 Periodic pulse count previous value (L) (H) 18 50 Periodic pulse count previous value (H) 18 51 Periodic pulse count previous value (H) 19 51 Ring counter maximum value (L) 19 51 Sampling counter maximum value (L)			(H)				. 1000.11 10.00		
Counter function selection setting 6							Coincidence output point set No.1		
7 Preset value setting (H) (B) (L) (H) (H)		Counter function selection setting				_			R/W
Ring counter value setting 10 Sampling/periodic time setting 11 Write data error code 12 to 28 CH1 limit switch output data setting 29 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting 63 to 79 CH4 limit switch output data setting 8 40 Overflow detection flag R/W 10 42 Sampling/periodic setting 11 43 Sampling/periodic counter flag 11 43 Sampling/periodic counter flag 12 to 44 Latch count value (L) (H) (H) (H) (H) (H) (H) (H) (H) (H) (H		Preset value setting					Coincidence output point set No.2		
9		_					Overflow detection flor	(H)	
10 Sampling/periodic time setting 11 Write data error code 12 to 28 CH1 limit switch output data setting 29 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting 63 to 79 CH4 limit switch output data setting 80 to 96 CH5 limit switch output data setting 10 42 Sampling/periodic setting 11 43 Sampling/periodic counter flag 12 44 Latch count value (L) 13 45 Sampling count value (L) 14 48 Sampling count value (L) 15 47 (H) 16 48 Periodic pulse count previous value (L) 17 49 Periodic pulse count present value (L) 18 50 Periodic pulse count present value (H) 18 50 Periodic pulse count present value (H) 19 51 Ring counter minimum value (H) 20 52 Priodic pulse count present value (H) 21 53 System area (Use prohibited) 80 to 96 CH5 limit switch output data setting 114 to 130 CH6 limit switch output data setting 131 to CH8 limit switch output data setting		Ring counter value setting —							K
11 Write data error code 12 to 28 CH1 limit switch output data setting 29 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting R/W R/W 11 43 Sampling/periodic counter flag 12 44 Latch count value (L) (H) R Periodic pulse count previous value (H) (H) R Periodic pulse count previous value (H) (H) R Periodic pulse count present value (H) (H) R 80 to 96 CH4 limit switch output data setting 80 to 96 CH5 limit switch output data setting 11 43 Sampling/periodic counter flag (L) (H) R Periodic pulse count previous value (H) (H) R Ring counter minimum value (H) R/W Ring counter maximum value (H) R/W 13 55 to 3 System area (Use prohibited) - CH8 limit switch output data setting									R/W
12 to 28 CH1 limit switch output data setting 12 to 28 CH1 limit switch output data setting 13 45 Latch count value (L) (H) (H) (H) (H) (H) (H) (H) (H) (H) (H				_					
12 to 28 CH1 limit switch output data setting 29 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting R/W R/W R/W 13 45 Latch count value (L) (H) (H) (H) (H) (H) (H) (H) (H) (H) (H	11	Write data error code					Sampling/periodic counter hag	(1.)	
29 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting R/W R/W 14 46 Sampling count value (L) (H) (H) (H) (H) (H) (H) (H) (H) (H) (H	12 to 28	CH1 limit switch output data setting					Latch count value	_ ` ′	-
29 to 45 CH2 limit switch output data setting 46 to 62 CH3 limit switch output data setting R/W R/W 15 47 Sampling count value (H) 16 48 Periodic pulse count previous value (L) (H) (H) 18 50 Periodic pulse count present value (H) (H) (H) R/W 63 to 79 CH4 limit switch output data setting 80 to 96 CH5 limit switch output data setting 114 to 130 CH7 limit switch output data setting 131 to CH8 limit switch output data setting	12 10 20	Of 11 mills Switch Susper data Setting							1
29 to 45 CH2 limit switch output data setting R/W 16 48 Periodic pulse count previous value (H) R/W 17 49 Periodic pulse count previous value (H) R/W 18 50 Periodic pulse count present value (H) R/W 18 50 Periodic pulse count present value (H) R/W 18 50 Periodic pulse count present value (H) R/W 19 51 Ring counter minimum value (L) R/W 20 52 Ring counter maximum value (H) R/W 21 53 55 System area (Use prohibited) - 14 to 130 CH7 limit switch output data setting 114 to 130 CH8 limit switch output data setting				-	15 47 Sampling count value		Sampling count value		R
A6 to 62 CH3 limit switch output data setting R/W R/W R/W R/W R/W R/W R/W R/	29 to 45	CH2 limit switch output data setting						(1)	
R/W 18 50 Periodic pulse count present value (L) (H)					17	49	Periodic pulse count previous value		
R/W 19 51 Periodic pulse count present value (H) 20 52 Ring counter minimum value (L) (H) R/W 80 to 96 CH5 limit switch output data setting 131 to CH8 limit switch output data setting R/W 19 51 Periodic pulse count present value (H) R/W Ring counter minimum value (L) (H) R/W 22 54 Ring counter maximum value (L) (H) R/W CH6 limit switch output data setting 14 to 130 CH7 limit switch output data setting CH8 limit switch output data setting				-	18	50	B : !:		
CH4 limit switch output data setting CH5 limit switch output data setting CH6 limit switch output data setting CH7 limit switch output data setting CH8 limit switch output data setting Ring counter minimum value (L) (H) R/W R/W CH8 limit switch output data setting CH8 limit switch output data setting CH8 limit switch output data setting	46 to 62	CH3 limit switch output data setting		R/W	19	51	Periodic pulse count present value		1
63 to 79 CH4 limit switch output data setting 80 to 96 CH5 limit switch output data setting 97 to 113 CH6 limit switch output data setting 114 to 130 CH7 limit switch output data setting CH8 limit switch output data setting CH8 limit switch output data setting CH8 limit switch output data setting					20	52	Ding counter minimum value	(L)	
63 to 79 CH4 limit switch output data setting 80 to 96 CH5 limit switch output data setting 97 to 113 CH6 limit switch output data setting 114 to 130 CH7 limit switch output data setting CH8 limit switch output data setting CH8 limit switch output data setting					21	53	Ring counter minimum value	(H)	D/M/
80 to 96 CH5 limit switch output data setting 97 to 113 CH6 limit switch output data setting 114 to 130 CH7 limit switch output data setting CH8 limit switch output data setting CH8 limit switch output data setting	63 to 79	CH4 limit switch output data setting			22	54	Ring counter maximum value	(L)	IN/ V V
97 to 113 CH6 limit switch output data setting 114 to 130 CH7 limit switch output data setting CH8 limit switch output data setting CH8 limit switch output data setting					23		Tring counter maximum value	(H)	
97 to 113 CH6 limit switch output data setting 114 to 130 CH7 limit switch output data setting CH8 limit switch output data setting	80 to 96	CH5 limit switch output data setting					System area (Use prohibited)		_
114 to 130 CH7 limit switch output data setting 131 to CH8 limit switch output data setting		or is minit owner susper data setting			31	63	System area (ede premisitea)		
114 to 130 CH7 limit switch output data setting CH8 limit switch output data setting									
131 to CH8 limit switch output data setting	97 to 113	CH6 limit switch output data setting							
131 to CH8 limit switch output data setting				-					
131 to CH8 limit switch output data setting	114 to 120	CH7 limit awitch output data setting							
CH8 limit switch output data setting	114 (0 130	CH7 IIIIII SWITCH Output data setting							
CH8 limit switch output data setting				-					
147		CH8 limit switch output data setting							
	147	one mine of the court of the co							

6.3 A1SD62(E/D/D-S1)

6.3.1 Performance specifications comparison

(1) Comparison between A1SD62 and QD62

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

						·		z. compatible		change required, **. Incompatible
	Iten	n		A1SD62			QD62		Compat- ibility	Precautions for replacement
Nur	nber of occup	ied I/O points	32 points (I/O assignment: special 32 points)			(I/O assi	16 points (I/O assignment: intelligent 16 points)			The number of occupied I/O points has changed to 16 points.
Nur	nber of chann	els		2 channels				0		
Cou	ınting speed s	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.	
_	Count input signal	Phase		1	-phase inp	ut, 2-phase i		0		
of 1 channel		Signal level (φA, φB)		5VDC 12VDC 24VDC 24VDC						
		Counting	1-phase input	100KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0	
pecific		speed (Max.)	2-phase input	100KPPS	7KPPS	200KPPS	100KPPS	10KPPS		
Performance specifications	Counter	Counting range		it unsigned to 16,777,2			oit 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 co	ounter functi	on	0	

				O: Compatible		change required, ×: 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)		
Counte	Counter	(100KPPS)	(Minimum phase difference		0	
Performance specifications of 1 channel		(10KPPS) 1-phase input	$ \begin{array}{c c} 20 \\ \hline 10 & 10 \\ \hline & (Unit : \mu s) \end{array} $ (1-phase input)	50 50 (Unit : μ s) (Minimum phase difference		
Performan		(10KPPS) 2-phase input	in 2-phase input: 25µs)			
Magnitu compar		Comparison range	24-bit unsigned binary	32-bit signed binary	0	
between and hig speed of module	n CPU h- counter	Comparison result	Set value < Set value = Set value >	count value	0	
Extons	d incut	Preset	5/12/24VD0	C, 2 to 5mA	0	
Externa	ıı ırıput	Function start		C, 2 to 5mA	0	
Externa	al output	Coincidence output	Transistor (sin 12/24VDC, 0.5A/ş 1 point/channel	0		
Internal curi (5VDC)	rent con	sumption	0.1A	2 points/channel 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

