



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
					R1	Standard
					S1	Custom (Please contact us)

Input Specifications

DC Measurement

		Input code 01 02 03 18 19				
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		± 100 mA	
03	15	± 600.0 V	100 mV	Approx. 10 M Ω	± 500 mA	$\pm 0.15\%$ 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	± 3 A	
	25	± 999.9 mA	100 μ A	Approx. 0.1 Ω	± 100 V	
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

AC Measurement (Average)

		Input code 04 05 08 09				
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	8 A	
	25	0–999.9 mA	100 μ A	(CT)		
09	26	0–5 A	1 mA	(CT)		

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)

		Input code 06 07 10 11				
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	8 A	
	25	0–999.9 mA	100 μ A	(CT)		
11	26	0–5 A	1 mA	(CT)		

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

		Input code 12			
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

		Input code 13			
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		
	J	J Thermocouple	-50 to +1000°C		$\pm 0.2\%$ fs
	T	T Thermocouple	-50 to +400°C		
	R	R Thermocouple	-10 to +1700°C		$\pm 0.6\%$ fs
	S	S Thermocouple	0 to +1700°C		
	B	B Thermocouple	+100 to +1800°C		$\pm 0.4\%$ fs

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	0.01–20.00 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 type : Fixed scaling (cannot change) *Frequency input type : Scale by Preset / division setting *Load cell input type : 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.
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. 80ms (12.5 times/sec) to 10s (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	1–999 digits for each setpoints
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 /
Lower limit ≤ Display value ≤ Upper limit	GO	OFF	ON	OFF	Normally Close
Lower limit value < Display value	LO	OFF	OFF	ON	(a / b contact)

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			
4–20 mA	550 Ω or less		±25 mVp-p

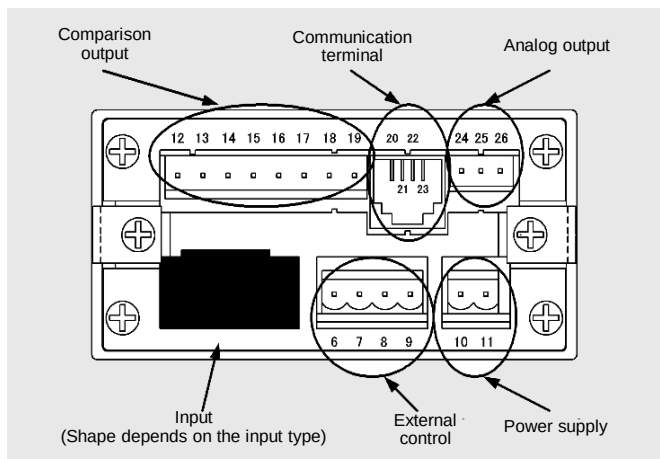
Conversion method	PWM (Pulse Width Modulation)
Resolution	13 bit equivalent
Scaling	Digital scaling
Response time	Approx. 0.5 s (0 to 90%)

*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	

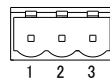
Terminal Connections



AC Voltage measurement

Input code **05 07**

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

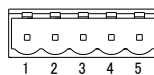


No.	Name	Description
1	HI (14)	Input terminal
2	HI (15)	
3	LO	-

AC Current measurement

Input code **08 10**

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



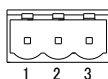
No.	Name	Description
1	HI (23)	Input terminal
2	HI (24)	
3	HI (25)	
4	LO	-
5		

Input

DC Voltage measurement

Input code **01**

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

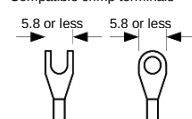


No.	Name	Description
1	HI	Input terminal (+) Range 11 (± 99.99 mV)
2	NC	
3	LO	Input terminal (-)

AC Current measurement

Input code **09 11**

Compatible crimp terminals



No.	Name	Description	
1	HI	Input terminal	Range 26 (0–5 A)
2	LO		

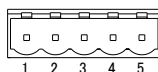


Diagram of the terminal block showing two terminals labeled 1 and 2, each with a cross symbol.

