

Autonics Dual PID Control Temperature Controller

TZ 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.
- 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 1.0N·m.
When connecting the sensor input and communication cable without dedicated cable, use AWG 28-16 cable and tighten the terminal screw with a tightening torque of 1.0N·m.
Failure to follow this instruction may result in fire or malfunction due to contact failure.
- Use the unit within the rated specifications.** Failure to follow this instruction may result in fire or product damage.
- 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

TZ	4	SP	-	1	4	R		
Control output	R	Relay output	S	SSR drive output	C	Current output		
Power supply	4	100-240VAC 50/60Hz	Option output	1 ^{K1, K2}	Event 1	2 ^{K2}	Event 1 + Event 2	
				R ^{K2}	Event 1 + PV transmission (DC4-20mA)	T	Event 1 + RS485 communication	
				A	Event 1 + Event 2 + PV transmission (DC4-20mA)	B	Event 1 + Event 2 + RS485 communication	
Size	SP	DIN W48×H48mm (plug type) ^{K3}	ST	DIN W48×H48mm (terminal block type)	M	DIN W72×H72mm	W	DIN W96×H48mm
	L	DIN W48×H96mm	H	DIN W96×H96mm	Digit	4	9999 (4-digit)	
Item	TZ	Temperature controller						

- ※ The unit cannot be configured with any random combination from the above ordering information. Please refer to Specifications for possible configurations.
- ※ 1: TZ4SP only supports Event 1 option output.
- ※ 2: TZ4ST only supports Event 1, Event 1 + Event 2, and Event 1 + PV transmission (DC4-20mA) option output.
- ※ 3: 11-pin sockets (PG-11, PS-11(N)) are sold separately.

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

■ Specifications

Series	TZ4SP	TZ4ST	TZ4M	TZ4W	TZ4H	TZ4L
Power supply	100-240VAC~50/60Hz					
Allowable voltage range	90 to 110% of rated power voltage					
Power consumption	Max. 5VA (100-240VAC 50/60Hz) Max. 6VA (100-240VAC 50/60Hz)					
Display method	7-segment LED (PV: red, SV: green)					
Character size	PV (W×H) SV (W×H)	4.8×7.8mm	9.8×14.2mm 8.0×10.0mm	8.0×10.0mm	3.8×7.6mm	9.8×14.2mm 8.0×10.0mm
Input type	RTD	DPT100Ω, JPt100Ω, 3-wire (allowed resistance: max. 5Ω per line)				
	TC	K (CA), J (IC), R (PR), E (CR), T (CC), S (PR), N (NN), W (TT) (allowed resistance: max. 100Ω per line)				
	Analog	1-5VDC~, 0-10VDC~, DC4-20mA				
Display accuracy	F.S. ±0.3% or 3°C, greater value					
Control output	Relay	250VAC~3A, 30VDC~3A, 1c				
	SSR	Max. 12VDC±3V 30mA				
	Current	DC4-20mA (load resistance max. 600Ω)				
Option output	EVENT1	250VAC~1A 1a				
	EVENT2	— 250VAC~1A 1a				
	PV transmission	— DC4-20mA (load resistance max. 600Ω)				
	Communication	— RS485 communication				
Control method	ON/OFF, P, PI, PD, PIDF, PID control					
Alarm output hysteresis	1 to 100°C (0.1 to 100.0°C) variable					
Proportional band (P)	0.0 to 100.0%					
Integral time (I)	0 to 3,600 sec					
Derivative time (D)	0 to 3,600 sec					
Control period (T)	1 to 120 sec					
Sampling period	0.5 sec					
LBA setting	1 to 999 sec					
Ramp setting	Ramp Up, Ramp Down: 1 to 99 min each					
Dielectric strength	2,000VAC 50/60Hz for 1 min (between input and power terminals)					
Vibration	Mechanical	0.75mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours				
	Electrical	0.5mm amplitude at frequency 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min				
Relay life cycle	Control output	Mechanical: min. 10,000,000 operations. Electrical: min. 100,000 operations (250VAC 3A resistance load)				
	Option output	Mechanical: min. 20,000,000 operations. Electrical: min. 500,000 operations (250VAC 1A resistance load)				
Insulation resistance	Over 100MΩ (at 500VDC megger)					
Noise immunity	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				
Approval	CE, c, US					
Weight ^{K1}	Approx. 205g (approx. 144g)	Approx. 218g (approx. 162g)	Approx. 360g (approx. 228g)	Approx. 365g (approx. 246g)	Approx. 474g (approx. 304g)	Approx. 474g (approx. 304g)

