和文は裏面をご覧下さい。

INSTRUCTION MANUAL

DIGITAL INDICATOR JIR-301-M

No. JIR31JE3 2019.03

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For detailed usage, refer to the Instruction Manual for the JIR-301-M. Please download the full Instruction Manual from the Shinko Technos website.
http://shinko-technos.co.jp/e/ → Support & Downloads → Downloads → Manuals

Thank you for purchasing our JIR-301-M, Digital Indicator. This manual contains instructions for the mounting, functions, operations and notes when operating the JIR-301-M. To ensure safe and correct use, thoroughly read and understand this manual before using this instrument. To prevent accidents arising from the misuse of this instrument, please ensure the operator receives this manual.

Safety Precautions (Be sure to read these precautions before using our products.)

The safety precautions are classified into 2 categories: "Warning" and "Caution".

⚠ Warning: Procedures which may lead to dangerous conditions and cause death or serious injury, if not carried out properly.

⚠ Caution: Procedures which may lead to dangerous conditions and cause superficial to medium injury or physical damage or may degrade or damage the product, if not carried out properly.

⚠ Warning

- To prevent an electric shock or fire, only Shinko or other qualified service personnel may handle the inner assembly.
- To prevent an electric shock, fire or damage to the instrument, parts replacement may only be undertaken by Shinko or other qualified service personnel.

⚠ SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand this manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after purpose-of-use consultation with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protective 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. Proper periodic maintenance is also required.
- This instrument must be used under the conditions and environment described in this 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.

⚠ Mounting Precautions

This instrument is intended to be used under the following environmental conditions (IEC61010-1)]: Overvoltage category Ⅱ, Pollution degree 2
Ensure the mounting location corresponds to the following conditions:

- A minimum of dust, and an absence of corrosive gases
- No flammable, explosive gases
- No mechanical vibrations or shocks
- No exposure to direct sunlight, an ambient temperature of 0 to 50℃ (32 to 122℉) (No icing)
- An ambient non-condensing humidity of 35 to 85 %RH
- No large capacity electromagnetic switches or cables through which large current is flowing
- No water, oil or chemicals or where the vapors of these substances can come into direct contact with the unit
- Please note that the ambient temperature of this unit – not the ambient temperature of the control panel – must not exceed 50℃ (122℉) if mounted through the face of a control panel, otherwise the life of electronic components (especially electrolytic capacitors) may be shortened.

⚠ Wiring Precautions

- Do not leave wire remnants in the instrument, as they could cause a fire or malfunction.
- Use the solderless terminal with an insulation sleeve in which the M3 screw fits when wiring the instrument.
- The terminal block of the JIR-301-M is designed to be wired from the upper side. The lead wire must be inserted from the upper side of the terminal, and fastened by the terminal screw.
- Tighten the terminal screw using the specified torque. If excessive force is applied to the screw when tightening, the terminal screw or case may be damaged. (0.63 N•m of torque is recommended.)
- Do not pull or bend the lead wire on the terminal side when wiring or after wiring, as it could cause malfunction.
- This instrument does not have a built-in power switch, circuit breaker and fuse. It is necessary to install a power switch, circuit breaker and fuse near the instrument. (Recommended fuse: Time-lag fuse, rated voltage 250 V AC, rated current 2 A)
- For the grounding wire, use a thick wire (1.25 - 2.0 mm^2).
- For a 24 V AC/DC power source, ensure polarity is correct when using direct current (DC).
- Do not apply a commercial power source to the sensor which is connected to the input terminal nor allow the power source to come into contact with the sensor.
- Use a thermocouple and compensating lead wire according to the sensor input specifications of this instrument.
- Use the 3-wire RTD according to the sensor input specifications of this instrument.
- When using a relay contact output type, externally use a relay according to the capacity of the load to protect the built-in relay contact.
- When wiring, keep input wires (thermocouple, RTD, etc.) away from AC power sources or load wires.

