LCD PID Temperature Controllers

TX Series

PRODUCT MANUAL

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.

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death

01. **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 personal injury, economic loss or fire.
02. **Do not use or store the unit in the place where flammable/explosive/ corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
    Failure to follow this instruction may result in explosion or fire.
03. **Install on a device panel to use.**
    Failure to follow this instruction may result in fire or electric shock.
04. **Do not connect, repair, or inspect the unit while connected to a power source.**
    Failure to follow this instruction may result in fire or electric shock.
05. **Check 'Connections' before wiring.**
    Failure to follow this instruction may result in fire.
06. **Do not disassemble or modify the unit.**
    Failure to follow this instruction may result in fire or electric shock.

⚠ Caution Failure to follow instructions may result in injury or product damage

01. **When connecting the power input and relay output, use AWG 20 (0.50 mm^2) cable or over, and tighten the terminal screw with a tightening torque of 0.74 to 0.90 N m.**
    When connecting the sensor input and communication cable without dedicated cable, use AWG 24 to 16 cable for screwless type, use AWG 28 to 16 cable for screw type, and tighten the terminal screw with a tightening torque of 0.74 to 0.90 N m for screw type.
    Failure to follow this instruction may result in fire or malfunction due to contact failure.
02. **Use the unit within the rated specifications.**
    Failure to follow this instruction may result in fire or product damage
03. **Use a dry cloth to clean the unit, and do not use water or organic solvent.**
    Failure to follow this instruction may result in fire or electric shock.
04. **Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
    Failure to follow this instruction may result in fire or product damage.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Check the polarity of the terminals before wiring the temperature sensor. For RTD temperature sensor, wire it as 3-wire type, using cables in same thickness and length. For thermocouple (TC) temperature sensor, use the designated compensation wire for extending wire.

- Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line. Do not use near the equipment which generates strong magnetic force or high frequency noise.
- Do not apply excessive power when connecting or disconnecting the connectors of the product.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Do not use the unit for other purpose (e.g. voltmeter, ammeter), but temperature controller.
- When changing the input sensor, turn off the power first before changing. After changing the input sensor, modify the value of the corresponding parameter.
- 24 VAC~, 24-48 VDC⎓ power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Do not overlapping communication line and power line. Use twisted pair wire for communication line and connect ferrite bead at each end of line to reduce the effect of external noise.
- Make a required space around the unit for radiation of heat. For accurate temperature measurement, warm up the unit over 20 min after turning on the power.
- Make sure that power supply voltage reaches to the rated voltage within 2 sec after supplying power.
- Do not wire to terminals which are not used.
- LCD performance may vary depending on the usage environment. Check the environmental conditions, and do not install the device in places where direct sunlight or high temperatures may be present.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude Max. 2,000 m
  - Pollution degree 2
  - Installation category II

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	❶	❷	-	❸	❹	❺	-	❻

❶ Display digits
4: 4 digit

❷ Size
- N: DIN W 48 × H 24 mm
- S: DIN W 48 × H 48 mm
- SP: DIN W 48 × H 48 mm (11 pin plug type)
- M: DIN W 72 × H 72 mm
- W: DIN W 96 × H 48 mm
- H: DIN W 48 × H 96 mm
- L: DIN W 96 × H 96 mm

❸ Option in/output
- 1: Alarm 1
- 2: Alarm 1 + Alarm 2
- R: Alarm 1 + PV transmission
- T: Alarm 1 + RS485
- A: Alarm 1 + Alarm 2 + PV transmission
- B: Alarm 1 + Alarm 2 + RS485

❹ Power supply
- 2: 24 VAC, 24-48 VDC
- 4: 100 - 240 VAC

❺ Control output
- R: Relay
- S: SSR drive
- C: Selectable current or SSR drive output

❻ Terminal type
- None: Screw
- L: Screwless

Product Components

- Product (+ bracket)
- [TX4N] Terminal Protection Cover × 1
- Instruction manual

Manual

For proper use of the product, refer to the manuals and be sure to follow the safety considerations in the manuals.
Download the manuals from the Autonics website.

