

# TCN Series Economical Dual Display Type, PID Control

## Economical Dual Display Type, PID Control

**Line-up**  
Connector  
plug type  
(TCN4S-□-P)

### ■ Features

- Realizes ideal temp. controlling with newly developed PID control algorithm and 100ms high speed sampling
- **Built-in relay output or SSR drive output selectable**  
: Enables to phase control and cycle control with SSR drive output (SSRP function)
- Dramatically increased visibility using wide display part
- Enhanced convenience of wiring and maintenance by connector plug type (TCN4S-□-P)
- Mounting space saving with compact design  
: Approx. 38% reduced size compared with existing model (depth-based)



**⚠ Please read "Caution for your safety" in operation manual before using.**



### ■ Ordering Information

<b>T</b>	<b>CN</b>	<b>4</b>	<b>S</b>	<b>-</b>	<b>2</b>	<b>4</b>	<b>R</b>	<b>-</b>	<b>P</b>
Item	Setting type	Digit	Size	Auxiliary output	Power supply	Control output	Wiring method	No-mark Bolt wiring method	
								P Connector plug connection method <sup>※1</sup>	
								R Relay contact output+SSR drive output <sup>※2</sup>	
								2 24VAC 50/60Hz, 24-48VDC	
								4 100-240VAC 50/60Hz	
								2 Alarm1+Alarm2 output	
								S DIN W48×H48mm	
								M DIN W72×H72mm	
								H DIN W48×H96mm	
								L DIN W96×H96mm	
4 9999 (4digit)									
CN Dual display type, set by touch switch									
T Temperature controller									

※1: Only for TCN4S model.

※2: In case of the AC voltage model, SSR drive output method (standard ON/OFF control, cycle control, phase control) is available to select.

### ■ Specifications

Series	TCN4S	TCN4M	TCN4H	TCN4L	
Power supply	AC power	100-240VAC 50/60Hz			
	AC/DC power	24VAC 50/60Hz, 24-48VDC			
Allowable voltage range 90 to 110% of rated voltage					
Power consumption	AC power	Max. 5VA (100-240VAC 50/60Hz)			
	AC/DC power	Max. 5VA (24VAC 50/60Hz), Max. 3W (24-48VDC)			
Display method 7 Segment (PV: red, SV: green), Other display (green, red) LED					
Character size	PV (W×H)	7.0×15.0mm	9.5×20.0mm	7.0×14.6mm	11.0×22.0mm
	SV (W×H)	5.0×9.5mm	7.5×15.0mm	6.0×12.0mm	7.0×14.0mm
Input type	RTD	DPT100Ω, Cu50Ω (allowable line resistance max. 5Ω per a wire)			
	Thermocouple	K (CA), J (IC), L (IC), T (CC), R (PR), S (PR)			
Display accuracy <sup>※1</sup>	RTD	• At room temperature (23°C ±5°C): (PV ±0.5% or ±1°C, select the higher one) ±1digit			
	Thermocouple	• Out of room temperature range: (PV ±0.5% or ±2°C, select the higher one) ±1digit For TCN4S-□-P, add ±1°C by accuracy standard.			
Control output	Relay	250VAC 3A 1a			
	SSR	12VDC ±2V 20mA Max.			
Alarm output AL1, AL2 Relay output: 250VAC 1A 1a					
Control method ON/OFF control, P, PI, PD, PID control					
Hysteresis 1 to 100°C/°F (0.1 to 50.0°C/°F) variable					

※1: ◎ At room temperature (23°C ±5°C)

- Thermocouple R (PR), S (PR), below 200°C: (PV ±0.5% or ±3°C, select the higher one) ±1digit
- Thermocouple R (PR), S (PR), over 200°C: (PV ±0.5% or ±2°C, select the higher one) ±1digit
- Thermocouple L (IC), RTD Cu50Ω: (PV ±0.5% or ±2°C, select the higher one) ±1digit

◎ Out of room temperature range

- Thermocouple R (PR), S (PR), below 200°C: (PV ±1.0% or ±6°C, select the higher one) ±1digit
  - Thermocouple R (PR), S (PR), over 200°C: (PV ±0.5% or ±5°C, select the higher one) ±1digit
  - Thermocouple L (IC), RTD Cu50Ω: (PV ±0.5% or ±3°C, select the higher one) ±1digit
- For TCN4S-□-P, add ±1°C by accuracy standard.

