Analog I/O Modules

Analog input modules provide an interface to the CPU for sensing variable real world levels of voltage and current signals. These signals are converted into digital values by the modules for use in programs. This enables the CPU to process variable signals such as pressure, speed and flow. For modules able to sense temperature, please refer to the temperature input modules section.

Model Number		Q64AD				06	8ADV				Q68ADI		
Stocked Item		S				S	0/10 0				S		
Certification			CE.				• cUL • CE				UL•cUL•(;F	
Number of Anal	og Innut Points	4 points (-	c)		-	oints (8 channe	ماد)			8 points (8		
	/oltage	· ·		it resistance				013)				snannoisj	
	Gurrent		\	it resistance							- 0 to 20mAD	C (input registe	ince value 250Ω)
	Jurrent		- ()-			/	96 to 4095, hig			10000+			Ince value 250(1)
Digital Output		T6-DIL SIG	neu binar	y (Normai re	Solution me		, ,		solution mode:		,		_
		Analog li	nut Ran	ne			l Resolution M			3	solution Mod		
							Output Value					Max. Resolut	ion
				0 to 10V		0 to 40		2.5n		0 to 160		0.625mV	
		Vallena		0 to 5V 1 to 5V		0 to 40 0 to 40		1.25 1.0n		0 to 120		0.416mV 0.333mV	
I/O Characterist	tics Max. Resolution	Voltage		-10 to 10			to 4000	2.5n		-16000 t		0.625mV	
				User Range	Setting		to 4000		75mV	-12000 t		0.333mV	
				0 to 20mA	ootting	0 to 40		5uA	-	0 to 1200		1.66µA	
		Current		4 to 20mA		0 to 40		4uA		0 to 120		1.33µA	
				User Range	Setting	-4000	to 4000	1.37	′μA	-12000 t	o 12000	1.33µA	
										1			
			Normal Resolution Mode High Resolution Mode										
		Analog li	unut Ran	10	Ambient Tempera With Temp. Drift Compensation		1		Ambient			Ambient	
		Analog in	iput nuni	90			Without Temp. Drift Compensatior	12	Temperature 25±5°C	With Temp. Compe	Drift Te	'ithout emp. Drift ompensation	Temperature 25±5°C
			0 to 10V	1						- · ·		•	0.10/
	racy of Digital Output		-10 to 1	0						±0.3% (±48 d).4% :64 digit)	±0.1% (±16 digit)
Value Relative t	to Maximum Value) (*1)	Voltage	0 to 5V							(±+0 u	(<u>-</u>	.o4 digit)	
			1 to 5V		±0.3%		±0.4%		±0.1%				
				nge Setting	(±12 digit)	(±16 digit)	((±48 digit)	±0.3%	+(0.3%	±0.1%
		0	0 to 20n 4 to 20n							(±36 d		:48 digit)	(±12 digit)
		Current		nge Setting									
				<u> </u>									
Conversion Tim	e	80 µs/cha	nnel (Wh	en temperatu	ire drift cor	npensat	ion is provided	, time	e is 160 µs Ion	ger, regar	dless of the r	number of chan	nels used)
Absolute Max. I	Input	<u> </u>	,	ent: ±30mA									
Insulation Syste	em	Across I/0) termina	ls and PLC p	ower suppl	y: Photo	ocoupler insulat	tion; A	Across channe	els: No ins	ulation		
I/O Device Point	ts Occupied	16 points	(I/O alloc	ation: 16 inte	elligent poir	its)							
Connection Terr	minal	18-point t	erminal b	lock									
						0.6	4				0.64		
Internal Current	t Consumption (5VDC) (A)	0.63				10.0	14				0.04		
Internal Current Weight (kg)	t Consumption (5VDC) (A)	0.63 0.18				0.1					0.19		

Analog to Digital Converter Modules

Note 1: "Digit" indicates a digital value. ±4 digit means that the digital value 1000 will vary between 996 and 1004.

High Speed Analog Input Module

Model Number		Q64ADH						
Stocked Item		S						
Certification		UL•cUL•CE						
Number of Analo	og Inputs	4 points (4 chan	nels)					
Digital Output		-20480 to 20479) (-32768 to 32767 when usir	ng the scaling function)				
Analog Input	Voltage	10 to 10VDC (In	put resistance 1MΩ)					
Analog Input	Current	0 to 20mADC (Ir	nput resistance 250Ω)					
		Analog Input R	2000	Digital Output Value	Maximum Resolution			
		Analog input h	0 to 10V		500µV			
			0 to 5V	0 to 20000	250µV			
			1 to 5V		200µV			
		Voltage	-10 to 10V	-20000 to 20000	500µV			
			1 to 5V (Extended mode)	-5000 to 22500	200µV			
I/U Characteristic	cs Maximum Resolution (*1)		User Range Setting	-20000 to 20000	219µV			
			0 to 20 mA		1000nA			
			4 to 20 mA	0 to 20000	800nA			
			4 to 20V (Extended Mode)	-5000 to 22500	800nA			
			User Range Setting	-20000 to 20000	878nA			
			User mange betting	200001020000	070IA			
Accuracy (Accura Relative to Maxi		Within ±0.1% (±	20 digit)					
Analog Output Va (*2)		Within ±0.2% (±40 digit)						
Conversion Spee	ed (*3, *4, *5)	High speed: 20µ	s/channel; Medium speed: 80)µs/channel; Low speed: 1ms	:/channel			
Absolute Maximi	um Input	Voltage: ±15V, C	Current: 30mA (*6)	· · · · · · · · · · · · · · · · · · ·				
Offset / Gain Set	ting Count (*7)	Up to 50000 tim	es					
Isolation Method		Between I/O terr	ninals and programmable cor	troller power supply: photoc	oupler isolation; Between input channels: no isolation			
Dielectric Withst	and Voltage	Between I/O terr	ninals and programmable cor	troller power supply: 500VA	Crms for 1 minute			
Insulation Resist	tance	Between I/O terr	ninals and programmable cor	ntroller power supply: 500VD	C 10MΩ or higher			
Number of Occup	pied I/O Points	16 points (I/O as	signment: Intelligent 16 poin	ts)				
Connected Termi	inal	18-point termina	ıl block					
Applicable Wire	Size	0.3 to 0.75mm ²						
Applicable Solde	erless Terminal	R1.25-3 (solderl	ess terminals with sleeve are	not usable)				
Internal Current	Consumption (5VDC)	0.52A						
Weight (kg)		0.18						
Base Unit Slots (Occupied	1 slot						
Notoo:								

Notes:

For details on the I/O conversion characteristics, refer to the following. I/O conversion characteristic of A/D conversion in the User's Manual.
 Except when receiving noise influence.