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.

Sold Separately

- Terminal protection cover: RSA / RMA / RHA / RLA-COVER
- Communication Converter: SCM-USP / SCM-38I / SCM-US48I / SCM-WF48

Specifications

Series		TX Series
Power supply	AC type	100 - 240 VAC~ 50/60 Hz
	AC/DC type	24 VAC~ 50/60 Hz, 24-48 VDC⎓
Permissible voltage range		90 to 110 % of rated voltage
Power consumption	AC type	≤ 8 VA
	AC/DC type	AC: ≤ 8 VA, DC: ≤ 5 W
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	13 VDC⎓ ±3 V, ≤ 20 mA
	Current	DC 4-20 mA or DC 0-20 mA (parameter), Load resistance: ≤ 500 Ω
Alarm output	Relay	AL1/2: 250 VAC~ 3 A 1a • TX4N AL2: 125 VAC~ 0.3 A 1a
Option output	PV transmission	DC 4 - 20 mA (Load resistance: ≤ 500 Ω, Output Accuracy: ±0.3% F.S.)
	RS485 Comm.	Modbus RTU
Display type		11 Segment (White, Green, Yellow), LCD type [01]
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	≥ 5,000,000 operations
	Electrical	≥ 200,000 operations (resistance load: 250 VAC~ 3 A)
Dielectric strength		Between the charging part and the case: 3,000 VAC~ 50/60 Hz for 1 min
Vibration		0.75 mm amplitude at frequency 5 to 55Hz in each X, Y, Z direction for 2 hours
Insulation resistance		≥ 100 MΩ (500 VDC⎓ megger)
Noise immunity		±2 kV square shaped noise (pulse width 1 μs) 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: ⊡, dielectric strength between primary circuit and secondary circuit: 3 kV)
Certification [02]		CE UKCA cULus cULus US KC EAC
Unit weight (packaged)		• TX4N: ≈ 81 g (≈ 147 g) • TX4W: ≈ 132 g (≈ 198 g) • TX4S: ≈ 97 g (≈ 150 g) • TX4H: ≈ 130 g (≈ 196 g) • TX4S-L: ≈ 95 g (≈ 148 g) • TX4H-L: ≈ 136 g (≈ 201 g) • TX4SP: ≈ 93 g (≈ 122 g) • TX4L: ≈ 204 g (≈ 279 g) • TX4M: ≈ 138 g (≈ 213 g)

01) When using the unit at low temperature (below 0°C), display cycle is slow.
02) Certifications may differ depending on the model. Check the Autonics website for specific certification information.

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.

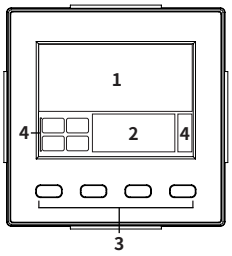
Input type		Decimal point	Display	Using range (°C)	Using range (°F)
Thermo -couple	K (CA)	1	K CA.H	-50 to 1,200	-58 to 2,192
		0.1	K CA.L	-50.0 to 999.9	-58.0 to 999.9
	J (IC)	1	J1 C.H	-30 to 800	-22 to 1,472
		0.1	J1 C.L	-30.0 to 800.0	-22.0 to 999.9
	L (IC)	1	L1 C.H	-40 to 800	-40 to 1,472
		0.1	L1 C.L	-40.0 to 800.0	-40.0 to 999.9
	T (CC)	1	t C C.H	-50 to 400	-58 to 752
		0.1	t C C.L	-50.0 to 400.0	-58.0 to 752.0
	R (PR)	1	RPR	0 to 1,700	32 to 3,092
	S (PR)	1	SPR	0 to 1,700	32 to 3,092
RTD	DPt100 Ω	1	dPt.H	-100 to 400	-148 to 752
		0.1	dPt.L	-100.0 to 400.0	-148.0 to 752.0
	Cu50 Ω	1	C U5.H	-50 to 200	-58 to 392
		0.1	C U5.L	-50.0 to 200.0	-58.0 to 392.0

■ 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

• In case of TX4SP Series, ±1°C will be added to the degree standard.

