

Programmable Controller

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

(Intelligent Function Modules)



Feb. 2020 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.

<u>______</u>CAUTION

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

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

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

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

[Design Precautions]

WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system
 operates safely even when a fault occurs in the external power supply or the programmable
 controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
 - (1) Configure external safety circuits, such as an emergency stop circuit, protection circuit, and protective interlock circuit for forward/reverse operation or upper/lower limit positioning.
 - (2) When the programmable controller detects the following problems, it will stop calculation and turn off all output in the case of (a). In the case of (b), it will hold or turn off all output according to the parameter setting. Note that the AnS series module will turn off the output in either of cases (a) and (b).

	Q series module	AnS series module
(a) The power supply module has over current protection equipment and over voltage protection equipment.	Output OFF	Output OFF
(b) The CPU module self-diagnosis functions, such as the watchdog timer error, detect problems.	Hold or turn off all output according to the parameter setting.	Output OFF

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

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

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

[Design Precautions]

WARNING

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

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

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

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

CAUTION

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

[Installation Precautions]

CAUTION

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

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

Tighten the screws within the specified torque range.

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

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

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

Check the connection for looseness.

Poor contact may cause incorrect input or output.

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

[Wiring Precautions]

WARNING

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

CAUTION

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

[Startup and Maintenance Precautions]

WARNING

- Do not touch any terminal while power is on.
 - Doing so will cause electric shock.
- Correctly connect the battery connector.
 - $\label{eq:continuous} \mbox{Do not charge, disassemble, heat, short-circuit, or solder the battery, or throw it into the fire.}$
 - 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	An abbreviation for large types of Mitsubishi Electric MELSEC-A series programmable
A series	controllers
AnC comice	An abbreviation for compact types of Mitsubishi Electric MELSEC-A series programmable
AnS series	controllers
A/AnS series	Generic term for A series and AnS series
^ ^ ·	An abbreviation for large types of Mitsubishi Electric MELSEC-QnA series programmable
QnA series	controllers
0.40	An abbreviation for compact types of Mitsubishi Electric MELSEC-QnA series programmable
QnAS series	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	An abbreviation for Mitsubishi Electric 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
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,
	Q03UDVCPU, Q03UDECPU, Q04UDHCPU, Q04UDVCPU, Q04UDEHCPU, Q06UDHCPU,
Universal model QCPU	Q06UDVCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDVCPU,
	Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDVCPU, and
	Q26UDEHCPU
■CPU module model	100000000000000000000000000000000000000
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 AnNCPU, AnACPU, and AnSCPU
QnACPU	Generic term for MELSEC-QnA series programmable controller CPUs
QnASCPU	Generic term for MELSEC-QnAS series programmable controller CPUs
	Generic term for MELSEC-QnA series and MELSEC-QnAS series programmable controller
QnA/QnASCPU	CPUs
A/A 0/0 A/0 +007**	Generic term for A series, AnS series, QnA series, and QnAS series programmable controller
A/AnS/QnA/QnASCPU	CPUs
	ICFUS

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

With the Q series intelligent function module, you can easily set, monitor, and test the intelligent function module using GX Works2 without changing the parameter settings, auto refresh, I/O signals, and buffer memory.

- Parameter 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.

Please note that equivalent functions are available using a separately sold utility package (GX Configurator-□) in GX Developer.

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)		
Analog input module	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		
		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:		
	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 upgrade tool (conversion adaptor) manufactured by Mitsubishi Electric Engineering Co., Ltd.

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor	
Analog input module	A1S64AD	Q64AD	ERNT-ASQT64AD	
	A1S68AD (voltage input)	Q68ADV	ERNT-ASQT68AD	
	A1S68AD (current input)	Q68ADI	ERNT-ASQ100AD	
	A1S68AD	Q68AD-G	ERNT-ASQT68AD-G*1	

^{*1} Conversion adapter with fixture, which cannot be mounted on the AnS size version Q large type base unit.

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

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

2.2 A1S64AD

2.2.1 Performance specifications comparison

Item			A1S64AD			
Voltage	-10 to 0 to +10VDC (Input resistance value: $1M\Omega$)					
Analog input Current		-20 to 0 to +20r	mADC (Input resista	ance value: 250Ω)		
·			16-bit signed binar	ry		
Digital autout		When 1	1/4000 is set: -4096	to +4095		
Digital output		When 1	1/8000 is set: -8192	to +8191		
		When 1/1	12000 is set: -12288	3 to +12287		
	Item Specifications					1
I/O characteristics	item			ue (when gain 5V/20m	A offset 0V/0mA)	1
1/O characteristics		Analog input	1/4000	1/8000	1/12000	1
		+10V	+4000	+8000	+12000	1
	I/O characteristics	+5V or +20mA	+2000	+4000	+6000	
		0V or 0mA	0	0	0	
		-5V or -20mA	-2000	-4000	-6000	
		-10V	-4000	-8000	-12000	4
Maximum resolution	Maximum recelution	Analog input Voltage input	1/4000 2.5mV	1/8000 1.25mV	1/12000 0.83mV	4
Maximum resolution	Maximum resolution	Current input	2.5mv 10µA	1.25πV 5μA	3.33µA	-
		Ourient input	τομέτ	ομ/ τ	0.00μ/τ	1
Overall accuracy (Accuracy in respect to maximum digital output value)	±1% When 1/4000 is set: ±4(When 1/8000 is set: ±8(When 12000 is set: ±12	0				

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

									0:0	ompatible,∆ : Par	tial change required, ×: Incompatible
					Q64AD					Compatibility	Precautions for replacement
				0 to 10VDC (In						0	
			0	to 20mADC (In	put resistan	ce value: 2	50Ω)			Ü	
		16-bit signed binary									
				Normal resolut	ion mode: -	4096 to 409	5,			0	
			High res	olution mode: -	12288 to 12	287, -16384	to 16383)			
											If the resolution differs
				Namedia	alutian mada		l limb roods	ıtian n	no do		between AnS series and Q
		Analo	g input	Digital	olution mode Maximu	т Г	High resolu Digital		laximum		series modules, it needs to be
		rar	nge	output value	resolutio		ut value		esolution	Δ	matched using a sequence
			0 to 10V	· · · · · · · · · · · · · · · · · · ·	2.5mV		16000		.625mV		program or user range
			0 to 5V	0 to 4000	1.25m\	/ 0.44	12000	0	.416mV		settings. (Refer to Appendix 4.)
	Volta	ane	1 to 5V		1.0mV	0 10	12000	0	.333mV		, , , , , , , , , , , , , , , , , , ,
	Volte	.go	-10 to 10V		2.5mV	-1600	to 16000	0	.625mV		
			User range settings	-4000 to 4000	0.375m	-1200) to 12000	0	.333mV		
			0 to 20mA	0 to 20mA 0 to 4000		O to	0 to 12000		1.66µA	0	
	Curr	ent	4 to 20mA	0 10 4000	4μΑ		7 12000	1.33µ/			
	User		User range settings	-4000 to 4000	1.37µA	-1200	-12000 to 12000		1.33μΑ		
		Ambier		ormal resolution mode		High resolution mode					
				t temperature to 55°C	•		oient temperature 0 to 55°C				
		g input	With	Without	Ambient	With	Witho	ut	Ambient		
	rar	nge	temperatu		temperature 25±5°C	temperature			temperature 25±5°C		
			drift	drift		drift	drift		2010 0	C	
		0 to 10		on compensation		compensation	compens	ation			
		-10 t				±0.3%	±0.49	%	±0.1%		
		10 V				(±48 digits)	(±64 dig	gits)	(±16 digits)		
	Voltage	0 to 5	iV							0	
	voltage	1 to 5	V								
		Use									
		rang	±0.3%	±0.4%	±0.1%						
	settin 0 to 20m		(±12 digits) (±16 digits)	(±4 digits)	±0.3%	±0.49	%	±0.1%		
		20m/				(±36 digits)			(±12 digits)		
		4 to							- '		
	Current	20m	A								
		Use									
		range									
		setting	yo								

Item	A1S64AD					
Maximum conversion speed	20ms/channel					
Absolute maximum input	Voltage: ±15V Current: ±30mA					
Analog input points	4 channels/module					
Maximum number of writes for E^2 PROM	-					
Isolation method	Between the input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated					
Dielectric withstand voltage	Between the input terminal and programmable controller power supply: 500VAC, for 1 minute					
Insulation resistance	Between the input terminal and programmable controller power supply: 500VDC, 5M Ω 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 : Oompatible,	△ . Partial change required, *. Incompatible	
Q64AD	Compatibility	Precautions for replacement	
80μs/channel (When there is temperature drift compensation, the time calculated by adding 160μs will be used regardless of the number of channels used.)	0	The conversion speed of Q64AD to A1S64AD has become quick. And then, on A1S64AD, the noise that did not import on A1S64AD can be imported as analog signal. In this case, use the averaging processing function to remove the effect of noise.	
Voltage: ±15V	0		
Current: ±30mA	0		
4 channels/module	0		
Max. 100,000 times	0		
Between the I/O terminal and programmable controller power supply:			
photocoupler isolation	0		
Between channels: not isolated			
Between the I/O terminal and programmable controller power supply: 500VAC, for 1 minute	0		
Between the I/O terminal and programmable controller power supply: 500VDC, 20M Ω 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	Δ		

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 X5		Y4 Y5		X4 X5	Use prohibited	Y4 Y5	Use prohibited		
X6		Y6		X6		Y6			
X7 X8		Y7 Y8		X7 X8	High resolution mode status flag	Y7 Y8			
X9		Y9	I I a a mark the transfer	X9	Operating condition setting completed flag	Y9	Operating condition setting request		
XA		YA	Use prohibited	XA	Offset/gain setting mode		User range writing request		
ХВ		YB		XB	Channel change completed flag	YB	Channel change request		
XC		YC		XC	Use prohibited	YC	Use prohibited		
XD		YD)	XD	Maximum value/ minimum value reset completed flag	YD	Maximum value/ minimum value reset request		
XE	Use prohibited	YE		XE	A/D conversion completed flag	YE	Use prohibited		
XF		YF		XF	Error flag	YF	Error clear request		
X10 X11		Y10 Y11							
X12		Y12	Error reset	1					
X13		Y13							
X14		Y14							
X15		Y15							
X16		Y16							
X17 X18		Y17 Y18							
X19		Y19	Use prohibited						
X1A		Y1A	ooc prombited						
X1B		Y1B							
X1C		Y1C							
X1D		Y1D							
X1E		Y1E							
X1F		Y1F							

2.2.4 Buffer memory address comparison

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

	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	time, count	CH1 Average time/average number of times			
2	CH1 Average time, count	D/M	2	CH2 Average time/average number of times		
3	CH2 Average time, count	K/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 (Lise prohibited)		
7	System area (Use prohibited)		7	System area (Ose prombhed)	_	
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		12	CH2 Digital output value	R	
13	CH4 Digital output value		13	CH3 Digital output value		
14			14	CH4 Digital output value	1	
15	0		15			
16	System area (Use prohibited)	-	16	(1)		
17			17	System area (Use pronibited)	-	
18	Write data error code	Б	18			
19	A-D conversion completed flag	7 K	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		
			34	CH3 Maximum value	R	
			35	CH3 Minimum value		
			36	CH4 Maximum value		
			37	CH4 Minimum value		
			38 to 157	System area (Use prohibited)	-	
			158 159	Mode switching setting	R/W	
			160 to	System area (Use prohibited)	-	
			200	Pass data classification setting	R/W	
			201	System area (Use prohibited)	-	
			202	CH1 Industrial shipment settings offset value		
			203	CH1 Industrial shipment settings gain value	-	
			204	CH2 Industrial shipment settings offset value	•	
			205	CH2 Industrial shipment settings gain value	-	
			206	CH3 Industrial shipment settings offset value	R/W	
			207	CH3 Industrial shipment settings gain value	1	
			208	CH4 Industrial shipment settings offset value	1	
			209	CH4 Industrial shipment settings gain value	•	

Q64AD							
Address (decimal)	Name	Read/write					
210	CH1 User range settings offset value						
211	CH1 User range settings gain value						
212	CH2 User range settings offset value						
213	CH2 User range settings gain value	R/W					
214	CH3 User range settings offset value	11/11					
215	CH3 User range settings gain value						
216	CH4 User range settings offset value						
217	CH4 User range settings gain value						

2.3 A1S68AD (Replacing with the Q68ADV or Q68ADI)

2.3.1 Performance specifications comparison

It	em		A1S6	8AD				
Analog input	Voltage	-10 to 0 to +10V	DC (Inpu	t resistance value: 1MΩ	2)			
Analog input	Current	0 to +20mADC (Input resistance value: 250Ω)						
Digital output		16-bit signed binary						
			I/O chara	cteristics				
		Analog in	put	Digital output				
		0 to +10		0 to +4000				
		-10V to +		-2000 to +2000				
		0V to 5V or 0 t		0 to +4000				
		1 to 5V or 4 to		0 to +4000				
.,		1.10 07 01.1	20	0.10 1.000				
I/O characteris maximum reso		M	1aximum	resolution				
		Analog in	put	Digital output				
		0 to +10		2.5mV				
		-10V to +		5mV				
		0V to 5'		1.25mV				
		1 to 5\		1mV				
		0 to 20m		5μΑ				
		4 to 20m		4μΑ				
Overall accuracy				at full scale t value: ±40)				

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

 						0:0		tial change required, ×: Incompatible
	Q68AD				Q68ADI		Compatibility	Precautions for replacement
	-10 to 10\			_				
(Input resistance value: 1MΩ)							Δ	The voltage/current cannot be
_					20mAD0			mixed for one module.
				(Input resist	tance valu	ue: 250Ω)		
			t signed bin	-				
		(Normal resolut					0	
	High res	olution mode: -	12288 to 12	287, -16384 t	o 16383)			
Analog	g input		olution mode		igh resoluti			
ran		Digital output value	Maximur resolution	"		Maximum resolution		
	0 to 10V	value	2.5mV	0 to 1		0.625mV		
	0 to 5V	0 to 4000	1.25mV			0.416mV		If the resolution differs
\/-14	1 to 5V		1.0mV	0 to 1	2000	0.333mV		between AnS series and Q
Voltage	-10 to 10V		2.5mV	-16000 to	o 16000	0.625mV		series modules, it needs to be
	User range settings	-4000 to 4000	0.375m\	/ -12000 to	o 12000	0.333mV	Δ	matched using a sequence
	0 to 20mA	0.4.4000	5µA	2		1.66µA		program or user range
Current	4 to 20mA	0 to 4000	4µA	0 to 1	2000	1.33µA		settings. (Refer to Appendix 4.)
Current	User range settings	-4000 to 4000	1.37µA	-12000 to	o 12000	1.33µA		
	Normal resolution mo			<u> </u>				
	Ambient temperature			Ambient temperature				
Analog inpu	t With	to 55°C Without	Ambient	With	55°C Withou	Ambient		
range	temperatu		temperature	temperature	temperat	temperature		
	drift	drift	25±5°C	drift	drift	25±5°C		
		ion compensation	1	compensation	compensa	ation		
0 to 1				±0.3%	±0.4%	±0.1%		
-10 t				(±48 digits)	(±64 digi	its) (±16 digits)		
0 to 5								
Voltage 1 to 5							0	
use								
rang	±0.3%	±0.4%	±0.1%					
settin	gs (±12 digit		(±4 digits)	0.00/	0.40/			
0 to)			±0.3% (±36 digits)	±0.4% (±48 digi			
4 to				(±30 digits)	(±40 digi	its) (±12 digits)		
Current 20m								
use								
rang								
settin	gs							
							1	1

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				
Aboolate maximum input	Current: ±30mA				
Analog input points	8 channels/module				
Maximum number of writes for E ² PROM	-				
Isolation method	Between the input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated				
Dielectric withstand voltage	-				
Insulation resistance	-				
Number of occupied I/O points	32 points (I/O assignment: special 32 points)				
Connected terminal	20-point terminal block				
Applicable wire size	0.75 to 1.5mm ²				
Applicable solderless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A				
Internal current consumption (5VDC)	0.40A				
Weight	0.27kg				

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

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

2.3.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S68AD	Q68ADV/I	Precautions for replacement
A/D conversion enable/disable	Specifies whether to enable or disable the A/D conversion for each channel. By disabling the conversion for the channels that are not used, the sampling time can be shortened.	0	0	
Sampling processing	The A/D conversion for analog input values is performed successively for each channel, and the digital output value is output upon each conversion.	0	0	The sampling processing time changes depending on the number of channels used (number of channels set to A/D conversion enable) and whether, with or without the temperature drift compensation function. (a) Without temperature drift compensation function (processing time) = (number of channels used) × 80 (µs/1 channel) (b) With temperature drift compensation function (processing time) = (number of channels used) × 80 (µs/1 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		
X4		Y4		X4	Use prohibited	Y4	Use prohibited	
X5 X6		Y5 Y6		X5 X6		Y5 Y6		
X7 X8		Y7 Y8		X7 X8	High resolution mode status flag	Y7 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	Use prohibited	YB		ХВ	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 Y13	Error reset					
X13 X14		Y13						
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				Q68ADV/I			
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write		
0 A-D conversion enable/disable		R/W	0	A/D conversion enable/disable setting			
1	Writing data error code	R	1	CH1 Average time/average number of times	R/W		
2	Average processing specification	R/W	2	CH2 Average time/average number of times			
3			3	CH3 Average time/average number of times			
to	System area (Use prohibited)		to				
8	System area (Ose prombited)	_	8	CH8 Average time/average number of times			
9			9	Averaging process setting			
10	CH1 Average time, count		10	A/D conversion completed flag			
11	CH2 Average time, count	R/W	11	CH1 Digital output value			
to		10,00	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 profibiled)	-	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	10/00		
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 profibiled)			
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			
	to System are		46				
			System area (Use prohibited)	-			
	157						
	158 Mode switching setting		Mode switching setting	R/W			
			159	Mode switching setting	IN/VV		
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	T./ V V		
			219	CH1 User range settings gain value			
			to		1		
			232	CH8 User range settings offset value			
			233	CH8 User range settings gain value]		

2 ANALOG INPUT MODULE REPLACEMENT Memo

2.4 A1S68AD (Replacing with the Q68AD-G)

2.4.1 Performance specifications comparison

It	em	A1S68AD						
	Voltage	-10 to 0 to +10VDC (Inp	ut resistance value: 1MΩ)					
Analog input	Current	0 to +20mADC (Input	resistance value: 250Ω)					
Digital output		16-bit sig	ned binary					
		I/O chara	acteristics					
I/O characteris maximum resc		Analog input 0 to +10V -10V to +10V 0V to 5V or 0 to 20mA 1 to 5V or 4 to 20mA Maximum Analog input 0 to +10V -10V to +10V	Digital output 0 to +4000 -2000 to +2000 0 to +4000 0 to +4000 n resolution Digital output 2.5mV 5mV					
		0V to +5V 1 to 5V 0 to 20mA 4 to 20mA	1.25mV 1mV 5μA 4μA					
Overall accuracy	Reference accuracy	Within ±1% at full scale (Digital output value: ±40)						
	Temperature coefficient	0.5	-					
Maximum con (sampling cycl			channel					
Response time	·	(The speed is 1ms/channel on all channels if averaging processing is set even for one channel.) -						
Absolute maxi	mum input	_	e: ±35V t: ±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		to 4095,		0	
		High resol	ution mode: -12	288 to 12287,	-16384 to 16383)			
				<u></u> -				
			Normal reso	lution mode	High resolu	ition mode		
	Input	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 10 12000	0.333mV		between AnS series and Q
	Voltage	1 to 5V (Expanded mode)	-1000 to 4500	1.0mV	-3000 to 13500	0.333mV	Δ	series modules, it needs to be
		-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV		matched using a sequence
		Users range setting		0.375m V	-12000 to 12000	0.333mV		program or user range
		0 to 20mA	0 to 4000	5μA	0 to 12000	1.66µA		settings. (Refer to Appendix 4.)
		4 to 20mA	0 10 1000	4μA	0 10 12000	1.33µA		
	Current	4 to 20mA (Expanded mode)	-1000 to 4500	4μΑ	-3000 to 13500	1.33µA		
		Users range setting	-4000 to 4000	1.37µA	-12000 to 12000	1.33µA		
			Reference	accuracy: ±0.1	1%			
	Normal resolution mode: ±4 digits High resolution mode (0 to 10V, -10 to 10V): ±16 digits High resolution mode (Other than the above ranges): ±12 digits							
	±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.	
	Voltage: ±15V current: ±30mA							

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 metriod	Between channels: not isolated	
Dielectric withstand voltage	<u>-</u>	
Insulation resistance		
Ilisulation resistance	-	
Newsbarraf accession 11/0 mainta	32 points	
Number of occupied I/O points	(I/O assignment: special 32 points)	
Connected terminal	20-point terminal block	
Applicable wire size	0.75 to 1.5mm ²	
Applicable solderless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A	
Internal current consumption		
(5VDC)	0.4A	
Weight	0.27kg	

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

	1 , 3 1 , 1				
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: $500 VDC,10 M\Omega \text{ or more}$ Between channels: $500 VDC,10 M\Omega \text{ or more}$	0				
16 points (I/O assignment: intelligent, 16 points)	Δ	The number of occupied I/O points has changed to 16 points.			
40-pin connector	×				
Within 0.3mm ²	×	Wiring change is required.			
-	×				
0.46A	Δ	Recalculation of internal current consumption (5VDC) is required.			
0.16kg	Δ				

2.4.2 Functional comparison

O: Available, -: Not available

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

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

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

2.4.3 I/O signal comparison

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

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

A1S68AD				Q68AD-G				
Device 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		
X1 X2	Error flag	Y2		X2		Y2		
Х3		Y3		Х3	Llaa probibited	Y3		
X4		Y4		X4	Use prohibited	Y4	Use prohibited	
X5		Y5		X5		Y5	ooo promisiloo	
X6		Y6		X6	Lligh recolution mode	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	
XB		YB		YB		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			minimum value reset	YD	minimum value reset	
					completed flag		request	
XE	Use prohibited	YE		XE	completed flag		Use prohibited	
XF		YF		XF	Error flag	YF	Error clear request	
X10		Y10						
X11 X12		Y11 Y12	Terar road					
X12 X13		Y13	Error reset					
X14		Y14						
X15		Y15						
X16		Y16						
X17		Y17						
X18		Y18						
X19		Y19	Use prohibited					
X1A X1B		Y1A Y1B						
X1C		Y1C						
X1D		Y1D						
X1E		Y1E						
X1F		Y1F						

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	K		Moving average/Time constant settings		
2	Average processing apositiontion	R/W	2	CH2 Average time/Average number of times/		
2	Average processing specification	IN/VV	2	Moving average/Time constant settings	R/W	
3			3	CH3 Average time/Average number of times/	TC/VV	
3			3	Moving average/Time constant settings		
to	System area (Use prohibited)		to			
8	System area (Ose prombited)	_	8	CH8 Average time/Average number of times/		
0			O	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		F/VV	to			
17	CH8 Average time, count		17	CH7 Digital output value	R	
18	System area (Hea probibited)		18	CH8 Digital output value		
19	System area (Use prohibited)	-	19	Error code		
20	CH1 Digital output value		20	Setting range (CH1 to CH4)		
21	CH2 Digital output value		21	Setting range (CH5 to CH8)		
22	CH3 Digital output value		22	Offset/gain setting mode offset specification		
23	CH4 Digital output value		23	Offset/gain setting mode gain specification		
0.4	CLIE Digital autout value		0.4	Averaging process specification (CH1 to	D/4/	
24	CH5 Digital output value	R	24	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	1		
28	A-D conversion completed flag	R/W	28	System area (Use prohibited)	-	
29	System area (Use prohibited)	-	29			
		·	30	CH1 Maximum value		
			31	CH1 Minimum value		
			to		R	
			44	CH8 Maximum value		
			45	CH8 Minimum value		
			46	System area (Use prohibited)	-	
			47	Input signal error detection extended/input		
			47	signal error detection setting	R/W	
			48	Warning output setting		
			49	Input signal error detection flag		
			50	Warning output flag (Process alarm)	R	
			51	Warning output flag (Rate alarm)	1	
			52	System area (Use prohibited)	-	
			53	Scaling enable/disable setting	R/W	
			54	CH1 Scaling value		
			to	-	R	
			61	CH8 Scaling value	1	

	Q68AD-G	
Address	Name	Read/write
(decimal)		ixeau/wiite
62	CH1 Scaling lower limit value	
63	CH1 Scaling upper limit value	
to		R/W
76	CH8 Scaling lower limit value	
77	CH8 Scaling upper limit value	
78		
to	System area (Use prohibited)	-
85	CHA Process alarma lavvan lavvan limeit valva	
86 87	CH1 Process alarm lower lower limit value	
88	CH1 Process alarm lower upper limit value	
89	CH1 Process alarm upper lower limit value	
to	CH1 Process alarm upper upper limit value	
114	CH8 Process alarm lower lower limit value	
115		
116	CH8 Process alarm lower upper limit value CH8 Process alarm upper lower limit value	
117	1 1	
117	CH8 Process alarm upper upper limit value CH1 Rate alarm warning detection period	
to	OTT INAIC AIAITH WAITHING DELECTION PERIOD	
125	CH8 Rate alarm warning detection period	
126	CH1 Rate alarm upper limit value	
127	CH1 Rate alarm lower limit value	
to	Chi Rate alarm lower limit value	
140	CH9 Bata alarm upper limit value	R/W
141	CH8 Rate alarm upper limit value CH8 Rate alarm lower limit value	FK/VV
141	CH1 Input signal error detection setting	
142	, ,	
142	value/CH1 Input signal error detection lower limit setting value	
to	innit setting value	
ιο	CH8 Input signal error detection setting	
149	value/CH8 Input signal error detection lower	
143	limit setting value	
	•	
150	CH1 Input signal error detection upper limit	
to	setting value	
to	CH8 Input signal error detection upper limit	
157	setting value	
158	Setting value	
159	Mode switching setting	
160		
to	System area (Use prohibited)	_
199	System area (636 prombited)	_
200	Save data classification setting	R/W
200	System area (Use prohibited)	
202	CH1 Factory default offset value	=
202	CH1 Factory default gain value	
to	orri actory actacit gain value	
216	CH8 Factory default offset value	
217	CH8 Factory default gain value	
218	CH1 User range settings offset value	R/W
219	CH1 User range settings onset value	
to	Citi Osci rango somings gam value	
232	CH8 User range settings offset value	
232	CH8 User range settings onset value	
200	John Coor range settings gain value	l

3 ANALOG OUTPUT MODULE REPLACEMENT

3.1 List of Analog Output Module Alternative Models for Replacement

AnS/QnAS s	eries		Transition to Q series
Product	Model	Model	Remarks (Restrictions)
		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
	A1S62DA	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
Analog output module	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: 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.

⊠Point -

(1) Converesion adapter

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

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

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

(2) Inrush Current

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

If an overcurrent occurs please consider the measures below.

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

3.2 A1S62DA (Replacing with the Q62DAN)

3.2.1 Performance specifications comparison

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

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

					0:0	•	tial change required, ×: Incompatible
		Q	62DAN			Compatibility	Precautions for replacement
							If the resolution differs
16 bit signed binary							between AnS series and Q
16-bit signed binary Normal resolution mode: -4096 to 4095							series modules, it needs to be
				-16384 to 16383		0	matched using a sequence
	nigh reso	iution mode 12	.200 10 12201, -	-10304 10 10303			program or user range
							settings. (Refer to Appendix 4.)
		Voltage:	-10 to 10VDC				
	(Ext	ernal load resist	ance value: 1k	Ω to 1M Ω)			
		Current:	0 to 20mADC			0	
	(E)	kternal load resis	stance value: 0	to 600Ω)			
		Normal reso	olution mode	High resolu	tion mode		
	og output	Digital input	Maximum	Digital input	Maximum		
	range	value	resolution	value	resolution		
	0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV		If the resolution differs
	1 to 5V	0 10 4000	1.0mV	0 10 12000	0.333mV		
Voltage	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV		between AnS series and Q
	User range		0.75mV	-12000 to 12000	0.333mV	Δ	series modules, it needs to be
	settings 0 to 20mA		F A		1.66µA		matched using a sequence
	4 to 20mA	0 to 4000	5μA 4μA	0 to 12000	1.33µA		program or user range
Current	User range				·		settings. (Refer to Appendix 4.)
	settings	-4000 to 4000	1.5µA	-12000 to 12000	0.83μΑ		
	Am	bient temperatu					
(voltage: ±10mV, current: ±20μA)						0	
	Amb	pient temperatur					
(voltage: ±30mV, current: ±60μA)							
80μs/channel					0		
Voltage: ±12V						0	
 Current: 21mA						0	
			nels/module			0	
		Max. 10	00,000 times			0	
		A	vailable			0	

Item		A1S62DA				
Isolation method		Between the output terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated				
Dielectric withs	tand voltage	•				
Insulation resis	tance					
Number of occi	upied I/O points	32 points (I/O assignment: special 32 points)				
Connected term	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	0.80A				
External	Voltage	-				
power supply	Current consumption	-				
	Inrush current	•				
Weight		0.32kg				

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

	O. 0	ompatible,△: Partial change required, ×: incompatible			
	Q62DAN	Compatibility	Precautions for replacement		
	Between the I/O terminal and programmable controller power supply: photocoupler isolation				
	Between output channels: not isolated	0			
	Between external power supply and analog output: transformer isolation				
	Between the I/O terminal and programmable controller power supply: 500VAC, for 1 minute	0			
	Between external power supply and analog output: 500VAC, for 1 minute	0			
	Between the I/O terminal and programmable controller power supply:				
	500VDC, 20M Ω or more	0			
	Between external power supply and analog output: 500VDC, $20M\Omega$ or more				
	40 mainta		The number of occupied I/O		
	16 points (I/O assignment: intelligent 16 points)	Δ	points has changed to 16		
			points.		
	18-point terminal block	×	No.		
	0.3 to 0.75mm ²	×			
	R1.25-3		Wiring change is required.		
	(Solderless terminals with an insulation sleeve cannot be used.)	×			
	0.33A	0			
	24\/DC +200/_ 450/				
	24VDC +20%, -15%	×			
	Ripple, spike 500mV _{P-P} or less		External power supply		
	0.15A	×	(24VDC) is required.		
	2.5A, 250µs or less	×			
·	0.19kg	Δ			

3.2.2 Functional comparison

O: Available, -: Not available

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

^{*1} For the A1S62AD, any mode (1/4000, 1/8000, or 1/12000) can be selected for both voltage and current input. For the Q62DAN, the mode is fixed at 1/4000 for both voltage and current input in normal resolution mode. In high resolution mode, the mode is fixed at 1/16000 when the input voltage range is -10 to 10V, and the mode is fixed at 1/12000 when the input voltage range is other than -10 to 10V or current is input.

3.2.3 I/O signal comparison

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

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

	A1S62DA				Q62DAN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
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		
X3		Y3		Х3	Use prohibited	Y3			
X4		Y4		X4		Y4			
X5	_	Y5		X5		Y5			
X6		Y6		X6		Y6	Use prohibited		
X7		Y7		X7	High resolution mode	Y7			
X8		Y8	Use prohibited	X8	status flag	Y8			
X9		Y9		X9	Operating condition setting completed flag	Y9	Operating condition setting request		
XA		YA		XA	Offset/gain setting mode flag	YA	User range writing request		
ХВ		YB		ХВ	Channel change completed flag	YB	Channel change request		
XC		YC		XC	Set value change completed flag	YC	Set value change request		
XD		YD		XD	Synchronous output mode flag	YD	Synchronous output request		
XE		YE		XE	Use prohibited	YE	Use prohibited		
XF	Use prohibited	YF		XF	Error flag	YF	Error clear request		
X10		Y10	CH1 D-A conversion output enable flag				_		
X11		Y11	CH2 D-A conversion output enable flag						
X12		Y12							
X13]	Y13							
X14		Y14	Use prohibited						
X15		Y15	Ose prombited						
X16		Y16							
X17		Y17							
X18		Y18	Error reset						
X19		Y19							
X1A		Y1A							
X1B		Y1B							
X1C		Y1C	Use prohibited						
X1D		Y1D							
X1E	-	Y1E							
X1F		Y1F							

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			Address			
(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	R/W	
2	CH2 digital value		2	CH2 Digital value		
3			3			
4			4			
5	System area (Lise prohibited)		5			
6	System area (Use prohibited)	-	6	System area (Lice prohibited)		
7			7	System area (Use prohibited)	-	
8			8			
9	Resolution of digital value		9			
10	CH1 set value check code	R/W	10			
11	CH2 set value check code		11	CH1 Set value check code	В	
12			12	CH2 Set value check code	R	
13			13			
14	System area (Lise prohibited)		14			
15	System area (Use prohibited) -	15	System area (Use prohibited)			
16			16	System 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	meac omterming country	1000	
			160			
			to	System area (Use prohibited)	-	
			199			
			200	Pass data classification setting	R/W	
			201	System area (Use prohibited)	-	
			202	CH1 Industrial shipment settings offset value		
			203	CH1 Industrial shipment settings gain value		
			204	CH2 Industrial shipment settings offset value		
			205	CH2 Industrial shipment settings gain value	R/W	
			206	CH1 User range settings offset value	',''	
			207	CH1 User range settings gain value		
			208	CH2 User range settings offset value		
			209	CH2 User range settings gain value		

3 ANALOG OUTPUT MODULE REPLACEMENT

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3.3 A1S62DA (Replacing with the Q64DAN)

3.3.1 Performance specifications comparison

Item	A1S62DA								
Digital input		Voltage: -4000 to 4000, -8000 to 8000, -12000 to 12000 Current: 0 to 4000, 0 to 8000, 0 to 12000							
Analog output		Voltage: -10 to 0 to +10VDC (External load resistance value: $2k\Omega$ to $1M\Omega$) Current: 0 to +20mADC (External load resistance value: 0 to 600Ω)							
I/O characteristics	Digital input value *1 The offset value *2 The offset value				Voltage output value*1 10V 5V 0 -5V -10V	Current output value*2 20mA 12mA 4mA			
Maximum resolution			000 2.5mV 000 1.25mV 000 0.83mV	(10V) 2.5	5μΑ (20mA) 5μΑ (20mA) 7μΑ (20mA)				
Overall accuracy (accuracy at maximum analog output value)		±1% (voltage: ±100mV, current: ±200μA)							
Maximum conversion speed	Within 25ms/2 channels (same time for one channel)								
Absolute maximum output	Voltage: ±12V Current: +28mA								
Analog output points			2 channe	els/module					
Number of writes to E ² PROM				-					
Output short protection			Ava	ilable					

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

					0:0	•	tial change required, ×: Incompatible
		Q	64DAN			Compatibility	Precautions for replacement
	,	16-bit s Normal resolutio lution mode: -12 Voltage:	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 4.)			
	•	ternal load resist Current: xternal load resi	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	Iution mode Maximum resolution 1.25mV 1.0mV 2.5mV 0.75mV 5μA 4μA 1.5μA	High resolu Digital input value 0 to 12000 -16000 to 16000 -12000 to 12000 0 to 12000 -12000 to 12000	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 4.)
		nbient temperatu (voltage: ±10r bient temperatur (voltage: ±30r	0				
80μs/channel							
Voltage: ±12V Current: 21mA							
			nels/module			0	
			00,000 times			0	
		A	vailable			0	

It	em	A1S62DA				
Isolation metho	od	Between the output terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated				
Dielectric withs	stand 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 solo	derless terminal	1.25-3, 1.25-YS3A, V1.25-3, V1.25-YS3A				
Internal current (5VDC)	t consumption	0.8A				
External	Voltage	-				
power supply	Current consumption	-				
	Inrush current	-				
Weight		0.32kg				

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

	O. C	Companible, \(\triangle\). Farmal change required, \(\triangle\). Incompanible				
	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, $20M\Omega$ or more					
	16 points		The number of occupied I/O			
	(I/O assignment: intelligent 16 points)	Δ	points has changed to 16			
			points.			
	18-point terminal block	×	- Wiring change is required.			
	0.3 to 0.75mm ²	×				
	R1.25-3					
	(Solderless terminals with an insulation sleeve cannot be used.)	×				
	0.34A	0				
	24VDC +20%, -15%					
	Ripple, spike 500mV _{P-P} or less	×	External newer cumple:			
	0.24A	×	External power supply (24VDC) is required.			
	2.5A, 260µs or less	×				
	0.20kg	Δ				

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 X7		Y6 Y7		X6 X7		Y6 Y7	lloo probibited		
X8		Y8	Use prohibited	X8	High resolution mode status flag	Y8	Use prohibited		
X9		Y9		X9	Operating condition setting completed flag	Y9	Operating condition setting request		
XA		YA			XA	Offset/gain setting mode flag	YA	User range writing request	
ХВ		YB		ХВ	Channel change completed flag	YB	Channel change request		
XC		YC		хс	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	OLIA D. A.	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 X14		Y13 Y14							
X14 X15		Y15	Use prohibited						
X16		Y16							
X17		Y17							
X18		Y18	Error reset						
X19		Y19							
X1A		Y1A							
X1B		Y1B	Llaa probibited						
X1C X1D		Y1C Y1D	Use prohibited						
X1E		Y1E							
X1F		Y1F							
	l .								

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	Name	Read/write	Address	Name	Read/write
(decimal)	Name	ixeau/write	(decimal)	Name	iteau/wiite
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				CH4 Digital value	
5	System area (Llas prohibited)		5		
6	System area (Use prohibited)	_	6		
7			7	Cystom area (Llas prohibited)	
8			8	System area (Use prohibited)	-
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	_
13			13	CH3 Set value check code	R
14	-		14	CH4 Set value check code	
15	System area (Use prohibited)	-	15		
16			16	1	
17			17	System area (Use prohibited)	-
		<u> </u>	18		
			19	Error code	_
			20	Setting range (CH1 to CH4)	R
			21	System area (Prohibited)	-
			22	Offset/gain setting mode Offset specification	
			23	Offset/gain setting mode Gain specification	R/W
			24	Offset/gain adjustment value specification	
			25		
			to	System area (Use prohibited)	_
			157	1	
			158		
			159	Mode switching setting	R/W
			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	
			210	CH1 User range settings offset value	R/W
			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

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3.4 A1S68DAI

3.4.1 Performance specifications comparison

Item	A1S68DAI							
Digital input	16-bit signed binary Setting range: 0 to 4096							
Analog output	1)	4 to 20mADC (External load resistance value: 0 to 600Ω)						
I/O characteristics		Digital input value 4000 2000	Analog output value 20mA 12mA 4mA					
Maximum resolution of analog value	4μΑ							
Overall accuracy (accuracy at maximum analog output value)	±1.0% (±200μA)							
Conversion speed	Within 4ms/8 channels If the frequency of access from the programmable controller CPU using the FROM/TO instructions is high, the speed may be increased for about 6ms.							
Absolute maximum output			-					
Analog output points		8 channe	ls/module					

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

					O: C	Compatible, \triangle : Part	al change required, ×: Incompatible
		Q	68DAIN			Compatibility	Precautions for replacement
	,	16-bit s Normal resolution High resolution m	0				
		0 to xternal load resis	0				
Analog	Analog output range			High resolu Digital input value 0 to 12000 -12000 to 12000	Maximum resolution 1.66µA 1.33µA 0.83µA	0	
		nt temperature 29 t temperature 0 t	0				
		80µ:	0				
			21mA			0	
		8 chan	nels/module			0	

It	em	A1S68DAI						
	es to E ² PROM	-						
Output short pr		Available						
Isolation metho		Between the output terminal and programmable controller power supply: photocoupler isolation Between output channels: not isolated						
Dielectric withs	stand voltage	-						
Insulation resis	stance	-						
Number of occupied I/O points		32 points (I/O assignment: special 32 points)						
Connected terr	minal	20-point terminal block (M3.5 × 7 screws)						
Applicable wire	e size	0.75 to 1.5mm ²						
Applicable solo	derless terminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A						
Internal current (5VDC)	t consumption	0.85A						
E. A	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	Δ	
2.5A, 230µs or less	Δ	(24VDC) is required.