Ite	m		A1SD62E			QD62E		Compat- ibility	Precautions for replacement
Number of occu	pied I/O points	(I/O ass	32 points signment: s points)		(I/O assiç	16 points gnment: inte points)	ligent 16	Δ	The number of occupied I/O points has changed to 16 points.
Number of chan	nels			2 cł	nannels			0	
Counting speed	switch settings	10	100K 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.
	Phase		1	-phase inpu	ut, 2-phase i	nput		0	
Count input signal	Signal level (\phiA, \phiB)		5VDC 12VDC 24VDC 22 to 5mA					0	
	Counting speed (Max.)	1-phase input 2-phase	100KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0	
	speed (Max.)	input	100KPPS	7KPPS	200KPPS	100KPPS	10KPPS		
	Counting range	24-b	24-bit unsigned binary 32-bit signed binary (0 to 16,777,215) (-2147483648 to 2147483647)						Since the QD62E uses 32- bit signed binary values, sequence program needs to be changed.
	Туре		UP/DOWN	preset cour	nter + ring co	on	0		
	Minimum cou	nt pulse w	idth, Duty ra	atio: 50%				-	
Performance specifications of 1 channel O aptroprint a specifications of 1 channel	(200KPPS)		-		(Minimu	2.5 (Unit: ,	ference		
Performance spec	(100KPPS)	(1)	Minimum ph		(Unit : μs) nce in 2-pha	se input: 2.5	ous)	0	
	(10KPPS) 1-phase input	50	00 50 (Unit :	: μs)	50	(Unit : µ	(s)		
	(10KPPS) 2-phase input	71	42 71 (Unit : 2-phase inp		,	hase input:			

	lten	1	A1SD62E	QD62E	Compat- ibility	Precautions for replacement
channel	Magnitude comparison	Comparison range	24-bit unsigned binary	32-bit signed binary	0	
specifications of 1 ch	between CPU and high-speed counter module	Comparison result	Set value Set value Set value	0		
sbe	External	Preset	5/12/24VI	DC, 2 to 5mA	0	
nce	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	
	Internal current consumption (5VDC)		0.1A 0.33A		Δ	Recalculation of internal current consumption (5VDC) is required.
We	eight		0.25kg	0.11kg	0	

(3) Comparison between A1SD62D and QD62D

	lte	m		A1SD62D			QD	62D		Compat- ibility	Precautions for replacement
Nui	mber of occ nts	upied I/O	(I/O ass	32 points ignment: sp points)	oecial 32	(I/O ass	16 po signment: in	oints telligent 16	points)	Δ	The number of occupied I/O points has changed to 16 points.
Nui	mber of cha	nnels				2 channe	ls			0	
	unting spee tings	d switch	20	00K	10K	500K (200K to 500KPPS)	200K (100K to 200KPPS)	100K (10K to 100KPPS)	10K (10KPPS or less)	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	(φΑ, φΒ)	(AN	126LS31 [m	nanufactui	ed by Texas	s Instrumen	ts] or equiva	lent)	0	
		Counting speed (Max.)	1-phase input 2-phase input	200KPPS 200KPPS		500KPPS	200KPPS	100KPPS	10KPPS	0	
		Counting range	24-bit	t unsigned I to 16,777,2	15)	32-bit signed binary (-2147483648 to 2147483647)				Δ	Since the QD62D uses 32-bit signed binary values, sequence program needs to be changed.
<u> </u>		Туре				et counter +	ring counte	r function		0	
anne		Minimum cou	nt pulse w	/idth, Duty r	atio: 50%					-	
Performance specifications of 1 channel	Counter	(500KPPS) -						Jnit : µs) ase difference aseut: 0.5µs)	ee		
Performs		(200KPPS)		(Minimun		5 2.5 (Unit ifference in		out: 1.25µs)		0	
		(100KPPS)		-		`	10 5 5 (Ulinimum phann 2-phase in	ase differenc	e		

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

	Ite	em	A1SD62D			QD	62D		Compat- ibility	Precautions for replacement
(Co	ounting speed	d switch settings)	7.7	10K	500K	200K	100K	10K	-	
		Minimum count	pulse width, Duty ratio: 5	50%					-	
	Counter	(10KPPS) 1-phase input	100 50 50 (Unit : μs) (1-phase input)	1	_ (M	$50 \ 50$ (Unit : μ s) (Minimum phase difference				
Performance specifications of 1 channel		(10KPPS) 2-phase input	142 71 71 (Unit : μs) (1-phase input))	-	n 2-phase		0		
e speci	Magnitude comparison	Comparison range	24-bit unsigned bina	ary		32-bit sigr	ned binary		0	
Performano	between CPU and high-speed counter module	Comparison result		Set va	alue < coui alue = coui alue > coui	nt value			0	
		Preset			DC in	put: 5/12/2	4VDC, 2 to	5mA		TI OD 00D
	External input Function start		5/12/24VDC, 2 to 5r	mA	Differenti	al input: El	A Standard	RS-422-	0	The QD62D supports both DC input and differential input.
	External	Coincidence	Tı	ransist	or (sink typ	oe) output				
	output	output	12/24	VDC,	0.5A/point	, 2A/comm	on		0	
	Juiput	odiput	1 point/channel	-		2 points	/channel			
	ernal current (consumption	0.25A			0.3	88A		Δ	Recalculation of internal current consumption (5VDC) is required.
We	ight		0.25kg			0.1	2kg		0	

(4) Comparison between A1SD62D-S1 and QD62D

	I	tem	A	\1SD62D-S	1		QD6	62D		Compat- ibility	Precautions for replacement
Nui		ccupied I/O	(I/O ass	32 points ignment: sp points)	oecial 32	(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	
	unting spe tings		20	00K	10K	·	200K (100K to 200KPPS)	100K (10K to 100KPPS)	10K (10KPPS or less)	0	Set the counting speed of the QD62D with the intelligent function module switch setting of GX Developer.
	Count	Phase				se input, 2-p				0	
	input	Signal level					rential line o		0		
	signal	(φΑ, φΒ)		//26LS31 [n	nanufactur	red by Texa	s Instrumen	ts] or equiva	alent)		
		Counting speed (Max.)	1-phase input 2-phase	200KPPS 200KPPS		500KPPS	200KPPS	100KPPS	10KPPS	0	
		Counting range		t unsigned to 16,777,2	15)	Ţ	32-bit sign 47483648 to	o 21474836	Δ	Since the QD62D uses 32-bit signed binary values, sequence program needs to be changed.	
<u>a</u>		Туре				et counter +	ring counte	r function		0	
anne		Minimum count	t pulse wid	dth, Duty ra	tio: 50%		-				
ormance specifications of 1 channel	Counter	(500KPPS)		-			1 1 1 (U		ce		
Performa		(200KPPS)		(Minimur		5 5 2.5 (Unit	: μs) 2-phase inp	out: 1.25µs)		0	
		(100KPPS)		-			10 5 5 (U	se differenc	ce		

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

	Ite	em	A1SD62D-S1	QD62D	Compati- bility	Precautions for replacement
(Co	ounting speed	d switch settings)	200K 10K	500K 200K 100K 10K	-	
		Minimum count	pulse width, Duty ratio: 50%		-	
Performance specifications of 1 channel	Counter	(10KPPS) 1-phase input	$ \begin{array}{c c} 100 \\ \hline 50 & 50 \\ \hline & & & & \\ \hline & & & \\ \hline & $	$50 \ 50$ (Unit : μ s) (Minimum phase difference	0	
		(10KPPS) 2-phase input	$71 71 $ (Unit: μ s) (2-phase input)	in 2-phase input: 25μs)	Ç	
e speci	Magnitude comparison	Comparison range	24-bit unsigned binary	32-bit signed binary	0	
Performanc	between CPU and high-speed counter module	Comparison result	Set v	alue < count value alue = count value alue > count value	0	
	module External Preset input	Preset Function start	EIA Standard RS-422-A Differential line driver level (AM26LS31 or equivalent) 5/12/24VDC, 2 to 5mA	DC input: 5/12/24VDC, 2 to 5mA Differential input: EIA Standard RS-422- A. Differential line driver may be connected.	0	The QD62D supports both DC input and differential input.
	External output	Coincidence output	Transis	tor (sink type) output 0.5A/point, 2A/common 2 points/channel	0	
	Internal current consumption (5VDC)		0.25A	0.38A	Δ	Recalculation of internal current consumption (5VDC) is required.
We	ght		0.25kg	0.12kg	0	

6.3.2 Functional comparison

O: Available, -: Not available

ltem	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	

6.3.3 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-S1	1)	ĺ	QD62	2(E/D)	
Device No.	,	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	l la a secola de de d	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		X9	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		ХВ	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(E/D/D-S1)									
Device No.	Signal name	Device No.	Signal name							
X19		Y19	CH2 Coincidence signal enable command							
X1A		Y1A	CH2 Down count command							
X1B		Y1B	CH2 Count enable command							
X1C	Use prohibited	Y1C	CH2 Count value read request							
X1D		Y1D	CH2 Count function selection start command							
X1E		Y1E	Use prohibited							
X1F		Y1F	Ose profilbited							

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



6.3.4 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)	FX/VV	
3	35	Pulse input mode setting	_		2	34	Present value	(L)	R	
4	36	Present value	(L)	R	3	35	Fresent value	(H)	N .	
5	37	Tresent value	(H)	IX	4	36	Coincidence output point set No.1	(L)		
6	38	Coincidence output point setting	(L)		5	37	Contolactice output point set 140.1	(H)	R/W	
7	39	No.1	(H)	R/W	6	38	Coincidence output point set No.2	(L)	1000	
8	40	Counter function selection setting		1000	7	39	Conformed output point set 140.2	(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		W	10	42	Sampling/periodic setting		R/W	
		command	ı				oamping, periodic colling			
12 ^{*1}	44*1	Coincidence output point setting	(L)	R/W	11	43	Sampling/periodic counter flag			
13 ^{*1}	45 ^{*1}	No.2	(H)	10.00	12	44	Latch count value	(L)	1	
14	46	Latab sount value	(L)		13	45	Laten count value	(H)		
15	47	Latch count value	(H)		14	46	Sampling count value	(L)		
16	48	Sampling count value	(L)		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	Periodic pulse count present value	(L)		
20	52	Periodic pulse count present value	(L)		19	51	T enouic puise count present value	(H)		
21	53	r enouic puise count present value	(H)		20	52	Ring counter minimum value	(L)		
2	22	Sampling/periodic counter flag			21	53	Ring counter minimum value		R/W	
<u> </u>				22	54	Ring counter maximum value	(L)	1000		
					23	55	Tring counter maximum value	(H)		
					24	56				
					to	to	System area (Use prohibited)		-	
					31	63				

