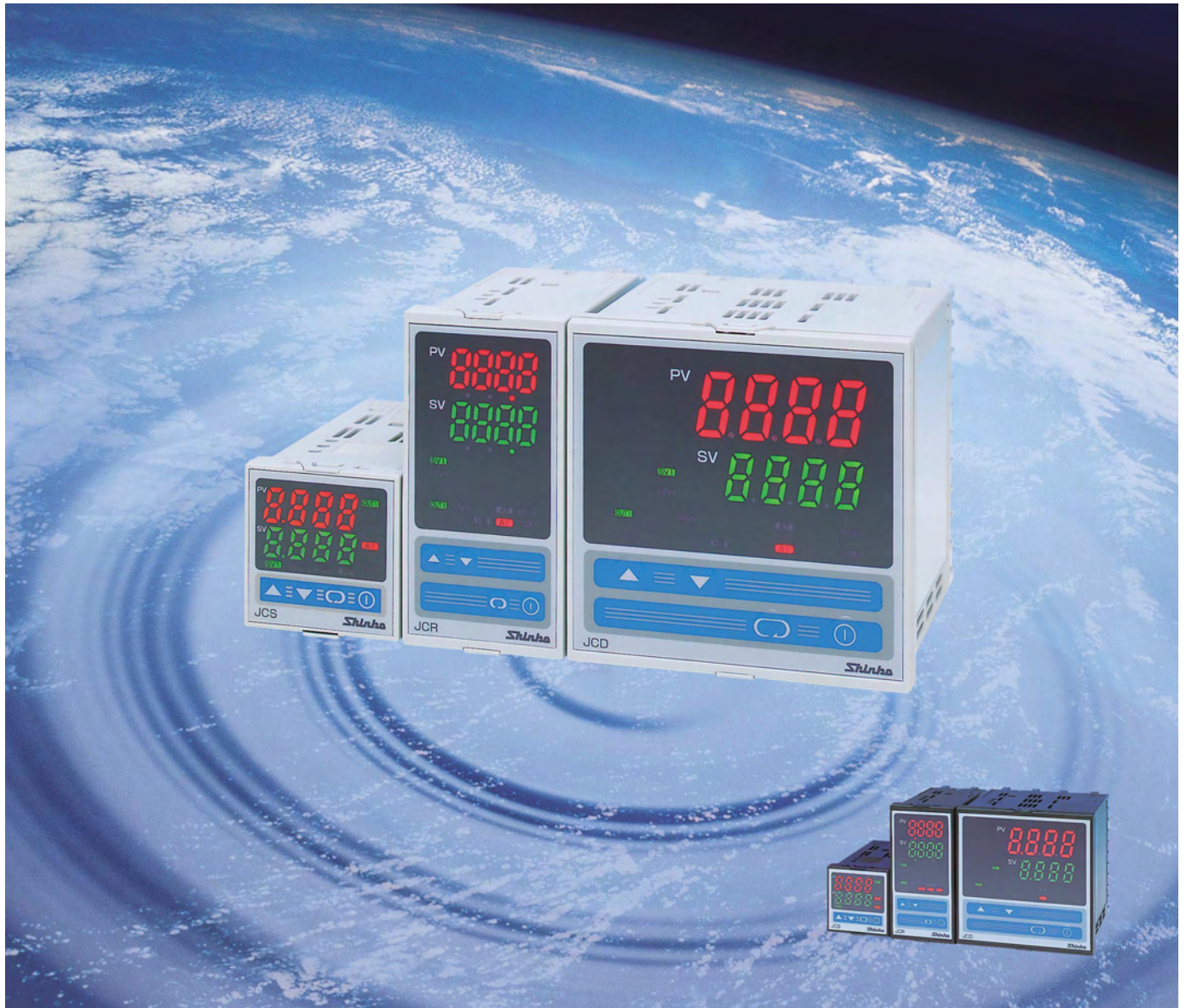


Digital indicating controller



Indicating controller

JC SERIES

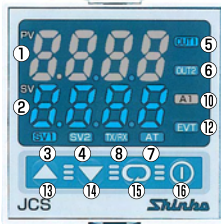


Go Global !