3.4.2 Functional comparison

O: Available, -: Not available

	<u> </u>						A 4 0 0 0	000	O : Available, - : Not available
Item		De	scriptio	n			A1S68 DAI	Q68 DAIN	Precautions for replacement
D/A conversion enable/ disable function	Specifies whether each channel.	Specifies whether to enable or disable the D/A conversion for each channel.							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 offset value for ea The conversion spD/A output is enable.	ch channe beed stays	el. s constai				0	0	
Synchronous output function	controller CPU. The analog outpurequest (YD) is se "programmable coelapsed. However, the anal channels (CH2 to When the module analog output will	The analog output will be updated after Synchronous output equest (YD) is set to ON and the time specified as programmable controller CPU processing time +120µs" has							
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	 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	Setting enal	conversion ble/disable Conversion ble/disable Output ble/disable flag	flag is for CPU is	orcibly to	TOP stat	while us.	0	0	
Resolution mode	The resolution can be switched according to the application.*1						-	0	
Online module replacement	The resolution mode is batch-set for all channels. 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.

	A1S6		Q68DAIN					
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0	WDT error flag (A1S68DAI detection)	Y0		X0	Module ready	Y0	Use prohibited	
X1	D/A conversion READY	Y1		X1		Y1	CH1 Output enable/ disable flag	
X2	Error flag	Y2		X2		Y2	CH2 Output enable/ disable flag	
X3		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	completed flag	YC	Set value change request	
XD	Ose 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		J				

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		7	CH7 Digital value		
8	CH8 digital value		8	CH8 Digital value		
9	System area (Use prohibited)	-	9	System area (Use prohibited)	_	
10	CH1 set value check code		10	bystem area (03e prombited)	_	
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	R	13	CH3 Set value check code		
14	CH5 set value check code		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)		
			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	INOCC SWITCHING SETTING	10,00	
			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	R/W	
			210	CH5 Industrial shipment settings offset value	.,,,,	
			211	CH5 Industrial shipment settings gain value		
			212	CH6 Industrial shipment settings offset value]	
			213	CH6 Industrial shipment settings gain value		
			214	CH7 Industrial shipment settings offset value		
			215	CH7 Industrial shipment settings gain value		
			216	CH8 Industrial shipment settings offset value		
			217	CH8 Industrial shipment settings gain value	1	

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	FK/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	(External l		to 10VDC nce value: 2kΩ to 1M	Ω)				
I/O characteristics		input value 2000 1000 0 11000 2000	Analog output value 10V 5V 0V -5V -10V					
Maximum resolution of analog value		5mV						
Overall accuracy (accuracy at maximum analog output value)	±1.0% (±100mV)							
Conversion speed		Within 4ms/8 channels If the frequency of access from the programmable controller CPU using the FROM/TO instructions is high, the speed may be increased for about 6ms.						
Absolute maximum output			-					
Analog output points		8 channe	ls/module					
Number of writes to E ² PROM			-					
Output short protection		Ava	lable					
Isolation method	Between the output terminal and programmable controller power supply: photocoupler isolation Between output channels: not isolated							
Dielectric withstand voltage			-					
Insulation resistance			-					

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

		06	8DAVN		0:0		Precautions for replacement
		Qo	ODAVN			Compatibility	If the resolution differs
	•	16-bit si Normal resolution lution mode: -122	Δ	between AnS series and Q series modules, it needs to be matched using a sequence program or user range settings. (Refer to Appendix 4.)			
	-10 to 10VI	DC (External load	d resistance va	llue: 1kΩ to 1MΩ)	1	0	
		Normal reso	lution mode	High resolu	tion mode		
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 1 to 5V	0 to 4000	1.25mV 1.0mV	0 to 12000	0.416mV 0.333mV	Δ	series modules, it needs to be matched using a sequence
Voltage	-10 to 10V User range settings	-4000 to 4000	2.5mV 0.75mV	-16000 to 16000 -12000 to 12000	0.625mV 0.333mV		program or user range settings. (Refer to Appendix 4.)
		t temperature 25 temperature 0 to		, ,		0	
		80µs	s/channel			0	
		±	±12V			0	
		8 chanr	nels/module			0	
		Max. 10	0,000 times			0	
		Av	railable			0	
	E	nd programmable Between output o	·	0			
Between the	e I/O terminal a	nd programmable	e controller po	ut: transformer is wer supply: 500V ut: 500VAC, for 1	AC, for 1 minute	0	
ı	Between the I/C	terminal and pro 500VDC,	ogrammable co 20MΩ or more	ontroller power su	ıpply:	0	
Betv	veen external p	ower supply and	analog output	: 500VDC, 20MΩ	or more		

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

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

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

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/Aconversion 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.

	A1S6	8DAV		Q68DAVN					
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X0	WDT error flag (A1S68DAV detection)	Y0		X0	Module ready	Y0	Use prohibited		
X1	D/A conversion READY	Y1		X1		Y1	CH1 Output enable/ disable flag		
X2	Error flag	Y2		X2		Y2	CH2 Output enable/ disable flag		
Х3		Y3		Х3		Y3	CH3 Output enable/ disable flag		
X4		Y4		X4	Use prohibited	Y4	CH4 Output enable/ disable flag		
X5		Y5		X5		Y5	CH5 Output enable/ disable flag		
X6		Y6		X6		Y6	CH6 Output enable/ disable flag		
X7		Y7	Use prohibited	X7		Y7	CH7 Output enable/ disable flag		
X8		Y8 X8 -			High resolution mode status flag	Y8	CH8 Output enable/ disable flag		
X9		Y9		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	Llas prohibited	YC		XC	Set value change completed flag	YC	Set value change request		
XD	Use prohibited	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							

3.5.4 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)	Namo	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	O				
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	1 5	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				
			18	CH8 Set value check code				
			19	Error code				
			20	Setting range (CH1 to CH4)				
			21	Setting range (CH5 to CH8)				
			22	Offset/gain setting mode Offset specification				
			23	Offset/gain setting mode Gain specification	R/W			
			24	Offset/gain adjustment value specification				
			25					
			to	System area (Use prohibited)	-			
			157					
			158	Manda and taking a satism	DAM			
			159	Mode switching setting	R/W			
			160					
			to	System area (Use prohibited)	-			
			201					
			202	CH1 Industrial shipment settings offset value				
			203	CH1 Industrial shipment settings gain value				
			204	CH2 Industrial shipment settings offset value				
			205	CH2 Industrial shipment settings gain value				
			206	CH3 Industrial shipment settings offset value				
			207	CH3 Industrial shipment settings gain value				
			208	CH4 Industrial shipment settings offset value	_			
			209	CH4 Industrial shipment settings gain value	D/4/			
			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				
			216	CH8 Industrial shipment settings offset value	1			
			217	CH8 Industrial shipment settings gain value	1			

	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	TX/VV								
227	CH5 User range settings gain value									
228	CH6 User range settings offset value									
229	CH6 User range settings gain value									
230	CH7 User range settings offset value									
231	CH7 User range settings gain value									
232	CH8 User range settings offset value									
233	CH8 User range settings gain value									

Memo			

ANALOG I/O MODULE REPLACEMENT

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

AnS/QnAS	series	Transition to Q series					
Product	Model	Model	Remark (Restrictions)				
Analog I/O module	A1S63ADA	Q64AD2DA	Cable size is changed. Number of slots : Not changed Not changed: The number of occupied I/O points, I/O signals, and buffer memory addresses are changed. 4) Performance specifications: External power supply (24VDC) is required. 5) Functional specifications: Simple loop control (Function expressions) becomes unavailable.				
	A1S66ADA	Q64AD2DA	Cable size is changed. Number of slots: Not changed Not changed: 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				

⊠Point -

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

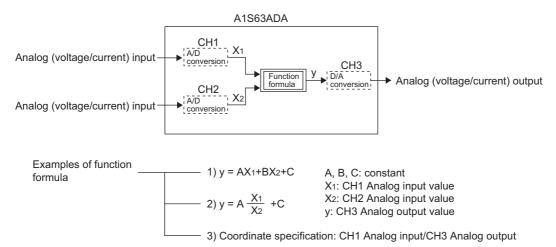
Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor		
Analog I/O module	A1S63ADA	Q64AD2DA	ERNT-ASQT63ADA		

⊠ Point -

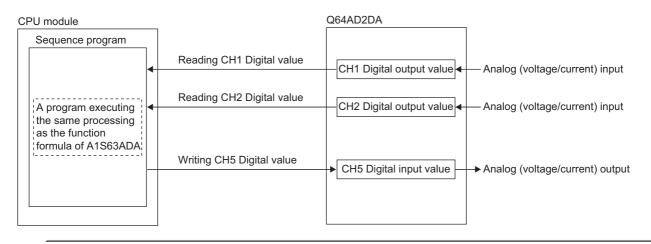
The Q64AD2DA of the replacement modules is not equipped with the simple loop control (Function expressions) function.

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

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



· Processing with the Q64AD2DA after the replacement



4.2 A1S63ADA

4.2.1 Performance specifications comparison

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

		O: Compatible, ∆: Partia									Precautions for				
	em				A1S63A	DA				Q	64AD2DA		Compatibility	replacement	
Number analog points				2 0	channels/	module				4 cha	nnels/modu	lle		0	
Angles	Voltage				0 to 0 to	10VDC value: 1M	10)		(Ir		to 10VDC	· 1MO)		0	
Analog input	Current			` '	to 0 to 2		112)		(II	•	o 20mADC	;. I IVIL2)			
	Current	(Input resistance value: 250Ω)							(In Normal resolu	•	tance value	Δ			
Digital output			WI	hen 1/40 hen 1/80	000 is set	: -4096 to : -8192 to -12288 to	8191		High resolutio	-10 on mode:	96 to 4595	to 12287,	Δ		
		characteristics		Analog input 10V 5V 20mA	(with g	tal output jain 5V/20 fset 0V/4n 1/8000 8000 4000	mA and	Input	Analog input range 0 to 10V 0 to 5V		maximum resolution 2.5mV	_	Maximum resolution 0.625mV 0.416mV		A resolution other than 1/4000 of
	eteristics	racte		0V 4mA	0	0	0		1 to 5\/	4000	1.0mV	12000	0.333mV		the AnS series and Q series
I/O charact		I/O cha		-5V -12mA	-2000	-4000	-6000	Voltage	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV	Δ	requires the support of a sequence
		Resolution		-10V oltage input	-4000 2.5mV	-8000 1.25mV	-12000 0.83mV		1 to 5V (extended mode)	-1000 to 4500	1.0mV	-3000 to 13500	0.333mV		program or the scaling function.
		Res		Current input	10µA	5µA	3.33µA		0 to 20mA	0 to	5µA	0 to	1.66µA		
								4 to 20mA 4 to 20mA (extended mode)		-1000 to 4500	4μA 4μA	12000 1.33μA -3000 to 1.33μA 13500			
Resolut	tion													0	
								Analog input Normal High resolution range resolution mode mode							
						_	Ambient temperature 0 to 10V		125+5°C	0 to 55°C ±0.4% (±64	25±5°C ±0.1% (±16				
Overall accuracy (accuracy at maximum analog output value)			±1% When 1/4000 is set: ±40 When 1/8000 is set: ±80 When 1/12000 is set: ±120					_	0 to 5V 1 to 5V 1 to 5V (extended mode) 0 to 20m. 4 to 20m. 4 to 20m. (extended extended exte	±0.49 d (±16 digits	6 (±4	±0.4% (±48 digits)	±0.1% (±12 digits)	0	
convers	Maximum conversion speed			When 1/8 hen 1/12	8000 is se 2000 is se	et: 1ms/ch et: 2ms/ch et: 3ms/cha	annel		(extended mode)	500)µs/channel	0			
Absolut maximu	te um input				Voltage ± Current ±2						ltage ±15V rrent 30mA			0	

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

O : Compatible, △ : Partial							: Partial cha	Compat-		
	Item	A1S63ADA			Q		ibility	replacement		
Number output pe	of analog oints	1 channel/module			2 cha		0			
Digital input		When 1/4000 is set Voltage: -4000 to 4000 Current: 0 to 4000 When 1/8000 is set Voltage: -8000 to 8000 Current: 0 to 8000 When 1/12000 is set Voltage: -12000 to 12000 Current: 0 to 12000		Normal resolution mode: -96 to 4095, -4096 to 4095, -1096 to 4595 High resolution mode: -384 to 16383, -288 to 12287, -16384 to 16383, -3288 to 13787						
Analog	Voltage	-10 to 0 to 10VDC (External load resistance value: $2k\Omega$ to $1M\Omega$)		-10 to 10VDC (External load resistance value: $1k\Omega$ to $1M\Omega$)						
output	Current	0 to 20mADC (External load resistance value: 0 to 600Ω)		(Externa		o 20mADC sistance valu	ue: 0 to 6	00Ω)	0	
I/O chara	acteristics	Digital input value	Voltage	Analog input range 0 to 10V 0 to 5V 1 to 5V -10 to 10V 1 to 5V (extended		Maximum resolution 2.5mV 1.25mV 1.0mV 1.0mV	_	Maximum resolution 0.625mV 0.416mV 0.333mV 0.333mV	Δ	A resolution other than 1/4000 of the AnS series and Q series requires the support of a sequence program or the scaling function.
Maximur	1/4000 2.5mV (10V) 5μA (20n 1/8000 1.25mV (10V) 2.5μA (20n aximum resolution 1/12000 0.83mV (10V) 1.7μA (20n		Current	mode) 0 to 20mA 4 to 20mA 4 to 20mA (extended mode)	0 to 4000 -1000 to 4500	5μA 4μA 4μA	13500 0 to 12000 -3000 to 13500	1.66µA 1.33µA 1.33µA	0	
Overall a (accurac maximur output va	y at n analog	±1% (Voltage: ±100mV, Current: ±200μA)	┢	Analog input range Ambient emperature 0 to 10V -10 to 10V 1 to 5V 1 to 5V (extended mode) 0 to 20mA 4 to 20mA (extended mode)	t0.4% (±16 digits)	(±4		±0.1% (±12 digits)	0	
Absolute	maximum	Voltage: ±12V Current: 28mA				ltage: ±12V			0	
•	ion speed	When 1/4000 is set: 1ms/channel When 1/8000 is set: 2ms/channel When 1/12000 is set: 3ms/channel		500μs/channel					0	
Output s		Available			,	Available			0	
Isolation		Between input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated	Between I/O terminal and programmable controller power supply: photocoupler isolation Between I/O channels: not isolated Between external power supply and analog I/O channel: not isolated					0		

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

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

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

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

4.2.2 Functional comparison

(1) Functions of A/D conversion

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

(2) Functions of D/A conversion

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

(3) Common functions

O: Available, -: Not available

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

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

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

⊠Point -

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

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

4.2.3 I/O signal comparison

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

	A1S63ADA				Q64AD2DA					
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name			
X0	WDT error	Y0		X0	Module ready	Y0	Use prohibited			
X1	Conversion READY	Y1		X1	CH1 Logging hold flag	Y1	CH1 Logging hold request			
X2	Error detection	Y2		X2	CH2 Logging hold flag	Y2	CH2 Logging hold request			
X3	CH3 output upper limit value hold	Y3		X3	CH3 Logging hold flag	Y3	CH3 Logging hold request			
X4	CH3 output lower limit value hold	Y4		X4	CH4 Logging hold flag	Y4	CH4 Logging hold request			
X5	Simple loop control in execution	Y5		X5	Use prohibited	Y5	CH5 Output enable/ disable flag			
X6	- Unusable	Y6		X6	External power off flag	Y6	CH6 Output enable/ disable flag			
X7	Onusable	Y7		X7	Input signal error detection signal	Y7				
X8		Y8	-Unusable	X8	High resolution mode status flag	Y8	Use prohibited			
X9	Offset/gain selection	Y9		Х9	Operating condition setting completion flag	Y9	Operating condition setting request			
XA	1 ,	YA		XA		YA				
XB		YB		ХВ	Use prohibited	YB	Use prohibited			
XC		YC		XC		YC				
XD		YD		XD	Maximum and minimum values reset completion flag	YD	Maximum and minimum values reset request			
XE		YE		XE	A/D conversion completed flag	YE	Use prohibited			
XF		YF		XF	Error flag	YF	Error clear request			
X10		Y10	CH3 D-A conversion value output enable							
X11		Y11	Simple loop control execution enable							
X12		Y12	Error reset	1						
X13	Unusable	Y13	CH3 upper/lower limits cancel							
X14		Y14								
X15		Y15	Unusable							
X16		Y16	Chadable							
X17		Y17								
X18		Y18								
X19	1	Y19	0,5 ,1 , , , ,							
X1A	1	Y1A	Offset/gain selection							
X1B X1C	_	Y1B Y1C	-							
X1C X1D	1	Y1C Y1D	Offset/gain setting	l						
X1D X1E	4	Y1E	Onsevyani setting	ł						
X1F	-	Y1F	Unusable							
ΛII		1 11		I						

4.2.4 Buffer memory address comparison

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

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

	A1	S63ADA						Q64AD2DA	
Address		Name	Read/write	Add	dress	(decir	nal)	Name	Read/write
(decimal)		vaille	Reau/write	CH1	CH2	CH3	CH4	Name	Reau/wille
0	A-D/D-A conversion en	able/disable setting		0	200	400	600	A/D conversion enable/disable setting	R/W
1	A-D conversion averag	ing setting		1	201	401	601	Averaging process method setting	R/W
2	CH1 averaging time/co	unt setting		2	202	402	602	Averaging process (time/number of times) setting	R/W
3	CH2 averaging time/co	unt setting		3	203	403	603		
4	CH3 output upper limit	value setting		to	to	to	to	System area	-
5	CH3 output lower limit	value setting	R/W	9	209	409	609		
6	Simple loop control typ	e setting		10	210	410	610	A/D conversion scaling enable/disable setting	R/W
7	Constant A setting			11	211	411	611	A/D conversion scaling lower limit value	R/W
8	Constant B setting			12	212	412	612	A/D conversion scaling upper limit value	R/W
9	Constant C setting			13	213	413	613	Shifting amount to conversion value	R/W
10	CH3 digital value settin	ıg		14	214	414	614		
11	CH1 A-D conversion di	gital value		to	to	to	to	System area	-
12	CH2 A-D conversion di	gital value		19	219	419	619		
13	Simple loop control out	put calculation value	R	20	220	420	620	Input signal error detection setting	R/W
14	Resolution setting			21	221	421	621	Input signal error detection setting value	R/W
15	A-D conversion comple	eted flag		22	222	422	622		
16	Error code			to	to	to	to	System area	-
17	Coordinate points setting	<u> </u>		29	229	429	629		
18	Point 0	CH1 coordinates		30	230	430	630	Logging enable/disable setting	R/W
19		CH3 coordinates		31	231	431	631	Logging cycle setting value	R/W
20	→Point 1	CH1 coordinates		32	232	432	632	Logging cycle unit setting	R/W
21		CH3 coordinates		33	233	433	633	Logging data setting	R/W
22	Point 2	CH1 coordinates		34	234	434	634	Logging points after trigger	R/W
23		CH3 coordinates		35	235	435	635	Level trigger condition setting	R/W
24	Point 3	CH1 coordinates		36	236	436	636	Trigger data	R/W
25	·	CH3 coordinates		37	237	437	637	Trigger setting value	R/W
26	Point 4	CH1 coordinates	R/W	38	238	438	638		
27		CH3 coordinates		to	to	to	to	System area	-
28	Point 5	CH1 coordinates		99	299	499	699		_
29		CH3 coordinates		100	300	500	700	Digital output value	R
30	Point 6	CH1 coordinates	_	101	301	501	701	System area	-
31		CH3 coordinates		102	302	502	702	Scaling value	R
32	Point 7	CH1 coordinates CH3 coordinates	_	103	303	503 504	703 704	System area Maximum digital output value	- R
34		CH3 coordinates CH1 coordinates	_	104	305	505		System area	K
35	Point 8	CH3 coordinates	_	103		506	706	Minimum digital output value	R
36		CH1 coordinates	_	107	307	507	707	,	-
37	Point 9	CH3 coordinates	_	107	308	508	707	· ·	R
31		Ci io coordinates		109	309	509	709	System area	-
				110	310	510	710	Minimum scaling value	R
				111	311	511		System area	-
				112	312	512	712		R
				113	313	513	713		R
				114	314	514	714	Input signal error detection flag	R
				115	315	515	715	,	
				to	to	to	to	System area	_
				119	319	519	719		
				120	320	520	720	Oldest pointer	R
				121	321	521	721	Latest pointer	R
				122	322	522	722	Logging data points	R
				123	323	523	723	Trigger pointer	R

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

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

	Q64AD2DA	
Address (decimal)	Name	Read/write
1200		
to	System area	-
1599		
1600	Level data 0	R/W
1601	Level data 1	R/W
1602	Level data 2	R/W
1603	Level data 3	R/W
1604 1605	Level data 4 Level data 5	R/W R/W
1605	Level data 6	R/W
1607	Level data 7	R/W
1608	Level data 8	R/W
1609	Level data 9	R/W
1610	-	
to	System area	-
1699		
1700	CH1 Digital output value	R
1701	CH2 Digital output value	R
1702	CH3 Digital output value	R
1703	CH4 Digital output value	R
1704		
to	System area	-
1709		
1710	CH1 Scaling value	R
1711 1712	CH2 Scaling value CH3 Scaling value	R R
1712	CH4 Scaling value	R
1714	OTH Scaling value	- 1
to	System area	_
1719	-,	
1720	CH1 Maximum digital output value	R
1721	CH1 Minimum digital output value	R
1722	CH2 Maximum digital output value	R
1723	CH2 Minimum digital output value	R
1724	CH3 Maximum digital output value	R
1725	CH3 Minimum digital output value	R
1726	CH4 Maximum digital output value	R
1727	CH4 Minimum digital output value	R
1728	0	
to 1739	System area	-
1740	CH1 Maximum scaling value	R
1740	CH1 Minimum scaling value	R
1742	CH2 Maximum scaling value	R
1743	CH2 Minimum scaling value	R
1744	CH3 Maximum scaling value	R
1745	CH3 Minimum scaling value	R
1746	CH4 Maximum scaling value	R
1747	CH4 Minimum scaling value	R
1748		
to	System area	-
1763		
1764	CHS Set value check code	R
1765	CH6 Set value check code	R
1766 to	System area	
1773	System area	_
1773	CH5 Real conversion digital value	R
1775	CH6 Real conversion digital value	R
1776	- J	,
to	System area	-
1789		
	•	•

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

		Q64AD2E)A		
Address (decimal)		Read/write			
1800	Latest add	dress of e	rror history		R
1801					
to	System ar	-			
1809					
1810					
	1		First two	Last two	
1811			digits of	digits of	
	History 1	Error	the year	the year	R
1812		time	Month	Day	
1813			Hour	Minute	
1814			Second	Day of the week	
1815				the week	
to	System ar	ea.			_
1819	Oysioin ai	ca			
1820		Error cod	de .		
1020	1	LI101 000	First two	Last two	
1821			digits of	digits of	
	l		the year	the year	_
1822	History 2	Error	Month	Day	R
1823		time	Hour	Minute	
				Day of	•
1824			Second	the week	
1825		•	•	•	
to	System ar	ea			-
1829					
1830		Error cod	de		
	1		First two	Last two	
1831			digits of	digits of	
	History 3	Error	the year	the year	R
1832		time	Month	Day	
1833			Hour	Minute	
1834			Second	Day of the week	
1835		1	I	1	
to	System ar	ea			-
1839	1				
1840		Error cod	de		
	1		First two	Last two	1
1841			digits of	digits of	
	History 4	Error	the year	the year	R
1842]	time	Month	Day	
1843	1		Hour	Minute	
1844			Second	Day of the week	
1845		<u> </u>	1	THE WEEK	
to	System ar	ea			_
1849	, , , , , , , , , , , , , ,				
1850		Error cod	de		
	1		First two	Last two	1
1851			digits of	digits of	
	Llictor: 5		the year	the year	
1852	History 5	Error	Month	Day	R
1853	1	time	Hour	Minute	1
1854			Second	Day of	1
				the week	
1855	Cycto	-00			
to 1859	System ar	c a			_
1009					<u> </u>

		Q64AD2D	A				
Address (decimal)		Name					
1860		Error code					
4004			First two	Last two			
1861			digits of the year	digits of the year			
1862	History 6	Error	Month	Day	R		
1863		time	Hour	Minute			
1000			Hour	Day of			
1864			Second	the week			
1865							
to	System ar	rea			-		
1869		I - .					
1870		Error code	First two	Last two			
1871			digits of	digits of			
1071			the year	the year			
1872	History 7	Error	Month	Day	R		
1873		time	Hour	Minute			
				Day of			
1874			Second	the week			
1875	04						
to	System ar	rea			-		
1879		I =	_				
1880		Error code		1144			
1881			First two digits of	Last two digits of			
1001			the year	the year	R		
1882	History 8	Error time	Month	Day			
1883			Hour	Minute			
				Day of			
1884			Second	the week			
1885							
to	System ar	rea			-		
1889							
1890		Error code	First two	Last two			
1891			digits of	digits of			
1031			the year	the year	R		
1892	History 9	Error	Month	Day			
1893		time	Hour	Minute			
4004				Day of			
1894			Second	the week			
1895							
to 1899	System ar	еа			_		
1899		Error code	9				
1300	-		First two	Last two	-		
1901			digits of	digits of			
.00.	History		the year	the year			
1902	10	Error	Month	Day	R		
1903	1	time	Hour	Minute	1		
1904			Second	Day of	1		
1905		<u> </u>	<u> </u>	the week			
to	System ar	rea			_		
1909							
1910		Error code	e				
			First two	Last two			
1911			digits of	digits of			
	History	_	the year	the year			
1912	11	Error	Month	Day	R R		
1913		time	Hour	Minute			
1914			Second	Day of			
1314			Jeconu	the week			

		Q64AD2I	24							
Address (decimal)	Name				Read/write					
1915										
to	System a	System area								
1919	1									
1920		Error co								
			First two	Last two						
1921			digits of	digits of						
	History	Error	the year	the year	R					
1922	12	time	Month	Day						
1923	<u> </u>	unio	Hour	Minute						
1924			Second	Day of						
4005				the week						
1925	Cuatama									
to 1929	System a	rea			-					
1930		Error co	do							
1930		Ellol Co	First two	Last two						
1931			digits of	digits of						
	History		the year	the year						
1932	13	Error	Month	Day	R					
1933	1	time	Hour	Minute	1					
1024	1		Co co :: -!	Day of						
1934			Second	the week						
1935			•							
to	System a	rea			-					
1939										
1940		Error co								
			First two	Last two						
1941			digits of	digits of						
4040	History	Error	the year	the year	R					
1942	14	time	Month	Day						
1943	1		Hour	Minute						
1944			Second	Day of the week						
1945				1						
to	System a	System area								
1949	1									
1950		Error co	de							
								First two	Last two	
1951			digits of	digits of						
	History	Error	the year	the year	R					
1952	15	time	Month	Day	I.					
1953			Hour	Minute						
1954			Second	Day of						
1055				the week						
1955 to	System a	rea			_					
1959	Cystein a									
1960		Error co	de		 					
.000	†		First two	Last two	-					
1961			digits of	digits of						
	History	_	the year	the year						
1962	16	Error	Month	Day	R					
1963	1	time	Hour	Minute	1					
1964]		Second	Day of						
			5550114	the week						
5000	01									
to	CH1 Log	R								
14999					<u> </u>					
15000	CLIO I -	aina det-								
to 24999	CH2 Log	yiriy data			R					
25000					 					
25000 to	CH3 Logs	etch pnin			R					
34999	O. IO LOG	ging data			'`					
2.000					1					

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

4.3 A1S66ADA

4.3.1 Performance specifications comparison

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

						O: C	ompatibl	e, ∆∶Partial	change required	d, ×: Incompatible
Ite	em	A1S66ADA			Q	64AD2DA			Compatibility	Precautions for replacement
Number analog ir points		4 channels/module		4 channels/module			0			
Analog	Voltage	-10 to 0 to 10VDC (Input resistance value: 1MΩ)		(Ir		to 10VDC	: 1MO)		0	
input	Current	0 to 20mADC (Input resistance value: 250Ω)		(In	0 to	o 20mADC tance value	: 250Ω)		0	
Digital ou	utput	12 bit binary value 0 to 4095		Normal resolution High resolution -163	-10 on mode:	96 to 4595	883, -288	to 12287,	Δ	
				Analog		resolution node	_	resolution node		
			Input	input range	Digital output value	Maximum resolution	Digital output value	Maximum resolution		
		Analog input range Digital output value Resolution		0 to 10V	0 to	2.5mV	0 to 16000	0.625mV		A resolution other than 1/
		0 to 10V 2.5mV		0 to 5V 1 to 5V	4000	1.25mV 1.0mV	0 to 12000	0.416mV 0.333mV		4000 of the AnS
I/O characte	ristics	Voltage	Voltage	-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV	Δ	series and Q series requires the support of a sequence
				1 to 5V (extended mode)	-1000 to 4500	1.0mV	-3000 to 13500	0.333mV		program or the scaling function.
				0 to 20mA 4 to 20mA	0 to 4000	5μA 4μA	0 to 12000	1.66µA 1.33µA		
			4 arrer	4 to 20mA (extended mode)	-1000 to 4500	4μΑ	-3000 to 13500	1.33µA		
Resolution	on								0	
			A	Analog input range		resolution ode	•	esolution node		
				Ambient emperature 0 to 10V	0 to 55°C	25±5°C	0 to 55°C ±0.4%	25±5°C ±0.1%		
Overall a	accuracy			-10 to 10V			(±64 digits)	(±16 digits)		
Overall accuracy (accuracy at maximum analog output value)	Within ±1% (±40)		0 to 5V 1 to 5V 1 to 5V (extended mode) 0 to 20mA 4 to 20mA 4 to 20mA (extended mode)	±0.4% (±16 digits)	(±4 +0.4% +0.1%		0			
Maximur conversion speed		400µs or less/4 channels (Sampling cycle: 80µs/channel)	500μs/channel			0				
Absolute maximur		Voltage ±15V Current 30mA				Itage ±15V rrent 30mA			0	

O : Compatible, $\, \Delta$: Partial change required, ×: Incompatible

If	tem	A1S66ADA	Q64AD2DA	Compatibility	Precautions for
Number	of analog	O ale avera la les adula	O ale annual a/marchille		replacement
output po		2 channels/module 12 bit binary value 0 to 4000	2 channels/module Normal resolution mode: -96 to 4095, -4096 to 4095, -1096 to 4595 High resolution mode: -384 to 16383, -288 to 12287, -16384 to 16383, -3288 to 13787	0	
Analog output	Voltage Current	-10 to 10VDC (External load resistance value: $2k\Omega$ to $1M\Omega$) 0 to 20mADC (External load resistance value: 0 to 600Ω)	-10 to 10VDC (External load resistance value: $1k\Omega$ to $1M\Omega$) 0 to $20mADC$ (External load resistance value: 0 to 600Ω)	0	
I/O chara	acteristics	, , Digital	Normal resolution High resolution	0	
		Analog output input value O to 10V 2.5mV	Analog input range		Because of the resolution
Maximur	m	Current 0 to 20mA 4 to 20mA 4 μA 5μA	0 to 5V 4000 1.25mV 0 to 0.416mV 1 to 5V 1.0mV 12000 0.333mV 1 to 5V -4000 2.5mV -16000 0.625mV	Δ	difference between the AnS series and L series, the support of a
resolutio	n		1 to 5V (extended mode) 1.0mV 1.0mV -3000 to 13500 0.333mV	Δ	sequence program, user range settings, or the scaling function is required.
			0 to 20mA 0 to 5μA 0 to 1.66μA 4 to 20mA 4000 4μA 12000 1.33μA 4 to 20mA 4 to 20mA (extended mode) 4μA -3000 to 1.33μA 13500 1.33μA		(Refer to Appendix 4.)
			Analog input Normal resolution High resolution		
			range mode mode Ambient temperature 0 to 55°C 25±5°C 0 to 55°C 25±5°C 0 to 10V -10 to 10V ±0.4% ±0.1% (±64 (±16 digits)) ±0.4% digits) ±0.4% digits)		
Overall accuracy (accuracy at maximum analog output value)		±1% (Voltage: ±100mV, Current: ±200μA)	0 to 5V	0	
Conversi	ion speed	240µs or less/2 channels (Sampling cycle: 80µs/channel)	500µs/channel	0	
	maximum	Voltage ±12V Current 28mA	Voltage ±12V Current 21mA	0	
Output s protectio		Available	Available	0	
Isolation		Between input terminal and programmable controller power supply: photocoupler isolation Between channels: not isolated	Between I/O terminal and programmable controller power supply: photocoupler isolation Between I/O channels: not isolated Between external power supply and analog I/O channel: not isolated	0	
Dielectric voltage	c withstand	Between input terminal and programmable controller power supply: 500VAC 1 minute	Between I/O terminal and programmable controller power supply: 500VACrms 1 minute	0	

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

Item A1S66ADA		A1S66ADA	Q64AD2DA	Compatibility	Precautions for replacement
Insulation resistance		Between input terminal and programmable controller power supply: 500VDC 5MΩ or higher	Between I/O terminal and programmable controller power supply: 500VDC 20MΩ or higher	0	
Number of I/O occupied points		64 points (input 64 points, output 64 points) (I/O assignment: output 64 points)	16 points (I/O assignment: intelligent 16 points)	Δ	The number of I/O occupied points has been changed to 16 points.
Connection terminal		20-point terminal block	erminal block A/D conversion part, D/A conversion part: 18-point terminal block External power supply 24VDC, FG connection: external power supply connector		Wiring needs to be changed.
Applicab	le wire size	0.75 to 1.25mm ² (Applicable tightening torque: 39 to 59N•cm)	A/D conversion part, D/A conversion part: 0.3 to 0.75mm ² External power supply 24VDC, FG connection: Refer to *1.	×	
Applicab	le ss terminal	1.25-3, 1.25-YS3, 2-3.5, 2-YS3A V1.25-M3, V1.25-YS3A, V2-S3, V2-YS3A	,		
	Voltage	21.6 to 26.4VDC	24VDC ±15% Ripple, spike 500mV _{P-P} or less	0	
External power supply	Current consumpt ion	0.16A	0.19A	0	
	Inrush current	-	2.5A 150µs or less	Δ	The inrush current is higher.
Internal consumption (5VDC)		0.21A	0.17A	0	
Weight		0.33kg	0.23kg	Δ	

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

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

4.3.2 Functional comparison

(1) Functions of A/D conversion

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

(2) Functions of D/A conversion

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

(3) Common functions

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

4.3.3 I/O signal comparison

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

A1S66ADA				Q64AD2DA				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0		Y0		X0	Module ready	Y0	Use prohibited	
X1		Y1		X1	CH1 Logging hold flag	Y1	CH1 Logging hold request	
X2		Y2		X2	CH2 Logging hold flag	Y2	CH2 Logging hold request	
Х3		Y3		Х3	CH3 Logging hold flag	Y3	CH3 Logging hold request	
X4		Y4		X4	CH4 Logging hold flag	Y4	CH4 Logging hold request	
X5		Y5		X5	Use prohibited	Y5	CH5 Output enable/ disable flag	
X6	CH3 digital output value	Y6	CH1 digital value setting	X6	External power off flag	Y6	CH6 Output enable/ disable flag	
X7		Y7		X7	Input signal error detection signal	Y7	Llaa wrahibitad	
X8]	Y8		X8	High resolution mode status flag	Y8	Use prohibited	
X9]	Y9	Y9		X9	Operating condition setting completion flag	Y9	Operating condition setting request
XA		YA		XA		YA		
XB		YB		XB	Use prohibited	YB	Use prohibited	
XC		YC		XC		YC		
XD	Usage disable	YD	Usage disable	XD	Maximum and minimum values reset completion flag	YD	Maximum and minimum values reset request	
XE	- Osage disable	YE		XE	A/D conversion completed flag	YE	Use prohibited	
XF		YF	CH1 D/A conversion value output enable flag	XF	Error flag	YF	Error clear request	
X10		Y10						
X11		Y11						
X12		Y12						
X13		Y13						
X14		Y14						
X15	CH4 digital output value	Y15	CH2 digital value setting					
X16	j ,	Y16]					
X17		Y17						
X18		Y18						
X19		Y19						
X1A	_	Y1A	_					
X1B		Y1B Y1C						
X1C X1D	-	Y1C Y1D	Llogge dipoble					
X1D X1E	Usage disable	Y1D Y1E	Usage disable					
\ IE	Usaye disable	TIE	CH2 D/A conversion value					
X1F		Y1F	output enable flag					

	A1S6	6ADA	
Device	0: 1	Device	0
No.	Signal name	No.	Signal name
X20		Y20	
X21	1	Y21	
X22		Y22	
X23		Y23	
X24		Y24	
X25	CH5 digital output value	Y25	
X26	CH3 digital output value	Y26	
X27		Y27	
X28		Y28	
X29		Y29	
X2A		Y2A	
X2B		Y2B	
X2C		Y2C	
X2D	Usage disable	Y2D	
X2E	Osage disable	Y2E	
X2F		Y2F	Usage disable
X30		Y30	Coago dicablo
X31		Y31	
X32		Y32	
X33		Y33	
X34		Y34	
X35	CH6 digital output value	Y35	
X36]g	Y36	
X37		Y37	
X38		Y38	
X39		Y39	
ХЗА		Y3A	
X3B		Y3B	
X3C]	Y3C	
X3D	Usage disable	Y3D	
X3E	Ĭ	Y3E	
X3F		Y3F	