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

POSITIONING MODULE REPLACEMENT

7.1 List of Positioning Module Alternative Models for Replacement

AnS	series	Transition to Q series			
Product	Model	Model		emarks (Restrictions)	
	A1SD70	QD73A1	require 2) Number of slots : Not cha 3) Program : Buffer r method 4) Performance specifications 5) Function specifications: Par	change: Upward-compatibility tly changed	
			•	ndication and function setting method)	
	A1SD75P1-	QD75P1N ^{*1} (when an open collector is connected)	2) Number of slots : Not cha 3) Program : I/O sigr	ctor and wiring are changed. anged hals and buffer memory assignment are changed. tire program is reviewed according to the	
	S3	QD75D1N ^{*1} (when a differential driver is connected)	 Performance specifications: Function specifications: Par 		
	A1SD75P2-	QD75P2N*1 (when an open collector is connected)	2) Number of slots : Not cha 3) Program : I/O sigr	ctor and wiring are changed. anged hals and buffer memory assignment are changed. tire program is reviewed according to the	
Positioning	S3	QD75D2N*1 (when a differential driver is connected)	specific 4) Performance specifications: 5) Function specifications: Par	cations change. Not changed	
module	A1SD75P3-	QD75P4N*1 (when an open collector is connected)	2) Number of slots : Not cha 3) Program : I/O sigr	ctor and wiring are changed. anged hals and buffer memory assignment are changed. tire program is reviewed according to the	
	S3	QD75D4N*1 (when a differential driver is connected)	specific 4) Performance specifications: 5) Function specifications: Par	cations change. Not changed	
	A1SD75M1	QD75M1	2) Number of slots : Not cha 3) Program : I/O sign The en	nals and buffer memory assignment are changed. tire program is reviewed according to the cations change. Upward compatible	
	A1SD75M2	QD75M2	1) External wiring : Connec 2) Number of slots : Not cha 3) Program : I/O sign The en specific 4) Performance specifications: Par	nals and buffer memory assignment are changed. tire program is reviewed according to the cations change. Upward compatible	

AnS series		Transition 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 7.4.6.

7.2 A1SD75P1-S3/P2-S3/P3-S3

7.2.1 Performance specifications comparison

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

	Model	A1SD75P1-	A1SD75P2-	A1SD75P3-	QD75P1N	QD75P2N	QD75P4N	Compat-	Precautions for
Item		S3	S3	S 3	QD75D1N	QD75D2N	QD75D4N	ibility	replacement
Number of co	ontrol axes	1	2	3	1	2	4	0	
Number of pointerns	sitioning data		600/axis*1			600/axis		0	
Position control interpolation function	2-axis linear interpolation	Not available	Available	Available	Not available	Available	Available (3-/4-axis linear interpolation : available)	0	
	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, \triangle : Partial change required, \star : Incompatible

			O: Comp	patible,△: Parti	ai change re	equired, ×: 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	8647 (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>	<incremental< td=""><td>l system></td><td></td><td></td><td></td></incremental<>	l system>			
	-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)					
Positioning range*2	-21474.83648 to 21474.83647 (degree)	-21474.8364	8 to 21474.83	647 (degree)	0	
	/-1342.17728 to 1342.17727 (degree)					
	-2147483648 to 2147483647 (pulse)	-2147483648 to 2147483647 (pulse)				
	/-134217728 to 134217727 (pulse)					
	<pre><in control="" speed-position="" switching=""></in></pre>	<in control<="" p="" speed-position="" switching=""></in>				
	0 to 214748364.7 (µm)	(INC mode)/p	osition-speed	d switching		
	/0 to 13421772.7 (µm)	control>				
	0 to 21474.83647 (inch)	0 to 2147483	864.7 (µm)			
	/0 to 1342.17727 (inch)	0 to 21474.8	3647 (inch)			
	0 to 21474.83647 (degree)	0 to 21474.8	3647 (degree)		
	/0 to 1342.17727 (degree)	0 to 2147483	647 (pulse)			
	0 to 2147483647 (pulse)					
	/0 to 134217727 (pulse)	<in speed-po<="" td=""><td>sition switchi</td><td>ng control</td><td></td><td></td></in>	sition switchi	ng control		
		(ABS mode)	>			
		0 to 359.999	99 (degree)			
	0.01 to 6000000.00 (mm/min)	0.01 to 2000	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	:h/min)		
Speed command range*2	/0.001 to 37500.000 (inch/min)				0	
Speed command range	0.001 to 600000.000 (degree/min)	0.001 to 2000000.000 (degree/min)				
	/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	Available (6 OPR methods)	Availat	ole (6 OPR me	ethods)	0	
(OPR method)	,			/		
JOG operation	Available		Available		0	

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

					equired, x: Incompatible
Manual pulse generator function		A1SD75P1- S3 S3 A1SD75P2- S3 S3 S3 S3	QD75P1N QD75D2N QD75D4N QD75D1N QD75D2N QD75D4N 1 generator/module	Compat- ibility △	replacement 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.
Acceleration /deceleration processing	Automatic trapezoidal acceleration/ deceleration S-curve acceleration/	Available Available	Available Available	0	
	deceleration	, wallasie	, wallasie		
Acceleration /deceleration time	Number of patterns	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		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	• ,	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, \star : Incompatible

				,	U	equired, ×: Incompatible
Model Item	A1SD75P1- A1SD75P2- A1SD75P3- S3 S3 S3	QD75P1N QD75D1N	QD75P2N QD75D2N	QD75P4N QD75D4N	Compat- ibility	Precautions for replacement
	10136-3000VE (Soldering type, supplied)		A6CON1 type, straigh old separately A6CON2			As the connectors
Connection connector	10136-6000EL (IDC type, sold separately)	(Soldering ty	(Crimping type, straight-out type, sold separately) A6CON4 (Soldering type, straight-out/diagonal-out type, sold separately)			As the connectors 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: 0.3mm ² (22 AWG) A6CON2: 24 AWG			Δ	QD75D□N are sold separately.
	28 AWG (approx. 0.08 mm ²)	7.0	00112. 2171			
Command pulse output system	Differential driver/Open collector	QD75P□N: Open collector QD75D□N: Differential driver			Δ	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 collector: 200kpps When connected to differential driver: 4Mpps			0	
Maximum connection distance between servos	When connected to open collector: 2m When connected to differential driver: 10m		cted to open ected to differ 10m		0	
Internal current consumption (A) (5VDC)	0.7A or less (when connected to differential driver: 0.78A)*4	QD75P1N: 0.29A QD75D1N: 0.43A	QD75P2N: 0.30A QD75D2N: 0.45A	QD75P4N: 0.36A QD75D4N: 0.66A	Δ	
Flash ROM write count	Max. 100,000 times	0.43A			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)	(I/O assignn	32 points nent: intellige	nt 32 points)	0	
Number of module occupied slots	1		1		0	
Weight	0.35kg	QD75P1N: 0.14kg QD75D1N: 0.15kg	QD75P2N: 0.14kg QD75D2N: 0.15kg	QD75P4N: 0.16kg QD75D4N: 0.16kg	0	

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

O: Compatible, \D: Partial change required, \times: Incompatible							
Item	Model	A1SD75P1- A1SD75P2- A1SD75 S3 S3 S3	P3- QD75P1N QD75D1N	QD75P2N QD75D2N	QD75P4N QD75D4N	Compat- ibility	Precautions for replacement
	STRT signal	Available (External start signal)	(integr	Not available ated into CHG	s S 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 signates speed-position able with para	switching	Δ	The input response time differs. (Refer to Section 7.2.5.)
	In-position (INP)	Available (for monitoring purpose)	Not available		Δ	No INP signal. When it is required for monitor, monitor using the input module.
	Signal logic switching	Available (only Command pulse output signa	ıl)	Available Available			The default logic of pulse output differs.
	Near-point watchdog signal	Available					The input response time differs. (Refer to Section 7.2.5.)
Peripheral	Connection with peripheral devices	oripheral Direct connection		Connection via programmable controller CPU, Q corresponding serial communication module, Q corresponding MELSECNET/H remote		0	The connection type differs.
devices (data setting, etc.)	AD75TU	Connectable		Not connectab	le	×	AD75TU cannot be used. Use GX Configurator-QP.
	GX Configurator	GX Configurator-AP	GX	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.

7.2.2 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□N/QD75D□N, 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.
Start history during arrara	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 (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 A1SD75P1-S3/P2-S3/P3-S3

When the following functions are used with the A1SD75P□-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					
J	The software stroke limit check o	f arc address is carried out only when	a sub point is designated.				
	It is not carried out when a center point is designated.						
	The software stroke limit check during speed control is carried out in the following cases:						
		pplied to the current feed value with [-				
	updated with Pr.21						
	When the software stroke limit is a	pplied to the machine feed value					
Software stroke limit	3. If an attempt is made to change t	he current value but the designated a	ddress is out of the software stroke				
function	limit range, the attempt is conside	ered as an error and the current value	e is not changed.				
	4. Error code change						
	A1SD75P□-S3:						
	There are 3 types of errors for ea QD75PDN/QD75DDN:	ich software stroke upper limit and lov	ver limit (error code: 509 to 512).				
	Errors for the software stroke up	per limit are integrated into one (error	code: 507).				
		er limit are integrated into one (error	•				
	Error codes 509 to 512 are delete	•	,				
Current value changing M	An error occurs when the design	ated new current value is out of the so	oftware stroke limit range.				
code function	-	during the positioning data current va	·				
	<u> </u>	and frequency value calculated from the					
Acceleration/deceleration		f the positioning module being used.	•				
speed control		8ms) can be used as the setting value	e for the acceleration/deceleration				
•	time.	,					
	"Peripheral side (emergency) sto	p" is deleted from the stop causes of	Stop group 2 "sudden stop				
	selection".						
	"Test mode fault" in the stop causes of Stop group 3 "sudden stop selection" 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 error occurrence" is added to the stop causes of Stop group 2 "Sudden						
	stop selection".						
		A1SD75P□-S3	QD75P□N/QD75D□N				
READY signal (X0)	OFF	Normal (READY)	Not READY/WDT error				
	ON	Not READY/WDT error	Normal (READY)				
Manual pulse generator operation	The number of connectable manual p	oulse generators is changed from 1 ge	enerator/axis to 1 generator/module.				
Axis operation status	"Step stopped" is changed to "Stopped"	ed" and "Step error occurring" is chan	ged to "Error occurring".				
-	• A1SD75P□-S3:						
	If the reference axis operates in re	verse direction, the control is internal	ly changed into the continuous				
	positioning control. (restart after de						
Continuous path control	• QD75PDN/QD75DDN:						
	Even if the reference axis operates	Even if the reference axis operates in reverse direction with interpolation, the control remains as the					
	continuous path control.						
	· ·	ation is the same as that of the A1SD	75P□-S3.)				
	· ·		75P□-S3.)				
Near pass	(In single-axis operation, the opera	the near pass function is available.	75P□-S3.)				
Near pass 2-axis interpolation	(In single-axis operation, the operation of the continuous path control, only	the near pass function is available.	75P□-S3.)				
	(In single-axis operation, the operation of the continuous path control, only Positioning address pass is not conditional or c	the near pass function is available. ucted.					
2-axis interpolation	(In single-axis operation, the operation of the continuous path control, only Positioning address pass is not conditional or c	the near pass function is available.					
2-axis interpolation • 2-axis linear interpolation	(In single-axis operation, the operation of the continuous path control, only Positioning address pass is not conditional or c	the near pass function is available. ucted.					
2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	(In single-axis operation, the operation of the continuous path control, only Positioning address pass is not condition.) The interpolation target axis can be respectively.	the near pass function is available. ucted.	ier.				
2-axis interpolation	(In single-axis operation, the operation of the continuous path control, only Positioning address pass is not condition.) The interpolation target axis can be respectively.	the near pass function is available. ucted. randomly set with a positioning identif opped" and "Step error occurring" is c	ier.				
2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	(In single-axis operation, the operation of the continuous path control, only Positioning address pass is not cond The interpolation target axis can be reconstructed.) 1. "Step stopped" is changed to "Stopped"	the near pass function is available. ucted. randomly set with a positioning identif opped" and "Step error occurring" is cost.	ier.				

