ISO 9001
KEMA
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DUTCH COUNCIL
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CE

c **RU** us

JC SERIES

Go Global !

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

Shinko

Features — Enhanced functions and flexibility

Multi-input

Accepts thermocouple (10 types), RTD (2 types), DC current (2 types) and DC voltage (4 types).
As the input sampling period is very short (0.25 seconds), multi-input function enables the controllers to deal with a broader range of processes.

Two externally switchable SVs

As memory function that switches SV1 or SV2 from an external contact signal is provided as standard, it is possible to switch the main set value externally after SV1 and SV2 are registered.
(for JCS-33A: Option)

One standard alarm (relay output) provided

The alarm action is provided as standard for JC☐series.
The alarm action and Energized/Deenergized are easily selectable via the keypad. (Default: No alarm action, Energized)

Safety standard

UL/C-UL and CE marking

More communication functions

· Shinko protocol and Modbus protocol are provided as standard for serial communication (Option: C5)
(For Modbus protocol, RTU mode or ASCII mode can be selected by key operation.)
It is possible to connect Modbus based instruments without using a communication converter.
· When using our programmable controller with option SVTC as a program setter and the JC☐-33A with option C5, JC☐-33 can be used as a multi-point programmable controller.
(Set value digital transmission is enabled, and a maximum of 31 units of JC☐-33A can be connected.)

Dust-proof, Drip-proof structure (Provided as standard)

The controllers can be used even in harsh environments exposed to water and dust. (IP66)

Immediate use

This product is shipped with optimal set values preset for use in the rubber, plastic and packaging industries. Just unpack and turn it on. You can use it immediately.
(Default: Proportional band 10 , Integral time 200 seconds
Derivative time 50 seconds, Control Reverse action.)

■Model name

J C ☐ − 3 3 A - ☐ / ☐ ☐ , ☐☐☐

Series name	S			W48 x H48 x D95mm
	R			W48 x H96 x D98.5mm
	D			W96 x H96 x D98.5mm
Control output (OUT1)		R		Relay contact
		S		Non-contact voltage (for SSR drive)
		A		DC current
Input			M	Multi-input
Supply voltage				100 to 240V AC*
			1	24V AC/DC

Option	A 2	Alarm 2 (A2)	
	W (5A)	Rated current: 5A	Heater burnout alarm
	W (10A)	Rated current: 10A	
	W (20A)	Rated current: 20A	
	W (50A)	Rated current: 50A	
	D R	Control output (OUT2) (Heating/Cooling control output)	
	D S		
	D A		
	D T		
	C 5	Serial communication (Based on EIA RS-485)	
	S M	SV1/SV2 external selection	
	L A	Loop break alarm	
	P 2 4	Isolated power supply output	
	T C	Terminal cover	
	B K	Color Black	

When ordering, select the alphanumeric characters from the table above for ☐.
When adding options, enter the code using a comma (,).
· For DC current output type, [Option: W] cannot be added.
· [Option: P24] cannot be added to the JCS-33A. [Option: SM] can be added only to the JCS-33A.
[Option: SM] is provided as standard for the JCR-33A and JCD-33A.
[Option: SM] is provided as standard for the JCR-33A and JCD-33A.
· For control output (OUT2), only [Option: DT] can be added to the JCS-33A.
· When [Option: C5] is added to the JCR-33A or JCD-33A, SV1/SV2 external selection cannot be used.
∗Standard voltage is 100 to 240V AC. Only when ordering 24V AC/DC, enter [1] after input code.

■Rated scale

Input type		Scale	
Thermocouple	K	−200 to 1370 ℃	−320 to 2500 °F
		−199.9 to 400.0 ℃	−199.9 to 750.0 °F
	J	−200 to 1000 ℃	−320 to 1800 °F
	R	0 to 1760 ℃	0 to 3200 °F
	S	0 to 1760 ℃	0 to 3200 °F
	B	0 to 1820 ℃	0 to 3300 °F
	E	−200 to 800 ℃	−320 to 1500 °F
	T	−199.9 to 400.0 ℃	−199.9 to 750.0 °F
	N	−200 to 1300 ℃	−320 to 2300 °F
	PL-Ⅱ	0 to 1390 ℃	0 to 2500 °F
	C (W/Re5-26)	0 to 2315 ℃	0 to 4200 °F
RTD	Pt100	−200 to 850 ℃	−300 to 1500 °F
		−199.9 to 850.0 ℃	−199.9 to 999.9 °F
	JPt100	−200 to 500 ℃	−300 to 900 °F
		−199.9 to 500.0 ℃	−199.9 to 900.0 °F
DC	4 to 20mA DC	−1999 to 9999, −199.9 to 999.9	
	0 to 20mA DC		
	0 to 1V DC		
	0 to 10V DC	−19.99 to 99.99, −1.999 to 9.999	
	1 to 5V DC		
	0 to 5V DC		

· For DC input and DC voltage input, scaling and decimal point place are changeable.
· For DC current input, connect 50Ω shunt resistor (sold separately) externally.