⚠ Caution with Respect to Export Trade Control Ordinance

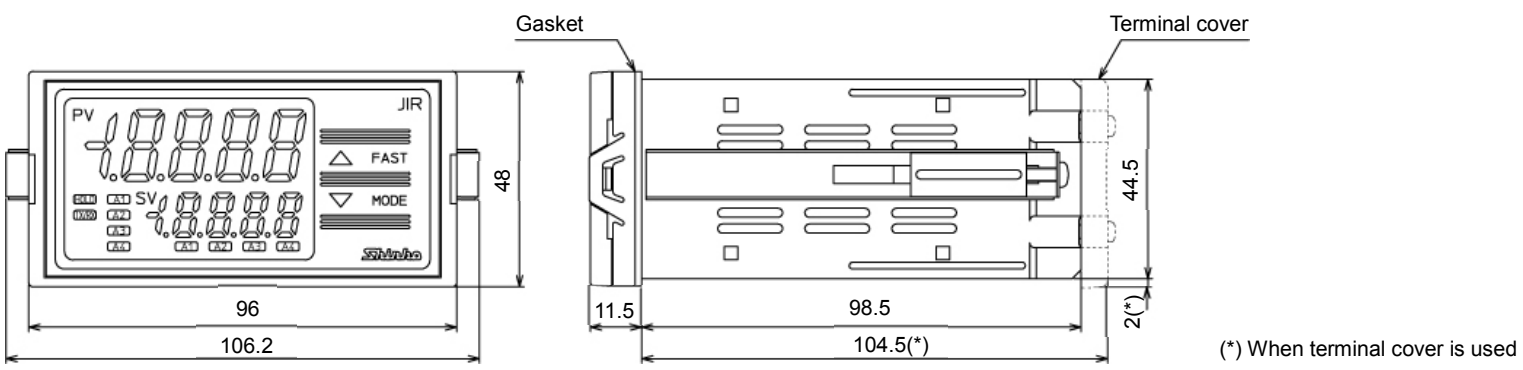
To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument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

Specifications

Power supply	100-240 V AC 50/60 Hz Allowable fluctuation range: 85 to 264 V AC 24 V AC/DC 50/60 Hz Allowable fluctuation range: 20 to 28 V AC/DC
Power consumption	100-240 V AC:Approx.8 VA (When max. options ordered: Approx.10 VA) 24 V AC: Approx.6 VA (When maximum options ordered: Approx. 9 VA) 24 V DC: Approx.4 W (When maximum options ordered: Approx. 7 W)
Ambient temperature	0 to 50℃ (32 to 122℉)
Ambient humidity	35 to 85 %RH (Non-condensing)
Indication accuracy	Thermocouple: Within ±0.2% of each input span ±1 digit, However, R, S input, 0 to 200℃ (32 to 392℉): Within ±6℃ (12℉) B input, 0 to 300℃ (32 to 572℉): Accuracy is not guaranteed. K, J, E, T, N input, Less than 0℃ (32℉): Within ±0.4% of input span ±1 digit RTD: Within ±0.1% of each input span ±1 digit, or within ±1℃ (2℉) whichever is greater Direct current, DC voltage input: Within ±0.2% of input span ±1 digit
Input sampling period	125 ms
Weight	Approx. 300 g
Accessories	Screw type mounting brackets: 1 set Instruction manual excerpt: 1 copy Unit label: 1 label Terminal cover: 1 piece (when the TC option is ordered)
A1 output A2 output A3 output	Relay contact 1a: Control capacity: 3 A 250 V AC (resistive load) Electrical life: 100,000 cycles

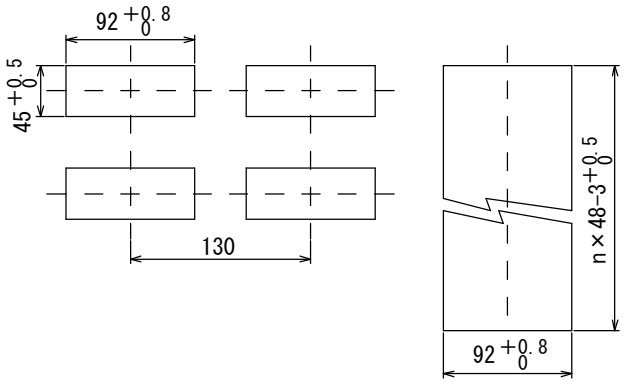
Transmission output 1	Resolution:	12000
	Direct current:	4 to 20 mA DC (Load resistance: Max. 550 Ω)
	Response time:	400 ms+ Input sampling period (0%→90%)
Alarm output 4 (A4 option)	Relay contact 1a:	Control capacity: 3 A 250 V AC(resistive load) Electrical life: 100,000 cycles
Insulated power output (P24 option)	Output voltage:	24±3 V DC (when load current is 30 mA)
	Ripple voltage:	Within 200 mV DC (when load current is 30 mA)
	Max load current:	30 mA DC
Insulated power output (P5 option)	Output voltage:	5±0.5 V DC (when load current is 30 mA)
	Ripple voltage:	Within 200 mV DC (when load current is 30 mA)
	Max load current:	30 mA DC
Power for 2-wire transmitter (DSB option)	Output voltage:	24±3 V DC (when load current is 30 mA)
	Ripple voltage:	Within 200 mV DC (when load current is 30 mA)
	Max load current:	30 mA DC
Transmission output 2 (T□2 option)	Resolution:	12000
	Output accuracy:	Within ±0.3% of transmission output span
	Response time:	400 ms + Input sampling period (0%→90%)
	Direct current:	4 to 20 mA DC (Load resistance: Max. 550 Ω) 0 to 20 mA DC (Load resistance: Max. 550 Ω)
	DC voltage:	0 to 1 V DC (Load resistance: Minimum 100 kΩ) 0 to 5 V DC (Load resistance: Minimum 500 kΩ) 1 to 5 V DC (Load resistance: Minimum 500 kΩ) 0 to 10 V DC (Load resistance: Minimum 1 MΩ)

