



Features

- Standard 1/8 DIN size (48 x 96 mm).
- Single display and multi display types are selectable.
- Measurement range can change by input range settings.
- Input, output, and power supply specifications can be selected according to your application.

Ordering Code

A5 ① ② ③ - ④ - ⑤

Series	① Power supply	② Display	③ Output option	④ Input	⑤ Suffix code	Description
A5						A5000 series
	1					100–240 V AC $\pm 10\%$
	2					9–60 V DC
		1				Single display
		2				Multi display
			0			None
			1			Comparison outputs
			2			Analog output
			3			RS-232C communication
			4			RS-485 communication
			5			Comparison outputs + Analog output
			6			Comparison outputs + Analog output + RS-232C communication
			7			Comparison outputs + Analog output + RS-485 communication
				01		DC voltage input ± 99.99 mV
				02		DC voltage input ± 999.9 mV / ± 9.999 V / ± 99.99 V / ± 600 V
				03		DC current input ± 9.999 mA / ± 99.99 mA / ± 999.9 mA
				04		AC voltage input (Average) 0–99.99 mV / 0–999.9 mV / 0–9.999 V
				05		AC voltage input (Average) 0–99.99 V / 0–600 V
				06		AC voltage input (True–RMS) 0–99.99 mV / 0–999.9 mV / 0–9.999 V
				07		AC voltage input (True–RMS) 0–99.99 V / 0–600 V
				08		AC current input (Average) 0–9.999 mA / 0–99.99 mA / 0–999.9 mA
				09		AC large current input (Average) 0–5 A
				10		AC current input (True–RMS) 0–9.999 mA / 0–99.99 mA / 0–999.9 mA
				11		AC large current input (True–RMS) 0–5 A
				12		Resistance input 0–99.99 Ω to 0–99.99 k Ω
				13		Thermocouple input K / J / T / R / S / B thermocouple
				14		RTD input Pt100 Ω / JPt100 Ω
				15		Frequency input Open collector / Logic / Magnetic
				16		Frequency input AC voltage 50–500 Vrms
				17		Load cell input Strain gauge 350 Ω
				18		Process signal input 1–5 V / 4–20 mA
				19		Process signal input with 12 V / 24 V sensor power supply *Cannot select code 19 when DC power supply type
				S1		Suffix code

*Suffix code will be 'R1' in case Japanese manual

Input Specifications

DC Measurement

Code	Range	Measurement range	Max. resolution	Input resistance	Max input	Accuracy
01	11	± 99.99 mV	10 μ V	Approx. 100 M Ω	± 100 V	$\pm 0.1\%$ fs
02	12	± 999.9 mV	100 μ V		± 250 V	
	13	± 9.999 V	1 mV		± 600 V	
	14	± 99.99 V	10 mV			
03	15	± 600.0 V	100 mV	Approx. 10 M Ω		$\pm 0.15\%$ fs
	23	± 9.999 mA	1 μ A	Approx. 10 Ω	± 100 mA	$\pm 0.2\%$ fs
	24	± 99.99 mA	10 μ A	Approx. 1 Ω	± 500 mA	
	25	± 999.9 mA	100 μ A	Approx. 0.1 Ω	± 3 A	
18, 19	1V	1–5 V	-	Approx. 1 M Ω	± 100 V	$\pm 0.2\%$ fs
	2A	4–20 mA	-	Approx. 10 Ω	± 100 mA	

Power supply for sensor (Code 19 only)	12 V DC $\pm 10\%$ 50 mA, or 24 V DC $\pm 10\%$ 25 mA
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AC Measurement (Average)