[Option combination for the JCS-33A]

	A 2	W	D T	C 5	S M	L A	T C	B K
Combination 1	○	○	×	○	×	○	○	○
Combination 2	×	×	○	○	×	×	○	○
Combination 3	○	○	×	×	○	○	○	○
Combination 4	×	×	○	×	○	×	○	○

[Option combination for the JCR-33A and JCD-33A]

	A 2	W	D☐	C 5	L A	P24	T C	B K
Combination 1	○	○	×	○	○	×	○	○
Combination 2	○	×	○	○	○	×	○	○
Combination 3	×	○	○	○	×	×	○	○
Combination 4	○	×	×	○	○	○	○	○

■Name and sections
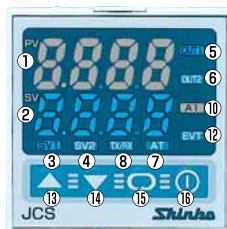
[JCS-33A]   [JCR-33A]   [JCD-33A]

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：OUT1 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：OUT2 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
Used to select various setting items or values.
(Increases numerical value.)

⑭：Decrease key
Used to select various setting items or values.
(Decreases numerical value.)

⑮：Mode key
Used to switch modes and register selection.

⑪：OUT/OFF key
Performs control 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: 100Ωor less (However, for B input: 40Ωor less) RTD---------------------- Pt100, JPt100 3-wire system (Allowable input lead wire resistance per wire: 10Ωor less) DC current-------------- 0 to 20mA DC, 4 to 20mA DC Input impedance: 50Ω (Connect shunt resistor 50Ωbetween input terminals.) Allowable input current: 50mA or less (When shunt resistor 50Ωis used) DC voltage-------------- 0 to 1V DC Input impedance: 1MΩor more Allowable input voltage: 5V or less Allowable signal source resistance: 2kΩor less 0 to 5V DC, 1 to 5V DC, 0 to 10V DC Input impedance: 100kΩor more Allowable input voltage: 15V or less Allowable signal source resistance: 100Ωor less
Accuracy (Setting・Indicating)	Thermocouple --------------------- Within ±0.2% of each input span ±1 digit or ±2℃(4°F) whichever is greater However, R or S input 0 to 200℃(0 to 400°F) : Within ±6℃(12°F) B input 0 to 300℃(0 to 600°F) : Accuracy is not guaranteed. K, J, E, T, and N input , less than 0℃(32°F) : Within ±0.4% of each input span ±1 digit RTD-------------------------------- Within ±0.1% of each input span ±1 digit or ±1℃(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 cosϕ=0.4), Electric life: 100,000 cycles Non-contact voltage----- 12$^{+2}_{0}$V 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℃(0 to 2000°F) (ON/OFF action when set to 0) RTD: 0.0 to 999.9℃(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℃(°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)	Alarm action and Energized/Deenergized can be selected via the keypad. ・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 When input uses a 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. Setting accuracy------ The same as the indicating accuracy Action-------------------- ON/OFF action Hysteresis-------------- Thermocouple and RTD: 0.1 to 100.0℃(°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 cycles
SV1/SV2 external selection	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)
Supply voltage	100 to 240V AC 50/60Hz, 24V AC/DC 50/60Hz　　　Allowable voltage fluctuation: 85 to 264V AC, 20 to 28V AC/DC
Power consumption	Approx. 8VA
Insulation resistance	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
Dielectric strength	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
Environment	Ambient temperature: 0 to 50℃　Ambient humidity: 35 to 85%RH (No condensation)
Safety standard	UL: Power input rating 100-240V AC, 24V AC/DC　File No. E159038
Material・Color	Material: Flame resistant resin　Color: Light gray
Mounting	Screw type mounting bracket. (Mountable panel thickness: Within 1 to 8mm)
Setting method	Sheet key input
External dimension	JCS-33A: W48 x H48 x D95mm, JCR-33A: W48 x H96 x D98.5mm, JCD-33A: W96 x H96 x D98.5mm
Weight	JCS-33A (Approx.200g), JCR-33A (Approx. 250g), JCD-33A (Approx. 370g)
Attached function	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