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers





(R) Graphic/ Logic Panels

(S) Field Network Devices

(T) Software

# TCN Series

## Specifications

Series	TCN4S	TCN4M	TCN4H	TCN4L
Proportional band (P)	0.1 to 999.9°C/°F			
Integral time (I)	0 to 9999 sec.			
Derivative time (D)	0 to 9999 sec.			
Control period (T)	0.5 to 120.0 sec.			
Manual reset	0.0 to 100.0%			
Sampling period	100ms			
Dielectric strength	AC Power	2,000VAC 50/60Hz 1min. (between input terminal and power terminal)		
	AC/DC power	1,000VAC 50/60Hz 1min. (between input terminal and power terminal)		
Vibration	0.75mm amplitude at frequency of 5 to 55Hz in each X, Y, Z direction for 2 hours			
Relay life cycle	Mechanical	OUT: Over 5,000,000 times, AL1/2: Over 5,000,000 times		
	Electrical	OUT: Over 200,000 times (250VAC 3A resistive load) AL1/2: Over 300,000 times (250VAC 1A resistive load)		
Insulation resistance	Min. 100MΩ (at 500VDC megger)			
Noise resistance	±2kV R-phase, S-phase the square wave noise (pulse width: 1us) by the noise simulator			
Memory retention	Approx. 10 years (when using non-volatile semiconductor memory type)			
Environment	Ambient temperature	-10 to 50°C, storage: -20 to 60°C		
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH		
Insulation type	Double insulation or reinforced insulation (mark:  , Dielectric strength between the measuring input part and the power part: AC power 2kV, AC/DC Power 1kV)			
Approval	  			
Weight*2	Approx. 147g (Approx. 100g)	Approx. 203g (Approx. 133g)	Approx. 194g (Approx. 124g)	Approx. 275g (Approx. 179g)

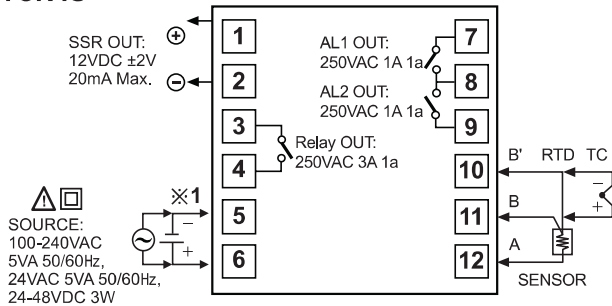
\*2: The weight includes packaging. The weight in parentheses is for unit only.

\*Environment resistance is rated at no freezing or condensation.

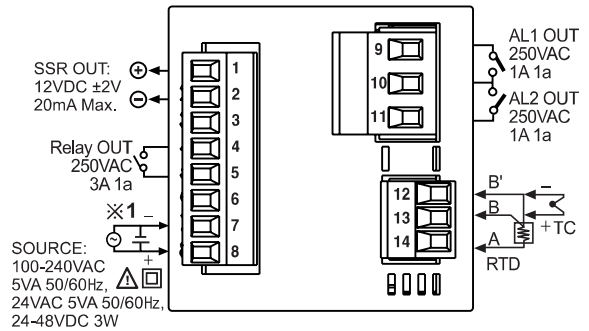
## Connections

\*TCN4 Series has selectable control output; Relay output, and SSR drive output. AC/DC voltage type does not have SSRP function.