Changed function	Description						
Command in position	The command in-position width is expanded.						
Command in-position	• AD75A1SD75P□-S3: 1 to 32767000						
function	QD75P□N/QD75D□N: 1 to 21474	483647					
Positioning start No.	7004 to 7010 (block start designation	n) and 8000 to 8049 (indirect designa	tion) are deleted.				
block start data	With QD75P□N/QD75D□N, the nur	mber of blocks has been change to 5	(7000 to 7004).				
block start data	(With the A1SD75P□-S3, this data is 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				
	I	manual operation	manual operation				

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 Type QD75P\(\text{DN/QD75D}\(\text{DN}\) Positioning Module User's Manual.

Inp	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		Y00 to Y0F.	Y01 to Y03.		
Use prohibited	X10 to X1F	X02, X03, X18 to X1F	Use prohibited	Y1E to Y1F	Y18 to Y1F		

^{*} The ON/OFF status for READY is different between the QD75P\(\text{DN/QD75D}\(\text{DN}\) and A1SD75P\(\text{D-S3}\).

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

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 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□-S		QD75P□N/QD75D□N				
	Axis 1	Axis 1 Axis 2 A		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 (AI)	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	189	339	39	189	339		
Pr.28 Acceleration time 3	40 41	190 191	340 341	40 41	190 191	340 341		
	42	191	341	42	191	341		
Pr.29 Deceleration time 1	43	193	343	43	193	343		

	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.30 Deceleration time 2	44	194	344	44	194	344		
T1.50 Bedeletation time 2	45	195	345	45	195	345		
Pr.31 Deceleration time 3	46	196	346	46	196	346		
	47 48	197 198	347 348	47 48	197 198	347 348		
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		
Dr 27 Suddon etan 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.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	210	360	60	210	360		
F1.42 Allowable circular interpolation error width	61	211	361	61	211	361		
Pr.43 External start function selection								
(QD75P\(\text{DN}\)/QD75D\(\text{DN}\): \(\begin{array}{c} \text{Pr.42} \\ \text{External command function} \end{array}\)	62	212	362	62	212	362		
selection)								
Pr.44 Near pass mode selection for path control	66	216	366	-	-	-		
Pr.45 OPR method	70	220	370	70	220	370		
Pr.46 OPR direction	71	221	371	71	221	371		
Dr. 27 OD address	72	222	372	72	222	372		
Pr.37 OP address	73	223	373	73	223	373		
Pr.48 OPR speed	74	224	374	74	224	374		
<u> </u>	75	225	375	75	225	375		
Pr.49 Creep speed	76 77	226 227	376 377	76 77	226 227	376 377		
Pr.50 OPR retry	78	228	378	78	228	378		
Pr.51 OPR dwell time	79	229	379	79	229	379		
	80	230	380	80	230	380		
Pr.52 Setting for the movement amount after near-point dog ON	81	231	381	81	230	381		
Pr.53 OPR acceleration time selection	82	232	382	82	232	382		
	83	233	383	83	233	383		
Pr.54 OPR deceleration time selection								
Pr.55 OP shift amount	84 85	234 235	384 385	84 85	234 235	384 385		
Pr.56 OPR torque limit value	86	236	386	86	236	386		
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		

		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) t	o (15)				
Md.7 Start axis		400 to 507	4040 to 4007				
(QD75PDN/QD75DDN: Md.3 Start information)		462 to 537	1212 to 1287				
Md.8 Operation type		463 to 538	1213 to 1288				
(QD75P□N/QD75D□N: Md.4 Start No.)	ory	403 to 338	1213 (0 1200				
Md.9 Start time (Hour: minute)	Start history	464 to 539	1214 to 1289				
(QD75P□N/QD75D□N: Md.5 Start (Hour))	Start	404 (0 559	1214 (0 1209				
Md.10 Start time (Second: 100ms)		465 to 540	1215 to 1290				
(QD75PDN/QD75DDN: Md.6 Start (Minute: second))		403 to 340	1213 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	'n	543 to 618	-				
Md.14 Operation type	Start history at error	544 to 619	-				
Md.15 Start time (Hour: minute)	tory 8	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) t	o (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)	2						
(QD75PDN/QD75DDN: Md.11 Axis error occurrence	Error history	626 to 686	1295 to 1355				
(Hour))	rror						
Md.22 Axis error occurrence time (Second: 100ms)	Ш						
(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)	تَ		
(QD75PDN/QD75DDN: Md.16 Axis warning	history	691 to 751	1360 to 1420
occurrence			
(Hour))	Warning		
Md.27 Axis warning occurrence time (Second: 100ms)	>		
(QD75P□N/QD75D□N: Md.17Axis warning		3692 to 752	1361 to 1421
occurrence (Minute: second))			
Md.28 Warning history pointer		753	1422

	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		
Md.29 Current feed value	800	900	1000	800	900	1000		
	801 802	901 902	1001 1002	801 802	901 902	1001		
Md.30 Machine feed value	803	903	1002	803	903	1002		
	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		
	811	911	1011	811	911	1011		
Md.37 Axis feedrate	812 912 1012 812 912 813 913 1013 813 913			1012 1013				
	814	914	1014	814	914	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		
Md 44 Torget volue	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.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		
Deceleration starting flag	-	-	-	899	999	1099		

	Buffer memory address							
Item of A1SD75P□-S3		\1SD75P□-S		QD75P□N/QD75D□N				
	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		
	1154	1203	1254	1504	1606	1704		
Cd.15 New current value	1155	1205	1255	1507	1607	1707		
Cd.16 New speed value	1156	1206	1256	1514	1614	1714		
	1157 1158	1207 1208	1257 1258	1515 1516	1615 1616	1715 1716		
Cd.17 Speed change request								
Cd.18 Positioning operation speed override	1159 1160	1209 1210	1259 1260	1513 1518	1613 1618	1713 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	1214	1264	1526	1626	1726		
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 input magnification	1168	1218	1268	1522	1622	1722		
	1169 1170	1219 1220	1269 1270	1523 1521	1623 1621	1723 1721		
Cd.24 OPR request flag OFF request	1170	1220	1270	1021	1021	1721		
Cd.25 External start valid	1171	1221	1271	1505	1605	1705		
(QD75P□N/QD75D□N: Cd.8 External command valid)	44=0	1000	40-0		10.15			
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		
Cd.33 New acceleration time value	1184	1234	1284	1508	1608	1708		
	1185 1186	1235 1236	1285 1286	1509 1510	1609 1610	1709 1710		
Cd.34 New deceleration time value	1187	1237	1287	1511	1611	1710		
Cd.35 Acceleration/deceleration time change during speed	1188	1238	1288	1512	1612	1712		
change, enable/disable selection	1100	1230	1200	1312	1012	1712		

Stem of A1SD75P□-S3 A1SD75P□-S3 QD75P□N/QI	
Da.1 Operation pattern Da.2 Control system 1300 2300 3300 2000 8000	2 Axis 3
Da.2 Control system 1300 2300 3300 2000 8000	
1300 2300 3300 2000 8000	
	14000
	14000
Da.4 Deceleration time No.	
Da.9 M code/condition data No. 1301 2301 3301 2001 8001	14001
Da.8 Dwell time/JUMP No.1 1202 2202 2202 2002	14000
1302 2302 3302 2002 8002 1302	14002
Not used 1303 2303 3303 2003 8003	
Da.7 Command speed 1304 2304 3304 2004 8004	
1305 2305 3305 2005 8005	
movement amount 1307 2307 3307 2007 8007 1308 2308 3308 2008 8008	
Da.6 Arc address 1309 2309 3309 2009 8009	
No.2 1310 to 1319 2310 to 2319 3310 to 3319 2010 to 2019 8010 to 8	14010 to
100.2	14019
No.3 1320 to 1329 2320 to 2329 3320 to 3329 2020 to 2029 8020 to 8	14020 to 14029
to to to to to	to
No.100 2290 to 2299 3290 to 3299 4290 to 4299 2990 to 2999 8990 to 8	14990 to 14999
Da.10 Shape	1,100
Da.11 Start data No.	
1st 4000 4550 4000 4000 4050 60000 60000 67000	7050 28000 28050
Da.12 Special start point point instruction	
Da.12 Special start point 4300 4350 4550 4600 4850 26000 26050 27000 27000 26050 27000 2	
	7051 28001 28051
3rd point 4302 4352 4552 4602 4802 4852 26002 26052 27002 27	7052 28002 28052
to to to to to	to
을 50th point 4349 4399 4599 4649 4849 4899 26049 26099 27049 27	7099 28049 28099
Ege Da.14 Condition target 4400 4650 4900 26100 27100	28100
Da.15 Condition operator	
to t	
No.1 4403 433 4303 20103 27104 4404 4654 4904 26104 27104	
Da.17 Parameter 1 4405 4655 4905 26105 27105	
4407 4007 4907 20107 27107	
No.2 4410 to 4419 4660 to 4669 4910 to 4919 26119 27119	
No.3 4420 to 4429 4670 to 4679 4920 to 4929 26120 to 27120	
26129 27128	
to to to to to to 27190	to 28190 to
No.10 4490 to 4499 4740 to 4749 4990 to 4999 26199 27199 27199	