Except when receiving hole influence.
 The default value is 20µs/channel.
 The logging function can be used only in the middle speed (80µs/channel) or low speed (1ms/channel).
 The flow amount integration function can be used only in the low speed (1ms/channel).
 This is a momentary current value which does not cause damage to internal resistors of the module. The maximum input current value for constant application is 24mA.
 If the number of offset/gain settings exceeds 50000 times, an error occurs.

Isolated Analog Modules

For some applications, it is essential that there is channel-to-channel isolation between analog inputs or outputs. These modules provide galvanic isolation between each channel so there is no common connection from one channel to any other.

8 CH Analog Module (Isolated Analog)

Model Number	1		Q68AD-G						
Stocked Item			S						
Certification			UL • cUL •	• CE					
lumber of Analo	a Inputs		8 points (8 channels)					
igital Output	5 1		· · ·	ned binary (normal resolution	mode: -4096	to 4095.	high resolution r	node: -12288 to 12287.	-16384 to 16383)
<u> </u>	Voltage	 	Ŭ,	/DC (Input impedance $1\Omega M$ of				,	,
nalog innut -	Current			ADC (Input resistance 250Ω)					
I									
					Normal Res	solution M	lode	High Resolution	Mode
			Input	Analog Input Range	Digital Out	out Value	Max. Resolutio	on Digital Output Va	alue Max. Resolution
				0 to 5V			2.5mV	0 to 1600	0.625mV
				0 to 5V	0 to 4000		1.25mV	0 to 1000	0.416mV
			Maltana	1 to 5V	1		1.0mV	0 to 1200	0.333mV
	Characteristics Maximum Resolution		Voltage	1 to 5V (Expanded Mode)	-1000 to 4500		1.0mV	-3000 to 13500	0.333mV
Characteristics Maximum Resolution			-10 to 10V	-4000 to 4000		2.5mV	-16000 to 16000	0.625mV	
		User Range Setting		-4000 to 40	00	0.375	-12000 to 12000	0.333mV	
			0 to 20 mA	0 to 4000		5µA	0 to 12000	1.66µA	
		4 to 20 mA	0 10 4000		4µA	0 10 12000	1.33µA		
			Current	4 to 20V (Expanded Mode)	-1000 to 45	000	4µA	-3000 to 13500	1.33µA
				User Range Setting -4000 to 40		00	1.37µA	-12000 to 12000	1.33µA
							•		
ccuracy (Accura	acv	Reference Accuracy	±0.1%; No	ormal resolution mode : ±4dig	it (*2); High	resolution	mode (0 to 10V	, -10 to 10V): ±16digit (*2)
elative to Maxii	mum	(*1)	High reso	lution mode (Other than the a	bove ranges)	±12digit	(*2)		·
nalog Output Va	alue)	Temp. Coefficient	±71.4ppm	/°C (0.00714%/°C) (*3)					
onversion Spee	d		10ms / ch	annel					
O Device Points	s Occupi	ed	16 points						
			Isolated			Isolation	Method	Dielectric Strength	Insulation Resistance
solation Specific	cations			I/O Terminal and Programmal	ole			500VAC rms, 1min.	
				r Power Supply		I ransfori	mer Isolation	1000\/AC uma_1min	500VDC 10MΩ or more
			Between	Analog Input Channels				1000VAC rms, 1min.	
onnector Type			A6CON1 c	or A6CON4					
iternal Current (Consum	ption (5VDC)	0.46A						
/eight (kg)			0.16						
ase Unit Slots C	Occunie	4	1						
100 0iiii 0i0la C	000up10	4							

Accuracy of offset/gain setting at ambient temperature.
 "digit" indicates a digital value.
 Accuracy per temperature change of 1°C Example: Accuracy when temperature changes from 25 to 30°C ±0.1% (reference accuracy) + 0.00714 %/°C (temperature coefficient) x 5°C (temperature change difference) = 0.1357%

High Resolution Analog Module (Isolated Analog Input Channels)

Model Number		Q64AD-G	Н						
Stocked Item		S							
Certification		UL • cUL	• CE						
Number of Analog Input I	Points	4 points (4 channels)						
Analan Innut	Voltage	-10 to 10	VDC (Input resistance 1MΩ)						
Analog Input	Current	0 to 20 m	ADC (Input resistance 250Ω)						
Digital Output		16-bit sig	ned binary (-32768 to 32768); 32	-bit signed bi	inary (-65536 to	65536)			
		Input	Analog Input Range	Maximum I		Digital Output Value	Digital Output Value		
				32-Blt	16-Bit	(32-Bit)	(16-Bit)		
			0 to 10V	156.3µV	312.6µV	_			
			0 to 5V 1 to 5V	78.2μV 62.5μV	156.4μV 125.0μV	0 to 64000	0 to 32000		
		Voltage		-		_			
O Characteristics Maxin) Characteristics Maximum Resolution		Users Input Range (Uni-Polar)	47.4µV	94.8µV				
			-10 to 10V	156.3µV	312.6µV	-64000 to 64000	-32000 to 32000		
			Users Input Range (Bi-Polar)	47.4µV	94.8µV				
			0 to 20 mA	312.5nA	625.0µV		0.4- 00000		
		Current	4 to 20 mA	250.0nA	500.0µV	0 to 64000	0 to 32000		
			Users Input Range (Uni-Polar) 151.6nA 303.2µV						
Accuracy (Accuracy	Reference Accuracy (*1)	±0.05%; Digital output value(32 bit): ±32 digit (*2); Digital output value (16 bit): ±16 digit (*2)							
Relative to Full-Scale)	Temp. Coefficient (*3)	±71.4 ppr	m / °C (0.00714% / °C)			. , ,			
onversion Speed		10ms / 4	channels						
Absolute Maximum Input		Voltage: ±	15V; Current: ± 30mA						
Withstanding Voltage Iso	lation Method	Between	/O terminal and PLC power suppl	y: Photocoup	ler insulation; B	etween analog input chan	nels: transformer isolatio		
Dielectric Strength		1780VAC	ms / 3 cycles (elevation 2000m)						
solation Voltage		Between	/O terminal and PLC power suppl	y: 500VDC 20	DMΩ more				
/O Device Points Occupi	ed	16 points							
Connected Terminal		18 points	terminal block						
Applicable Solderless Te	rminals	R1.25-3 (A solderless terminals with sleeve	s cannot be i	used)				
Internal Current Consum	otion (5VDC)	0.89 A							
Weight (kg)		0.20							
Base Unit Slots Occupied		1							
lotes:									

