Analog I/O

Analog Input Modules

Stocked Item S S Certification UL • cUL • CE Number of Analog Input Points 4 points (4 channels) 8 points (8 channels) Analog Input Voltage -10 to 10 VDC (input resistance 1MΩ)					
Number of Analog Input Points 4 points (4 channels) 8 points (8 channels) Analog Input Voltage -10 to 10 VDC (input resistance 1MΩ)					
Analog Input Voltage $-10 \text{ to } 10 \text{ VDC (input resistance } 1M\Omega)$					
Analog Input Current 0 to 20mADC (input resistance 250Ω)					
Digital Output Value 16-bit signed binary value (-32768 to 32767)					
Analog Input Range Digital Output Value Resolution					
0 to 10V					
0 to 32000 156.3μV					
Voltage 1 to 5V 125.0μV					
1 to 5V (extended mode) -8000 to 32000 125.0μV					
1/0 Characteristics, Resolution (*1)					
User range setting 47.7µV					
0 to 20mA 0 to 32000					
Current 4 to 20mA 500.0nA					
(R60AD4 only) 4 to 20mA (extended mode) -8000 to 32000 500.0nA					
User range setting					
Accuracy (Accuracy for the Maximum Digital Output Value) (*2) Ambient temperature 25 ±5°: within ±0.1% (±32 digits) Ambient temperature 0 to 55°: within ±0.3% (±96 digits)					
Conversion Speed 80µs/CH					
Absolute Maximum Input Voltage: ±15V, Current: 30mA (*3) Voltage: ±15V (*3)					
Number of Offset/Gain Settings (*4) 50000 times maximum					
Isolation Method Between I/O terminals and programmable controller power supply: Photocoupler; Between input channels: Non-is	solation				
Withstand Voltage Between I/O terminals and programmable controller power supply: 500 VAC rms for 1 minute					
Insulation Resistance Between I/O terminals and programmable controller power supply: $10MΩ$ or higher, at $500 VDC$					
Number of Occupied I/O Points 16 points (I/O assignment: Intelligent 16 points)					
External Connection System 18-point terminal block	· ·				
Applicable Wire Size 0.3 to 0.75 ² (22 to 18 AWG)	0.3 to 0.75 ² (22 to 18 AWG)				
Applicable Solderless Terminal R1.25-3 (solderless terminal with an insulation sleeve cannot be used)	· · · · · · · · · · · · · · · · · · ·				
Internal Current Consumption (5 VDC) 0.22A	0.22A				
External Dimensions (H x W x D) mm 106 x 27.8 x 131 (Base unit mounting side: 98mm)					
Weight (kg) 0.12					

- Notes:

 1. For details on the I/O conversion characteristics, see User's Manual.

 2. Except for the conditions under noise influence.

 3. These voltage and current values are instantaneous values at which no breakdown occurs in the internal resistance of the module.

 4. A count more than 50000 times causes Number of writes to offset/gain settings reach limit error (error code: 1080H).

Model Number	R60ADI8					
Stocked Item	S					
Certification	UL • cUL • CE					
Number of Analog Input Points	8 points (8 channels)	points (8 channels)				
Analog Input Voltage	-					
Analog Input Current	0 to 20mADC (input resistance 2	250Ω)				
Digital Output Value	16-bit signed binary value (-327	'68 to 32767)				
	Analog Input Range		Digital Output Value	Resolution		
		0 to 20mA	0 to 32000	625.0nA		
I/O Characteristics, Resolution (*1)	Current	4 to 20mA	7 0 10 32000	500.0nA		
	Current	4 to 20mA (extended mode)	-8000 to 32000	500.0nA		
	User range setting -32000 to 32000 190.7nA					
Accuracy (Accuracy for the Maximum Digital	Ambient temperature 25 ±5°: wi					
Output Value) (*2)	Ambient temperature 0 to 55°: v	vithin ±0.3% (±96 digits)				
Conversion Speed	80μs/CH					
Absolute Maximum Input	Current: 30mA (*3)					
Number of Offset/Gain Settings (*4)	50000 times maximum					
Isolation Method	Between I/O terminals and prog	rammable controller power supply	y: Photocoupler; Between input	channels: Non-isolation		
Withstand Voltage	Between I/O terminals and prog	rammable controller power supply	y: 500 VAC rms for 1 minute			
Insulation Resistance	Between I/O terminals and prog	rammable controller power suppl	y: $10M\Omega$ or higher, at 500 VDC			
Number of Occupied I/O Points	16 points (I/O assignment: Intel	ligent 16 points)				
External Connection System	18-point terminal block					
Applicable Wire Size	0.3 to 0.75mm² (22 to 18 AWG)					
Applicable Solderless Terminal	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)					
Internal Current Consumption (5 VDC)	0.22A					
External Dimensions (H x W x D) mm	106 x 27.8 x 131 (Base unit mo	unting side: 98mm)				
Weight (kg)	0.12					

- Notes:

 1. For details on the I/O conversion characteristics, see User's Manual.

 2. Except for the conditions under noise influence.

 3. These voltage and current values are instantaneous values at which no breakdown occurs in the internal resistance of the module.