*By meeting global specifications,
our JC series can be used anywhere.*

Shinko

■ Name and sections



[JCS-33A]



[JCR-33A]



[JCD-33A]

- ① : **PV display**
Indicates PV (process variable). While setting, this indicates characters.
- ② : **SV display**
Indicates SV (set value). While setting, it indicates various set values and the status of the selected value.
- ③ : **SV1 indicator**
Lights when SV1 is indicated on the SV display.
- ④ : **SV2 indicator**
Lights when SV2 is indicated on the SV display.
- ⑤ : **OUT 1 indicator**
Lights when control output 1 is ON.
(For current output type, it flashes according to output manipulated variable in 0.25 seconds cycles.)
- ⑥ : **OUT 2 indicator**
Lights when control output 2 is ON.
(For current output type, it flashes according to output manipulated variable in 0.25 seconds cycles.)
- ⑦ : **AT indicator**
Flashes when PID auto-tuning and PD auto-reset are performing.
- ⑧ : **TX/RX indicator**
Flashes when responding to the command from host computer during serial communication (Option).
- ⑨ : **HB indicator**
Lights when Heater burnout alarm (Option) or Sensor burnout is ON.
- ⑩ : **A1 indicator**
Lights when alarm 1 is ON.
- ⑪ : **A2/LA indicator**
Lights when Alarm 2 (Option) is ON and/or Loop break alarm (Option) is ON.
- ⑫ : **EVT indicator (Only JCS-33A)**
Lights when Alarm 2 (Option), Loop break alarm (Option), or Heater burnout alarm (Option) is ON.
- ⑬ : **Increase key**
This key is used to select various setting items or value.
(Increases numerical value.)
- ⑭ : **Decrease key**
This key is used to select various setting items or value.
(Decreases numerical value.)
- ⑮ : **Mode key**
This key is used to switch the setting mode and register the set value.
- ⑯ : **OUT/OFF key**
Performs output ON or OFF.

■ Standard specifications

Display	JCS-33A: PV [Red 4 digits, Character size: 10.2 x 4.9mm (H x W)], SV [Green 4 digits, Character size: 8.8 x 4.9mm (H x W)] JCR-33A: PV [Red 4 digits, Character size: 11.2 x 5.4mm (H x W)], SV [Green 4 digits, Character size: 11.2 x 5.4mm (H x W)] JCD-33A: PV [Red 4 digits, Character size: 18 x 8mm (H x W)], SV [Green 4 digits, Character size: 12.6 x 6mm (H x W)]
Input	Thermocouple----- K, J, R, S, B, E, T, N, PL-II, C (W/Re5-26) External resistance: 100Ω or less (However, for B input: 40Ω or less) RTD----- Pt100, JPt100 3-wire system (Allowable input lead wire resistance per wire: 10Ω or less) DC current----- 0 to 20mA DC, 4 to 20mA DC Input impedance: 50Ω (Connect shunt resistor 50Ω between input terminals.) DC voltage----- 0 to 1V DC Allowable input current: 50mA or less (When shunt resistor 50Ω is used) 0 to 5V DC, 1 to 5V DC, 0 to 10V DC Input impedance: 1MΩ or more Allowable input voltage: 5V or less Allowable signal source resistance: 2kΩ or less Input impedance: 100kΩ or more Allowable input voltage: 15V or less Allowable signal source resistance: 100Ω or less
Accuracy (Setting · Indicating)	Thermocouple ----- Within ±0.2% of each input span ±1 digit or ±2°C (4°F) whichever is greater However, R or S input 0 to 200°C (0 to 400°F): Within ±6°C (12°F) B input 0 to 300°C (0 to 600°F): Accuracy is not guaranteed. K, J, E, T, and N input, less than 0°C (32°F): Within ±0.4% of each input span ±1 digit RTD----- Within ±0.1% of each input span ±1 digit or ±1°C (2°F) whichever is greater DC current and DC voltage----- Within ±0.2% of each input span ±1 digit
Input sampling period	0.25 seconds
Control output (OUT 1)	Relay contact----- 1a1b (JCS-33A: 1a) 3A 250V AC (Resistive load), 1A 250V AC (Inductive load cos φ = 0.4), Electric life: 100,000 times Non-contact voltage----- 12 ⁺ 3V DC Max. 40mA (Short-circuit protected) DC current----- 4 to 20mA DC Load resistance: Max. 550Ω
Control action	Actions mentioned below can be selected by key operation. [Default: PID] PID (with auto-tuning function), PI, PD (with auto reset function), P (with auto reset function), ON/OFF OUT1 proportional band (P)----- Thermocouple: 0 to 1000°C (0 to 2000°F) (ON/OFF action when set to 0) RTD: 0.0 to 999.9°C (0.0 to 999.9°F) (ON/OFF action when set to 0.0) DC current and DC voltage: 0.0 to 100.0% (ON/OFF action when set to 0.0) Integral time (I)----- 0 to 1000 seconds (OFF when set to 0) Derivative time (D)----- 0 to 300 seconds (OFF when set to 0) OUT1 proportional cycle----- 1 to 120 seconds (Not available for DC current output type) OUT1 ARW----- 0 to 100% Hysteresis----- Thermocouple and RTD: 0.1 to 100.0°C (°F) DC current and DC voltage: 1 to 1000 (The placement of the decimal point follows the selection.) OUT1 output limit----- -5 to 105%

