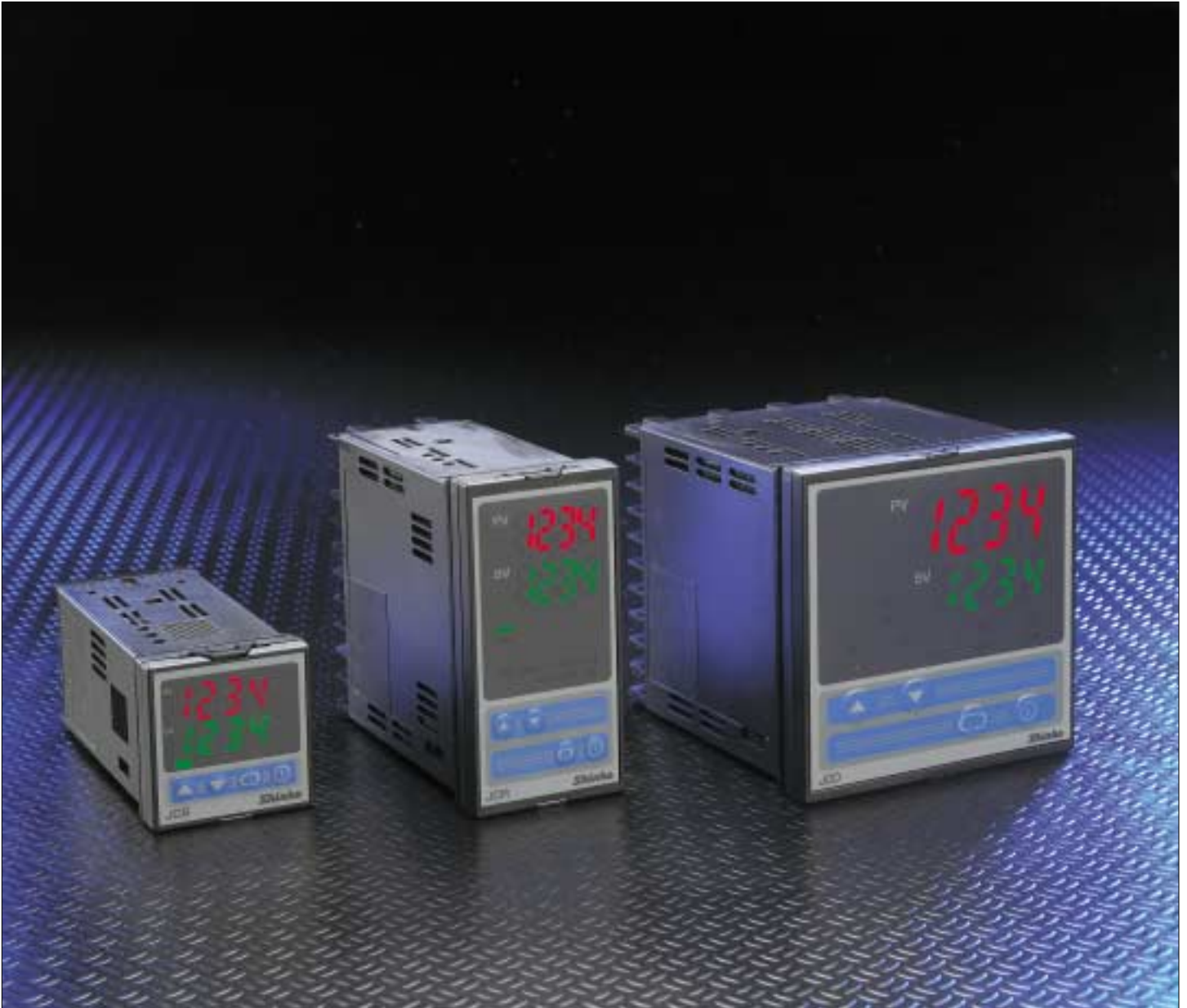


**Digital Indicating Controllers**



# JC Series

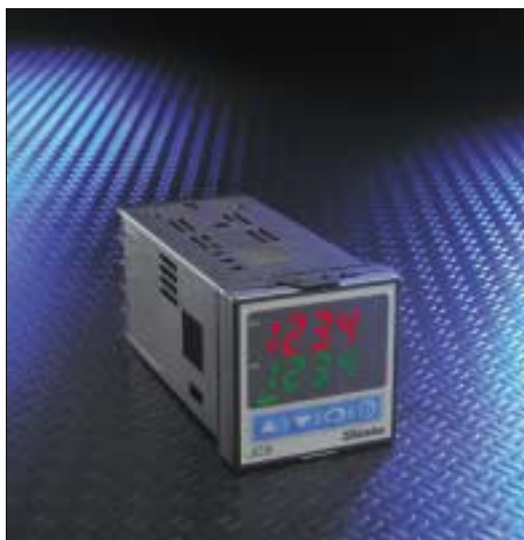


***High performance controllers  
...at the lowest prices anywhere!***

***Shinko***  
North America Ltd.  
[www.shinkona.com](http://www.shinkona.com)

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## Standard Features



**Model JCS**

1/16 DIN (48mm x 48mm)



**Model JCR**

1/8 DIN (48mm x 96mm)



**Model JCD**

1/4 DIN (96mm x 96mm)

### • Structure

Units available in standard DIN sizes (1/16, 1/8 and 1/4 DIN).  
NEMA 4X protective construction.  
Black enclosure.

### • Programmable Alarms

Units feature standard single alarm output with optional second alarm.

### • True Multi-Input

Units feature true multi-input capabilities: 10 thermocouple types, 1 RTD type, 2 current inputs, and 4 voltage inputs.

### • Auto/Manual Control

Manual override allows you to take control of your process at anytime.

### • Large LED Display

All units feature dual display. PV red 4 digits, SV green 4 digits.