Unit Descriptions

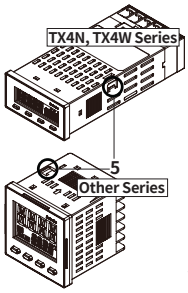


1. PV display part (White)
• Run mode: displays PV (Present value)
• Setting mode: displays parameter name

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 • SSR output (cycle/phase control) MV over 5% ON • Current output MV over 5% ON
AL1/2	Alarm output	Turns ON when each alarm output is ON

5. PC loader port:
For connecting communication converter (sold separately).
⚠ Do not drive with the loader port connected. Failure to follow this instruction may result in malfunction.

Initial Display When Power is ON

When power is supplied, after all display will flash for 1 sec, model name is displayed sequentially. After input sensor type will flash twice, enter into RUN mode.

	1. All display	2. Model	3. Input specification	4. Run mode
PV display part	8.8.8.8	t x 4S	t x 4S	oPEN
SV display part	8.8.8.8	24R	K CA.H	0

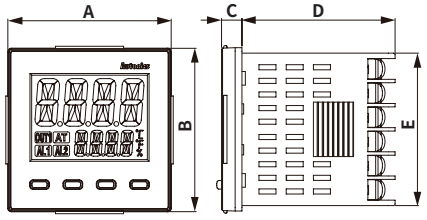
Errors

Display	Description	Troubleshooting
oPEn	Flashes when input sensor is disconnected or sensor is not connected.	Check input sensor status.
HHHH	Flashes when PV is higher than input range.[01]	When input is within the rated input range, this display disappears.
LLLL	Flashes when PV is lower than input range.[01]	

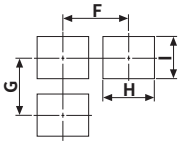
01) Be careful that when HHHH / LLLL error occurs, the control output may occur by recognizing the maximum or minimum input depending on the control type.

Dimensions

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



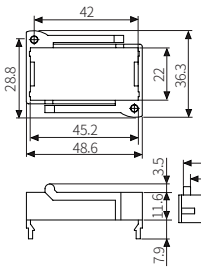
■ Panel cut-out



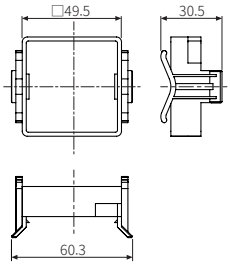
	Body					Panel cut-out			
	A	B	C	D	E	F	G	H	I
TX4N	48	24	4	94.2	21.8	≥ 55	≥ 37	$45^{+0.6}_{0}$	$22.2^{+0.3}_{0}$
TX4S	48	48	6	45	44.8	≥ 65	≥ 65	$45^{+0.6}_{0}$	$45^{+0.6}_{0}$
TX4S-L	48	48	6	54.6	44.8	≥ 65	≥ 65	$45^{+0.6}_{0}$	$45^{+0.6}_{0}$
TX4SP	48	48	6	67.1	44.8	≥ 65	≥ 65	$45^{+0.6}_{0}$	$45^{+0.6}_{0}$
TX4M	72	72	6	45	67.5	≥ 90	≥ 90	$68^{+0.7}_{0}$	$68^{+0.7}_{0}$
TX4W	96	48	6	45	44.7	≥ 115	≥ 65	$92^{+0.8}_{0}$	$45^{+0.6}_{0}$
TX4H	48	96	6	45	91.5	≥ 65	≥ 115	$45^{+0.6}_{0}$	$92^{+0.8}_{0}$
TX4H-L	48	96	6	54.6	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

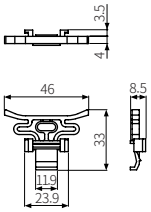
TX4N



TX4S/SP

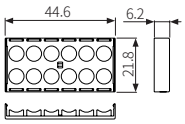


Other series



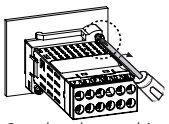
■ Terminal protection cover

TX4N



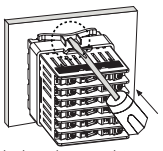
Installation Method

■ TX4N



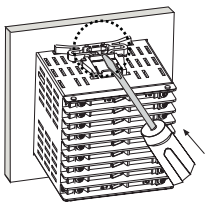
Crosshead screwdriver

■ TX4S/SP



Flathead screwdriver

■ Other series



Flathead screwdriver

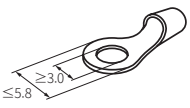
Mount the product to panel with bracket, push it to arrow direction by using screw driver.
• In case of TX4N Series, fasten the bolts.