 4. A count more than 50000 times causes number of writes to offset/gain settings reach limit error (error code: 1080H).

Isolated Analog Input Modules

Note	Model Number	og mpat Modules	R60AD8-G			R60AD16-G		
Certification								
Number of Analog Input Channels						5		
Analog Input Voltage		. I				dO sharrada		
Analog Input Current Digital Output Value 16-bit signed binary value (-32788 to 32767)						16 channels		
16-bit signed binary value (-32768 to 32767) Analog Input Range		<u> </u>	·					
Analog Input Range								
Voltage	Digital Output Val	ue		, ,				
Voltage Voltage Voltage Voltage Voltage Voltage To 5V 10 to 32000 156.3 μV 125.0 μV 125			Analog Input Ra	, -	Digital 0	utput Value		
Voltage				* * *			'	
1 to 5V (extended mode) -8000 to 32767 (-8000 to 36000) 125.0μV -10 to 10V -32000 to 32000 312.5μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.2μV -29.				0 to 3200	00	'		
1 to 5V (extended mode) -8000 to 32/6V (8000 to 36000) 125.0μV			Voltane					
User range setting			Voltago	1 to 5V (extended mode)	-8000 to	32767 (-8000 to 36000)		
User range setting 29.2μV	I/O Conversion Ch	aracteristics, Resolution		-10 to 10V	-32000 to	32000	312.5µV	
User Range Setting 4 to 20mA 4 to 2				User range setting	32000 1	3 32000	29.2µV	
User Range Setting				0 to 20mA	0 to 2200	20	625.0nA	
User range setting -32000 to 32000 115.5nA		User Range	4 to 20mA	0 10 3200	50	500.0nA		
Accuracy (Accuracy For the Maximum Digital Output Value)Reference accuracy: Within ±0.1% (±32 digits) Temperature coefficient: ±35ppm/°C (0.0035%/°C)Common Mode CharacteristicsCommon mode voltage between input and common ground (input voltage 0V): 500VACConversion Speed10ms/CHResponse Time20msAbsolute Maximum InputVoltage: ±15V, Current: 30mANumber of Offset/Gain Settings50000 times maximumIsolation MethodBetween I/O terminals and programmable controller power supply: Transformer Between analog input channels: TransformerWithstand VoltageBetween I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between analog input channels: 1000VACrms for 1 minuteInsulation ResistanceBetween I/O terminals and programmable controller power supply: 10MΩ or higher, at 500 VDCNumber of Occupied I/O Points16 points, 1 slot (I/O assignment: Intelligent 16 points)32 points, 2 slots (I/O assignment: Empty 16 points + Intelligent 16 points)External Interface40-pin connectorApplicable Wire SizeA6CON1 and A6CON4 A6CON20.088 to 0.3² (28 to 22 AWG) (stranded wire)Wire SizeA6CON2 A6CON20.088 to 0.3² (28 to 24 AWG) (stranded wire)Connector For External DevicesA6CON1, A6CON2, A6CON4 (sold separately)Internal Current Consumption (5 VDC)R60AD8-G: 0.33A; R60AD16-G: 0.52A			Setting	4 to 20mA (extended mode)	-8000 to	32767 (-8000 to 36000)	500.0nA	
Common Mode Characteristics Common mode voltage between input and common ground (input voltage 0V): 500VAC				User range setting	-32000 to	32000	115.5nA	
Common Mode CharacteristicsCommon mode voltage rejection ratio (VCM < 500V): 60Hz 107dB, 50Hz 106dB			Reference accur	acy: Within ±0.1% (±32 digits) Tempera	ature coeffi	cient: ±35ppm/°C (0.0035%/°C)		
Conversion Speed 10ms/CH Response Time 20ms Absolute Maximum Input Voltage: ±15V, Current: 30mA Number of Offset/Gain Settings Setween I/O terminals and programmable controller power supply: Transformer Between analog input channels: Transformer Withstand Voltage Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between analog input channels: 1000VACrms for 1 minute Between analog input channels: 1000VACrms for 1 minute Between analog input channels: 1000VACrms for 1 minute Insulation Resistance Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between analog input channels: 1000VACrms for 1 minute Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between analog input channels: 1000VACrms for 1 minute Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between I/O terminals and programmable controller power supply: 5			Common mode voltage between input and common ground (input voltage 0V): 500VAC					
Response Time 20ms	Common Wode Ci	iaracteristics						
Absolute Maximum InputVoltage: ±15V, Current: 30mANumber of Offset/Gain Settings50000 times maximumIsolation MethodBetween I/O terminals and programmable controller power supply: Transformer Between analog input channels: TransformerWithstand VoltageBetween I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between analog input channels: 1000VACrms for 1 minuteInsulation ResistanceBetween I/O terminals and programmable controller power supply: 10MΩ or higher, at 500 VDCNumber of Occupied I/O Points16 points, 1 slot (I/O assignment: Intelligent 16 points)32 points, 2 slots (I/O assignment: Empty 16 points + Intelligent 16 points)External Interface40-pin connector40-pin connectorApplicable Wire SizeA6CON1 and A6CON40.088 to 0.3² (28 to 22 AWG) (stranded wire)Wire SizeA6CON20.088 to 0.24² (28 to 24 AWG) (stranded wire)Connector For External DevicesA6CON1, A6CON2, A6CON4 (sold separately)Internal Current Consumption (5 VDC)R60AD8-G: 0.33A; R60AD16-G: 0.52A	Conversion Speed		10ms/CH			<u> </u>		
Number of Offset/Gain Settings 50000 times maximum	Response Time		20ms					
Section Method Between I/O terminals and programmable controller power supply: Transformer Between analog input channels: Transformer Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between analog input channels: 1000VACrms for 1 minute Setween analog input channels: 1000VACrms for 1	Absolute Maximu	m Input	Voltage: ±15V, Current: 30mA					
Withstand VoltageBetween I/O terminals and programmable controller power supply: 500VACrms for 1 minute; Between analog input channels: 1000VACrms for 1 minuteInsulation ResistanceBetween I/O terminals and programmable controller power supply: 10MΩ or higher, at 500 VDCNumber of Occupied I/O Points16 points, 1 slot (I/O assignment: Intelligent 16 points)32 points, 2 slots (I/O assignment: Empty 16 points + Intelligent 16 points)External Interface40-pin connectorApplicable Wire SizeA6CON1 and A6CON4 A6CON4 (0.088 to 0.3² (28 to 22 AWG) (stranded wire)Wire SizeA6CON2 A6CON4 (sold separately)Internal Current Consumption (5 VDC)R60AD8-G: 0.33A; R60AD16-G: 0.52A	Number of Offset/	Gain Settings	50000 times maximum					
Between analog input channels: 1000VACrms for 1 minute	Isolation Method		Between I/O tern	ninals and programmable controller po	wer supply	: Transformer Between analog in	put channels: Transformer	
Number of Occupied I/O Points 16 points, 1 slot (I/O assignment: Intelligent 16 points) 32 points, 2 slots (I/O assignment: Empty 16 points + Intelligent 16 points)	Withstand Voltage)				: 500VACrms for 1 minute;		
External Interface 40-pin connector Applicable Wire Size A6CON2 0.088 to 0.3² (28 to 22 AWG) (stranded wire) Connector For External Devices A6CON1, A6CON2, A6CON4 (sold separately) Internal Current Consumption (5 VDC) R60AD8-G: 0.33A; R60AD16-G: 0.52A	Insulation Resista	nce						
Applicable Wire Size A6CON1 and A6CON4 0.088 to 0.3² (28 to 22 AWG) (stranded wire) Connector For External Devices A6CON1, A6CON2, A6CON4 (sold separately) Internal Current Consumption (5 VDC) R60AD8-G: 0.33A; R60AD16-G: 0.52A	Number of Occupied I/O Points 16 points, 1 slot (I/O			(I/O assignment: Intelligent 16 points)			nts + Intelligent 16 points)	
Wire Size A6CON2 0.088 to 0.242 (28 to 24 AWG) (stranded wire) Connector For External Devices A6CON1, A6CON2, A6CON4 (sold separately) Internal Current Consumption (5 VDC) R60AD8-G: 0.33A; R60AD16-G: 0.52A	External Interface		40-pin connecto	r				
Wire Size A6CON2 0.088 to 0.24² (28 to 24 AWG) (stranded wire) Connector For External Devices A6CON1, A6CON2, A6CON4 (sold separately) Internal Current Consumption (5 VDC) R60AD8-G: 0.33A; R60AD16-G: 0.52A	Applicable	A6CON1 and A6CON4	0.088 to 0.32 (28	3 to 22 AWG) (stranded wire)				
Connector For External Devices A6CON1, A6CON2, A6CON4 (sold separately) Internal Current Consumption (5 VDC) R60AD8-G: 0.33A; R60AD16-G: 0.52A		A6CON2	, , , , ,					
Internal Current Consumption (5 VDC) R60AD8-G: 0.33A; R60AD16-G: 0.52A	Connector For Ext	ernal Devices	A6CON1, A6CON	I2, A6CON4 (sold separately)				
External Dimensions (H x W x D) mm 106 x 27.8 x 110 106	Internal Current C	onsumption (5 VDC)	R60AD8-G: 0.33	A; R60AD16-G: 0.52A				
	External Dimension	ons (H x W x D) mm	106 x 27.8 x 110)		106 x 56 x 110 (Base unit mou	inting side: 98mm)	