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		
Positioning		Start No.8001	4500	4750	5000	-	-	-		
J	Indirect	Start No.8002	4501	4751	5001	-	-	-		
start information	designation	to	to	to	to	to	to	to		
inionnation		Start No.8050	4549	4799	5049	-	-	-		
Drogrammal	ala controllar	Condition judgment torget	5050			30000				
ū	ole controller	Condition judgment target data of the condition data		to			to			
CPU memor	y area	data of the condition data		5099			30099			
Target axis	t axis			5100			-			
Head position	ning block No	D.	5101			-				
No. of read/	No. of read/write data items		5102			-				
Read/write r	Read/write request			5103			-			
Read/write b	olock			5110 to 6109		-				

7.2.5 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: $4.7k\Omega \rightarrow 4.3k\Omega$ Response time: $4ms \rightarrow 1ms$	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	
Output	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□-S3] → [Specifications of QD75P□N/QD75D□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{\text{\text{QD75P\(\text{\text{\text{\text{QD75P\(\text{\text{\text{\text{\text{QD75P\(\text{\tex

7.3.1 Performance specifications comparison

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

_						O. Comp	Datible, △ . Parti	ai change re	equired, ×: Incompatible
Item	Model	A1SD75M1	A1SD75M2	A1SD75M3	QD75M1	QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Number of control axes		1	2	3	1	2	4	0	
Number of positioning data items			600/axis ^{*1}			600/axis		0	
Position	2-axis linear interpolation	Not available	Available	Available	Not available	Available	Available		
control 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	ange	-21474.8364 0 to 359.9999 -2147483648 <incremental -21474.8364 -21474.8364 -2147483648 <in speed-po<br="">0 to 21474.83 0 to 21474.83 0 to 21474.83 0 to 21474.83</in></incremental 	8 to 21474836 8 to 21474.83 99 (degree) 8 to 21474836 8 to 21474.83 8 to 21474.83 8 to 21474.83 8 to 21474.83 9 to 21474.83 9 to 21474836 9 sition switchin 164.7 (µm) 164.7 (µm) 164.7 (degree)	647 (inch) 47 (pulse) 64.7 (µm) 647 (inch) 647 (degree) 47 (pulse) ng control>	<in absolute="" system=""> -214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) 0 to 359.99999 (degree) -2147483648 to 2147483647 (pulse) <incremental system=""> -214748364.8 to 214748364.7 (μm) -21474.83648 to 21474.83647 (inch) -21474.83648 to 21474.83647 (degree) -21474.83648 to 21474.83647 (pulse) <in control="" speed-position="" switching=""> 0 to 21474.83647 (μm) 0 to 21474.83647 (degree) 0 to 21474.83647 (degree) 0 to 21474.83647 (degree) 0 to 2147483647 (pulse)</in></incremental></in>			0	
Speed comm	and range	0.01 to 6000000.00 (mm/min) 0.001 to 600000.000 (inch/min) 0.001 to 600000.000 (degree/min) 1 to 1000000 (pulse/s)			0.01 to 20000000.00 (mm/min) 0.001 to 2000000.000 (inch/min) 0.001 to 2000000.000 (degree/min) 1 to 10000000 (pulse/s)			0	
Machine OPR function (OPR method)		Available (6 OPR methods)		Available (4 OPR methods)		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	agaiii.
- C C Sporatio						,			

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

			U: Col	mpatible,△ : Part	ai change re	equired, ×: Incompatible
Item	Model	A1SD75M1 A1SD75M2 A1SD75M3	QD75M1 QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Manual pulse generator function		1 generator/axis	1 generator/module		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.
	Automatic trapezoidal 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 indepe (4 patterns ea	Acceleration time and deceleration time can be set independently. (4 patterns each) 1 to 8388608ms		
Compensation		Electronic gears, backlash compensation, near pass*2	Electronic gears, I compensation, near		Δ	Refer to *2.
Error display		17-segment LED	Error LED		×	To check details of diagnostics, use GX Developer.
History data storage (Start, error, warning)		Provided (4 types, 16 items/module)	Provided (3 types, 16 item		0	The start history at error is integrated into the start history.
Data storage	destination	Flash ROM (battery-less backup)	Flash ROM (battery-less ba		0	

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

	Marie			O: Comp	patible, △ : Parti	ai change re	equired, ×: Incompatible
Item	Model	A1SD75M1 A1SD75M2 A1SD75M	3 QD75M1	QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Connection connector		10136-3000VE (Soldering type, supplied) 10136-6000EL (IDC type, sold separately)	(Soldering	A6CON1, A6CON4 (Soldering type, sold separately) A6CON2 (Crimping type, sold separately) A6CON3		×	As the connectors differ, wiring
Applicable wire size		10136-3000VE: 24 to 30 AWG (approx. 0.05 to 0.2mm²) 10136-6000EL: 28 AWG (approx. 0.08mm²)	A6CON A6CO	(IDC type, sold separately) 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	nection type	Refer to Se	ection 7.3.5 (2).	, ,	,		0. 6.
Maximum ext distance of S	tension SCNET		30m			Δ	Shape of a bus connector differs.
Internal curre		0.7A or less		0.40A		0	
consumption (A) (5DVC) Flash ROM write count		Max. 100,000 times	Ма	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 occupied I/O points		32 points (I/O assignment: special 32 points)	(I/O assignn	32 points nent: intellige	nt 32 points)	0	
Number of m		1		1		0	
		0.35kg	0.15kg	0.15kg	0.16kg		
I/O signal for external devices	I/O signal for external Available (integral external externa		Not available (integrated 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-position switching signal	start or sp	ommand signated bead-position ble with paral	switching	0	
Peripheral devices (data setting, etc.)	Connection with peripheral devices	Direct connection	controller CF	Connection via programmable controller CPU, Q corresponding serial communication module, Q corresponding MELSECNET/H remote I/O module		0	The connection type differs.
	AD75TU	Connectable	N	ot connectab	le	×	AD75TU cannot be used. Use GX Configurator-QP.
	GX Configurator	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\(\text{\Pi}\): Selected with parameters, QD75M\(\text{\Pi}\): Standard function)
 - QD75MD 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.

7.3.2 Functional comparison

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

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

Deleted function	Precautions for replacement				
Creep speed out of range error (error code: 208)	With the QD75M□, there is no the error code of the left column.				
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	n the QD75MD, 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				
Positioning data I/F	the buffer memory. Since all positioning data can be set in the buffer memory with the QD75M□, this				
Fositioning data i/i	function is deleted.				
Start history during errors	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 (Modulo page OS type OS version)	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					
onangoa ranonon	The software stroke limit che	eck of arc address is carried out only	when a sub point is designated.				
	It is not carried out when a c	•	,				
	The software stroke limit check during speed control is carried out in the following cases:						
	When the software stroke limit	t is applied to the current feed value	with Pr.14 and the current feed				
	value is updated with Pr.21						
		t is applied to the machine feed valu	ie				
		nge the current value but the design					
Orficer at the last live to for a time	software stroke limit range, t	he attempt is considered as an error	r and the current value is not				
Software stroke limit function	changed.						
	Error code change						
	A1SD75M□:						
	• •	or each software stroke upper limit a	and lower limit (error code: 509 to				
	512). QD75M□:						
		e upper limit are integrated into one	(error code: 507)				
		e lower limit are integrated into one	•				
	Error codes 509 to 512 are of		(61101 0000. 000).				
Current value changing M code		signated new current value is out of	the software stroke limit range.				
function		valid during the positioning data cur					
Acceleration/deceleration speed	Only two-word type (1 to 838860	08ms) can be used as the setting va	lue for the acceleration/				
control	deceleration time.						
	1. "Peripheral side (emergency) stop" is deleted from the stop causes of Stop group 2 "sudden stop						
	selection".						
	"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 grou						
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.						
	"Programmable controller CPU error occurrence" is added to the stop causes of Stop group 2						
	"Sudden stop selection".	o entri occanioned la dadea to the	s stop daddes of ctop group 2				
		A1SD75M□	QD75M□				
READY signal (X0)	OFF	Normal (READY)	Not READY/WDT error				
	ON	Not READY/WDT error	Normal (READY)				
Manual pulse generator operation	The number of connectable mar	nual pulse generators is changed fro	m 1 generator/axis to 1				
	generator/module.						
Axis operation status		topped" and "Step error occurring" is	s changed to "Error occurring".				
	• A1SD75M□:						
	If the reference axis operates in reverse direction, the control is internally changed into the						
Continuous path control	continuous positioning control. (restart after deceleration stop) • QD75M□:						
Continuous patri control	Even if the reference axis operates in reverse direction with interpolation, the control remains as						
	the continuous path control.						
	(In single-axis operation, the operation is the same as that of the A1SD75M□.)						
Nanana		only the near pass function is availa					
Near pass	Path of positioning address pass	s is not conducted.					
2-axis interpolation							
• 2-axis linear interpolation The interpolation target axis can be randomly set with a positioning identifier.							
2-axis fixed-feed	The interpolation target and oan be randomly set with a positioning lacitude.						
Circular interpolation	4 IIOtan ataura dilita i	IIOtanaadii aadii IIOtaa	Wie about all to WE				
		"Stopped" and "Step error occurring	is changed to "Error occurring"				
Step function	in the axis operations status The restart command for step	start information (02H) is deleted.					
	3. The step operation is restarte						
-	c. The step operation is restarte	a war the restait communit.					

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 designation	ation) and 8000 to 8049 (indirect de	esignation) are deleted.			
Displayed data	With QD75M□, the number of blocks has been change to 5 (7000 to 7004).					
Block start data	(With the A1SD75M□, this data is called "Positioning start information".)					
Start history	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			
	!	manual operation	manual operation			

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 Type QD75M Positioning Module User's Manual.

In	put (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		
Lloo probibited	V10 to V15	X02, X03,	Llac prohibited	Y00 to Y0F,	Y02, Y03,		
Use prohibited	X10 to X1F X18 to X1F		Use prohibited	Y1E to Y1F	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

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 Type QD75M Positioning Module User's Manual.

area shows the differences between A1SD75M□ and QD75M□.