Terminal Specifications

• Unit: mm, Use the terminal of follow shape.

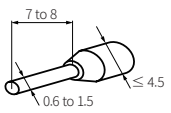
■ Screw: Crimp terminal

Fork crimp terminal



Round crimp terminal

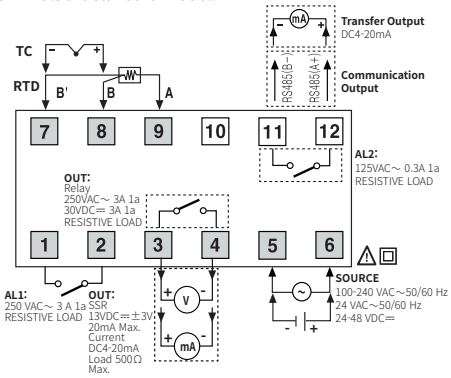
■ Screwless: Wire ferrule



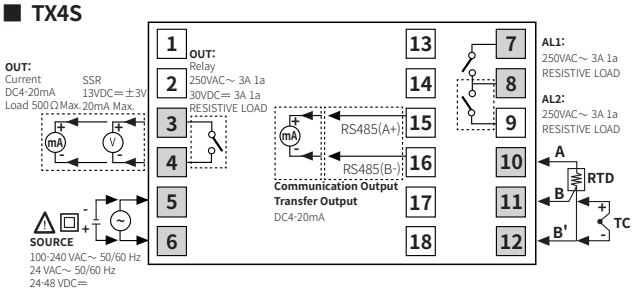
Connections

• Shaded terminals are standard model.

■ TX4N

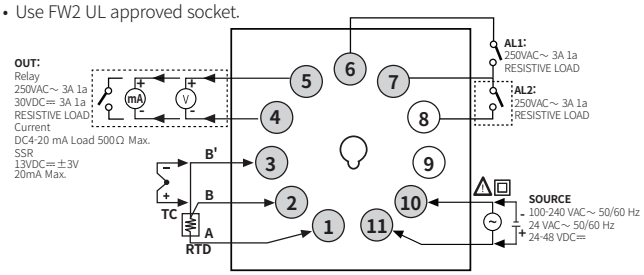


■ TX4S

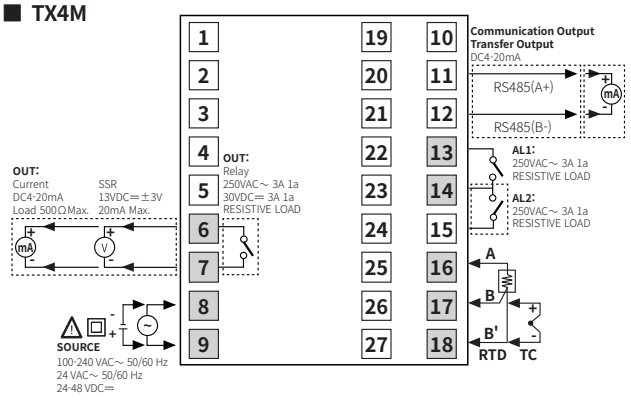


■ TX4SP

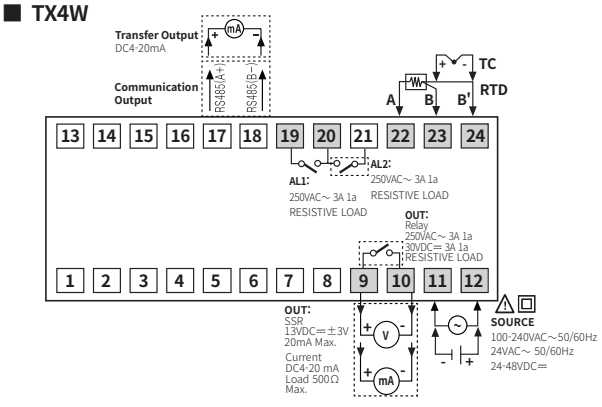
• Use FW2 UL approved socket.