SIL2 Analog Control Output Module

Model Number		RY40PT5B-AS
Stocked Item		S
Certification		UL • CE
Number of Output Poin	ts	16
Rated Load Voltage		24VDC (Allowable voltage range: 20.4 to 28.8VDC)
Maximum Load Curren	t	0.5A/point, 5A/common
Maximum Inrush Curre	ent	Current is to be limited by the overload protection function
Leakage Current at OF	F	0.3mA or lower
Maximum Voltage Dro	p at ON	1.0VDC (TYP.) 0.5A
Output Response	OFF-ON	0.5ms or less
Time	ON-OFF	1.5ms or less
Control Cycle Time		2ms
Surge Suppressor		Zener diode
Fuse		None
External Power	Voltage	24VDC (Ripple ratio: Within 5%) (Allowable voltage range: 20.4 to 28.8VDC)
Supply (*1)	Current	87mA (at 24VDC)
Withstand Voltage		510VAC rms for one minute
Isolation Resistance		10MΩ or more with isolation resistance tester
Noise Immunity		Simulator noise 500Vp-p, noise width 1µs, noise frequency 25 to 60Hz (noise simulator condition)
Protection Degree		IP2X
Wiring Method for Con	nmon	16 points/common (common terminal: TB18)
Number of Occupied I/O Points		32 points (I/O assignment: Output 32 points)
Protection Function Overload Protection		Limited current when detecting overcurrent: 1.0A or higher/point; Activated to each point.
Overheat Protection		Activated to each point.
External Interface		18-point screw terminal block (M3x6 screw)
Internal Current Consu	mption (5VDC)	190mA (TYP. all points ON)
Weight (kg)		0.24