1. 2. 3.

tes: Accuracy when consistent at some temperature within the ambient temperature (to 55°C). "Digit" indicates a digital output value. Accuracy per temperature change of 1°C. Example: Accuracy when temperature change from 25 to 30°C. 0.05% (reference accuracy + 0.00714% / °C (temperature coefficient) x 5 °C (temperature change difference) = 0.0857%

Isolated Analog Input Module with Signal Conditioning Function

Model Number			Q66AD-DG								
Stocked Item			S								
Certification			UL • CUL • CE								
	Input	Number of Analog Input	6 points (6 channels)								
	Specification	Analog Input	4 to 20 mADC (Input resistance	e 250Ω)							
Connecting Section		Supply Voltage	26 ±2VDC								
with 2-Wire	Supply Power Specification	Maximum Supply Current	24mADC								
	opeomeanon	Short-Circuit Protection	Available; Limit current: 25 to 35mA								
	Check Termina	ls	Available								
Digital Output			16-bit signed binary (normal re	solution mode: -96	to 4095, high resolut	ion mode: -288 to 12287)					
			Analog Input Range	Normal Resolutio	n Mode	High Resolution Mode					
			Analog Input Range	Digital Output Val	ue Max. Resolution	n Digital Output Value	Max. Resolution				
/O Characteristi	ics Maximum Re	esolution	0 to 20mA 4 to 20mA	- 0 to 4000	5μΑ 4μΑ	0 to 12000	1.66µА 1.33µА				
			4 to 20mA (Expanded Mode)	-1000 to 4500	4µA	-3000 to 13500	1.33µA				
			User Range Setting	0 to 4000	1.37µA	0 to 12000	1.33µA				
Accuracy		Reference Accuracy (*1)	±0.1% (Normal resolution mode: ±4 digit; High resolution mode: ±12 digit) (*2)								
(Accuracy Relati Full-Scale)	ive to	Temp. Coefficient (*3)	±71.4 ppm / °C (0.00714% / °C)								
Conversion Spe	ed		10ms / channel								
			Isolated Part		Insulation Method	Dielectric Withstand Voltage	e Isolation Voltage				
Insulation			Between I/O Terminal and Prog Controller Power Supply	grammable	Transformer	500VAC rms, 1min					
			Between Analog Input Channel	ls	Isolation	1000VAC rms, 1min.	or more				
			Between External Power Suppl	ly and Analog Input		500VAC rms, 1min					
/O Device Point	· · · · · · · · · · · · · · · · · · ·		16 points								
Connected Term	inal		18 points terminal block								
Connector Type			A6CON4								
	Consumption (5	VDC)	0.42 A								
External Power	Supply		24VDC +20%, -15%; Ripple, sp	oike within 500mVp-	p; Inrush current: 5.0	A, within 400µs; 0.36A					
Weight (kg)			0.22								
Base Unit Slots	Occupied		1								
otoc:											

 Notes:

 1. Accuracy of offset/gain setting at ambient temperature.

 2. "digit" indicates a digital value.

 3. Accuracy per temperature change of 1°C. Example: Accuracy when temperature changes from 25 to 30°C 0.1% (reference accuracy) + 0.00714 % / °C (temperature coefficient) x 5°C (temperature change difference) = 0.1357%

High Resolution Isolated Analog Input Module with Signal Conditioning Function

	er		Q62AD-DGH								
Stocked Item			S								
Certification			CE								
	Input	Number of Analog Input	2 points (2 channels)								
Connecting	1.	Analog Input	4 to 20 mADC (*1) (Inpu	t resistance 250	ΟΩ)						
Section		Supply Voltage	26 ±2VDC								
With 2-Wire Transmitter	Supply Power	Maximum Supply Current	24mADC								
114115111111001	Power	Short-Circuit Protection	Available; Limit current: 25 to 35mA								
	Check T	erminals	Available								
Digital Output	t		16-bit signed binary (-76	8 to 32767); 32	-bit signed	binary (-1538 to 65535)					
/O Characteristics Maximum Decolution			Analog Input Range	Maximum Re 32-Blt	solution 16-Bit	Digital Output Value	e (32-Bit)	Digital C	Jutput Value (16-Bit)		
I/U Characteri	O Characteristics Maximum Resolution		4 to 20mA	250.0nA	500.0nA	0.4- 0.4000		0.4- 000	0 to 32000		
			User range Setting	151.6nA	303.2nA	0 to 64000	0 10 320		00		
Accuracy (Acc		Reference Accuracy (*2)	±0.05%; Digital output va	alue(32 bit): ±3	2 digit; Digi	tal output value (16 bit): ±	±16 digit (*3	8)			
Relative to Fu	ull-Scale)	Temp. Coefficient (*4)	±71.4 ppm / °C (0.00714% / °C)								
Conversion S	peed		10ms / 2 channels								
			Isolated Part			Insulation Method	Dielectric	Strength	Isolation Voltage		
			Between I/O Terminal a	nd PLC Power	Supply	Photocoupler Insulation	1780 VAC	rms/3			
neulation			Between Analog Input Channels				n 1780 VAC rms / 3 cycles (elevation		500 VDC 10MΩ or		
Insulation			Between Analog Input (Channels		Transformer Isolation	cycles (ele	more			
nsulation			Between Analog Input O Between External Powe		nalog Input		cycles (ele 2000m)	vation	more		
nsulation					nalog Input			vation	more		
	oints Occu	pied			nalog Input			vation	more		
I/O Device Po		pied	Between External Powe		nalog Input			vation	more		
/O Device Po Connected Te Applicable So	erminal olderless 1	Ferminals	Between External Powe 16 points 18 points terminal block R1.25-3 (A solderless ter	r Supply and Ar		Transformer Isolation		vation	more		
I/O Device Po Connected Te Applicable So Internal Curre	erminal olderless 1 ent Consur		Between External Powe 16 points 18 points terminal block R1.25-3 (A solderless ter 0.33 A	r Supply and Ar minals with sle	eves cannot	Transformer Isolation be used)	2000m)		more		
Insulation I/O Device Po Connected Te Applicable So Internal Curre External Powe	erminal olderless 1 ent Consur	Ferminals	Between External Powe 16 points 18 points terminal block R1.25-3 (A solderless ter 0.33 A 24VDC +20%, -15%; Rip	r Supply and Ar minals with sle	eves cannot	Transformer Isolation	2000m)		more		
I/O Device Po Connected Te Applicable So Internal Curre	erminal olderless 1 ent Consur er Supply	Ferminals nption (5VDC)	Between External Powe 16 points 18 points terminal block R1.25-3 (A solderless ter 0.33 A	r Supply and Ar minals with sle	eves cannot	Transformer Isolation be used)	2000m)		more		

 Notes:

 1. User range setting is 2 to 24mA.

 2. Accuracy of offset/gain setting at ambient temperature. Q62AD-DGH needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).

