



Features

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

Ordering Code

A5 ① ② ③ - ④ - ⑤

Series	Power supply	Display	Output option	Input	Suffix code	Description
A5	1	2	3	4	5	A5000 series
	1					100-240 V AC $\pm 10\%$
	2					9-60 V DC
		1				Single display
		2				Multi display
			0			None
			1			Comparator output
			2			Analog output
			3			RS-232C communication
			4			RS-485 communication
			5			Comparator output + Analog output
			6			Comparator output + Analog output + RS-232C communication
			7			Comparator output + 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 *19 is for AC power supply only. *Please specify the sensor power voltage 12 V or 24 V when order.
					S1	Suffix code

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

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			
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 (Please select when order)

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			

Frequency range 40 Hz to 1 kHz (*50 / 60 Hz for 26 range (0-5 A) input)

Low cut (0 fixed display) 0-9999 digit by setting (*Default setting : 99 digit)

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		
	25	0-999.9 mA	100 μ A	(CT)		
11	26	0-5 A	1 mA			

Frequency range 40 Hz to 1 kHz (*50 / 60 Hz for 26 range (0-5 A) input)

Low cut (0 fixed display) 0-9999 digit by setting (*Default setting : 99 digit)

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		$\pm 0.2\%$ fs
	J	J Thermocouple	-50 to +1000°C		$\pm 0.6\%$ fs
	T	T Thermocouple	-50 to +400°C		$\pm 0.4\%$ fs
	R	R Thermocouple	-10 to +1700°C		
	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	0.01–20.0 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	50–500 Vrms
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
	DC10V				1.0 μV / digit	+2 digit)

Sensor power supply	5 V DC ±5% 15 mA, or 10 V DC ±5% 30 mA
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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 adjust by calibration setting
Over range display	Displays o.L or -o.L
Decimal point	Configurable *Temperature input is fixed per range
Zero display	Leading zero suppression
Operating temperature and humidity range	0 to +50°C, 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 : Power to I/O terminals, 3000 V AC / 1 min DC Power : Power to I/O terminals, 500 V DC / 1 min Common : Input to Output terminals, Analog output to Communication terminals : 500 V DC / 1 min Case to Terminals : 3000 V AC / 1 min Comparator output terminals : 500 V DC / 1 min
Insulation resistance	100 MΩ or more at 500 V DC 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/s) to 10 s (0.1 times/s) *RTD measurement : Approx. 160 ms or more *Thermocouple measurement : Approx. 480 ms or more
Moving average count	Select from [None / 2 / 4 / 8 / 16 / 32]
Display update cycle	Approx. 80 ms (12.5 times/s) (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

Comparator 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	Adjustable 1–999 digits per judgment value
Operation speed	Max. 10 ms

Comparison conditions

Comparison conditions	Judgment result	Comparator 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)
Lower limit value > Display value	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			
4–20 mA	550 Ω or less		±25 mVp-p

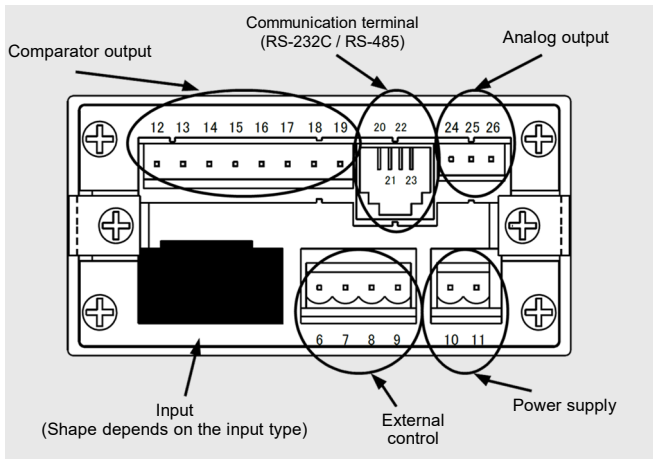
Conversion method	PWM (Pulse Width Modulation)
Resolution	13 bit equivalent
Scaling	Digital scaling
Response time	Approx. 0.5 s (0 to 90%)

*4–20mA DC ripple with a 250 Ω load resistance (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

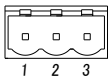


◆Input

■DC Voltage measurement

Input code **01**

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

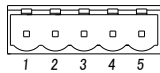


No.	Name	Description
1	HI	Input terminal (+)
2	NC	No connection
3	LO	Input terminal (-)

■DC Voltage measurement

Input code **02**

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

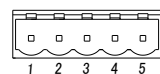


No.	Name	Description
1	HI (12)	Input terminal (+)
2	HI (13)	
3	HI (14)	
4	HI (15)	
5	LO	Input terminal (-)

■DC Current measurement

Input code **03**

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

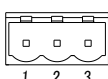


No.	Name	Description
1	HI (23)	Input terminal (+)
2	HI (24)	
3	HI (25)	
4	LO	Input terminal (-)
5	LO	

■AC Voltage measurement

Input code **04 06**

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

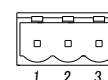


No.	Name	Description
1	HI (11,12)	Input terminal (+)
2	HI (13)	
3	LO	Input terminal (-)

■AC Voltage measurement

Input code **05 07**

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

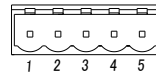


No.	Name	Description
1	HI (14)	Input terminal (+)
2	HI (15)	
3	LO	Input terminal (-)