Note:

1. For the external power supply, use a product that meets the following conditions: • The overvoltage protection function is available. • The output voltage does not exceed 35VDC in single fault state.

MELSEC iQ-R HART-Enabled Analog-Digital Converter Module

		3 3				
Model Number		R60ADI8-HA				
Stocked Item		S				
Certification		UL • CE		_		
Number of Analog Inp	ut Channels	8 Channels		_		
Analog Input Current		0 to 20mADC (input resistance: 25	0Ω)			
Power Supply Part	Maximum Supply Current	DC24mA				
for External Devices	Short-Circuit Protection	Provided (limiting current: 25 to 40				
Digital Output		16-bit signed binary value (-32768	to 32767)			
		Analog Current Input Range	Digital Output value	Resolution		
I/O Characteristics, R	esolution (*1)	0 to 20mA	- 0 to 32000	625.0nA		
.,		4 to 20mA	0 10 02000	500.0nA		
		4 to 20mA (extended mode)	-8000 to 32000	500.0nA		
Accuracy (Accuracy of the Maximum	Ambient Temperature 25 ±5°C	Within ±0.1% (±32 digits)				
Digital Output Value) (*2)	Ambient Temperature 0 to 55°C	Within ±0.3% (±96 digits)				
Response Time (*3)		400ms				
Sampling Cycle		80ms/8CH				
Absolute Maximum In	put	Current: 30mA (*4)				
Isolation Method		Between I/O terminals and programmable controller power supply: Photocoupler Between input channels: Non-isolation				
Withstand Voltage		Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute				
Isolation Resistance		Between I/O terminals and programmable controller power supply: $10M\Omega$ or higher, at $500VDC$				
HART® Modern		HART modem FSK physical layer (multiplexed)				
HART Communication	Function	Protocol revision 7 supported; 4 pr	ocess variables supported; FDT/DTN	1 supported		
Number of Occupied I	/O Points	Number of occupied I/O points 16 points (I/O assignment: Intelligent 16 points)				
External Interface		External interface 40-point two-piece spring clamp terminal block (push-in type)				
Applicable Wire Size		Applicable wire size Stranded wire: 0.5 to 1.5 ² (24 to 16 AWG), terminal slot size: 2.4mm x 1.5mm				
Applicable Solderless	Terminal	AIO.5-10WH (PHOENIX CONTACT GmbH & Co. KG), applicable wire size: 0.5 ² AIO.75-10GY (PHOENIX CONTACT GmbH & Co. KG), applicable wire size: 0.75 ² A1-10 (PHOENIX CONTACT GmbH & Co. KG), applicable wire size: 1.0 ² A1.5-10 (PHOENIX CONTACT GmbH & Co. KG), applicable wire size: 1.5 ²				
External Power Supply		24VDC +20%, -15% (*5)				
		Ripple, spike: 500mVP-P or lower				
		Inrush current: 6.2A, 430µs or less				
		Current consumption: 0.22A				
Internal Current Cons	umption (5VDC)	0.17A				
External Dimensions	(H x W x D) mm	106 (base unit mounting side: 98m	ım) x 27.8 x125			
Weight (kg)		0.21				

- Notes:

 1. For details on the I/O conversion characteristics, refer to the User's Manual
 2. Except for the conditions under noise influence.
 3. The time until an analog input signal reaches the A/D converter in the A/D converter module.
 4. This current value is an instantaneous value at which no breakdown occurs in the internal resistance of the module.
 5. Consider voltage drop between the external power supply and the HART-enabled device when supplying the power to the HART enabled device from the A/D converter module.