 3. "Digit" indicates a digital output value.

 4. Accuracy per temperature change of 1°C.

 Example: Accuracy when temperature change from 25 to 30°C. 0.05% (reference accuracy + 0.00714% / °C (temperature coefficient) x 5 °C (temperature change difference) = 0.0857%

Combination Analog Module

	r	Q64AD2DA	1				
tocked Item		S	-				
ertification		UL•cUL•					
umber of An	alog Input Points	4 points (4	/	~			
nalog Input	Voltage		DC (input resistance value 1M				
and a mput	Current		DC (input resistance value 250				
gital Output			olution mode:-96 to 4095, -40 tion mode:-384 to 16383, -28			87	
		Angles Inc	ul Denne	Normal Resolution Mo	de	High Resolution Mode	
		Analog Inp	ut Kange	Digital Output Value	Max. Resolution	Digital Output Value	Max. Resolution
			O to 10V		2.5mV	0 to 16000	0.625mV
			0 to 5V	0 to 4000	1.25mV	0 to 12000	0.416mV
Characteri	stics	Voltage	1 to 5V	1	1.0mV	0 to 12000	0.333mV
aximum Res	solution		-10 to 10V	-4000 to 4000	2.5mV	-16000 to 16000	0.625mV
			1 to 5V (Extended Mode)	-1000 to 4500	1.0mV	-3000 to 13500	0.333mV
			0 to 20mA	0 to 4000	5µA	0 to 12000	1.66µA
		Current	4 to 20mA	0 to 4000	4μA	0 to 12000	1.33µA
			4 to 20mA (Extended Mode)	-1000 to 4500	4μA	-3000 to 13500	1.33µA
				Normal Desclution M	4.0		
		Angland	ut Dongo	Normal Resolution Mo	1	High Resolution Mode	1
		Analog Inp	ut kange	Ambient Temperature 0 to 55°C	Ambient Temperature 25 ±5°C	Ambient Temperature 0 to 55°C	Ambient Temperatur 25 ±5°C
			0 to 10V	010000	20 10 0	0 10 00 0	23 13 0
				-		±0.4% (±64 digit)	±0.1% (±16 digit)
	uracy of Digital Output	Voltore	-10 to 10	-			· · · · ·
	e to Maximum Value) (*1)	Voltage	0 to 5V	-			
	, , , ,		1 to 5V	±0.4% (±16 digit)	±0.1% (±4 digit)		
			1 to 5V (Extended Mode)			±0.4% (±48 digit)	±0.1% (±12 digit)
			0 to 20mA	-			
		Current	4 to 20mA	-			
			4 to 20mA (Extended Mode)				
		500 / 1					
nversion Ti		500 µs/cha	nnei				
			5V, current: ±30mA (*2)				
	mum Input alog Output Points	2 points (2	channels)				
mber Of An		2 points (2		096 to 4095; High res	plution mode: -288 to	12287, -16384 to 163	383
imber Of An gital Input	alog Output Points	2 points (2 Normal res	channels)		plution mode: -288 to	12287, -16384 to 163	383
imber Of An gital Input	alog Output Points	2 points (2 Normal res -10 to 10VI	channels) olution mode: -96 to 4095, -40	MΩ)	olution mode: -288 to	12287, -16384 to 163	383
mber Of An jital Input	alog Output Points Voltage	2 points (2 Normal res -10 to 10VI	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1	MΩ) 00Ω)			
imber Of An gital Input	alog Output Points Voltage	2 points (2 Normal res -10 to 10VI 0 to 20mAI	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6	MΩ) 00Ω) Normal Resolution Mo	de	High Resolution Mode	
isolute Maxi Imber Of An gital Input ialog Output	alog Output Points Voltage	2 points (2 Normal res -10 to 10VI 0 to 20mAI	channels) olution mode: -96 to 4095, -4(DC (External load resistance: 1 DC (External load resistance: 6 tput Range	MΩ) 00Ω)	de Maximum Resolution		Maximum Resolutio
mber Of An gital Input alog Output	alog Output Points Voltage Current	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V	MΩ) 00Ω) Normal Resolution Mo	de Maximum Resolution 1.25 mV	High Resolution Mode	Maximum Resolutio
mber Of An jital Input alog Output	alog Output Points Voltage	2 points (2 Normal res -10 to 10VI 0 to 20mAI	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000	de Maximum Resolution 1.25 mV 1.0 mV	High Resolution Mode Digital Input Value 0 to 12000	Maximum Resolutio 0.416 mV 0.333 mV
mber Of An jital Input alog Output	alog Output Points Voltage Current	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V	MΩ) OOΩ) Normal Resolution Mo Digital Input Value	de Maximum Resolution 1.25 mV	High Resolution Mode Digital Input Value	Maximum Resolutio
nber Of An ital Input log Output	alog Output Points Voltage Current	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000	de Maximum Resolution 1.25 mV 1.0 mV	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Maximum Resolutio 0.416 mV 0.333 mV
nber Of An ital Input ilog Output	alog Output Points Voltage Current	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV	High Resolution Mode Digital Input Value 0 to 12000	Maximum Resolutio 0.416 mV 0.333 mV 0.625 mV
mber Of An gital Input alog Output	alog Output Points Voltage Current	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Maximum Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µA
mber Of An yital Input alog Output	alog Output Points Voltage Current	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
mber Of An jital Input alog Output	alog Output Points Voltage Current	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 Ambient Temperature	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
mber Of An jital Input alog Output	alog Output Points Voltage Current stics Maximum Resolution	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
mber Of An jital Input alog Output Characteri curacy (Acc	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current Analog Ou	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA tput Range 0 to 5V	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 Mmbient Temperature 0 to 55°C	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
mber Of An jital Input alog Output Characteri curacy (Acc	alog Output Points Voltage Current stics Maximum Resolution	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA tput Range 0 to 5V 1 to 5V	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 Ambient Temperature	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
mber Of An jital Input alog Output Characteri curacy (Acc	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current Analog Ou	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA tput Range 0 to 5V 1 to 5V -10 to 10V -10 to 10V	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 Mmbient Temperature 0 to 55°C	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
nber Of An ital Input ilog Output Characteri uracy (Acc	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 Mmbient Temperature 0 to 55°C	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
nber Of An ital Input Ilog Output Characteri Characteri	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current Analog Ou Voltage	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA tput Range 0 to 5V 1 to 5V -10 to 10V -10 to 10V	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV)	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV)	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
nber Of An ital Input Iog Output Characteri Characteri uracy (Acc kimum Ana	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To alog Output Value)	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current Voltage Current	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 5V 1 to 5V 4 to 20 mA 4 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV)	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV)	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
nber Of An ital Input Ilog Output Characteri uracy (Acc cimum Ana version Sp	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To log Output Value)	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current Voltage Current 500 µs/cha	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV)	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV)	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
