

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 | ≤ 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 = ± 2 V, ≤ 20 mA TX4M/H/L: 13 VDC = ± 3 V, ≤ 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 | ≥ 100 M Ω (500 VDC = megger) | |
| Noise immunity | ± 2 kV square shaped noise (pulse width 1 μ s) by noise simulator R-phase, S-phase | |
| Memory retention | ≈ 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: ≈ 87 g (≈ 146 g) | • TX4M: ≈ 143 g (≈ 233 g) |
| | • TX4H: ≈ 133 g (≈ 214 g) | • TX4L: ≈ 206 g (≈ 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.

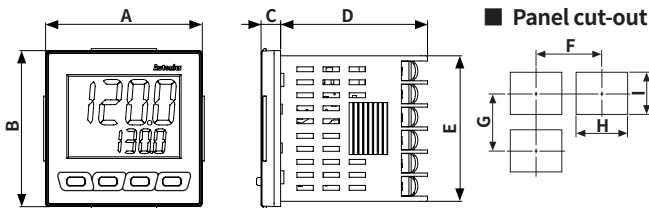
| Input type | Decimal point | Display | Using range (°C) | Using range (°F) | |
|---------------|---------------|---------|------------------|------------------|-----------------|
| Thermo-couple | K (CA) | 1 | ℞ ℄ RH | -50 to 1,200 | -58 to 2,192 |
| | | 0.1 | ℞ ℄ RL | -50.0 to 999.9 | -58.0 to 999.9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

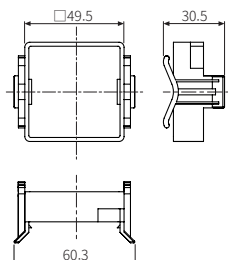
- Unit: mm, For the detailed drawings, follow the Autonics website.
- Below is based on TX4S Series.



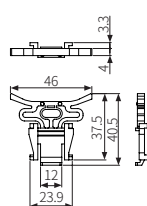
| | Body | | | | | Panel cut-out | | | | |
|------|------|----|---|----|------|---------------|-------|---------------------------------|---------------------------------|--|
| | A | B | C | D | E | F | G | H | I | |
| TX4S | 48 | 48 | 6 | 45 | 44.8 | ≥ 65 | ≥ 65 | 45 ^{+0.6} ₀ | 45 ^{+0.6} ₀ | |
| TX4M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

■ Bracket

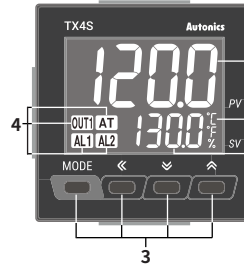
TX4S



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)

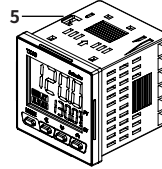
- Run mode: displays SV (Setting value)
- Setting mode: displays parameter setting value

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