High Speed Analog Input Module

Model Number		R60ADH4					
Stocked Item		S					
Certification		UL • CUL • CE (EMC)					
Number of Analog Ing	outs	4 channels					
Digital Output		16-bit signed binary v	alue (-32768 to 32767)				
	Voltage	-10 to 10VDC (input re	esistance: 1MΩ)				
Analog Input	Current	0 to 20mADC (input re	0 to 20mADC (input resistance: 250Ω)				
	'	Analog Input Range		Digital Output Value	Resolution		
			0 to 10V		312.5 μV		
			0 to 5V	0 to 32,000	156.3 μV		
		Valtage	1 to 5V		125.0 μV		
		Voltage	1 to 5V (Extended mode)	-8000 to 32,000	125.0 μV		
O Characteristics, R	esolution (*1)		-10 to 10V	20,000 to 20,000	312.5 μV		
			User Range Setting	-32,000 to 32,000	125.0 µV (*2)		
			0 to 20mA	0 to 20 000	625.0 nA		
		0	4 to 20 mA	0 to 32,000	500.0 nA		
		Current	4 to 20V (Extended mode)	-8000 to 32,000	500.0 nA		
			User Range Setting	-32,000 to 32,000	500.0 nA (*2)		
ccuracy (Accuracy f the Maximum	Ambient Temperature 25±5°C	Within ±0.1% (±32 digit)					
ligital Output 'alue) (*3)	Ambient Temperature 0 to 55°C	Within ±0.2% (±64 digit)					
		Normal mode (medium speed: 10µs/CH)					
peration Mode (San	npling Cycle) (*4)	Normal mode (low spe	eed: 20 μs/CH)				
		Simultaneous conversion mode (5 µs/4CH)					
		40 kHz (Normal mode (medium speed: 10µs/CH))					
nput Band (*5)		20 kHz (Normal mode (low speed: 20 μs/CH))					
		60 kHz (Simultaneous conversion mode (5 μs/4CH))					
nput Response Time	(*6)	20 μs maximum					
bsolute Maximum lı	nput (*7)	Voltage: ±15V, Current	t: 30mA	·			
lumber of Offset/Gai	n Settings (*8)	10,000 times maximu	m	·			
solation Method		Between I/O terminals and programmable controller power supply: Photocoupler					
סטומנוטוו וזוקנווטנ		Between input channels: Non-isolation					
Withstand Voltage Between I/O				wer supply: 500 VACrms for 1 min			
solation Resistance		Between I/O terminals and programmable controller power supply: 10MΩ or higher, at 500 VDC					
lumber of Occupied	I/O Points	, ,	nent: Intelligent 16 points)				
xternal Interface		18-point terminal block					
Applicable Wire Size		0.3 to 0.75 mm ² (22 to 18 AWG)					
Applicable Solderles:	s Terminal	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)					
nternal Current Cons	umption (5 VDC)	0.73 A					
xternal Dimensions	(H x W x D) mm	106 x 27.8 x 131					
Weight (kg)		0.20					
otoo							

- For Details on the I/O conversion, refer to iQ-R High Speed Analog-Digital Converter Module User's Manual (Startup).
 Maximum resolution in the user range setting.
 Except for the conditions under noise influence.

- 4. The module becomes more susceptible to noise while operating in the operation mode with faster sampling cycle. For measures to reduce noise, refer to the iQ-R Module Configuration Manual. If the module is still affected by noise after the measures have been taken, use averaging processing, primary delay filter, and digital filter. For how to use them, refer to the MELSEC iQ-R High Speed Analog-Digital Converter Module User's Manual (Application).

- The frequency where the amplitude ratio is -3dB when the sine wave with the amplitude of 5V is input.
 The time until an analog input signal reaches the A/D converter in the A/D converter module.
 This current value is an instantaneous value at which no breakdown occurs in the internal resistance of the module.
- 7. This current value is an instantaneous value at which no breakdown occurs in the internal resistance of the incode.

 8. A count more than 10,000 times causes number of writes to offset/gain settings reach limit error (error code: 1080H).

Analog Output Modules

Model Number		R60DA4		R60DAV8			
Stocked Item		S		S			
Certification		UL • cUL • CE	UL • cUL • CE				
Number of Analog Out	put Points	4 points (4 channels)		8 points (8 channels)			
Digital Input		16-bit signed binary value (-327	6-bit signed binary value (-32768 to 32767)				
Analog Output Voltage		-10 to 10 VDC (external load res	istance value $1k\Omega$ or more) 0 to 5	VDC (external load resistance val	ue 500Ω or more)		
Analog Output Current		0 to 20mADC (external load resi	stance value 0 to 600Ω)	-			
		Analog Input Range		Digital Output Value	Resolution		
			0 to 10V	- 0 to 32000	156.3µV		
		Voltage	0 to 5V	0 10 32000	125.0µV		
I/O Characteristics Be	eclution (*1)	Voltage	1 to 5V	-32000 to 32000	312.5µV		
I/O Characteristics, Resolution (*1)			User range setting	-32000 to 32000	512.5μν		
			-10 to 10V	- 0 to 32000	625.0nA		
		Current (R60DA4 Only)	4 to 20mA	0 10 32000	500.0nA		
			User range setting	-32000 to 32000	350.9nA		
Accuracy (Accuracy fo		Ambient temp 25 ±5°: within ±0.1% (Volt ±10mV, current ±20µA)		Ambient temp 25 ±5°: within ±0.1%(Voltage ±10mV)			
Value of the Analog O	, , , ,	'	0.3% (Volt ±30mV, current ±60µA)	Ambient temp 0 to 55°: within ±	±0.3% (Voltage ±30mV)		
Conversion Speed	Normal Output Mode	80µs/CH					
	Wave Output Mode	80μs/CH					
Number of Offset/Gain		Up to 50000 times (A count more than 50000 times causes Number of writes to offset/gain settings reach limit error (error code: 1080H)					
Output Short Protectio	n	Protected Between I/O terminals and programmable controller power supply: Photocoupler; Between output channels: Non-isolation					
Isolation Method		Between the external power sup	een the external power supply and analog outputs: Transformer isolation				
Withstand Voltage			rammable controller power supply: ply and analog outputs: 500 VAC r				
Insulation Resistance		Between I/O terminals and programmable controller power supply: 10MΩ or higher, at 500 VDC					
Number of Occupied I	/O Points	16 points (I/O assignment: Intell	ligent 16 points)	•			
External Connection S	ystem	18-point terminal block					
Applicable Wire Size	-	0.3 to 0.75mm ²					
Applicable Solderless	Terminal	R1.25-3 (solderless terminal wit	h an insulation sleeve cannot be u	sed)			
External Power Supply		24 VDC +20%, -15%					
		Ripple, spike 500mVP-P or lowe	er				
		Inrush current: 5.0A, 690µs or s	horter	Inrush current: 5.0A, 670µs or s	shorter		
		Current consumption: 0.14A		Current consumption: 0.16A			
Internal Current Consu	imption (5 VDC)	0.16A	·				
External Dimensions (H x W x D) mm	106 x 27.8 x 131 (Base unit mo	unting side: 98mm)				
Weight (kg)		0.14					
Notes Cas balan			<u> </u>				