■ Input Type and Range

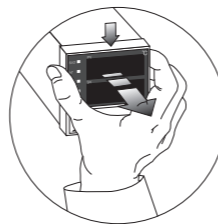
Input type	Decimal point	Display	Input range (°C)	Input range (°F)
Thermo couple	K (CA)	1	ELRH -100 to 1300	-148 to 2372
	K (CA)	0.1	ELRL -100.0 to 999.9	Not supported
	J (IC)	1	JLCH 0 to 800	32 to 1472
	J (IC)	0.1	JLCL 0.0 to 800.0	Not supported
	R (PR)	1	rPr 0 to 1700	32 to 3092
	E (CR)	1	ELRH 0 to 800	32 to 1472
	E (CR)	0.1	ELRL 0.0 to 800.0	Not supported
	T (CC)	1	ELCH -200 to 400	-328 to 752
	T (CC)	0.1	ELCL -199.9 to 400.0	Not supported
	S (PR)	1	sPr 0 to 1700	32 to 3092
RTD	JPt100Ω	0.1	JPEH -199.9 to 199.9	-199.9 to 391.8
	DPT100Ω	1	dPEH 0 to 500	32 to 932
	DPT100Ω	0.1	dPEL -199.9 to 199.9	-199.9 to 391.8
	Analog	Voltage	0 - 10VDC	A--1 -1999 to 9999
		1 - 5VDC	A--2 (display range will vary depending on the decimal point.)	
	Current	DC4 - 20mA	A--3	

■ Configuring Input Type

Please configure the internal switches before supplying power. After supplying power, configure the input type [n-t] in parameter group 2 according to the input type.

Input type	S/W 1	S/W 2
Thermocouple		
RTD	1 1	m A V
Analog	Voltage (0-10VDC, 1-5VDC)	2 2
	Current (DC4-20mA)	2 2

- Detaching the case
Press the front case then pull the case to detach the case from the body. Configure the internal switches as input type.



■ Dimensions

(unit: mm)

• TZ4SP

• TZ4ST

• TZ4M

• TZ4W

• TZ4H

• TZ4L

• Bracket

• TZ4ST, TZ4SP Series

• TZ4L, TZ4M, TZ4H, TZ4W Series

• Panel cut-out dimensions (unit: mm)

Series	A	B	C	D
TZ4SP	Min. 55	Min. 62	45 ^{±0.2}	45 ^{±0.2}
TZ4ST	Min. 55	Min. 62	45 ^{±0.2}	45 ^{±0.2}
TZ4M	Min. 74	Min. 91	68 ^{±0.2}	68 ^{±0.2}
TZ4W	Min. 112	Min. 50	92 ^{±0.2}	45 ^{±0.2}
TZ4H	Min. 50	Min. 102	45 ^{±0.2}	92 ^{±0.2}
TZ4L	Min. 98	Min. 106	92 ^{±0.2}	92 ^{±0.2}

■ Connections

※ Use terminals of size specified below.

Terminal	Round	Forked
a	Min. 3.5mm	Min. 3.5mm
b	Max. 7.2mm	Max. 7.2mm

• TZ4SP

• TZ4M

• TZ4ST

• TZ4W

• TZ4L