4.3.4 Buffer memory address comparison

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

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

Name	Q64AD2DA											
CH1 CH2 CH3 CH4	Address (decimal)				Namo	Paad/write						
1	CH1	CH2	CH3	CH4	Name	Reau/write						
2	0	200	400	600	A/D conversion enable/disable setting	R/W						
2	1	201	401	601	Averaging process method setting	R/W						
Setting	2	202	402	602	Averaging process (time/number of times)	R/M						
to to to to System area - 10 210 410 610 A/D conversion scaling enable/disable setting R/W 11 211 411 611 A/D conversion scaling lower limit value R/W 12 212 412 612 A/D conversion scaling upper limit value R/W 13 213 413 613 Shifting amount to conversion value R/W 14 214 414 614 to to to to to System area - 19 219 419 619 Proper limit value R/W 20 220 420 620 Input signal error detection setting R/W 21 221 421 621 Input signal error detection setting value R/W 22 222 422 622 Input signal error detection setting value R/W 31 231 431 631 Logging pale error detection setting value R/W 32 232 432 632 Logging cycle setti					setting							
9	3	203	403	603								
10					System area	-						
11	9	209	409	609								
12 212 412 612 A/D conversion scaling upper limit value R/W 13 213 413 613 Shifting amount to conversion value R/W 14 214 414 614 to	10	210	410	610	3	R/W						
13	11	211	411	611	A/D conversion scaling lower limit value	R/W						
14	12	212	412	612	A/D conversion scaling upper limit value	R/W						
to to to to to 19 219 419 619 619 7.0 19 219 419 619 619 7.0 220 420 620 Input signal error detection setting R/W 21 221 421 621 Input signal error detection setting value R/W 22 222 422 622 to to to to to System area 7. 29 229 429 629 7.0 230 430 630 Logging enable/disable setting R/W 31 231 431 631 Logging cycle setting value R/W 32 232 432 632 Logging cycle unit setting R/W 33 233 433 633 Logging data setting R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 to to to to 5 System area 7. 299 499 699 7.0 19 19 10 300 500 700 Digital output value R/W 101 301 501 701 System area 7. 202 502 702 Scaling value R/W 103 303 503 703 System area 7. 203 205 505 705 System area 7. 204 104 304 504 704 Maximum digital output value R/W 105 305 505 705 System area 7. 205 205 205 705 System area 7. 205 205 205 205 705 System area 7. 205 205 205 205 205 205 205 205 205 205	13	213	413	613	Shifting amount to conversion value	R/W						
19	14	214	414	614								
20 220 420 620 Input signal error detection setting R/W 21 221 421 621 Input signal error detection setting value R/W 22 222 422 622 - - 10 to to to System area - 29 229 429 629 - 30 230 430 630 Logging enable/disable setting R/W 31 231 431 631 Logging cycle setting value R/W 32 232 432 632 Logging data setting R/W 33 233 433 633 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger setting value R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 respect	to	to	to	to	System area	-						
21 221 421 621 Input signal error detection setting value R/W 22 222 422 622 - - to to to to to - 29 229 429 629 - 30 230 430 630 Logging enable/disable setting R/W 31 231 431 631 Logging cycle setting value R/W 32 232 432 632 Logging cycle unit setting R/W 33 233 433 633 Logging points after trigger R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger setting value R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 638 <	19	219	419	619								
22 222 422 622 to to to to System area - 29 229 429 629 - 30 230 430 630 Logging enable/disable setting R/W 31 231 431 631 Logging cycle setting value R/W 32 232 432 632 Logging data setting R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 to to to to System area - 100 300 500 700 Digital output value R 101 301 501 701 System area - 102 302	20	220	420	620	Input signal error detection setting	R/W						
to to to System area - 29 229 429 629 30 230 430 630 Logging enable/disable setting R/W 31 231 431 631 Logging cycle setting value R/W 32 232 432 632 Logging cycle unit setting R/W 33 233 433 633 Logging data setting R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 to to to to to to to to syx m - to 99 299 499 699 - - - -	21	221	421	621	Input signal error detection setting value	R/W						
29 229 429 629 30 230 430 630 Logging enable/disable setting R/W 31 231 431 631 Logging cycle setting value R/W 32 232 432 632 Logging cycle unit setting R/W 33 233 433 633 Logging points after trigger R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638	22	222	422	622								
30	to	to	to	to	System area	-						
31 231 431 631 Logging cycle setting value R/W 32 232 432 632 Logging cycle unit setting R/W 33 233 433 633 Logging points after trigger R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 Trigger setting value R 100 300 500 700 Digital output value R 101 301 501	29	229	429	629								
32 232 432 632 Logging cycle unit setting R/W 33 233 433 633 Logging data setting R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 Trigger setting value R/W 38 238 438 638 Trigger setting value R 100 300 500 700 Digital output value R 101 301 501 701 System area - 102 302 502 702 Scaling value R 103 303 503 703 System area - 104 304 504 704 Maximum digital ou	30	230	430	630	Logging enable/disable setting	R/W						
33 233 433 633 Logging data setting R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638	31	231	431	631	Logging cycle setting value	R/W						
33 233 433 633 Logging data setting R/W 34 234 434 634 Logging points after trigger R/W 35 235 435 635 Level trigger condition setting R/W 36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 - - to to to to to to to System area - - - - 99 299 499 699 - - - - 100 300 500 700 Digital output value R -	32	232	432	632		R/W						
35	33	233	433	633		R/W						
36 236 436 636 Trigger data R/W 37 237 437 637 Trigger setting value R/W 38 238 438 638 - - to to to bystem area - - 99 299 499 699 - - 100 300 500 700 Digital output value R 101 301 501 701 System area - - 102 302 502 702 Scaling value R - 103 303 503 703 System area - - 104 304 504 704 Maximum digital output value R - 105 305 505 705 System area - - 106 306 506 706 Minimum digital output value R 107 307 507 707 S	34	234	434	634	Logging points after trigger	R/W						
37 237 437 637 Trigger setting value R/W 38 238 438 638 - - to to to to System area - - 99 299 499 699 -	35	235	435	635	Level trigger condition setting	R/W						
38 238 438 638 to to to System area - 99 299 499 699 - 100 300 500 700 Digital output value R 101 301 501 701 System area - 102 302 502 702 Scaling value R 103 303 503 703 System area - 104 304 504 704 Maximum digital output value R 105 305 505 705 System area - 106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value <td>36</td> <td>236</td> <td>436</td> <td>636</td> <td>Trigger data</td> <td>R/W</td>	36	236	436	636	Trigger data	R/W						
to to to to to System area - 99 299 499 699 - 100 300 500 700 Digital output value R 101 301 501 701 System area - 102 302 502 702 Scaling value R 103 303 503 703 System area - 104 304 504 704 Maximum digital output value R 105 305 505 705 System area - 106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 to to to to System area - 119 319 519 719 120 320 520 720 Oldest pointer R	37	237	437	637	Trigger setting value	R/W						
99 299 499 699 100 300 500 700 Digital output value R 101 301 501 701 System area - 102 302 502 702 Scaling value R 103 303 503 703 System area - 104 304 504 704 Maximum digital output value R 105 305 505 705 System area - 106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 51	38	238	438	638								
100 300 500 700 Digital output value R 101 301 501 701 System area - 102 302 502 702 Scaling value R 103 303 503 703 System area - 104 304 504 704 Maximum digital output value R 105 305 505 705 System area - 106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R	to	to	to	to	System area	-						
101 301 501 701 System area -	99	299	499	699								
102 302 502 702 Scaling value R 103 303 503 703 System area - 104 304 504 704 Maximum digital output value R 105 305 505 705 System area - 106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 10 to to to to System area - 119 319 519 719 120 320 520 720 Oldest pointer R	100	300	500	700	Digital output value	R						
103 303 503 703 System area - 104 304 504 704 Maximum digital output value R 105 305 505 705 System area - 106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 to to to to to system area	101	301	501	701	System area	-						
104 304 504 704 Maximum digital output value R 105 305 505 705 System area - 106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 to to to to to system area - 119 319 519 719 <t< td=""><td>102</td><td>302</td><td>502</td><td>702</td><td>Scaling value</td><td>R</td></t<>	102	302	502	702	Scaling value	R						
105 305 505 705 System area -	103	303	503	703	System area	-						
106 306 506 706 Minimum digital output value R 107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 To To To 10 to to to System area - - 119 319 519 719 To To To To To To To To To	104	304	504	704	Maximum digital output value	R						
107 307 507 707 System area - 108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 to to to to System area - 119 319 519 719 To Oldest pointer R	105		505	705	System area	-						
108 308 508 708 Maximum scaling value R 109 309 509 709 System area - 110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 to to to to System area - 119 319 519 719 T19 T	106	306	506	706	Minimum digital output value	R						
109 309 509 709 System area -	107	307	507	707	System area	-						
110 310 510 710 Minimum scaling value R 111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 T15	108	308	508	708	Maximum scaling value	R						
111 311 511 711 System area - 112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 to to to System area - 119 319 519 719 120 320 520 720 Oldest pointer R	109	309	509	709	System area	-						
112 312 512 712 Setting range R 113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 T15 T15 to to to to System area - - 119 319 519 719 T19 T19 <t< td=""><td>110</td><td>310</td><td>510</td><td>710</td><td>Minimum scaling value</td><td>R</td></t<>	110	310	510	710	Minimum scaling value	R						
113 313 513 713 A/D conversion completed flag R 114 314 514 714 Input signal error detection flag R 115 315 515 715 T15 T15 <td>111</td> <td>311</td> <td>511</td> <td>711</td> <td>System area</td> <td>-</td>	111	311	511	711	System area	-						
114 314 514 714 Input signal error detection flag R 115 315 515 715 to to to System area - 119 319 519 719 120 320 520 720 Oldest pointer R	112	312	512	712	Setting range	R						
115 315 515 715 to to to to System area - 119 319 519 719 120 320 520 720 Oldest pointer R	113	313	513	713	A/D conversion completed flag	R						
to to to to to System area - 119 319 519 719 - 120 320 520 720 Oldest pointer R	114	314	514		Input signal error detection flag	R						
119 319 519 719 120 320 520 720 Oldest pointer R	115	315	515	715								
120 320 520 720 Oldest pointer R	to	to	to	to	System area	-						
·	119	319	519	719								
121 321 521 721 Latest pointer R	120	320	520	720	Oldest pointer	R						
	121	321	521	721	Latest pointer	R						

Q64AD2DA											
Address (decimal)					Read/write						
CH1	CH2	CH3	CH4		Name						
122	322	522	722	Logging data points			R				
123	323	523	723	Trigger pointer			R				
124	324	524	724								
to	to	to	to	System area	-						
189	389	589	789								
190	390	590	790	Latest error code			R				
191	391	591	791		First two digits of the year	Last two digits of the year	R				
192	392	592	792	Error time	Month	Day	R				
193	393	593	793		Hour	Minute	R				
194	394	594	794		Second	Day of the week	R				
195	395	595	795								
to	to	to	to	System area	-						
199	399	599	799								

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

	Q64AD2DA	
Address (decimal)	Name	Read/write
1200		
to	System area	-
1599		
1600	Level data 0	R/W
1601	Level data 1	R/W
1602	Level data 2	R/W
1603	Level data 3	R/W
1604	Level data 4 Level data 5	R/W R/W
1605 1606	Level data 5	R/W
1607	Level data 7	R/W
1608	Level data 8	R/W
1609	Level data 9	R/W
1610		•
to	System area	-
1699		
1700	CH1 Digital output value	R
1701	CH2 Digital output value	R
1702	CH3 Digital output value	R
1703	CH4 Digital output value	R
1704		
to	System area	-
1709 1710	CH1 Scaling value	R
1710	CH2 Scaling value	R
1711	CH3 Scaling value	R
1713	CH4 Scaling value	R
1714		
to	System area	-
1719		
1720	CH1 Maximum digital output value	R
1721	CH1 Minimum digital output value	R
1722	CH2 Maximum digital output value	R
1723	CH2 Minimum digital output value	R
1724	CH3 Maximum digital output value	R
1725	CH3 Minimum digital output value	R
1726 1727	CH4 Maximum digital output value CH4 Minimum digital output value	R
1728	CH4 Millimum digital output value	K
to	System area	_
1739	System area	
1740	CH1 Maximum scaling value	R
1741	CH1 Minimum scaling value	R
1742	CH2 Maximum scaling value	R
1743	CH2 Minimum scaling value	R
1744	CH3 Maximum scaling value	R
1745	CH3 Minimum scaling value	R
1746	CH4 Maximum scaling value	R
1747	CH4 Minimum scaling value	R
1748	04	
to 1763	System area	-
1763	CH5 Set value check code	R
1765	CH6 Set value check code	R
1766	The second secon	11
to	System area	-
1773		
1774	CH5 Real conversion digital value	R
1775	CH6 Real conversion digital value	R
1776		
to	System area	-
1789		
	·	

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

		Q64AD2D	A		
Address (decimal)		N	ame		Read/write
1800	Latest add	dress of en	or history		R
1801					
to	System ar	ea			-
1809					
1810		Error cod	е		
			First two	Last two	
1811			digits of	digits of	
	History 1	Error	the year	the year	R
1812		time	Month	Day	
1813			Hour	Minute	
1814			Second	Day of the week	
1815		•	•	•	
to	System ar	ea			-
1819					
1820		Error cod	е		
			First two	Last two	
1821			digits of	digits of	
	History 2	Error	the year	the year	R
1822		time	Month	Day	
1823			Hour	Minute	
1824			Second	Day of the week	
1825		ı		II.	
to	System area			-	
1829					
1830		Error cod	е		
			First two	Last two	
1831			digits of	digits of	
4000	History 3	Error	the year	the year	R
1832		time	Month	Day	
1833			Hour	Minute	
1834			Second	Day of the week	
1835					
to	System ar	ea			-
1839					
1840		Error cod	е		
			First two	Last two	
1841			digits of	digits of	
1842	History 4	Error	the year	the year	R
	-	time	Month	Day	
1843	-		Hour	Minute	
1844			Second	Day of the week	
1845					
to	System area			-	
1849					
1850]	Error cod		_]
			First two	Last two	
1851			digits of	digits of	
1050	History 5	Error	the year	the year	R
1852 1853		time	Month Hour	Day	
1000	1		noul	Minute	
1854			Second	Day of the week	
1855		·			
to	System ar	ea			-
1859					

Address (decimal)		Na	me		Read/write
1860		Error code)		
			First two	Last two	
1861			digits of	digits of	
	History 6	Error	the year	the year	R
1862	,	time	Month	Day	
1863			Hour	Minute	
1864			Second	Day of the week	
1865		l			
to	System ar	ea			-
1869					
1870		Error code)		
			First two	Last two	
1871			digits of	digits of	
	History 7	Error	the year	the year	R
1872	,	time	Month	Day	
1873			Hour	Minute	
1874			Second	Day of	
1875				the week	
to	System ar	ea			_
1879	-,				
1880		Error code	9		
			First two	Last two	
1881			digits of	digits of	
			the year	the year	
1882	History 8	Error	Month	Day	R
1883		time	Hour	Minute	
1884			Second	Day of	
1885				the week	
to	System ar	ea			_
1889	- y = t = t = t = t = t = t = t = t = t =	-			
1890		Error code	<u> </u>		
1000			First two	Last two	-
1891			digits of	digits of	
			the year	the year	
1892	History 9	Error	Month	Day	R
1893		time	Hour	Minute	
				Day of	
1894			Second	the week	
1895			•		
to	System ar	ea			-
1899					
1900		Error code	•		
	1		First two	Last two	1
1901			digits of	digits of	
	History	Error	the year	the year	R
1902	10	time	Month	Day] '`
1903		anne	Hour	Minute	
1904			Second	Day of the week	
1905		<u> </u>		ule week	
to	System ar	ea			-
1909	-				
1910		Error code	9		
			First two	Last two	1
1911			digits of	digits of	
	History	_	the year	the year	_
1912	11	Error	Month	Day	R
1913	1	time	Hour	Minute	1
1014	1		Socord	Day of	
1914			Second	the week	

		Q64AD2I	DA		
Address (decimal)		1	Name		Read/write
1915					
to	System a	rea			_
1919	1				
1920		Error co	de		
1020		Ellol oo	First two	Last two	
1921			digits of	digits of	
1021	History		the year	the year	
1922	12	Error	Month	Day	R
1923	12	time	Hour	Minute	
1925			Tioui		
1924			Second	Day of the week	
1925				lile week	
	04				
to	System a	rea			-
1929		1_			
1930		Error co			
			First two	Last two	
1931			digits of	digits of	
	History	Error	the year	the year	R
1932	13	time	Month	Day	
1933			Hour	Minute	
1934			Second	Day of	
1304			Jecond	the week	
1935					
to	System a	rea			-
1939					
1940		Error co	de		
			First two	Last two	
1941			digits of	digits of	_
	History		the year	the year	
1942	14	Error	Month	Day	R
1943		time	Hour	Minute	
				Day of	
1944			Second	the week	
1945					
to	System a	rea			-
1949	1				
1950		Error co	de		
			First two	Last two	
1951			digits of	digits of	
	History		the year	the year	
1952	15	Error	Month	Day	R
1953	"	time	Hour	Minute	
1000			rioui	Day of	
1954			Second	the week	
1955		L		THE WEEK	
to	System a	rea			_
1959	- Cystein ai	Ju			-
1960	-	Error co	do		
1900		EHOI CO		Loct to-	
1061			First two	Last two	
1961	11:-4:		digits of	digits of	
1000	History	Error	the year	the year	R
1962	16	time	Month	Day	
1963			Hour	Minute	
1964			Second	Day of	
5000				the week	
5000	CH1 Logging data			_	
to	CH1 Logging data			R	
14999					
15000					
to	CH2 Logging data			R	
24999					
25000					
to	CH3 Logg	jing data			R
34999					

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



TEMPERATURE INPUT MODULE REPLACEMENT

5.1 List of Temperature Input Module Alternative Models for Replacement

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

⊠Point -

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

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor
	A1S68TD	Q68TD-G-H01	ERNT-ASQT68TD-H01*1
Temperature input module	A13001D	Q68TD-G-H02	ERNT-ASQT68TD-H02*1*2
	A1S62RD3(N)	Q64RD	ERNT-ASQT62RD
	A1S62RD4(N)	Q04ND	

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

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



5.2 A1S68TD (Replacing with the Q64TD)

5.2.1 Performance specifications comparison

(1) Performance specifications comparison

Detected temperature walue 16-bit signed binary (0 to 1700°C 16-bit signed binary (0 to 1700°C 16-bit signed binary (170 to 1700°C 1700°C 16-bit signed binary (1700°C 1700°C 17	Item		A1S68TD				
temperature value	Temperature se	ensor input	0 to 1700°C				
Scaling value 16-bit signed binary (0 to 2000)	Output	temperature					
Applicable thermocouple Refer to Section 5.2.1 (2). Measured temperature range accuracy Overall accuracy Isolated area Isolated area Between thermocouple input and programmable controller power supply Between cold junction compensation input (Pt100) and programmable controller power supply Disconnection detection Number of recruined I/O points Refer to Section 5.2.1 (2). Refer to Section 5.2.1 (2). Available Isolated area Isolation method Dielectric withstand voltage Insulation resistance SMΩ or more using 500VAC, for 1 minute 500VAC, for 1 minute resistance tester Available Number of temperature sensor input (Pt100) and programmable controller power supply Standards Applicable thermocouple input and programmable controller power supply Transformer isolation 500VAC, for 1 minute resistance tester Available Number of temperature sensor input points Standards Available Number of occupied I/O points				16-bit signed binary (0 to 2000)			
Refer to Section 5.2.1 (2).		compliance		JIS C1602-1981	1		
Accuracy Overall accuracy *1 Maximum conversion speed Isolated area Isolation method Dielectric withstand voltage Insulation resistance	Applicable then	mocouple	Refer to Section 5.2.1 (2).				
Solation method Solated area Isolation method Dielectric withstand voltage Insulation resistance		perature range	Refer to Section 5.2.1 (2).				
Isolated area Isolation method Dielectric withstand voltage Insulation resistance	Overall accurac	су	*1				
Isolated area Isolation method Voltage Insulation resistance	Maximum conv	ersion speed	400ms/8 channels				
Number of temperature sensor input points 8 channels + 1 channel for Pt100/module Number of occupied I/O points 32 points	Isolation metho	od	Between thermocouple input and programmable controller power supply Between thermocouple input channels Between cold junction compensation input (Pt100) and	Transformer isolation	voltage 500VAC, for 1 minute	5MΩ or more using 500VDC insulation	
input points 8 channel of Pt 100/module 32 points	Disconnection (detection		Available			
Number of occupied I/() points I		perature sensor	8 channels + 1 channel for Pt100/module				
(I/O assignment: special 32 points)	Number of occu	upied I/O points	(I/O assignment: special 32 points)				
External connection system 20-point terminal block	External conne	ction system	20-point terminal block				
Applicable wire size 0.75 to 1.5mm ²	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) 0.32A		consumption		0.32A			
Weight 0.28kg	Weight			0.28kg			

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

Q64TD	Compatibility	Precautions for replacement
-270 to 1820°C	_	The measured temperature range differs depending on the thermocouple used.
16-bit signed binary (-2700 to 18200: value up to the first decimal place \times 10)	0	
16-bit signed binary (0 to 100 (0 to 100%))	Δ	The concept of scaling value differs. To use the scaling values, program needs to be reviewed.
JIS C1602-1995		As the applicable thermocouples and thermocouple compliance standards
Refer to Section 5.2.1 (2).	Δ	differ, refer to Section 5.2.1 (2) to check the specifications, and use the thermocouple that can be used with the Q64TD.
Refer to Section 5.2.1 (2).	^	As they depend on the applicable thermocouple and measured
*1	0	temperature range, refer to Section 5.2.1 (2) to check the specifications.
40ms/channel	0	
Isolated area Isolation method Dielectric withstand voltage SolovDC,	0	
Available	0	
4 channels + 1 channel for Pt100/module	Δ	To use 5 or more channels, consider replacing the A1S68TD with two Q64TD modules.
16 points (I/O assignment: intelligent 16 points)	Δ	The number of occupied I/O points has changed to 16 points.
 18-point terminal block	×	
0.3 to 0.75mm ²	×	Wiring change is required.
1.25-3, R1.25-3 (Solderless terminals with an insulation sleeve cannot be used.)	×	g change to required.
0.50A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.25kg	Δ	

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

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

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

^{+ (}Cold junction compensation accuracy)

(2) Applicable thermocouple and measured temperature range accuracy

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

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

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

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

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

5.2.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S68TD	Q64TD	Precautions for replacement
Temperature conversion function	Imports temperature data.			
(Temperature conversion value	(Stores imported temperature data in the	0	0	
storage)	buffer memory.)			
Conversion enable/disable	Sets whether to enable/disable a	0	0	
function	conversion per channel.	0	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	0	
Temperature conversion system	Processes the detected temperature by	0	0	Averaging processing is added
remperature 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.
Dtd 00 and it mation as many and atting	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	'	-	0	Redundant CPU support this
	system being stopped.			function.

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

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

5.2.3 I/O signal comparison

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

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

	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 prombited	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	
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 profibiled	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	1	Y1A	555 prombitod				
X1B	1	Y1B					
X1C	1	Y1C					
X1D	1	Y1D					
X1E		Y1E					
X1F		Y1F					

5.2.4 Buffer memory address comparison

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

	A1S68TD			Q64TD		
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write	
0	A/D conversion enable/disable setting	R/W	0	Conversion enable/disable setting		
1	Error code		1	CH1 Time/count averaging setting		
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			4	CH4 Time/count averaging setting		
5			5			
6	4		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)	R	14	CH4 Measured temperature value		
15	CH6 Converted temperature value (0.1°C unit)		15 to 18	System area (Use prohibited)	_	
16	CH7 Converted temperature value (0.1°C unit)		19	Error code		
17	CH8 Converted temperature value (0.1°C unit)		20	Setting range	R	
18			21 to 46	System area (Use prohibited)	_	
19	System area (Use prohibited)	-	47	Warning output enable/disable setting	R/W	
20	CH1 Scaling value		48	Warning output flag		
21	CH2 Scaling value		49	Disconnection detection flag		
22	CH3 Scaling value		50	CH1 Scaling value		
23	CH4 Scaling value		51	CH2 Scaling value	R	
24	CH5 Scaling value	R	52	CH3 Scaling value		
25	CH6 Scaling value	1	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		
31	CH1 Upper limit value (0.1°C unit)		66	CH3 Scaling range lower limit value	R/W	
32	CH2 Lower limit value (0.1°C unit)		67	CH3 Scaling range upper limit value		
33	· · · · · · · · · · · · · · · · · · ·		68	5 5 11		
	CH2 Upper limit value (0.1°C unit) CH3 Lower limit value (0.1°C unit)		69	CH4 Scaling range lower limit value CH4 Scaling range upper limit value		
34	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	-	
	CH4 Upper limit value (0.1°C unit)			CH1 Scaling width lower limit value		
37	, , ,	R/W	79	9 11		
38	CH5 Lippor limit value (0.1°C unit)		80	CH2 Scaling width upper limit value		
39	CH5 Upper limit value (0.1°C unit)		81	CH2 Scaling width lower limit value		
40	CH6 Lippor limit value (0.1°C unit)		82	CH3 Scaling width upper limit value		
41	CH6 Upper limit value (0.1°C unit)		83	CH3 Scaling width upper limit value	R/W	
42	CH7 Lower limit value (0.1°C unit)		84	CH4 Scaling width lower limit value		
43	CH7 Upper limit value (0.1°C unit)		85	CH4 Scaling width upper limit value		
44	CH8 Lower limit value (0.1°C unit)		86	CH1 Warning output lower lower limit value		
45	CH8 Upper limit value (0.1°C unit)		87	CH1 Warning output lower upper limit value		
46	System area (Use prohibited)	_	88	CH1 Warning output upper lower limit value		
47	,		89	CH1 Warning output upper upper limit value		

	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	Gystem 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	
			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	
			119 120	CH2 Offset temperature set value	
			121	CH2 Offset temperature set value CH2 Gain temperature set value	
			122	CH3 Offset temperature set value	R/W
			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)	-
				Conversion setting for disconnection	
			148	detection	R/W
			149	System area (Use prohibited)	-
			450 to 450	Conversion setting for disconnection	DAM
			150 to 153	detection (CH1 to CH4)	R/W
			154 to 157	System area (Use prohibited)	-
			158 to 159	Mode switching setting	_
			160	CH1 Factory default offset value	
			161	CH1 Factory default gain value	
			162	CH1 User range settings offset value	
			163	CH1 User range settings gain value	
			164	CH1 User range settings thermal EMF	
				offset value (L)	
			165	CH1 User range settings thermal EMF	
				offset value (H) CH1 User range settings thermal EMF gain	
			166	value (L)	
			167	CH1 User range settings thermal EMF gain value (H)	R/W
			168	CH2 Factory default offset value	
			169	CH2 Factory default gain value	
			170	CH2 User range settings offset value	
			171	CH2 User range settings gain value	
			172	CH2 User range settings thermal EMF offset value (L)	
			173	CH2 User range settings thermal EMF offset value (H)	
			174	CH2 User range settings thermal EMF gain value (L)	
			175	CH2 User range settings thermal EMF gain	
			5	value (H)	

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

Memo		
		_



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

5.3.1 Performance specifications comparison

(1) Performance specifications comparison

	Item	A1S68TD						
Tempera	uture sensor input		0 to 1700°C					
	Detected temperature value	(0 to 1700)	16-bit signed binary (0 to 17000: value up to the first decimal place × 10)					
Output								
Thermod	couple compliance		JIS C1602-198	1				
Applicab	le thermocouple		Refer to Section 5.3	3.1 (2).				
Measure accuracy	ed temperature range /		Refer to Section 5.3	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			
Disconn	ection detection		Available					
Number input poi	of temperature sensor nts	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 b	olock				
	device connector							
(sold sep								
	le wire size		0.75 to 1.5mm					
	le solderless terminal	R1.25-	3, 1.25-YS3, RAV1.25	-3, V1.25-YS3A				
(5VDC)	current consumption		0.32A					
Weight			0.28kg					

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

		_			フ. Compatible, ム.	Partial change required, *: Incompatible
Q68TD-G-H02	Q se	ries	Q68TD-G-H	01*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	
	_	ned binar to 100%	-		Δ	The concept of scaling value differs. To use the scaling values, program needs to be reviewed.
		02-1995 ion 5.3.1	(2)		Δ	Use the thermocouple that can be used on the Q68TD-G-H02/H01, referring to Section 5.3.1 (2).
		ion 5.3.1	. ,		Δ	As they depend on the applicable thermocouple and measured
	*2				0	temperature range, refer to Section 5.3.1 (2) to check the specifications.
640ms/8 channels ^{*3}			320ms/8 char	nnels ^{*3}	0	
Isolated area Between thermocouple input and programmable controller power supply Between thermocouple input channels Between cold junction compensation input (Pt100) and programmable controller power supply	Trans isola Trans isola	former ation former ation	Dielectric withstand voltage 500VACrms, for 1 minute 1000VACrms, for 1 minute -	Insulation resistance 500VDC, 10MΩ or more	0	
Available (all the channels are independe	nt)		Not availa	ble	Δ	The Q68TD-G-H01 supports the disconnection monitor function.
8 channels + 1 channel for Pt100/module					0	
16 points (I/O assignment: intelligent 16 points)					Δ	The number of occupied I/O points has changed to 16 points.
40-pin connector A6CON4					×	Wiring change is required.
0.3m	m² (22 / -	AWG) or	less		×	
0.65A			0.49A		Δ	Recalculation of internal current consumption (5VDC) is required.
0.22kg			0.18kg		Δ	

- *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	Larger value of ±0.07°C, or ±0.02% of			
K	0 10 1200	measured temperature	measured temperature			
E	0 to 800	Larger value of ±0.5°C, or ±0.25% of	Larger value of ±0.07°C, or ±0.02% of			
L	0 10 000	measured temperature	measured temperature			
	0 to 750	Larger value of ±0.5°C, or ±0.25% of	Larger value of ±0.07°C, or ±0.02% of			
J	0 10 730	measured temperature	measured temperature			
т	0 to 350	Larger value of ±0.5°C, or ±0.25% of	Larger value of ±0.07°C, or ±0.02% of			
	0 10 330	measured temperature	measured temperature			

		Q68TD-G-H02, Q68	TD-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.

5.3.2 Functional comparison

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

Item	Description	A1S68TD	Q68TD-G- H02/H01	Precautions for replacement
Temperature conversion function	Imports temperature data.			
(Temperature conversion value	(Stores imported temperature data in the	0	0	
storage)	buffer memory.)			
Conversion enable/disable	Sets whether to enable/disable a	0	0	
function	conversion per channel.	U	0	
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	Sata an input type for each channel		\circ	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	
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.	U	0	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			
0" " " " "	Performs linear correction by individually		_	
Offset/gain setting function	compensating any given 2 points (offset	-	0	
	value/gain value) within the effective range.			The Durance CDU and
	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-H02/H01, the setting can be selected. By setting "disabled" and providing an ice bath externally, the cold junction temperature compensation accuracy can be improved.

5.3.3 I/O signal comparison

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

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

	A1S68TD				Q68TD-G-H02,	Q68TD-	-G-H01
Device		Device	Signal name	Device	Signal name	Device	Signal name
No.	Signal hame	No.	Signal Hame	No.	Signal name	No.	Signal name
X0	Watchdog timer error flag	Y0		X0	Module ready	Y0	
X1	A/D conversion READY flag	Y1		X1		Y1	
X2	Error flag	Y2		X2		Y2	
Х3	Disconnection detection flag	Y3		Х3		Y3	Use prohibited
X4	Out-of-measurement- range flag	Y4		X4	Use prohibited	Y4	Use profibiled
X5		Y5		X5		Y5	
X6		Y6		X6		Y6	
X7		Y7		X7		Y7	
X8		Y8		X8		Y8	
X9		Y9		X9	Operating condition setting completion flag	Y9	Operating condition setting request
XA		YA	Use prohibited	XA	Offset/gain setting mode status flag	YA	User range write request
ХВ		YB		ХВ	Channel change completion flag	YB	Channel change request
XC		YC		XC	Q68TD-G-H02: Disconnection detection signal Q68TD-G-H01: Disconnection status monitor signal	YC	Use prohibited
XD		YD		XD	Warning output signal	YD	
XE	Use prohibited	YE		XE	Conversion completion flag	YE	
XF		YF		XF	Error flag	YF	Error clear request
X10		Y10	0.11				_
X11		Y11	Set lower/upper limit value update instruction				
X12		Y12	Error reset				
X13		Y13					
X14		Y14					
X15		Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Use prohibited				
X1A		Y1A					
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

5.3.4 Buffer memory address comparison

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

	A1S68TD			Q68TD-G-H02, Q68TD-G-H01	
Address	Name	Read/write	Address	Name	Read/write
(decimal)	Name	rteau/write	(decimal)	Name	rteau/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
		R	1 10 0	time constant setting	
2	Disconnection detection flag	.``	9	System area (Use prohibited)	-
3	Out-of-measurement-range flag		10	Conversion completion flag	
4			11 to 18	CH1 to CH8 Measured temperature value	
5			19	Error code	R
6			20 to 21	CH1 to CH8 Setting range 1/2	
	System area (Use prohibited)	-		(Thermocouple type)	
7	, , ,		22	Setting range 3 (Offset/gain setting)	
8			23	System area (Use prohibited)	-
9			24 to 25	CH1 to CH8 Averaging processing	
				selection	
10	CH1 Converted temperature value (0.1°C unit)		26	Offset/gain setting mode (Offset	
	, , ,			specification)	
11	CH2 Converted temperature value (0.1°C unit)		27	Offset/gain setting mode (Gain	R/W
40	0110 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			specification)	
12	CH3 Converted temperature value (0.1°C unit)		28	CH1 Offset temperature setting value	
13	CH4 Converted temperature value (0.1°C unit)	R	29	CH1 Gain temperature setting value	
14	CH5 Converted temperature value (0.1°C unit)		to	CI IO Cain tamen and una antime a catin	
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	R
			45	setting status	
18	Cyctam area (Hee prohibited)			Q68TD-G-H01: System area (Use prohibited)	-
19	System area (Use prohibited)	-	46	Warning output enable/disable setting	R/W
20	CH1 Sociling value		47	Warning output flag (Process alarm)	TV/VV
21	CH1 Scaling value CH2 Scaling value	<u> </u>	48	Warning output flag (Rate alarm)	
21	CH2 Scalling value	<u> </u>	40	Q68TD-G-H02: Disconnection detection	
22	CH3 Scaling value			flag	R
			49	Q68TD-G-H01: Disconnection status	- '`
23	CH4 Scaling value	R		monitor flag	
24	CH5 Scaling value		50 to 57	CH1 to CH8 Scaling value	
25	CH6 Scaling value	 	58	Scaling valid/invalid setting	R/W
26	CH7 Scaling value	†	59 to 61	System area (Use prohibited)	-
27	CH8 Scaling value	†	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)	†	to	, , , , , , , , , , , , , , , , , , ,	
34	CH3 Lower limit value (0.1°C unit)	R/W	93	CH8 Scaling width upper limit value	1
35	CH3 Upper limit value (0.1°C unit)	†	94	CH1 Process alarm lower lower limit value	1
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	1

	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		1
40	CH6 Lower limit value (0.1°C unit)		125	CH8 Process alarm upper upper limit value	1
	, ,		126 to		1
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	1
43	CH7 Upper limit value (0.1°C unit)		135	CH1 Rate alarm lower limit value	1
44	CH8 Lower limit value (0.1°C unit)		to		1
45	CH8 Upper limit value (0.1°C unit)		149	CH8 Rate alarm lower limit value	1
46	,		150 to 157	System area (Use prohibited)	-
47			158 to 159	Mode switching setting	R/W
	System area (Use prohibited)	-	160 to		
48			163	System area (Use prohibited)	-
49				Q68TD-G-H02: Conversion setting for	
40			164 to	disconnection detection	
			165	System area (Use prohibited) Mode switching setting System area (Use prohibited) System area (Use prohibited) Q68TD-G-H02: Conversion setting for disconnection detection Q68TD-G-H01: Disconnection state conversion setting Q68TD-G-H02: Conversion setting value for disconnection detection Q68TD-G-H01: Conversion setting value for disconnection state System area (Use prohibited) CH1 Factory default offset value CH1 User range settings offset value CH1 User range settings gain value CH1 User range settings thermal EMF offset value (L)	
				9	R/W
				Q68TD-G-H02: Conversion setting value for	1000
				disconnection detection	
			173	Q68TD-G-H01: Conversion setting value for	
				disconnection state	
			174 to 189	System area (Use prohibited)	-
			190	CH1 Factory default offset value	
			191	-	-
			192		
			193		
					1
			194		
				1 1	4
			195		
			196		
			197	CH1 User range settings thermal EMF gain	
			to	value (П)	R/W
			to 246	CH8 Factory default offset value	FV/VV
				-	-
			247 248		-
					1
			249		1
			250		
				CH1 Process alarm upper upper limit value CH2 Process alarm upper upper limit value CH3 Process alarm upper upper limit value CH1 to CH8 Rate alarm warning detection period CH1 Rate alarm lower limit value CH1 Rate alarm lower limit value CH1 Rate alarm lower limit value CH8 Rate alarm lower limit value CH8 Rate alarm lower limit value CH8 Rate alarm lower limit value System area (Use prohibited) Mode switching setting C68TD-G-H02: Conversion setting for disconnection detection C68TD-G-H01: Disconnection state conversion setting C68TD-G-H01: Conversion setting value of disconnection detection C68TD-G-H01: Conversion setting value of disconnection detection C68TD-G-H01: Conversion setting value of disconnection state CH1 Factory default offset value CH1 Factory default offset value CH1 User range settings offset value CH1 User range settings thermal EMF offset value (L) CH1 User range settings thermal EMF offset value (H) CH1 User range settings thermal EMF gavalue (L) CH3 User range settings thermal EMF gavalue (H) CH8 Factory default offset value CH8 User range settings disparate thermal EMF gavalue (H) CH8 User range settings thermal EMF gavalue (L)	-
			251		
			252	offset value (H) CH8 User range settings thermal EMF gain	_
			253	One Osci range settings thermal Livir gain	

value (H)

Memo				
	-	-	-	



5.4 A1S62RD3N (Replacing with the Q64RD)

5.4.1 Performance specifications comparison

Item		A1S62RD3N					
Measuring method		3-wire type					
		16-bit signed binary:					
	Townsersture						
	Temperature conversion	3-wire type					
Output	value						
		Value up to the third decimal place × 1000					
	Scaling value	-					
		Pt100					
A	dan one DTD	(JIS C1604-1997, IEC 751-am2, JIS C1604-1989, DIN 43760-1980)					
Applicable plat	Inum KID	JPt100					
		(JIS C1604-1981)					
Manageria	D#400	-180 to 600°C					
	Pt100	$(27.10 \text{ to } 313.71\Omega)$					
•	ID4400	-180 to 600°C					
range	JPt100	(25.80 to 317.28 Ω)					
Measured temperature range Pt100 -180 to 600°C (27.10 to 313.71Ω) JPt100 -180 to 600°C (25.80 to 317.28Ω) Accuracy ±1% (accuracy at full scale) Resolution 0.025°C Conversion speed 40ms/channel Analog input points 2 channels/module Output current for temperature -180 to 600°C (27.10 to 313.71Ω)							
Accuracy							
		(accuracy at full scale)					
Resolution		0.025°C					
Conversion sp	eed	40ms/channel					
Analog input p	oints	2 channels/module					
Output current	for temperature	1mΔ					
detection							
Isolation metho	od						
		Between platinum RTD input and channel: not isolated	_				
Distantia saida		Determined the DTD investoral and accommodate the second to the second t					
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	upied I/O points						
F. 4 1							
External conne	-						
Applicable wire							
Applicable solo	derless terminal	V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A					

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

		Q64RD	0.0	•	Precautions for replacement
					Precautions for replacement
		wire type		0	
		igned binary:			
,		00 to 8500			
V		rst decimal place × 10		0	
		igned binary:			
		00 to 850000			
Va		rd decimal place × 1000			
	16-bit s	igned binary		0	
		Pt100			As the compliance standards for the applicable platinum
	•	997, IEC 751 1983)		Δ	RTD differ, change the
	J	Pt100			platinum RTD to the one that
	(JIS C	1604-1981)			can be used with the Q64RD.
	-200	to 850°C			
				0	
	-180	to 600°C			
A	mbient tempera	ture 0 to 55°C: ±0.25%			
	(accuracy relative to maximum value) Ambient temperature 25±5°C: ±0.08%			0	
ļ .	Ambient tempera	ature 25±5°C: ±0.08%			
(accuracy relative to maximum value)					
	0	.025°C		0	
	40m	s/channel		0	
	4 chan	nels/module		0	
		1mA		0	
Isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance		
Between platinum RTD input	Photocoupler	1780VACrms/3 cycles			
and programmable	isolation	(Altitude 2000m)	10MΩ or more using	0	
controller power supply Between platinum RTD input			500VDC insulation resistance tester		
channels	Not isolated	-	redictaries tester		
	Detecte	d per channel		0	
	16	6 points			The number of occupied I/O
		: intelligent 16 points)		Δ	points has changed to 16
<u>'</u>				1	points.
		terminal block		×	
		0.75mm ²		×	Wiring change is required.
		3, R1.25-3		×	
(Solderless te	rminals with an	insulation sleeve cannot b	e used.)		

