

# Single Display PID Temperature Controllers



## TC Series CATALOG

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc are subject to change without notice for product improvement. Some models may be discontinued without notice.

### Features

- Single digital display (switch between PV and SV)
- 100ms high-speed sampling rate and  $\pm 0.5\%$  display accuracy
- Switch between relay output and SSR drive output (patent) \*
- SSR drive output (SSRP function) control options: ON/OFF control, cycle control, phase control
- Compact design with large display panels for easier reading
- Connector plug types offer easier wiring and maintenance (TCN4S- -P)

\*Korea Patent Registration 10-1002582, U.S.A. Patent Registration 8645000, Japan Patent Registration 3184816, China Patent Registration ZL200980111733.X, Vietnam Patent Registration 1-0012131, India Patent Registration 291573, Indonesia Patent Registration IDP003216

### Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

T C 4 ① - ② ③ ④

#### ① Size

S: DIN W 48 × H 48 mm  
SP: DIN W 48 × H 48 mm (11 pin plug type)  
Y: DIN W 72 × H 36 mm  
M: DIN W 72 × H 72 mm  
H: DIN W 48 × H 96 mm  
W: DIN W 96 × H 48 mm  
L: DIN W 96 × H 96 mm

#### ③ Power supply

2: 24 VAC~ 50/60 Hz, 24-48 VDC=  
4: 100-240 VAC~ 50/60 Hz

#### ④ Control output

N: Indicator - without control output  
R: Relay + SSR drive

#### ② Alarm output

N: No alarm  
1: 1 alarm  
2: 2 alarm

### Product Components

- Product
- Instruction manual
- Bracket

### Specifications

Series	TC4□-□2□	TC4□-□4□
Power supply	24 VAC~ 50/60 Hz $\pm 10\%$ 24-48 VDC= $\pm 10\%$	100 - 240 VAC~ 50/60 Hz $\pm 10\%$
Power consumption	AC: $\leq 5$ VA, DC: $\leq 3$ W	$\leq 5$ VA
Sampling period	100 ms	
Input specification	Refer to 'Input Type and Using Range'.	
Control output	Relay	250 VAC~ 3 A, 30 VDC= $\pm 3$ A, 1a
	SSR	12 VDC= $\pm 2$ V, $\leq 20$ mA
Alarm output	250 VAC~ 1 A 1a	
Display type	7 Segment (red, green, yellow), LED type	
Control type	Heating, Cooling	ON/OFF, P, PI, PD, PID Control
Hysteresis	1 to 100 (0.1 to 50.0) °C/°F	
Proportional band (P)	0.1 to 999.9 °C/°F	
Integral time (I)	0 to 9,999 sec	
Derivative time (D)	0 to 9,999 sec	
Control cycle (T)	0.5 to 120.0 sec	
Manual reset	0.0 to 100.0%	
Relay life cycle	Mechanical	OUT1/2, AL1/2: $\geq 5,000,000$ operations
	Electrical	OUT1/2: $\geq 200,000$ operations (load resistance: 250 VAC~ 3A) AL1/2: $\geq 300,000$ operations (load resistance: 250 VAC~ 1 A)
Dielectric strength	Between input terminal and power terminal: 1,000 VAC~ 50/60 Hz for 1 min	Between input terminal and power terminal: 2,000 VAC~ 50/60 Hz 1 min
	Vibration	
0.75 mm amplitude at frequency 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Insulation resistance	$\geq 100$ M $\Omega$ (500 VDC= $\pm$ megger)	
Noise immunity	Square shaped noise (pulse width: 1 $\mu$ s) by noise simulator $\pm 2$ kV R-phase, S-phase	
Memory retention	$\approx 10$ years (non-volatile semiconductor memory type)	
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)	
Ambient humidity	35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)	
Insulation type	Mark: □, double or reinforced insulation (dielectric strength between the measuring input part and the power part: 1 kV)	Mark: □, double or reinforced insulation (dielectric strength between the measuring input part and the power part: 2 kV)
	Approval	
CE, RoHS, ENEC, FCC		
Unit weight (packaged)	• TC4S: $\approx 94$ g ( $\approx 141$ g)	• TC4SP: $\approx 76$ g ( $\approx 123$ g)
	• TC4Y: $\approx 85$ g ( $\approx 174$ g)	• TC4M: $\approx 133$ g ( $\approx 204$ g)
	• TC4W: $\approx 122$ g ( $\approx 194$ g)	• TC4H: $\approx 122$ g ( $\approx 194$ g)
	• TC4L: $\approx 155$ g ( $\approx 254$ g)	

## Input Type and Using Range

The setting range of some parameters is limited when using the decimal point display.