### • PID Autotune

All units feature as standard full function third generation PID Autotune. This feature minimizes process overshoot under the most demanding applications.

### • Modbus Protocol With RS485 (Option)

Units offer communications capabilities.

### • Safety Approvals

UL, cUL and CE Safety Approvals.

### • Warranty

All units manufactured to strict ISO standards and offer full 3 year manufacturers warranty.

### • Low Cost

Most advanced price/performance package available.

## Input Range Table

Input Type		Scale	
Thermocouple	K	-200 to 1370°C -199.9 to 400.0°C	-320 to 2500°F -199.9 to 750.0°F
	J	-200 to 1000°C	-320 to 1800°F
	R	0 to 1760°C	0 to 3200°F
	S	0 to 1760°C	0 to 3200°F
	B	0 to 1820°C	0 to 3300°F
	E	-200 to 800°C	-320 to 1500°F
	T	-199.9 to 400.0°C	-199.9 to 750.0°F
	N	-200 to 1300°C	-320 to 2300°F
	PL-II	0 to 1390°C	0 to 2500°F
	C (W/Re5-26)	0 to 2315°C	0 to 4200°F
RTD	Pt100	-199.9 to 850.0°C -200 to 850°C	-199.9 to 999.9°F -300 to 1050°F
DC	4 to 20mA DC 0 to 20mA DC 0 to 1V DC 0 to 10V DC 1 to 5V DC 0 to 5V DC	-1999.9 to 9999, -199.9 to 999.9 -19.99 to 99.99, -1.999 to 9.999	

• For DC current input a shunt resistor (50Ω) is provided as standard.