nber Of An ital Input ilog Output Characteri uracy (Acc ximum Ana iversion Sp iolute Max	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To slog Output Value)	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current 500 µs/cha Voltage: 12	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 5V 1 to 5V -10 to 10V 0 to 5V 1 to 5V 4 to 20 mA 4 to 20 mA	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV)	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV)	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
nber Of An ital Input ilog Output Characteri uracy (Acc ximum Ana iversion Sp solute Max put Short (alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To slog Output Value) ueed imum Output Circuit Protection	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current 500 µs/cha Voltage: 12 Available	channels) 0 channels) 0 olution mode: -96 to 4095, -40 0 DC (External load resistance: 1 0 DC (External load resistance: 6 0 tput Range 0 0 0 to 5V 1 10 -10 to 10V 0 0 0 tput Range 0 0 0 not o 5V 1 10 5V -10 to 10V 0 0 0 0 to 20 mA 4 4 0 nnel V Current: 21mA 0	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA)	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV)	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
mber Of An ital Input alog Output Characteri :uracy (Acc ximum Ana inversion Sp solute Max iput Short (Device Poi	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To ilog Output Value) seed imum Output Circuit Protection ints Occupied	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current 500 µs/cha Voltage: 12 Available 16 points (channels)	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA)	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV)	High Resolution Mode Digital Input Value - 0 to 12000 -16000 to 16000	Maximum Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µA
mber Of An gital Input alog Output Characteri Characteri curacy (Acc iximum Ana nversion Sp solute Maxi tput Short (alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To ilog Output Value) seed imum Output Circuit Protection ints Occupied	2 points (2 Normal res -10 to 10VI 0 to 20mAI Analog Ou Voltage Current 500 µs/cha Voltage: 12 Available 16 points (1	channels)	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 Ambient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA) points)	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV) ±0.1% (±20 μA)	High Resolution Mode Digital Input Value 0 to 12000 -16000 to 16000 0 to 12000	Maximum Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µA
mber Of An jital Input alog Output Characteri curacy (Acc ximum Ana nversion Sp solute Max tput Short (Device Po nnected Te	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To ilog Output Value) seed imum Output Circuit Protection ints Occupied	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current 500 μs/cha Voltage: 12 Available 16 points (18 points t	channels)	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 Ambient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA) points) : R1.25-3 (Solderless	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV) ±0.1% (±20 μA)	High Resolution Mode Digital Input Value 0 to 12000 -16000 to 16000 0 to 12000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА
nber Of An ital Input ital og Output Characteri characteri suracy (Acc ximum Ana nversion Sp solute Max put Short C Device Po Invected Te plicable So	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To log Output Value) meed imum Output Circuit Protection ints Occupied minals Iderless Terminal	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current 500 μs/cha Voltage: 12 Available 16 points (18 points tr	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA 4 to 20 mA 4 to 20 mA V Current: 21mA V Current: 21mA V Current: 1ntelligent 16 erminal block sion part, D/A conversion part	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA) points) : R1.25-3 (Solderless al connection: Not ava	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV) ±0.1% (±20 μA) terminals with sleeves ilable	High Resolution Mode Digital Input Value 0 to 12000 -16000 to 16000 0 to 12000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА 1.33µА
nber Of An ital Input ilog Output Characteri Characteri uracy (Acc kimum Ana iversion Sp iolute Maxi put Short C Device Poi nected Tei ilicable So ernal Supp	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To log Output Value) need imum Output Circuit Protection ints Occupied minals Iderless Terminal IV Power	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current 500 μs/cha Voltage: 12 Available 16 points (18 points to A/D conver External po 24VDC 15%	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA (0 to 20 mA 4 to 20 mA (1 to 5V) -10 to 10V 0 to 20 mA (1 to 5V) -10 to 10V 0 to 20 mA (1 to 20	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA) points) : R1.25-3 (Solderless al connection: Not ava	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV) ±0.1% (±20 μA) terminals with sleeves ilable	High Resolution Mode Digital Input Value 0 to 12000 -16000 to 16000 0 to 12000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА 1.33µА
nber Of An ital Input ilog Output Characteri Characteri uracy (Acc kimum Ana iversion Sp iolute Maxi put Short C Device Poi nnected Ter ilicable So ernal Supp	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To log Output Value) meed imum Output Circuit Protection ints Occupied minals Iderless Terminal	2 points (2 Normal res -10 to 10VI 0 to 20mAl Voltage Current Current 500 μs/cha Voltage: 12 Available 16 points (18 points tt A/D conver External po 24VDC 15%	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA (0 to 20 mA 4 to 20 mA (1 to 5V) -10 to 10V 0 to 20 mA (1 to 5V) -10 to 10V 0 to 20 mA (1 to 20	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA) points) : R1.25-3 (Solderless al connection: Not ava	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV) ±0.1% (±20 μA) terminals with sleeves ilable	High Resolution Mode Digital Input Value 0 to 12000 -16000 to 16000 0 to 12000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА 1.33µА
mber Of An jital Input alog Output Characteri curacy (Acc ximum Ana nversion Sp solute Max put Short (Device Poi nnected Te plicable So ernal Supp ernal Curre ight (kg)	alog Output Points Voltage Current stics Maximum Resolution uracy With Respect To log Output Value) need imum Output Circuit Protection ints Occupied minals Iderless Terminal IV Power	2 points (2 Normal res -10 to 10VI 0 to 20mAl Analog Ou Voltage Current 500 μs/cha Voltage: 12 Available 16 points (18 points to A/D conver External po 24VDC 15%	channels) olution mode: -96 to 4095, -40 DC (External load resistance: 1 DC (External load resistance: 6 tput Range 0 to 5V 1 to 5V -10 to 10V 0 to 20 mA 4 to 20 mA (0 to 20 mA 4 to 20 mA (1 to 5V) -10 to 10V 0 to 20 mA (1 to 5V) -10 to 10V 0 to 20 mA (1 to 20	MΩ) 00Ω) Normal Resolution Mo Digital Input Value 0 to 4000 -4000 to 4000 0 to 4000 0 to 4000 4mbient Temperature 0 to 55°C ±0.3% (±30mV) ±0.3% (±60 μA) points) : R1.25-3 (Solderless al connection: Not ava	de Maximum Resolution 1.25 mV 1.0 mV 2.5 mV 5μA 4μA 25 ±5°C ±0.1% (±10mV) ±0.1% (±20 μA) terminals with sleeves ilable	High Resolution Mode Digital Input Value 0 to 12000 -16000 to 16000 0 to 12000	Махітит Resolutio 0.416 mV 0.333 mV 0.625 mV 1.66µА 1.33µА