Input type	Decimal point	Display	Using range (°C)	Using range (°F)	
Thermo-couple	K (CA)	1	ℓℓℓℓ	-50 to 1,200	-58 to 2,192
	J (IC)	1	ℓℓℓ	-30 to 500	-22 to 932
	L (IC)	1	ℓℓℓ	-40 to 800	-40 to 1,472
RTD	Cu50 Ω	1	ℓℓℓ.ℓ	-50 to 200	-58 to 392
		0.1	ℓℓℓ.ℓ	-50.0 to 200.0	-58.0 to 392.0
	DPT100 Ω	1	dℓℓ.ℓ	-100 to 400	-148 to 752
		0.1	dℓℓ.ℓ	-100.0 to 400.0	-148.0 to 752.0

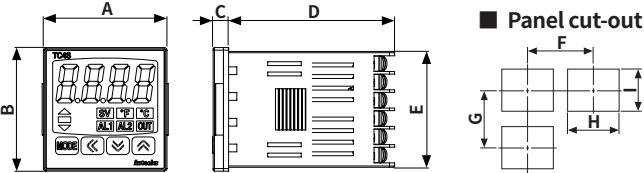
## Display accuracy

Input type	Using temperature	Display accuracy
Thermo-couple	At room temperature (23°C ±5 °C)	(PV ±0.5% or ±1 °C higher one) ±1-digit • Thermocouple L, RTD Cu50 Ω: (PV ±0.5% or ±2 °C higher one) ±1-digit
RTD	Out of room temperature range	(PV ±0.5% or ±2 °C higher one) ±1-digit • Thermocouple L, RTD Cu50 Ω: (PV ±0.5% or ±3 °C higher one) ±1-digit

- In case of TC4SP Series, ±1°C will be added.
- If the input specification is set to 'decimal point 0.1' display, add ±1°C by accuracy standard.

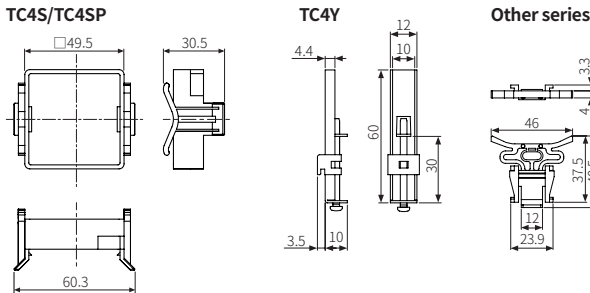
## Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
- Below is based on TC4S Series.

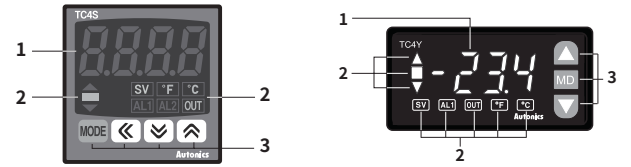


Series	Body			Panel cut-out					
	A	B	C	D	E	F	G	H	I
TC4S	48	48	6	64.5	45	≥ 65	≥ 65	45 <sup>+0.6</sup> <sub>0</sub>	45 <sup>+0.6</sup> <sub>0</sub>
TC4SP	48	48	6	72.2	45	≥ 65	≥ 65	45 <sup>+0.6</sup> <sub>0</sub>	45 <sup>+0.6</sup> <sub>0</sub>
TC4Y	72	36	7	77	30	≥ 91	≥ 40	68 <sup>+0.7</sup> <sub>0</sub>	31.5 <sup>+0.5</sup> <sub>0</sub>
TC4W	96	48	6	64.5	44.7	≥ 115	≥ 65	92 <sup>+0.8</sup> <sub>0</sub>	45 <sup>+0.6</sup> <sub>0</sub>
TC4M	72	72	6	64.5	67.5	≥ 90	≥ 90	68 <sup>+0.7</sup> <sub>0</sub>	68 <sup>+0.7</sup> <sub>0</sub>
TC4H	48	96	6	64.5	91.5	≥ 65	≥ 115	45 <sup>+0.6</sup> <sub>0</sub>	92 <sup>+0.8</sup> <sub>0</sub>
TC4L	96	96	6	64.5	91.5	≥ 115	≥ 115	92 <sup>+0.8</sup> <sub>0</sub>	92 <sup>+0.8</sup> <sub>0</sub>

## Bracket



## Unit Descriptions



### 1. Temperature Display part (Red)

- Run mode: Displays PV (Present value).
- Setting mode: Displays parameter name, setting value.

### 3. Input key

Display	Name
[MODE]	Mode key
[◀], [▼], [▲]	Setting value control key

### 2. Indicator

Display	Name	Description
▲ ■ ▼	Deviation	Displays PV deviation based on SV (Setting value) by LED. ▲: ON when deviation is over +2 °C ■: ON when deviation is within ±2 °C ▼: ON when deviation is under -2 °C Flashes during auto tuning every 1 sec
SV	Setting value	Turns ON when SV is displayed on temperature display part.
°C, °F	Temperature unit	Displays selected unit (parameter).
AL1/2	Alarm output	Turns ON when each alarm output is ON.
OUT	Control output	Turns ON when control output is ON. • CYCLE/PHASE control of SSR drive output: Turns ON when MV is over 3.0%. (only for AC power model)

## Sold Separately

- 11 pin socket: PG-11, PS-11 (N)
- Terminal protection cover: RSA / RMA / RHA / RLA Cover