

# LCD PID Temperature Controllers



## TX 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

- 50ms high-speed sampling rate and  $\pm 0.3\%$  display accuracy
- Large LCD display with easy-to-read white PV characters
- Switch between current output and SSR drive output
- SSR drive output (SSRP function) control options: ON/OFF control, cycle control, phase control
- Communication output model available: RS485 (Modbus RTU)
- Parameter configuration via PC (RS485 communication): DAQMaster software included (comprehensive device management software)
- Compact, space-saving design with 45 mm depth: 30% rear-length size reduction compared to similar-sized (48 × 48 mm) models from Autonics
- Terminal protection cover sold separately: RSA-COVER

\*Korea Patent Registration 30-2020-0020300, Korea Patent Registration 10-1651262, U.S.A. Patent Registration 10281339, Japan Patent Registration 6603317, China Patent Registration ZL201580039398.2, Germany Patent Application 112015003239.8

\*Korea Design Registration 30-0999138

### 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 X 4 ① - ② 4 ③

#### ① Size

S: DIN W 48 × H 48 mm  
 M: DIN W 72 × H 72 mm  
 H: DIN W 48 × H 96 mm  
 L: DIN W 96 × H 96 mm

#### ③ Control output

R: Relay  
 S: SSR drive  
 C: Selectable current or SSR drive output

#### ② Option in/output

1: Alarm 1  
 2: Alarm 1 + Alarm 2  
 A: Alarm 1 + Alarm 2 + PV transmission  
 B: Alarm output 1 + Alarm output 2 + RS485 communication

### Product Components

- Product
- Bracket
- Instruction manual

### Software

Download the installation file and the manuals from the Autonics website.

#### ■ DAQMaster

DAQMaster is comprehensive device management program. It is available for parameter setting, monitoring.

### Specifications

Series	TX Series	
Power supply	100 - 240 VAC ~ 50/60 Hz $\pm 10\%$	
Power consumption	$\leq 8$ VA	
Sampling period	50 ms	
Input specification	Refer to 'Input Type and Using Range'.	
Control output	Relay	250 VAC ~ 3 A, 30 VDC = 3 A, 1a
	SSR	TX4S: 12 VDC = $\pm 2$ V, $\leq 20$ mA TX4M/H/L: 13 VDC = $\pm 3$ V, $\leq 20$ mA
	Current	DC 4-20 mA or DC 0-20 mA (parameter), Load resistance: $\leq 500 \Omega$
Alarm output	Relay	AL1/2: 250 VAC ~ 3 A 1a
Option output	PV transmission	DC 4 - 20 mA (Load resistance: $\leq 500 \Omega$ , Output Accuracy: $\pm 0.3\%$ F.S.)
	RS485 Comm.	Modbus RTU
Display type	11 Segment (Red, Green, Yellow), LCD type	
Control type	Heating, Cooling	ON/OFF, P, PI, PD, PID Control
	Heating&Cooling	
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	$\geq 5,000,000$ operations
	Electrical	$\geq 200,000$ operations (resistance load: 250 VAC ~ 3 A)
Dielectric strength	Between all terminals and case: 3,000 VAC ~ 50/60 Hz for 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 = megger)	
Noise immunity	$\pm 2$ kV square shaped noise (pulse width 1 $\mu$ s) by noise simulator 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)	
Protection structure	IP50 (Front panel, IEC standards)	
Insulation type	Double or reinforced insulation (mark: $\square$ ), dielectric strength between primary circuit and secondary circuit: 3 kV	
Approval	CE	
Unit weight (packaged)	• TX4S: $\approx 87$ g ( $\approx 146$ g)	• TX4M: $\approx 143$ g ( $\approx 233$ g)
	• TX4H: $\approx 133$ g ( $\approx 214$ g)	• TX4L: $\approx 206$ g ( $\approx 290$ g)

0.1) When using the unit at low temperature (below 0°C), display cycle is slow.

## Communication Interface

### ■ RS485

Comm. protocol	Modbus RTU
Application standard	EIA RS485 compliance with
Maximum connection	31 units (address: 01 to 127)
Synchronous method	Asynchronous
Comm. method	Two-wire half duplex
Comm. effective range	≤ 800 m
Comm. speed	2,400 / 4,800 / 9,600 (default) / 19,200 / 38,400 bps (parameter)
Response time	5 to 99 ms (default: 20 ms)
Start bit	1 bit (fixed)
Data bit	8 bit (fixed)
Parity bit	None (default), Odd, Even
Stop bit	1 bit, 2 bit (default)