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

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

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.) $ \begin{array}{c} $	0	
0.60A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.17kg	Δ	

5.4.2 Functional comparison

O: Available, -: Not available

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

5.4.3 I/O signal comparison

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

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

	A1S62RD3N			Q64RD			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	WDT error flag	Y0		X0	Module ready	Y0	Use prohibited
X1	READY flag	Y1		X1	CH1 Offset/gain setting status signal	Y1	CH1 Offset setting request
X2	Write data error flag	Y2		X2	CH2 Offset/gain setting status signal	Y2	CH1 Gain setting request
Х3	CH1: Disconnection- detected flag	Y3		Х3	CH3 Offset/gain setting status signal	Y3	CH2 Offset setting request
X4	CH2: Disconnection- detected flag	Y4		X4	CH4 Offset/gain setting status signal	Y4	CH2 Gain setting request
X5		Y5		X5		Y5	CH3 Offset setting request
X6		Y6		X6	Llaa probibitad	Y6	CH3 Gain setting request
X7		Y7	Use prohibited –	X7	Use prohibited	Y7	CH4 Offset setting request
X8		Y8	Use prohibited	X8		Y8	CH4 Gain setting request
X9		Y9	X X X	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		YE		XE	Conversion completion flag	YE	
XF	Use prohibited	YF		XF	Error flag	YF	Error clear request
X10		Y10					
X11		Y11					
X12		Y12	Error code reset flag				
X13		Y13 Y14					
X14 X15		Y14 Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Use prohibited				
X1A		Y1A	·				
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

5.4.4 Buffer memory address comparison

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

	A1S62RD3N			Q64RD							
Address	Name	Read/write	Address	Name	Read/write						
(decimal)	Conversion enable/disable specification		(decimal)	Conversion enable/disable setting							
				CH1 Time/count/moving average/time	-						
1	Averaging processing specification		1	constant setting							
		R/W	0	CH2 Time/count/moving average/time							
2	CH1 Averaging time/count		2	constant setting	R/W						
3	CH2 Averaging time/count		3	CH3 Time/count/moving average/time							
	Criz, Wordging unio, count			constant setting							
4			4	CH4 Time/count/moving average/time							
				constant setting							
5 6	System area (Use prohibited)		5 6								
7	System area (Ose prombited)	-	7	System area (Use prohibited)	-						
8			8								
9			9	Averaging processing setting	R/W						
10	CH1 Detected temperature value (16bit)	CH1 Detected temperature value (16bit)		Conversion completion flag							
11	CH2 Detected temperature value (16bit)	R	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	dystem area (Ose prombited)	-	15								
16			16	System area (Use prohibited)	-						
17	T		17	granian aroa (eee promanea)							
18	CH1 Detected temperature value (32bit)		18								
19	(H)	R	19	Error code	R						
20	CH2 Detected temperature value (L) (32bit) (H)		20	Setting range							
21	(32bit) (H)		21 22								
23			23								
24			24								
25									25		
26			26	1							
27	Custom and (Haramahibitan)		27								
28	System area (Use prohibited)	-	28								
29			29								
30			30								
31			31								
32			32	System area (Use prohibited)	_						
33	Write data error code	R/W	33								
34 35	Conversion completed flag	R/W R	34 35								
36	Type specification of platinum RTD	R/W	36								
- 00	. The specification of plannam (CD	1.7/ 4.4	37								
			38								
			39								
			40								
			41								
			42								
			43								
			44								

	Q64RD		
Address			Read/write
(decimal)	Name		Read/Write
45	System area (Use prohibited)		_
46			
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49	Disconnection detection flag		
50 51	CH1 Scaling value		
52	CH2 Scaling value CH3 Scaling value		
53	CH4 Scaling value		
54	CH1 Measured temperature value	(L)	
55	(32bit)	(H)	R
56	CH2 Measured temperature value	(L)	
57	(32bit)	(H)	
58	CH3 Measured temperature value	(L)	
59	(32bit)	(H)	
60	CH4 Measured temperature value	(L)	
61	(32bit)	(H)	
62	CHA Cooling was as lesses limit value	(L)	
63	CH1 Scaling range lower limit value	(H)	
64	CLIA Caslina nanas uma ar limit unlus	(L)	
65	CH1 Scaling range upper limit value	(H)	
66	CLIQ Seeling range lower limit value	(L)	
67	CH2 Scaling range lower limit value	(H)	
68	CH2 Scaling range upper limit value	(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	Cris scaling range upper limit value	(H)	
74	CH4 Scaling range lower limit value	(L)	
75	Of 14 Coaling range lower limit value	(H)	
76	CH4 Scaling range upper limit value	(L)	
77		(H)	
78	CH1 Scaling width lower limit value		
79	CH1 Scaling width upper limit value		
80	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	/L \	
86	CH1 Warning output lower lower limit	(L)	
87	value	(H)	
88	CH1 Warning output lower upper limit	(L)	
89	value	(H)	
90 91	CH1 Warning output upper lower limit	(L)	
91	value CH1 Warning output upper upper limit	(H)	
92	Value	(L)	
to	value	(H)	
116	CH4 Warning output upper upper limit	(1.)	
116		(L)	
	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	Cri4 Gairi terriperature set value	(H)	R/W			
134	Extended averaging processing					
134	specification					
135 to 147	System area (Use prohibited)		ı			
148	Conversion setting for disconnection		R/W			
140	detection					
149	System area (Use prohibited)		-			
150	CH1 Conversion setting value for	(L)				
151	disconnection detection	(H)				
to						
156	CH4 Conversion setting value for	(L)				
157	disconnection detection	(H)				
158	Mode switching setting	(L)	R/W			
159	wode switching setting	(H)	FX/VV			
160	3-wire type CH1 Factory default offset	(L)				
161	value	(H)				
to						
254	4-wire type CH4 User range settings	(L)				
255	gain resistance value	(H)				

Memo		
		_

5.5 A1S62RD3N (Replacing with the Q64RD-G)

5.5.1 Performance specifications comparison

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

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

		064	RD-G	<u> </u>		Precautions for replacement
			re type		+	r recautions for replacement
		3/4-WI	те туре		0	
	Vali 32-t	6-bit signed binary ue up to the first bit signed binary a up to the third	0			
		16-hit sig	ned binary		0	
	Pt100 (JIS C 1604-1997, IEC751 1983)					As the compliance standards for
						the applicable RTD differ, change the RTD to the one that can be used with the Q64RD-G.
		-200 to	850°C		0	
	-180 to 600°C					
	-60 to 180°C					
		*	1		0	
		0.02	25°C		0	
		40ms/d	channel		0	
		4 channe	ls/module		0	
		1r	mA		0	
	Isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance		
	Between temperature- measuring resistor input and programmable controller power supply	Photocoupler isolation	1780VACrms/3 cycles (Altitude 2000m)	$10M\Omega$ or more using 500VDC insulation	0	
	Between temperature- measuring resistor input channels	Transformer isolation	(, unado 2000)	resistance tester		
		Detected p	per channel		0	
			oints			The number of occupied I/O
	(I/O assignment: intelligent 16 points)				Δ	points has changed to 16 points.
			minal block		×	
			.75mm ²		×	Wiring change is required.
	(Solderless torm		R1.25-3 sulation sleeve cannot be	oused)	×	
	(Soldeness telli	iii ais wilii all Ill		ĺ		

^{*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: Compatible, △: Partial change required, ×: Incompatible

	O: Compatible, \(\Delta\): Partial change required, \(\delta\): 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.)				
Wire 2)	0			
Wire Q64RD-G a1 A1 B1 b1 SLD				
0.62A		Recalculation of internal current consumption (5VDC) is required.		
0.20kg	Δ	<u> </u>		

5.5.2 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	0	The setting ranges of time and count averages differ. Check the specifications, referring to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.
Detected temperature value storage	Stores temperature data in the buffer memory.	0	0	
Disconnection detection	Detects a disconnection of the connected RTD or cable.	0	0	
Specification of RTD type	Specifies a RTD type used.	0	0	
Range switching function (temperature)	Switches the measured temperature range.	-	0	
Warning output function	Outputs a warning when the temperature exceeds the set temperature range.	-	0	
Scaling function	Converts a measured temperature value into a percent value (%) in set width.	-	0	
Online module replacement	A module can be replaced without the system being stopped.	-	0	The Process CPU and Redundant CPU support this function.

5.5.3 I/O signal comparison

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

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

	A1S62RD3N			Q64RD-G			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	WDT error flag	Y0		X0	Module ready	Y0	Use prohibited
X1	READY flag	Y1		X1	CH1 Offset/gain setting status signal	Y1	CH1 Offset setting request
X2	Write data error flag	Y2		X2	CH2 Offset/gain setting status signal	Y2	CH1 Gain setting request
Х3	CH1: Disconnection- detected flag	Y3		Х3	CH3 Offset/gain setting status signal	Y3	CH2 Offset setting request
X4	CH2: Disconnection- detected flag	Y4		X4	CH4 Offset/gain setting status signal	Y4	CH2 Gain setting request
X5		Y5		X5		Y5	CH3 Offset setting request
X6		Y6		X6	Use prohibited	Y6	CH3 Gain setting request
X7		Y7	I la a maala ila ita d	X7	Ose pronibiled	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	
хс		YC		ХС	Disconnection detection signal	YC	
XD		YD		XD	Warning output signal	YD	Use prohibited
XE		YE		XE	Conversion completion flag	YE	
XF	Use prohibited	YF		XF	Error flag	YF	Error clear request
X10		Y10					
X11		Y11					
X12		Y12	Error code reset flag				
X13		Y13 Y14					
X14 X15		Y14 Y15					
X16		Y16					
X17		Y17					
X18		Y18					
X19		Y19	Use prohibited				
X1A		Y1A	·				
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					

5.5.4 Buffer memory address comparison

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

	A1S62RD3N			Q64RD-G		
Address (decimal)	Name	Read/write	Address (decimal)	Name	Read/write	
0	Conversion enable/disable specification		0	Conversion enable/disable setting		
1	Averaging processing selection		1	CH1 Time/count/moving average/time constant setting		
2	CH1 Averaging time/count	R/W	2	CH2 Time/count/moving average/time constant setting	R/W	
3	CH2 Averaging time/count		3	CH3 Time/count/moving average/time constant setting		
4			4	CH4 Time/count/moving average/time constant setting		
5			5			
6	System area (Use prohibited)	-	6	System area (Use prohibited)		
7			7	System area (Ose prombited)	-	
8			8			
9			9	Averaging processing specification	R/W	
10	CH1 Detected temperature value (16bit)	R	10	Conversion completion flag		
11	CH2 Detected temperature value (16bit)		11	CH1 Measured temperature value (16bit)		
12			12	CH2 Measured temperature value (16bit)	R	
13			13	CH3 Measured temperature value (16bit)		
14	System area (Use prohibited)	-	14	CH4 Measured temperature value (16bit)		
15 16			15 16			
17			17	System area (Use prohibited)	-	
18	CH1 Detected temperature value (L)		18			
19	(32bit) (H)		19	Error code	+	
20	CH2 Detected temperature value (L)	R	R	20	Setting range 1	⊢ R
21	(32bit) (H)		21	Setting range 2	┤ ``	
22	X- / X-		22			
23			23			
24			24			
25			25			
26			26			
27	System area (Use prohibited)	_	27			
28	Cystem area (Ose prombited)	_	28			
29			29			
30			30			
31			31			
32			32	System area (Hermonkikited)		
33	Write data error code	D/\/	33	System area (Use prohibited)	-	
34 35	Write data error code Conversion completed flag	R/W R	34 35			
36	Type specification of platinum RTD	R/W	36			
- 50	13pc specification of platfilluli IX1D	11/77	37			
			38			
			39			
			40			
			41			
		42				
			43			
			44		ī	

	Q64RD-G		
Address	Nama		Read/write
(decimal)	Name		Read/write
45	System area (Lise prohibited)		
46	System area (Use prohibited)		-
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	((H)	
64	CH1 Scaling range upper limit value	(L)	
65	((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)	R/W
90	CH1 Warning output upper lower limit ((L)	FX/VV
91	value ((H)	
92	CH1 Warning output upper upper limit ((L)	
93	value ((H)	
to			
116	CH4 Warning output upper upper limit ((L)	
117	value ((H)	
118	CH1 Offset temperature set valuer	(L)	
119	CH1 Offset temperature set valuer ((H)	
120	CH1 Gain tomporature set value	(L)	
121	CH1 Gain temperature set value	(H)	
to			
132	CH4 Gain tomporature set value	(L)	
133	CH4 Gain temperature set value	(H)	
134	Extended averaging processing specificati	ion	
135 to	System area (Use prohibited)		
147	System area (Use prohibited)		-
148	Conversion setting for disconnection detection		R/W
149	System area (Use prohibited)		-
	, , , , ,		

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

Memo		
		_
		_

5.6 A1S62RD4N (Replacing with the Q64RD)

5.6.1 Performance specifications comparison

Item		A1S62RD4N			
Measuring met	thod	4-wire type			
Temperature conversion value		16-bit signed binary: -1800 to 6000 Value up to the first decimal place × 10 32-bit signed binary: -180000 to 600000 Value up to the third decimal place × 1000			
	Scaling value	-			
Applicable 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.			
	upied I/O points	32 points (I/O assignment: special 32 points)			
External conne		20-point terminal block			
Applicable wire	e size	0.75 to 1.5mm ²			
Applicable solderless terminal		V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A			

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

		4400	0.1	•	tial change required, x. incompatible
		64RD		T T	Precautions for replacement
	3/4-\	wire type		0	
		gned binary:			
		0 to 8500			
V		st decimal place × 10		0	
		gned binary:			
		0 to 850000			
Val	ue up to the thir	d decimal place × 1000			
	16-bit si	gned binary		0	
	(JIS C 1604-19	Pt100 997, IEC751 1983)		Δ	As the compliance standards for the applicable platinum RTD differ, change the
		Pt100 1604-1981)			platinum RTD to the one that can be used with the Q64RD.
	-200	to 850°C		0	
-180 to 600°C					
		ure 0 to 55°C: ±0.25%			
	•	e to maximum value)		0	
		ture 25±5°C: ±0.08%			
(e to maximum value)			
		025°C		0	
	40ms	s/channel		0	
	4 chanr	nels/module		0	
		1mA		0	
			T		
Isolated area Between platinum RTD input and programmable controller power supply	Photocoupler isolation	Dielectric withstand voltage 1780VACrms/3 cycles (Altitude 2000m)	Insulation resistance 10MΩ or more using 500VDC insulation	0	
Between platinum RTD input channels	Not isolated	-	resistance tester		
	Detected	l per channel		0	
(points intelligent 16 points)		Δ	The number of occupied I/O points has changed to 16 points.
	18-point t	erminal block		×	
	0.3 to	0.75mm ²		×	VA/fining a phase and its assessment
		3, R1.25-3			Wiring change is required.
(Solderless te		insulation sleeve cannot be	e used.)	×	

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

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

·		artial criange required, i meempatible
Q64RD	Compatibility	Precautions for replacement
The conductor resistance value must meet the condition of 1) + 2) \leq 2k Ω or less. (When a 3-wire type Pt100 is connected, the difference between 1) and 2) in the conductor resistance value must be 10Ω or less.) Wire OGHRD A1 B1 B1 B1 B1 B1 B1 B1 B1 B1	O	Precautions for replacement
0.60A	Δ	Recalculation of internal current consumption (5VDC) is required.
 0.17kg	Δ	

5.6.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62RD4N	Q64RD	Precautions for replacement
Conversion enable/disable specification of each channel	Enables/disables a detection of temperature.	0	0	
Sampling/averaging processing selection	Processes the detected temperature by specified method.	0	0	The setting ranges of time and count averages differ. Check the specifications, referring to the RTD Input Module/Channel Isolated RTD Input Module User's Manual.
Detected temperature value storage	Stores temperature data in the buffer memory.	0	0	
Disconnection detection	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.

5.6.3 I/O signal comparison

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

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

Device No. No. No. No. Signal name No.	A1S62RD4N			Q64RD				
X1		Signal name		Signal name		Signal name		Signal name
X1	X0	WDT error flag	Y0		X0		Y0	-
X2 Write data error lag Y2 X3 Edisconnection-detected flag (CH1 and CH2) Y3	X1	READY flag	Y1		X1		Y1	=
Mathematical Characteristics Mathematical Characteristics	X2	Write data error flag	Y2		X2		Y2	CH1 Gain setting request
Y4	Х3		Y3		Х3		Y3	_
YS	X4		Y4		X4		Y4	CH2 Gain setting request
X7 X8 X8 X9 X9 XA XA XA XB X9 XA XA XB XB XC XA XB XB XC XD XC XD XE XF X10 X11 X11 X12 X13 X14 X15 X16 X17 X18 X18 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X10 X11 X11 X11 X12 X11 X12 X13 X14 X15 X16 X17 X18 X19 X10 X10 X11 X11 X11 X12 X11 X12 X13 X14 X15 X16 X17 X18 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X10 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10 X10 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10 X10 X10 X10 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10	X5		Y5		X5		Y5	_
X7 X8 X8 Y9 X9 XA XA XA XB XC XD XE Use prohibited XF Y6 XF XB XC XD XD XE Use prohibited XF XB XC XD XD XE XF X10 X11 X11 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X12 X11 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X17 X18 X18 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X17 X18 X18 X19 X10 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10 X10 X10 X10 X10 X11 X11 X12 X12 X13 X14 X15 X16 X17 X17 X18 X18 X19 X10	X6		Y6		X6	Llaa probibited	Y6	
X8 X9 Y8 Y9 X9 Y9 X9 Operating condition setting request yes setting request satus flag XA XB XC XD XC XD XE XF X10 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X112 X112 X112 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X112 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X10 X11 X11 X112 X12 X13 X14 X15 X16 X17 X18 X19 X19 X19 X10 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X10 X11 X11 X11 X11 X12 X12 X13 X14 X15 X16 X17 X18 X19 X19 X10 X10 X11 X110 X111 X111 X12 X12 X13 X14 X15 X16 X17 X17 X18 X19 X19 X10 X10 X10 X11 X11 X11 X11 X11 X12 X12 X13 X14 X15 X17 X18 X19 X19 X10 X10 X11 X11 X11 X11 X11 X12 X12 X13 X14 X15 X15 X16 X17 X17 X18 X19 X19 X10 X10 X10 X10 X11 X11 X11 X11 X11 X12 X12 X13 X14 X15 X15 X16 X17 X17 X18 X19 X19 X10	X7		Y7	I la a maala ila ita d	X7	Ose pronibiled	Y7	=
Ye	X8		Y8	Use pronibited	X8		Y8	CH4 Gain setting request
YA	X9		Y9		X9		Y9	
YC YD XC YD XC Signal YC XD Warning output signal YD XE Conversion completion YE YF Y10 XF Error flag YF Error clear request XT X12 X13 X14 X15 X16 X17 X18 X19 X10 X11 X110 X110	XA		YA		XA	-	YA	User range write request
YC YD XE Use prohibited YE YD XE Conversion completion YE XF Error clear request XF Error clear request XII XII XIII XIII XIII XIII XIII XIII XIIII XIIIII XIIII XIIII XIIII XIIII XIIII XIIII XIIII XII	XB		YB		XB	Use prohibited	YB	
YE	хс		YC		ХС		YC	
Value Valu	XD		YD		XD	Warning output signal	YD	Use pronibited
X10 Y10 X11 Y11 X12 Y12 Error code reset flag X13 Y13 X14 Y14 X15 Y15 X16 Y16 X17 Y17 X18 Y18 X19 Y19 X1A Y1A X1B Y1B X1C Y1D X1D Y1D X1E Y1E	XE	Use prohibited	YE		XE	· ·	YE	
X11	XF		YF		XF	Error flag	YF	Error clear request
X12 Y12 Error code reset flag X13 Y13 X14 Y14 X15 Y15 X16 Y16 X17 Y18 X18 Y18 X19 Y1A X1A Y1A X1B Y1C X1D Y1D X1E Y1E								_
X13 Y13 X14 Y14 X15 Y15 X16 Y16 X17 Y18 X18 Y18 X19 Y19 Use prohibited X1A Y1B X1B Y1C X1D Y1D X1E Y1E								
X14 Y14 X15 Y15 X16 Y16 X17 Y17 X18 Y18 X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E				Error code reset flag				
X15 Y15 X16 Y16 X17 Y17 X18 Y18 X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E								
X16 Y16 X17 Y17 X18 Y18 X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E								
X17 X18 X19 Y19 X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E								
X19 Y19 Use prohibited X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E	X17		Y17					
X1A Y1A X1B Y1B X1C Y1C X1D Y1D X1E Y1E	X18		Y18					
X1B Y1B X1C Y1C X1D Y1D X1E Y1E				Use prohibited				
X1C Y1C X1D Y1D X1E Y1E								
X1D Y1D Y1E								
X1E Y1E								
	X1E X1F		Y1F					

5.6.4 Buffer memory address comparison

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

	A1S62RD4N			Q64RD	
Address	Name	Read/write	Address	Name	Read/write
(decimal)	Conversion enable/disable specification		(decimal)	Conversion enable/disable setting	
		1		CH1 Time/count/moving average/time	-
1	Averaging processing specification		1	constant setting	
0	Old Access the Africa I count	R/W	0	CH2 Time/count/moving average/time	
2	CH1 Averaging time/count		2	constant setting	R/W
3	CH2 Averaging time/count		3	CH3 Time/count/moving average/time	
	on 27 Wordging unio/obunk			constant setting	
4			4	CH4 Time/count/moving average/time	
			-	constant setting	
5 6	System area (Use prohibited)		5 6		
7	System area (Ose prombited)	_	7	System area (Use prohibited)	-
8			8		
9			9	Averaging processing setting	R/W
10	CH1 Detected temperature value (16bit)	_	10	Conversion completion flag	
11	CH2 Detected temperature value (16bit)	R	11	CH1 Measured temperature value (16bit)	
12			12	CH2 Measured temperature value (16bit)	R
13			13	CH3 Measured temperature value (16bit)	
14	System area (Llas prohibited)		14	CH4 Measured temperature value (16bit)	
15	System area (Use prohibited)	-	15		
16			16	System area (Use prohibited)	_
17	<u> </u>		17	government (ose prombhed)	
18	CH1 Detected temperature value (L)		18		
19	(32bit) (H)	R	19	Error code	R
20	CH2 Detected temperature value (L)		20	Setting range	
21	(32bit) (H)		21		
22			22		
24			24		
25			25		
26			26		
27			27		
28	System area (Use prohibited)	-	28		
29			29		
30			30		
31			31		
32			32	System area (Use prohibited)	_
33			33	, (200 p. c	
34	Write data error code	R/W	34		
35	Conversion completed flag	R	35		
36	Type specification of platinum RTD	R/W	36 37		
			38		
			39		
			40		
			41		
			42		
			43		
			44	1	ĺ

	Q64RD		
Address			Read/write
(decimal)	Name		Read/Write
45	System area (Use prohibited)		_
46			
47	Warning output enable/disable setting		R/W
48	Warning output flag		
49 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)	Г
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 63	CH1 Scaling range lower limit value	(L) (H)	
64		(L)	
65	CH1 Scaling range upper limit value	(H)	
66		(L)	
67	CH2 Scaling range lower limit value	(H)	
68	CHO Cooling response common limit color	(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	от о от том от т	(H)	
74	CH4 Scaling range lower limit value	(L)	
75		(H)	
76 77	CH4 Scaling range upper limit value	(L) (H)	y.
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		
86	CH1 Warning output lower lower limit	(L)	,
87	value	(H)	
88	CH1 Warning output lower upper limit	(L)	
89	Value	(H)	
90 91	CH1 Warning output upper lower limit value	(L)	
91	CH1 Warning output upper upper limit	(H) (L)	
93	value	(L) (H)	
to	· -	()	
116	CH4 Warning output upper upper limit	(L)	
117	value	(H)	
118		(L)	
119	CH1 Offset temperature set value	(H)	•
120	CH1 Gain temperature set value	(L)	
121	OTT Gain temperature set value	(H)	

	Q64RD		
Address (decimal)	Name		Read/write
to			
132	CH4 Gain temperature	(L)	
133	Cris Gain temperature	(H)	R/W
134	Extended averaging processing		
104	specification		
135 to 147	System area (Use prohibited)		1
148	Conversion setting for disconnection		R/W
140	detection		IN/VV
149	System area (Use prohibited)		-
150	CH1 Conversion setting value for	(L)	
151	disconnection detection	(H)	
to			
156	CH4 Conversion setting value for	(L)	
157	disconnection detection	(H)	
158	Mode switching setting		R/W
159	Mode switching setting		FX/VV
160	3-wire type CH1 Factory default offset	(L)	
161	value	(H)	
to			
254	4-wire type CH4 User range settings	(L)	
255	gain resistance value	(H)	

Memo

5.7 A1S62RD4N (Replacing with the Q64RD-G)

5.7.1 Performance specifications comparison

It	em	A1S62RD4N			
Measuring me	thod	4-wire type			
Output Temperature conversion value 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)			
temperature range	JPt100	-180 to 600°C (25.80 to 317.28Ω)			
	Ni100	<u>-</u>			
Accuracy		±1% (accuracy at full scale)			
Resolution		0.025°C			
Conversion sp	eed	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 occ	upied 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

						uai change required, *: incompatible
		Q64F	RD-G		Compatibility	Precautions for replacement
		3/4-wir	• •		0	
	16	-bit signed bina	ry: -2000 to 8500			
	Valu	e up to the first	decimal place × 10		0	
		it signed binary:				
	Value	up to the third	decimal place × 1000			
		16-bit sign	ed binary		0	
		Pt1	00			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.
		-200 to	850°C			
					-	
		-180 to	600°C		0	
		-60 to			-	
		0				
		0.02	5°C		0	
		40ms/c			0	
					1	
		4 channel	s/module		0	
		1m	nA		0	
	Isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance		
	Between temperature-measuring	Photocoupler				
	resistor input and programmable controller power supply	isolation	1780VACrms/3 cycles	10M Ω or more using 500VDC insulation	0	
	Between temperature-measuring	Transformer	(Altitude 2000m)	resistance tester		
	resistor input channels	isolation				
	Detected per channel					T
	16 points (I/O assignment: intelligent 16 points)					The number of occupied I/O
						points has changed to 16
	18-point terminal block					points.
		-			×	-
		0.3 to 0. 1.25-3, l			^	Wiring change is required.
	(Coldoring torm	•	R1.25-3 sulation sleeve cannot be	used)	×	
	(Soldeness term	1	1			

^{*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 coefficient	Pt100/JPt100 (-200 to 850°C)	±50ppm/°C (±0.0050%/°C)		
	Ni100 (-60 to 180°C)	±70ppm/°C (±0.0070%/°C)		

Item	A1S62RD4N	
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 A1S62RD4N CH1 Pt100 2) 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, △: Partial change required, ×: Incompatible

	•	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.)	0	
Wire Q64RD-G a1 A1 B1 b1 SLD		
0.62A	Δ	Recalculation of internal current consumption (5VDC) is required.
0.20kg	Δ	

5.7.2 Functional comparison

O: Available, -: Not available

Item	Description	A1S62RD4N	Q64RD-G	Precautions for replacement
Conversion enable/disable	Enables/disables a detection of	0	0	
specification of each channel	temperature.		O	
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.

5.7.3 I/O signal comparison

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

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

	A1S62		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 march the transf	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	İ	XB	Use prohibited	YB	
хс		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		ļ			
X12		Y12	Error code reset flag				
X13		Y13 Y14					
X14 X15		Y15					
X16		Y16					
X17		Y17					
X18	<u> </u> 	Y18					
X19		Y19	Use prohibited				
X1A		Y1A					
X1B		Y1B					
X1C		Y1C					
X1D		Y1D					
X1E		Y1E					
X1F		Y1F					



5.7.4 Buffer memory address comparison

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

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

	Q64RD-G		
Address	Name		Read/write
(decimal)			
39			
40			
41			
42	System area (Use prohibited)		_
43	gyetem area (eee premenea)		
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			
60	CH4 Measured temperature value	(L)	
61	(32bit)	(H)	
62	CH1 Scaling range lower limit value	(L)	
63		(H)	
64	CH1 Scaling range upper limit value	(L)	
65		(H)	
to		(1.)	
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	OLIA O - discountidate como en liceta con los		
85	CH4 Scaling width upper limit value	(1)	
86	CH1 Warning output lower lower limit	(L)	
87	value	(H)	
88	CH1 Warning output lower upper limit	(L)	
89	value CH1 Warning output upper lower limit	(H)	R/W
90	" ''	(L)	
91	Value	(H)	
92 93	CH1 Warning output upper upper limit value	(L)	
to	value	(H)	
116	CH4 Warning output upper upper limit	(L)	
117	value	(L) (H)	
118		(L)	
119	CH1 Offset temperature set value	(L) (H)	
120		(L)	
121	CH1 Gain temperature set value	(L) (H)	
to		(11)	
132		(L)	
133	CH4 Gain temperature set value	(L) (H)	
134	Extended averaging processing specific		
135 to		2011	
147	System area (Use prohibited)		-
	Conversion setting for disconnection		
148	detection		R/W
149	System area (Use prohibited)		-
150	CH1 Conversion setting value for	(L)	
151	disconnection detection	(H)	R/W
	1	(/	1

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

6

HEATING-COOLING TEMPERATURE CONTROL MODULE/TEMPERATURE CONTROL MODULE REPLACEMENT

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

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

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

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

⊠Point -

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

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

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

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

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

Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor*1	
	A1S64TCTTBW-S1	Q64TCTTBWN	EDNIT ACOTGATOTTDW	
	A1S64TCTRTBW ^{*2}		ERNT-ASQT64TCTTBW	
Discourse How data the	A1S64TCRTBW-S1	Q64TCRTBWN	ERNT-ASQT64TCRTBW	
Disconnection detection	A1S64TCTRTBW ^{*3}	Q041CRIBWN	ERNI-ASQ1041CR16W	
function-equipped temperature control module	A1S62TCTTBW-S2	Q64TCTTBWN	EDNIT ACOTOTECTEDIAL	
temperature control module	A1S64TCTRTBW ^{*4}	Q041CTTBVVN	ERNT-ASQT62TCTTBW	
	A1S62TCRTBW-S2	OG4TCDTDWN	ERNT-ASQT62TCRTBW	
	A1S64TCTRTBW ^{*5}	Q64TCRTBWN	ERNI-ASQ1021CR16W	

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



6.2 Performance Specifications Comparison

6.2.1 A1S64TCTRT(BW) (thermocouple connection)

	ltem		Specifications	
			A1S64TCTRT A1S64TCTRTBW	
Control output			Transistor output	
0011110100	Control output		Standard control: 4 channels/module	
Number of temperature input points		out points	Heating-cooling control: 2 channels/module	
Applicable	e temperature ser	nsor	(Refer to Section 6.2.1 (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 process value	M645: 14.090	
	temperature	(PV): -100°C or more	Within ±1.0°C	
Accuracy	compensation	Temperature process value	Within ±2.0°C	
	accuracy:	(PV): -150 to -100°C	Widini 12.0 O	
	(ambient	Temperature process value	M645 10 000	
	temperature: 0 to 55°C)	(PV): -200 to -150°C	Within ±3.0°C	
Sampling			0.5s (Constant regardless of the number of channels used)	
Control output cycle			1 to 100s	
Input impe	Input impedance		1ΜΩ	
Input filter			0 to 100s	
Sensor co	Sensor correction value setting		-50.00 to 50.00%	
Operation	at sensor input o	disconnection	Upscale processing	
Tomporati	ura control motha	d	Standard control: PID ON/OFF pulse or two-position control	
Temperau	ure control metho	ou	Heating-cooling control: PID ON/OFF pulse	
		PID constants setting	Standard control: Can be set by auto-tuning or self-tuning.	
		J	Heating-cooling control: Can be set by auto-tuning.	
PID constants range		Proportional band (P)	Standard control: 0.0 to 1000.0%	
	-	Integral time (I)	Heating-cooling control: 0.1 to 1000.0% 1 to 3600s	
_		Integral time (I) Derivative time (D)	0 to 3600s	
Set value	(SV) setting rang	. ,	Within the temperature range set for the temperature sensor to be used	
Set value	(SV) setting rang	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	
Transistor output		Max. inrush current	0.4A, 10ms	
		Leakage current at OFF	0.1mA or less	
		Leakage current at OTT	1.0VDC (TYP) at 0.1A	
		Max. voltage drop at ON	2.5VDC (MAX) at 0.1A	
		Response time	OFF→ON: 2ms or less, ON→OFF: 2ms or less	
Number of writes to E ² PROM			Max. 10 ¹² times (number of FeRAM read/write)	
14diffibel 0	WINCS TO LITTLE	ZIVI	Max. 10 times (number of tertain read/write)	

Specifications			
Q64TCTTN	Q64TCTTBWN	Compatibility	Precautions for replacement
Transisto	or output	0	
Standard control: 4	4 channels/module		
Heating-cooling control	ol: 2 channels/module	0	
(Refer to Sec	tion 6.2.1 (1).)	0	
(Ambient temperature: 25±	5°C) Full scale × (±0.3%) ^{*1}		
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1 (Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1			
Within ±	:1.0°C ^{*1}		
Within ±	:2.0°C* ¹		
Within ±3.0°C ^{*1}			
0.5s (Constant regardless of	the number of channels used)	0	
1 to	100s	0	
11	ΜΩ	0	
0 to	100s	0	
-50.00 to	50.00%	0	
Upscale p	rocessing	0	
PID ON/OFF pulse o	r two-position control	0	
Standard control: Can be set Heating-cooling control: 0		0	
0.0 to 1	000.0%	0	
0 to 3	3600s	0	
0 to 3	3600s	0	
Within the temperature range set fo	r the temperature sensor to be used	0	
ON/OF	F pulse	0	
10 to 3	30VDC	0	
0.1A/point, 0	.4A/common	0	
0.4A, 10ms		0	
0.1mA	or less	0	
1.0VDC (T 2.5VDC (M	YP) at 0.1A AX) at 0.1A	0	
OFF→ON: 2ms or less,		0	
Max. 10 ¹² times (number of read/w		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	
nem		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	
Dicioculo Withstalia Volt		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		0 to 200	
Number of occupied I/O	points	32 points (I/O assignment: special 32 points)		
0 " ' ' '				
Connection terminal		20-point ten		
Applicable wire size		0.75 to ²		
Applicable solderless te	rminal	R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A		
		*0	*0	
Internal current consumption		0.33A (0.19A)* ²	0.39A (0.25A) ^{*2}	
\\/ - : t		0.201	0.001	
Weight		0.26kg	0.28kg	
External dimensions		34.5(W) × 130(H	1) × 93.6(D)mm	

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

(To the next page)

O: Compatible, \(\Delta : \) Partial change required, \(\times : \) Incompatible

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

(From the previous page)

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



6.2.2 A1S64TCTRT(BW) (platinum resistance thermometer connection)

16 a va		Specifications	
ľ	tem	A1S64TCTRT A1S64TCTRTBW	
Control output		Transistor output	
Number of temperature input points		Standard control: 4 channels/module	
Number of temperature	input points	Heating-cooling control: 2 channels/module	
Applicable temperature	sensor	(Refer to Section 6.2.2 (1).)	
Indication accuracy		(Ambient temperature: 25±5°C) Full scale × (±0.3%) ± 1 digit	
indication accuracy		(Ambient temperature: 0 to 55°C) Full scale × (±0.7%) ± 1 digit	
Sampling cycle		0.5s (Constant regardless of the number of channels used)	
Control output cycle		1 to 100s	
Input impedance		1ΜΩ	
Input filter		0 to 100s	
Sensor correction value	esetting	-50.00 to 50.00%	
Operation at sensor inp	ut disconnection	Upscale processing	
Towns and the control weather d		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	Compatibility	Precautions for replacement
Q64TCRTN Q64TCRTBWN	Compatibility	Frecautions for replacement
Transistor output	0	
Standard control: 4 channels/module	0	
Heating-cooling control: 2 channels/module		
(Refer to Section 6.2.2 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1		
(Ambient temperature: 0 to 55°C) Full scale × (±0.7%)*1	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	
Standard control: Can be set by auto-tuning or self-tuning. 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	

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 = $(400.0^{\circ}\text{C} - (-200.0^{\circ}\text{C})) \times (\pm 0.007) + (\pm 1.0^{\circ}\text{C})$ = $\pm 5.2^{\circ}\text{C}$

160		Specific	ations	
Item		A1S64TCTRT	A1S64TCTRTBW	
Insulation method		Between input terminal and programmable controller power supply: Transformer insulation		
insulation method		Between input channels:	Transformer insulation	
Dielectric withstand volt	200	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric withstand voit	age	Between input channels	: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable con		
modation resistance		Between input channels:	500VDC, 10MΩ or more	
			U.R.D.Co., LTD.	
	Current sensor		CTL-12-S36-8	
Heater disconnection detection specifications		_	CTL-6-P(-H)	
		_		
	Input accuracy		Full scale × (±1.0%)	
	Number of alert		3 to 255	
	delay		0 10 200	
N 1 6 : 11/0		32 points (I/O assignment: special 32 points)		
Number of occupied I/O	points			
Connection terminal		20-point terminal block		
Applicable wire size		0.75 to 1	1.5mm ²	
Applicable solderless te	rminal	R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
Internal current consum	ption	0.33A (0.19A)* ²	0.39A (0.25A)* ²	
			200	
Weight		0.26kg	0.28kg	
External dimensions		34.5(W) × 130(H	I) × 93.6(D)mm	

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

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

Platinum resistance	°C		°F	
thermometer type	Temperature measurement range	Resolution	Temperature measurement range	Resolution
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1
F1100	-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
JPTIOU	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1

Specific	cations	0	Barrellian formalisment
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)	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.
(I/O assignment. Intelligent 10 points)	Vacancy for 16 points + intelligent 16 points)		points and slots are different.
18-point terminal block	Two 18-point terminal blocks		
22 to 18 AWG			Wiring change is required.
R1.25-3			
			Recalculation of internal
0.29A	0.33A	Δ	current consumption (5VDC) is
			required.
0.17kg	0.28kg	Δ	
27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm	-	



6.2.3 A1S64TCTT(BW)-S1

lan			Specifications	
	Item		A1S64TCTT-S1 A1S64TCTTBW-S1	
Control ou	Control output		Transistor output	
Number of	f temperature inpu	t points	4 channels/module	
Applicable	temperature sens	sor	(Refer to Section 6.2.3 (1).)	
	Indication accuracy		(Ambient temperature: 25±5°C) Full scale × (±0.3%) ± 1 digit	
	Indication 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 ou	ontrol output cycle		1 to 100s	
	Input impedance		1ΜΩ	
Input filter	nput filter		0 to 100s	
	rrection value sett		-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	
Transistor output		Rated load voltage	10.2 to 30VDC	
		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	2.5VDC (MAX) at 0.1A	
		Response time	OFF \rightarrow ON: 2ms or less, ON \rightarrow OFF: 2ms or less	
Number of	f writes to E ² PRO	М	Max. 100,000 times	

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

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

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

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

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

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

ltem		Specifica	ations	
nem		A1S64TCTT-S1	A1S64TCTTBW-S1	
Insulation method		Between input terminal and programmable controller power supply: Transformer insulation		
modation metrod		Between input channels:	Transformer insulation	
Dielectric withstand volt	age	Between input terminal and programmable cor		
		Between input channels:	500VAC, for 1 minute	
		Between input terminal and programmable cont	roller power supply: 500VDC, 10MΩ or more	
Insulation resistance		Between input channels: 5	500VDC, 10MΩ or more	
	<u> </u>	1	<u>'</u>	
			U.R.D.Co., LTD.	
Heater disconnection detection specifications	Current sensor		CTL-12-S36-8	
			CTL-6-P(-H)	
		-	0.20.(,	
·	Input accuracy	1	Full scale × (±1.0%)	
	Number of alert	1	3 to 255	
	delay		3 to 255	
Number of occupied I/O	points	32 points (I/O assignment: special 32 points)		
Connection terminal		20-point term		
Applicable wire size		0.75 to 1.	.5mm ²	
Applicable solderless terminal		R1.25-3, 1.25-YS3, RA\	/1.25-3, V1.25-YS3A	
Internal current consumption		0.33A	0.42A	
NA - 1 -		0.071	0.001	
Weight		0.27kg	0.30kg	
External dimensions		34.5(W) × 130(H)) × 93.6(D)mm	