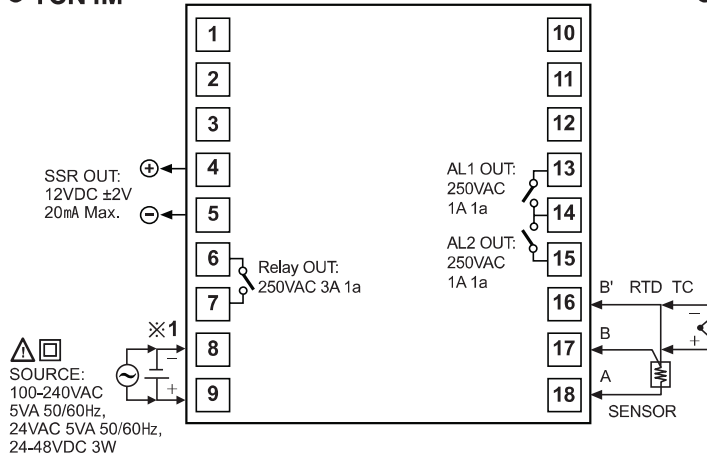
### TCN4S



### TCN4S-P

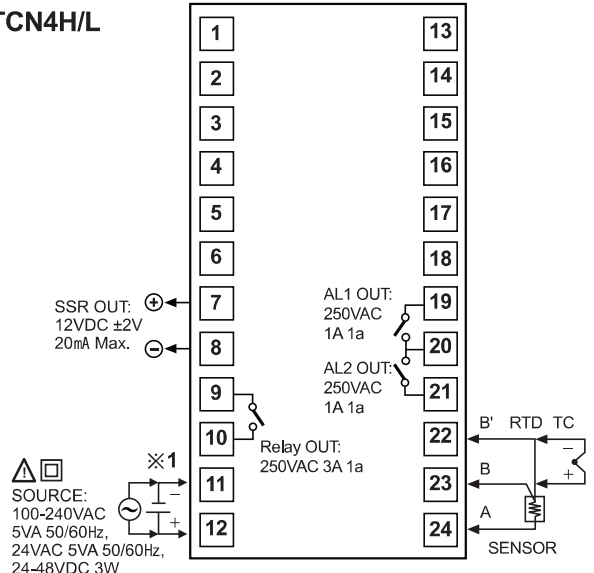


### TCN4M



\*1: Power supply  
 • AC power: 100-240VAC 5VA 50/60Hz  
 • AC/DC power: 24VAC 5VA 50/60Hz, 24-48VDC 3W

### TCN4H/L

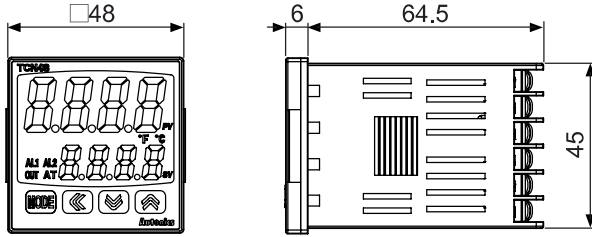


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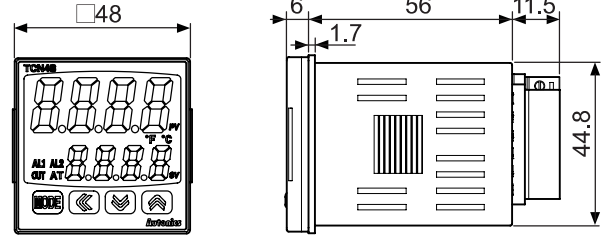
## ■ Dimensions

(unit: mm)