Code	Range	Measurement range	Max. resolution	Input resistance	Max. input	Accuracy
04	11	0–99.99 mV	10 μ V	1 M Ω or more	100 V	$\pm (0.2\% \text{ rdg} + 10 \text{ digits})$
	12	0–999.9 mV	100 μ V		250 V	
	13	0–9.999 V	1 mV		600 V	
05	14	0–99.99 V	10 mV	Approx. 10 Ω	100 mA	$\pm (0.3\% \text{ rdg} + 10 \text{ digits})$
	15	0–600.0 V	100 mV		500 mA	
08	23	0–9.999 mA	1 μ A	Approx. 1 Ω	3 A	$\pm (0.5\% \text{ rdg} + 10 \text{ digits})$
	24	0–99.99 mA	10 μ A	Approx. 0.1 Ω	(CT)	
	25	0–999.9 mA	100 μ A	(CT)	8 A	
09	26	0–5 A	1 mA	(CT)	8 A	

Frequency range	40 Hz to 1 kHz *50 / 60 Hz for 26 range (0–5 A) input
Low cut	99 digits (0 fixed display) *Able to change by setting
Response time	Approx. 1 s

AC Measurement (True–RMS)

Code	Range	Measurement range	Max. resolution	Input resistance	Max. input	Accuracy
06	11	0–99.99 mV	10 μ V	1 M Ω or more	100 V	$\pm (0.2\% \text{ rdg} + 20 \text{ digits})$
	12	0–999.9 mV	100 μ V		250 V	
	13	0–9.999 V	1 mV		600 V	
07	14	0–99.99 V	10 mV	Approx. 10 Ω	100 mA	$\pm (0.3\% \text{ rdg} + 20 \text{ digits})$
	15	0–600.0 V	100 mV		500 mA	
10	23	0–9.999 mA	1 μ A	Approx. 1 Ω	3 A	$\pm (0.5\% \text{ rdg} + 20 \text{ digits})$
	24	0–99.99 mA	10 μ A	Approx. 0.1 Ω	(CT)	
	25	0–999.9 mA	100 μ A	(CT)	8 A	
11	26	0–5 A	1 mA	(CT)	8 A	

Frequency range	40 Hz to 1 kHz *50 / 60 Hz for 26 range (0–5 A) input
Low cut	99 digits (0 fixed display) *Able to change by setting
Crest factor	4:1 at full scale
Response time	Approx. 1 s

*The accuracy and resolution apply to sine waves over 5% of the measurement range.

Resistance Measurement

Code	Range	Measurement range	Max. resolution	Measurement current	Accuracy
12	11	0–99.99 Ω	0.01 Ω	Approx. 5 mA	$\pm 0.2\%$ fs
	12	0–999.9 Ω	0.1 Ω	Approx. 0.5 mA	
	13	0–9.999 k Ω	1 Ω	Approx. 0.05 mA	
	14	0–99.99 k Ω	10 Ω	Approx. 0.005 mA	

Wiring system	2-wire or 4-wire
Open circuit voltage	Approx. 5 V

Thermocouple Measurement

Code	Range	input	Measurement range	Max. resolution	Accuracy
13	KA	K Thermocouple	-50.0 to +199.9°C	0.1°C	$\pm 0.5\%$ fs
	KB	K Thermocouple	-50 to +1200°C	1°C	$\pm 0.2\%$ fs
	J	J Thermocouple	-50 to +1000°C		
	T	T Thermocouple	-50 to +400°C		
	R	R Thermocouple	-10 to +1700°C		$\pm 0.4\%$ fs
	S	S Thermocouple	0 to +1700°C		
	B	B Thermocouple	+100 to +1800°C		

Internal resistance	50 Ω or less
Burnout alarm	--- display
Cold junction compensation error	$\pm 2^\circ\text{C}$ (10–40°C)
Linearizer	Digital linearizer

*The accuracy of range code B applies to temperatures above 500°C.

RTD measurement

Input code 14

Code	Range	input	Measurement range	Max. resolution	Accuracy
14	PA	Pt100 Ω	-100.0 to +199.9°C	0.1°C	±0.15%fs
	JPA	JPt100 Ω			
	PB	Pt100 Ω	-100 to +600°C	1°C	±0.3%fs
	JPB	JPt100 Ω			

External resistance	10 Ω or less per wire
Resistor current	Approx. 1 mA
Linearizer	Digital linearizer
Burnout alarm	Displays [OL] when A or B is disconnected. Displays [---] when C is disconnected.