External dimensions (Scale: mm)



(*) When terminal cover is used

Panel Cutout (Scale: mm)



⚠ Caution

If vertical close mounting is used for the instrument, IP66 specification (Drip-proof/Dust-proof) may be compromised, and all warranties will be invalidated.

Vertical close mounting
n: Number of mounted units

Mounting of the Unit

⚠ Caution

As the case of the JIR-301-M is made of resin, do not use excessive force while tightening screws, or the mounting brackets or case could be damaged. 0.12 N•m of torque is recommended.

Mounting of the Unit

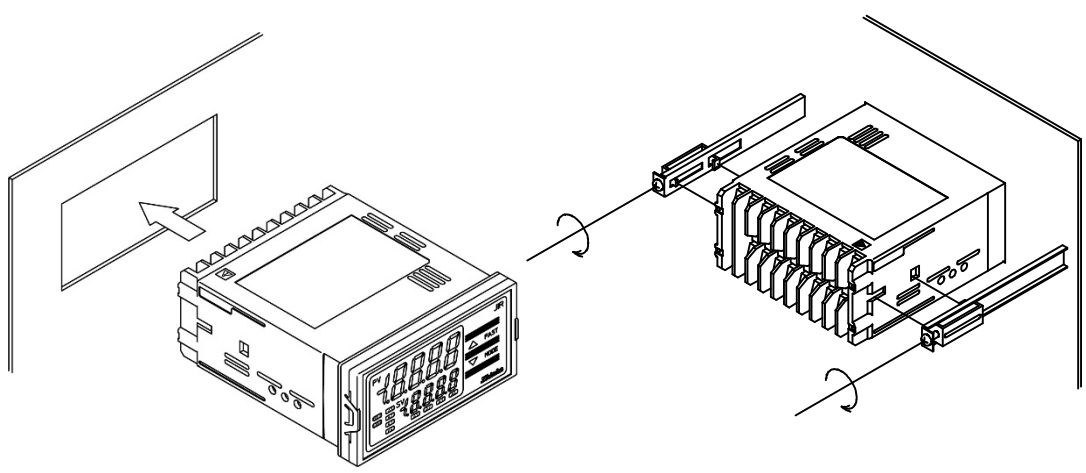
Mount the instrument vertically to the flat, rigid panel to ensure it adheres to the Drip-proof/Dust-proof specification (IP66).

If vertical close mounting is used for the instrument, IP66 specification (Drip-proof/Dust-proof) may be compromised, and all warranties will be invalidated.

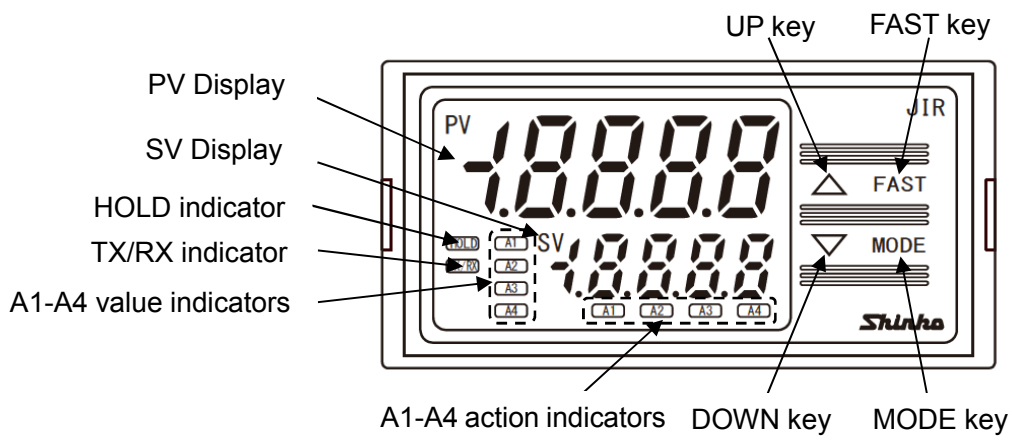
Mountable panel thickness: 1 to 8 mm

(1) Insert the instrument from the front side of the control panel.

