

Autonics

LCD Display PID Temperature Controller TX SERIES

INSTRUCTION MANUAL



Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

Safety Considerations

Please observe all safety considerations for safe and proper product operation to avoid hazards. symbol represents caution due to special circumstances in which hazards may occur.

- Warning** Failure to follow these instructions may result in serious injury or death.
- Caution** Failure to follow these instructions may result in personal injury or product damage.

Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.) Failure to follow this instruction may result in fire, personal injury, or economic loss.
- Install on a device panel to use.** Failure to follow this instruction may result in electric shock.
- Do not connect, repair, or inspect the unit while connected to a power source.** Failure to follow this instruction may result in electric shock or fire.
- Check 'Connections' before wiring.** Failure to follow this instruction may result in fire or explosion.
- Do not disassemble or modify the unit.** Failure to follow this instruction may result in electric shock or fire.

Caution

- When connecting the power input and relay output, use AWG 20 (0.50mm²) cable or over and tighten the terminal screw with a tightening torque of 0.74 to 0.90Nm. When connecting the sensor input and communication cable without dedicated cable, use AWG 28 to 16 cable and tighten the terminal screw with a tightening torque of 0.74 to 0.90Nm. Failure to follow this instruction may result in fire or malfunction due to contact failure.
- Use the unit within the rated specifications.
- Use dry cloth to clean the unit, and do not use water or organic solvent. Failure to follow this instruction may result in electric shock or fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present. Failure to follow this instruction may result in fire or explosion.
- Keep metal chip, dust, and wire residue from flowing into the unit. Failure to follow this instruction may result in fire or product damage.

Ordering Information

TX	4	S	-	1	4	R
Control output	R	Relay output				
S	SSR drive output					
C	Selectable current output or SSR drive output					
Power supply	4	100-240VAC 50/60Hz				
Option output	1	Alarm output 1				
	2	Alarm output 1+Alarm output 2				
	A	Alarm output 1+Alarm output 2+Trans. output				
	B	Alarm output 1+Alarm output 2+RS485 com. output				
Size	S	DIN W48×H48mm				
	M	DIN W72×H72mm				
	H	DIN W48×H96mm				
	L	DIN W96×H96mm				
Digit	4	9999(4-digit)				
Item	TX	LCD display PID temperature controller				

Input Type and Range

Input type	Decimal point	Display	Input range(°C)	Input range(°F)	
Thermocouple	K (CA)	1	℄CRH	-50 to 1200	-58 to 2192
		0.1	℄CRL	-50.0 to 999.9	-58.0 to 999.9
	J (IC)	1	℄JCH	-30 to 800	-22 to 1472
		0.1	℄JCL	-30.0 to 800.0	-22.0 to 999.9
	L (IC)	1	℄LCH	-40 to 800	-40 to 1472
		0.1	℄LCL	-40.0 to 800.0	-40.0 to 999.9
RTD	T (CC)	1	℄TCH	-50 to 400	-58 to 752
		0.1	℄TCL	-50.0 to 400.0	-58.0 to 752.0
	R (PR)	1	℄RPH	0 to 1700	32 to 3092
		0.1	℄RPL	0 to 1700	32 to 3092
	S (PR)	1	℄SPH	-100 to 400	-148 to 752
		0.1	℄SPL	-100.0 to 400.0	-148.0 to 752.0
DPT 100Ω	1	℄DPT	-50 to 200	-58 to 392	
	0.1	℄DPTL	-50.0 to 200.0	-58.0 to 392.0	
Cu50Ω	1	℄CU5H	-50 to 200	-58 to 392	
	0.1	℄CU5L	-50.0 to 200.0	-58.0 to 392.0	

The above specifications are subject to change and some models may be discontinued without notice. Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