	Buffer memory 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	
D.G. No. of pulses per retation (AD)	1	151	301	2	152	302	
Pr.2 No. of pulses per rotation (AP)		151	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	
	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	
Pr.o Acceleration time o	9	159	309	13	163	313	
Pr.9 Deceleration time 0	10	160	310	14	164	314	
11.0	11	161	311	15	165	315	
Pr.10 Bias speed at start	12 13	162	312	6 7	156 157	306	
Pr.12 Backlash compensation amount	15	163 165	313	17	167	307 317	
Pr.13 Software stroke limit upper limit	16 17	166 167	316 317	18 19	168 169	318 319	
value				-			
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 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	33	-	-	
Pr.25 Size selection for acceleration/ deceleration time	31	181	331	-	-	-	
Speed-position function selection	-	-	-	34	184	334	
	36	186	336	36	186	336	
Pr.26 Acceleration time 1	37	187	337	37	187	337	
Pr.27 Acceleration time 2	38	188	338	38	188	338	
11.21 Acceleration time 2	39	189	339	39	189	339	
Pr.28 Acceleration time 3	40	190	340	40	190	340	
	41	191	341	41	191	341	

			Buffer mem	ory 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
	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
	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
	58	208	358	58	208	358
Pr.40 Stop group 3 sudden stop selection		200	330	50	200	330
Pr.41 Positioning complete signal output	59	209	359	59	209	359
time						
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						
(QD75M□: Pr.42 External command	62	212	362	62	212	362
function selection)						
Pr.150 Setting for the restart allowable	64	214	364	64	214	364
range when servo OFF to ON	65	215	365	65	215	365
Pr.44 Near pass mode selection for path						
control	66	216	366	-	-	-
	70	220	270	70	220	270
Pr.45 OPR method	70	220	370	70	220	370
Pr.46 OPR direction	71	221	371	71	221	371
Pr.47 OP address	72	222	372	72	222	372
TI.47 Of dudiess	73	223	373	73	223	373
Pr.48 OPR speed	74 75	224	374 275	74 75	224	374
	75 76	225 226	375 376	75 76	225 226	375 376
Pr.49 Creep speed	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
	82	232	382	82	232	382
Pr.53 OPR acceleration time selection						
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
	85 86	235	385	86	235	385
Pr.56 OPR torque limit value	ου	230	300	00	230	300

	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	
	102	252	402	30102	30202	30302	
Pr.102 Regenerative brake resistor	103	253	403	30103	30202	30303	
Pr.103 Motor type						30303	
Pr.104 Motor capacity	104	254	404	30104	30204		
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 Maker setting	-	-	-	30110 30111	30210 30211	30310 30311	
Pr.112 Load inertia ratio	112	262	412	30112	30211	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	
	116	266	416	30116	30216	30316	
Pr.116 Speed loop gain 2							
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	121	271	421	30121	30221	30321	
output Pr.122 Monitor output mode selection	122	272	422	30122	30222	30322	
	123	273	423	30123	30223	30323	
Pr.123 Optional function 1	123	274	424	30123	30223	30323	
Pr.124 Optional function 2	124	2/4	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	149	299	449				
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	

		Buffer memory address				
Item of A1SD75M□		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) t	o (15)			
Md.7 Start axis		400 / 507	10101 1007			
(QD75M□: Md.3 Start information)		462 to 537	1212 to 1287			
Md.8 Operation type		463 to 538	1213 to 1288			
(QD75M□: Md.4 Start No.)	ory	403 to 336	12 13 to 1200			
Md.9 Start time (Hour: minute)	Start history	464 to 539	1214 to 1289			
(QD75M□: Md.5 Start (Hour))	Star	404 10 000	1214 (0 1203			
Md.10 Start time (Second: 100ms)		465 to 540	1215 to 1290			
(QD75M□: Md.6 Start (Minute: second))		100 10 0 10	1210 to 1200			
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	at error	544 to 619	-			
Md.15 Start time (Hour: minute)	Start history at	545 to 620	-			
Md.16 Start time (Second: 100ms)	rt his	546 to 621	-			
Md.17 Error judgment	Sta	547 to 622	-			
Md.18 Start history pointer at error		623	-			
(Pointer number)		(0) t	o (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) (QD75M□: Md.11 Axis error occurrence (Hour))		626 to 686	1295 to 1355			
		020 to 000	1293 to 1333			
Md.22 Axis error occurrence time (Second:						
100ms)	Error history	627 to 687	1296 to 1356			
(QD75M□: Md.12 Axis error occurrence						
(Minute: second))	1					
Md.23 Error history pointer		688	1357			

ltem of A1SD75M□		Buffer memory address	
		A1SD75M□	QD75M□
		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	Warning history	689 to 749	1358 to 1418
Md.25 Axis warning No.		690 to 750	1359 to 1419
Md.26 Axis warning occurrence time (Hour:		691 to 751	1360 to 1420
minute)			
(QD75□: Md.16 Axis warning occurrence (Hour))			
Md.27 Axis warning occurrence time (Second:		692 to 752	1361 to 1421
100ms)			
(QD75M□: Md.17 Axis warning occurrence			
(Minute: second))			
Md.28 Warning history pointer		753	1422

			Buffer mem	ory address						
Item of A1SD75M□		A1SD75M□			QD75M□					
	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	902	1002	803	902	1002				
	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	810 811	910 911	1010 1011				
Md.37 Axis feedrate	812	912	1012	812	912	1012				
Mu.57 Axis leedrate	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				
	819 820	919 920	1019 1020	819 820	919 920	1019 1020				
Md.42 Target speed	821	920	1020	821	920	1020				
	822	922	1022	V = .	<u> </u>	.02.				
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										
Md.47 Special start data instruction	828	928	1028	828	928	1028				
parameter setting value										
Md.48 Start positioning data No. setting 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	835	935	1035	835	935	1035				
executed		930	1000	000	930	1000				
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	849 850	949	1049 1050				
Md.101 Real current value	850 851	950 951	1050 1051	850 851	950 951	1050				
	1 00	951	1001	001	951	1601				

			Buffer mem	ory 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
Wid. 102 Beviation dedities value	853	953	1053	853	953	1053
Md.103 Motor rotation	854 855	954 955	1054 1055	854 855	954 955	1054 1055
Md.104 Motor current	856	956	1055	856	956	1056
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
		T		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	Buffer memory 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						
		1105						
Cd.6 Write pattern		1106						
Cd.7 Read/write request								
Cd.8 Read/write positioning data I/F		1108 to 1137			4000			
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		
	1155 1156	1205 1206	1255 1256	1507 1514	1607 1614	1707 1714		
Cd.16 New speed value	1157	1207	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		
	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	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	1520	1020	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		-	1		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	lress				
		Item of A1SD75M□				A1SD	75M□					QD7	5M□		
				Ax	is 1	Ax	is 2	Axi	is 3	Ax	is 1	Ax	is 2	Axi	is 3
	Da Da Da	3 Acceleration time No.		13	600	23	00	33	00	20	00	80	000	140	000
				12	801	23	01	33	<u>01</u>	20	01	90	01	140	201
<u>.</u>		9 M code/condition data 8 Dwell time/JUMP nation positioning data	No.1		602		02		02		02		002		002
ata	Not i	used		13	03	23	03	33	03	20	03	80	03	140	003
Positioning data*1	Da	7 Command speed			04 05	23 23	04 05		04 05	_	04 05		04 105		004 005
ositio	Da	5 Positioning address/		13	06	23	06	33	06	20	06	80	06	140	006
ď		ement amount		13	07	23	07	33	07	20	07	80	07	140	007
	Da	6 Arc address			08 09	23 23			08 09		08 09		08 109		008
		No.2	1310 t	o 1319	2310 t	o 2319	3310 t	o 3319	2010 t	2010 to 2019 8010 to 8019		o 8019	14010 to 14019		
		No.3			o 1329	2320 t			o 3329		0 to 2029 8020 to 8029		140	20 to 029	
		to		1	to	t	.0	t	0	1	.0	1	to		0
		No.100		2290 t	o 2299	3290 t	o 3299	99 4290 to 4299 2990 to 299		o 2999	8990 t	o 8999	1499	90 to 999	
	Start block data*2	Da.10 Shape 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			27001	27051		28051
		3rd point		4302	4352	4552	4602	4802						28002	
n*3		to 50th point		4349	4399	4599	o 4649	4849	o 4899		26099		27099	28049	28000
Positioning start information*3		Da.14 Condition target Da.15 Condition operator		44	-00	46	50	49	00	26	100	27 ⁻	100	281	100
ioning		Da.16 Address	No.1	44	.02 .03	46	52 53	49	02 03	26	102 103	27	102 103	28	102 103
Positi	data	Da.17 Parameter 1			·04 ·05	46 46	54 55		04 05		104 105		104 105		104 105
	Condition data	Da.18 Parameter 2		4406 4407			56 57		06 07		106 107		106 107		106 107
	රි	No.2	•	4410 t	o 4419	4660 t	o 4669	4910 t	o 4919		10 to 119		10 to 119		10 to 119
		No.3		4420 t	o 4429	4670 t	o 4679	4920 t	o 4929	2612	20 to 129	271	20 to 129	2812	20 to 129
		to		1	to	t	:0	t	0		:0		to		0
		No.10		4490 t	o 4499	4740 t	o 4749	4990 to	o 4999		90 to 199		90 to 199		90 to 199

With the QD75M□, the positioning data buffer memory addresses are No. 1 to 600.

^{*2} With the QD75M□, it is called "block start data".