DC Voltage measurement

Input code **02**

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

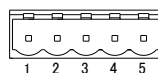


No.	Name	Description	
1	HI (12)	Input terminal	(+)Range 12 (±999.9 mV) Range 13 (±9.999 V) Range 14 (±99.99 V) Range 15 (±600 V)
2	HI (13)		
3	HI (14)		
4	HI (15)		
5	LO		
		(-)	

Resistance measurement

Input code **12**

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



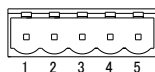
No.	Name	Description
1	HI	Input terminal
2	LO	
3	+S	Source : Constant current line for 4-wire resistance measurement
4	-S	
5	COM	Common terminal (GND for input circuit)

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

DC Current measurement

Input code **03**

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

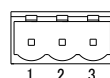


No.	Name	Description		
1	HI (23)	Input terminal	Range 23 (± 9.999 mA)	
2	HI (24)		(+) Range 24 (± 99.99 mA)	
3	HI (25)		Range 25 (± 999.9 mA)	
4	LO		(-)	
5				

Temperature (Thermocouple) measurement

Input code **13**

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

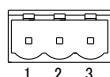


No.	Name	Description
1	+	Input terminal (+)
2	NC	No connection
3	-	Input terminal (-)

Temperature (RTD) measurement

Input code **16**

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

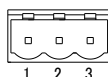


No.	Name	Description
1	A	Input terminal
2	B	
3	C	Conductor resistance removal wire terminal

AC Voltage measurement

Input code **04 06**

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

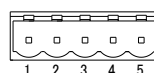


No.	Name	Description
1	HI (11,12)	Input terminal
2	HI (13)	
3	LO	-

Frequency measurement (Open Collector / Logic / Magnetic)

Input code **15**

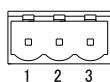
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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

Frequency measurement (AC Pulse) Input code 16

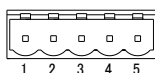
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



No.	Name	Description
1	HI	Input terminal
2	NC	No connection
3	LO	Input terminal

Strain Gauge measurement (Load cell) Input code 17

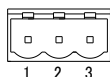
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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

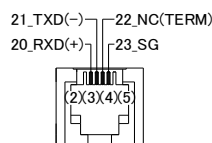
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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)



RS-232C

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

RS-485

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

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

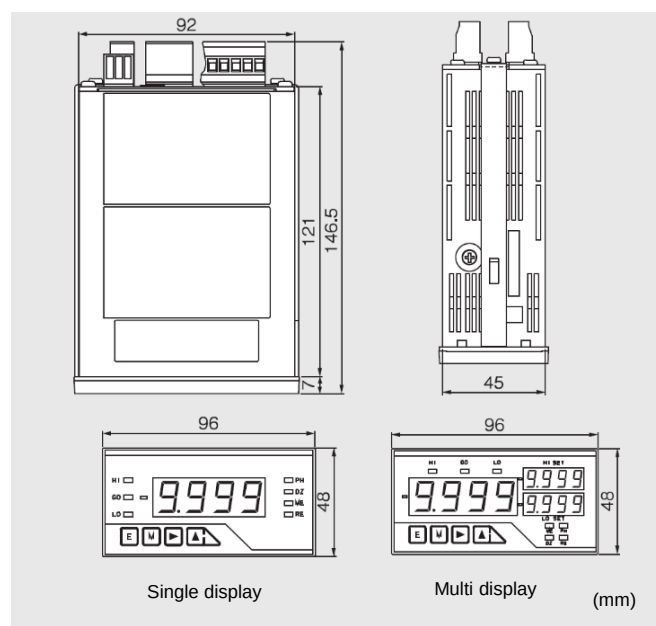
External Controls

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



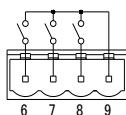
No.	Name	Description	
24	COM	Common terminal for analog output	
25	A-OUT	Output terminal	For current
26	V-OUT		For voltage

Dimensions



External Controls

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



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

Power Supply

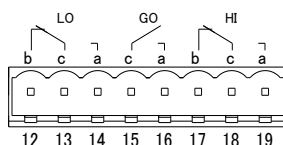
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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	Remarks
12	LO-b	LO output	b contact, Normally close
13	LO-c		Common terminal
14	LO-a	LO output	a contact, Normally open
15	GO-c		Common terminal
16	GO-a	GO output	a contact, Normally open
17	HI-b		b contact, Normally close
18	HI-c	HI output	Common terminal
19	HI-a		a contact, Normally open

Panel Cutout