Frequency measurement

(Open collector / Logic / Magnetic)

Input code 15

Code	Range	Measurement range	Max. resolution	Display refresh time	Accuracy
15	11	0.1–200.0 Hz	0.1Hz	1–10 s	±0.2%fs
	12	1–2000 Hz	1 Hz	1 s	
	13	0.01–20.00 kHz	10 Hz	100 ms	
	14	0.1–200.0 kHz	100 Hz		

Input voltage level	Open collector : L : 1 V or less (5 V, 4.7 kΩ pull-up) Logic : L : 1 V or less, H : 2.5–15 V Magnetic : 0.3–30 Vp-p
Max. allowable input	15 V for Open collector / Logic / Magnetic
Sensor power supply	15 V DC ±10% (within 20 mA)
Prescale	0.001–9.999
Division	1–9999
Duty ratio	0.5

Frequency measurement (AC Pulse)

Input code 16

Code	Range	Measurement range	Max. resolution	Display refresh time	Accuracy
16	11	0.1–200.0 Hz	0.1 Hz	1–10 s	±0.2%fs
	12	1–2000 Hz	1 Hz	1 s	
	13	0.01–20.0 kHz	10 Hz	100 ms	
	14	0.1–200 kHz	100 Hz		

Input voltage level	50–500Vrms
Prescale	0.001–9.999
Division	1–9999
Duty ratio	0.5

Load cell measurement (Strain gauge 350 Ω)

Input code 17

Code	Sensor power	Zero adjustment range	Span adjustment range	Measurement range	Max. resolution	Accuracy
17	DC5V	-0.3– +1.0 mV/V	1.0–3.0 mV/V	0–3 mV/V	0.5 μV / digit	±(0.1%fs +2 digit)
	DC10V				1.0 μV / digit	

Sensor power supply	5 V DC ±5% 15 mA, or 10 V DC ±5% 30 mA (by setting)
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Common Specifications

Display	Main display : Red 7-segment LED (14.2 mm height) Sub display : Green 7-segment LED (8 mm height) Judgment display : HI / GO / LO Function display : ME / PH / DZ / RE
Polarity	"-" is displayed automatically at negative polarity
Display range	-9999 to 9999
Scaling	Offset : ±9999, Full scale : ±9999 (Setting range) *Temperature input : Fixed scaling (cannot change) *Frequency input : Scale by Preset & division setting *Load cell input : Scale adjusting by calibration setting
Over range display	Displays o.L or -o.L
Decimal point	Able to set to any digit *Temperature input type is fixed
Zero display	Leading zero suppression
Operating temperature	0 to +50°C
Operating relative humidity	35–85% RH (Non-condensing)
Power supply	1) 100–240 V AC ±10%, or 2) 9–60 V DC
Power consumption	1) AC power : 100 V AC ±10%, 7 VA max. 240 V AC ±10%, 12 VA max. 2) DC power : 7 W max.
External dimensions	48(H)×96(W)×146.5(D) mm, 1/8 DIN size
Weight	Approx. 450 g

Dielectric strength	AC power : Between Power - Input / output terminal 3000 V AC 1min DC power : Between Power - Input / output terminal 500 V DC 1min Common : Between Input - Output terminal Between Analog output - communication terminal 500 V DC 1min Between case terminals 3000 V AC 1 min Between comparison output terminals 500 V DC 1 min
Insulation resistance	500 V DC, 100 MΩ or more between the above terminals
Compliance directive	EMC Directive 2014/30/EU, LVD (Low Voltage Directive) 2014/35/EU, RoHS Directive 2011/65/EU (EU)2015/863 *CE model only
Sampling rate	Approx. 80 ms (12.5 times/sec) to 10 s (0.1 times/sec) (by setting) *In case RTD measurement, Approx. 160 ms–, In case Thermocouple measurement, Approx. 480 ms–
Number of moving average	Set from [None / 2 / 4 / 8 / 16 / 32]
Display update cycle	Approx. 80 ms (12.5 times/sec) (Based on measurement sampling rate)
Sensor power supply	Frequency input, load cell input, process input (code 19) type only
Standard accessories	Unit sticker No.2
Optional accessories	Front panel cover (WP, WP–3)