## General Specifications

<b>Display</b>	JCS-33A: PV [Red 4 digits, Character size: 10.2 x 4.9mm], SV [Green 4 digits, Character size 8.8 x 4.9mm] JCR-33A: PV [Red 4 digits, Character size: 11.2 x 5.4mm], SV [Green 4 digits, Character size 11.2 x 5.4mm] JCD-33A: PV [Red 4 digits, Character size: 18 x 8mm], SV [Green 4 digits, Character size 12.6 x 6.6mm]
<b>Input</b>	<p>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)</p> <p>RTD ----- Pt100, 3-wire system (Allowable input wire resistance per wire: 10Ω or less)</p> <p>DC current ----- 0 to 20mA DC, 4 to 20mA DC Input impedance: 50Ω (Connect shunt resistor 50Ω between input terminals.) Allowable input current: 50mA or less (When shunt resistor 50Ω is used.)</p> <p>DC voltage ----- 0 to 1V DC Input impedance: 1MΩ or greater Allowable input voltage: 5V or less Allowable signal source resistance: 2kΩ or less</p> <p>0 to 5V DC, 1 to 5V DC, 0 to 10V DC Input impedance: 100kΩ or greater Allowable input voltage: 15V or less Allowable signal source resistance: 100Ω or less</p>
<b>Accuracy (Setting • Indicating)</b>	<p>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 and N input less than 0°C (32°F): Within ±0.4% of input span ±1 digit</p> <p>RTD ----- Within ±0.1% of each input span ±1 digit or ±1°C (2°F) whichever is greater</p> <p>DC current and DC voltage ---- Within ±0.2% of each input span ± 1 digit</p>
<b>Input Sampling Period</b>	0.25 seconds
<b>Control Output (OUT 1)</b>	<p>Relay contact - (JCS-33A) 3A 250V AC (Resistive load), 1A 250V AC (Inductive load cos Ø=0.4), Electric life: 100,000 times</p> <p>Non-contact DC voltage ---- 12-14V DC Max. 40 mA (short-circuit protected)</p> <p>DC current ----- 4 to 20mA DC Load resistance: Max. 550Ω</p>
<b>Control Action</b>	<p>Actions mentioned below can be selected by key operation. (Factory default set as PID)</p> <p>PID (with auto-tuning function), PI, PD (with manual Reset function), P (with manual reset function), ON/OFF</p> <p>OUT 1 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 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)</p> <p>Integral time (I) ----- 0 to 1000 seconds (OFF when set to 0)</p> <p>Derivative time (D) ----- 0 to 300 seconds (OFF when set to 0)</p> <p>Proportional cycle ----- 1 to 120 seconds (DC current output type is not available.)</p> <p>OUT1 ARW ----- 0 to 100% FS</p> <p>Hysteresis ----- Thermocouple and RTD: 0.1 to 100.0°C (F) DC current and DC voltage: 1 to 1000 (Decimal point place follows the selection)</p> <p>OUT1 Output limit ----- -5 to 100%</p>
<b>Alarm 1 (A1)</b>	<p>Alarm action and Energized/De-energized can be selected by key operation.</p> <ul style="list-style-type: none"> <li>• Setting accuracy The same as the indicating accuracy.</li> <li>• Action ON/OFF action</li> <li>• 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)</li> <li>• Output Relay contact 3A 250V AC (Resistive load), Electric life: 100,000 times</li> </ul>
<b>Mounting Method</b>	JCS provided with one piece mounting bracket. JCR and JCD includes screw type mounting brackets.
<b>Setting Method</b>	Sheet key input.
<b>Material • Color</b>	Material: Flame resistant resin. Color: Black
<b>Supply Voltage</b>	100 to 240V AC 50/60Hz, 24V AC/DC 50/60Hz Allowable voltage fluctuation: 85 to 264V AC, 20 to 28 AC/DC, Power consumption approximately 8VA
<b>Environment</b>	Ambient temperature: -10 to 50°C Ambient humidity: 35 to 85%RH (No condensation)
<b>External Dimension &amp; Weight</b>	<p>JCS-33A: 48 x 48 x 96.5mm (W x H x D) Approx. 200g</p> <p>JCR-33A: 48 x 96 x 98.5mm (W x H x D) Approx. 250g</p> <p>JCD-33A: 96 x 96 x 98.5mm (W x H x D) Approx. 370g</p>