(2) Attach the mounting brackets by the slots on the right and left sides of the case, and secure the instrument in place with the screws.
0.12 N•m of torque is recommended.



Name and Functions



Display, Indicator

Name	Description
PV Display	Indicates PV (process variable) or characters in the setting mode with the red LED.
SV Display	Indicates A1/A2/A3/A4 value or the set value in the setting mode with the green LED.
HOLD indicator	When PV is held (HOLD, Peak HOLD, Bottom HOLD), the yellow LED lights.
TX/RX indicator	The yellow LED lights during Serial communication (C5 option) TX (transmitting) output.
A1 value indicator	When A1 value is indicated on the SV Display, the green LED lights.
A2 value indicator	When A2 value is indicated on the SV Display, the green LED lights.
A3 value indicator	When A3 value is indicated on the SV Display, the green LED lights.
A4 value indicator	When A4 value is indicated on the SV Display, the green LED lights. (A4 option)
A1 action indicator	When A1 output is ON, the red LED lights. Flashes during A1 output HOLD.
A2 action indicator	When A2 output is ON, the red LED lights. Flashes during A2 output HOLD.
A3 action indicator	When A3 output is ON, the red LED lights. Flashes during A3 output HOLD.
A4 action indicator	When A4 output is ON, the red LED lights. Flashes during A4 output HOLD. (A4 option)

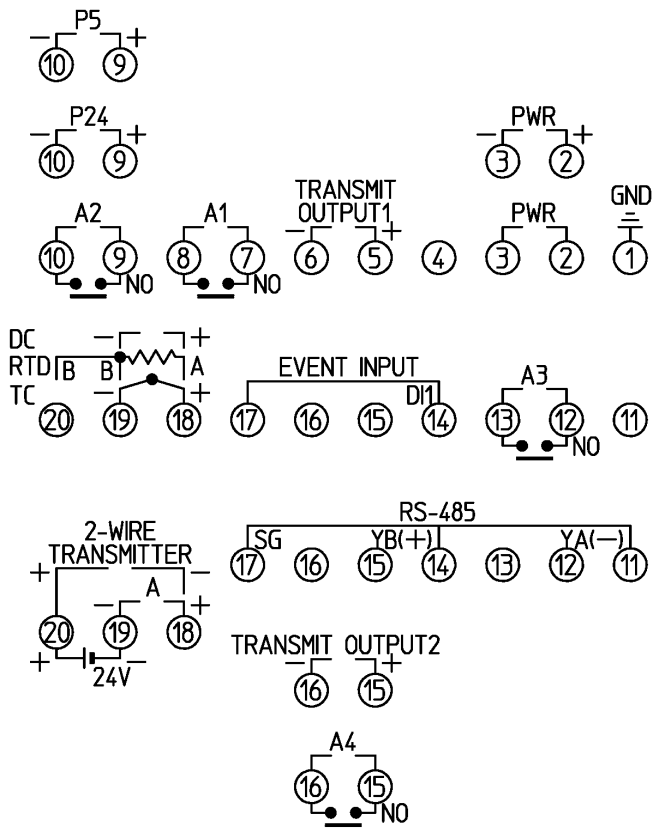
Key

Name	Description
UP key	Increases the numeric value. If High/Low limit range alarm is selected in [A4 type], and if the SV Display indicates A4 value, the SV Display indicates A4 high limit value while the UP key is pressed.
FAST key	Makes the set value change faster while holding down the UP/DOWN key and FAST key together.
DOWN key	Decreases the numeric value.
MODE key	Selects the setting mode, and registers the set value.

Terminal Arrangement

⚠ Warning

- Turn the power supply to the instrument off before wiring or checking. Working on or touching the terminal with the power switched on may result in severe injury or death due to electrical shock.
- Tighten the terminal screw using the specified torque. 0.63 N•m of torque is recommended.