Notes:

1. A1: The selection ranges and accuracies have the following relationships.

Ambient Temperature	Temperature Range		
Annulent temperature	Pt100 and JPt100 : -20 to 120°C	Pt100 : -200 to 850°C	JPt100 : -180 to 600°C
0 to 55°C	±0.3°C	±2.125°C	±1.5°C
25 ±5°C	±0.096°C	±0.68°C	±0.48°C

The conversion speed is a period from when a temperature is input and converted into a corresponding digital value until the value is stored into the buffer memory. When two or more channels are used, the conversion speed is "40ms number of conversion enabled channels". 2. For output in the case of disconnection detection, select any of "Value immediately before disconnection", "Up scale (maximum value of measured temperature range + 5% of measured temperature range)", "Down scale (minimum value of measured temperature range - 5% of measured temperature range)" or "Given value".

Analog Output Modules

Analog output modules allow the CPU to convert digital program values to real world analog current or voltage signals. These can then be used to control actuators whose properties vary between set limits, such as valve openings, speed control, extension distance, etc.

Model Name		Q62DAN		Q64DAN		Q681	DAVN		Q68DAIN	
Stocked Item		S		S		S			S	
Number Of Analog O	utput Points	2 points (2	channels)	4 points (4 channel	s)	8 po	ints (8 channels)			
Digital Input		16-bit signe	d binary (normal reso	lution mode: -4096 to	4095, High re	solutio	on mode: -12288 to 122	287, -16	6384 to 16383)
	Voltage	-10 to 10VE	C (External load resis	tance value: $1K\Omega$ to 1	MΩ)				-	
nalog Output	Current	0 to 20 mA	DC (External load resi	stance value: 0Ω to 600Ω)		-	-			OC (External load lue: 0Ω to 600Ω)
		Analan O	utaut Donno	Normal Resolution Mode			High Resolution Mo	de		
		Analog Ul	itput Range	Digital Input Value	Max. Resolut	tion	Digital Input Value	Max.	Resolution	
			0 to 5V	0.4- 4000	1.25 mV		0.4- 40000	0.416	mV	-
		Mallana	1 to 5V	0 to 4000	1.0 mV		- 0 to 12000	0.333	mV	-
) Characteristics,		Voltage	-10 to 10V	1000 to 1000	2.5 mV		-16000 to 16000	0.625	mV	-
laximum Resolution	n		User Range Setting	-4000 to 4000	0.75 mV		-12000 to 12000	0.333	mV	-
			0 to 20 mA	0 to 4000	5μΑ		0 to 12000	1.66µ	A	-
		Current	4 to 20 mA	0 10 4000	4μΑ		0 10 12000	1.33µ	A	_
			User Range Setting	-4000 to 4000	1.5µA		-12000 to 12000	0.83µ	A	
Accuracy (Accuracy With Respect To	Ambient Temp. 25 ±5°C	Within ± 0.1 % (Voltage: ±10 mV, Current: ± 20µA)								
Maximum Analog Dutput Value)	Ambient Temp. O to 55°C	Within ± 0.3	3 % (Voltage: ± 30 mV	, Current: ± 60μA)						
Conversion Speed		80µs/chann	el							
utput Short Circuit	Protection	Available								
O Device Points Oc		· · ·	/O assignment: Intellig	ent 16 points)						
connected Terminals	S	18-points te	erminal block							
Applicable Solderles	s Terminal	R1.25-3 (A	solderless terminal wi	th sleeve cannot be u	sed)	Othe	erminal: R1.25-3, 1.25-Y r terminals than FG: R1 ot be used)			
		24VDC + 20) %, -15 %				·			
		Ripple, spik	e 500 mV P-P or less							
xternal Supply Pow	er	Inrush curre within 250µ		Inrush current: 2.5 within 260µs	Α,		sh current: 2.5 A, in 230µs	Inrush curren within 230µs		
		0.15 A		0.24 A		0.20	A		0.27 A	
nternal Current Con	sumption (5VDC)	0.33 A		0.34 A		0.38	Α		0.38 A	
Weight (kg)		0.19		0.20		0.20			0.20	
Base Unit Slots Occu	pied	1								