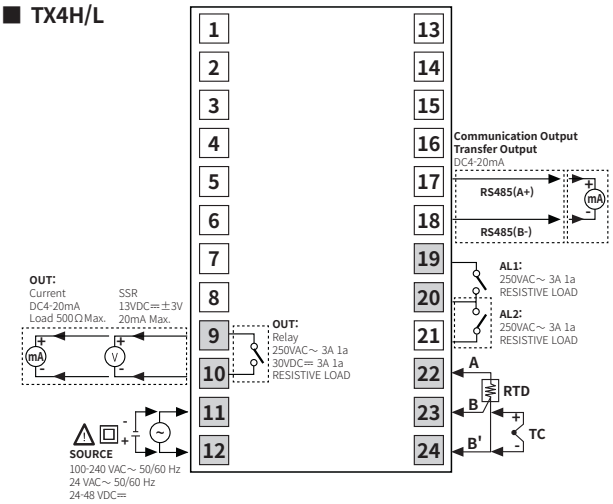
■ TX4M



■ TX4W



■ TX4H/L



Mode Setting

RUN	[MODE], [◀], [▲], [▼] →	**SV setting**	Move digits: [◀] Change value: [▲], [▼] Save: [MODE] or no key input over 3 sec	→ RUN
	[MODE] 2 sec →	**Parameter 1 group**	[MODE] over 3 sec	
	[MODE] 4 sec →	**Parameter 2 group**	[MODE] over 3 sec	
	[◀] + [▲] + [▼] over 5 sec →	**Parameter reset**	Refer to 'Parameter Reset'	→
	[▲] + [▼] over 3 sec →	**Digital input key**	Auto	→

Parameter Reset

01. Press the [◀] + [▲] + [▼] keys for over 5 sec. in run mode, INIT turns ON.
02. Change the setting value as YES by pressing the [▲] , [▼] keys.
03. Press the [MODE] key to reset all parameter values as default and to return to run mode.

Parameter Setting

- Some parameters are activated/deactivated depending on the model or setting of other parameters. Refer to the descriptions of each item.
- [MODE] key: Move to next item after saving / Return to RUN mode after saving (≥ 3 sec) / Return to previous parameter after saving (within 1 sec returning to RUN mode)
  [◀] key: Select parameter / Move digits / Return to the upper level without saving (≥ 2 sec) / Return to RUN mode without saving (≥ 3 sec)
  [▲], [▼] key: Select parameter / Change setting value
- Return to the upper level without saving when there is no key input for more than 30 seconds.
- The range in parentheses '( )' is the setting range when the set value of the 'input specification' parameter is used with one decimal point.
- Recommended parameter setting sequence: Parameter 2 group → Parameter 1 group → SV setting mode

■ Parameter 1 group

Parameter		Display	Default	Setting range	Condition
1-1	AL1 alarm temperature	AL 1	1250	Deviation alarm: -F.S. to F.S. °C/°F Absolute value alarm: Within input range	2-16/19 AL1/2 alarm Operation: AM1 to AM6, HBA
1-2	AL2 alarm temperature	AL2	1250	[Alarm output2 model] Same as 1-1 AL1 alarm temperature	
1-3	Auto tuning	At	oFF	OFF: Stop, ON: Execution	-
1-4	Proportional band	P	10.0	0.1 to 999.9 °C/°F	2-8 Control type: PID
1-5	Integral time	I	240	0 (OFF) to 9,999 sec	
1-6	Derivative time	d	49	0 (OFF) to 9,999 sec	
1-7	Manual reset	RESt	50.0	0.0 to 100.0%	2-8 Control type: PID & 1-5 Integral time: 0
1-8	Hysteresis	HYS	2	1 to 100 (0.1 to 50.0) °C/°F	2-8 Control type: ONOF

