

THUMBWHEEL SWITCH / ROTARY DIAL
TEMPERATURE CONTROLLER

MXD / MXR Series

INSTRUCTION MANUAL

MXD/MXR 260701EN

PIDMaxWell

Thank you for choosing our product.
Please read and understand the instruction manual before using it.
For your safety, read and follow the below Safety considerations before using.
For your safety, read and follow the considerations in the instruction manual, other manuals and the website.
Keep this instruction manual in a place where you can find it easily.
The product specifications, dimensions, etc., are subject to change due to improvement or discontinuation without notice.
Follow the website for the latest information.

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ Accidents or dangers may occur under particular conditions.

⚠ Warnings

Failure to follow instructions may result in severe injury or death

01. Fail-safe device must be installed when using the unit with machinery that may cause severe 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 may result in personal injury, economic loss or fire.
02. Do not use the unit in flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity environments.
Failure to follow may result in an explosion or fire.
03. Install on a device panel to use.
Failure to follow may result in fire or electric shock.
04. Do not connect, repair, or inspect the unit while the power is on.
Failure to follow may result in fire or electric shock.
05. Check 'Connections' before wiring.
Failure to follow may result in fire.
06. Do not disassemble or modify the unit.
Failure to follow 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 cable, 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 28 to 16 cable and tighten the terminal screw with a tightening torque of 0.74to 0.90 N m.
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 chips, 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.
- 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.
- 24VDC ≡ power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- 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.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in'Specifications')
 - Altitude Max.2,000m
 - Pollution degree 2
 - Installation category II

Display Character Description									
0	1	2	3	4	5	6	7	8	9
A	b	c	d	E	F	G	H	i	J
K	L	M	n	o	P	q	r	S	t
U	v	W	X	y	Z	-	-	-	-
U	v	W	X	y	Z	-	-	-	-

Ordering Information

For reference only, the actual product does not support all combinations.

M	X	①	-	②	③	-	④
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- ① Setting method

D: Thumbwheel switch type
R: Rotary dial type
- ③ Input type

K : K type
E : E type
J : J type
Pt: Pt100 type
- ② Size

S : DIN W 48 × H 48 mm
H : DIN W 48 × H 96 mm
M : DIN W 72 × H 72 mm
L : DIN W 96 × H 96 mm
- ④ Power supply

2 : 100-240VAC~50/60Hz

Product Components

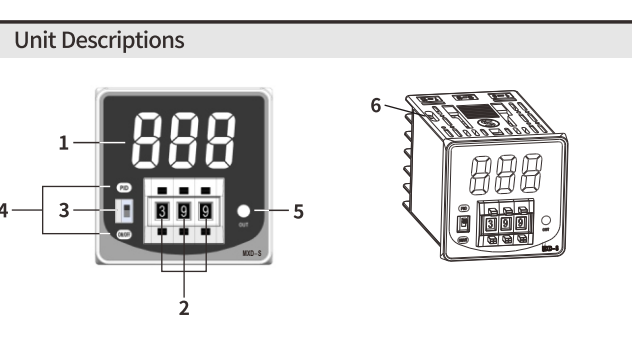
- Product
- Instruction manual
- Bracket

Sold Separately

- Terminal protection cover: SP-S/SP-H/SP-M/SP-L Cover

Specifications

Series	MX□-□ □-□	
Power supply	100-240VAC~50/60Hz ±10%	
Power consumption	≤ 5VA	
Sampling period	100ms	
Input type (Factory-set)	TC	K E J
	RTD	Pt100
Display Accuracy	At room temperature (23°C ± 5°C)	(±0.5% of PV or ±2°C, whichever is greater) ±1 digit
	Outside room temperature range	(±0.5% of PV or ±3°C, whichever is greater) ±1 digit
Control output	Relay	250VAC~3A
Display type		
Control type	ON/OFF Control	Hysteresis: 2°C (fixed)
	PID Control	P:30.0 I:240 D:60 Control cycle: 20 sec (fixed)
Relay life cycle	Mechanical	≥5,000,000 operations
	Electrical	≥200,000 operations
Dielectric strength		
Between the charging part and the case, and between input and power supply terminals: 2,000 VAC~ 50/60 Hz for 1 min.		
Vibration		
0.75mm amplitude at frequency 5 to 55Hz (for 1 min.) in each X, Y, and Z direction for 2 hours		
Insulation resistance		
≥100MΩ (500VDC ≡ megger)		
Noise immunity		
±2 kV/square shaped noise (pulse width: 1μs) 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)		
Certification		
CE		
Unit weight(packaged)	•MXD-S : ≈70g(≈105g)	•MXD / MXR-M : ≈105g(≈150g)
	•MXD-H: ≈95 g(≈145g)	•MXD / MXR-L : ≈145 g(≈205g)



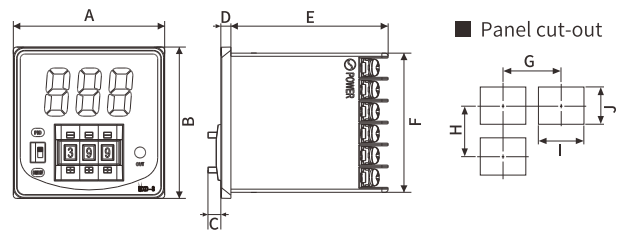
1. Display part (red led)
2. Setting part
- MXD: Thumbwheel switch type
- MXR: Rotary dial type
3. Control mode selection
- PID / ON-OFF control switching
- 4/5. Indicator
- | Display | Name | Description |
|---------|----------------|---|
| PID | PID Control | Lights up when PID control mode is ON. |
| ON/OFF | ON/OFF Control | Lights up when ON/OFF control mode is ON. |
| OUT | Control Output | Lights up when the control output is ON. |
6. PC loader port: For connecting the communication converter (sold separately).