Alarm 1 (A1)	<p>Alarm action and Energized/Deenergized can be selected by key operation.</p> <ul style="list-style-type: none"> No alarm High limit alarm (Deviation setting) Setting range: —(Input span) to Input span Low limit alarm (Deviation setting) Setting range: —(Input span) to Input span High/Low limits alarm (Deviation setting) Setting range: 0 to Input span High/Low limit range alarm (Deviation setting) Setting range: 0 to Input span Process high alarm Setting range: Input range low limit value to Input range high limit value Process low alarm Setting range: Input range low limit value to Input range high limit value High limit alarm w/standby (Deviation setting) Setting range: —(Input span) to Input span Low limit alarm w/standby (Deviation setting) Setting range: —(Input span) to Input span High/Low limits alarm w/standby (Deviation setting) Setting range: 0 to Input span <p>When input is with decimal point, the negative low limit value is —199.9 and the positive high limit value is 999.9. When input is DC current or DC voltage, input span is scaling span. When input is DC current or DC voltage, input range low (or high) limit value is scaling low (or high) limit value.</p> <p>Setting accuracy-----The same as the indicating accuracy Action-----ON/OFF action Hysteresis----- Thermocouple and RTD: 0.1 to 100.0°C (°F) DC current and DC 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 times</p>
SV1/SV2 external selection	<p>Selects SV1 or SV2 from the external contact. (For JCS-33A, [Option: SM] needs to be added.) SV1: Contact open (Terminals between 14 and 17 is open) SV2: Contact closed (Terminals between 14 and 17 is closed)</p>
Supply voltage	<p>100 to 240V AC 50/60Hz, 24V AC/DC 50/60Hz Allowable voltage fluctuation: 85 to 264V AC, 20 to 28V AC/DC</p>
Power consumption	<p>Approx. 8VA</p>
Insulation resistance	<p>When control output (OUT1) is Non-contact voltage or DC current output with [Option: DS or DA] is added, insulation test between Control output (OUT1) terminal and Heater burnout alarm output terminal, between Control output (OUT1) terminal and Control output (OUT2) terminal, between Control output (OUT1) terminal and Insulated power output terminal must not be carried out. When control output (OUT1) is Non-contact voltage or DC current output, insulation test between Control output (OUT1) and SV1/SV2 external switch terminal, between control output (OUT1) and communication terminal must not be carried out. When control output (OUT2) is Non-contact voltage or DC current output, insulation test between Control output 2 (OUT2) and SV1/SV2 external switch terminal, between control output (OUT2) and communication terminal must not be carried out. Other combinations: 10MΩ or more, at 500V DC</p>
Dielectric strength	<p>1.5kV AC for 1min between input terminal and ground terminal, between input terminal and power terminal 1.5kV AC for 1min between power terminal and ground terminal 1.5kV AC for 1min between output terminal and ground terminal, between output terminal and power terminal</p>
Environment	<p>Ambient temperature: 0 to 50°C Ambient humidity: 35 to 85%RH (No condensation)</p>
Material · Color	<p>Material: Flame resisting resin Color: Light gray</p>
Mounting method	<p>Screw type mounting bracket is used. (Mountable panel thickness: Within 1 to 15mm)</p>
Setting method	<p>Sheet key input</p>
External dimension	<p>JCS-33A: W48 x H48 x D96.5mm, JCR-33A: W48 x H96 x D98.5mm, JCD-33A: W96 x H96 x D98.5mm</p>
Weight	<p>JCS-33A (Approx.200g), JCR-33A (Approx. 250g), JCD-33A (Approx. 370g)</p>
Attached function	<p>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, Auto/Manual control selection Dust-proof and Drip-proof structure IP66</p>

Options

[Select options according to your needs. When ordering, designate the Option code to be added.]