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

	0	C	°F Temperature	
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
J	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
Т	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0 to 700 -300 to 400	1
	-200.0 to 400.0 0.0 to 400.0	0.1	0.0 to 700.0	0.1

(To the next page)

Specifications		Competibility	Dragoutions for replacement
Q64TCTTN	Q64TCTTBWN	Compatibility	Precautions for replacement
Between input terminal and programmable co	ontroller power supply: Transformer insulation	0	
Between input channels	: Transformer insulation)	
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 progra	ammable controller power supply:		
500VDC, 20	MΩ 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 dosigniment: intelligent to points)	Vacancy for 16 points + intelligent 16 points)		points and slots are uniciont.
18-point terminal block	Two 18-point terminal blocks		
22 to 1	8 AWG	×	Wiring change is required.
R1.25-3			
			Recalculation of internal
0.29A	0.33A	Δ	current consumption (5VDC) is
			required.
0.17kg	0.28kg	Δ	
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		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		-	-
PLII	0 to 1200	1	0 to 2300	1
W5Re/W26Re	0 to 2300	1	0 to 3000	1



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

	tem -	Specifications		
	tem	A1S64TCRT-S1	A1S64TCRTBW-S1	
Control output		Transistor output		
Number of temperature	input points	4 channels/	/module	
Applicable temperature	sensor	(Refer to Sectio	on 6.2.4 (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		
Sampling cycle		0.5s (Constant regardless of the	e number of channels used)	
Control output cycle		1 to 10	00s	
Input impedance		1ΜΩ	2	
Input filter		0 to 10	00s	
Sensor correction value	setting	-50.00 to 5	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.		
DID constants range	Proportional band (P)	0.0 to 1000.0%		
PID constants range	Integral time (I)	1 to 3600s		
	Derivative time (D)	0 to 3600s		
Set value (SV) setting ra	ange	Within the temperature range set for the	ange set for the temperature sensor to be used	
	Output signal	ON/OFF	pulse	
	Rated load voltage	10.2 to 30	OVDC	
	Max. load current	0.1A/point, 0.4	A/common	
	Max. inrush current	0.4A, 10	0ms	
Transistor output	Leakage current at OFF	0.1mA or	r less	
	Max. voltage drop at	1.0VDC (TYF	•	
	ON	2.5VDC (MA)	<u>'</u>	
	Response time	OFF→ON: 2ms or less, C		
Number of writes to E ² F	PROM	Max. 100,00	00 times	

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

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

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

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

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

Item		Specific	cations	
Item		A1S64TCRT-S1	A1S64TCRTBW-S1	
Inculation output		Between input terminal and programmable controller power supply: Transformer insulation		
Insulation output		Between input channels	: Transformer insulation	
Dielectric withstand volta	age	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric Withstand Volta		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		0 to 200	
Number of occupied I/O	points	32 points (I/O assignment: special 32 points)		
O		00	and a state of	
Connection terminal		20-point ten		
Applicable wire size		0.75 to ²		
Applicable solderless terminal		R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
Internal current consum	ption	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 measurement range	Resolution	Temperature measurement range	Resolution	
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1	
P1100	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	
JPt100	-200.0 to 500.0	0.1	-300 to 900	1	
JFIIOU	-200.0 to 200.0	0.1	-300.0 to 300.0	0.1	

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

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



6.2.5 A1S62TCTT(BW)-S2

	Item Specifications			
	item		A1S62TCTT-S2 A1S62TCTTBW-S2	
Control ou	Control output		Transistor output	
Number of	f temperature inpu	t points	2 channels/module	
Applicable	temperature sens	sor	(Refer to Section 6.2.5 (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	cycle		0.5s (Constant regardless of the number of channels used)	
Control ou	Control output cycle		1 to 100s	
Input impe	Input impedance		1ΜΩ	
Input filter			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	Proportional band (P) Integral time (I)		0.0 to 1000.0%	
			1 to 3600s	
		Derivative time (D)	0 to 3600s	
Set value	(SV) setting range		Within the temperature range set for the temperature sensor to be used	
		Output signal	ON/OFF pulse	
		Rated load voltage	10.2 to 30VDC	
		Max. load current	0.1A/point, 0.4A/common	
Transistor	output	Max. inrush current	0.4A 10ms	
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 or less	
Number of	f writes to E ² PRO	М	Max. 100,000 times	

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

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

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

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

(Example) Accuracy at the input range of 38 (-200.0 to 400.0° 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		
nem		A1S62TCTT-S2	A1S62TCTTBW-S2	
Inculation 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 Volt	ay c	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		2 222	
N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		20 : 1 4/2		
Number of occupied I/O	points	32 points (I/O assignm	ent: special 32 points)	
Connection terminal		20-point ter	minal block	
Applicable wire size		0.75 to	1.5mm ²	
Applicable solderless terminal		R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
Internal current consum	ption	0.19A		
Weight		0.25kg	0.28kg	
External dimensions		34.5(W) × 130(F	H) × 93.6(D)mm	

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

	0	С	°F		
Thermocouple type	Temperature measurement range	Resolution	Temperature measurement range	Resolution	
R	0 to 1700	1	0 to 3000	1	
	0 to 500		0 to 1000		
	0 to 800	1	0 to 1000	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	
т	0 to 200	1	-300 to 400	'	
	0 to 400				
	-200.0 to 400.0	0.1	0.0 to 700.0	0.1	
	0.0 to 400.0	U. I	0.0 to 700.0	U. I	

(To the next page)

Specifi		inange required, . meempatible		
Q64TCTTN	Q64TCTTBWN	Compatibility	Precautions for replacement	
Between input terminal and programmable co	ontroller power supply: Transformer insulation s: Transformer insulation	0		
	ontroller power supply: 500VAC, for 1 minute s: 500VAC, for 1 minute	0		
	ntroller power supply: 500VDC, 20M Ω or more 500VDC, 20M Ω or more	0		
-	U.R.D.Co., LTD. CTL-12-S36-8 CTL-12-S36-10 CTL-12-S56-10 CTL-6-P(-H) Full scale × (±1.0%) 3 to 255	0		
16 points/slot (I/O assignment: intelligent 16 points)	32 points/2 slots (default I/O assignment Vacancy for 16 points + intelligent 16 points)	Δ	The number of occupied I/O points and slots are different.	
18-point terminal block	Two 18-point terminal blocks		_	
22 to 1	×	Wiring change is required.		
0.29A	0.33A		Recalculation of internal current consumption (5VDC) is required.	
0.17kg	0.28kg	Δ		
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 measurement range		Temperature measurement range	Resolution	
S	0 to 1700	1	0 to 3000	1	
В	400 to 1800	1	800 to 3000	1	
E	0 to 400 0 to 1000	1	0 to 1800	1	
	0.0 to 700.0	0.1	-	-	
N	0 to 1300	1	0 to 2300	1	
U	0 to 400 -200 to 200	1	0 to 700 -300 to 400	1	
	0.0 to 600.0	0.1	-	-	
	0 to 400 0 to 900	1	0 to 800 0 to 1600	1	
L	0.0 to 400.0 0.0 to 900.0	0.1	-	-	
PLII	0 to 1200	1	0 to 2300	1	
W5Re/W26Re	0 to 2300	1	0 to 3000	1	



6.2.6 A1S62TCRT(BW)-S2

7	tom	Specific	cations	
II.	tem	A1S62TCRT-S2	A1S62TCRTBW-S2	
Control output		Transisto	or output	
Number of temperature	input points	2 channels	s/module	
Applicable temperature	sensor	(Refer to Secti	ion 6.2.6 (1).)	
Indication accuracy		(Ambient temperature: 25±5°C)) Full scale × (±0.3%) ± 1 digit	
indication 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	Ω	
Input filter		0 to 1	100s	
Sensor correction value	setting	-50.00 to	50.00%	
Operation at sensor inp	ut disconnection	Upscale processing		
Temperature control me	thod	PID ON/OFF pulse or two-position control		
	PID constants setting	Can be set by	auto-tuning.	
DID constants non-	Proportional band (P)	0.0 to 10	000.0%	
PID constants range	Integral time (I)	1 to 3	600s	
	Derivative time (D)	0 to 30	600s	
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 3	30VDC	
	Max. load current	0.1A/point, 0.	4A/common	
	Max. inrush current	0.4A, ·	10ms	
Transistor output	Leakage current at	0.1mA	or lace	
	OFF			
	Max. voltage drop at	1.0VDC (TYP) 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	

Specifications	Compatibility	Precautions for replacement
Q64TCRTN Q64TCRTBWN		Treductions for replacement
Transistor output	0	
4 channels/module	0	
(Refer to Section 6.2.6 (1).)	0	
(Ambient temperature: 25±5°C) Full scale × (±0.3%)*1	_	
(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		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 volt	200	Between input terminal and programmable co	ontroller power supply: 500VAC, for 1 minute	
Dielectric Withstand Volt	ay e	Between input channels	:: 500VAC, for 1 minute	
Insulation resistance		Between input terminal and programmable cor	ntroller power supply: 500VDC, $10M\Omega$ or more	
Ilisulation 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 to 230	
Number of occupied I/O	points	32 points (I/O assignm	ent: special 32 points)	
Connection terminal		20-point terr	minal black	
		-		
Applicable wire size		0.75 to 1		
Applicable solderless te	rminal	R1.25-3, 1.25-YS3, RA	V1.25-3, V1.25-YS3A	
Into me al comment conservation	4:	0.404	0.004	
Internal current consumption		0.19A	0.28A	
Weight		0.25kg	0.28kg	
External dimensions		34.5(W) × 130(H	H) × 93.6(D)mm	

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

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

Specific	Composibility	Dungaritions for replacement	
Q64TCRTN	Q64TCRTBWN	Compatibility	Precautions for replacement
Between input terminal and programmable co	ontroller power supply: Transformer insulation	0	
Between input channels	: Transformer insulation	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	O	
	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/alet	32 points/2 slots		The number of occupied I/O
(I/O assignment: intelligent 16 points)	16 points/slot (default I/O assignment		points and slots are different.
(I/O assignment. Intelligent To points)	Vacancy for 16 points + intelligent 16 points)		points and slots are different.
18-point terminal block	Two 18-point terminal blocks		_
22 to 18	×	Wiring change is required.	
R1.2			
			Recalculation of internal
0.29A	0.33A	Δ	current consumption (5VDC) is
			required.
0.17kg	0.28kg	Δ	
27.4(W) × 98(H) × 112(D)mm	55.2(W) × 98(H) × 112(D)mm	-	

6.3 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 fun	ction	Suppresses the manipulated value overshoot which frequently occurs when the set value (SV) is changed or the control target is changed.		
Sensor correcti	ion function	Reduces the difference between the measured value and actual temperature to zero when these two are different due to measurement conditions, etc.		
Unused channe	el setting	Sets not to execute PID operation for channels that do not perform temperature control.		
PID control ford	ced stop	Forcibly stops an PID operation in the channel where temperature control is in process.		
Heater disconn	ection detection function	Measures the current that flows in the heater main circuit and detects disconnection.		
Output off-time	current error detection function	An error of when the transistor output is off can be detected by measuring whether there is current flowing in the heater main circuit.		
Loop disconne	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	ı 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	at CPU stop error	Whether to hold or clear temperature control output when a CPU stop error occurs can be selected.		
Control function	า	A control status can be specified by setting output signals and buffer memory.		
Online module	change	A module can be changed without stopping the system.		
	Cooling method setting function	An auto tuning operation formula can be set according to the selected cooling system (water-cooling or air-cooling).		
Heating- cooling control	Overlap/dead band function	An temperature area can be set near the temperature where heating output and cooling output is switched: An overlap area where both are output or a dead band area where neither is output.		
	Temperature conversion function (using unused channels)	Utilizing input channels that are not used for the control (monitor channel 1, 2), temperature conversion can be performed.		

O: Available -: Not available

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

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

6.4 I/O Signal Comparison

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

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

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

A1S64TCTRT(BW)				Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN			
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	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 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		Х9	Default value write completion flag	Y9	Default setting registration instruction
XA	FeRAM write incomplete flag	YA		XA	E ² PROM write failure flag	YA	Use prohibited
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	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	OSS PISHIBIRE	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.



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

A1S64TCTRT(BW)					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		
X3	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		
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 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	Use prohibited	X16 X17	Use prohibited	Y16 Y17	Use prohibited		
X18		Y18	FeRAM backup command	X18	E ² PROM write completion flag	Y18	E ² PROM backup instruction		
X19		Y19	Default setting registration command	X19	Default value write completion flag	Y19	Default setting registration instruction		
X1A		Y1A	CH1 Forced PID control stop command	X1A	E ² PROM write failure flag	Y1A	Use prohibited		

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

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

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

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

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



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

	A1S64TCTT(BW)-S1,	A1S64T0	CRT(BW)-S1	Q64TCTTN, Q64TCRTN*1				
				Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	
X0	Watchdog timer error flag	Y0		X0	Module READY flag	Y0	Use prohibited	
X1	Temperature control module READY flag	Y1		X1	Setting/operation mode status	Y1	Setting/operation mode instruction	
X2	Write error flag	Y2		X2	Write error flag	Y2	Error reset instruction	
Х3	Hardware error flag	Y3		Х3	Hardware error flag	Y3	Use prohibited	
X4	CH1 tuning status flag	Y4		X4	CH1 Auto tuning status	Y4	CH1 Auto tuning instruction	
X5	CH2 tuning status flag	Y5		X5	CH2 Auto tuning status	Y5	CH2 Auto tuning instruction	
X6	CH3 Auto tuning status	Y6		X6	CH3 Auto tuning status	Y6	CH3 Auto tuning instruction	
X7	CH4 Auto tuning status	Y7		X7	CH4 Auto tuning status	Y7	CH4 Auto tuning instruction	
X8	E ² PROM write completion flag	Y8	Use prohibited	X8	E ² PROM write completion flag	Y8	E ² PROM backup instruction	
Х9	Default value write complete flag	Y9	·	X9	Default value write completion flag	Y9	Default setting registration instruction	
XA	FeRAM write incomplete flag	YA		XA	E ² PROM write failure flag	YA	Use prohibited	
ХВ	Use prohibited	YB		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 tuning status	Y15	CH2 Auto tuning instruction	
X16	Use prohibited Y10		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 Y1C	CH2 Forced PID control	X1B	Setting change	Y1B	Setting change		
ΛΙΒ			stop command	XID	completion flag	115	instruction		
X1C			CH3 Forced PID control	X1C	CH1 Alert occurrence	Y1C	CH1 PID control forced		
XIO			stop command		flag	110	stop instruction		
X1D	Use prohibited	Y1D	CH4 Forced PID control	X1D	CH2 Alert occurrence	Y1D	CH2 PID control forced		
ΛID	Ose profibiled	לוו	stop command	AID	flag	110	stop instruction		
V1E	X1E X1F	Y1E		X1E	CH3 Alert occurrence	Y1E	CH3 PID control forced		
AIL		TIE	Use prohibited	A I L	flag	112	stop instruction		
V1E		Y1F	ose prombiled	X1F	CH4 Alert occurrence	Y1F	CH4 PID control forced		
AIF		Y1F		ΛIF	flag	i IF	stop instruction		

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

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

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

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



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

A1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2					Q64TCTTN, Q64TCRTN ^{*1} Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X0	Watchdog timer error flag	Y0		X0	Module READY flag	Y0	Use prohibited		
X1	Temperature control module READY flag	Y1		X1	Setting/operation mode status	Y1	Setting/operation mode instruction		
X2	Write error flag	Y2		X2	Write error flag	Y2	Error reset instruction		
X3	Hardware error flag	Y3		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 of an amatic or mand	X10	Module READY flag	Y10	Use prohibited Setting/operation mode		
X11		Y11	Setting/operation mode command	X11	Setting/operation mode status	Y11	instruction		
X12		Y12	Error reset command	X12	Write error flag	Y12	Error reset instruction		
X13		Y13	Use prohibited	X13	Hardware error flag	Y13	Use prohibited		
X14		Y14	CH1 Auto-tuning command	X14	CH1 Auto tuning status	Y14	CH1 Auto tuning instruction		
X15	Use prohibited	Y15	CH2 Auto-tuning command	X15	CH2 Auto tuning status	Y15	CH2 Auto tuning instruction		
X16 X17		Y16 Y17	Use prohibited	X16 X17	Use prohibited	Y16 Y17	Use prohibited		
X18		Y18	FeRAM backup command	X18	E ² PROM write completion flag	Y18	E ² PROM backup		
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		

HEATING-COOLING TEMPERATURE CONTROL MODULE/

A1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2					Q64TCTTN, Q64TCRTN*1 Q64TCTTBWN, Q64TCRTBWN				
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name		
X1B		Y1B	CH2 Forced PID control stop command	X1B	Setting change completion flag	Y1B	Setting change instruction		
X1C	Use prohibited	Y1C		X1C	CH1 Alert occurrence flag	Y1C	CH1 PID control forced stop instruction		
X1D	Ose profibiled	Y1D	Use prohibited	X1D	CH2 Alert occurrence flag	Y1D	CH2 PID control forced stop instruction		
X1E		Y1E		X1E	Use prohibited	Y1E	Use prohibited		
X1F		Y1F		X1F		Y1F	<u>'</u>		

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

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

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

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



6.5 Buffer Memory Address Comparison

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

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

				A1S64TCTRT(BW)		
	Address (h	exadecimal		Name	Donall control	
CH1	CH2	CH3	CH4	Name	Read/write	
		0		Error code		
1	2	3	4	Decimal point position		
5	6	7	8	Alert detail		
9	Α	В	С	Temperature process value (PV)		
D	E	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	
	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	1	
27	47	67	87	Setting of Alert alarm 2	1	
28	48	68	88	Setting of Alert alarm 3	1	
29	49	69	89	Setting of Alert alarm 4		
2A	4A	6A	8A	Upper output limiter	1	
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	- R/VV	
30	50	70	90	Primary delay digital filter setting		
31	51	71	91	Control response parameter		
32	52	72	92	AUTO/MAN mode switching		
33	53	73	93	MAN output setting		
34	54	74	94	Setting change rate limiter		
35	55	75	95	AT bias		
36	56	76	96	Direct/reverse action setting		
37	57	77	97	Upper setting limiter		
38	58	78	98	Lower setting limiter		
39	59	79	99	CT selection	1	
3A	5A	7A	9A	Heater disconnection alert setting	1	
3B	5B	7B	9B	Loop disconnection detection judgment time		
3C	5C	7C	9C	Loop disconnection detection dead band	1	
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	
		E		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	17/77
3D	5D	7D	9D	Unused channel setting	

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

A1S64TCTRT(BW)								
Address (hexadecimal)				Name	Read/write			
CH1	CH2	CH3	CH4	Name	Reau/write			
3E	5E	7E	9E	Self-tuning setting	R/W			
3F	5F	7F	9F	Self-tuning flag	R			
	Α	.0		Mode setting for Alert alarm 1				
	Α	.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				
	Α	.5		Alert delay count				
	A	6		Heater disconnection/output off-time current error				
	^	.0		detection delay count	R/W			
	A7			Temperature rise completion range setting				
	Α	.8		Temperature rise completion soak time setting				
	Α	.9		PID continuation flag				
	Α	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			
	В	5		System area (Use prohibited)	-			
	В	6		Cold junction temperature compensation selection	R/W			
	В	7		Control switching monitor	R			

⊠ Point -

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

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

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

6 HEATING-COOLING TEMPERATURE CONTROL MODULE/

			Q64TCT1	IN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN				
	Address (h	exadecimal)		Name	Dandhuuita			
CH1	CH2	CH3	CH4	Name	Read/write			
3E	5E	7E	9E	E ² PROM's PID constants read instruction	R/W			
3F	5F	7F	9F	Automatic backup setting after auto tuning of PID constants	10,44			
	Д	۸0						
	Д	\1		System area (Use prohibited)	_			
	Д	\2		Dystem area (Ose promoted)				
	Д	١3						
		۸4		Alert dead band setting				
	Α	\5		Number of alert delay				
	Д	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				
		Α		Heater disconnection correction function selection				
AB	AC	AD	AE	System area (Use prohibited)	-			
		√F		Transistor output monitor ON delay time setting	R/W			
		30		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	R/W			
		06		analog module	R/W			
		36 37		Cold junction temperature compensation selection Control switching monitor	FC/VV			
DO	B9		DD		- D/M			
B8		BA	BB	Auto tuning mode selection	R/W			
	1	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	1011			
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			
		o 10F		CT input channel assignment setting				
				CT selection	R/W			
110 to 117 118 to 11F					100			
				Reference heater current value				
0.7		0	l a					
23E	25E	27E	29E	Self-tuning setting	R/W			
23F	25F	27F	29F	Self-tuning flag	R			



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

		A1S64TCTRT(BW)	
Address (h	exadecimal)	Nome	Dandhuit.
CH1	CH2	Name Name	Read/write
	0	Error code	
1	2	Decimal point position	
5	6	Alert detail	
9	Α	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	ID	Cold junction temperature process value	
1	IE		
1	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	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	Custom area (Llee prohibited)	
2C	4C	System area (Use prohibited)	-
2D	4D	Sensor compensation value setting	R/W
2E	4E	System area (Use prohibited)	-
2F	4F	Heating control output period setting	
30	50	Primary delay digital filter setting	R/W
31	51	Control response parameter	
32	52	System area (Use prohibited)	_
33	53	Gystem area (636 prombited)	_
34	54	Setting change rate limiter	R/W
35	55	System area (Use prohibited)	_
36	56		
37	57	Upper setting limiter	
38	58	Lower setting limiter	R/W
39	59	CT selection	
3A	5A	Heater disconnection alert setting	
3B	5B	System area (Use prohibited)	_
3C	5C		
3D	5D	Unused channel setting	R/W

		CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN		
Address (he)		Name	Read/write	
CH1	CH2			
0		Write data error code		
1	2	Decimal point position		
5	6	Alert definition		
9	Α	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	H/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	R/W	
38	58	Lower limit setting limiter	- FV VV	
39	59	System area (Use prohibited)	-	
3A	5A	Heater disconnection alert setting	R/W	
3B	5B	System area (Use prohibited)	_	
3C	5C	System area (Ose promisited)		
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	D. adlamita	
CH1	CH2	Name	Read/write	
3E	5E	Court and a second (the annual tilt thank)		
3F	5F	System area (Use prohibited)	-	
A	۸0	Mode setting for Alert alarm 1		
A	\1	Mode setting for Alert alarm 2		
A	Λ2	Mode setting for Alert alarm 3		
A	13	Mode setting for Alert alarm 4		
A	\4	Alert dead band setting		
A	\ 5	Alert delay count		
^	.6	Heater disconnection/output off-time current error		
	10	detection delay count	R/W	
A	.7	Temperature rise completion range setting		
A	۸8	Temperature rise completion soak time setting		
P	v 9	PID continuation flag		
Д	A	Heater voltage compensation setting		
AB	AC	Heater current reference value		
Д	.F	Transistor output monitor ON delay time setting		
E	30	CT monitor method switching		
B1	B2	Heating control output monitor	R	
t	0			
	36	Cold junction temperature compensation selection	R/W	
E	37	Control switching monitor	R	
B8	B9	Temperature conversion setting	R/W	
	0			
C0	C1	Manipulated value for cooling (MV)		
C2	C3	Cooling control output monitor	R	
C4 C5		Cooling transistor output flag		
to		0 " 1 "		
CF F0		Cooling type setting		
D0	E0	Cooling proportional band (Pc) setting	D/M	
D1	E1 E2	Cooling upper output limiter	R/W	
D2 D3	E2 E3	Cooling control output period setting Overlap/dead band		
טט	ES	Ovenap/ueau panu		

⊠Point -

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

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

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

6 HEATING-COOLING TEMPERATURE CONTROL MODULE/

			CTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN		
	Address (he	<u> </u>	Name	Read/write	
	CH1	CH2			
	3E	5E	E ² PROM's PID constants read instruction	R/W	
	3F	5F	Automatic backup setting after auto tuning of PID constants		
	A				
	A1 A2		System area (Use prohibited)	-	
	AS				
	A		Alert dead band setting		
	A)	Number of alert delay		
	A	3	Heater disconnection/output off-time current error detection		
			delay count	R/W	
	A	7	Temperature rise completion range setting	1000	
	AA A	3	Temperature rise completion soak time setting		
	AS	9	PID continuation flag		
	AA	4	Heater disconnection correction function selection		
	AB	AC	System area (Use prohibited)	-	
	AF		Transistor output monitor ON delay time setting		
	BO		CT monitor method switching	R/W	
			Manipulated value of heating (MVh) for output with another		
	B1	B2	analog module	R	
			Resolution of the manipulated value for output with another		
	B	5	analog module	R/W	
	B6		Cold junction temperature compensation selection		
	B7		Control switching monitor	R	
	B8	B9	Auto tuning mode selection	R/W	
	BC to		System area (Use prohibited)	-	
	C0	D0	Alert 1 mode setting		
	C1	D1	Alert 2 mode setting		
	C2	D2	Alert 3 mode setting	R/W	
	C3	D3	Alert 4 mode setting		
	C4 to CF	D4 to DF	System area (Use prohibited)		
	100 to		Heater current process value	R	
	108 to		CT input channel assignment setting		
	110 to		CT selection	R/W	
	118 to		Reference heater current value		
	to				
	2B8	2B9	Temperature conversion setting	R/W	
	to		System area (Use prohibited)	<u> </u>	
	2C0	2C1	Manipulated value for cooling (MVc)	R	
	to				
			Manipulated value of cooling (MVc) for output with another		
	2C4	2C5	analog module	R	
	to				
	2C8	2C9	Cooling transistor output flag	R	
	to		J		
	2C		Cooling method setting		
	2D0	2E0	Cooling proportional band (Pc) setting		
	2D1	2E1	Cooling upper limit output limiter	R/W	
	2D2	2E2	Cooling control output cycle setting		
	2D3	2E3	Overlap/dead band setting		



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

			A1S	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	E	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		
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)		Nama	Dood/unite
	CH1	CH2	CH3	CH4	- Name	Read/write
			0		Write data error code	
	1	2	3	4	Decimal point position	
	5	6	7	8	Alert definition	
	9	Α	В	С	Temperature process value (PV)	
	D	Е	F	10	Manipulated value (MV)	
	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*2	
		1	E		MAN mode shift completion flag	
		1	F		System area (Use prohibited)	-
	20	40	60	80	Input range	
ļ	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	
ľ	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	DAM
	3C	5C	7C	9C	Loop disconnection detection dead band	R/W
İ	3D	5D	7D	9D	Unused channel setting	

A1S64TCTT(BW)-S1, A1S64TCRT(BW)-S1						
Address (hexadecimal) Name Read/write				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)	-	
	Α	1 0		Alert alarm 1 mode setting		
	Α	\1		Alert alarm 2 mode setting		
	Α	.2		Alert alarm 3 mode setting		
	Α	.3		Alert alarm 4 mode setting		
	А	۸4		Alert blind section setting		
	Α	\ 5		Number of alert delays		
	A6 A7			Number of delays for heater disconnection/current	R/W	
				error detection when output is turned off		
				Temperature increase complete range setting		
	А	۸8		Temperature increase complete soak time setting		
	A9			PID continue flag		
	А	A		Heater voltage compensation function setting		
AB	AC	AD	AE	Standard heater current value		
	А	٠F		Transistor output monitor on delay time setting		
	В0			CT monitor method switch		
B1	B2	В3	B4	Manipulation value (MV) (0 to 4000)	R	
	B5			System area (Use prohibited)	-	
				Cold junction temperature compensation selection*1		
	В	86		(This area can be used with the software version F or	R/W	
				later.)		

^{*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.

Q64TCTTN, Q64TCTTBWN, Q64TCRTBWN						
		exadecimal)		Name	Read/write	
CH1	CH2	CH3	CH4			
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		
	Α	.0				
	Α	.1		System area (Use prohibited)		
	Д	.2		- System area (Ose prombited)	-	
	Д	.3]		
	Д	4		Alert dead band setting		
	Д	.5		Number of alert delay		
		^		Heater disconnection/output off-time current error detection		
	А	.6		delay count	D/M/	
	Д	.7		Temperature rise completion range setting	R/W	
	Д	.8		Temperature rise completion soak time setting		
	Д	.9		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		
	В	0		CT monitor method switching	17/ VV	
B1	B2	B3	B4	Manipulated value (MV) for output with another analog module	R	
	Р	5		Resolution of the manipulated value for output with another		
		.5		analog module		
В6				Cold junction temperature compensation selection	R/W	
	Е	57		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	TV/ V V	
C3	D3	E3	F3	Alert 4 mode setting		
C4 to CF	D4 to DF	E4 to EF	F4 to FF	System area (Use prohibited)	-	
		o 107		Heater current process value	R	
108 to 10F				CT input channel assignment setting		
110 to 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	



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

A1S62TCTT(BW)-S2, A1S62TCRT(BW)-S2								
	exadecimal)	Name	Read/write					
CH1	CH2							
	0	Write data error code						
1	2	Decimal point position						
5	6	Alert occurrence details						
9	Α	Temperature process value (PV)						
D	Е	Heating manipulation value (MV)	R					
11	12	Increased temperature determination flag						
15	16	Heating transistor output flag						
19	1A	Heater current process value						
1	D	Cooling contact temperature process value*1						
1	E	Customs area (Han much thirted)						
1	F	System area (Use prohibited)	-					
20	40	Input range						
21	41	Stop mode setting						
22	42	Set value (SV) setting						
23	43	Heating proportional band (Ph) setting						
24	44	Integral time (I) setting						
25	45	Derivative time (D) setting	R/W					
26	46	Alert set value 1						
27	47	Alert set value 2						
28	48	Alert set value 3						
29	49	Alert set value 4						
2A	4A	Heating-cooling upper output limiter setting						
2B	4B	Cyatam area (Llas prohibited)						
2C	4C	System area (Use prohibited)	-					
2D	4D	Sensor compensation value setting	R/W					
2E	4E	System area (Use prohibited)	-					
2F	4F	Heating control output cycle setting						
30	50	First-order delay digital filter setting	R/W					
31	51	Control response parameter						
32	52	System area (Llee 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	17/ VV					
3A	5A	Heater wire breakage alert setting						
3B	5B	System area (Use prohibited)	_					
3C	5C	System area (Ose prombiled)	-					
3D	5D	Not used channel setting	R/W					

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

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

Add	ress (hexadecimal)	Nama	Dood/swite
CH1	CH2	Name Name	Read/write
	0	Write data error code	
1	2	Decimal point position	
5	6	Alert definition	
9	A	Temperature process value (PV)	
D	E	Manipulated value for heating (MVh)	
11	12	Temperature rise judgment flag	R
15	16	Heating transistor output flag	
19	1A	Set value (SV) monitor	
	1D	Cold junction temperature process value*2	
	1E	MAN mode shift completion flag	
	1F	E ² PROM's PID constants read/write completion flag	
20	40	Input range	
21	41	Stop mode setting	
22	42	Set value (SV) setting	
23	43	Heating proportional band (Ph) setting	7
24	44	Integral time (I) setting	
25	45	Derivative time (D) setting	
26	46	Alert set value 1	
27	47	Alert set value 2	
28	48	Alert set value 3	
29	49	Alert set value 4	
2A	4A	Upper limit output limiter	D///
2B	4B	Lower limit output limiter	R/W
2C	4C	Output variation limiter setting	
2D	4D	Sensor correction value setting	
2E	4E	Adjustment sensitivity (dead band) setting	
2F	4F	Heating control output cycle setting	
30	50	Primary delay digital filter setting	
31	51	Control response parameter	
32	52	AUTO/MAN mode shift	
33	53	MAN output setting	
34	54	Setting change rate limiter	
35	55	AT bias	
36	56	System area (Use prohibited)	-
37	57	Upper limit setting limiter	R/W
38	58	Lower limit setting limiter	17/77
39	59	System area (Use prohibited)	-
3A	5A	Heater disconnection alert setting	R/W
3B	5B	System area (Use prohibited)	-
3C	5C		
3D	5D	Unused channel setting	R/W

Name		A18	662TCTT(BW)-S2, A1S62TCRT(BW)-S2		
System area (Use prohibited) 3E	Address (h	exadecimal)	Namo	Poad/write	
3F 5F System area (Use prohibited) A0 Alert alarm 1 mode setting A1 Alert alarm 2 mode setting A2 Alert alarm 3 mode setting A3 Alert alarm 4 mode setting A4 Alert blind section setting A5 Number of alert delays A6 Number of delays for heater wire breakage/current error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited) B7 B8 B9 to C0 C1 Cooling manipulated value (MV) C2 C3 C3 Cooling manipulated value (MV) (0 to 4000) R C4 C5 Cooling manipulated value (MV) C6 C6 C7 Cooling manipulated value (MV) (0 to 4000) R C7 C8 C0 C9 C1 Cooling manipulated value (MV) (0 to 4000) R C6 C7 C7 C00 (0 to 4000) R C7 C8 C00 (0 to 4000) R C9 C9 C1 C00 (0 to 4000) R C9 C9 C1 C00 (0 to 4000) R C9 C9 C1 C00 (0 to 4000) R C9 C9 C1 C00 (0 to 4000) R C9 C9 C1 C00 (0 to 4000) R C9 C9 C9 C00 (0 to 4000) R C9 C9 C9 C00 (0 to 4000) R C9 C9 C9 C00 (0 to 4000) R C9 C9 C9 C00 (0 to 4000) R C9 C9 C9 C00 (0 to 4000) R C9 C9 C9 C9 C00 (0 to 4000) R C9 C9 C9 C9 C9 (0 to 4000) R C9 C9 C9 C9 C9 (0 to 4000) R C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C9 C	CH1	CH2	Name	Reau/write	
A0 Alert alarm 1 mode setting A1 Alert alarm 2 mode setting A2 Alert alarm 3 mode setting A3 Alert alarm 4 mode setting A4 Alert blind section setting A5 Number of alert delays A6 Number of delays for heater wire breakage/current error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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) B5 B6 System area (Use prohibited) C0 C1 Cooling manipulated value (MV) C2 C2 C3 C3 Cooling manipulated value (MV) C4 C5 Cooling manipulated value (MV) (0 to 4000) CF Cooling manipulated value (MV) (0 to 4000) CF Cooling manipulated value (MV) (0 to 4000) CF Cooling manipulated value (MV) (0 to 4000) C7 C8 C5 Cooling manipulated value (MV) (0 to 4000) C9 C9 C1 Cooling manipulated value (MV) (0 to 4000) C9 C9 C3 C5 Cooling manipulated value (MV) (0 to 4000) C9 C9 C0 C0 C0 Cooling manipulated value (MV) (0 to 4000) C9 C9 C0 C0 C0 Cooling manipulated value (MV) (0 to 4000) C9 C9 C0 C0 C0 C0 C0 C0 C0 C0 C0 C0 C0 C0 C0	3E	5E	System area (Use prohibited)		
A1	3F	5F	System area (Ose profibiled)	-	
A2 Alert alarm 3 mode setting A3 Alert alarm 4 mode setting A4 Alert blind section setting A5 Number of alert delays A6 Number of delays for heater wire breakage/current error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited)	A	۸0	Alert alarm 1 mode setting		
A3 Alert alarm 4 mode setting A4 Alert blind section setting A5 Number of alert delays A6 Number of alert delays A6 Number of alert delays A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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) B5 B6 System area (Use prohibited) B7 B8 B9 to C0 C1 Cooling manipulated value (MV) C2 C3 C3 Cooling manipulated value (MV) C4 C5 Cooling transistor output flag CF Cooling proportional band (Pc) setting D1 E1 Cooling upper output limiter R/W D2 E2 Cooling control output cycle setting	A	\1	Alert alarm 2 mode setting		
A4 Alert blind section setting A5 Number of alert delays Number of delays for heater wire breakage/current error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited) C0 C1 Cooling manipulated value (MV) C2 C3 Cooling manipulated value (MV) C4 C5 Cooling transistor output flag CF Cooling proportional band (Pc) setting D1 E1 Cooling upper output limiter CAT MAN NAM NAM R/W R/W R/W R/W R/W R/W R/W R/	A	\2	Alert alarm 3 mode setting		
A5 Number of alert delays A6 Number of delays for heater wire breakage/current error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited)	Į.	\ 3	Alert alarm 4 mode setting		
A6 Number of delays for heater wire breakage/current error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited)	Į.	N4	Alert blind section setting		
A6 error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited)		\ 5	Number of alert delays		
error detection when output is turned off A7 Temperature increase complete range setting A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited)	,	.6	Number of delays for heater wire breakage/current		
A8 Temperature increase complete soak time setting A9 PID continue flag AA 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 B5 B6 System area (Use prohibited)	<i>,</i>	NO .	error detection when output is turned off	R/W	
A9 PID continue flag AA 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 B5 B6 System area (Use prohibited)	ļ.	۸7	Temperature increase complete range setting		
AA Heater voltage compensation function setting AB AC Standard heater current value AF Transistor output monitor ON delay time setting BO CT monitor method switch B1 B2 Heating manipulated value (MV) (0 to 4000) R B5 B6 System area (Use prohibited)		\ 8	Temperature increase complete soak time 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 B5 B6 System area (Use prohibited)		٧9	PID continue flag		
AF Transistor output monitor ON delay time setting B0 CT monitor method switch B1 B2 Heating manipulated value (MV) (0 to 4000) B5 B6 System area (Use prohibited)	A	A	Heater voltage compensation function setting		
B0 CT monitor method switch B1 B2 Heating manipulated value (MV) (0 to 4000) B5 B6 System area (Use prohibited)	AB	AC	Standard heater current value		
B1 B2 Heating manipulated value (MV) (0 to 4000) 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) 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		F	Transistor output monitor ON delay time setting		
B5	E	30	CT monitor method switch		
B6 System area (Use prohibited) B7 B8 B9 C0 C1 Cooling manipulated value (MV) C2 C3 Cooling manipulated value (MV) (0 to 4000) 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	B1	B2	Heating manipulated value (MV) (0 to 4000)	R	
B8 B9 to C0 C1 Cooling manipulated value (MV) C2 C3 Cooling manipulated value (MV) (0 to 4000) 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	E	35			
B8 B9 to C0 C1 Cooling manipulated value (MV) C2 C3 Cooling manipulated value (MV) (0 to 4000) 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		26	System area (Use prohibited)	_	
B8 B9 to C0 C1 Cooling manipulated value (MV) C2 C3 Cooling manipulated value (MV) (0 to 4000) 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			Oystern area (Ose profibiled)	-	
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					
C0 C1 Cooling manipulated value (MV) C2 C3 Cooling manipulated value (MV) (0 to 4000) C4 C5 Cooling transistor output flag CF Cooling method setting D0 E0 Cooling proportional band (Pc) setting D1 E1 Cooling upper output limiter D2 E2 Cooling control output cycle setting		L			
C2 C3 Cooling manipulated value (MV) (0 to 4000) C4 C5 Cooling transistor output flag CF Cooling method setting D0 E0 Cooling proportional band (Pc) setting D1 E1 Cooling upper output limiter D2 E2 Cooling control output cycle setting			Cooling manipulated value (MV)		
C4 C5 Cooling transistor output flag CF Cooling method setting D0 E0 Cooling proportional band (Pc) setting D1 E1 Cooling upper output limiter D2 E2 Cooling control output cycle setting				R	
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					
D0 E0 Cooling proportional band (Pc) setting D1 E1 Cooling upper output limiter R/W D2 E2 Cooling control output cycle setting					
D2 E2 Cooling control output cycle setting	D0	E0	-		
D2 E2 Cooling control output cycle setting	D1	E1	Cooling upper output limiter	R/W	
D3 E3 Overlap/dead band	D2	E2			
	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 (hexadecimal)				
	CH1	CH2	Name	Read/write	
	3E	5E	E ² PROM's PID constants read instruction	5.04	
	3F	5F	Automatic backup setting after auto tuning of PID constants	R/W	
	A		1 3 3		
	A	1			
	A	2	System area (Use prohibited)	-	
	A	3			
	A		Alert dead band setting		
	A	5	Number of alert delay		
			Heater disconnection/output off-time current error detection		
	A	6	delay count		
	A	7	Temperature rise completion range setting	R/W	
	A8 A9		Temperature rise completion soak time setting		
			PID continuation flag		
	A		Heater disconnection correction function selection		
	AB	AC			
	AB A		System area (Use prohibited) Transister output monitor ON delay time setting	-	
			Transistor output monitor ON delay time setting	R/W	
	В	0	CT monitor method switching		
	B1	B2	Manipulated value of heating (MVh) for output with another	R	
			analog module		
	В	5	Resolution of the manipulated value for output with another	-	
			analog module		
	В		Cold junction temperature compensation selection	R/W	
	В		Control switching monitor	R	
	B8	B9	Auto tuning mode selection	R/W	
	BC to		System area (Use prohibited)	-	
	C0	D0	Alert 1 mode setting		
	C1	D1	Alert 2 mode setting	R/W	
	C2	D2	Alert 3 mode setting		
	C3	D3	Alert 4 mode setting		
	to	1			
	100 to	107	Heater current process value	R	
	108 to	10F	CT input channel assignment setting		
	110 to 117				
	118 to		Reference heater current value	R/W	
	to)			
	2B8	2B9	Temperature conversion setting	R/W	
	to				
	2C0	2C1	Manipulated value for cooling (MVc)	R	
	to				
			Manipulated value of cooling (MVc) for output with another		
	2C4	2C5	analog module	R	
	to)	·		
	2C8	2C9	Cooling transistor output flag	R	
	to		J 7 J		
	20		Cooling method setting		
	2D0	2E0	Cooling proportional band (Pc) setting		
		2E1	Cooling upper limit output limiter	R/W	
	2111		TOOOMING UPPEL HITHL OULPUL HITHLE!	13/ V V	
	2D1 2D2	2E2	Cooling control output cycle setting		

