

**Shinko**

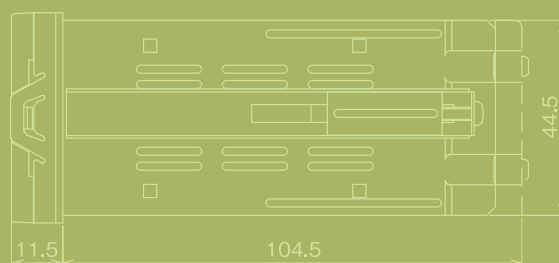
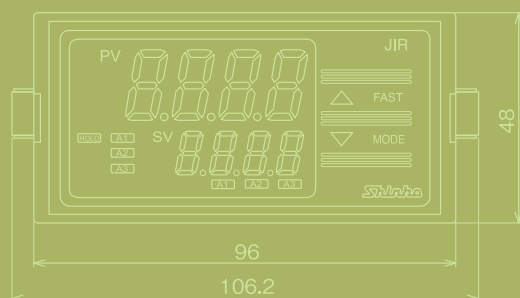
**Digital Indicator**

**JIR-301-M**

# Your Industry. Our Indicators.



Multiple input and process measurement indication  
*3-points of alarm output as standard*



*Standard transmission output (4 to 20mA DC)*

*Dust-proof/Drip-proof (IP66)*



## Features

### Multi-input

Total 18 types of input can be chosen from thermocouple (10 types), RTD (2 types), DC current (2 types) and DC voltage (4 types).

### Alarm output (3 points) is provided as standard.

Alarm output (3 points) is available as standard.

Alarm action type and status Energized/De-energized can be easily switched by key operation. (Default: No alarm action, Energized)

### Standard transmission output.

Converting the input value to analog signal every 0.25 seconds, and outputs the value in DC current.  
4 to 20mA DC is standard output.

### Modbus

Serial communication (C5 option) protocol comprises Shinko protocol and Modbus protocol. For Modbus protocol, RTU mode and ASCII mode are selectable by key operation. Without the communication converter, Modbus compatible instruments can be connected.

### Standard Dust-proof/Drip-proof function (for front part only)

IP66 structure means the indicator can be used even in harsh environment exposed to dust and water splashes.

### Safety standards

UL/C-UL, CE marking

## Specifications

### Model names

|                     |   |     |  |                        |              |
|---------------------|---|-----|--|------------------------|--------------|
| JIR-301-M □ / □ □ □ |   |     |  | Series name: JIR-301-M |              |
| Input               | M |     |  | Multi-input            |              |
| Power supply        | 1 |     |  | 24V AC/DC              |              |
| Option              |   | TA  |  | DC current output      | 0 to 20mA DC |
|                     |   | TV  | Specified transmission output              | 0 to 1V DC             |              |
|                     |   |     |  | 0 to 5V DC             |              |
|                     |   |     | DC voltage output                          | 1 to 5V DC             |              |
|                     |   |     |  | 0 to 10V DC            |              |
|                     |   | C5  | Serial communication (Based on EIA RS-485) |                        |              |
|                     |   | P24 | Insulated power output                     |                        |              |
|                     |   | BK  | Color, black                               |                        |              |
|                     |   | TC  | Terminal cover                             |                        |              |

Please designate the specification from the □, □ □ □ columns.

When adding an option, enter it punctuated by a comma.

· When P24 option is added, Alarm 2 output is not available.

· When C5 option is added, Hold function is not available.

· For the supply voltage, 100 to 240V AC is standard. However, when ordering 24V AC/DC, enter "1" after the input.