## Options

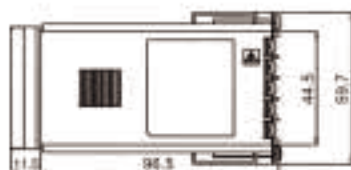
<b>Alarm 2 [A2]</b>	When this option is added, 1 alarm point is added. Alarm action type, Setting range and Relay contact type are the same as those of Alarm 1 (A1). See Alarm 1 (A1) section.
<b>Heater Break Alarm [W]</b>	Watches the heater current with CT (current transformer), and detects burnout. Heater rated current must be selected from 5A, 10A, 20A and 50A. Setting accuracy---Within $\pm 5\%$ of heater rated current Output-----Relay contact 3A 250V AC (Resistive load), Electric life: 100,000 times Self-holding-----Not available Accessories-----CT (Current Transformer)
<b>Control Output (OUT2) (Heating/Cooling Control) [DR,DS,DA,DT]</b>	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. 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 can be applied to JCS-33A series.) Control action (Heating side): The same as control output (OUT1) Control action (Cooling side): Proportional band (P)-- 0.0 to 10.0 times of the control output (OUT1) proportional band (ON/OFF action when set to 0.0) Integral time (I)----- The same as the integral time setting value of the control output (OUT1) Derivative time (D)----- The same as the derivative time setting value of the control output (OUT1) Overlap cycle----- Thermocouple and RTD: -100.0 to 100.0°C (F) Dead band----- DC current and DC voltage: -1000 to 1000 (Decimal point place follows this selection.) Hysteresis----- 0.1 to 100.0°C (F) Control output • Relay contact (DR) : 3A 250V AC (Resistive load), 1A 250V AC (Inductive load $\cos \phi=0.4$ ), Electric life: 100,000 times • Non-contact voltage (DS) 12-14V DC Max. 40mA (short-circuit protected) • DC current (DA) : 4 to 20mA DC Load resistance: Max. 550 $\Omega$ • Non-contact relay (DT) : 3A 250V AC (Resistive load) Only available on model JCS Cooling action mode (This must be selected from below by key operation.) • Air cooling (Linear characteristic) • Oil cooling (1.5 <sup>th</sup> Power of characteristic) • Water cooling (2 <sup>nd</sup> Power of characteristic)
<b>Serial Communication [C5]</b>	Various setting status changing, reading and setting of the JC•-33A can be performed from external computer. By combining programmable controller (Option: SVTC added) with JC•-33A (Option: C5 added), it is possible to transmit the SV (setting value) of the programmable controller digitally to the JC•-33A. Communication interface-----Based on EIA, RS-485 Data transfer rate----- (2400/4800/9600/19200bps) 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.) Number of connectable units-----A maximum of 31 units per host computer
<b>SV1/SV2 External Selection [SM]</b>	Provided as standard feature on model JCR and JCD. Option only on model JCS. Main setting value 1 and 2 can be changed by external contact. Terminal between 13 and 14 is open: SV1, Terminal between 13 and 14 is closed: SV2
<b>Loop Break Alarm [LA]</b>	This option enables Heater burnout, Sensor burnout and Input burnout to be detected. Loop break alarm time-----0 to 200 minutes Loop break alarm span-----Thermocouple and RTD: 0 to 150°C (F), 0.0 to 150.0°C (F) DC current and DC voltage: 0 to 1500 Output-----Relay contact 3A 250V AC (resistive load), 1A 250V AC (Inductive load $\cos \phi=0.4$ ), Electric life: 100,000 times
<b>Transmitter Power Supply [P24]</b>	When this option is added, 24V DC is output from the terminal 9 to 10 of JCD-33A and JCR-33A Output voltage: 24V DC $\pm 3V$ (When load current is 30mA) Ripple voltage: 200mV (When load current is 30mA) Maximum load current: 30mA