7

HIGH-SPEED COUNTER MODULE REPLACEMENT

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

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

AnS/QnAS	series		Transition to Q series
Product	Model	Model	Remarks (Restrictions)
Lligh apped sounts	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 3) Counting speed : Can be switched (500KPPS, 200KPPS, 100KPPS, or 10KPPS). 4) Counting range : 24-bit binary (0 to 16777215) → 32-bit signed binary (-2147483648 to 2147483647) Program needs to be reviewed. 5) Program : The number of occupied I/O points, I/O signals and buffer memory addresses are changed. 6) Performance specifications: Not changed 7) Function specifications: Not changed

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

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

⊠Point -

1) Module replacement

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

2) Counting range of the counter

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

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

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

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

Wiring

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

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

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

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

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

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

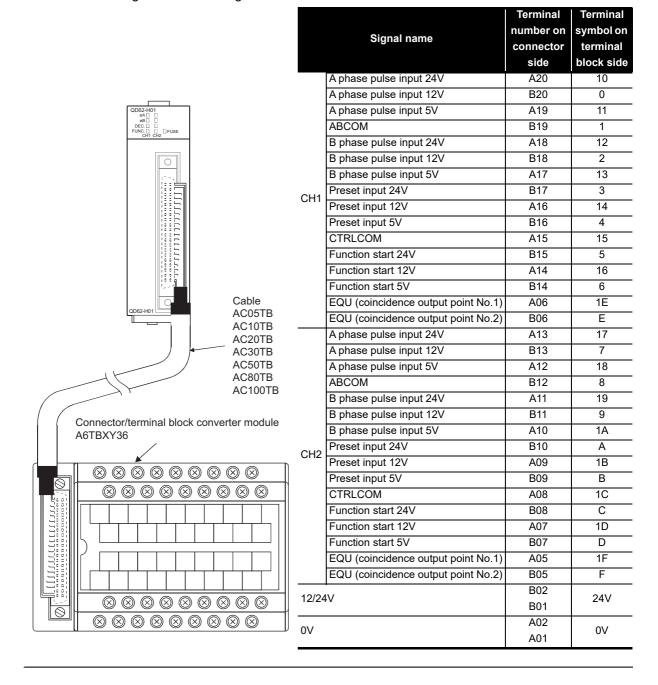
Product	MELSEC-AnS/QnAS series module	MELSEC-Q series module	Conversion adaptor	
	A1SD61	QD62 QD62-H01	ERNT-ASQTD61*1	
Lligh and acustor module	A13001	QD62-H02	ERNI-ASQIDOI	
High-speed counter module	A1SD62	QD62	ERNT-ASQTD62*1	
	A1SD62E	QD62E	ERNT-ASQTD62	
	A1SD62D	QD62D	ERNT-ASQTD62D*1	

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

(b) Using the connector/terminal block converter module

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

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



7.2 A1SD61

7.2.1 Performance specifications comparison

(1) Comparison between A1SD61 and QD62

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

		1			O: Compatible			e,∆: Partial change required, ×: Incompat			
Item				A1SD61			QD62		Compat- ibility	Precautions for replacement	
			32 points				16 points				
Number of occupied I/O points			(I/O assi	ignment: sį	oecial 32	(I/O assi	gnment: inte	lligent 16	Δ	*1	
					points)			points)			
Nu	mber of chan	nel	s		1 channel			2 channels		0	
Со	Counting speed switch settings		50	DΚ	10K	200K (100K to 200KPPS)	200K 100K 10K (100K to (10K to (10KPPS		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		ignal level λΑ, φΒ)			5VDC 12VDC 24VDC	2 to 5mA			0	*2
		С	Counting	1-phase input	50KPPS	10KPPS	200KPPS	100KPPS	10KPPS	_	
			peed (Max.)	2-phase input	50KPPS	7KPPS	200KPPS	100KPPS	10KPPS	0	
			counting ange	32-bit signed binary (-2147483648 to 2147483647)			0				
		_	уре				ınter + ring c	ounter funct	ion	0	
		N	<u>linimum coun</u>	t pulse wid	dth, Duty ra	atio: 50%				-	
Performance specifications of 1 channel	Counter		(200KPPS)		-		2.5 (Minimu	2.5 (Unit :) um phase dinase input: 1	ference	0	
			(100KPPS)		-		5 (Minimu	5 (Unit:) um phase dithase input:	ference	0	
			(50KPPS)		0 10 (Unit :			-		Δ	Set the counting speed of the QD62 to "100K".

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

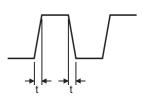
Ite	em	A1SD61		QD62	Compat- ibility	Precautions for replacement
(Counting speed	d switch setting)	50KPPS 1	0KPPS	200KPPS 100KPPS 10KPPS	-	
Counter	(10KPPS) 1-phase input	t pulse width, Duty ratio	s)	100 50 50 (Unit : μs)	-	
Magnitude comparison between CPU and	(10KPPS) 2-phase input	71 71 (Unit : (2-phase input)	μs)	(Minimum phase difference in 2-phase input: 25μs)	0	
Magnitude comparison	Comparison range	32-bit signed binary			0	
between CPU and high-speed counter module	Comparison result	a contact: Dog ON address ≤ 0 value ≤ Dog OFF addrest b contact Dog OFF address ≤ 0 value ≤ Dog ON add	dress Count	Set value < count value Set value = count value Set value > count value	Δ	Two points can be set.
External input	Preset Function start	12/24VDC, 3/6m 5VDC, 5mA		5/12/24VDC, 2 to 5mA	Δ	Since the external input specifications differ, check the specifications of external device.
External	Coincidence output	-		Transistor (sink type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common		Output currents differ
output	Limit switch output	Transistor (open colle output 12/24VDC, 0.1A/po 0.8A/common	oint,	-	Δ	Output currents differ.
Internal current (5VDC)	consumption	0.35A		0.30A	0	
Weight		0.27kg		0.11kg	Δ	

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

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

 (For the QD62)

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



(2) Comparison between A1SD61 and QD62-H01

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

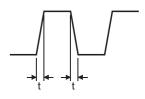
							C : Compat		ilai onange requirea, moompatible	
Item			A1SD61			QD62-l	101	Compat- ibility	Precautions for replacement	
Number of occupied I/O points			32 points (I/O assignment: special 32 points)		16 points (I/O assignment: intelligent 16 points)		Δ	*1		
Nur	nber of chann	els		1	channel		2 chanr	nels	0	
Cou	Counting speed switch settings		ettings	5 50K 10K 50K			0	Set "2 (counting speed 200KPPS)" in the intelligent function module switch setting. Counting is performed using 50KPPS by setting "2 (counting speed 200KPPS)."		
		Phase			1-phase	input, 2-pha	ase input		0	
	Count input signal	Signal I (φΑ, φΒ				5VDC 12VDC 24VDC	} 2 to 5mA		0	
		Counting speed (•	1-phase input 2-phase input	50KPPS 50KPPS	10KPPS 7KPPS	1-phase input 2-phase input	50KPPS 50KPPS	0	*2
		Countir range	,				648 to 2147483		0	
		Туре		UP/DO	WN preset	counter + rir	ng counter func	tion	0	
		Minimu	m cou	nt pulse width, [Outy ratio: 5	0%			-	
specifications of 1 channel	Counter	Mini cour puls widt	е		10 10 (Unit : μs) (1-phase and 2-phase input) Set input rise time to 5μs or less.				0	
pecific	Magnitude	Compa range	rison		32-bit signed binary				0	
Performance s	comparison between CPU and A1SD61/ QD62-H01	Compa	rison	Dog ON addi Dog (b Dog OFF add	OFF addres contact	ss nt value ≤	Set value < co Set value = co Set value > co	ount value	0	
	External input Preset Function start			VDC, 3/6m /DC, 5mA	A	5/12/24VDC,	2 to 5mA	Δ	Since the external input specifications differ, check the specifications of external device.	
	External output	Coincidence output			-		Transistor (s output 2 point 12/24VDC, 0 2A/com	s/channel .5A/point,	Δ	Output currents differ.
		Limit sv output			pen collecto DC, 0.1A/po A/common		-			
	rnal current co DC)	onsump	tion		0.35A		0.30	A	0	
Wei	ght				0.27kg		0.11k	g	Δ	

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

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

 (For the QD62-H1)

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



(3) Comparison between A1SD61 and QD62-H02

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

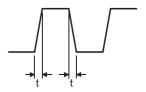
Number of occupied I/O points Number of occupied I/O points Number of channels 32 points (I/O assignment: special 32 points) (I/O assignment: intelligent 16 points) 1 channel 2 channels O Set **2 (counting speed 200KPPS)** in the intelligent 16 points) O Set **2 (counting speed 200KPPS)** in the intelligent 16 points) O O O O O O O O O	punting speed S)" in the intelligent module switch setting. is performed using by setting "2 speed 200KPPS)."
Number of occupied I/O points Vi/O assignment: special 32 points (I/O assignment: intelligent 16 points) ∆	5)" in the intelligent module switch setting. is performed using by setting "2 speed 200KPPS)."
Counting speed switch settings Set "2 (counting speed 200KPPS)" in the intel function module switch Counting is performed 10KPPS by setting "2 (counting speed 200K Post)" in the intel function module switch Counting is performed 10KPPS by setting "2 (counting speed 200K Post) professional profession	5)" in the intelligent module switch setting. is performed using by setting "2 speed 200KPPS)."
Counting speed switch settings Counting speed switch settings SoK 10K 5)" in the intelligent module switch setting. is performed using by setting "2 speed 200KPPS)."	
Count input signal Counting 1-phase input 5VDC 24VDC s can be set.	
Signal Signal Signal level ((φA, φB) 12VDC 24VDC 24 VDC 24VDC 24V	s can be set.
Speed (Max.) 2-phase input 50KPPS 7KPPS 2-phase input 7KPPS Counting range 32-bit signed binary (-2147483648 to 2147483647) ○ Type	s can be set.
Type UP/DOWN preset counter + ring counter function ○ Minimum count pulse width, Duty ratio: 50% - Magnitude comparison petween CPU and A1SD61/QD62-H02 OF Faddress ≤ Count value ≤ Dog ON address ≤ Count value ≤ Set value > count value Set value > count val	is can be set.
Minimum count pulse width, Duty ratio: 50% Counter Minimum count pulse width, Duty ratio: 50% Counter Minimum count pulse width Count pulse width Count pulse width Comparison petween CPU and A1SD61/ QD62-H02 Comparison result Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and Comparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and COmparison petween CPU and CPU and COmparison petween CPU and CPU a	is can be set.
Counter Minimum count pulse width Magnitude comparison range Set input rise time to 5µs or less.	s can be set.
Minimum count pulse width Minimum count pulse width Minimum count pulse width Minimum count pulse width Minimum count pulse width Magnitude comparison team comparison between CPU and A1SD61/QD62-H02 Comparison result Dog OFF address	s can be set.
Dog ON address	s can be set.
Dog ON address	ts can be set.
Dog ON address	ts can be set.
Preset Since the external input	
External input Function start 12/24VDC, 3/6mA 5VDC, 5mA 5/12/24VDC, 2 to 5mA	ions differ, check the
External output Coincidence output Coincidence output Transistor (sink type) output 2 points/channel 12/24VDC, 0.5A/point, 2A/common A Output currents differ.	urrents differ.
Limit switch output Coutput Transistor (open collector) output 12/24VDC, 0.1A/point, 0.8A/common	
Internal current consumption	
(5VDC) 0.35A 0.30A	

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

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

 (For the QD62-H02)

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



7.2.2 Functional comparison

O: Available, -: Not available

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

7.2.3 I/O signal comparison

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

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

	A1S	D61			QD62, QD62-F	101, QD6	62-H02
Device No.	Signal name	Device No.	Signal name	Device No.	Signal name	Device No.	Signal name
X0	Watchdog timer error flag	Y0		X0	Module ready	Y0	CH1 Coincidence signal No.1 reset command
X1	CH1 limit switch output status flag	Y1		X1	CH1 Counter value large (point No.1)	Y1	CH1 Preset command
X2	CH2 limit switch output status flag	Y2		X2	CH1 Counter value coincidence (point No.1)	Y2	CH1 Coincidence signal enable command
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	11	X7	CH1 Counter value small (point No.2)	Y7	CH1 Coincidence signal No.2 reset command
X8	CH8 limit switch output status flag	Y8	Use prohibited	X8	CH2 Counter value large (point No.1)	Y8	CH2 Coincidence signal No.1 reset command
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
ХВ	Error flag	YB		XB	CH2 External preset request detection	YB	CH2 Down count command
XC	Fuse/external power cutoff detection flag	YC		XC	CH2 Counter value large (point No.2)	YC	CH2 Count enable command
XD	Sampling/periodic counter flag	YD		XD	CH2 Counter value coincidence (point No.2)	YD	CH2 External preset detection reset command
XE		YE		XE	CH2 Counter value small (point No.2)	YE	CH2 Counter function selection start command
XF		YF		XF	Fuse broken detection flag	YF	CH2 Coincidence signal No.2 reset command
X10		Y10	Count enable command				
X11		Y11	Decrement count command				
X12		Y12	Preset command				
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 Hame	No.	Signal name								
X18		Y18									
X19		Y19									
X1A		Y1A									
X1B	Use prohibited	Y1B	Use prohibited								
X1C	Ose profibiled	Y1C	Ose prombited								
X1D		Y1D									
X1E		Y1E									
X1F		Y1F									

7.2.4 Buffer memory address comparison

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

	A1SD61			QD62, QD62-H01, QD62-H02								
Addusses				Add	ress							
Address	Name		Read/write	(dec	imal)	Name		Read/write				
(decimal)				CH1	CH2							
0	Present value	(L)		0	32	Proport value setting	(L)	R/W				
1		(H)	R	1	33	Preset value setting	(H)	FX/VV				
2	Counter function selection count	(L)	IX.	2	34	Present value	(L)	R				
3	value	(H)		3	35	Tresent value	(H)	1				
4	Pulse input mode setting			4	36	Coincidence output point set No.1	(L)					
5	Counter function selection setting			5	37	Comordone datput point set No. 1	(H)	R/W				
6	Preset value setting	(L)		6	38	Coincidence output point set No.2	(L)					
7		(H)		7	39	, ,	(H)					
8	Ring counter value setting	(L)		8	40	Overflow detection flag		R				
9	ŭ ŭ	(H)		9	41	Counter function selection setting		R/W				
10	Sampling/periodic time setting			10	42	Sampling/periodic setting						
11	Write data error code			11	43	Sampling/periodic counter flag	1 (1)					
40.4.00	CH1 limit switch output data setting			12	44	Latch count value	(L)					
12 to 28				13	45		(H)					
			-	14 15	46 47	Sampling count value	(L)	R				
29 to 45	CLIQ limit quitab autaut data acting			16	48		(H)					
29 10 43	CH2 limit switch output data setting			17	49	Periodic pulse count previous value	(L) (H)					
				18	50		(L)	-				
46 to 62	CH3 limit switch output data setting		R/W	19	51	Periodic pulse count present value	(H)	-				
40 10 02	or to mine switch output data solding		1000	20	52		(L)					
			-	21	53	Ring counter minimum value	(H)	1				
63 to 79	CH4 limit switch output data setting			22	54		(L)	R/W				
				23	55	Ring counter maximum value	(H)					
			-	24 to	56 to		,					
80 to 96	CH5 limit switch output data setting			31	63	System area (Use prohibited)		-				
							ı					
97 to 113	CH6 limit switch output data setting											
114 to 130	CH7 limit switch output data setting											
131 to		·										
147	CH8 limit switch output data setting	witch output data setting										
1-71												

7.3 A1SD62(E/D/D-S1)

7.3.1 Performance specifications comparison

(1) Comparison between A1SD62 and QD62

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

	Iten	n		A1SD62			QD62		Compat- ibility	Precautions for replacement
Nur	mber of occup	ied I/O points	32 points 16 points (I/O assignment: special 32 points) (I/O assignment: intelligent 16 points)				Δ	The number of occupied I/O points has changed to 16 points.		
Nur	mber of chann	els			2 c	hannels			0	
Cou	unting speed s	witch settings	10	00K	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	-phase inp	ut, 2-phase i	input		0	
of 1 channel	Count input signal	Signal level (φA, φB)	5VDC 12VDC 24VDC }2 to 5mA						0	
		Counting speed (Max.)	1-phase input 2-phase	100KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0	
pecifi		speed (Max.)	input	100KPPS	7KPPS	200KPPS	100KPPS	10KPPS		
Performance specifications	Counter	Counting range		it unsigned to 16,777,2	•		bit signed bir 3648 to 214	-	Δ	Since the QD62 uses 32-bit signed binary values, sequence program needs to be changed.
Д.	Per	Туре		UP/DOWN	preset cou	nter + ring c	ounter functi	on	0	

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

	Item		A1SD62	QD62	Compat- ibility	Precautions for replacement
		Minimum cour	t pulse width, Duty ratio: 50%		-	
		(200KPPS)	-	2.5 2.5 (Unit : μs) (Minimum phase difference in 2-phase input: 1.25μs)		
ınnel	Counter	(100KPPS)	10 5 5 (I	Unit : μs) se in 2-phase input: 2.5μs)	0	
Performance specifications of 1 channel		(10KPPS) 1-phase input	20 10 10 (Unit : μs) (1-phase input)	$50 \ 50$ (Unit : μ s) (Minimum phase difference		
Performan		(10KPPS) 2-phase input	142 71 71 (Unit : μs) (2-phase input)	in 2-phase input: 25μs)		
	Magnitude comparison	Comparison range	24-bit unsigned binary	32-bit signed binary	0	
	between CPU and high- speed counter module	Comparison result	Set value =	count value count value count value	0	
	External input	Preset	5/12/24VD0		0	
		Function start	5/12/24VD0		0	
	External output	Coincidence output	-	ok type) output point, 2A/common 2 points/channel	0	
	Internal current consumption (5VDC)		0.1A	0.3A	Δ	Recalculation of internal current consumption (5VDC) is required.
We	eight		0.25kg	0.11kg	Δ	

(2) Comparison between A1SD62E and QD62E

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

	Iter	n		A1SD62E	:			. Оотраные	Compat-	
	1101	"							ibility	replacement
Nu	mber of occup	ied I/O points	(I/O as	signment: s		(I/O assiç	gnment: inte	lligent 16	Δ	points has changed to 16
Nu	mber of chann	els		politici	2 cł	l nannels	pointo)		0	pointe.
Со	unting speed s	switch settings	1	00K	10K	200K 100K 10K (10KPPS) 0r less)			0	Set the counting speed of the QD62E with the intelligent function module switch setting of GX Developer.
		Phase		1	-phase inpu	ıt, 2-phase i	nput		0	
	Count input signal	Signal level $(\phi A, \phi B)$ Signal level $(\phi A, \phi B)$ Signal level $(\phi A, \phi B)$ Signal level $(\phi A, \phi B)$ 2 to 5mA 24VDC							0	
		Counting	input	100KPPS	10KPPS	200KPPS	100KPPS	10KPPS	0	
		Counting 24-bit unsigned binary 32-bit signed binary								
Counting 24-bit unsigned binary 32-bit signed range (0 to 16,777,215) (-2147483648 to 2	-	-	Δ	Since the QD62E uses 32- bit signed binary values, sequence program needs to be changed.						
		• •	ATSDBZE 32 points 32 points (I/O assignment: special 32 (I/O assignment: intelligent 16 points) 2 channels 2 channels 2 cook 100K 10K 10K 10K 10K 10K 10K 10K 10K 10							
		Minimum co	unt pulse w	32 points O assignment: intelligent 16 points) O Set the counting spee the QD62E with the intelligent function ms witch setting of GX Developer. 1-phase input, 2-phase input O SVDC 12VDC						
Performance specifications of 1 channel		(200KPPS	1-phase input 100KPPS 10KPPS 200KPPS 100KPPS 10KPPS 0 2-phase input 100KPPS 7KPPS 200KPPS 100KPPS 10KPPS 10KPPS 24-bit unsigned binary (0 to 16,777,215)							
Performance speci	Counter	(100KPPS		Minimum ph	5 5		se innut: 2.5	ius)	0	
		(10KPPS) 1-phase input	50	00 50 (Unit :	: μs)	50	50 (Unit : <u>/</u>	us)		
		(10KPPS) 2-phase input	71	42 71 (Unit :	: μs)	-				

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

	Iten	n	A1SD62E	QD62E	Compat- ibility	Precautions for replacement			
Je	Magnitude	Comparison	24-bit unsigned binary	32-bit signed binary	0				
channel	comparison	range	24-bit drisighed biriary 32-bit signed biriary						
	between								
of 1	CPU and	Campariaan	Set value	< count value					
Suc	high-speed	igh-speed Comparison Set value = count value		0					
ätic	counter	result	Set value						
oific	module								
specifications	External	Preset	5/12/24VI	5/12/24VDC, 2 to 5mA					
Performance	input	Function start	5/12/24VI	DC, 2 to 5mA	0				
ma	External	Coincidence	Transistor (so	urce type) output					
rf-			12/24VDC, 0.1A/	point, 0.4A/common	0				
Pe	output	output	1 point/channel	2 points/channel					
Inte	Internal current consumption					Recalculation of internal			
		onsumption	0.1A	0.33A	Δ	current consumption			
(SV	(5VDC)					(5VDC) is required.			
We	eight		0.25kg	0.11kg	Δ				

(3) Comparison between A1SD62D and QD62D

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

	Ite	m	A1SD	62D		QD	62D		Compat-		
Nui	mber of occi	upied I/O	32 po (I/O assignmer poin	t: special 32	(I/O asa	16 po signment: in	oints telligent 16	points)	Δ	The number of occupied I/O points has changed to 16 points.	
Nu	mber of cha	nnels			2 channe	els			0		
	unting speed	d switch	200K	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					0					
	input	Signal level	EIA	Standard RS	-422-A Diffe	22-A Differential line driver level					
	signal	(φΑ, φΒ)		1 [manufactu	red by Texa	s Instrumen	ts] or equiva	lent)	U		
		Counting speed (Max.)	1-phase 200KF 2-phase input 200KF	PS 10KPPS	- 500KPPS	200KPPS	100KPPS	10KPPS	0		
		Counting	24-bit unsig (0 to 16,7	77,215)	,		o 21474836	47)	Δ	occupied I/O points has changed to 16 points. O Set the counting speed of the QD62D with the intelligent function module switch setting of GX Developer. O Since the QD62D uses 32-bit signed	
<u> </u>		Туре		/DOWN pres		ring counte	r function	0			
anne		Minimum cou	nt pulse width, D	uty ratio: 50%	- atio: 50%						
formance specifications of 1 channel	Counter	(500KPPS)	-		-		J _{nit: μs)} ase differenc nput: 0.5μs)	e			
Performa		(200KPPS)	(Min		5 .5 2.5 (Unit		out: 1.25µs)	0			
		(Minimum phase diff				fference in 2-phase input: 1.25μs) 10 5 5 (Unit : μs) (Minimum phase difference in 2-phase input: 2.5μs)					

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

	lte	em	A1SD62D			QD	62D		Compat- ibility	Precautions for replacement
(Co	ounting speed	switch settings)	200K	10K	500K	200K	100K	10K	-	
		Minimum count	pulse width, Duty rat	io: 50%					-	
	Counter	(10KPPS) 1-phase input	100 50 50 (Unit : (1-phase inp	<i>μ</i> s) ut)	100 50 50 (Unit : μ s) (Minimum phase difference					
Performance specifications of 1 channel		(10KPPS) 2-phase input	142 71 71 (Unit:		,		input: 25µs		0	
e speci	Magnitude comparison	Comparison range	24-bit unsigned	binary		32-bit sigr	ned binary		0	
Performano	between CPU and high-speed counter module	Comparison result	Set value < count value Set value = count value Set value > count value						0	
		Preset			DC in	put: 5/12/2	4VDC, 2 to	5mA		The ODCOD comments
	External input	Function start	5/12/24VDC, 2 t		A, Dif	fferential lir	A Standard ne driver m ected.		0	The QD62D supports both DC input and differential input.
	External	Coincidence			or (sink typ					
	output	output			0.5A/point	, 2A/comm	on		0	
	Catput	output	1 point/chan	nel		2 points	/channel			
	ernal current (consumption	0.25A			0.3	88A		Δ	Recalculation of internal current consumption (5VDC) is required.
We	eight		0.25kg			0.1	2kg		Δ	

(4) Comparison between A1SD62D-S1 and QD62D

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

	It	tem	A1SD62D-	S1		QDe	62D		Compat- ibility	Precautions for replacement
Nur		cupied I/O	32 points (I/O assignment: s points)		(I/O ass	16 po signment: in	oints telligent 16	points)	Δ	The number of occupied I/O points has changed to 16 points.
Nur	mber of ch	annels			2 channe	ls			0	
	unting spe tings	ed switch	200K	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					0				
	input	Signal level	EIA Sta	indard RS-	422-A Diffe	rential line o	driver level		0	
	signal	(φΑ, φΒ)	(AM26LS31 [r	manufactui	red by Texas	s Instrumen	ts] or equiva	lent)	0	
		Counting speed (Max.)	1-phase input 200KPPS 200KPPS input 200KPPS	10KPPS	500KPPS	200KPPS	100KPPS	10KPPS	0	
		Counting range	24-bit unsigned (0 to 16,777,2	215)			o 21474836	47)	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 count	pulse width, Duty ra	atio: 50%					-	
formance specifications of 1 channel	Counter	(500KPPS)	-				J _{nit: μs)} ase differenc nput: 0.5μs)	e		
Performa		(200KPPS)	(Minimu		5 5 2.5 (Unit	: μs) 2-phase inp	out: 1.25µs)	0		
		(100KPPS)	-		,	•	Jnit : μs) ase differenc nput: 2.5μs)	e		

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

	lte	em	A1SD62D-S1			QD	62D		Compati- bility	Precautions for replacement
(Co	ounting speed	d switch settings)	200K	10K	500K	200K	100K	10K	-	
		Minimum count	oulse width, Duty ratio:	50%					-	
	Counter	(10KPPS) 1-phase input	100 50 50 (Unit : μs (1-phase input)		100 50 50 (Unit : μs) (Minimum phase difference					
Performance specifications of 1 channel		(10KPPS) 2-phase input	142 71 71 (Unit : μs (2-phase input)		(Minimum phase difference in 2-phase input: 25µs)					
e speci	Magnitude comparison	Comparison range	24-bit unsigned bin	ary		32-bit sigr	ned binary		0	
Performanc	between CPU and high-speed counter module	Comparison result	Set value < count value Set value = count value Set value > count value						0	
	External input	EIA Standard RS-422-A DC input: 5/12/24VDC, 2 to 5mA Differential line driver level Differential input: EIA Standard RS-422-		0	The QD62D supports both DC input and differential input.					
	External output Coincidence output Coincidence output 1 point/channel Coincidence output 2 points/channel				0					
	ernal current	consumption	0.25A				88A		Δ	Recalculation of internal current consumption (5VDC) is required.
We	ight		0.25kg			0.1	2kg		Δ	

7.3.2 Functional comparison

O: Available, -: Not available

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

7.3.3 I/O signal comparison

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

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

	A1SD62(I	E/D/D-S1	1)		QD62	2(E/D)	
Device	Signal name	Device	Signal name	Device	Signal name	Device	Signal name
No.	CH1 Counter value large	No.		No.		No.	CH1 Coincidence signal
X0	(point No.1)	Y0		X0	Module ready	Y0	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	Y7		X7	CH1 Counter value small (point No.2)	Y7	CH1 Coincidence signal No.2 reset command
X8 ^{*1}	CH1 Counter value large (point No.2)	Y8	Use prohibited	X8	CH2 Counter value large (point No.1)	Y8	CH2 Coincidence signal No.1 reset command
X9 ^{*1}	CH1 Counter value coincidence (point No.2)	Y9		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		XB	CH2 External preset request detection	YB	CH2 Down count
XC*1	CH2 Counter value coincidence (point No.2)	YC		XC	CH2 Counter value large (point No.2)	YC	CH2 Count enable
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	S	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 prombited						

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

7.3.4 Buffer memory address comparison

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

A1SD62(E/D/D-S1)					QD62(E/D)				
Add	ress				Add	ress			
(dec	imal)	Name		Read/write	(dec	imal)	Name		Read/write
CH1	CH2				CH1	CH2			
1	33	Preset value setting	(L)		0	32	Preset value setting	(L)	R/W
2	34	Treset value setting	(H)	R/W	1	33	Treset value setting	(H)	17/77
3	35	Pulse input mode setting			2 34		Present value	(L)	R
4	36	Present value	(L)	R	3	35	Troopin value	(H)	
5	37		(H)		4	36	Coincidence output point set No.1	(L)	
6	38	Coincidence output point setting	(L)		5	37		(H)	R/W
7	39	No.1	(H)	R/W	6	38	Coincidence output point set No.2	(L) (H)	
8	40	Counter function selection setting		⊣	7	39			
9	41	Sampling/periodic time setting			8	40	Overflow detection flag		R
10	42	External preset detection reset com			9	41	Counter function selection setting		544
11 ^{*1}	43 ^{*1}	Point No.2 coincidence signal reset command		W	10	42	Sampling/periodic setting		R/W
12 ^{*1}	44*1	Coincidence output point setting	(L)	R/W	11	43	Sampling/periodic counter flag		
13 ^{*1}	45 ^{*1}	No.2	(H)	TX/VV	12	44	Latch count value	(L)	
14	46	Latch count value	(L)		13	45	Later Count value	(H)	
15	47	Laten count value	(H)		14	46	Sampling count value	(L)	
16	48	Sampling count value	(L)		15	47	Sampling Count value	(H)	R
17	49	Campling 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 chould pulse seally present value	(H)	
21	53		(H)		20	52	Ring counter minimum value	(L)	
2	22	Sampling/periodic counter flag			21	53	Tang seamer raman range	(H)	R/W
					22	54	Ring counter maximum value	(L)	
					23	55		(H)	
					24	56			
					to	to	System area (Use prohibited)		-
					31	63			

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

POSITIONING MODULE REPLACEMENT

8.1 List of Positioning Module Alternative Models for Replacement

AnS	series		Transition to Q series					
Product	Model	Model		Remarks (Restrictions)				
	A1SD70	QD73A1	External wiring Number of slots Program	 : Not changed*2 (An external power supply (±15VDC) is not required. The connector installation direction is reverse.) : Not changed (Two slots are occupied.) : Buffer memory assignment and change of the setting method ifications change: Upward-compatibility 				
			5) Function specificat					
	A1SD75P1-	QD75P1N ^{*1} (when an open collector is connected)	External wiring Number of slots Program	Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the				
	S3	QD75D1N ^{*1} (when a differential driver is connected)	Performance spec Function specificat	specifications change. ifications: Not changed				
	A1SD75P2-	QD75P2N ^{*1} (when an open collector is connected)	External wiring Number of slots Program	Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the				
Positioning	S3	QD75D2N*1 (when a differential driver is connected)	Performance spec Function specificat	specifications change. ifications: Not changed				
module ^{*3}	A1SD75P3-	QD75P4N ^{*1} (when an open collector is connected)	External wiring Number of slots Program	Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the				
	S3	QD75D4N ^{*1} (when a differential driver is connected)	Performance spec Function specificat	specifications change. ifications: Not changed tions: Partly changed (Example: Manual pulse generator 1/axis → 1/module)				
	A1SD75M1	QD75M1	3) Program	Connector and wiring are changed. Not changed I/O signals and buffer memory assignment are changed. The entire program is reviewed according to the specifications change. ifications: Upward compatible tions: Partly changed (Example: Manual pulse generator 1/axis → 1/module)				
	A1SD75M2	QD75M2	External wiring Number of slots Program Performance spec Function specificat	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. ifications: Upward compatible				

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

^{*1} The QD75P and QD75D and their programs are the same when they are replaced.

Change the sequence program as necessary with checking the processing timing, because performances such as the starting time and data update cycle are improved.

- *2 When the A1SD70 being used in the setting that the negative voltage is output when the positioning address increases is replaced with the QD73A1, the wiring change between the A1SD70 and an encoder is required. For details, refer to Section 8.4.6.
- *3 For details on the A1SD71-S2/S7, refer to the following.
 - T12-0016 Production discontinuation of MELSEC-A series models
 - FA-A-0060 Procedures for Replacing Positioning Module AD71 with QD75

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

8.2.1 Performance specifications comparison

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

	Model			A1SD75P3-	QD75P1N	QD75P2N	QD75P4N	Compati-	
Item		S3	S3	S3	QD75D1N	QD75D2N	QD75D4N	bility	replacement
Number of co	ontrol axes	1	2	3	1	2	4	0	
Number of point items	ositioning data		600/axis ^{*1}			600/axis		0	
Position control interpolation	2-axis linear interpolation	Not available	Available	Available	Not available	Available	Available (3-/4-axis linear interpolation : available)	0	
function	2-axis circular interpolation	Not available	Available	Available	Not available	Available	Available		
	Position control		Available			Available			
	Speed control		Available			Available			
Positioning system	Speed- position switching control		Available			Available		0	
	Position- speed switching control		Available			Available			

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

Model	A1SD75P1- A1SD75P2- A1	1SD75P3-	QD75P1N	QD75P2N			Precautions for
Item	S3 S3	S3	QD75D1N	QD75D2N	QD75D4N	bility	replacement
item	<absolute system=""></absolute>	55	<absolute sy<="" td=""><td></td><td>QD/3D4N</td><td>Dility</td><td>теріасепіені</td></absolute>		QD/3D4N	Dility	теріасепіені
	-214748364.8 to 214748364.	7 (um)	•	3 to 21474836	84.7 (um)		
	/-13421772.8 to 13421772.7	., ,	-214740304.0	3 10 2 147 4030	λ4. <i>1</i> (μπ)		
	`` '		-21/17// 836//	8 to 21474.83	647 (inch)		
	/-1342.17728 to 1342.17727	` '	-21474.00040	3 10 2 147 4.03	047 (111011)		
	0 to 359.99999 (degree)	(IIICII)	0 to 359.9999	O (dograp)			
	/0 to 359.99999 (degree)		0 10 339.999	oo (degree)			
	-2147483648 to 2147483647	(pulso)	21/7/026/0	to 21474836	47 (pulso)		
	/-134217728 to 134217727 (`` '	-2147403040	10 2 147 4030	47 (puise)		
	<pre><incremental system=""></incremental></pre>	(puise)	<incremental< td=""><td>cyctom></td><td></td><td></td><td></td></incremental<>	cyctom>			
	-214748364.8 to 214748364.	7 (um)		8 to 21474836	34.7 (um)		
	/-13421772.8 to 13421772.7	`` '	-214740304.0	0 10 2 147 4000	λ4. <i>1</i> (μπτ)		
	-21474.83648 to 21474.8364	· ,	21/7/ 926/9	8 to 21474.83	647 (inch)		
		, ,	-21474.03040	5 10 2 1474.03	047 (111011)		
D 141 1 *2	/-1342.17728 to 1342.17727	, ,	21/7/ 026/	0 to 01/17/1 00	647 (dograa)		
Positioning range ^{*2}	-21474.83648 to 21474.83647	-21474.03040	8 to 21474.83	047 (degree)	0		
	/-1342.17728 to 1342.17727		21/7/026/0	to 21171026	47 (pulso)		
	-2147483648 to 2147483647	,	-2147403040	to 21474836	47 (puise)		
	/-134217728 to 134217727 (pulse)		dn anaad na	aitian audtahir	a control		
			<in control<br="" speed-position="" switching="">(INC mode)/position-speed switching</in>				
	0 to 214748364.7 (µm)		control>				
	/0 to 13421772.7 (µm)		ontroi> 0 to 214748364.7 (µm)				
	0 to 21474.83647 (inch)			. ,			
	/0 to 1342.17727 (inch)		0 to 21474.83	, ,			
	0 to 21474.83647 (degree)		0 to 21474.83647 (degree) 0 to 2147483647 (pulse)				
	/0 to 1342.17727 (degree)		0 10 2147483	647 (puise)			
	0 to 2147483647 (pulse)		مان مان مان مان مان مان مان مان مان مان				
	/0 to 134217727 (pulse)			sition switchir	ig control		
			(ABS mode)>				
	0.01 to 6000000 00 (mm/mile)	\	0 to 359.9999	`	min\		
	0.01 to 6000000.00 (mm/min)	,	0.01 10 20000	0000.00 (mm/	111111)		
	/0.01 to 375000.00 (mm/min 0.001 to 600000.000 (inch/mi	,	0.001 to 2000	0000.000 (inc	h/min)		
	,	,	0.001 10 2000	000.000 (INC	11/111111)		
Speed command range*2	/0.001 to 37500.000 (inch/m	,	0 001 to 2000	0000 000 (do	roo/min)	0	
-	0.001 to 600000.000 (degree	,	0.001 10 2001	0000.000 (deg	gree/min)		
	/0.001 to 37500.000 (degree 1 to 1000000 (pulse/s)	5/11III1 <i>)</i>	1 to 1000000	(nulse/s)			
	/1 to 62500 (pulse/s)		1 to 1000000	(puise/s)			
Machine OPR function	, 1 to 02000 (pulsors)						
(OPR method)	Available (6 OPR metho	ods)	Availab	ole (6 OPR me	ethods)	0	
JOG operation	Available			Available		0	

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

			O: Compatible,∆: Parti		
Item	Model	A1SD75P1- A1SD75P2- A1SD75P3- S3 S3 S3	QD75P1N QD75P2N QD75P4N QD75D1N QD75D2N QD75D4N	Compati- bility	replacement
Manual pulse function	e generator	1 generator/axis	1 generator/module	Δ	On QD75P□N/QD75D□N, the manual pulse generator cannot be used by each axis independent. When connecting the manual pulse generator for each axis is required, use one axis module. The manual pulse generator itself can use the same one. The operation for inputting one pulse differs. Set the parameter so that movement amount may be same.
Starting time		20ms	1.5 to 2.0ms (when other axes are starting: 1.5 to 2.0ms + 0.1ms to 0.5ms)	0	The starting time becomes fast. Check the processing timing.
Acceleration /deceleration		Available	Available	0	
processing	S-curve acceleration/ deceleration	Available	Available		
Acceleration	Number of patterns	Acceleration time and deceleration time can be set independently. (4 patterns each)	Acceleration time and deceleration time can be set independently. (4 patterns each)		
/deceleration time	Setting range	Switching is possible. 1 to 65535ms or 1 to 8388608ms	1 to 8388608ms	0	
	Sudden stop deceleration	Changeover between 1 to 65535ms/ 1 to 8388608ms possible	1 to 8388608ms		
Compensatio	on	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 Works2/ GX Developer.
History data s error, warning	storage (Start, g)	Provided (4 types, 16 items/module)	Provided (3 types, 16 items/axis)	0	The start history at error is integrated into the start history.