Notes: See below.						
Model Number	R60DAI8					
Stocked Item	S	S				
Certification	UL • cUL • CE					
Number of Analog Output Points	8 points (8 channels)					
Digital Input	16-bit signed binary value (-327)	68 to 32767)				
Analog Output Voltage	-					
Analog Output Current	0 to 20mADC (external load resis	stance value 0 to 600Ω)				
	Analog Input Range		Digital Output Value	Resolution		
I/O Characteristics, Resolution (*1)		0 to 20mA	- 0 to 32000	625.0nA		
1/0 Gilatacieristics, nesolution (1)	Current	4 to 20mA	0 10 32000	500.0nA		
		User range setting	-32000 to 32000	350.9nA		
Accuracy (Accuracy for the Maximum Value of the Analog Output Value) (*2)		Ambient temperature 25 ±5°: within ±0.1% (Current ±20µA) Ambient temperature 0 to 55°: within ±0.3% (Current ±60µA)				
Conversion Speed	80µs/CH					
Number of Offset/Gain Settings	Up to 50000 times (A count more	than 50000 times causes Number	of writes to offset/gain settings read	ch limit error (error code: 1080H)		
Output Short Protection	Protected					
Isolation Method		ammable controller power supply ply and analog outputs: Transform	: Photocoupler; Between output cher isolation	nannels: Non-isolation		
Withstand Voltage		ammable controller power supply ply and analog outputs: 500 VAC I				
Insulation Resistance	Between I/O terminals and progr	ammable controller power supply	: 10MΩ or higher, at 500 VDC			
Number of Occupied I/O Points	16 points (I/O assignment: Intell	igent 16 points)				
External Connection System	18-point terminal block					
Applicable Wire Size	0.3 to 0.75mm ²					
Applicable Solderless Terminal	R1.25-3 (solderless terminal with	h an insulation sleeve cannot be u	sed)			
	24 VDC +20%, -15%					
External Power Supply	Ripple, spike 500mVP-P or lower					
	Inrush current: 5.0A, 700s or shorter					
	Current consumption: 0.26A					
Internal Current Consumption (5 VDC)	0.16A					
External Dimensions (H x W x D) mm	106 x 27.8 x 131 (Base unit mou	ınting side: 98mm)				
Weight (kg)	0.14					

Notes: 1. For details on the I/O conversion characteristics, see User's Manual. 2. Except for the conditions under noise influence.