D/A Converter Module

Model Number		Q64DAH						
Stocked Item		-						
Number of Analog	Output Points	4 points (4 chanr	nels)					
	Input	-20480 to 20479	,					
Digital Input	Using the Scaling Function	-32768 to 32767						
An alan Outant	Voltage	-10 to 10VDC (ex	ternal load resistance	1kΩ to 1MΩ)				
Analog Output	Current	0 to 20mADC (ex	ternal load resistance	0Ω to 600Ω)				
		Analog Output F	Range	Digital Value	Maximum Resolution			
			0 to 5V	-	250µV			
			1 to 5V	0 to 20000	200µV			
		Voltage	-10 to10V		500µV			
I/O Characteristics	s, Maximum Resolution (*1)		User range setting	-20000 to 20000	333µV			
			0 to 20mA		1000nA			
		Current	4 to 20mA	0 to 20000	800nA			
			User range setting	-20000 to 20000	700nA			
			ů ů		70011A			
Accuracy	Ambient Temperature 25 ±5°C	Within ±0.1% (vo	oltage: ±10mV, curren	t: ±20µA)				
(Accuracy for the Maximum Value of Analog Output Value) (*2)	Ie Ambient Temperature Within 0.00% (voltages 2000) (cuments 2000)							
Conversion	Normal Output Mode	20µs/channel						
Speed	Wave Output Mode	50µs/channel, 80	µs/channel					
Number of Offset/0	Gain Settings	Up to 50000 counts						
Output Short Prote	ction	Protected						
Insulation Method		Between I/O terminals and programmable controller power supply: photocoupler isolation; Between output channels: no isolation; Between external power supply and analog output: transformer isolation						
Dielectric Withsta	nd Voltage			ble controller power supply alog output: 500VAC rms f	/: 500VAC rms for 1 minute; or 1 minute			
Insulation Resista	nce	Between I/O term	inals and programma	ble controller power supply	/: 500VDC 10MΩ or higher			
Number of Occupi	ed I/O Points	16 points (I/O as	signment: 16 points fo	or intelligent)	·			
Connected Termin	al	18-point terminal	l block					
Applicable Wire S	ize	0.3 to 0.75mm ²						
Applicable Solder	less Terminal	R1.25-3 (solderle	ess terminals with slee	eve are not usable)				
	24VDC +20%, -15%	24VDC +20%, -1	5%					
External Power	Ripple, Spike 500mVP-P or Lower	Ripple, spike 500	mVP-P or lower					
Supply	Inrush Current: 4.3A, 1000µs or Shorter	Inrush current: 4	.3A, 1000µs or shorte	r				
	Current Consumption: 0.18A	Current consump	otion: 0.18A					
Internal Current C	onsumption (5VDC)	0.12A						
		0.12A 0.19						

 Notes:

 1. For details on the I/O conversion characteristics, refer to I/O conversion characteristic of D/A conversion in the User's Manual.

 2. Except when receiving noise influence. Warm up (power on) the module for 30 minutes to satisfy the accuracy shown in the table.

Isolated Analog Output Modules with Output Monitor

Model Number		Q62DA-FG								
Stocked Item		S								
Certification		UL • cUL • CE								
Number of Analo	g Outputs	2 points (2 cha	nnels)							
Digital Input	<u> </u>	16-bit signed b	inary (-12288 to 12287, -1	6384 to 16	383)					
	Voltage	-12 to 12VDC (External load resistance 1k	to 1MΩ)	,					
Analog Output	Current	0 to 20 mADC	(External load resistance: 0) to 600Ω);	0 to 22 mADC					
	·					1.84	B			
			Analog Output Range 0 to 5V	Digital li	nput Value		m Resolution			
			1 to 5V	0 to 12000		0.416m\ 0.333m\				
		Voltage	-10 to 10V	-16000 t						
/A Characteristic	cs Maximum Resolution	Vollage	User Range Setting 2			0.366mV				
o onaracteristi	os maximum resolution		User Range Setting 3	-12000 t	o 12000	0.183mV				
			0 to 20 mA			1.66µA	·			
			4 to 20 mA	- 0 to 1200	JU	1.33µA				
			User Range Setting 1 -12000 to 12000 0.671µA							
	curacy (Accuracy Reference Accuracy (*1)		within ±0.1%; (Voltage: ±10mV, Current: ±20µA)							
Analog Output Va		±80 ppm / °C (0.008% / °C)							
Conversion Spee	d	10ms / 2 channels								
	Resolution	12 bit								
Output Monitor	Reference Accuracy (*1)	±0.2%								
	Temperature Coefficient (*2)	±160ppm / °C	(0.016% / °C)							
Output Short-Cire	cuit Protection	Available								
/O Device Points	s Occupied	16 points								
		Isolated Part			Isolation Met	had	Dielectric Strength	Insulation Resistance		
							Dielectric Streligti	Insulation Resistance		
solation Specifi	cations	I	erminal and Controller Pow	er Supply	Photocoupler		1780VAC rms / 3	500VDC 10MQ		
		Between Analo	g Output Channels		Transformer I	solation	cycles (elevation	or more		
		Between Exter	nal Power Supply and Anal	log Output	Transformer I	solation	2000m)			
Connected Termi	inal	18 points termi								
		. ·		voo oonnot	ha ugad)					
••	erless Terminals		derless terminals with sleev	ves cannot	ue used)					
	Consumption (5VDC)	0.37A	150/ Dinala and a solution	500mm						
	subhia	24VDC +20%, -15%; Ripple, spike within 500mVp-p; Inrush current: 5.2A, within 300µs, 0.3A								
External Power S		0.20								
External Power S Weight (kg) Base Unit Slots (0.20								

Notes:

 Accuracy of offset/gain setting at ambient temperature Q62AD-DGH needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).
 Accuracy per temperature change of 1°C. Example: Accuracy when temperature change from 25 to 30°C. 0.1% (reference accuracy + 0.008% / °C (temperature coefficient) x 5 °C (temperature change difference) = 0.14%