■ Parameter 2 group

Parameter		Display	Default	Setting range	Condition
2-1	Input specification[01]	IN-t	K CA.H	Refer to 'Input Type and Using Range'	-
2-2	Temperature unit[01]	UNIt	°C	°C, °F	-
2-3	Input correction	IN-b	0	-999 to 999 (-199.9 to 999.9) °C/°F	-
2-4	Input digital filter	MAV.F	0.1	0.1 to 120.0 sec	-
2-5	SV low limit[02]	L-SV	-50	Within '2-1 Input specification: using range' L-SV ≤ H-SV - 1-digit °C/°F	-
2-6	SV high limit[02]	H-SV	1200	H-SV ≥ L-SV + 1-digit °C/°F	-
2-7	Control output mode	o-Ft	HEAt	HEAT: Heating, COOL: Cooling	-
2-8	Control type[03]	C-Md	PId	PID, ONOF: ON/OFF	-
2-9	Control output	oUt	CURR	[Selectable current or SSR drive output model] CURR: Current, SSR	-
2-10	SSR drive output type	SSR.M	StNd	[SSR drive output model] STND, CYCL, PHAS	-
2-11	Current output range	o.MA	4-20	4-20: 4-20 mA, 0-20: 0-20 mA	2-9 Control output: CURR
2-12	Control cycle	t	20.0 (Relay) 2.0 (SSR)	0.5 to 120.0 sec	2-8 Control type: PID or 2-10 SSR drive output type: STND
2-13	AL1 alarm operation	AL-1	AM1A □□□■	□□□ AM0: Off AM1: Deviation high limit alarm AM2: Deviation low limit alarm AM3: Deviation high, low limit alarm AM4: Deviation high, low reverse alarm AM5: Absolute value high limit alarm AM6: Absolute value low limit alarm SBA: Sensor break alarm LBA: Loop break alarm (LBA)	-
2-14	AL1 alarm option			■ A: Standard alarm B: Alarm latch C: Standby sequence 1 D: Alarm latch and standby sequence 1 E: Standby sequence 2 F: Alarm latch and standby sequence 2 • Enter to option setting: Press [◀] key in 2-13 AL-1 alarm operation.	-
2-15	AL2 alarm operation	AL-2	AM2A	[Alarm output2 model] Same as '2-13/14 AL1 alarm operation/ option'	-
2-16	AL2 alarm option				
2-17	Alarm output hysteresis	AHYS	1	1 to 100 (0.1 to 50.0) °C/°F	2-13/14 AL1/2 alarm operation: AM1 to 6
2-18	LBA time	LbAt	0	0 (OFF) to 9,999 sec or auto[04]	2-13/14 AL1/2 alarm operation: LBA
2-19	LBA band	LbAb	2	0 (OFF) to 999 (0.0 to 999.9) °C/°F or auto[05]	2-13/14 AL1/2 alarm operation: LBA & 2-18 LBA time: > 0
2-20	Transmission output low limit	FS-L	-50	[PV transmission output model] Refer to 'Input Type and Using Range'	-
2-21	Transmission output high limit	FS-H	1200		
2-22	Comm. address	AdRS	1	[Communication output model] 1 to 127	-
2-23	Comm. speed	bPS	96	[Communication output model] 24, 48, 96, 192, 384 (×100) bps	-
2-24	Comm. parity bit	PRtY	NONE	[Communication output model] NONE, EVEN, ODD	-
2-25	Comm. stop bit	StP	2	[Communication output model] 1, 2 bit	-
2-26	Response time	RSWt	20	[Communication output model] 5 to 99 ms	-
2-27	Comm. write	CoMW	EN.A	[Communication output model] EN.A: Enable, DIS.A: Disable	-
2-28	Digital input key	di-K	StoP	STOP: Stop control output, AL.RE: Alarm reset, AT*: Execute auto tuning, OFF	*2-8 Control type: PID
2-29	Sensor error, MV	ER.MV	0.0	0.0: OFF, 100.0: ON	2-8 Control type: ONOF
				0.0 to 100.0%	2-8 Control type: PID
2-30	Lock	LoC	oFF	OFF LOC1: Lock parameter 2 group LOC2: Lock parameter 1/2 group LOC3: Lock parameter 1/2 group, SV setting	-