Isolated Analog Output Modules

Model Number		R60DA8-G			R60DA16-G		
Stocked Item		S			S		
Certification		UL • cUL • CE					
Number of Analo	og Output Channels	8 channels			16 channels		
Digital Input		16-bit signed bina	ry value (-32768 to 32767)				
Analog Output V	/oltage	-12 to 12 VDC (ext	ternal load resistance value 1kΩ or m	iore)			
Analog Output C	Gurrent	0 to 20mADC (exte	ernal load resistance value 0Ω to 600	Ω); 0 to 22mA	DC (external load re	sistance value) (*5)	
		Analog Output Ra	nge	Digital \	/alue	Resolution	
			0 to 5V	0.4 000	00	156.3µV	
		1 to 5V	0 to 320	00	125.0μV		
			-10 to 10V	20000		312.5µV	
		Voltage	-12 to 12V	-32000 t	to 32000	378.4µV	
/O Conversion (Characteristics,		1 to 5V (extended mode)	-8000 to	36000	125.0μV	
Resolution (*1)	,		User range setting 2			378.4µV	
			User range setting 3	-32000 t	:0 32000	312.0µV	
			0 to 20mA			625.0nA	
			4 to 20mA	0 to 320	00	500.0nA	
		Current	4 to 20mA (extended mode)	-8000 to	36000	500.0nA	
		User range setting 1		to 32000	360.1nA		
Accuracy (Accur	acy For The Maximum	Reference accuracy: Within ±0.1% (Voltage:±10mV, Current: ±20µA) (*3)					
Analog Output V		Temperature coefficient: ±50ppm/°C (0.005%/°C) (*4)					
Conversion Spe	ed	1ms/CH					
Number of Offse	et/Gain Settings	Up to 50000 times	(A count more than 50000 times cause	es Number of v	writes to offset/gain s	ettings reach limit error (error code: 1080H)	
Output Short Cir	cuit Protection	Built-in					
solation Method	d	Between analog ou	nals and programmable controller po utput channels: Transformer power supply and analog output chan	,			
Withstand Volta	ge	Between analog ou	Between I/O terminals and programmable controller power supply: 500VACrms for 1 minute Between analog output channels: 1000VACrms for 1 minute Between external power supply and analog output channel: 500VACrms for 1 minute				
		Between I/O terminals and programmable controller power supply: 10MΩ or higher, at 500 VDC					
Insulation Resis	stance	Between analog output channels: 10MΩ or higher, at 500 VDC					
		Between external power supply and analog output channel: 10MΩ or higher, 500 VDC					
Number of Occu	pied I/O Points		nts, 1 slot (I/O assignment: Intelligen pints, 2 slots (I/O assignment: Empty		ntelligent 32 points)		
xternal Interfac	ne .	40-pin connectors	, 2 siete (" e aborgiinione Empty	. 5 po	gon. oz pomto)		
Applicable	A6CON1 and A6CON4	<u> </u>	o 22 AWG) (stranded wire)				
Vire Size	A6CON2	· `	to 24 AWG) (stranded wire)				
Connectors For	External Devices	,	, A6CON4 (sold separately)				
External Power Supply		24 VDC +20%, -15					
		Ripple, spike 500mVp-p or lower					
		H		16-G: 4 24 5	40us or less for DC	24V 1 and DC24V 2 respectively	
		Inrush current: R60DA8-G: 4.2A, 540µs or less; R60DA16-G: 4.2A, 540µs or less, for DC24V_1 and DC24V_2 respectively Current consumption: R60DA8-G: 0.36A; R60DA16-G: 0.70A					
ntarnal Current	Consumption (5 VDC)	· '	R60DA16-G: 0.25A	0.100			
	sions (H x W x D)	-	27.8 x 110; R60DA16-G: 106 x 56 x	110 (Raca unit	mounting cide: 00n	nm)	
Neight (kg)	SIUIIS (II A W A D)	R60DA8-G: 0.21; F		TTO (DASE UIIII	mounting side. 901		
weight (kg)		1100DA0-0. 0.21, 1	100DA10-0. 0.32				

- Notes:

 1. Second the I/O conversion characteristics, refer to the User's Manual.

 2. Except for the conditions under noise influence.

 3. The accuracy at an ambient temperature when the offset/gain setting is configured. Obtaining sufficient accuracy requires a warm-up of 30 minutes (energization).

 4. The accuracy based on a temperature change of 1°C.

 5. For an output current of 20mA or higher, see User's Manual.

High Speed Analog Output Module

Model Number		R60DAH4					
Stocked Item		S					
Certification		UL • CUL • CE					
Number of Analo	g Output Channels	4					
Digital Input		16-bit signed binary value (-32768 to 32767)					
Analog Output Vo	ltage	-10 to10VDC (external load resi	stance value 1kΩ or higher); 0 to 5	SVDC (external load resistance	e value 500Ω or higher)		
Analog Output Cu	irrent	0 to 20mADC (external load res	istance value 50 to 600Ω)				
			Analog Output Range	Digital Value	Resolution		
			0 to 5V	0 to 32000	156.3µV		
		Veltage	1 to 5V	0 10 32000	125.0μV		
1/0 01	Danalutian	Voltage	-10 to 10V	00000 +- 00000	312.5µV		
I/O Characteristic	S, Resolution		User range setting (voltage)	-32000 to 32000	312.5µV		
			0 to 20mA	0.4- 00000	625.0nA		
		Current	4 to 20mA	0 to 32000	500.0nA		
			User range setting (current)	-32000 to 32000	360.0nA		
Accuracy	Ambient Temperature 25 ±5°C	Within ±0.1% (voltage ±10mV, o	current ±20µA)				
Accuracy	Ambient Temperature 0 to 55°C	Within ±0.3% (voltage ±30mV, o	current ±60µA)				
Operation Mode	(Conversion Speed)	High speed output mode (conve Normal output mode (conversio Wave output mode (conversion	n speed: 10µs/CH)				
Output Response	Time	Voltage output: Maximum 20μs (-10 to 10V, 2kΩ load); Current output: Maximum 10μs (0 to 20mA, 250Ω load)					
Number of Offset	/Gain Settings	10000 times maximum					
Output Short Circ	uit Protection	Equipped					
Isolation Method		Between output channels: Non-i	rammable controller power supply solation and analog output: Transformer is:	•			
Number of Occup	ied I/O Points	16 points (I/O assignment: Intelligent 16 points)					
External Interface	9	18-point terminal block					
Applicable Wire	Size	0.3 to 0.75 (22 to 18 AWG)					
Applicable Solde	rless Terminal	R1.25-3 (solderless terminal with an insulation sleeve cannot be used)					
External Power S	upply	24VDC +20%, -15%, Inrush current: 3.8A, 700µs or lower, Current consumption: 0.13A					
Internal Current (Consumption (5VDC)	0.27A					
External Dimensi	ons (H x W x D) mm	106 x 27.8 x 131					
Weight (kg)		0.2					