***All units feature a full 3 year warranty and lifetime technical support!***

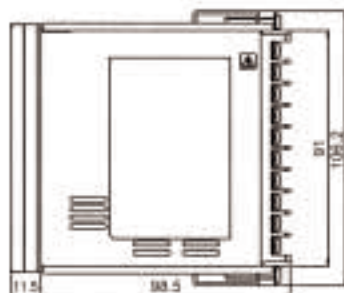


## External Dimensions

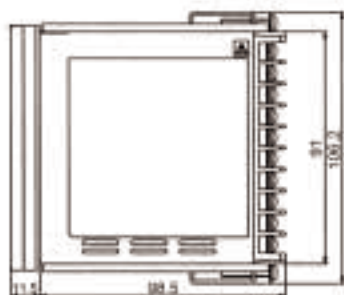
## JCS-33A Series



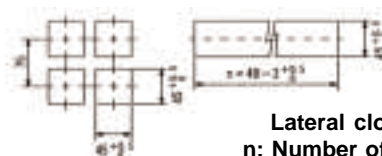
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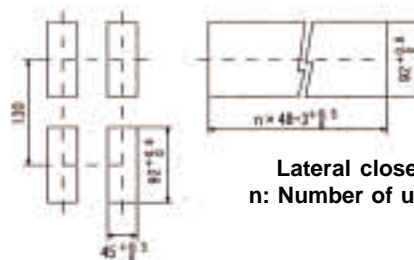
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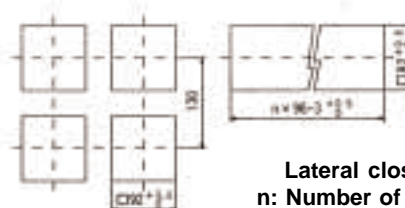
## Panel Cutout



**Lateral close mounting**  
n: Number of units mounted



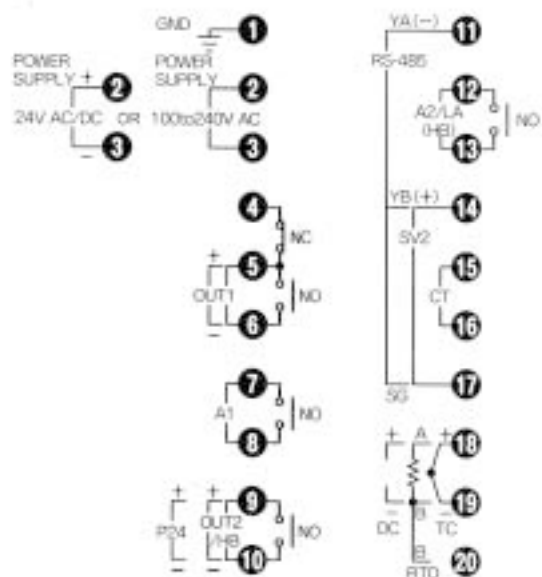
**Lateral close mounting**  
**n: Number of units mounted**



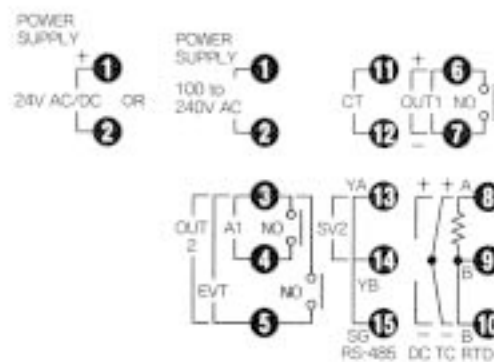
**Lateral close mounting**  
n: Number of units mounted