■Options

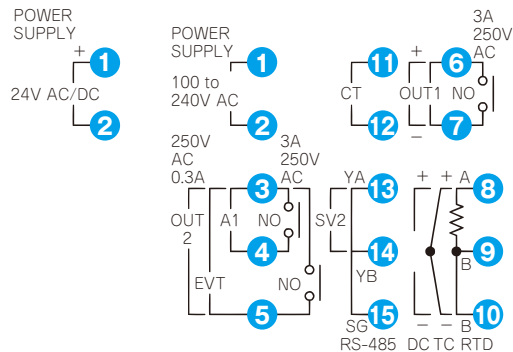[Select options according to your needs. When ordering, designate the Option code to be added.]
JCS-33A has Event output which involves Alarm 2 (A2), Heater burnout alarm (W), Control output (OUT 2) and Loop break alarm (LA) output.

|	
Alarm 2 (A2) [A2]	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.
Heater burnout alarm [W]	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 cycles Self-holding--------- Not available Accessories--------- CT (for single phase: 1 piece)
Control output (OUT2) (Heating/Cooling control) [DR, DS, DA, DT]	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℃(°F) 　　　　　　　　　　　　DC current and DC voltage: -1000 to 1000 (The placement of the decimal point follows the selection.) 　Hysteresis------------------------0.1 to 100.0℃(°F) Control output ・Relay contact (DR) : 1a 3A 250V AC (Resistive load), 1A 250V AC(Inductive load cosϕ=0.4), Electric life:100,000 cycles ・Non-contact voltage (DS) : 12^{+0}_{-0}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) Cooling action mode (This must be selected by key operation from below.) ・Air cooling (Linear characteristic) ・Oil cooling (1.5th Power of the linear characteristic) ・Water cooling (2nd Power of the linear characteristic)
Serial communication [C5]	Various setting status changing, reading and setting of the JC□-33A can be performed from an 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

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℃(°F), 0.0 to 150.0℃(°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
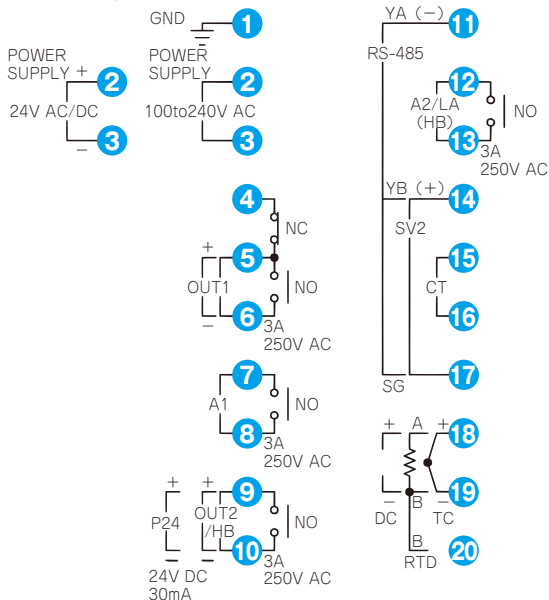
GND
Ground terminal. JCS-33A series does not have this terminal.

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 Insulated 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
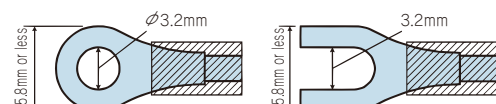Only for the JCS-33A series

⚠ · 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.
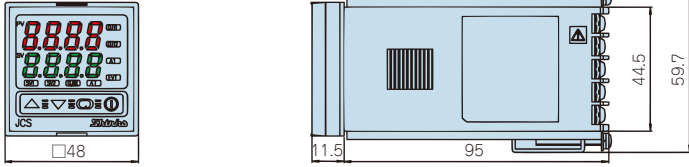
■Solderless terminal

Use a solderless terminal with an insulation sleeve in which the M3 screw fits.
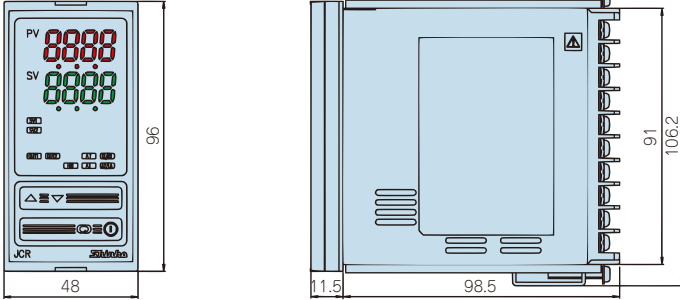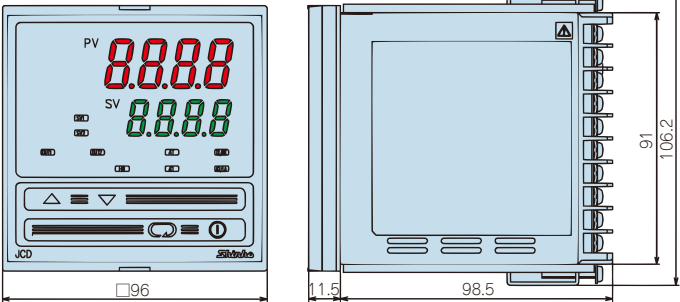Tightening torque should be approx. 0.63N·m.