With the QD75M□, 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 A	1SD75M□	A1SD75M□			QD75M□			
			Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3	
Positioning		Start No.8001	4500	4750	5000	-	-	-	
U	Indirect	Start No.8002	4501	4751	5001	-	-	-	
start information	designation	to	to	to	to	to	to	to	
mormation		Start No.8050	4549	4799	5049	-	-	-	
Drogrammal	olo controllor	Condition judgment torget	5050			30000			
Programmal		Condition judgment target data of the condition data		to			to		
CPU memor	y area	data of the condition data		5099			30099		
Target axis			5100			-			
Head position	ning block No).	5101			-			
No. of read/write data items			5102			-			
Read/write request		5103			-				
Read/write b	lock			5110 to 6109			-		

7.3.5 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

 \bigcirc : Compatible, \triangle : Partial change required

	Item	Difference*		Precautions for replacement	
	Upper/lower limit signal	OFF current:1.5mA→1.0mA		Check whether the OFF current value met	
	Opper/lower littlit signal	Input resistance:4.7k Ω \rightarrow 6.8k Ω	Δ	satisfied values	
	Stop signal	OFF current:1.5mA→1.0mA		Check whether the OFF current value met	
	Stop signal	Input resistance:4.7k Ω \rightarrow 6.8k Ω	Δ	satisfied values	
	Near-point dog signal	OFF current:1.5mA→1.0mA		Check whether the OFF current value met satisfied values	
Input		Input resistance:4.7k Ω \rightarrow 6.8k Ω	Δ		
iriput		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 Ω \rightarrow 6.8k Ω	Δ	satisfied values	
		Response time:4ms→1ms		Satisfied values	
	Manual pulse generator	ON current:3.5mA→1.0mA			
	iviariuai puise gerierator	Input resistance:1.5k \rightarrow 1.2k Ω	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	075M□	QD7	75M□		
Name	Logic (Initial setting)	Logic switching by parameter	Logic (Initial setting)	Logic switching by parameter		
Manual pulse generator A phase	Negative logic	Netellewed	Negative logic	Alleured		
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	Nogativa logio	Allowed		
Speed-position switching signal*2	Negative logic	Not allowed	Negative 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) Applicable servo amplifier

The following shows the applicability of servo amplifiers to the QD75M□.

O : Applicable \triangle : However, the cable change is required even applicable. $\boldsymbol{\times}$: Not applicable

Amplifier model name	A1SD75M□	QD75M□	Combination example of the positioning modules and servo amplifi being replaced (However, the cable change is required even applicable.)			
MR-J□-B	0	×	(1) QD75M□ + MR-J2S□-B			
)	^	(2) QD75MH□ + MR-J3□-B			
MR-H□-B		Δ	(1) QD75M□ + MR-J2S□-B			
IVIN-I ILL-D	0		(2) QD75MH□ + MR-J3□-B			
MR-J2∏-B			(1) QD75M□ + MR-J2S□-B			
WR-JZLI-B	0	Δ	(2) QD75MH□ + MR-J3□-B			
MR-J2S□-B	0	0				

7.4 A1SD70

7.4.1 Performance specifications comparison

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

			O: Compatible, △	: Partial ch	ange required, ×: Incompatible
Item	Model	A1SD70	QD73A1	Compat- ibility	Precautions for replacement
Number of co	ontrol axes	1 axis	1 axis	0	
Positioning	Capacity	1 data	1 data	0	
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	" ,		0	
Positioning	Command (32-bit signed binary) (32-bit signed binary) Speed command 1 to 400,000 (pulse/s) 1 to 4,000,000 (pulse/s)		0	The specification has improved. (Upward-compatibility)	
Fositioning	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	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	on	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	-	0	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.

7.4.2 Function comparison

(1) Function comparison between the A1SD70 and the QD73A1

O: Compatible, -: Not available

	Function		Description	A1SD70	QD73A1	Precautions for replacement
		Positioning control	Positioning is executed from the current position to a specified position at a specified speed.	0	0	Refer to Section 7.4.6.
		CONTROL	Positioning is executed to the address specified in			7.4.0.
	Position control	Two-phase	"Da.2 Positioning address P1" at "Da.3 Positioning speed V1",			
	mode	trapezoidal		0	0	
		positioning control	then to the address specified in "Da.4 Positioning address P2" at			
Major			"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-pos	sition	stopped by Stop signal after the input of Speed-position switching	_		Refer to Section
	control sw	ritch mode	command signal, the positioning can be continued by Speed-	0	0	7.4.6.
			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			
JOG opera	tion		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	ol		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	
			This function controls moving distance and speed by multiplying	_	_	
Electronic	gear function	n	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 of	ounter clea	r function	emergency stop during positioning, clearing the accumulated	0	0	
			pulses in the deviation counter prevents servomotor rotation at			
			power recovery.			
0		_	This function forces to change speed from a program during	_	_	Refer to Section
Speed change function		n	positioning control or JOG operation.	0	0	7.4.6.
Current value change function		function	This function changes the current feed value to a specified value		_	Refer to Section
		Turiction	from a sequence program on the condition other than while BUSY.	0	0	7.4.6.
			This function turns on In-position signal while the accumulated			
In nosition	function		pulse amount in the deviation counter is within the specified in-		_	
In-position function			position range. In-position signal can be used as the signal right	0	0	
			before positioning completion.	1		
Zoro/main	adiu otros e v t		This function adjusts analog voltage contained in accumulated		_	Refer to Section
Zero/gain a	aujustment		pulses.	0	0	7.4.6.



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

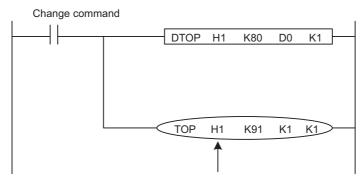
(2) Changed function from the A1SD70

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.
Speed-position control switch mode (speed control operation)	 A1SD70 For Velocity/position axis travel distance change area, the value is reflected during speed control. Setting value: 0 to 2147483647 (valid within the stroke range) QD73A1 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)
Speed change function	 A1SD70 The speed change is requested by writing a new speed value in Velocity change area of the buffer memory. QD73A1 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
Current value change function	 A1SD70 The current value is changed by writing a new address in Present value change area of the buffer memory. 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).
Zero/gain adjustment	 A1SD70 The adjustment is performed using the volumes for zero/gain adjustment. QD73A1 The adjustment is performed by either of following methods. 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
Mode switch	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 2) Encoder interface setting pin 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	EDD	I load for hath miner and main any
Major error	ERR.2	ERR.	Used for both minor errors and major errors.
Encoder phase A	φА	φА	
Encoder phase B	φВ	φВ	
Encoder phase Z	φZ	φZ	
BUSY	BUSY	BUSY	
Zoro adjustment status		ZERO	The contents indicated with "ZERO" of the QD73A1 differ from the ones
Zero adjustment status	_	ZERO	indicated with "ZERO" of the A1SD70.
Gain adjustment status	-	GAIN	
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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7.4.3 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
(The first half slot is Empty 16 points.)*1	to	to	(The first half slot is Empty 16 points.)*1	to	to
(The first fian slot is Empty to points.)	X0F	X0F	(The lirst riali slot is Empty 16 points.)	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
Absolute positioning start complete	_	X21		to	to
Absolute positioning start complete	-	۸۷۱		Y1F	Y19
Forward start complete				Y2B	Y1D
(for the incremental positioning and the	-	X22			to
speed-position control switching)			Use prohibited*1	Y2E, Y2F	Y1F
Reverse start complete					
(for the incremental positioning and the	_	X23			Y2E, Y2F
speed-position control switching)		7,20			126, 121
speed-position control switching)					
Synchronization flag	-	X24			
Zero/gain adjustment data writing complete	_	V0.4			
flag	-	X2A			
Zero/gain adjustment change complete flag	-	X2B	1		
Set value change complete flag	-	X2C	1		
Operating status of the speed-position			1		
control switch mode	-	X2D			
	\/CC	V05 t- V00	1		
*1	X20	X25 to X29			
Use prohibited*1	to	X2E, X2F			
	X2F	/\LL, /\Ll			

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.

7.4.4 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.

			Buffer mem	ory address
	Item		A1SD70	QD73A1
	Stroke limit upper limit		0	0
	Stroke littlit upper littlit		1	1
	Stroke limit lower limit		2	2
	Stroke littlit lower littlit		3	3
Fixed parameter		Numerator of command	4	4
		pulse multiplication		7
	Electronic gear	Denominator of		
		command pulse	5	5
		multiplication		
	Speed limit value		20	20
			21	21
Variable parameter	Acceleration time		22	22
•	Deceleration time		23	23
	In-position range		24	24
	Positioning mode		25	25
	OP address		40	40
			41	41
	OPR speed		42	42
OPR data			43	43
	Creep speed		44	44
			45	45
		ent amount after near-point	46	46
	dog ON		47	47
	Positioning pattern		60	301
	Positioning address P ₁		61 62	302 303
			63	304
Positioning data	Positioning speed V ₁		64	305
Positioning data			65	306
	Positioning address P ₂	2	66	307
			67	308
	Positioning speed V ₂		68	309
			80	80
	New current value		81	81
			82	82
	New speed value		83	83
				84
	JOG speed (area)		84 85	85
0 1 1 1	Deviation counter clear	r command	86	86
Control change area	Analog output adjustm		87	87
			88	88
	New speed-position me	ovement amount	89	89
	Current value change	request	-	90
	Speed change request		-	91
	Analog output adjustm	ont area 2		92
	Analog output adjustm	CIII alea 2	<u>-</u>	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	100		
	Current leed value	101	101		
	Actual current value	102	102		
	Actual current value	103	103		
	Error code (ERR.1)	104	104		
	Error code (ERR.2)	105	105		
	Designation assumbs and the	106	116 ^{*1}		
	Deviation counter value	107	117 ^{*1}		
Monitor area	Deviation counter value (address)	-	106 ^{*2} 107 ^{*2}		
		108	108		
	Movement amount after near-point dog ON	109	109		
	Speed-position switching command	110	110		
	Control mode	111	111		
	Zero/gain execution status	-	112		
	Zero/gain adjustment status	-	113		
	Feedrate		114		
	reediate	-	115		
	(Record 0) Error code	-	120		
	(Record 0) Error occurrence (Year : Month)	-	121		
Error history	(Record 0) Error occurrence (Day : Hour)	-	122		
LITOI TIISTOLY	(Record 0) Error occurrence (Minute : Second)	-	123		
	(Record 1 to 15)	-	124 to 183		
	Error history pointer	-	184		

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).

7.4.5 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

						ie, Δ.1 attal change required
	Item		A1SD70	QD73A1	Compati-	Precautions for
	iteiii		AISBIO	QD/3A1	bility	replacement
	External pow	er 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	
mpat		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 Speed command (analog signal)		0	0	0	
			0	0	0	

7.4.6 Precautions for the replacement of the A1SD70 by the QD73A1

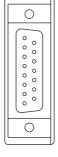
The following shows precautions for the replacement of the A1SD70 by the QD73A1.