01) Below parameters are initialized when the setting value is changed.
- Parameter 1 group: AL1/2 alarm temperature,
- Parameter 2 group: Input correction, SV high/low limit, LBA band, Alarm output Hysteresis

02) If SV is lower/higher than low/high limit when the value is changed, SV is changed to the low/high limit value.

03) When changing the value from PID to ONOF, each value of following parameter is changed.
2-28 Digital input key: OFF, 2-29 Sensor error, MV: 0.0 (Setting value is lower than 100.0)

04) After auto tuning, the range is set as twice of the integral time automatically. If the previous setting value is outside of the range automatically set, it is set to the nearest Max. or Min. value of the range.

05) After auto tuning, the range is set as 10% of the proportion band automatically. If the previous setting value is outside of the range automatically set, it is set to the nearest Max. or Min value of the range.

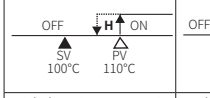
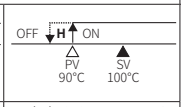
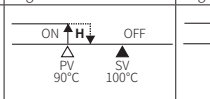
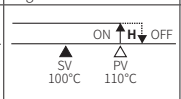
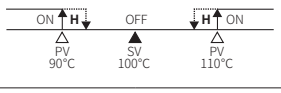
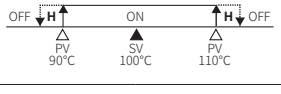
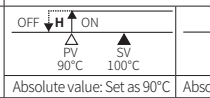
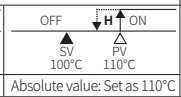
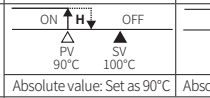
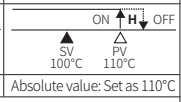
Function: Alarm

888. 8
Alarm operation **Alarm option**

Set both alarm operation and alarm option by combining.
Each alarm operates individually in two alarm output models.
When the current temperature is out of alarm range, alarm clears automatically.

■ Operation

• **H**: Alarm output hysteresis

Mode	Name	Alarm operation		Description
AM0	-	-		No alarm output
AM1	Deviation high limit			If deviation between PV and SV as high-limit is higher than set value of deviation temperature, the alarm output will be ON.
		High deviation: Set as 10°C	High deviation: Set as -10°C	
AM2	Deviation low limit			If deviation between PV and SV as low limit is higher than set value of deviation temperature, the alarm output will be ON.
		Low deviation: Set as 10°C	Low deviation: Set as -10°C	
AM3	Deviation high, low limit			If deviation between PV and SV as high/low-limit is higher than set value of deviation temperature, the alarm output will be ON.
		High, Low deviation: Set as 10°C		
AM4	Deviation high, low limit reverse			If deviation between PV and SV is higher than the lower limit deviation set value and less than the upper limit deviation set value, the alarm output will be ON.
		High, Low deviation: Set as 10°C		
AM5	Absolute value high limit			If PV is higher than the absolute value, the output will be ON.
		Absolute value: Set as 90°C	Absolute value: Set as 110°C	
AM6	Absolute value low limit			If PV is lower than the absolute value, the output will be ON.
		Absolute value: Set as 90°C	Absolute value: Set as 110°C	
SbA	Sensor break	-		It will be ON when it detects sensor disconnection.
LbA	Loop break	-		It will be ON when it detects loop disconnection.