## Input Type and Using Range

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

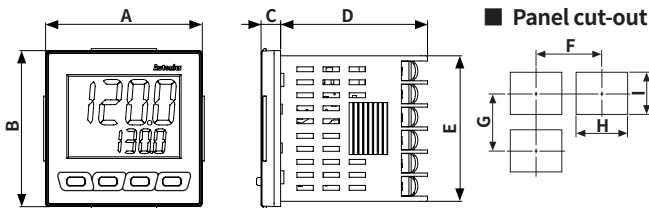
Input type	Decimal point	Display	Using range (°C)	Using range (°F)
Thermo-couple	K (CA)	1	-50 to 1,200	-58 to 2,192
		0.1	-50.0 to 999.9	-58.0 to 999.9
	J (IC)	1	-30 to 800	-22 to 1,472
		0.1	-30.0 to 800.0	-22.0 to 999.9
	L (IC)	1	-40 to 800	-40 to 1,472
		0.1	-40.0 to 800.0	-40.0 to 999.9
T (CC)	1	-50 to 400	-58 to 752	
	0.1	-50.0 to 400.0	-58.0 to 752.0	
R (PR)	1	0 to 1,700	32 to 3,092	
S (PR)	1	0 to 1,700	32 to 3,092	
RTD	Cu50 Ω	1	-50 to 200	-58 to 392
		0.1	-50.0 to 200.0	-58.0 to 392.0
	DPT100 Ω	1	-100 to 400	-148 to 752
		0.1	-100.0 to 400.0	-148.0 to 752.0

### ■ Display accuracy

Input type	Using temperature	Display accuracy
Thermocouple RTD	At room temperature (23°C ±5°C)	(PV ±0.3% or ±1 °C higher one) ±1-digit • Thermocouple R, S below 200 °C: (PV ±0.5% or ±3 °C higher one) ±1-digit Over 200 °C: (PV ±0.5% or ±2 °C higher one) ±1digit • Thermocouple L, RTD Cu50 Ω: (PV ±0.5% or ±2 °C higher one) ±1-digit
	Out of room temperature range	(PV ±0.5% or ±2 °C higher one) ±1-digit • Thermocouple R, S: (PV ±1.0% or ±5 °C higher one) ±1digit • Thermocouple L, RTD Cu50 Ω: (PV ±0.5% or ±3 °C higher one) ±1digit

## Dimensions

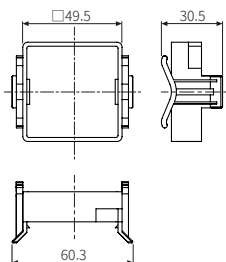
- Unit: mm, For the detailed drawings, follow the Autonics website.
- Below is based on TX4S Series.



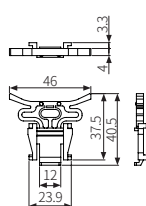
	Body					Panel cut-out				
	A	B	C	D	E	F	G	H	I	
TX4S	48	48	6	45	44.8	≥ 65	≥ 65	45 <sup>+0.6</sup> <sub>0</sub>	45 <sup>+0.6</sup> <sub>0</sub>	
TX4M	72	72	6	45	67.5	≥ 90	≥ 90	68 <sup>+0.7</sup> <sub>0</sub>	68 <sup>+0.7</sup> <sub>0</sub>	
TX4H	48	96	6	45	91.5	≥ 65	≥ 115	45 <sup>+0.6</sup> <sub>0</sub>	92 <sup>+0.8</sup> <sub>0</sub>	
TX4L	96	96	6	45	91.5	≥ 115	≥ 115	92 <sup>+0.8</sup> <sub>0</sub>	92 <sup>+0.8</sup> <sub>0</sub>	

### ■ Bracket

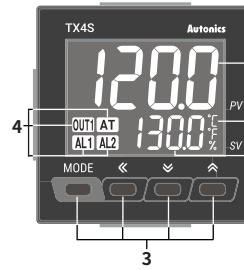
#### TX4S



#### Other series



## Unit Descriptions



### 1. PV display part (White)

- Run mode: displays PV (Present value)
- Setting mode: displays parameter name

### 2. SV display part (Green)

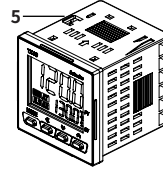
- Run mode: displays SV (Setting value)
- Setting mode: displays parameter setting value

### 3. Input key

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

### 4. Indicator

Display	Name	Description
°C, %, °F	Unit	Displays selected unit (parameter)
AT	Auto tuning	Flashes during auto tuning every 1 sec
OUT1	Control output	Turns ON when control output 1 is ON
AL1/2	Alarm output	Turns ON when each alarm output is ON



**5. PC loader port:** For connecting communication converter (sold separately).

## Sold Separately

- Terminal protection cover: RSA / RMA / RHA / RLA Cover
- Communication converter: SCM Series