Errors

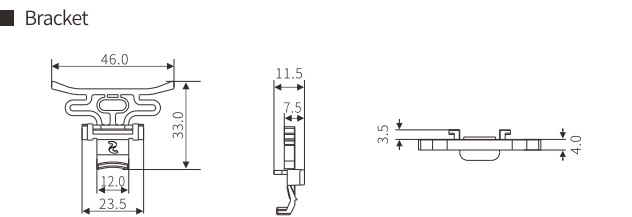
Display	Description	Output	Treatment
HHH	The PV is higher than input range	OFF	When PV is within the rated input range, this display disappears
LLL	The PV is lower than input range		

Dimensions

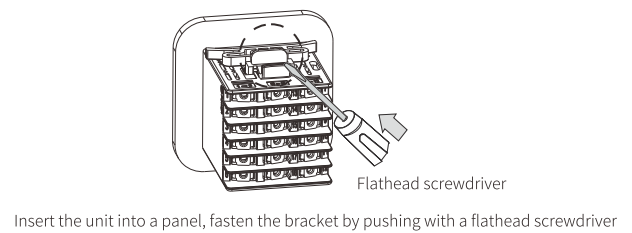
- Below is based on TXD-S Series , Unit: mm



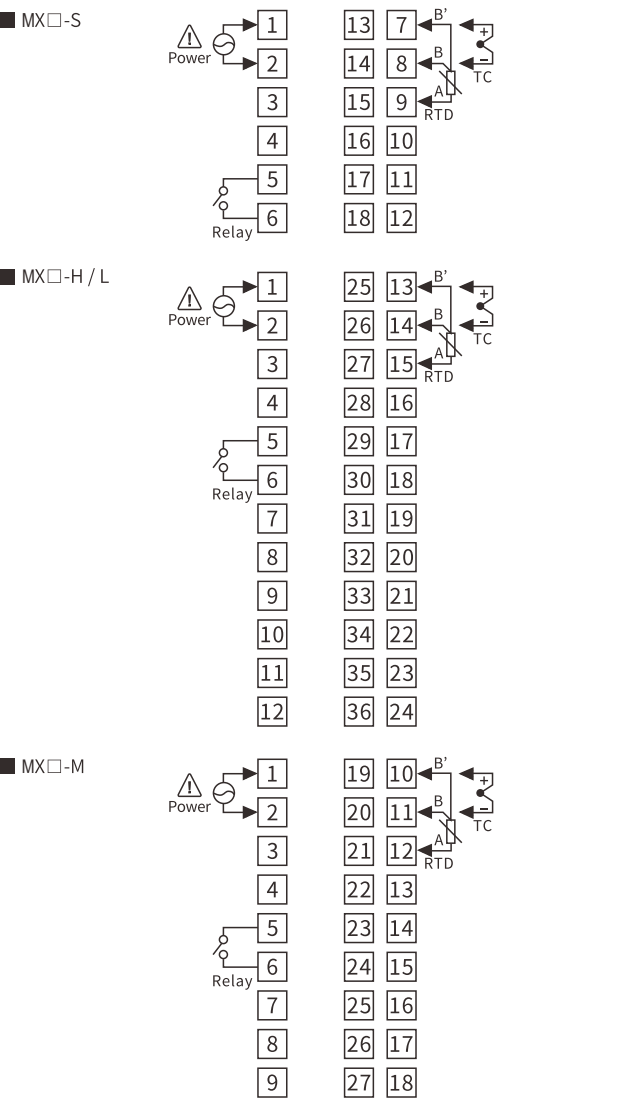
	Body						Panel cut-out			
	A	B	C	D	E	F	G	H	I	J
MXD-S	48	48	4	3	50	44.5	≥70	≥70	45	45
MXD-H	48	96	5	3	50	91	≥70	≥120	45	92
MXD-M	72	72	5	3	50	67	≥95	≥95	68	68
MXD-L	96	96	5	3	50	91	≥120	≥120	92	92
MXR-M	72	72	8	3	50	67	≥95	≥95	68	68
MXR-L	96	96	8	3	50	91	≥120	≥120	92	92



Installation Method



Wiring Diagram



Crimp Terminal Specifications

- Unit: mm, Use the crimp terminal of follow shape



Function Description

- PID Control
- For PID control, proportional control (P) operates smooth control without vibration, automatically corrects offset with integral action (I), and speeds up response to disturbance with differential action(D). It shows excellent control results even for control targets with delay time.
- Proportional control (P) : Smooth control without vibration
 - Integral action (I) : Automatically correct offset
 - Differential action (D) : Fast response to disturbances
- ON/OFF Return Value
- Set the interval data between the ON and OFF of the ON/OFF control.
Initial value of OH is 2.
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