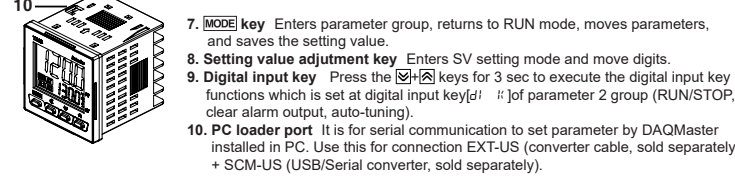
Specifications

Series	TX4S	TX4M	TX4H	TX4L
Power supply	100-240VAC~50/60Hz			
Allowable voltage range	90 to 110% of rated voltage			
Power consumption	Max. 8VA			
Display method	11-segments (PV: white, SV: green), other display (yellow) with LCD method ^{※1}			
Character size	PV(W×H) 7.2×14mm	10.7×17.3mm	7.2×15.8mm	16×26.8mm
SV(W×H)	3.9×7.6mm	6.8×11mm	6.2×13.7mm	10.7×17.8mm
Input type	RTD TC	K (CA), J (IC), L (IC), T (CC), R (PR), S (PR)		
Display accuracy ^{※2}	TC	At room temperature: (23°C±5°C): (PV ±0.3% or ±1°C, select the higher one) ±1-digit Out of room temperature: (PV ±0.5% or ±2°C, select the higher one) ±1-digit		
Control output	Relay	250VAC~3A, 30VDC= 3A, 1a		
Option output	SSR	Max. 12VDC=±2V 20mA Max. 13VDC= ±3V 20mA		
Alarm output	Current	DC4-20mA or DC0-20mA (load resistance max. 500Ω)		
Trans. output	AL1, AL2	250VAC 3A~ , 30VDC 3A= 1a		
Com. output	RS485	communication output (Modbus RTU method)		
Control method	ON/OFF control, P, PI, PD, P D control			
Hysteresis	1 to 100°C/°F (0.1 to 50.0°C/°F) variable			
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	50ms			
Dielectric strength	3,000VAC 50/60Hz for 1 min (between primary circuit and secondary circuit)			
Vibration	0.75mm amplitude at frequency 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours			
Relay life cycle	Mechanical	OUT, AL1/2: min 5,000,000 operations		
Electrical	OUT, AL1/2: min 200,000 (250VAC 3A resistance load)			
Insulation resistance	Min. 100MΩ (at 500VDC megger)			
Noise resistance	Square shaped noise by noise simulator (pulse width 1μs) ±2kV R-phase, S-phase			
Memory retention	Approx. 10 years (non-volatile semiconductor memory type)			
Environment	Ambient temp.	-10 to 50°C, storage: -20 to 60°C		
Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Protection structure	IP50 (front panel, IEC standards)			
Insulation type	Double insulation (mark: dielectric strength between primary circuit and secondary circuit: 3kV)			
Approval	CE,			
Weight ^{※3}	Approx. 146.1g (approx. 88.7g)	Approx. 233g (approx. 143g)	Approx. 214g (approx. 133g)	Approx. 290g (approx. 206g)

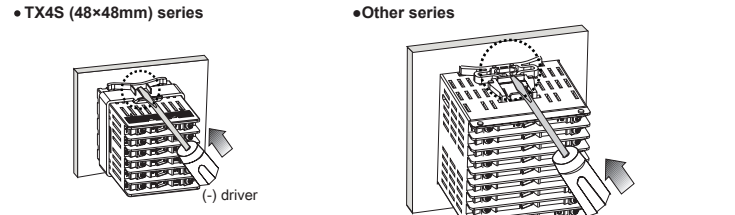
- ※1: When using the unit at low temperature (below 0°C), display cycle is slow. Control output operates normally.
- ※2: At room temperature(23°C±5°C)
 - TC R(PR), S(PR), below 200°C: (PV ±0.5% or ±3°C, select the higher one) ±1-digit, over 200°C: (PV ±0.5% or ±2°C, select the higher one) ±1-digit
 - TC L(IC), RTD Cu50Ω: (PV ±0.5% or ±2°C, select the higher one) ±1-digit
- Out of room temperature range
 - TC R(PR), S(PR): (PV ±1.0% or ±5°C, select the higher one) ±1-digit
 - TC L(IC), RTD Cu50Ω: (PV ±0.5% or ±3°C, select the higher one) ±1-digit
- ※3: The weight includes packaging. The weight in parenthesis is for unit only.
- ※Environment resistance is rated at no freezing or condensation.

Unit Description

- Measured value (PV) component**
RUN mode: Displays current measured value (PV).
SETT NG mode: Displays parameters.
- Temperature unit(°C/°F) indicator**
Displays the set temperature unit as temperature unit [H H L] of parameter 2 group.
- Setting value (SV) display component**
RUN mode: Displays setting value(SV).
SETT NG mode: Displays setting value of parameter.
- Auto-tuning indicator**
Flashes during auto-tuning every 1 sec.
- Control output (OUT) indicator**
Turns ON while control output is ON.
※ Turns ON when MV is over 3.0% at cycle/phase control of SSR drive output method.
- Alarm output (AL1, AL2) indicator**
Turns ON when the corresponding alarm output turns ON.