Thermocouple Input Module

Model Number			R60TD8-G	R60RD8-G		
Stocked Item			S	S		
Certification			UL • cUL • CE			
Number of Analog In	put Points		8 points (8 channels) + Cold junction compensation channel	8 points (8 channels)		
		erature Value	per module 16-bit signed binary value (-2700 to 18200)	6-bit signed binary value (-2000 to 8500)		
Output Measured Temperature Value		erature value	,	6-bit signed biliary value (-2000 to 6500)		
Thermocouple Comp	Scaling Value		16-bit signed binary value JIS C1602-1995, IEC 60584-1(1995), IEC60584-2(1982) -			
Usable Thermocoupl		n Accuracy	For details, refer to User's Manual	Pt100 (JIS C 1604-1997, IEC 751:1983);JPt100 (JIS C 1604-1981); Ni100 (DIN 43760 1987); Pt50 (JIS C 1604-1981)		
Cold Junction Compensation Accuracy (*3)		(*3)	±1.0°C	-		
Accuracy (*1)			For details, refer to User's Manual	-		
Resolution			B, R, S, N: 0.3°C; K, E, J, T: 0.1°C	0.1		
Conversion Speed (*2)			30ms/channel	10ms/channel		
Conversion Speed (2) Between Thermocouple Input Channel and Programmable Controller Power Supply		ogrammable r Supply	Transformer isolation			
(- /	Between Therm Channels	ocouple Input	Transformer isolation			
	Between Therm Channel and Pro Controller Powe	ogrammable r Supply	500 VAC rms for 1 minute			
Withstand Voltage	Between Therm Channels	ocouple Input	1000 VAC rms for 1 minute			
	Programmable (Supply	put Channel and Controller Power	-	500 VAC rms for 1 minute		
	Between RTD In			1000 VAC rms for 1 minute		
	Between Therm Channel and Pro Controller Powe	ogrammable	500 VDC 10MΩ or higher	-		
Insulation	Between Thermocouple Input Channels		500 VDC 10M Ω or higher			
Resistance	Between RTD input Channel and Programmable Controller Power Supply		-	500 VDC 10MΩ or higher		
	Between RTD In	put Channels		500VDC 10M Ω or higher		
	Pt100			-200 to 850°C		
Temperature	JPt100			-180 to 600°C		
Measuring Range	Ni100		 -	-60 to 250°C		
	Pt50			-200 to 650°C		
		-200 to 850°C		±0.8°C (ambient temperature: 25±5°C), ±2.4°C (ambient temperature: 0 to 55°C)		
	Pt100	-20 to 120°C		±0.3°C (ambient temperature: 25±5°C), ±1.1°C (ambient temperature: 0 to 55°C) ±0.4°C (ambient temperature: 25±5°C), ±1.2°C		
		0 to 200°C		(ambient temperature: 0 to 55°C) ±0.8°C (ambient temperature: 25±5°C), ±2.4°C		
Conversion Accuracy		-180 to 600°C	 -	(ambient temperature: 0 to 55°C) ±0.3°C (ambient temperature: 25±5°C), ±1.1°C		
,	JPt100	-20 to 120°C		(ambient temperature: 0 to 55°C) ±0.4°C (ambient temperature: 25±5°C), ±1.2°C		
	Nidoo	0 to 200°C		(ambient temperature: 0 to 55°C) ±0.4°C (ambient temperature: 25±5°C), ±1.2°C		
	Ni100	-60 to 250°C		(ambient temperature: 0 to 55°C) ±0.8°C (ambient temperature: 25±5°C), ±2.4°C		
	Pt50	-200 to 650°C		(ambient temperature: 0 to 55°C)		
Between RTD Input Channel and Programmable Controller Power Supply		Controller Power	-	Transformer isolation		
Di " - :	Between RTD In	put Channels	Double in	Transformer isolation		
Disconnection Detec			Built-in			
Number of Offset/Ga			50000 times maximum			
Number of Occupied I/O Points			16 points (I/O assignment: Intelligent 16 points)			
External Interface			40-pin connector			
Applicable Wire	A6CON1 and A6	CUN4	0.088 to 0.3mm² (28 to 22 AWG) (stranded wire)			
Size	A6CON2		0.088 to 0.24mm² (28 to 24 AWG) (stranded wire)			
Connector For Extern			A6CON1, A6CON2, A6CON4 (sold separately)	Loosa		
Internal Current Cons	. ,		0.36A	0.35A		
External Dimensions Weight (kg)	(uxwxu) mm		106 x 27.8 x 110			
vvettiiii (KII)			0.19			

Notes:

- Notes:

 1. Except for the conditions under noise influence.
 2. This conversion speed is the time required to store a measured temperature value into the buffer memory in sampling processing.
 3. No isolation is provided between the cold junction compensation channel and the programmable controller power supply.
 4. A count more than 50000 times causes number of writes to offset/gain settings reach limit error (error code: 1080H).