■AC Current measurement

Input code **08 10**

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



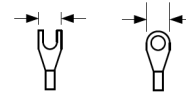
No.	Name	Description
1	HI (23)	Input terminal (+)
2	HI (24)	
3	HI (25)	
4	LO	Input terminal (-)
5	LO	

■AC Current measurement

Input code **09 11**



Applicable solderless terminals
5.8mm or less 5.8mm or less

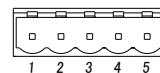


No.	Name	Description
1	HI	Input terminal (+)
2	LO	

■Resistance measurement

Input code **12**

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



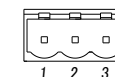
No.	Name	Description
1	HI	Input terminal (+)
2	LO	
3	+S	Source : Constant current line for 4-wire resistance measurement
4	-S	
5	COM	Common terminal (GND for input circuit)

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

■Temperature (Thermocouple) measurement

Input code **13**

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

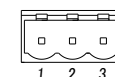


No.	Name	Description
1	+	Input terminal (+)
2	NC	No connection
3	-	Input terminal (-)

■Temperature (RTD) measurement

Input code **14**

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



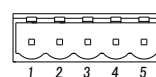
No.	Name	Description
1	A	Input terminal
2	B	
3	C	Conductor resistance removal wire terminal

■Frequency measurement

(Open Collector / Logic / Magnetic)

Input code **15**

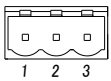
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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

Frequency measurement (AC Pulse) Input code 16

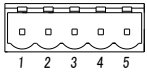
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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

Strain Gauge measurement (Load cell) Input code 17

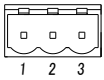
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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

Process Signal Measurement Input code 18

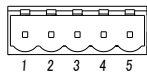
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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

Process signal measurement with 12 V / 24 V sensor power supply Input code 19

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

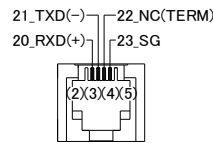


No.	Name	Description
1	V-IN	Input terminal (+) Range 1V (1–5 V)
2	A-IN	Input terminal (+) Range 2A (4–20 mA)
3	LO	Input terminal (-)
4	+EXC	Power supply excitation for sensor (+)
5	-EXC	Power supply excitation for sensor (-)

*Please specify the sensor power voltage (DC12V/DC24V) at the time of order.

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	Signal ground. Common terminal

RS-485

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

*RS-485 : Shorting terminals 21 and 22 activates the 200Ω termination resistor.

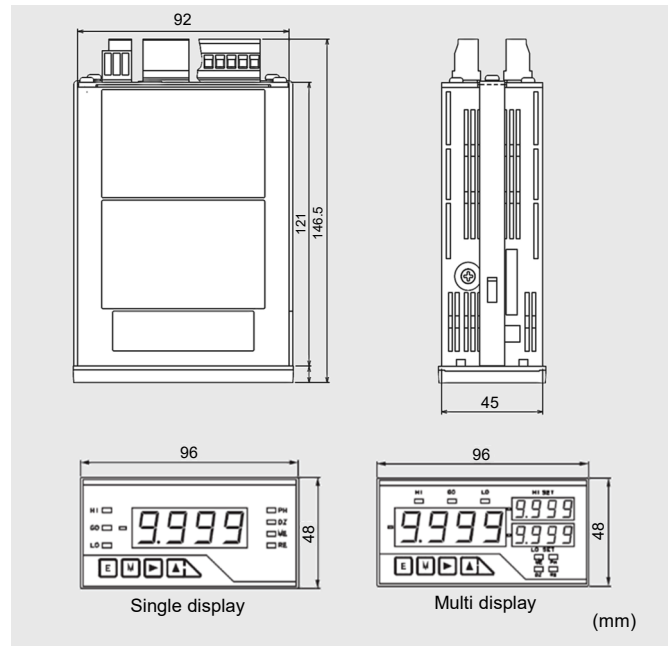
Analog output

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

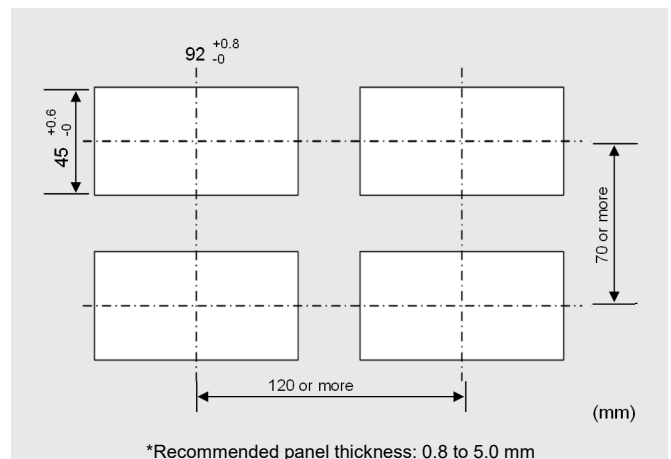


No.	Name	Description
24	COM	Common terminal for analog output
25	A-OUT	Output terminal For current
26	V-OUT	Output terminal For voltage

Dimensions



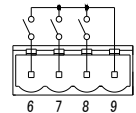
Panel Cutout



*Recommended panel thickness: 0.8 to 5.0 mm

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

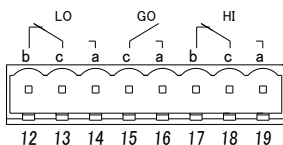
Compatible wire : Solid wire: 28–12 AWG, Stranded wire: 30–12 AWG



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

Comparator output

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



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