Installation

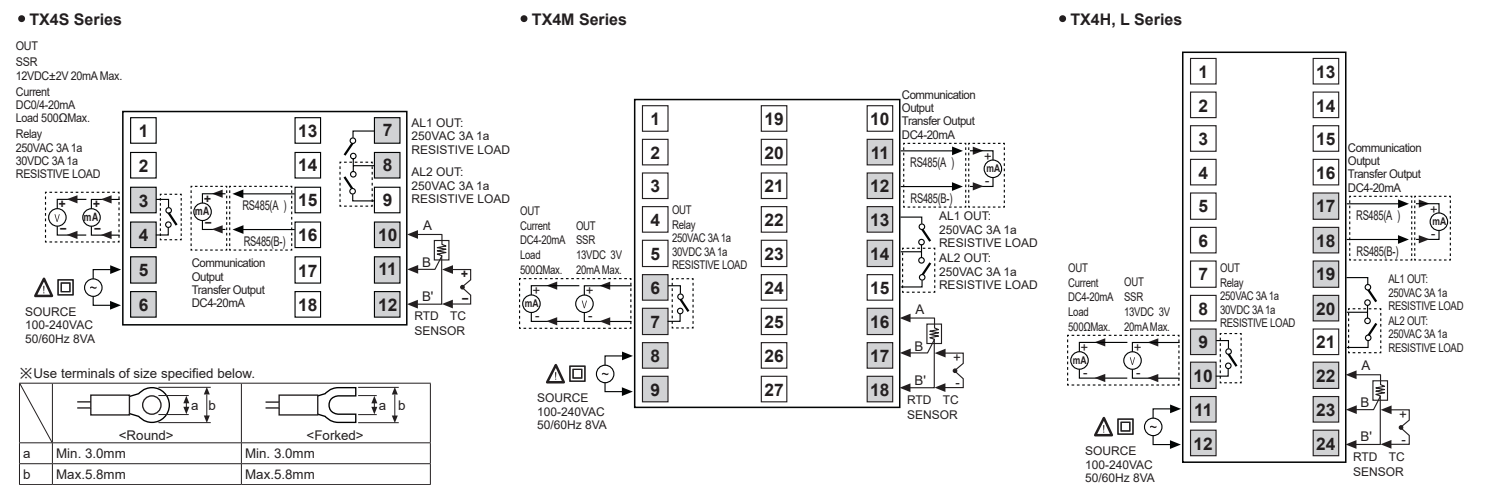


Comprehensive Device Management Program[DAQMaster]

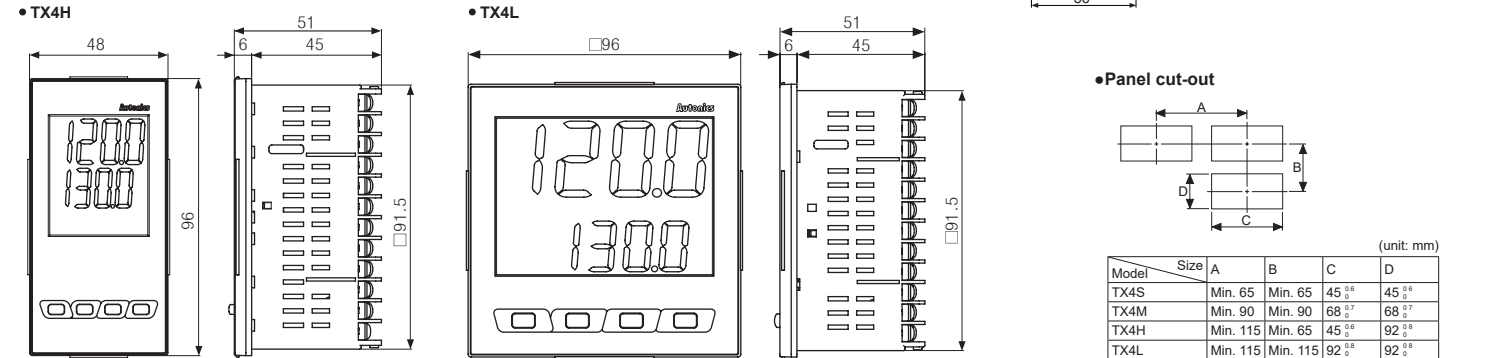
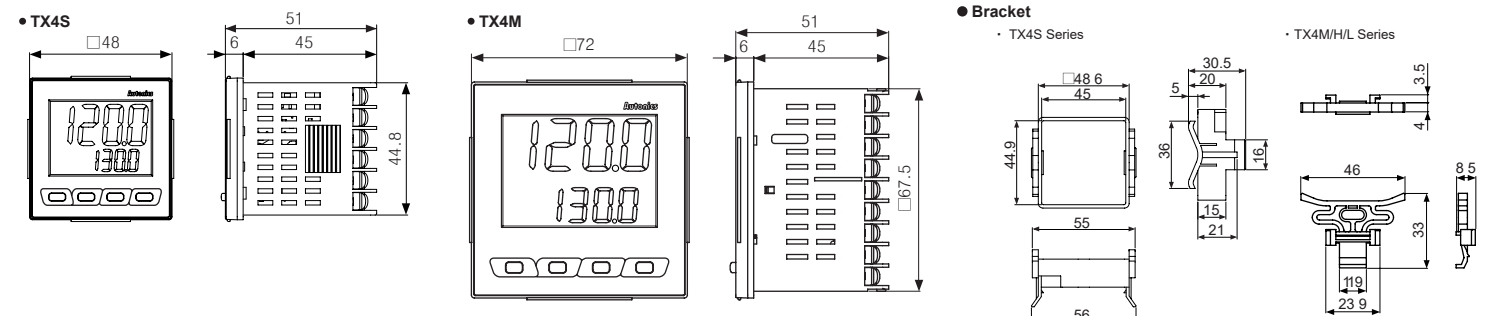
DAQMaster is a comprehensive device management software for setting parameters and monitoring processes.