External Control Specifications

Hold	Hold the display at any time
Digital zero	Set the display to zero at any time
Peak hold	Hold the [Max.] / [Min.] / [Max. - min.] value

Output Specifications

Comparison Output

Number of outputs	3 points (HI / GO / LO)
Relay contact output specifications	Contact rating : 240 V AC 8 A (resistance load), 30 V DC 8 A (resistance load) Mechanical life : 20 million times or more Electrical life : 50,000 times or more (resistance load)
Judgment value setting	-9999 to 9999
Hysteresis	Can be set in the range of 1–999 digits for each judgment value
Operation speed	Max. 10 ms

Comparison conditions

Conditions for comparison	Judgment result	Comparison output			Relay contact
		HI	GO	LO	
Display value > Upper limit value	HI	ON	OFF	OFF	Normally open / close (a / b)
Upper limit ≥ Display value ≥ Lower limit	GO	OFF	ON	OFF	NO (a contact)
Upper limit ≥ Display value ≥ Lower limit	LO	OFF	OFF	ON	Normally open / close (a / b)

Analog Output

Output type	Load resistance	Accuracy	Ripple
0–1 V	10 kΩ or more	±0.2%fs	±50 mVp-p
0–10 V			
1–5 V	550 Ω or less	±0.2%fs	±25 mVp-p
4–20 mA			

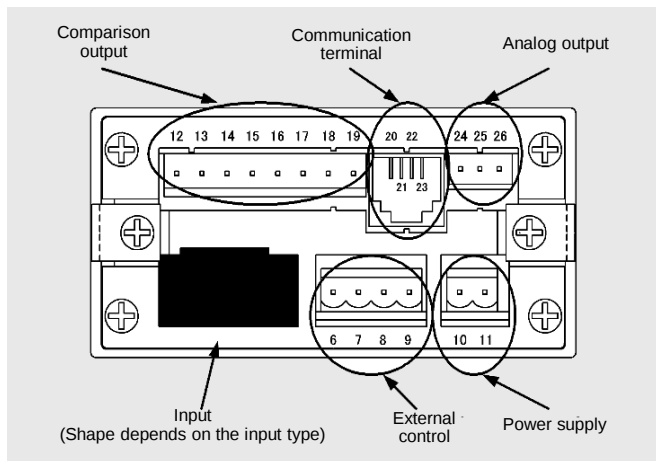
Conversion method	PWM (Pulse Width Modulation)
Resolution	13 bit equivalent
Scaling	Digital scaling
Response time	Approx. 0.5 s (0 to 90%)

*4–20mA DC ripple is a load resistance of 250 Ω (at 20 mA output)

RS-232C, RS-485 Communication

	RS-232C	RS-485
Synchronization method	Start-stop synchronization	
Communication method	Full duplex	2-wire half duplex (Polling selection)
Communication rate	38400 / 19200 / 9600 / 4800 / 2400 bps	
Start bit	1 bit	
Data length	7 bit / 8 bit	
Parity	Even parity (default) / Odd parity / No parity	
Error detection	–	BCC check sum
Stop bit	1 bit / 2 bit	
Character code	ASCII code	
Control procedure	No procedure	
Signal name	TXD, RXD, SG	Non-inverting (+), Inverting (–)
Number of connections	1 unit	Max. 31 units
Line length	15 m	Max. 500 m (Network total) *CE model : Less than 30 m
Delimiter	CR+LF / CR	