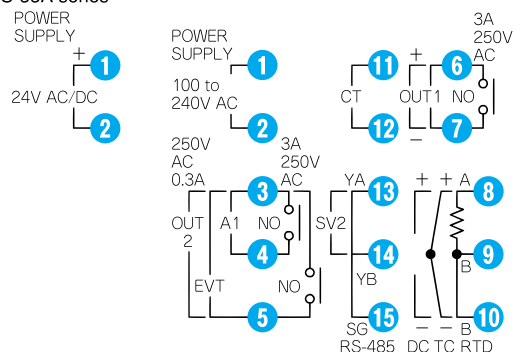
JCS-33A has Event output which involves Alarm 2 (A2), Heater burnout alarm (W), Control output (OUT 2) and Loop break alarm (LA) output.

Alarm 2 (A2) [A2]	<p>When this option is added, 1 alarm point is added. Alarm action type, Setting range and Relay contact type are the same as those of Alarm 1 (A1). See Alarm 1 (A1) section.</p>
Heater burnout alarm [W]	<p>Watches the heater current with CT (current transformer), and detects the burnout. Heater rated current must be selected from 5A, 10A, 20A and 50A. Setting accuracy---Within ±5% of heater rated current Output-----Relay contact 1a 3A 250V AC (Resistive load), Electric life: 100,000 times Self-holding----- Not available Accessories-----CT (for single phase: 1piece)</p>
Control output (OUT2) (Heating/Cooling control) [DR, DS, DA, DT]	<p>If this option is applied, control output 2 is added and enables Heating/Cooling control. There are 4 types of control output i.e. Relay contact output (DR), Non-contact voltage output (DS), DC current output (DA) and Non-contact relay output (DT). The type must be designated when ordering. (Relay contact output, Non-contact voltage output and DC current output can be applied to JCR-33A and JCD-33A series.) [Only Non-contact relay output (DT) can be applied to the JCS-33A series.] Heating control action (Heating side): The same as control output (OUT1) Cooling control action (Cooling side): Proportional band (P)----- 0.0 to 10.0 times the control output (OUT1) proportional band (ON/OFF action when set to 0.0) Integral time (I)-----The same as that of the control output (OUT1). Derivative time (D)-----The same as that of the control output (OUT1). Proportional cycle----- 1 to 120 seconds (Not available for DC current output type) Overlap band/Dead band----- Thermocouple and RTD: -100.0 to 100.0°C (°F) DC current and DC voltage: -1000 to 1000 (The placement of the decimal point follows the selection.) Hysteresis-----0.1 to 100.0°C (°F)</p> <p>Control output</p> <ul style="list-style-type: none"> Relay contact (DR) : 1a 3A 250V AC (Resistive load), 1A 250V AC(Inductive load cos φ =0.4), Electric life:100,000 times Non-contact voltage (DS) : 12³/₅ V DC Max. 40mA (Short-circuit protected) DC current (DA) : 4 to 20mA DC Load resistance: Max. 550Ω Non-contact relay (DT) : 0.3A 250V AC (Resistive load) <p>Cooling action mode (This must be selected by key operation from below.)</p> <ul style="list-style-type: none"> Air cooling (Linear characteristic) Oil cooling (1.5th Power of the linear characteristic) Water cooling (2nd Power of the linear characteristic)
Serial communication [C5]	<p>Various setting status changing, reading and setting of the JC□-33A can be performed from external computer. By combining Shinko programmable controller (Option: SVTC added) with JC□-33A (Option: C5 added), it is possible to transmit the SV (set value) of the programmable controller digitally to the JC□-33A Communication interface----- EIA, RS-485 Communication method----- Half-duplex communication start-stop synchronous Communication speed----- (2400/4800/9600/19200bps) Selectable by key operation</p>