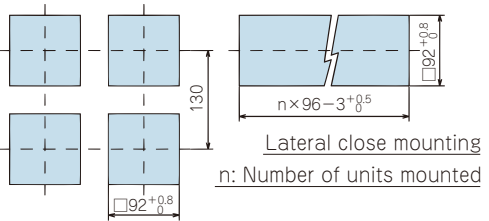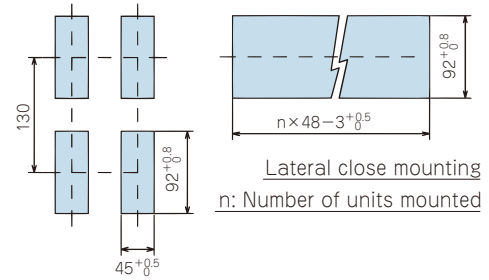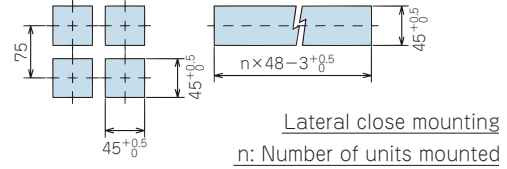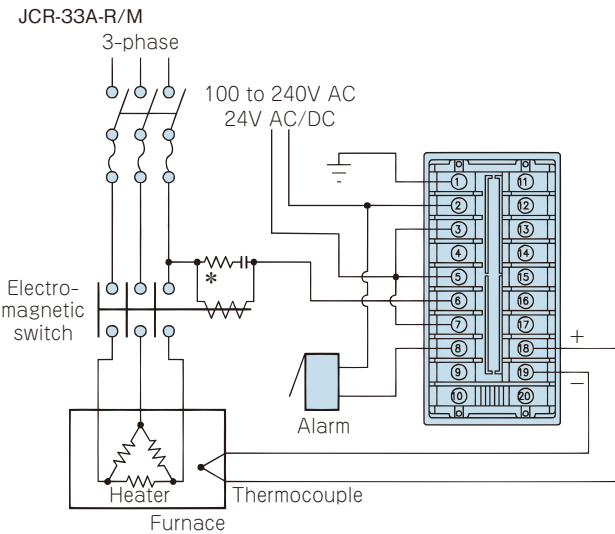## ■External dimensions (Scale : mm)

JCS-33A series

□48 / 11.5 / 95 / 44.5 / 59.7

JCR-33A series

48 / 96 / 11.5 / 98.5 / 91 / 106.2

JCD-33A series

□96 / 11.5 / 98.5 / 91 / 106.2

■Panel cutout (Scale : mm)

75 / $45^{+0.5}_{0}$ / $45^{+0.5}_{0}$ / $45^{+0.5}_{0}$ / $n \times 48 - 3^{+0.5}_{0}$

Lateral close mounting
n: Number of units mounted

130 / $92^{+0.8}_{0}$ / $45^{+0.5}_{0}$ / $92^{+0.8}_{0}$ / $n \times 48 - 3^{+0.5}_{0}$

Lateral close mounting
n: Number of units mounted

130 / $\square 92^{+0.8}_{0}$ / $92^{+0.8}_{0}$ / $n \times 96 - 3^{+0.5}_{0}$

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

JCR-33A-R/M

3-phase
100 to 240V AC
24V AC/DC
Electro-magnetic switch
Alarm
Heater
Furnace
Thermocouple

＊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.

■CT dimensions (Scale : mm)

CTL-6-S (for 5A, 10A, 20A)

15 / 0.5 / ∅5.8 / 2.8 / 7.5 / CTL-6-S / 25 / 10.5 / 3 / 21 / 40 / K / L / 10 / 30 / 2−∅3.5

CTL-12-S36-10L1U (for 50A)

30 / 100 / 40 / ∅12 / 15 / 40 / 30 / 2−M3

· This catalog is as of March 2008 and its contents are subject to change without notice. · If you have any inquiries, please consult us or our agency.