Item	Minimum specifications
System	IBM PC compatible computer with Pentium III or above
Operations	Windows 98/NT/XP/Vista/7/8/10
Memory	256MB+
Hard disk	1GB+ of available hard disk space
VGA	Resolution: 1024×768 or higher
Others	RS232C serial port (9-pin), USB port

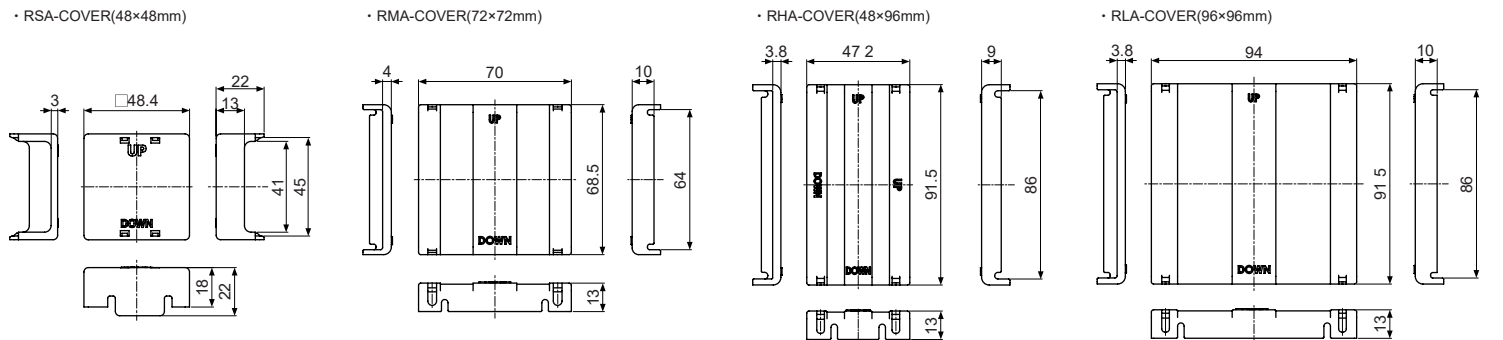
Connections



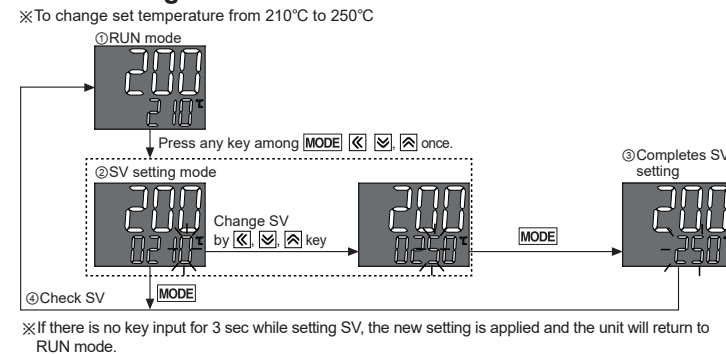
Dimensions



Terminal cover (sold separately)



SV Setting



Factory Default

Parameter	Factory default	Parameter	Factory default
IN-E	℄CRH	AL1	1250
UNI-E	°C	AL2	oFF
IN-b	0	P	10.0
MAR-F	0.1	i	240
L-SV	-50	d	49
H-SV	1200	RES-E	50.0
o-F-E	HEAR-E	HYS	2
C-M-d	PI-d		
oU-E	CURR		
SSR-M	SEH-d		
oMR	4-20		
t	200 (Relay)		
AL-1	AM1A		
AL-2	AM2A		