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

Model	A1SD75P1- A1SD75P2- A1SD75P3-	QD75P1N QD75P2N (QD75P4N	Compati-	
Item	S3 S3 S3 Flash ROM	QD75D1N QD75D2N (QD75D4N	bility	replacement
Data storage destination	(battery-less backup)	(battery-less backu	p)	0	
	10136-3000VE (Soldering type, supplied)	A6CON1 (Soldering type, straight-c sold separately) A6CON2	out type,	_	As the connectors differ, wiring change is required. The connectors of QD75P□N/
Connection connector	10136-6000EL (IDC type, sold separately)	(Crimping type, straight-o sold separately) A6CON4 (Soldering type, straight-out out type, sold separat	t/diagonal-	×	
Applicable wire size	10136-3000VE: 24 to 30 AWG (approx. 0.05 to 0.2 mm ²) 10136-6000EL:	A6CON1, A6CON4: 0.3 (22 AWG) A6CON2: 24 AWG		Δ	QD75D□N are sold separately.
	28 AWG (approx. 0.08 mm ²)		-		The state of the
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:		0	
Maximum connection distance between servos	When connected to open collector: 2m When connected to differential driver: 10m	4Mpps When connected to open co When connected to differen 10m	ntial driver:	0	
Internal current consumption (A) (5VDC)	0.7A or less (when connected to differential driver: 0.78A)*4	QD75P1N: QD75P2N: QD75P4N: 0.29A 0.30A 0.36A QD75D1N: QD75D2N: QD75D4N: 0.43A 0.45A 0.66A		Δ	
Flash ROM write count	Max. 100,000 times	Max. 100,000 times		0	When QD75P□N/ QD75D□N carries out the flash write 26 times from the sequence program, an error occurs. The error reset enables to perform the flash write.
	32 points	32 points	0		
Number of occupied I/O points Number of module	(I/O assignment: special 32 points)	(I/O assignment: intelligent	32 points)		

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

	Model	A1SD75P1- A1SD75P2	A19D75D2	QD75P1N	·	·		Precautions for
Itom	Wodei	S3 S3	S3	QD75P1N QD75D1N	QD75P2N QD75D2N	QD75P4N QD75D4N	bility	
Item		33 33	33	QD75D1N QD75P1N:	QD75D2N QD75P2N:	QD75D4N QD75P4N:	Dility	replacement
				i i	1			
Weight		0.35kg		0.14kg	0.14kg	0.16kg	Δ	
				QD75D1N:	QD75D2N:	QD75D4N:		
				0.15kg	0.15kg	0.16kg		
								When using both the speed-
								position switching
								control and the
					Not available			external start,
	STRT signal	Available (External s	start signal)	(integra	ated into CHG		Δ	input the external
				(integra		signai)		start signal to the
								interrupt module,
								and start using
						the direct output.		
								The input
				External co	ommand signa	al (External		
I/O signal for	CHG signal	al Speed-position switching signal		start or s	peed-position	Δ	response time	
external devices				selecta	ble with para	meters)		differs. (Refer to
								Section 8.2.5.)
	In-position (INP)							No INP signal.
		Available (for monitoring purpose)					When it is	
				Not available		Δ	required for	
							monitor, monitor	
							using the input	
								module.
	Signal logic	Signal logic Available switching (only Command pulse output signal)		Available			0	The default logic
								of pulse output
		()	(only command pulse output signal)					differs.
	Near-point							The input
	watchdog	Available			Available		Δ	response time
	signal	7.1.4.1.4.2.10			7.17445.0			differs. (Refer to
	oignai							Section 8.2.5.)
	Connection				tion via progra			
	with			controller CF	PU, Q corresp	onding serial		The connection
	peripheral	Direct connec	ction	comm	unication mod	dule, Q	0	type differs.
Peripheral	devices			correspondir	ng MELSECN	ET/H remote		type uniors.
devices	devices				I/O module			
(data setting,	Teaching		-					The teaching
etc.)	module	AD75TU			Not available		×	module cannot be
eic.)	module							used.
	Software				CV Marks			The software
		GX Configurate	or-AP	0.7	GX Works2	OD	Δ	package that can
	package			GX Configurator-QP				be used 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\(\text{D}N\)/QD75D\(\text{D}N\) does not have address pass mode. When being asked for passing the positioning address, continue with continuous running. (However, it will stop once.)

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

8.2.2 Functional comparison

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

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

Deleted function	Precautions for replacement
Stepping motor mode	The setting is not required when using stepping motor due to it's performance gain.
Fast machine OPR	With the QD75PDN/QD75DDN, there is no possible function for replacement.
Special start (stop)	Execute it separately for the start two times.
	In the QD75PDN/QD75DDN, 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 arrays	The contents are the same as the start history.
Start history during errors	Therefore, the QD75P□N/QD75D□N stores only the start history.
System monitor data	These data were deleted because they can be displayed in system monitor "Module's detailed
(Module name, OS type, OS version)	information" of GX Works2/GX Developer.

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

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

Changed function		Description					
5g	The software stroke limit check or		en a sub point is designated.				
	It is not carried out when a center point is designated.						
	2. The software stroke limit check during speed control is carried out in the following cases:						
	• When the software stroke limit is applied to the current feed value with Pr.14 and the current feed value is						
	updated with Pr.21						
	When the software stroke limit is applied to the machine feed value						
Software stroke limit	3. If an attempt is made to change t		address is out of the software stroke				
function	limit range, the attempt is conside	ered as an error and the current valu	ie is not changed.				
	4. Error code change						
	A1SD75P□-S3:						
	There are 3 types of errors for ea	ch software stroke upper limit and lo	ower limit (error code: 509 to 512).				
	QD75P□N/QD75D□N:						
	Errors for the software stroke upp	per limit are integrated into one (erro	r code: 507).				
	Errors for the software stroke low	er limit are integrated into one (error	r code: 508).				
	Error codes 509 to 512 are delete	ed.					
Current value changing M	1. An error occurs when the designation	ated new current value is out of the	software stroke limit range.				
code function	2. The M code setting value is valid	during the positioning data current v	alue changing instruction.				
	1. An error occurs when the comma	nd frequency value calculated from	the speed limit value exceeds the				
Acceleration/deceleration	maximum command frequency of	f the positioning module being used.					
speed control	2. Only two-word type (1 to 8388608	Bms) can be used as the setting valu	ue for the acceleration/deceleration				
	time.						
	1. "Peripheral side (emergency) stop" is deleted from the stop causes of Stop group 2 "sudden stop						
	selection".						
Stop process and restart	"Test mode fault" in the stop causes of Stop group 3 "sudden stop selection" is changed to be in the stop						
after stop positioning	causes of Stop group 2 "sudden stop selection".						
operation stop	2. "Stop (QD75 peripheral)" is adde-	d to the stop causes of Stop group 3	B "sudden stop selection".				
operation stop	3. Error code 100 (Peripheral device	e stop during operation) is deleted.					
	4. "Programmable controller CPU e	rror 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	The number of connectable manual բ	oulse generators is changed from 1 g	generator/axis to 1 generator/module.				
operation Axis operation status	"Step stopped" is changed to "Stoppe	ad" and "Stan arror occurring" is cha	anged to "Error occurring"				
Axis operation status	• A1SD75P□-S3:	ed and Step end occurring is one	inged to Error occurring .				
		verse direction, the control is interna	ally changed into the continuous				
	If the reference axis operates in reverse direction, the control is internally changed into the continuous						
Continuous path control	positioning control. (restart after deceleration stop)						
Continuous paur control	• QD75P□N/QD75D□N: Even if the reference axis operates in reverse direction with interpolation, the control remains as the						
	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 A1SD75P□-S3.)						
	· · · · · · · · · · · · · · · · · · ·		7701 🖸 00.)				
Near pass	For the continuous path control, only the near pass function is available. Positioning address pass is not conducted.						
2-axis interpolation	l como ming address pass to met some	<u> </u>					
2-axis linear interpolation							
2-axis fixed-feed	The interpolation target axis can be r	andomly set with a positioning ident	ifier.				
Circular interpolation							
Sirodiai intorpolation	"Step stopped" is changed to "Stopped"	opped" and "Step error occurring" is	changed to "Error occurring" in the				
	axis operations status parameters		enanged to Ener occurring in the				
Step function	The restart command for step sta						
	The step operation is restarted w						
	13. THE SLED ODE AUDIT IS TESTALLED W						

Changed function	Description						
Command in position	The command in-position width is expanded.						
Command in-position	AD75A1SD75P□-S3: 1 to 327670	000					
function	• QD75P□N/QD75D□N: 1 to 2147	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	s called "Positioning start information	".)					
Start history	The configuration of "start information" and "start No." is changed so that the start No. can be directly checked.						
Basic parameter1	When the programmable controller (CPU is powered ON or is reset, the va	alid value is only the first value after				
"Pr.5 Pulse output mode"	the programmable controller READ\	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"	Software stroke limit valid for Software stroke limit inva						
	manual operation						

8.2.3 I/O signal comparison

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

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

Ing	out (X)		Output (Y)				
Signal name	A1SD75P□-S3	QD75P□N/ QD75D□N	Signal name	A1SD75P□-S3	QD75P□N/ QD75D□N		
(A1SD75/QD75) READY	X00*1	X00 ^{*1}	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*2	X0C	Axis 2 Stop	Y14	Y05		
Axis 2 BUSY	X05 ^{*2}	X0D	Axis 3 Stop	Y1C	Y06		
Axis 3 BUSY	X06*2	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		

^{*1} The ON/OFF status for READY is different between the QD75P□N/QD75D□N and A1SD75P□-S3.

	Not READY/WDT error	READY
QD75P□N/	OFF	ON
QD75D□N	011	014
A1SD75P□-S3	ON	OFF

^{*2} When using a program example of No.10 Reset program described in "A1SD75P1-S3/P2-S3/P3-S3, AD75P1-S3/P2-S3/P3-S3 Positioning Module User's Manual" for the QD75P□N/QD75D□N, replace "X4 (BUSY signal for Axis 1)" with "DXC (Direct access input of BUSY signal for Axis 1)". Do the same thing for programs for Axis 2 and Axis 3.

■ Precautions for replacement

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

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

8.2.4 Buffer memory address comparison

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

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

	Buffer memory address							
Item of A1SD75P□-S3		A1SD75P□-S			QD75P□N/QD75D[
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3		
Pr.1 Unit setting	0	150	300	0	150	300		
Pr.2 1 No. of pulses per rotation (Ap)	1	151	301	1	151	301		
Pr.3 1 Movement amount per rotation (Al)	2	152	302	2	152	302		
Pr.4 Unit magnification (Am)	3	153	303	3	153	303		
Pr.5 Pulse output mode	4	154	304	4	154	304		
Pr.6 Rotation direction setting	5	155	305	5	155	305		
Pr.7 Speed limit value	6	156	306	10	160	310		
The open mine value	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	160	310	14	164	314		
	11	161 162	311 312	15 6	165 156	315 306		
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		
PI.13 Software stroke littlit upper littlit value	17	167	317	19	169	319		
Pr.14 Software stroke limit lower limit value	18	168	318	20	170	320		
Pr.15 Software stroke limit selection	19	169 170	319 320	21	171 172	321 322		
Pr.16 Software stroke limit valid/invalid setting	21	171	321	23	173	323		
Till Software Stoke little valid/illvalid Setting	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	186	336	36	186	336		
	37	187	337	37	187	337		
Pr.27 Acceleration time 2	38 39	188 189	338 339	38 39	188 189	338 339		
	40	190	340	40	190	340		
Pr.28 Acceleration time 3	41	191	341	41	191	341		
Pr.29 Deceleration time 1	42	192	342	42	192	342		
	43	193	343	43	193	343		

	Buffer memory address						
Item of A1SD75P□-S3	A	.1SD75P□-S	3	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 Beddieration 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 Sudden stan 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	
Pr.43 External start function selection	61	211	361	61	211	361	
	62	212	362	62	212	362	
(QD75P□N/QD75D□N: Pr.42 External command function	02	212	302	02	212	302	
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	
Pr.37 OP address	72	222	372	72	222	372	
	73	223	373	73	223	373	
Pr.48 OPR speed	74 75	224 225	374 375	74 75	224 225	374 375	
	76	226	376	76	225	376	
Pr.49 Creep speed	77	227	377	77	227	377	
Pr.50 OPR retry	78	228	378	78	228	378	
Pr.51 OPR dwell time	79	229	379	79	229	379	
Pr.52 Setting for the movement amount after near-point dog	80	230	380	80	230	380	
ON	81	231	381	81	231	381	
Pr.53 OPR acceleration time selection	82	232	382	82	232	382	
Pr.54 OPR deceleration time selection	83	233	383	83	233	383	
Pr.55 OP shift amount	84	234	384	84	234	384	
	85	235	385	85	235	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		462 to 537	1212 to 1287				
(QD75P□N/QD75D□N: Md.3 Start information)		402 to 337	1212 10 1201				
Md.8 Operation type		400 / 500	40404 4000				
(QD75PDN/QD75DDN: Md.4 Start No.)	ory	463 to 538	1213 to 1288				
Md.9 Start time (Hour: minute)	Start history	464 to 539	1214 to 1289				
(QD75PDN/QD75DDN: Md.5 Start (Hour))	Start	404 10 300	1214 to 1209				
Md.10 Start time (Second: 100ms)		465 to 540	1215 to 1290				
(QD75P□N/QD75D□N: Md.6 Start (Minute: second))		400 10 040	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	٥	543 to 618	-				
Md.14 Operation type	at eri	544 to 619	-				
Md.15 Start time (Hour: minute)	tory a	545 to 620	-				
Md.16 Start time (Second: 100ms)	Start history at error	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)	<u>></u>						
(QD75P□N/QD75D□N: Md.11 Axis error occurrence	Error history	626 to 686	1295 to 1355				
(Hour))	rror						
Md.22 Axis error occurrence time (Second: 100ms)							
(QD75P□N/QD75D□N: 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)	ιλ		
(QD75P□N/QD75D□N: Md.16 Axis warning	history	691 to 751	1360 to 1420
occurrence	ing		
(Hour))	Warning		
Md.27 Axis warning occurrence time (Second: 100ms)	>		
(QD75P□N/QD75D□N: Md.17 Axis warning		3692 to 752	1361 to 1421
occurrence (Minute: second))			
Md.28 Warning history pointer		753	1422

	Buffer memory address							
Item of A1SD75P□-S3	-	\1SD75P□-S		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		
THE STATE OF THE S	801 802	901 902	1001	801 802	901 902	1001		
Md.30 Machine feed value	803	902	1002 1003	803	902	1002 1003		
	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		
Our ent speed	811	911	1011	811	911	1011		
Md.37 Axis feedrate	812 813	912	1012	812	912	1012		
	814	913 914	1013 1014	813 814	913 914	1013 1014		
Md.38 Speed-position switching control positioning amount	815	915	1015	815	915	1015		
Md.39 External input/output signal	816	916	1016	816	916	1016		
Md.40 Status	817	917	1017	817	917	1017		
	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		
- ind. 12 in get open	821	921	1021	821	921	1021		
Md.43 OP absolute position	822 823	922 923	1022 1023	-	-	-		
	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 mem	ory address		
Item of A1SD75P□-S3	A	\1SD75P□-S			5P□N/QD75	D□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	1204	1254	1506	1606	1706
Cd.15 New current value	1155	1205	1255	1507	1607	1707
Cd.16 New speed value	1156 1157	1206 1207	1256 1257	1514 1515	1614 1615	1714 1715
Cd.17 Speed change request	1158	1208	1258	1516	1616	1716
Cd.18 Positioning operation speed override	1159	1209	1259	1513	1613	1713
Cd.19 JOG speed	1160	1210	1260	1518	1618	1718
	1161	1211	1261	1519	1619	1719
Cd.20 Speed-position switching enable flag	1163	1213	1263	1528	1628	1728
Cd.21 Speed-position switching control movement amount	1164 1165	1214 1215	1264 1265	1526 1527	1626 1627	1726 1727
change register	1167	1217	1267	1524	1624	1724
Cd.22 Manual pulse generator enable flag	1168	1217	1268	1522	1622	1724
Cd.23 Manual pulse generator 1 pulse input magnification	1169	1219	1269	1523	1623	1723
Cd.24 OPR request flag OFF request	1170	1220	1270	1521	1621	1721
Cd.25 External start valid	1171	1221	1271	1505	1605	1705
(QD75P□N/QD75D□N: Cd.8 External command valid)	''''	1221	1271	1303	1003	1703
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
Trew acceleration time value	1185	1235	1285	1509	1609	1709
Cd.34 New deceleration time value	1186 1187	1236 1237	1286 1287	1510 1511	1610 1611	1710 1711
Cd.35 Acceleration/deceleration time change during speed	1188	1238	1288	1512	1612	1712
change, enable/disable selection	1100	1200	1200	1012	1012	1112

			Buffer m							ory address					
		Item of A1SD75P□-S3				A1SD7	5P□-S3			ory ada	QD75P□N/QD75D□N				
				Ax	is 1		is 2		is 3	Ax	is 1		is 2		is 3
	Da	.1 Operation pattern .2 Control system .3 Acceleration time No4 Deceleration time No.		13	800	23	2300 3300		2000		8000		140	000	
		9 M code/condition data		13	01	23	01	33	801	2001		8001		140	001
*_	Da	.8 Dwell time/JUMP tination positioning data No.	No.1	13	602	23	02	33	802	20	02	80	02	140	002
data	Not	used		13	03	23	03	33	803	20	03	80	03	140	003
Positioning data*1	Da	.7 Command speed		1304 1305			04 05		04 805		04 05		04 05		004 005
ositi	Da	.5 Positioning address/		13	06	23	06	33	806	20	06	80	06	140	006
ď		ement amount		13	07	23	07	33	807	20	07	80	07	140	007
	Da	.6 Arc address			08 09		08 09		08 09	20 20	08 09		08 09		008
		No.2	ı	1310 to 1319			o 2319		o 3319		o 2019	8010 to 8019		14010 to 14019	
	No.3			1320 t	to 1329 2320 to 2329		3320 to 3329 2020 to 2029		8020 to 8029		14020 to 14029				
	to			t	to	1	0	1	to	1	0	1	0.0		to
		No.100		2290 t	o 2299	3290 to 3299		4290 t	o 4299	2990 to 2999		8990 to 8999			90 to 999
	Start block data*2	Da.10 Shape Da.11 Start data No. Da.12 Special start instruction	1st point	4300	4350	4550	4600	4800	4850	26000	26050	27000	27050	28000	28050
	rt blo	Da.13 Parameter													
	Sta	2nd point		4301	4351	4551	4601	4801	4851	26001	26051	27001	27051		28051
က		3rd point to		4302	4352 to	4552	4602 o	4802	4852 to		20052		0	28002	28052 to
tion		50th point		4349	4399	4599	4649	4849	4899	26049			27099		28099
forma		Da.14 Condition target		44	.00	46	50	49	000	26	100	27	100	28.	100
i H		Da.15 Condition operator													
Positioning start information*3		Da.16 Address	No.1	44	.02 .03		52 53		002 003	26 ⁻	102 103	27	102 103	28	102 103
ositio	data	Da.17 Parameter 1	17 Parameter 1 4404 4405				54 55		04 05		104 105		104 105		104 105
	lition d	Da.18 Parameter 2			.06 .07		56 57		006 007		106 107		106 107		106 107
	1 20		4660 t			o 4919	26110 to 26119		271 ⁻	10 to 119	281	10 to 119			
		No.3		4420 t	o 4429	4670 t	o 4679	4920 t	o 4929	26120 to 26129		27120 to 27129		2812	20 to 129
		to		t	to	1	0	1	to		0		0		to
		No.10		4490 t	o 4499	4740 t	o 4749	4990 t	o 4999		90 to 199		90 to 199		90 to 199

^{*1} With the QD75P□N/QD75D□N, 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 mem	ory 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	-	-	-	
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	-	-	-	
Dragrammal	olo controllor	Condition judgment torget		5050		30000			
Programmal		Condition judgment target		to		to			
CPU memor	y area	data of the condition data		5099		30049			
Target axis				5100		-			
Head position	ning block No	Э.		5101		-			
No. of read/write data items				5102		-			
Read/write request			5103			-			
Read/write b	lock			5110 to 6109		-			

8.2.5 External interface specifications comparison

The following table lists the differences of the external interface specifications between the A1SD75P□-S3 and QD75P□N/QD75D□N.

O : Compatible, △ : Partial change required

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

8.3 A1SD75M1/M2/M3

8.3.1 Performance specifications comparison

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

	Model					O : 00mp	Janbie, Z. Faiti		equired, *. Incompatible
Item	Model	A1SD75M1	A1SD75M2	A1SD75M3	QD75M1	QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Number of co	ontrol axes	1	2	3	1	2	4	0	
Number of po	ositioning data		600/axis ^{*1}	1		600/axis	1	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-pc<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 21474836 8 to 21474.83 8 to 21474.83 6 to 21474.83	647 (inch) 647 (pulse) 64.7 (µm) 647 (inch) 647 (degree) 647 (pulse) ng control>	-21474.8364 0 to 359.999 -2147483648 <incrementa -21474.8364="" -2147483648="" 0="" 21474.8="" 21474.8<="" <in="" speed-po="" td="" to=""><td>8 to 21474836 8 to 21474.83 99 (degree) 8 to 21474836 I system> 8 to 21474.83 8 to 21474.83 8 to 21474.83 3 to 21474.83 cosition switchin 364.7 (µm) 3647 (degree)</td><td>647 (inch) 47 (pulse) 64.7 (µm) 647 (inch) 647 (degree) 47 (pulse) ng control></td><td>0</td><td></td></incrementa>	8 to 21474836 8 to 21474.83 99 (degree) 8 to 21474836 I system> 8 to 21474.83 8 to 21474.83 8 to 21474.83 3 to 21474.83 cosition switchin 364.7 (µm) 3647 (degree)	647 (inch) 47 (pulse) 64.7 (µm) 647 (inch) 647 (degree) 47 (pulse) ng control>	0	
Speed comm	nand range	0.001 to 600	000.00 (mm/n 000.000 (inch 000.000 (degi) (pulse/s)	/min)	0.001 to 200	0000.00 (mm/ 0000.000 (inc 0000.000 (deç 00 (pulse/s)	h/min)	0	
Machine OPF (OPR method		Availat	ole (6 OPR me	ethods)	Available (4 OPR methods)		ethods)	Δ	Corresponding to the OP unpassed error is required. Return the motor more than one rotation once at the error and perform the OPR start again.
JOG operation	on		Available			Available		0	agaii.
								_	l .

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

O: Compatible, △: Partial change required, ×: Incompatil							quired, x: incompatible	
Item	Model	A1SD75M1 A1SD75M2	A1SD75M3	QD75M1	QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Manual pulse function	egenerator	1 generator/ax	is	1 g	enerator/mod	ule	Δ	• On QD75M□, the manual pulse generator cannot be used by each axis independent. When connecting the manual pulse generator for each axis is required, use one axis module. • The manual pulse generator itself can use the same one. • The operation for inputting one pulse differs. Set the parameter so that movement amount may be same.
Acceleration /deceleration	Automatic trapezoidal acceleration/ deceleration	Available			Available		0	
process	S-pattern acceleration/ deceleration	Available			Available			
Acceleration /deceleration		Acceleration time and dece can be set independ (4 patterns eac	dently. h)		time and dece e set independ patterns eacl	dently.	0	
time	setting range	Switching is poss 1 to 65535ms or 1 to 83		1	to 8388608m	s		
Compensatio	-	Electronic gears, ba	cklash		onic gears, ba		Δ	Refer to *2.
Error display	compensation, near pass 2 compensation, near pass 2 ay 17-segment LED Error LED ×		To check details of diagnostics, use GX Works2/GX Developer.					
History data s	storage (Start, g)	Provided (4 types, 16 items/m	nodule)	(3 typ	Provided pes, 16 items/	axis)	0	The start history at error is integrated into the start history.
Data storage	destination	Flash ROM (battery-less back	kup)	(bat	Flash ROM tery-less back	cup)	0	

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

			O : Compa	atible,∆ : Parti	ai change re	equired, ×: Incompatible
Item	Model	A1SD75M1 A1SD75M2 A1SD75M3	QD75M1 QD75M2	QD75M4	Compat- ibility	Precautions for replacement
Connection connector		10136-3000VE (Soldering type, supplied) 10136-6000EL (IDC type, sold separately)	A6CON1, A6CON4 (Soldering type, sold separately) A6CON2 (Crimping type, sold separately) A6CON3 (IDC type, sold separately)		×	As the connectors differ, wiring
Applicable wire size		10136-3000VE: 24 to 30 AWG (approx. 0.05 to 0.2mm²) 10136-6000EL: 28 AWG (approx. 0.08mm²)	A6CON1; A6CON4: 0.3mm ² A6CON2: 24 to 28 AWG A6CON3: 28 AWG (twisted wire), 30 AWG (single wire)		0	change is required. The connectors of QD75M□ is sold separately.
SSCNET con Maximum ext distance of S	tension	Refer to Sect			Δ	Shape of a bus connector differs.
Internal curre	ent	0.7A or less	0.40A		0	
Flash ROM w		Max. 100,000 times	Max. 100,000 times Max. 100,000 times		0	When QD75M□ carries out the flash write 26 times from the sequence program, an error occurs. The error reset enables to perform the flash write.
Number of oc	ccupied I/O	32 points (I/O assignment: special 32 points)	32 points (I/O assignment: intelligen	t 32 points)	0	
Number of m		(I/O assignment: special 32 points)	1	t 32 points)	0	
occupied slot Weight	S	0.35kg	0.15kg 0.15kg 0.16kg		0	
I/O signal for external devices	START signal	Available	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	External command signal start or speed-position s selectable with param	witching	Δ	
Peripheral	Connection with peripheral devices	Direct connection	Connection via program controller CPU, Q correspon communication mode corresponding MELSECNE I/O module	nding serial ule, Q	0	The connection type differs.
devices (data setting, etc.)	Teaching module	AD75TU	Not available		×	The teaching module cannot be used.
	Software package	GX Configurator-AP	GX Works2 GX Configurator-Q	ŀP ^{*3}	0	The software package that can be used differs.

- *1 No.1 to 100 data items/axis of positioning data can be set using the buffer memory and No.1 to 600 data/axis can be set with QD75MD.
 - The positioning data in the buffer memory is not backed up.
- *2 The near pass function is valid only during the continuous path control. (A1SD75M□: Selected with parameters, QD75M□: Standard function)
 - 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.

8.3.2 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	With the QD75M□, there is no the error code of the left column.					
(error code: 208)						
Fast machine OPR	With the QD75M□, there is no possible function for replacement.					
Special start (stop)	Execute it separately for the start two times.					
Indirect designation	In the QD75M□, the start block area on the buffer memory is expanded to five blocks (0 to 4). Each					
munect designation	start block can be directly designated with positioning start No. (7000 to 7004).					
Block transfer	With the A1SD75M□, this interface is used to set positioning data No. 101 to 600 that do not exist on					
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/F	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					
(Module name, OS type, OS version)	information" of GX Works2/GX Developer.					

(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					
	1. The software stroke limit chec	k of arc address is carried out only	y when a sub point is designated.				
	It is not carried out when a center point is designated.						
	2. The software stroke limit check during speed control is carried out in the following cases:						
	When the software stroke limit is applied to the current feed value with Pr.14 and the current feed						
	value is updated with Pr.21						
	When the software stroke limit	s applied to the machine feed valu	ue				
	3. If an attempt is made to chang						
	,	e attempt is considered as an erro					
Software stroke limit function	changed.	•					
	Error code change						
	A1SD75M□:						
	There are 3 types of errors for	each software stroke upper limit a	and lower limit (error code: 509 to				
	512).		`				
	QD75M□:						
	Errors for the software stroke	upper limit are integrated into one	(error code: 507).				
	Errors for the software stroke	lower limit are integrated into one	(error code: 508).				
	Error codes 509 to 512 are de		,				
Current value changing M code	1. An error occurs when the des	gnated new current value is out o	f the software stroke limit range.				
function	2. The M code setting value is va	-					
Acceleration/deceleration speed		Bms) can be used as the setting va					
control	deceleration time.	,					
	"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 group 2 "sudden stop selection".						
positioning operation stop	2. "Stop (QD75 peripheral)" is added to the stop causes of Stop group 3 "sudden stop selection".						
	3. Error code 100 (Peripheral device stop during operation) is deleted.						
	4. "Programmable controller CPU error occurrence" is added to the stop causes of Stop group 2						
	"Sudden stop selection".						
		A1SD75M□	QD75M□				
			QD/3MD				
READY signal (X0)	OFF	Normal (READY)	Not READY/WDT error				
READY signal (X0)	OFF ON	Normal (READY) Not READY/WDT error					
	ON	, ,	Not READY/WDT error Normal (READY)				
,	ON	Not READY/WDT error	Not READY/WDT error Normal (READY)				
READY signal (X0) Manual pulse generator operation Axis operation status	ON The number of connectable manu	Not READY/WDT error	Not READY/WDT error Normal (READY) om 1 generator/axis to 1				
Manual pulse generator operation	ON The number of connectable manu generator/module.	Not READY/WDT error	Not READY/WDT error Normal (READY) om 1 generator/axis to 1				
Manual pulse generator operation	ON The number of connectable manu generator/module. "Step stopped" is changed to "Stotal Control of the contro	Not READY/WDT error	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring".				
Manual pulse generator operation	ON The number of connectable manu generator/module. "Step stopped" is changed to "Stotal Control of the contro	Not READY/WDT error ral pulse generators is changed from pped" and "Step error occurring" in reverse direction, the control is in	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring".				
Manual pulse generator operation Axis operation status	ON The number of connectable manu generator/module. "Step stopped" is changed to "Sto • A1SD75M□: If the reference axis operates in	Not READY/WDT error ral pulse generators is changed from pped" and "Step error occurring" in reverse direction, the control is in	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring".				
Manual pulse generator operation	ON The number of connectable manu generator/module. "Step stopped" is changed to "Sto • A1SD75M□: If the reference axis operates in continuous positioning control. • QD75M□:	Not READY/WDT error ral pulse generators is changed from pped" and "Step error occurring" in reverse direction, the control is in	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the				
Manual pulse generator operation Axis operation status	ON The number of connectable manu generator/module. "Step stopped" is changed to "Sto • A1SD75M□: If the reference axis operates in continuous positioning control. • QD75M□:	Not READY/WDT error ral pulse generators is changed from paped and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop)	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the				
Manual pulse generator operation Axis operation status	ON The number of connectable manu generator/module. "Step stopped" is changed to "Stotal of the reference axis operates in continuous positioning control. • QD75M□: Even if the reference axis operates the continuous path control.	Not READY/WDT error ral pulse generators is changed from paped and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop)	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the collation, the control remains as				
Manual pulse generator operation Axis operation status Continuous path control	ON The number of connectable manu generator/module. "Step stopped" is changed to "Stoto A1SD75MIII: If the reference axis operates in continuous positioning control. • QD75MIII: Even if the reference axis operates the continuous path control. (In single-axis operation, the operation)	Not READY/WDT error ral pulse generators is changed from pipped" and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) ates in reverse direction with interpretations.	Not READY/WDT error Normal (READY) Dom 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the Dolation, the control remains as A1SD75MD.)				
Manual pulse generator operation Axis operation status	ON The number of connectable manu generator/module. "Step stopped" is changed to "Stoto A1SD75MIII: If the reference axis operates in continuous positioning control. • QD75MIII: Even if the reference axis operates the continuous path control. (In single-axis operation, the operation)	Not READY/WDT error ral pulse generators is changed from period and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) ates in reverse direction with interpretation is the same as that of the only the near pass function is avail	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the collation, the control remains as A1SD75MD.)				
Manual pulse generator operation Axis operation status Continuous path control Near pass	ON The number of connectable manugenerator/module. "Step stopped" is changed to "Stoto A1SD75MD: If the reference axis operates in continuous positioning control. • QD75MD: Even if the reference axis operates the continuous path control. (In single-axis operation, the operation of the continuous path control).	Not READY/WDT error ral pulse generators is changed from period and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) ates in reverse direction with interpretation is the same as that of the only the near pass function is avail	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the collation, the control remains as A1SD75MD.)				
Manual pulse generator operation Axis operation status Continuous path control Near pass	ON The number of connectable manu generator/module. "Step stopped" is changed to "Sto • A1SD75M□: If the reference axis operates in continuous positioning control. • QD75M□: Even if the reference axis operates the continuous path control. (In single-axis operation, the operation of the continuous path control. Path of positioning address pass	Not READY/WDT error ral pulse generators is changed from piped" and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) rates in reverse direction with interpretation is the same as that of the rally the near pass function is avail is not conducted.	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the collation, the control remains as A1SD75M□.)				
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation	ON The number of connectable manu generator/module. "Step stopped" is changed to "Sto • A1SD75M□: If the reference axis operates in continuous positioning control. • QD75M□: Even if the reference axis operates the continuous path control. (In single-axis operation, the operation of the continuous path control. Path of positioning address pass	Not READY/WDT error ral pulse generators is changed from period and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) ates in reverse direction with interpretation is the same as that of the only the near pass function is avail	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the collation, the control remains as A1SD75M□.)				
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation	ON The number of connectable manu generator/module. "Step stopped" is changed to "Sto • A1SD75M□: If the reference axis operates in continuous positioning control. • QD75M□: Even if the reference axis operates the continuous path control. (In single-axis operation, the operation of the continuous path control. Path of positioning address pass	Not READY/WDT error ral pulse generators is changed from piped" and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) rates in reverse direction with interpretation is the same as that of the rally the near pass function is avail is not conducted.	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the collation, the control remains as A1SD75M□.)				
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	ON The number of connectable manu generator/module. "Step stopped" is changed to "Stotal and the state of t	Not READY/WDT error ral pulse generators is changed from perel and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) rates in reverse direction with interpretation is the same as that of the only the near pass function is avail is not conducted.	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the colation, the control remains as A1SD75M□.) able. identifier.				
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed • Circular interpolation	ON The number of connectable manu generator/module. "Step stopped" is changed to "Stotal and the state of t	Not READY/WDT error ral pulse generators is changed from piped" and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) retains a reverse direction with interpletation is the same as that of the material is not conducted.	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the collation, the control remains as A1SD75M□.)				
Manual pulse generator operation Axis operation status Continuous path control Near pass 2-axis interpolation • 2-axis linear interpolation • 2-axis fixed-feed	ON The number of connectable manuagenerator/module. "Step stopped" is changed to "Stotal of the reference axis operates in continuous positioning control. • QD75M: Even if the reference axis operates the continuous path control. (In single-axis operation, the operation of the continuous path control. Path of positioning address pass The interpolation target axis can be also as the control of the continuous path control. 1. "Step stopped" is changed to "Stotal of the continuous path control of the contr	Not READY/WDT error ral pulse generators is changed from peped" and "Step error occurring" in reverse direction, the control is in (restart after deceleration stop) ates in reverse direction with interpretation is the same as that of the only the near pass function is available in not conducted. The randomly set with a positioning of stopped and "Step error occurring arameters.	Not READY/WDT error Normal (READY) om 1 generator/axis to 1 is changed to "Error occurring". Internally changed into the colation, the control remains as A1SD75M□.) able. identifier.				

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

8.3.3 I/O signal comparison

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

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

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

^{*1} The ON/OFF status for READY is different between the QD75M□ and AD75M□.

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

^{*2} When using a program example of No.11 Reset program described in A1SD75M1/M2/M3, AD75M1/M2/M3 Positioning Module User's Manual for the QD75M□, replace "X4 (BUSY signal for Axis 1)" with "DXC (Direct access input of BUSY signal for Axis 1)". Do the same thing for programs for Axis 2 and Axis 3.

8.3.4 Buffer memory address comparison

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

area shows the differences between A1SD75M□ and QD75M□.