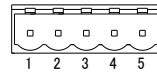
Terminal Connections



AC Current measurement

Input code **08 10**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG

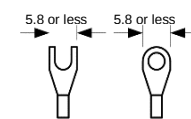


No.	Name	Description
1	HI (23)	Input terminal (+)
2	HI (24)	
3	HI (25)	
4	LO	Input terminal (-)
5		

AC Current measurement

Input code **09 11**

Compatible crimp terminals



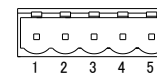
No.	Name	Description
1	HI	Input terminal (+)
2	LO	
3	HI	Input terminal (-)
4	LO	
5		

1 2

Resistance measurement

Input code **12**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



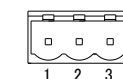
No.	Name	Description
1	HI	Input terminal (+)
2	LO	
3	+S	Source : Constant current line for 4-wire resistance measurement
4	-S	
5	COM	Common terminal (GND for input circuit)

※Short between 1-3 and 2-4 to measure with 2-wire.

Temperature (Thermocouple) measurement

Input code **13**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG

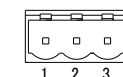


No.	Name	Description
1	+	Input terminal (+)
2	NC	No connection
3	-	Input terminal (-)

Temperature (RTD) measurement

Input code **16**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



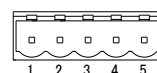
No.	Name	Description
1	A	Input terminal
2	B	
3	C	Conductor resistance removal wire terminal

Frequency measurement

(Open Collector / Logic / Magnetic)

Input code **15**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



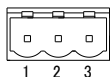
No.	Name	Description
1	HI	Input terminal (+)
2	LO	
3	+15V	Sensor power supply (+)
4	0V	
5	COM	Common terminal (GND for input circuit)

Input

DC Voltage measurement

Input code **01**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG

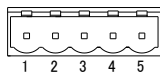


No.	Name	Description
1	HI	Input terminal (+)
2	NC	No connection
3	LO	Input terminal (-)

DC Voltage measurement

Input code **02**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG

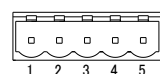


No.	Name	Description
1	HI (12)	Input terminal (+)
2	HI (13)	
3	HI (14)	
4	HI (15)	
5	LO	Input terminal (-)

DC Current measurement

Input code **03**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG

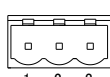


No.	Name	Description
1	HI (23)	Input terminal (+)
2	HI (24)	
3	HI (25)	
4	LO	Input terminal (-)
5		

AC Voltage measurement

Input code **04 06**

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG

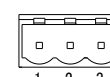


No.	Name	Description
1	HI (11,12)	Input terminal (+)
2	HI (13)	
3	LO	Input terminal (-)

AC Voltage measurement

Input code **05 07**

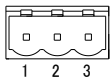
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description
1	HI (14)	Input terminal (+)
2	HI (15)	
3	LO	Input terminal (-)

Frequency measurement (AC Pulse) Input code 16

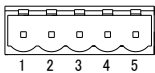
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description
1	HI	Input terminal (+)
2	NC	No connection
3	LO	Input terminal (-)

Strain Gauge measurement (Load cell) Input code 17

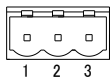
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description	
1	+SIG	Input signal terminal	(+)
2	-SIG		(-)
3	+EXC	Power supply excitation for sensor	(+)
4	-EXC		(-)
5	COM	Common terminal (GND for input circuit)	

Process Signal Measuring Unit Input code 18

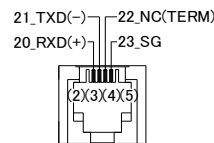
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description		
1	V-IN	Input terminal	(+)	Range 1V (1–5 V)
2	A-IN			Range 2A (4–20 mA)
3	LO		(-)	

Serial Communication

Modular jack: RJ-14(6P 4C)



No.	Name	Description
20	RXD	Receive data terminal
21	TXD	Transmit data terminal
22	NC	No connection
23	SG	Signal ground. Common terminal

No.	Name	Description
20	+	Non-inverting (Data+, A)
21	-	Inverting (Data-, B)
22	TERM	Termination resistor
23	SG	Signal ground. Common terminal

*For RS-485 specifications, a 200 Ω termination resistor is enabled by shorting terminals 21 and 22.