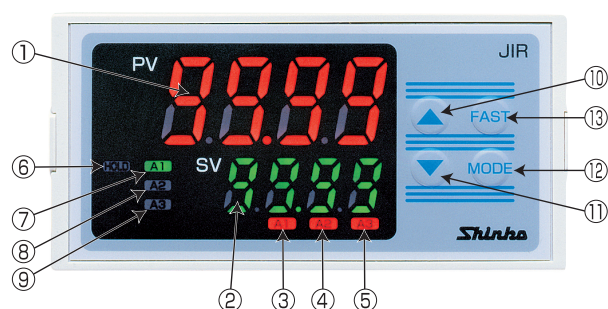
### Rated range

| Input type    |              | Input range                      |                    |
|---------------|--------------|----------------------------------|--------------------|
| Thermo-couple | K            | -200 to 1370 °C                  | -320 to 2500 °F    |
|               | J            | -199.9 to 400.0 °C               | -199.9 to 750.0 °F |
|               | R            | -200 to 1000 °C                  | -320 to 1800 °F    |
|               | S            | 0 to 1760 °C                     | 0 to 3200 °F       |
|               | B            | 0 to 1760 °C                     | 0 to 3200 °F       |
|               | E            | 0 to 1820 °C                     | 0 to 3300 °F       |
|               | T            | -200 to 850 °C                   | -320 to 1500 °F    |
|               | N            | -199.9 to 400.0 °C               | -199.9 to 750.0 °F |
|               | PL - II      | -200 to 1300 °C                  | -320 to 2300 °F    |
|               | C (W/Re5-26) | -200 to 500 °C                   | -300 to 900 °F     |
| RTD           | Pt100        | 0 to 2315 °C                     | 0 to 4200 °F       |
|               |              | -200 to 850 °C                   | -300 to 1500 °F    |
|               | JPt100       | -199.9 to 850.0 °C               | -199.9 to 999.9 °F |
| DC current    | 4 to 20mA DC | -199.9 to 500.0 °C               | -199.9 to 900.0 °F |
|               | 0 to 20mA DC |                                  |                    |
| DC voltage    | 0 to 1V DC   |                                  |                    |
|               | 0 to 10V DC  | -1999 to 9999, -199.9 to 999.9   |                    |
|               | 1 to 5V DC   | -19.99 to 99.99, -1.999 to 9.999 |                    |
|               | 0 to 5V DC   |                                  |                    |

· For DC current and voltage input, scaling is possible and decimal point place can be changed.

· For DC current input, 50Ω shunt resistor (sold separately, model: RES-S02-050) must be externally installed.

### Name and functions of the sections



- ① PV display : Indicates PV (process variable) or characters in the setting mode with the red LED.
- ② SV display : Indicates the alarm value or set value in the setting mode with the green LED.
- ③ A1 action indicator : When A1 output is ON, the red LED lights.
- ④ A2 action indicator : When A2 output is ON, the red LED lights.
- ⑤ A3 action indicator : When A3 output is ON, the red LED lights.
- ⑥ HOLD indicator : When PV HOLD (Hold, Peak hold, Bottom hold) output is ON, the yellow LED lights.
- ⑦ A1 value indicator : When A1 value is indicated, the green LED lights.
- ⑧ A2 value indicator : When A2 value is indicated, the green LED lights.
- ⑨ A3 value indicator : When A3 value is indicated, the green LED lights.
- ⑩ Increase key : Increases the numeric value.
- ⑪ Decrease key : Decreases the numeric value.
- ⑫ Mode key : Selects the setting mode or registers the set value. (To register the set value or selected value, press the MODE key)
- ⑬ Fast key : Makes the set value change faster while holding down the Increase or Decrease key together.