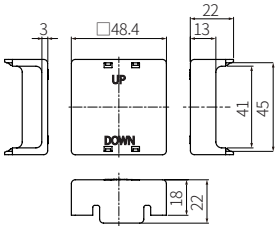
■ Option

Mode	Name	Description	Condition of reapply
A	Standard alarm	If it is an alarm condition, alarm output is ON. If it is a clear alarm condition, alarm output is OFF.	-
b	Alarm latch	If it is an alarm condition, alarm output is ON and maintains ON status.	-
C	Standby sequence 1	First alarm condition is ignored and from second alarm condition, standard alarm operates. When power is supplied and it is an alarm condition, this first alarm condition is ignored and from the second alarm condition, standard alarm operates.	Power ON
d	Alarm latch and standby sequence 1	If it is an alarm condition, it operates both alarm latch and standby sequence. When power is supplied and it is an alarm condition, this first alarm condition is ignored and from the second alarm condition, alarm latch operates.	
E	Standby sequence 2	First alarm condition is ignored and from second alarm condition, standard alarm operates. When re-applied standby sequence and if it is alarm condition, alarm output does not turn ON. After clearing alarm condition, standard alarm operates.	Power ON, change SV, change alarm temperature / operation or change STOP to RUN mode
F	Alarm latch and standby sequence 2	Basic operation is same as alarm latch and standby sequence1. It operates not only by power ON/OFF, but also alarm set value, or alarm option changing. When re-applied standby sequence and if it is alarm condition, alarm output does not turn ON. After clearing alarm condition, alarm latch operates.	

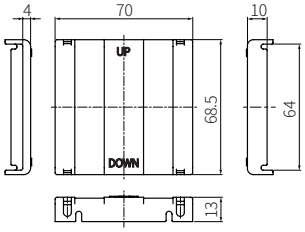
Sold Separately: Terminal Protection Cover

• Unit: mm, Only available for screw type models.

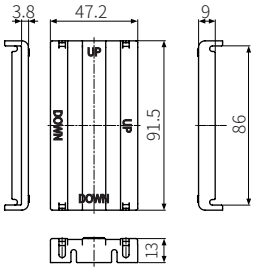
RSA-COVER: DIN W48 × H48



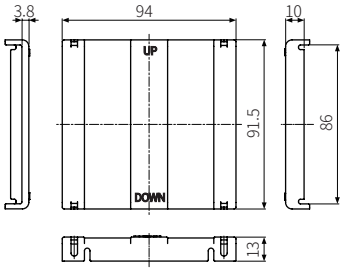
RMA-COVER: DIN W72 × H72



RHA-COVER: DIN W48 × H96



RLA-COVER: DIN W96 × H96



Segment Table

The segments displayed on the product indicate the following meanings. It may differ depending on the product.

7 Segment			
0	0	I	I
1	1	J	J
2	2	K	K
3	3	L	L
4	4	M	M
5	5	N	N
6	6	O	O
7	7	P	P
8	8	Q	Q
9	9	R	R
A	A	S	S
b	B	T	T
C	C	U	U
d	D	V	V
E	E	W	W
F	F	X	X
G	G	Y	Y
H	H	Z	Z

11 Segment			
0	0	I	I
1	1	J	J
2	2	K	K
3	3	L	L
4	4	M	M
5	5	N	N
6	6	O	O
7	7	P	P
8	8	Q	Q
9	9	R	R
A	A	S	S
b	B	T	T
C	C	U	U
d	D	V	V
E	E	W	W
F	F	X	X
G	G	Y	Y
H	H	Z	Z

12 Segment			
0	0	I	I
1	1	J	J
2	2	K	K
3	3	L	L
4	4	M	M
5	5	N	N
6	6	O	O
7	7	P	P
8	8	Q	Q
9	9	R	R
A	A	S	S
b	B	T	T
C	C	U	U
d	D	V	V
E	E	W	W
F	F	X	X
G	G	Y	Y
H	H	Z	Z

16 Segment			
0	0	I	I
1	1	J	J
2	2	K	K
3	3	L	L
4	4	M	M
5	5	N	N
6	6	O	O
7	7	P	P
8	8	Q	Q
9	9	R	R
A	A	S	S
b	B	T	T
C	C	U	U
d	D	V	V
E	E	W	W
F	F	X	X
G	G	Y	Y
H	H	Z	Z

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