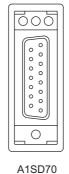
Item	A1SD70	QD73A1	Precautions
Number of occupied slots	2 s	slots	*1
Number of occupied I/O points	48 points (I/O assignment: First half slot: Empty 16 points Second half slot: special function module, 32 points)	48 points (I/O assignment: First half slot: Empty 16 points Second half slot: Intelli., 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

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)	of the motor and	Wiring between the A1SD70 a	nd encoder	Wiring when the A1SD70 is rep	laced to the QD73A1
1	OFF	Same direction	Phase A Phase B	Phasei A Phasei B Encoder	Phase Phase B QD73A1	Phase A Phase B Encoder
2	-011	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

8.1 Position Detection Module Replacement

There are no Q series alternative models for the A1S62LS position detection module.

8 POSITION DETECTION MODULE REPLACEMENT

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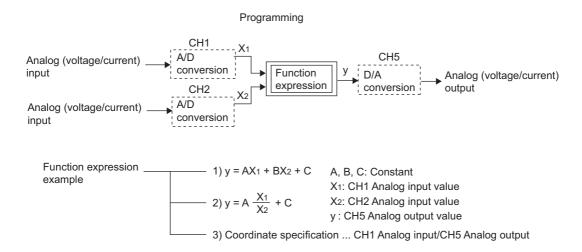
REPLACEMENT OF OTHER MODULES

9.1 Replacement 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, QI60, as an alternative.
Analog timer module	A1ST60	Consider programmed timer control by indirectly specifying internal timer.
	A1S63ADA	If the simple loop control is not used, consider replacing the module with two separated modules (analog input module and analog output module).
Analog I/O Module	A1S66ADA	If the simple loop control is used, consider replacing the module with the Q64AD2DA. (Create a sequence program for the simple loop control.)*1
ID interface module	A1SD35ID1	There are no alternative models. Consider using our partner manufacturer's products (Balluff ID system BIS M series), which can be connected to Mitsubishi programmable
ID Interface module	A1SD35ID2	controllers. For details of a system transition method, refer to the technical bulletin (FA-A-0062).
MELSECNET/MINI-S3 master module	A1SJ71PT32-S3	Consider replacing the system with a CC-Link system. (Refer to the Transition from MELSECNET/MINI-S3, A2C(I/O) to CC-Link Handbook (L-08061ENG).)
MELSEC-I/O Link remote I/O system master module	A1SJ51T64	Consider replacing the system with a CC-Link/LT system. (Refer to the Transition from MELSEC-I/OLINK to CC-Link/LT Handbook (L-08062ENG).)
AS-i master module	A1SJ71AS92	Replace the module with the AS-i master module, QJ71AS92.
Memory card interface module	A1SD59J-S2	Create a file register in a memory card or the standard RAM, and use it as a substitute.
Dummy module	A1SG62	Replace the module with the QG60 and set I/O assignment in parameter.

*1 An example of a sequence program is shown below.



1 EXTERNAL DIMENSIONS

10.1External Dimensions

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

For external dimensions of base units, refer to the following.

			Transition target		
No.	Handbook	Manual number	A/QnA	AnS/ QnAS	Q
1	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Fundamentals)	L-08043ENG	0	×	0
2	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series Handbook (Fundamentals)	L-08219ENG	×	0	0

10 EXTERNAL DIMENSIONS

Memo		

APPENDICES

Appendix 1 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)	ATSJHOPU
Power supply module	A1S61PN, A1S62PN, A1S63P
Angleg module	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).

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 2 Relevant Manuals

Appendix 2.1 Replacement handbooks

(1) Transition guide

No.	Manual name	Manual number	Target	
NO.	Mariual flairle		A (large)	AnS (small)
1	MELSEC-A/QnA Series Transition Guide	L(NA)08077E	0	×
2	MELSEC-AnS/QnAS Series Transition Guide	-	×	0

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

No.	Manual name	Manual number	Target	
NO.	Manual Haine	Wallual Hullibel	A (large)	AnS (small)
	Transition from MELSEC-A/QnA (Large Type) Series to Q Series	L-08043ENG	0	×
1	Handbook (Fundamentals)	L-00043LING	O	
•	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q	L-080219ENG	×	
	Series Handbook (Fundamentals)	L-0002 19LING	^	O
	Transition from MELSEC-A/QnA (Large Type) Series to Q Series	L-08046ENG	0	_
2	Handbook (Intelligent Function Modules)	L-00040ENG	0	Target Part Part Part
	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q	L-08220ENG	×	
	Series Handbook (Intelligent Function Modules)	L-00220ENG	^	O
3	Transition from MELSEC-A/QnA (Large Type), AnS/QnAS	L-08048ENG	0	
3	(Small Type) Series to Q Series Handbook (Network Modules)	L-00040LNG	U	O
4	Transition from MELSEC-A/QnA (Large Type), AnS/QnAS	L-08050ENG	G o	
7	(Small Type) Series to Q Series Handbook (Communications)	L-00030LNG		
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	-
0	Handbook	L-0000 IENG	0	O
7	Transition from MELSEC-I/OLINK to CC-Link/LT Handbook	L-08062ENG	0	0
8	Transition of CPUs in MELSEC Redundant System Handbook	L-08117ENG	0	
0	(Transition from Q4ARCPU to QnPRHCPU)	L-0011/ENG	0	*

(3) Transition Examples

No	. Manual name	Manual number	Та	rget
No	. Wallua Hallie	Wallual Hullibel	A (large)	AnS (small)
1	MELSEC-A/QnA Series Transition Examples	L(NA)08121E	0	0

(4) Others

No	. Manual name	Manual number	Та	rget
NC	. Wallual Hallie	Manual number	A (large)	AnS (small)
1	Procedures for Replacing Positioning Module AD71 with QD75	FA-A-0060	0	0

Appendix 2.2 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
	A1SD75P1-S3/P2-S3/P3-S3, AD75P1-S3/P2-S3/P3-S3 Positioning Module		
14	User's Manual	IB-66716	13J871
15	Type A1S62LS User's Manual	IB-66647	13J837
16	High Speed Counter Module Type A1SD61 User's Manual	IB-66337	13J674
47	High Speed Counter Module Type A1SD62, A1SD62E, A1SD62D(S1) User's	ID 00500	40 1040
17	Manual	IB-66593	13J816
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,	ID 66565	13 1564
23	A1SJ71PT32-S3, A1SJ71T32-S3 User's Manual	IB-66565	13JE64
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 2.3 Q series

No.	Manual name	Manual number	Model code
1	iQ Platform Programmable Controllers MELSEC-Q Series [QnU]	L-08101E	_
2	Analog-Digital Converter Module User's Manual	CLLOSOOFF	42 1002
2	Q64AD/Q68ADV/Q68ADI/GX Configurator-AD (SW2D5C-QADU-E)	SH-080055	13JR03
	Channel Isolated High Resolution Analog-Digital Converter Module /		
2	Channel Isolated High Resolution Analog-Digital Converter Module (With	CLI 000077	42 ID54
3	Signal Conditioning Function) User's Manual	SH-080277	13JR51
	Q64AD-GH/Q62AD-DGH/GX Configurator-AD (SW2D5C-QADU-E)		
	Channel Isolated Analog-Digital Converter Module/Channel Isolated		
4	Analog-Digital Converter Module (With Signal Conditioning Function)	SH-080647ENG	13JR96
4	User's Manual	3H-000047 ENG	133K90
	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)		
6	Channel Isolated Digital-Analog Converter Module User's Manual	SH-080281E	13JR52
J	Q62DA-FG/GX Configurator-DA (SW2D5C-QDAU-E)	011-000201L	1001102
7	Channel Isolated Digital-Analog Converter Module User's Manual	SH-080648ENG	13JR97
	Q66DA-G/GX Configurator-DA (SW2D5C-QDAU-E)	011 0000 102110	1001107
	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
	Q64RD/Q64RD-G/GX Configurator-TI (SW1D5C-QTIU-E)		
10	Channel Isolated RTD Input Module User's Manual	SH-080722ENG	13JZ06
	Q68RD3-G/GX Configurator-TI (SW1D5C-QTIU-E)		
	Thermocouple Input Module Channel Isolated Thermocouple/Micro		40.1700
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
	Q68TD-G-H01/Q68TD-G-H02/GX Configurator-TI (SW1D5C-QTIU-E)		
40	Temperature Control Module User's Manual	CLI 000404	42 ID24
13	Q64TCTT/Q64TCTTBW/Q64TCRT/Q64TCRTBW/GX Configurator-TC	SH-080121	13JR21
	(SW0D5C-QTCU-E)		
14	High-Speed Counter Module User's Manual	SH-080036	13JL95
	QD62/QD62E/QD62D/GX Configurator-CT (SW0D5C-QCTU-E)		
15	High Speed Counter Module User's Manual (Hardware) QD62-H01/QD62-H02	IB-0800421	13JY78
	Type QD75P/QD75D Positioning Module User's Manual		
16	QD75P1/QD75P2/QD75P4/QD75D1/QD75D2/QD75D4	SH-080058	13JR09
	Type QD75M Positioning Module User's Manual		
17	QD75M1/QD75M2/QD75M4	IB-0300062	1XB752
	QDT SINI T/QDT SINI2/QDT SINI4		

Appendix 2.4 Programming tool

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

Appendix 3 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).

		0.10000.0	- qu u = y u = u u	5a. 5 5t . 5qa 5a 2) a55.
		Resolution of Q seri	es analog I/O module	•
Resolution of AnS series	Normal resolution	lormal resolution High resolutio		Hoor rongo
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	_
1/12000	_	0	_	△*2

O: Measure required by user, \triangle : Measure not required by user

(2) Example of sequence program to change a resolution

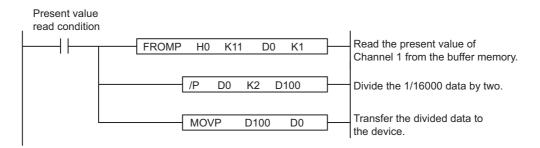
(Condition)

(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 3 (2).)

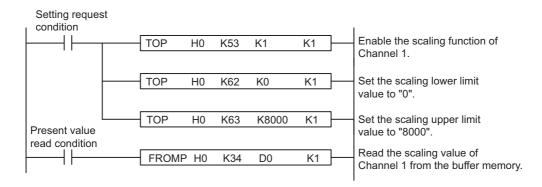
^{*2} Set a user range in high resolution mode.

(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		Description	Default	Read/Write	
Hexadecimal	Decimal	Description	Delault	Reau/wille	
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		
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	TVW	
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.

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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



HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

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