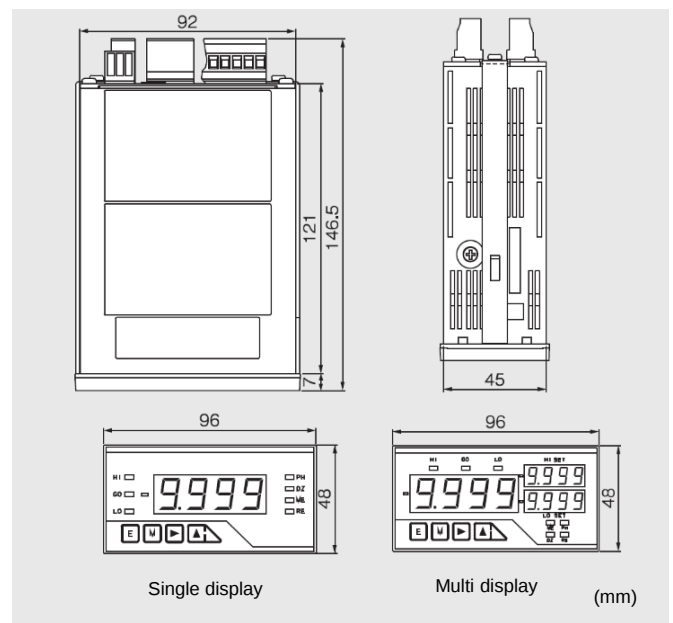
External Controls

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



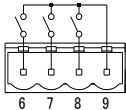
PINS: I/O, ANALOG, ANALOG, ANALOG, ANALOG			
No.	Name	Description	
24	COM	Common terminal for analog output	
25	A-OUT	Output terminal	For current
26	V-OUT		For voltage

Dimensions



External Controls

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description
6	HOLD	Hold function control terminal
7	DZ	Digital zero function (reset function) control terminal
8	PH	Peak hold function control terminal
9	COM	Common terminal for external control

Power Supply

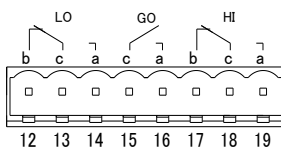
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description
10	POWER	Power terminal (No polarity for both AC and DC)
11		

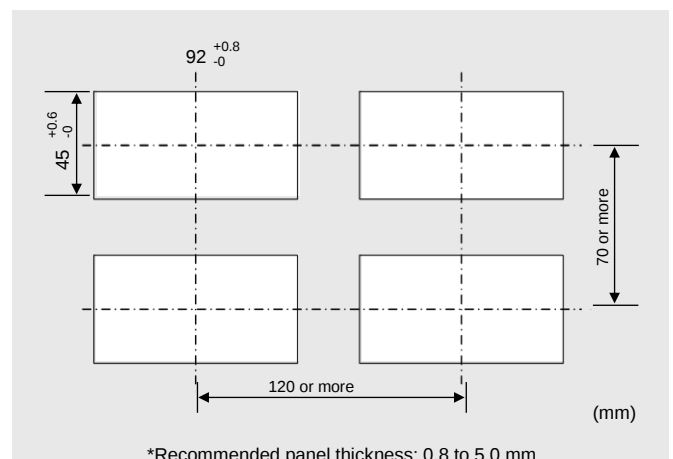
Comparison Output

Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description	
12	LO-b	LO output	Normally close, b contact
13	LO-c		Common terminal
14	LO-a		Normally open, a contact
15	GO-c	GO output	Common terminal
16	GO-a		Normally open, a contact
17	HI-b	HI output	Normally close, b contact
18	HI-c		Common terminal
19	HI-a		Normally open, a contact

Panel Cutout



*Recommended panel thickness: 0.8 to 5.0 mm