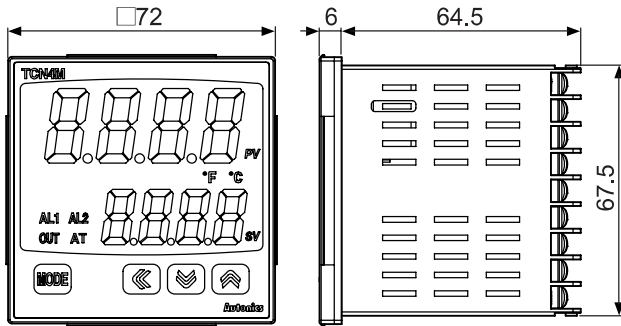
### ● TCN4S



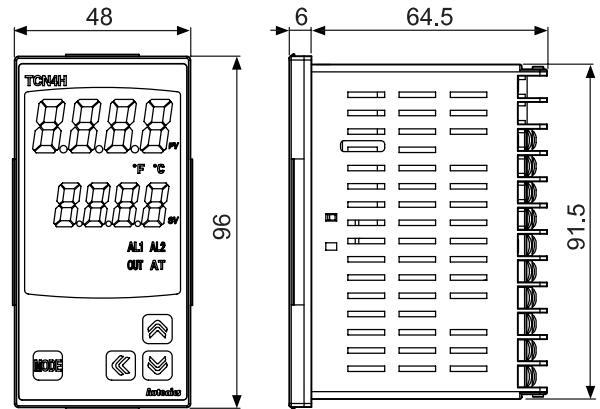
### ● TCN4S-P



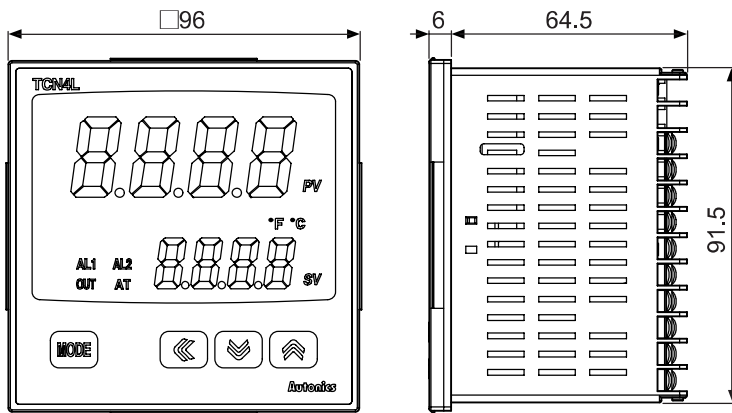
### ● TCN4M



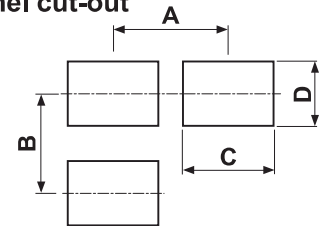
### ● TCN4H



### ● TCN4L



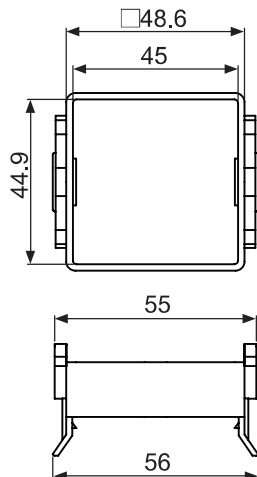
### ● Panel cut-out



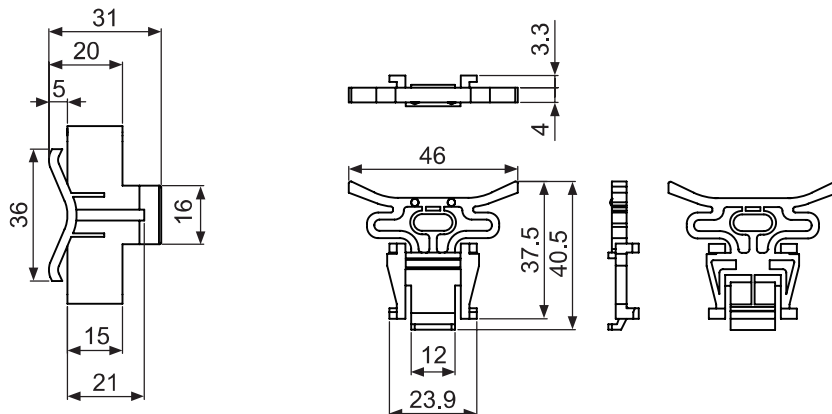
Size	A	B	C	D
TCN4S	Min. 65	Min. 65	45 <sup>+0.6</sup> <sub>0</sub>	45 <sup>+0.6</sup> <sub>0</sub>
TCN4M	Min. 90	Min. 90	68 <sup>+0.7</sup> <sub>0</sub>	68 <sup>+0.7</sup> <sub>0</sub>
TCN4H	Min. 65	Min. 115	45 <sup>+0.6</sup> <sub>0</sub>	92 <sup>+0.8</sup> <sub>0</sub>
TCN4L	Min. 115	Min. 115	92 <sup>+0.8</sup> <sub>0</sub>	92 <sup>+0.8</sup> <sub>0</sub>

## ● Bracket

### ● TCN4S Series



### ● TCN4M, TCN4H, TCN4L Series



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