## ■ Standard specifications

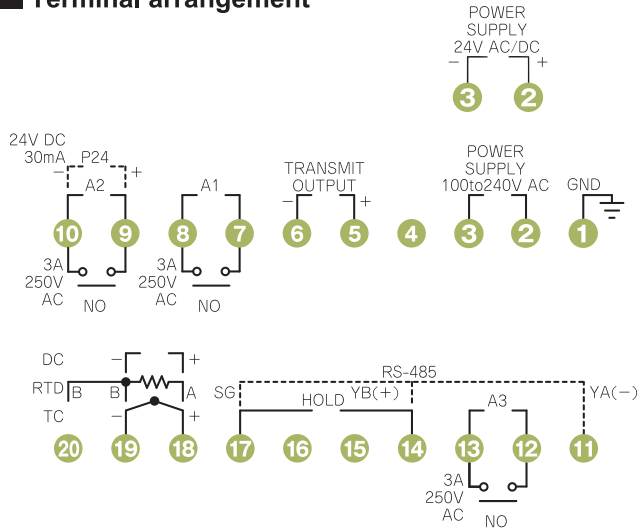
|  |   |
|--|---|
| Display                                      | PV: Red LED 4-digit, character size, 16 x 7.2mm (H x W)    SV: Green LED 4-digit, character size, 10 x 4.8mm (H x W)  |
| Input  | Thermocouple : K, J, R, S, B, E, T, N, PL-II, C (W/Re5-26)    External resistance: 100Ω or less (for B input, 40Ω or less)<br>RTD : Pt100, JPt100 3-wire system (Allowable input lead wire resistance: 10Ω or less per wire)<br>DC current : 0 to 20mA DC, 4 to 20mA DC    Input impedance: 50Ω (Install 50Ω shunt resistor between input terminals)<br>Allowable input current: 50mA or less (when 50Ω shunt resistor is used)   |
|  | DC voltage : 0 to 1V DC    Input impedance: 1MΩ or more<br>Allowable input voltage: 5V or less<br>Allowable signal source resistance: 2kΩ or less<br>0 to 5V DC, 1 to 5V DC, 0 to 10V DC    Input impedance: 100kΩ or more<br>Allowable input voltage: 15V or less<br>Allowable signal source resistance: 100Ω or less  |
|  | Thermocouple : Within ±0.2% of each input span ±1digit, or within ±2°C(4°F), whichever is greater<br>However, R, S inputs, 0 to 200°C(0 to 400°F): Within ±6°C(12°F)<br>B input, 0 to 300°C(0 to 600°F): Accuracy is not guaranteed.<br>K, J, E, T, N inputs, less than 0°C(32°F): Within ±0.4% of each input span ±1digit<br>RTD : Within ±0.1% of each input span ±1digit, or within ±1°C(2°F), whichever is greater<br>DC current, voltage: Within ±0.2% of each input span ±1digit  |
| Input sampling period                        | 0.25 seconds  |
| Alarm 1 (A1)<br>Alarm 2 (A2)<br>Alarm 3 (A3) | Alarm action and status Energized/De-energized can be selected by key operation.<br>· No alarm action<br>· High limit alarm    Setting range: Input range low limit value to input range high limit value<br>· Low limit alarm    Setting range: Input range low limit value to input range high limit value<br>· High limit alarm with standby    Setting range: Input range low limit value to input range high limit value<br>· Low limit alarm with standby    Setting range: Input range low limit value to input range high limit value<br>· High/Low limit range alarm(*1)    Setting range: None<br>When input has a decimal point, negative lower limit set value is -199.9, and positive upper limit set value is 999.9.<br>Setting range for DC current and DC voltage inputs: Scaling low limit value to scaling high limit value.<br>(*1) Only Alarm 3 (A3) can be selected. High/Low limit range alarm is activated depending on A1 and A2 set values.<br>Setting accuracy : The same as indicating accuracy<br>Action : ON/OFF action<br>Hysteresis : Thermocouple, RTD: 0.1 to 100.0(°F)<br>DC current, voltage: 1 to 1000 (The placement of the decimal point follows the selection) |
|  | Output : Relay contact 1a, 3A 250V AC (resistive load), Electric life: 100,000 cycles   |
|  | Converting the input value to analog signal every 0.25 seconds, and outputs the value in DC current.<br>Resolution : 1/12000<br>DC current : 4 to 20mA DC (load resistance, Max. 550Ω)<br>Output accuracy : Within ±0.3% of output span   |
| Supply voltage                               | 100 to 240V AC    50/60Hz, 24V AC/DC    50/60Hz<br>Allowable voltage fluctuation range: 85 to 264V AC, 20 to 28V AC/DC  |
| Power consumption                            | Approx. 8VA   |
| Insulation resistance                        | 10MΩ or more, at 500V DC  |
| Dielectric strength                          | Between Input terminal and Ground terminal, Input terminal and Power terminal----- 1.5kV AC for 1 minute<br>Between Power terminal and Ground terminal ----- 1.5kV AC for 1 minute<br>Between Output terminal and Ground terminal, Output terminal and Power terminal--- 1.5kV AC for 1 minute<br>(Output terminal comprises A1, A2 and A3 output terminals, transmission output terminals and communication terminals)   |
|  | Ambient temperature: 0 to 50°C (32 to 122°F) Ambient humidity: 35 to 85%RH (Non-condensing)   |
|  | UL: Power input rating 100-240V, 24V AC/DC    File No. E159038  |
| Safety standard                              | Material: Flame resistant resin    Color: Light grey  |
| Mounting                                     | Flush, Screw type mounting brackets (Panel thickness: 1 to 8mm)   |
| Setting method                               | Sheet key input   |
| External dimensions                          | W96 x H48 x D100mm  |
| Weight                                       | Approx. 300g  |
| Attached functions                           | Sensor correction, Set value lock, Power failure countermeasure, Self-diagnosis, Automatic cold junction temperature compensation (only thermocouple), Sensor burnout alarm, Input burnout, Warm-up display, Dust-proof/Drip-proof IP66,Hold function   |

## ■ Options

[When ordering, designate an option code]