Model Number		Q66DA-G										
Stocked Item		S										
Certification		UL•cUL•	CE									
Number of Anal	og Outputs	6 points (6	channels)									
Digital Input	- <u>-</u>	16-bit signed binary (normal resolution mode:-4096 to 4095; high resolution mode: -12288 to 12287, -16384 to 16383)										
	Voltage	-12 to 12V[-12 to 12VDC (External load resistance 1k to 1MΩ)									
Analog Output	Current	0 to 20 mA	DC (External load resistan	ce: 0 to 600Ω); 0 to	22 mADC (*3)							
			1	Normal Resolution	an Mada	High Resolution I	nh Daaslutten Mede					
		Input	Analog Input Range	Digital Input Valu		3						
			0 to 5V		1.25mV		0.416mV					
			1 to 5V	0 to 4000	1.0mV	0 to 12000	0.333mV					
		Voltage	-10 to 10V		2.5mV	-16000 to 16000	0.625mV					
/O Characterist	Characteristics Maximum Resolution		User Range Setting 2	-4000 to 4000	.075mV	-12000 to 12000	0.400mV					
			User Range Setting 3		0.375mV	-12000 10 12000	0.210mV					
			0 to 20 mA	0 to 4000	5µA	0 to 12000	1.66µA					
			4 to 20 mA	0 10 4000	4µA	0 10 12000	1.33µA					
			User Range Setting 1	-4000 to 4000	1.5µA	-12000 to 12000	0.95µA					
Accuracy (Accuracy Reference Accuracy (*1)		within ±0.1%; (Voltage: ±10mV, Current: ±20µA)										
Relative to Max Analog Output V		±80 ppm / '	°C (0.008% / °C)									
Conversion Spe	ed	6ms / chan	nels									
	Resolution	15-bit										
Output Monitor	Reference Accuracy (*1)	±0.1%										
	Temperature Coefficient (*2)	0.008% / °	5									
Dutput Short-Cii	cuit Protection	Available										
/O Device Point	s Occupied	16 points										
		Isolated P	art		Isolation Method	Dielectric Strength	Insulation Resistance					
		Between O	utput Terminal and Contro	oller Power Supply		500VAC rms, 1 min.						
solation Specif	ications	Between A	nalog Output Channels		Transformer Isolation	1000VAC rms, 1 min.	500VDC 10M Ω or more					
		Between E	xternal Power Supply and	Analog Output	ISUIALIUII	500VAC rms, 1 min.						
Connected Term	inal	40-pin conr	nector									
	erless Terminals			sleeves cannot be i	used)							
	Consumption (5VDC)	R1.25-3 (A solderless terminals with sleeves cannot be used) 0.62A										
External Power		24VDC, +20%, -15%; Ripple, spike within 500 mV p-p; Inrush current: 4.8A, within 400µs; 0.22A										
Weight (kg)		0.22	. , ,									
Base Unit Slots	Occupied	1										

Notes:

 Notes:

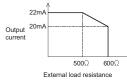
 1. Accuracy of offset/gain setting at ambient temperature Q66DA-G needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).

 2. Accuracy per temperature change of 1 °C

 Example: Accuracy when temperature changes from 25 to 30 °C

 0.1% (Reference accuracy) + 0.008%/ °C (temperature coefficient) x 5 °C (temperature change difference) = 0.14%

 3. The following indicates the external load resistance when output current is 20mA or more.



HART Interface Module

The Q Series HART® Interface I/O Modules provide total access to process data and device diagnostics from over 1000 HART enabled field devices. The system is designed to use the 4-20mA (or 0-20mA) control signal from traditional analog devices as well as the 4-20mA and digital process data from HART devices, allowing up to 5 (1 analog, 4 digital process variables) control points on a single 2-wire connection.

Model Number		ME1AD8HAI-Q							
Stocked Item		•							
Number of Analog Input Points		8 points (8 channels)							
Current		0 to 20 mA DC • 4 to 20 mA DC							
Analog Input	Absolute Maximum Input	± 30 mA							
	Input Resistance	250Ω							
	Short-Circuit Protection	Available							
	Primary Filter	Hz (3 dB), HART signal is 1200 Hz with 1 mAP-P							
Digital Output		16-bit signed binary (-768 to 32767)							
I/O Characteristics, Maximum Resolution		Analog Input Range	Digital Output Value	Maximum Resolution					
		0 to 20 mA	- 0 to 32000	625.0 nA	-				
		4 to 20 mA		500.0 nA	-				
Accuracy (Relative to Digital Output Value) (*1)		±0.15% (±48 digit) (*2)							
Cycle Time		80 ms (Independent to the number of used channels)							
Insulation Method	Between the I/O Terminals and PLC Power Supply	Photocoupler insulation							
method	Between Analog Input Channels	Non-insulated							
HART Modem		FSK Physical Layer, multiplexed							
HART Functions		Protocol Revision 6 support • 4 Process variables support (PV, SV, TV, QV) • FDT/DTM support							
Number of I/O Occupied Points		32 points (I/O assignment: Intelligent 32 points)							
External Wiring Connection System		18-points terminal block							
Applicable Wire Size		Refer to the HART specification for more details. The external power supply voltage of the ME1AD8HAI-Q should be enough for correct operation of the analog transmitter. (*3, *4)							
Applicable Solderless Terminals		R1.25-3 (Solderless terminals with sleeves cannot be used)							
External Supply Power	Voltage	24VDC (+20%, -15%); ripple, spike within 500mVP-P							
	Current (A)	0.3							
	Inrush Current	5.5 A within 200 µs							
Online Module Change		Not supported							
Internal Current Consumption (5VDC) (A)		0.32							
Weight (kg)		0.19							
Base Unit Slots Occupied		1							

 Notes:

 1. ME1AD8HAI-Q needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).

 2. "digit" indicates a digital value.

"digit" indicates a digital value.
 Use case: For distances up to 800 m, the wire size of 0.51 mm diameter with 115 nF/km cable capacitance and 36.7 nF/km cable resistance can be applied.
 Refer to the calculation example shown in User's Manual (External wiring).

Load Cell Input Module

Model Number	Q61LD							
Stocked Item	S							
Certification	UL • CUL • CE							
Number of Analog Inputs	1 point (1 channel)							
Digital Output	32-bit signed binary; 0 to 10000							
Analog Input Range (Load Cell Rated Output)	0.0 to 1.0mV/V, 0.0 to 2.0mV/V, 0.0 to 3.0mV/V							
	Analog Input Range		Digital Output Value	Maximum Weighing Capacity Output Value	Maximum Resolution			
I/O Characteristics Maximum Resolution	Load Cell Rated Output	0 to 1.0mV/V 0 to 2.0mV/V 0 to 3.0mV/V	0 to 10000	-99999 to 99999	0.5µА 1.0µА 1.5µА			
Accuracy (Accuracy Relative to Maximum Analog Output Value)	Nonlineality: Within ±0.01%/FS (Ambient temperature 25°C); Zero drift: Within ±0.25µV/°C RTI; Gain drift: Within ±15 ppm/°C							
Conversion Speed	10ms							
Accuracy (Accuracy Relative to Analog Input (Load Cell Rated Output) of a Module)	Nonlineality: Within ±0.01%/FS (Ambient temperature 25°C); Zero drift: Within ±0.25µV/°C RTI; Gain drift: Within ±15 ppm/°C							
I/O Device Points Occupied	16 points							
Connected Terminal	terminal block							
Applicable Solderless Terminals	R1.25-3 (A solderless terminal cannot be used)							
Internal Current Consumption (5VDC)	0.48A							
External Power Supply	nal Power Supply 24VDC +20%, -15%; Ripple, spike within 500mVp-p; Inrush current: 5.2A, within 300µs, 0.3A							
Weight (kg) 0.17								
Base Unit Slots Occupied	1							