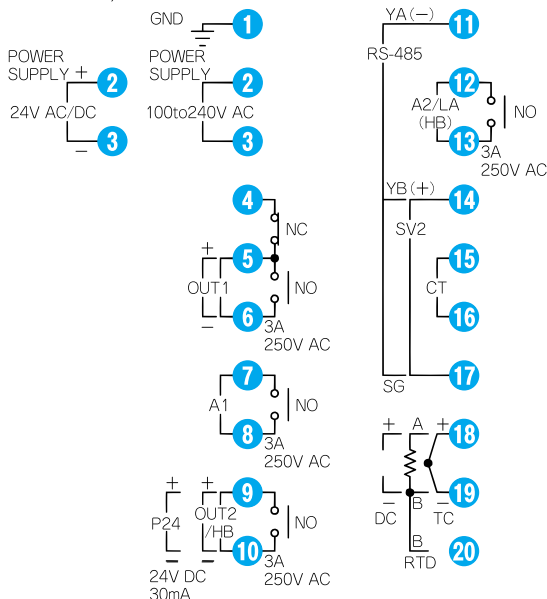
Serial communication [C5]	Parity ----- (Even/ Odd/ No parity) Selectable by key operation Stop bit----- (1 or 2) Selectable by key operation Communication protocol ----- Based on Shinko standard protocol or Modbus (Selectable by key operation) (When Modbus is selected, RTU mode or ASCII mode can be selected by key operation.) Number of connectable units----- A maximum of 31 units per host computer Communication error detection----- Parity check and Checksum
SV1/SV2 external selection [SM]	SV1 and SV2 can be changed by external contact. [Option: SM] can be added only to the JCS-33A. Contact open between terminals 13 and 14 : SV1, Contact closed between terminals 13 and 14 : SV2
Loop break alarm [LA]	This option enables Heater burnout, Sensor burnout and actuator trouble to be detected. Loop break alarm time----- 0 to 200 minutes Loop break alarm action span---- Thermocouple and RTD: 0 to 150.0°C (°F), 0.0 to 150.0°C (°F) DC current and DC voltage: 0 to 1500 Output----- Relay contact 1a 3A 250V AC (Resistive load), Electric life:100,000 times
Insulated power output [P24]	When this option is added, 24V DC is outputted from the terminal 9 to 10 of JCD-33A and JCR-33A and can be the power source of 2-wire transmitter. Output voltage : 24±3V DC (When load current is 30mA.) Ripple voltage : 200mV (When load current is 30mA.) Maximum load current: 30mA
Terminal cover [TC]	Electrical shock protection 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.
Color Black [BK]	Case and base: black.

Terminal arrangement

JCS-33A series



JCR-33A series, JCD-33A series



GND

Ground terminal. JCS-33A series does not have this terminal.

POWER SUPPLY

Power supply terminal.

OUT 1

Output terminal for Control output 1

A 1

Output terminal for Alarm 1

OUT 2 / HB

Output terminal for Control output 2 or Heater burnout alarm (Only when option is added)

P24

Output terminal for isolated power output 24V DC (Only when option is added)

RS-485

Communication terminal for Serial communication (C5) (Only when option is added)

A2 / LA (HB)

Alarm 2, Loop break alarm or Heater burnout alarm output terminal (Only when option is added)

SV2

SV1/SV2 external selection terminal

CT

CT (Current transformer) input terminal (Only when Heater burnout alarm (Option) is added)

TC

Thermocouple input terminal

RTD

RTD input terminal

DC

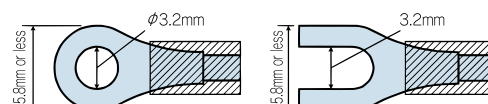
DC current or DC voltage input terminal

EVT

Event (Alarm 2, Heater burnout alarm or Loop break alarm) output terminal
Only for the JCS-33A series

Solderless terminal

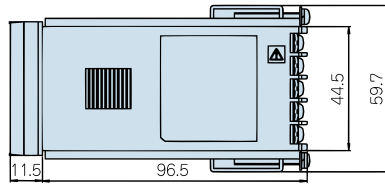
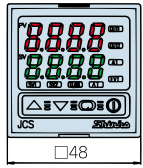
Use a solderless terminal with an insulation sleeve in which an M3 screw fits as shown below.
Tightening torque: 0.6N·m to 1.0N·m