|  |   |
|--|---|
| Specified transmission output [TA or TV] | Converting the input value to analog signal every 0.25 seconds, and outputs the value in DC current or voltage.<br>If this option is applied, the standard transmission output (4 to 20mA) becomes ineffective.<br>Resolution: 1/12000<br>DC current [TA] : 0 to 20mA DC (load resistance, max. 500Ω)<br>DC voltage [TV] : 0 to 1V DC (load resistance, min. 100kΩ), 0 to 5V DC (load resistance, min. 500kΩ)<br>1 to 5V DC (load resistance, min. 500kΩ), 0 to 10V DC (load resistance, min. 1MΩ)<br>Output accuracy: Within ±0.3% of output span  |
| Serial communication [C5]                | Operates various set value changes, set value readings and settings from external computer.<br>If this option is added, Hold function is not available.<br>Communication interface : Based on EIA RS-485<br>Communication method : Half-duplex communication<br>Synchronization method : Start-stop synchronization<br>Communication speed : 2400/4800/9600/19200bps    Selectable by key operation<br>Parity : Even/Odd/No parity    Selectable by key operation<br>Stop bit : 1, 2    Selectable by key operation<br>Communication protocol : Shinko protocol/Modbus RTU/Modbus ASCII, Selectable by key operation<br>Connectable number of unit : Max. 31 units per host computer<br>Communication error detection : Dual-detection by parity and checksum |
| Insulated power output [P24]             | 24V DC is output from terminals 9 and 10, and this becomes the power source for a 2-wire transmitter.<br>If this option is added, Alarm 2 (A2) output is not available.<br>Output voltage: 24 ±3V DC (when load current is 30mA)<br>Ripple voltage: 200mV (when load current is 30mA)<br>Max. load current: 30mA  |
| Color Black [BK]                         | The standard color of the base and case is light gray, however, if this option is added, the color will be black.   |
| Terminal cover [TC]                      | Electric shock protection terminal cover (Be sure to use this terminal cover by adding this option if operator may touch the back of the controller while running the controller.)  |

## Terminal arrangement



(Dotted lines shows optional terminals)

**GND** Ground terminal

**TRANSMIT OUTPUT** Transmission output terminals

**A1, A2, A3** Alarm 1, Alarm 2 and Alarm 3 output terminals

**P24** Insulated power output (24V DC) terminals

**RS-485** Serial communication (C5) terminals (When the option is added)

**HOLD** Hold function input terminals

**TC** Thermocouple input terminals

**RTD** RTD input terminals

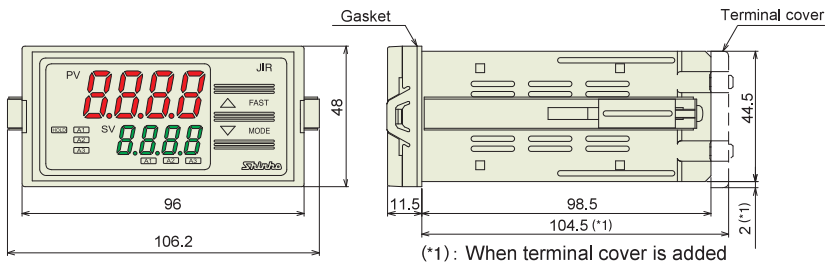
**DC** DC current or DC voltage input terminals



### Caution

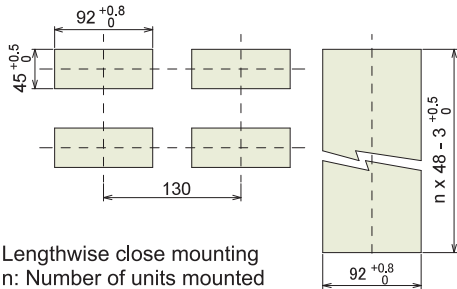
- Terminal block of this unit is designed to be wired from the upper side of the unit.
- When P24 option is added, Alarm 2 (A2) output is unavailable.
- When C5 option is added, Hold function is unavailable.

## External dimensions (Scale: mm)



(\*1): When terminal cover is added

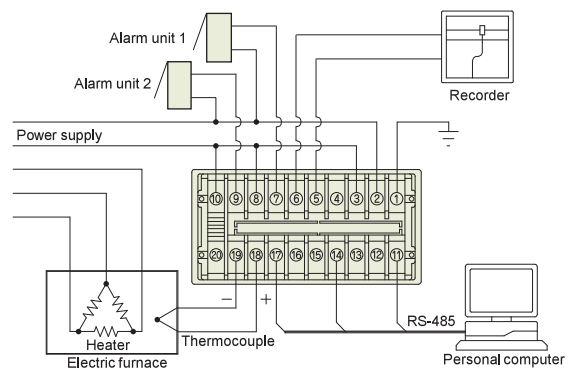
## Panel cutout (Scale: mm)



Lengthwise close mounting  
n: Number of units mounted

**Caution:** For the lengthwise close mounting, Dust-proof/Drip-proof IP66 specification is not fulfilled.

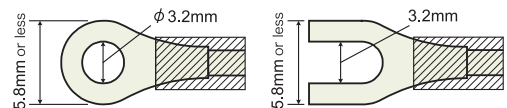
## Wiring example



## Solderless terminal

Use a solderless terminal with an insulation sleeve in which the M3 screw fits as shown below.

The torque should be 0.63N·m



**SAFETY PRECAUTIONS**

- To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after consulting purpose of use with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

### Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.

This catalog is as of March 2009 and its contents are subject to change without notice. If you have any inquiries, please consult us or our agency.

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