Terminal Code	Description
GND	Ground
PWR	Power supply voltage 100 to 240 V AC or 24 V AC/DC For a 24 V AC/DC power source, ensure polarity is correct when using direct current (DC).
TRANSMIT OUTPUT1	Transmission output 1
A1	A1 output
A2	A2 output
A3	A3 output
EVENT INPUT	Event input
TC	Thermocouple input
RTD	RTD input
DC	Direct current input, DC voltage input **For direct current input (Externally mounted shunt resistor), connect a 50 Ω shunt resistor between input terminals.**
P24	Insulated power output 24 V (P24 option)
P5	Insulated power output 5 V (P5 option)
RS-485	Serial communication (RS-485)(C5 option)
TRANSMIT OUTPUT2	Transmission output 2 (T□2 option)
A4	A4 output (A4 option)
A	Direct current input (DSB option)
24V	Power for 2-wire transmitter (DSB option)

Selection Item

Set value lock	
----	Unlock
Loc 1	Lock 1
Loc2	Lock 2
Loc3	Lock 3
Communication protocol	
noñL	Shinko protocol
ñodA	MODBUS ASCII mode
ñodr	MODBUS RTU mode
bñ̄L	Shinko protocol (Block read available)
bñdA	MODBUS ASCII mode (Block read available)
bñdr	MODBUS RTU mode (Block read available)
Communication speed	
□□24	2400 bps
□□48	4800 bps
□□96	9600 bps
□192	19200 bps
□384	38400 bps
Parity	
nonE	No parity
EvEn	Even
odd□	Odd
Stop bit	
□□□1	1 bit
□□□2	2 bits
Input type	
t□□C	K -200 to 1370℃
t□.C	K -200.0 to 400.0℃
J□□C	J -200 to 1000℃
r□□C	R 0 to 1760℃
S□□C	S 0 to 1760℃
b□□C	B 0 to 1820℃
E□□C	E -200 to 800℃

T□.C	T -200.0 to 400.0℃
n□□C	N -200 to 1300℃
PL2C	PL-Ⅱ 0 to 1390℃
c□□C	C(W/Re5-26) 0 to 2315℃
Pt.C	Pt100 -200.0 to 850.0℃
JPt.C	JPt100 -200.0 to 500.0℃
Pt□C	Pt100 -200 to 850℃
JPtC	JPt100 -200 to 500℃
t□□F	K -320 to 2500℉
t□.F	K -200.0 to 750.0℉
J□□F	J -320 to 1800℉
r□□F	R 0 to 3200℉
S□□F	S 0 to 3200℉
b□□F	B 0 to 3300℉
E□□F	E -320 to 1500℉
T□.F	T -200.0 to 750.0℉
n□□F	N -320 to 2300℉
PL2F	PL-Ⅱ 0 to 2500℉
c□□F	C(W/Re5-26) 0 to 4200℉
Pt.F	Pt100 -200.0 to 1000.0℉
JPt.F	JPt100 -200.0 to 900.0℉
Pt□F	Pt100 -300 to 1500℉
JPtF	JPt100 -300 to 900℉
420A	4 to 20 mA DC -2000 to 10000 (Externally mounted 50Ω shunt resistor)
020A	0 to 20 mA DC -2000 to 10000 (Externally mounted 50Ω shunt resistor)
0□1V	0 to 1 V DC -2000 to 10000
0□5V	0 to 5 V DC -2000 to 10000
1□5V	1 to 5 V DC -2000 to 10000
0 10V	0 to 10 V DC -2000 to 10000
4201	4 to 20 mA DC -2000 to 10000 (Built-in 50 Ω shunt resistor)
0201	0 to 20 mA DC -2000 to 10000 (Built-in 50 Ω shunt resistor)
Decimal point place	

□□□0	No decimal point
□□0.0	1 digit after decimal point
□0.00	2 digits after decimal point
0.000	3 digits after decimal point
A1/A2/A3/A4 type	
----	No alarm action
H□□□	High limit alarm
L□□□	Low limit alarm
H□□ũ	High limit with standby alarm
L□□ũ	Low limit with standby alarm
ũ1 d□	H/L limit range alarm(A3, A4 only)
A1/A2/A3/A4 Energized/De-energized	
noñL	Energized
rEvS	De-energized
Event input function	
HoLd	HOLD
P_H□	Peak HOLD
b_H□	Bottom HOLD
HLd1	Alarm HOLD 1
HLd2	Alarm HOLD 2
A1/A2/A3/A4 HOLD function	
nonE	Disabled
HoLd	Enabled
Square root function	
nonE	Disabled
USE□	Enabled
A1/A2/A3/A4 output ON/OFF	
oFF□	Output OFF
on□□	Output ON

Key Operation Flowchart