	Buffer 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		
Pr.2 No. of pulses per rotation (AP)	1	151	301	2	152	302		
Pr.2 No. of pulses per rotation (AP)	<u>'</u>	101		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		
Pr.7 Speed limit value	6	156	306	10	160	310		
11.7 Opeca min value	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	160	310	14	164	314		
	11 12	161 162	311 312	15 6	165 156	315		
Pr.10 Bias speed at start	13	163	312	7	157	306 307		
Pr.12 Backlash compensation amount	15	165	315	17	167	317		
	16	166	316	18	168	318		
Pr.13 Software stroke limit upper limit	17	167	317	19	169	319		
value	18			20				
Pr.14 Software stroke limit lower limit	19	168 169	318 319	20	170 171	320 321		
value	19	109	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		
D.OZ Assalanation time C	38	188	338	38	188	338		
Pr.27 Acceleration time 2	39	189	339	39	189	339		
Pr.28 Acceleration time 3	40	190	340	40	190	340		
11.20 Accordation time o	41	191	341	41	191	341		

	Buffer memory address							
Item of A1SD75M□		A1SD75M□			QD75M□			
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3		
Pr.29 Deceleration time 1	42	192	342	42	192	342		
11.23 Becoleration time 1	43	193	343	43	193	343		
Pr.30 Deceleration time 2	44 45	194	344 345	44 45	194 195	344 345		
-	46	195 196	345	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		
D. 07 Cudden stem de calendar time	54	204	354	54	204	354		
Pr.37 Sudden stop deceleration time	55	205	355	55	205	355		
Pr.38 Stop group 1 sudden stop selection	56	206	356	56	206	356		
Pr.39 Stop group 2 sudden stop selection	57	207	357	57	207	357		
Pr.40 Stop group 3 sudden stop selection	58	208	358	58	208	358		
Pr.41 Positioning complete signal output								
time	59	209	359	59	209	359		
	60	210	360	60	210	360		
Pr.42 Allowable circular interpolation	61	211	361	61	210	361		
error width								
Pr.43 External start function selection	••	0.10			242			
(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	-	-	-		
Pr.45 OPR method	70	220	370	70	220	370		
Pr.46 OPR direction	71	221	371	71	221	371		
	72	222	372	72	222	372		
Pr.47 OP address	73	223	373	73	223	373		
D. 40 ODD aread	74	224	374	74	224	374		
Pr.48 OPR speed	75	225	375	75	225	375		
Pr.49 Creep speed	76	226	376	76	226	376		
	77	227	377	77	227	377		
Pr.50 OPR retry	78	228	378	78	228	378		
OPR dwell time	-	-	-	79	229	379		
Pr.52 Setting for the movement amount	80	230	380	80	230	380		
after near-point dog ON	81	231	381	81	231	381		
Pr.53 OPR acceleration time selection	82	232	382	82	232	382		
Pr.54 OPR deceleration time selection	83	233	383	83	233	383		
Pr.55 OP shift amount	84 85	234	384	84 85	234	384 385		
Pr.56 OPR torque limit value	85 86	235 236	385 386	85 86	235 236	385		
F1.30 OFK torque IIIIII value	UU	200	300	00	200	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
Pr.102 Regenerative brake resistor	102	252	402	30102	30202	30302
Pr.103 Motor type	103	253	403	30103	30203	30303
Pr.104 Motor capacity	104	254	404	30104	30204	30304
Pr.105 Motor speed	105	255	405	30105	30205	30305
Pr.106 Feedback pulse	106	256	406	30106	30206	30306
Pr.107 Rotation direction	107	257	407	30107	30207	30307
Pr.108 Auto tuning	108	258	408	30108	30208	30308
Pr.109 Servo response setting	109	259	409	30109	30209	30309
Maker setting	-	-	-	30110	30210	30310
Maker setting	-	-	-	30111	30211	30311
Pr.112 Load inertia ratio	112	262	412	30112	30212	30312
Pr.113 Position loop gain 1	113	263	413	30113	30213	30313
Pr.114 Speed loop gain 1	114	264	414	30114	30214	30314
Pr.115 Position loop gain 2	115	265	415	30115	30215	30315
Pr.116 Speed loop gain 2	116	266	416	30116	30216	30316
Pr.117 Speed integral compensation	117	267	417	30117	30217	30317
Pr.118 Notch filter selection	118	268	418	30118	30218	30318
Pr.119 Feed forward gain	119	269	419	30119	30219	30319
Pr.120 In-position range	120	270	420	30120	30220	30320
Pr.121 Electromagnetic brake sequence output	121	271	421	30121	30221	30321
Pr.122 Monitor output mode selection	122	272	422	30122	30222	30322
Pr.123 Optional function 1	123	273	423	30123	30223	30323
Pr.124 Optional function 2	124	274	424	30124	30224	30324
Pr.125 Adaptive vibration suppression control/low pass filter	125	275	425	30125	30225	30325
Maker setting	-	-	-	30126	30226	30326
Pr.127 Monitor output 1 offset	127	277	427	30127	30227	30327
Pr.128 Monitor output 2 offset	128	278	428	30128	30228	30328
Pr.129 Pre-alarm data selection	129	279	429	30129	30229	30329
Pr.130 Zero speed	130	280	430	30130	30230	30330
Pr.131 Error excessive alarm level	131	281	431	30131	30231	30331
Pr.132 Optional function 5	132	282	432	30132	30232	30332
Pr.133 Optional function 6	133	283	433	30133	30233	30333
Pr.134 PI-PID control switch-over position	134	284	434	30134	30234	30334
droop Maker setting	-	_	_	30135	30235	30335
Marci setting	-		_	30133	30233	30333

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

ltem of A1SD75M□		Buffer memory address	
		A1SD75MD QD75MD	
		Common for axis 1,2,3	Common for axis 1,2,3,4
Md.1 In test mode flag		450	1200
Md.2 Module name		451	-
Md.3 OS type		452 453 454 455	-
Md.4 OS version		456 457	-
Md.5 Clock data (Hour: minute)		460	-
Md.6 Clock data (Second: 100ms)		461	-
(Pointer number)		(0) to (15)	
Md.7 Start axis	Start history	462 to 537	1212 to 1287
(QD75M□: Md.3 Start information)			
Md.8 Operation type		463 to 538	1213 to 1288
(QD75M□: Md.4 Start No.)			
Md.9 Start time (Hour: minute)		464 to 539	1214 to 1289
(QD75M□: Md.5 Start (Hour))			
Md.10 Start time (Second: 100ms)		465 to 540	1215 to 1290
(QD75M□: Md.6 Start (Minute: second))			
Md.11 Error judgment		466 to 541	1216 to 1291
Md.12 Start history pointer		542	1292
(Pointer number)	Start history at error	(0) to (15)	-
Md.13 Start axis		543 to 618	-
Md.14 Operation type		544 to 619	-
Md.15 Start time (Hour: minute)		545 to 620	-
Md.16 Start time (Second: 100ms)		546 to 621	-
Md.17 Error judgment		547 to 622	-
Md.18 Start history pointer at error		623	-
(Pointer number)		(0) to (15)	
Md.19 Axis in which the error occurred	Error history	624 to 684	1293 to 1353
Md.20 Axis error No.		625 to 685	1294 to 1354
Md.21 Axis error occurrence time (Hour: minute)		626 to 686	1295 to 1355
(QD75M□: Md.11 Axis error occurrence (Hour))			
Md.22 Axis error occurrence time (Second: 100ms)		627 to 687	1296 to 1356
(QD75M□: Md.12 Axis error occurrence			
(Minute: second))			
Md.23 Error history pointer		688	1357

		Buffer mem	ory address
Item of A1SD75M□		A1SD75M□	QD75M□
		Common for axis 1,2,3	Common for axis 1,2,3,4
(Pointer number)		(0) to	0 (15)
Md.24 Axis in which the warning occurred		689 to 749	1358 to 1418
Md.25 Axis warning No.		690 to 750	1359 to 1419
Md.26 Axis warning occurrence time (Hour:	<u>></u>		
minute)	history	691 to 751	1360 to 1420
(QD75□: Md.16 Axis warning occurrence (Hour))	ing h		
Md.27 Axis warning occurrence time (Second:	Warning l		
100ms)	>	692 to 752	1361 to 1421
(QD75M□: Md.17 Axis warning occurrence		092 to 132	1301 to 1421
(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	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	810 811	910 911	1010 1011
AAU OZ Avija fa a dusta	812	912	1012	812	912	1012
Md.37 Axis feedrate	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
NAJ 44 Torget velve	818	918	1018	818	918	1018
Md.41 Target value	819	919	1019	819	919	1019
Md.42 Target speed	820	920	1020	820	920	1020
raiget opecu	821	921	1021	821	921	1021
Md.43 OP absolute position	822 823	922 923	1022 1023	-	-	-
Md.44 Movement amount after near-point	824	924	1024	824	924	1024
dog ON	825	925	1024	825	925	1024
	826	926	1026	826	926	1026
Md.45 Torque limit stored value	020	920	1020	020	920	1020
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	829	929	1029	829	929	1029
/alue	020	020	1020	020	020	1020
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						
QD75MD: Md.41 Special start repetition counter)	834	934	1034	832	932	1032
Md.54 Positioning data No. being	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 104
	848	948	1048	848	948	1048
Md.100 OPR re-travel value	849	949	1049	849	949	1049
Md.101 Real current value	850	950	1050	850	950	1050
IVIA. 10 I I TOAI CUITOIR VAIUE	851	951	1051	851	951	1051

			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
- Deviation scanter 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	1056	856	956	1055
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		-		875 876	975 976	1075 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 memory address						
ltem of A1SD75M□		A1SD75M□			QD75M□	
	Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3
Cd.1 Clock data setting (hour)		1100			-	
Cd.2 Clock data setting (minute, second)		1101			-	
Cd.3 Clock data writing		1102			-	
Cd.4 Target axis		1103			-	
Cd.5 Positioning data No.		1104			-	
Cd.6 Write pattern		1105			-	
Cd.7 Read/write request		1106			-	
Cd.8 Read/write positioning data I/F		1108 to 1137			-	
Cd.9 Flash ROM write request		1138			1900	
Cd.10 Parameter initialization request		1139			1901	
Cd.11 Positioning start No.	1150	1200	1250	1500	1600	1700
Cd.12 Axis error reset	1151	1201	1251	1502	1602	1702
Cd.13 Restart command	1152	1202	1252	1503	1603	1703
Cd.14 M code OFF request	1153	1203	1253	1504	1604	1704
Cd.15 New current value	1154	1204	1254	1506	1606	1706
	1155 1156	1205 1206	1255 1256	1507 1514	1607 1614	1707 1714
Cd.16 New speed value	1157	1207	1257	1515	1615	1715
Cd.17 Speed change request	1158	1208	1258	1516	1616	1716
Cd.18 Positioning operation speed override	1159	1209	1259	1513	1613	1713
Cd.19 JOG speed	1160	1210	1260	1518	1618	1718
	1161	1211	1261	1519	1619	1719
Cd.20 Speed-position switching enable flag	1163	1213	1263	1528	1628	1728
Cd.21 Speed-position switching control	1164	1214	1264	1526	1626	1726
movement amount change register	1165	1215	1265	1527	1627	1727
Cd.22 Manual pulse generator enable flag	1167	1217	1267	1524	1624	1724
Cd.23 Manual pulse generator 1 pulse	1168	1218	1268	1522	1622	1722
input magnification	1169	1219	1269	1523	1623	1723
Cd.24 OPR return request flag OFF request	1170	1220	1270	1521	1621	1721
Cd.25 External start valid						
(QD75M□: Cd.8 External command valid)	1171	1221	1271	1505	1605	1705
Cd.26 Step valid flag	1172	1222	1272	1545	1645	1745
Cd.27 Step mode	1173	1223	1273	1544	1644	1744
Cd.28 Step start information	1174	1224	1274	1546	1646	1746
Cd.29 Skip command	1175	1225	1275	1547	1647	1747
Cd.30 New torque value	1176	1226	1276	1525	1625	1725
Cd.31 Positioning starting point No.	1178	1228	1278	1501	1601	1701
Cd.100 Servo OFF command	1179	1229	1279	1551	1651	1751
Cd.101 Torque output setting value	1180	1230	1280	1552	1652	1752

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

				1				Buff	er mem	orv ado	iress				
		Item of A1SD75M□				A1SD	75M□			,		QD7	5M□		
				Ax	is 1		is 2	Ax	is 3	Ax	is 1		is 2	Ax	is 3
	Da Da Da	.2 Control system .3 Acceleration time No.		13	00	23	00	33	00	20	000	80	000	140	000
				40	0.1	22	04	22	04	200	004	00	104	4.40	204
		9 M code/condition data 8 Dwell time/JUMP nation positioning data	No.1		01		01	33	02		001		001	140	002
ata _*	Not ı	used		13	03	23	03	33	03	20	003	80	03	140	003
Positioning data*1	Da	7 Command speed			04	23 23	04 05	33 33	04 05	_	004		04 05		004
sitic	Da	5 Positioning address/		13	06	23	06	33	06	20	006	80	06	140	006
<u>A</u>		ement amount		13	07	23		33	07	20	07	80	07	140	007
	Da	Da.6 Arc address			08 09	23 23		33 33	08 09)08)09		08 109	140	008 009
		No.2			o 1319	2310 to	o 2319	3310 t	o 3319	2010 t	o 2019	8010 t	o 8019	140	10 to 019
		No.3		1320 t	o 1329	2320 t	o 2329	3320 t	o 3329			8020 t	o 8029		20 to 029
		to			:0	t	.0	t	0	1	to	1	to		0
		No.100		2290 to 2299 3290 to 3299		4290 to 4299 2990 to 2999		8990 t	o 8999		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	26001	26051		27051	28001	28051
		3rd point		4302	4352	4552	4602	4802	4852			1		28002	
*ر		to 50th point		4349	4399	4599	649	4849	o 4899		to 26099		27099		28099
Positioning start information*3		Da.14 Condition target Da.15 Condition operator			.00		50		00		100		100		100
oning s		Da.16 Address	No.1		.02 .03		52 53		02 03		102 103		102 103		102 103
Positi	data	Da.17 Parameter 1			.04 .05		54 55		04 05		104 105		104 105		104 105
	Condition data	Da.18 Parameter 2			.06 .07		56 57		06 07		106 107		106 107		106 107
	Ö	No.2		4410 t	o 4419	4660 to	o 4669	4910 t	o 4919		10 to 119		10 to 119		10 to 119
		No.3		4420 t	o 4429	4670 to	o 4679	4920 t	o 4929	261	20 to 129	2712	20 to 129	2812	20 to 129
		to		1	10	t	:0	t	0		to		to		10
		No.10		4490 t	o 4499	4740 to	o 4749	4990 t	o 4999		90 to 199		90 to 199		90 to 199

^{*1} With the QD75MD, the positioning data buffer memory addresses are No. 1 to 600.

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

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

			Buffer memory address						
	Item of A1SD75M□			A1SD75M□			QD75M□	D75M□	
			Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 3	
Positioning		Start No.8001	4500	4750	5000	-	-	-	
start	Indirect	Start No.8002	4501	4751	5001	-	-	-	
information	designation	to	to	to	to	to	to	to	
IIIOIIIIalioii		Start No.8050	4549	4799	5049	-	-	-	
Drogrammal	ala controllar	Condition judgment torget	5050			30000			
ŭ	ole controller	Condition judgment target data of the condition data		to			to		
CPU memor	y area	data of the condition data		5099			30049		
Target axis			5100			-			
Head position	Head positioning block No.		5101			-			
No. of read/write data items			5102			-			
Read/write r	Read/write request		5103			-			
Read/write b	olock			5110 to 6109			-		

8.3.5 External interface specifications comparison

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

(1) Electrical specifications comparison

O : Compatible, △ : Partial change required

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

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

(2) Signal layout comparison

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

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

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

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

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

(3) Supported servo amplifier

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

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

A1SD75M□/AD75M□	QD75M□	Domarko			
Supported amplifier model	Availability	Remarks			
MR-J□-B	Available				
MR-H□-B	Available	Needs to change the SSCNET cables (refer to (b) in the next page.)			
MR-J2□-B	Available	Discontinued model			
MR-J2S□-B	Available				

⊠ Point

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

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

Additionally, the servo motor needs to be replaced.

- Positioning module: QD77MS□ + servo amplifier: MR-J3□-B
- Positioning module: QD77MS□ + servo amplifier: MR-J4□-B
- (2) Selecting suitable products to replace the existing servo amplifier without servo motor replacement

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

Positioning module: QD75M

MR-J4-B-RJ020

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

MR-J4-T20

+ Converter module: (Conversion III

(Conversion Unit for SSCNET of MR-J2S-B)

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

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

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

(b) For SSCNET cables applicable to the servo amplifiers

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

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

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

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

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

Table 2. With the servo amplifier MR-H

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

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

8.4 A1SD70

8.4.1 Performance specifications comparison

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

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

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

Model Item	A1SD70	QD73A1	Compat- ibility	Precautions for replacement
External supply voltage/ current terminal block	+15VDC, 0.2A -15VDC, 0.02A	-	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	Δ	

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

8.4.2 Function comparison

(1) Function comparison between the A1SD70 and the QD73A1

O: Compatible, -: Not available

	Function		Description	A1SD70	QD73A1	Precautions for replacement
		Positioning	Positioning is executed from the current position to a specified	0	0	Refer to Section
		control	position at a specified speed.	O	U	8.4.6.
	Position	Two phase	Positioning is executed to the address specified in			
	control mode	Two-phase trapezoidal	"Da.2 Positioning address P1" at "Da.3 Positioning speed V1",		0	
	illoue	positioning control	then to the address specified in "Da.4 Positioning address P2" at	0	0	
Major		Control	"Da.5 Positioning speed V2" by one positioning start signal.			
positioning			Operation starts according to the positioning speed set beforehand			
control			by one start signal, then the operation switches to position control			
			by Speed-position switching command signal. If the operation			
	Speed-po	sition	stopped by Stop signal after the input of Speed-position switching	_		Refer to Section
	control sw	vitch mode	command signal, the positioning can be continued by Speed-	0	0	8.4.6.
			position mode restart signal. In addition, the positioning address			
			(movement amount) can be changed if it is before the input of			
			Speed-position switching command signal.			
			Positioning is executed in the specified direction at specified			
				speed while a JOG operation command is on. Turning on the		
JOG operation			signal starts operation at a specified speed and speed control	0	0	
			operation is continued until Stop signal is input.			
			A workpiece is returned to an original point following an OPR start			
OPR contro	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	
Ela atuacia a	6 4: .		This function controls moving distance and speed by multiplying	_		
Electronic of	gear function	on	command pulse output.	0	0	
			This function clears the accumulated pulses in the deviation			
			counter. When the servomotor power is turned off due to an			
Deviation c	ounter clea	ar function	emergency stop during positioning, clearing the accumulated	0	0	
			pulses in the deviation counter prevents servomotor rotation at			
			power recovery.			
0	6		This function forces to change speed from a program during	_	_	Refer to Section
Speed char	nge tunctio	on	positioning control or JOG operation.	0	0	8.4.6.
C		£	This function changes the current feed value to a specified value			Refer to Section
Current val	ue cnange	TUNCTION	from a sequence program on the condition other than while BUSY.	0	0	8.4.6.
			This function turns on In-position signal while the accumulated			
In position	function		pulse amount in the deviation counter is within the specified in-			
In-position	iunction		position range. In-position signal can be used as the signal right	0	0	
			before positioning completion.			
Zara/gain -	divetos e t		This function adjusts analog voltage contained in accumulated	_	_	Refer to Section
Zero/gain a	ujusiment		pulses.	0	0	8.4.6.



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

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

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

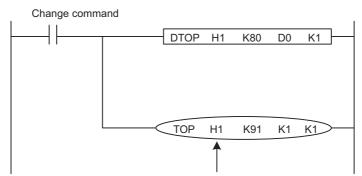
(2) Changed function from the A1SD70

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

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

Changed function	Change description
Major positioning control	Program corrections of the QD73A1 are required because buffer memory addresses for the positioning
wajor positioning control	address, positioning speed, and positioning pattern differ from those of the A1SD70.
	• A1SD70
	Amount of movement from the near-point dog ON (buffer memory address: 108, 109), the absolute value of
	the moving amount is stored.
OPR function	• QD73A1
	Near point the amount of movement of the dog after the ON (buffer memory address: 108, 109), the value
	obtained by adding the homing direction rating Will be paid. Near point movement amount after dog ON
	(absolute value) (Buffer Memory Address: 118, 119) in, the amount of movement Absolute value is stored.
	• A1SD70
	For Velocity/position axis travel distance change area, the value is reflected during speed control.
Speed-position control switch	Setting value: 0 to 2147483647 (valid within the stroke range)
mode (speed control	• QD73A1
operation)	For New speed-position movement amount, the value is cleared to 0 when the next operation starts and
	reflected when Speed-position switching command signal is turned on.
	Setting value: 1 to 2147483647 (valid within the stroke range)
	• A1SD70
	The speed change is requested by writing a new speed value in Velocity change area of the buffer memory.
	• QD73A1
Speed change function	The speed change is requested by writing a new speed value in the buffer memory and writing "1" to Speed
	change request (buffer memory address: 91).
	* To use the speed change function, an additional program is required.*1
	• A1SD70
	The current value is changed by writing a new address in Present value change area of the buffer memory.
Current value change	• QD73A1
function	The current value is changed by writing a new address in New current value of the buffer memory and
	writing "1" to Current value change request (buffer memory address: 90).
	• A1SD70
	The adjustment is performed using the volumes for zero/gain adjustment.
	• QD73A1
	The adjustment is performed by either of following methods.
Zero/gain adjustment	Using the UP/DOWN switch for zero/gain adjustment
Zero/gain adjustinent	The function is the same as the A1SD70 though the QD73A1 uses the UP/DOWN switch instead of the
	volumes.
	2) Using the buffer memory
	To use the buffer memory for the adjustment, create a program.*1
	A1SD70
	The setting is configured with slide switches or encoder interface setting pin (hardware setting)
	1) Slide switches
	Rotation direction, accumulated pulse, multiplication setting, zero-return direction, zero-return mode, and
	zero/gain adjustment mode setting/clear
Mode switch	2) Encoder interface setting pin
	Encoder output types
	• QD73A1 The potting is configured with the intelligent function module quitely potting of CV Works2 or the quitely
	The setting is configured with the intelligent function module switch setting of GX Works2 or the switch
	setting of parameter I/O assignment of GX Developer.
	* Though the setting method is changed from a hardware switch to parameters of software, the same level
LED	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	Used for both minor errors and major errors.	
Major error	ERR.2	ERR.		
Encoder phase A	φА	φА		
Encoder phase B	φВ	φВ		
Encoder phase Z	φZ	φZ		
BUSY	BUSY	BUSY		
Zero adjustment status		ZERO	The contents indicated with "ZERO" of the QD73A1 differ from the ones	
Zero adjustment status	-	ZERU	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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8.4.3 I/O signals comparison

Some I/O signals are added a function.

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

Input (X)			Output (Y)			
Signal name	A1SD70	QD73A1	Signal name	A1SD70	QD73A1	
Unused	X00	X00	Unused	Y00	Y00	
(The first half slot is Empty 16 points.)*1	to	to	**	to	to	
	X0F	X0F	(The first half slot is Empty 16 points.)*1	Y0F	Y0F	
WDT error, H/W error	X10	X10	Zero/gain adjustment data writing request	-	Y1A	
Module READY	X11	X11	Zero/gain adjustment change request	-	Y1B	
OPR request	X12	X12	Set value change request	-	Y1C	
OPR complete	X13	X13	OPR start	Y20	Y20	
BUSY	X14	X14	Absolute positioning start	Y21	Y21	
Positioning complete	X15	X15	Forward start	Y22	Y22	
In-position	X16	X16	Reverse start	Y23	Y23	
Excessive error	X17	X17	Forward JOG start	Y24	Y24	
Error detection	X18	X18	Reverse JOG start	Y25	Y25	
Overflow	X19	X19	Speed-position mode restart	Y26	Y26	
Underflow	X1A	X1A	Stop	Y27	Y27	
Servo READY	X1B	X1B	Error reset	Y28	Y28	
Near-point dog	X1C	X1C	Overflow reset	Y29	Y29	
External stop	X1D	X1D	Underflow reset	Y2A	Y2A	
Upper limit signal	X1E	X1E	Speed-position switching enable	Y2C	Y2C	
Lower limit signal	X1F	X1F	PLC READY	Y2D	Y2D	
OPR start complete	-	X20		Y10	Y10	
About the monition in a short committee		X21		to	to	
Absolute positioning start complete	-	۸۷۱		Y1F	Y19	
Forward start complete				Y2B	Y1D	
(for the incremental positioning and the	-	X22	*1	\(\alpha = \(\alpha = \)	to	
speed-position control switching)			Use prohibited*1	Y2E, Y2F	Y1F	
Reverse start complete						
' '		X23			Y2E, Y2F	
(for the incremental positioning and the	-	A23		-	125, 125	
speed-position control switching)						
Synchronization flag	-	X24				
Zero/gain adjustment data writing complete			1			
flag	-	X2A				
Zero/gain adjustment change complete flag	_	X2B	1			
Set value change complete flag	_	X2C	1			
Operating status of the speed-position		7.20	1			
control switch mode	-	X2D				
CONTROL SWITCH HIDGE			1			
	X20	X25 to X29				
Use prohibited*1	to	VOE VOE				
	X2F	X2E, X2F				

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

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

8.4.4 Buffer memory address comparison

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

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

area shows the differences between the A1SD70 and the QD73A1.

Warran			Buffer memory address		
	Item		A1SD70	QD73A1	
	Straka limit uppar limit		0	0	
	Stroke limit upper limit	1	1	1	
Fixed parameter	Stroke limit lower limit		2	2	
	Stroke iiriit lower iiriit		3	3	
		Numerator of command	4	4	
		pulse multiplication	·	•	
	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	<u> </u>		43	43	
	Creep speed		44	44	
			45	45	
		ent amount after near-point	46	46	
	dog ON		47	47	
	Positioning pattern		60 61	301	
	Positioning address P	oning address P ₁		302	
			62	303	
D ''' ' 1.	Positioning speed V ₁		63	304	
Positioning data			64	305	
	Positioning address P	2	65	306	
			66	307	
	Positioning speed V ₂		67 68	308 309	
			80	80	
	New current value		81	81	
			82	82	
	New speed value		83	83	
			84	84	
	JOG speed (area)		85	85	
	Deviation counter clea	ar command	86	86	
Control change area	Analog output adjustn		87	87	
			88	88	
	New speed-position m	novement amount	89	89	
	Current value change	request	-	90	
	Speed change reques	•	<u> </u>	91	
				92	
	Analog output adjustm	nent area 2	-	93	

		Buffer men	nory address
	Item	A1SD70	QD73A1
	Zero/gain adjustment specification	-	94
Zero/gain adjustment	Zero/gain adjustment value specification	-	95
area	Factory default zero/gain adjustment value		96
	restoration request	•	90
	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
		106	116 ^{*1}
Monitor area	Deviation counter value	107	117 ^{*1}
			106 ^{*2}
	Deviation counter value (address)	-	107 ^{*2}
	Mayamant amount after page point dog ON	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
	recurate	-	115
	(Record 0) Error code	ı	120
Error history	(Record 0) Error occurrence (Year : Month)	ı	121
	(Record 0) Error occurrence (Day : Hour)	ı	122
	(Record 0) Error occurrence (Minute : Second)	-	123
	(Record 1 to 15)	-	124 to 183
	Error history pointer	-	184

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

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

8.4.5 Interface specifications comparison with external devices

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

○: Compatible, △: Partial change required

				0		le, Δ: Partial change required
	Item		A1SD70	QD73A1	Compati- bility	Precautions for 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	
iiiput	input digital	Lower limit signal	0	0	0	
		Speed- position switching command	0	0	0	
	Positioning feedback pulse input		(Pulse frequency) Open collector: 100kpulse/s or less TTL: 100kpulse/s or less Differential: 100kpulse/s or less	(Pulse frequency) Open collector: 200kpulse/s or less TTL: 200kpulse/s or less Differential: 1Mpulse/s or less	0	The specification has improved. (Upward-compatibility)
Output	Servo ON		0	0	0	
	Speed comm signal)	nand (analog	0	0	0	

8.4.6 Precautions for the replacement of the A1SD70 by the QD73A1

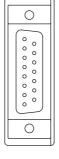
The following shows precautions for the replacement of the A1SD70 by the QD73A1.

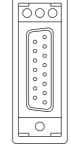
Item	A1SD70	QD73A1	Precautions
Number of occupied slots	2 s	lots	*1
Number of occupied I/O points	48 points (I/O assignment: First half slot: Empty 16 points Second half slot: special function module, 32 points) 48 points (I/O assignment: First half slot: Empty 16 points Second half slot: Intelli., 32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

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

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

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





QD73A1

A1SD70

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

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

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

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

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

No.	Slide switch 1 of the A1SD70 (rotation direction setting)	of the motor and	Wiring between the A1SD70 an	id encoder	Wiring when the A1SD70 is repla	aced to the QD73A1
1	OFF	Same direction	Phase Phase B	Phase A L Phase B L B L B L B L B L B L B L B L B L B	Phase Phase B QD73A1	Phase A J Phase B B Encoder
2		Reverse direction	Phase Phase B A1SD70	Phase A. J. Phase B. B. Encoder	Phase Phase B	Phase A J Phase B B Encoder

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

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

POSITION DETECTION MODULE REPLACEMENT

9.1 Position Detection Module Replacement

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

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

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

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

Absocoder model	Q series position detection module for replacement		Existing A series position detection module				
	VS-Q62	VS-Q62B	A61LS	A62LS	A62LS-S5	A63LS	A1S62LS
VRE-P062SAC	-	VS-Q62B-V1PG	0	-	0	-	-
VRE-P028SAC	-	V3-Q02B-V1FG	0	-	-	0	0
MRE-32SP062SAC	VS-Q62B-M2PG		1	0	-	0	0
MRE-G□SP062FAC (□: 64/128/160/256/320)		VS-Q62B-M2PG	-	0	0	-	-
VLS-256PWB		VS-Q62-L VS-Q62B-L	-	0	0	-	-
VLS-512PWB			-	0	0	-	-
VLS-1024PW	VS-062-I		-	0	0	-	-
VLS-512PYB	V3-Q02-L		-	-	0	-	-
VLS-1024PYB			-	0	0	1	-
VLS-2048PY			-	0	-	-	-

VS-Q62: Varilimit type (scaling, positioning, switch output) VS-Q62B: Converter type (position detection function)

(2) Connection cables

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

(3) Remote setting module

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

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

9 POSITION DETECTION MODULE REPLACEMENT Memo

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REPLACEMENT OF OTHER MODULES

10.1 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, Ql60, as an alternative.
ruise caton module	AISFOO	An interrupt program needs to be prepared.
Analog timer module	A1ST60	Consider programmed timer control by indirectly specifying
Analog timer module	AISTOU	internal timer.
		There are no alternative models. Consider using our partner
	A1SD35ID1	manufacturer's products (ID system "BIS M series"
ID interface module		manufactured by Balluff GmbH or ID system "Z series"
ID Interface module		manufactured by B&PLUS KK), which can be connected to
	A1SD35ID2	Mitsubishi programmable controllers. (System migration)
		For details, refer to the technical bulletin (FA-A-0062).
Memory card interface module	A1SD59J-S2	Create a file register in a memory card or the standard RAM,
ivieniory card interface filloddie	W 190991-95	and use it as a substitute.

Memo		

APPENDICES

Appendix 1 External Dimensions

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

Appendix 2 Spare Parts Storage

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

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

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

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

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

[Reference]

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

Appendix 3 Relevant Manuals

Appendix 3.1 Replacement handbooks

(1) Transition guide

No.	Manual name	Manual number	Model code
1	MELSEC-A/QnA Series Transition Guide	L08077E	-
2	MELSEC-AnS/QnAS (Small Type) Series Transition Guide	L08236E	-

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

No.	Manual name	Manual number	Model code
	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook	L08043ENG	_
1	(Fundamentals)	L000+3L1 1 C	
•	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series	L08219ENG	_
	Handbook (Fundamentals)	L002 19L1 1 O	_
	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook	L08046ENG	_
2	(Intelligent Function Modules)	L00040LING	_
	Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series	L08220ENG	_
	Handbook (Intelligent Function Modules)	LUUZZULING	_
3	Transition from MELSEC-A/QnA (Large Type), AnS/QnAS (Small Type)	L08048ENG	_
3	Series to Q Series Handbook (Network Modules)	L000+0L1 1 C	_
4	Transition from MELSEC-A/QnA (Large Type), AnS/QnAS (Small Type)	L08050ENG	_
4	Series to Q Series Handbook (Communications)	LUUUUULING	_
5	Transition from MELSEC-A0J2H Series to Q Series Handbook	L08060ENG	-
6	Transition from MELSECNET/MINI-S3, A2C(I/O) to CC-Link Handbook	L08061ENG	-
7	Transition from MELSEC-I/OLINK to CC-Link/LT Handbook	L08062ENG	-
,	Transition from MELSEC-I/OLINK to AnyWire DB A20 Handbook	L08263ENG	-
8	Transition of CPUs in MELSEC Redundant System Handbook	L08117ENG	_
U	(Transition from Q4ARCPU to QnPRHCPU)	LUGITILING	

(3) Transition Examples

No	Manual name	Manual number	Model code
1	MELSEC-A/QnA (Large), AnS/QnAS (Small) Transition Examples	L08121E	-

(4) Others

No.	Manual name (technical bulletin)	Manual number	Model code
1	Procedures for Replacing Positioning Module AD71 with QD75	FA-A-0060	-
2	Transition from MELSERVO-J2-Super/J2M Series to J4 Series Handbook	L03093	-
3	Product discontinuation of ID system D-2N series	FA-A-0062	-
4	Production discontinuation of MELSEC-A series models	T12-0016	-

Appendix 3.2 AnS series

No.	Manual name	Manual number	Model code
1	A/D Converter Module Type A1S64AD User's Manual	IB-66336	13J676
2	Analog-Digital Converter Module Type A1S68AD User's Manual	IB-66576	13J757
3	D/A Converter Module Type A1S62DA User's Manual	IB-66335	13J673
4	Digital-Analog Converter Module Type A1S68DAV/DAI User's Manual	IB-66587	13J810
5	Thermocouple Input Module Type A1S68TD User's Manual	IB-66571	13J781
6	Type A68RD3N/4N,A1S62RD3N/4N Pt100 Input Module User's Manual	SH-080193	13JR46
	A1S62TCTT-S2 Heating-Cooling Temperature Control Module		
7	A1S62TCTTBW-S2 Heating-Cooling Temperature Control Module with Wire	SH-3643	13JL35
	Breakage Detection Function User's Manual		
	A1S62TCRT-S2 Heating-Cooling Temperature Control Module		
8	A1S62TCRTBW-S2 Heating-Cooling Temperature Control Module with Wire	SH-3644	13JL36
	Breakage Detection Function User's Manual		
	Temperature Control Module Type A1S64TCTRT/Temperature Control		
9	Module with Disconnection Detection Function Type A1S64TCTRTBW	SH-080549ENG	13JR79
	User's Manual		
	A1S64TCRT-S1 Temperature Control Module/A1S64TCRTBW-S1		
10	Temperature Control Module with Disconnection Detection Function User's	IB-66756	13JL03
	Manual		
	A1S64TCTT-S1 Temperature Control Module/A1S64TCTTBW-S1		
11	Temperature Control Module with Disconnection Detection Function User's	IB-66747	13J891
	Manual		
12	Positioning Module Type A1SD70 User's Manual	IB-66367	13JE04
13	A1SD75M1/M2/M3, AD75M1/M2/M3 Positioning Module User's Manual	IB-66715	13J870
4.4	A1SD75P1-S3/P2-S3/P3-S3, AD75P1-S3/P2-S3/P3-S3 Positioning Module	ID 00740	40 1074
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
17	High Speed Counter Module Type A1SD62, A1SD62E, A1SD62D(S1) User's	IB-66593	13J816
17	Manual	10-00393	133610
18	Pulse catch module type A1SP60 User's Manual (Hardware)	IB-66477	13JE61
19	Analog timer module type A1ST60 User's Manual (Hardware)	IB-66479	13JE57
21	Analog input/Output Module Type A1S63ADA User's Manual	IB-66435	13JE30
22	Analog Input/Output Module Type A1S66ADA User's Manual	IB-66819	13JL41
23	MELSECNET/MINI-S3 Master Module Type AJ71PT32-S3, AJ71T32-S3,	IB-66565	13JE64
	A1SJ71PT32-S3, A1SJ71T32-S3 User's Manual		.50204
24	AS-i Master module type A1SJ71AS92 User's Manual	SH-080085	13JR15
25	A1SD59J-S2/MIF Memory Card Interface Module User's Manual	SH-080056	13JR05

Appendix 3.3 Q series

No.	Manual name	Manual number	Model code
1	iQ Platform Programmable Controllers MELSEC-Q Series [QnU]	L08101E	_
2	Analog-Digital Converter Module User's Manual	CILODOGE	42 ID02
	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	CLL 000077	13JR51
3	Signal Conditioning Function) User's Manual	SH-080277	
	Q64AD-GH/Q62AD-DGH/GX Configurator-AD (SW2D5C-QADU-E)		
	Channel Isolated Analog-Digital Converter Module/Channel Isolated		
	Analog-Digital Converter Module (With Signal Conditioning Function)	011 0000475NO	40 1000
4	User's Manual	SH-080647ENG	13JR96
	Q68AD-G/Q66AD-DG/GX Configurator-AD (SW2D5C-QADU-E)		
	Digital-Analog Converter Module User's Manual		
5	Q62DAN/Q64DAN/Q68DAVN/Q68DAIN/Q62DA/Q64DA/Q68DAV/	SH-080054	13JR02
	Q68DAI/GX Configurator-DA (SW2D5C-QDAU-E)		
	Channel Isolated Digital-Analog Converter Module User's Manual	011 0000045	40.1050
6	Q62DA-FG/GX Configurator-DA (SW2D5C-QDAU-E)	SH-080281E	13JR52
_	Channel Isolated Digital-Analog Converter Module User's Manual	011 0000 105110	10.1507
7	Q66DA-G/GX Configurator-DA (SW2D5C-QDAU-E)	SH-080648ENG	13JR97
	Analog Input/Output Module User's Manual		
8	Q64AD2DA/Configurator-DA (SW2D5C-QADU-E)/GX Configurator-DA	SH-080793ENG	13JZ25
	(SW2D5C-QDAU-E)		
	RTD Input Module Channel Isolated RTD Input Module User's Manual	011 000440	40 1004
9	Q64RD/Q64RD-G/GX Configurator-TI (SW1D5C-QTIU-E)	SH-080142	13JR31
40	Channel Isolated RTD Input Module User's Manual	OLL 000700ENG	40.1700
10	Q68RD3-G/GX Configurator-TI (SW1D5C-QTIU-E)	SH-080722ENG	13JZ06
	Thermocouple Input Module Channel Isolated Thermocouple/Micro		13JR30
11	Voltage Input Module User's Manual	SH-080141	
	Q64TD/Q64TDV-GH/GX Configurator-TI (SW1D5C-QTIU-E)		
12	Channel Isolated Thermocouple Input Module User's Manual	SH 00070EFNC	13JZ26
12	Q68TD-G-H01/Q68TD-G-H02/GX Configurator-TI (SW1D5C-QTIU-E)	SH-080795ENG	
13	Temperature Control Module User's Manual		
	Q64TCTT/Q64TCTTBW/Q64TCRT/Q64TCRTBW/GX Configurator-TC	SH-080121	13JR21
	(SW0D5C-QTCU-E)		
14	High-Speed Counter Module User's Manual	CH 000036	12 11 05
14	QD62/QD62E/QD62D/GX Configurator-CT (SW0D5C-QCTU-E)	SH-080036	13JL95
15	High Speed Counter Module User's Manual (Hardware)	IB-0800421	13JY78
	QD62-H01/QD62-H02	IB-0000421	133176
16	Type QD75P/QD75D Positioning Module User's Manual	SH-080058	13JR09
	QD75P1/QD75P2/QD75P4/QD75D1/QD75D2/QD75D4	311-000030	193K09
17	Type QD75M Positioning Module User's Manual	IB-0300062	1XB752
	QD75M1/QD75M2/QD75M4	IB-0300002 IAB73	
18	QD73A1 Positioning Module User's Manual	SH-081075ENG	13JZ69

Appendix 3.4 Programming tool

No.	Manual name	Manual number	Model code
1	GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG	13JU63
2	GX Works2 Version 1 Operating Manual (Intelligent Function Module)	SH-080921ENG	13JU69
3	GX Developer Version 8 Operating Manual	SH-080373E	13JU41

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

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

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

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

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

O. Modelio required by deel, E. Medelio Net required by deel				
Resolution of Q series analog I/O module				•
Resolution of AnS series	Normal resolution	High resolution mode		Heer venee
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, △: Measure not required by user

(2) Example of sequence program to change a resolution

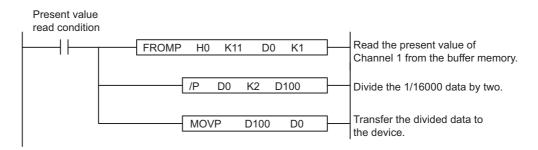
(Condition)

(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 4 (2).)

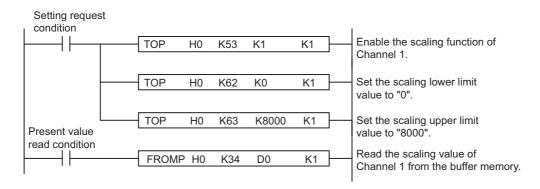
^{*2} Set a user range in high resolution mode.

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

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

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

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



(Buffer memory areas of the Q68AD-G)

Address Hexadecimal Decimal		Description	Default	Read/Write	
		Description	Delault		
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	, r	
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	IX/VV	
41 _H	65	CH2 Scaling upper limit value	0		

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

WARRANTY

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

1. Gratis Warranty Term and Gratis Warranty Range

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

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

[Gratis Warranty Term]

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

[Gratis Warranty Range]

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

2. Onerous repair term after discontinuation of production

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

3. Overseas service

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

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

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

- (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
- (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
- (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
- (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

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

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