## Terminal Wiring

## JCR-33A, JCD-33A series

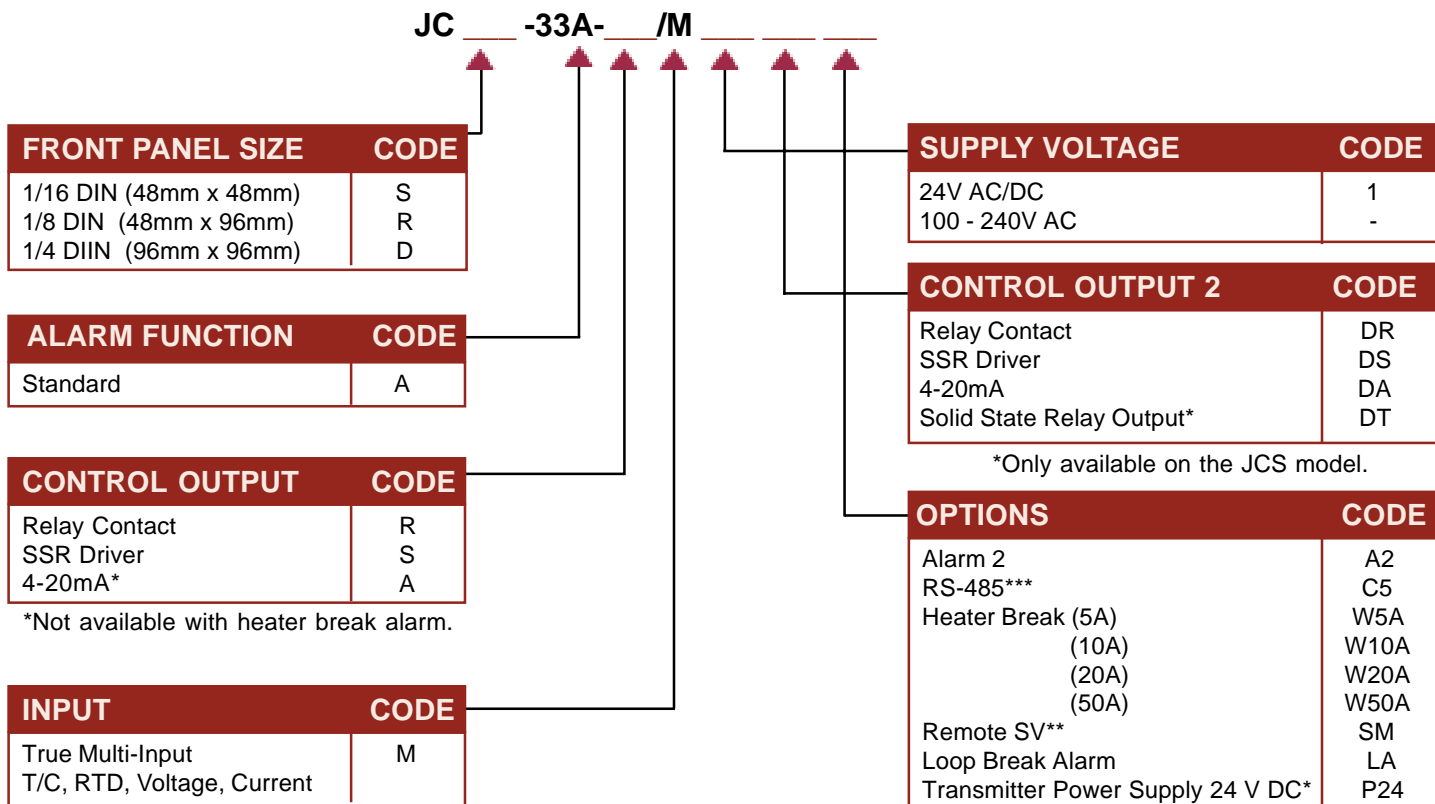


## JCS-33A series



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facility

## Model Number Configuration



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Instrumentation**  
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