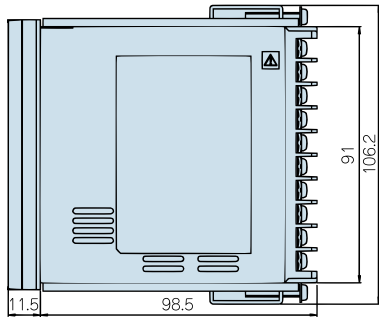
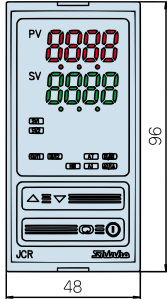
- The terminal board of this instrument is designed to be wired from the left.
- When [Option: P24] is added, [Option: W] or [Option: DR, DS, DA] cannot be applied.
- SV1/SV2 external selection cannot be used when [Option: C5] is added.
([Option: SM] cannot be added to the JCS-33A.)
- Only DT (Non-contact relay) from [Option: DR, DS, DA, DT] can be added to the JCS-33A.
- For DC current output type, [Option: W] cannot be added.

External dimension (unit: mm)

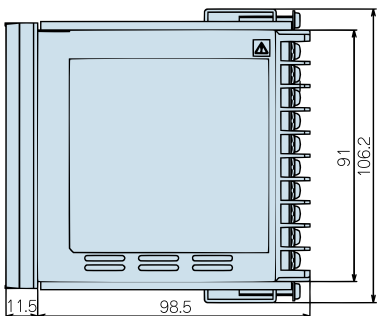
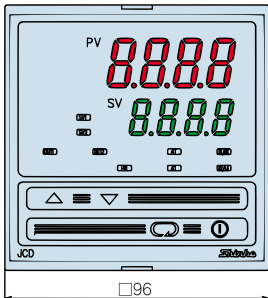
JCS-33A series



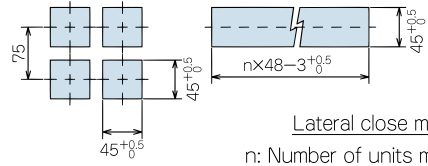
JCR-33A series



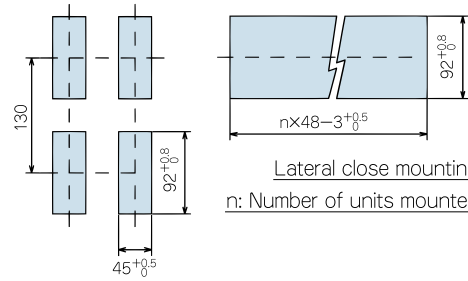
JCD-33A series



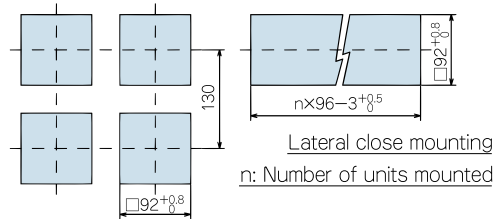
Panel cutout (unit: mm)



Lateral close mounting
n: Number of units mounted



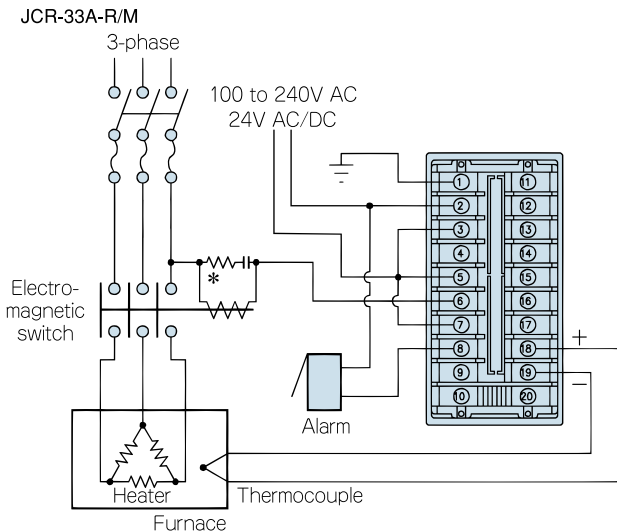
Lateral close mounting
n: Number of units mounted



Lateral close mounting
n: Number of units mounted

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

Wiring example



* Surge absorber: To prevent the unit from harmful effects of unexpected level noise, it is recommended that a surge absorber be installed between the electromagnetic switch coils.



- 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 July 2005. Specifications are subject to change without notice. When inquiring, please consult our agency or the shop where you purchased the unit.

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OVERSEAS DIVISION

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