

# DIGITAL THERMOSTAT

## DATA SHEET

**PXR3**

Digital thermostat PXR3 is an on-off temperature alarm that accepts signals from a thermocouple or a thermistor and transmits relay contact output signals when the input reaches the alarm setpoint. It is most suited to overheat detection of a wide range of equipment.

## FEATURES

- 1. Compact design**  
H24 × W48 × D98 mm (1/32 DIN), 150 g
- 2. Accepts thermocouples or thermistor**  
Supporting five types of thermocouples or thermistor (0–100°C), PXR3 can be used in various applications from low temperature to high temperature.
- 3. Temperature display**  
You can quickly check the system temperature and the alarm setpoint by easy key operation.



- 4. Alarm setting available in 1°C steps**  
You can set the alarm setpoint in 1°C steps by front key operation
- 5. Waterproof front panel**  
IP66 (NEMA 4X) waterproof structure allows you to wash the panel
- 6. Two relay outputs (option)**  
Enables high/low, high/high, or low/low limit setting

## SPECIFICATIONS

Input	Number of inputs: 1 Input signal and measurable range: see Table 1. Allowable signal source resistance: thermocouple input ≤ 100Ω Measurement cycle: ≤ 2 seconds  Burnout function (open-circuit detection): you can set the output upon an open-circuit to the upper limit or the lower limit Input impedance: thermocouple input ≥ 1 MΩ Input filter: first-order lag filter, configurable in 0.5-second steps, within 0–90 seconds Input compensation: configurable within ±10% of measurement range
Display and keys	Green LED 7-segment 4-digit alphanumeric display Display contents: measured value, alarm 1 setpoint, alarm 2 setpoint, parameter name, parameter value 3 keys, with key lock function
Accuracy	Indication accuracy: See Table 1 (Error of temperature sensor is not included) Reference junction compensation accuracy: ±1°C (at 23°C)
Alarm output	Form A (SPST-NO) contact, 1 or 2 points Contact capacity: 220 V AC / 30 V DC, 1A (resistive load) Mechanical life of contact: 10 million times (no load) Electrical life of contact: 100 thousand times (rated load)  Output cycle: 0.5 seconds  Alarm type: see Table 2 Alarm setpoint: configurable in 1°C steps, within 0–100% of measurement range Hysteresis: configurable in 1°C steps, within 0–110% of measurement range Alarm delay: configurable within 0–120 seconds

Power supply	100 (-15%) V to 240 (+10%) V AC, 50/60 Hz Power consumption: ≤ 6 VA (at 100 V AC), ≤ 8 VA (at 240 V AC),
Operating conditions	Ambient temperature: -10°C to +50°C Ambient humidity: ≤ 90% RH (no condensation)
Mounting	Panel mount, or DIN rail or wall mount when using DIN rail mounting adapter (separate order item)
Dimensions	H24 × W48 × D98 mm
Weight	Approx. 150 g
Case materials	Plastic (equivalent to non-combustibility grade UL94V-0)
IP rating of front panel	IP66 (equivalent to NEMA 4X) When installed with our genuine waterproof packing.
Terminal	Screw clamp terminal
Finish color	Black
Certification	UL, C-UL
EU Directive Compliance	LVD (2014/35/EU) EN 61010-1 EN 61010-2-030 EMC (2014/30/EU) EN 61326-1 (Table 2) EN 55011 (Group 1 Class A) EN 61000-3-2 (Class A) EN 61000-3-3 RoHS (2011/65/EU) EN 50581

**Table 1 Input range code**

Input signal	Code of Pn2	Range (°C)	Indication accuracy
Thermocouple	J	0 to 800	±0.5% FS ±1digit ±1°C
	K	0 to 1200	±0.5% FS ±1digit ±1°C
	R	0 to 1600	±0.5% FS ±1digit ±1°C
	T	0 to 400	±0.5% FS ±1digit ±1°C
	E	0 to 600	±0.5% FS ±1digit ±1°C
Thermistor	PB-36	0 to 100	±4°C

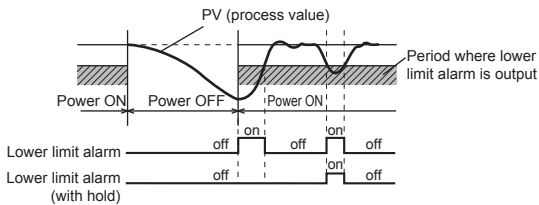
- Notes
- 1) Correct display is not made in the range of 0 - 500°C of type R thermocouple.
  - 2) It is not permitted to make switching between thermistor input and thermocouple input. (It is fixed depending on what was specified at the time of purchase.)
  - 3) If the input signal was changed, the measuring range should be changed to a value that corresponds to the input signal. (Set PSL at 0 and set PSU at the upper limit value of the measuring range.)
  - 4) The accuracy of indication of the thermocouple does not include the reference junction compensation accuracy (±1°C).
  - 5) The accuracy of indication of thermistor input does not include the accuracy of the sensor.

**Table 2 Alarm types**

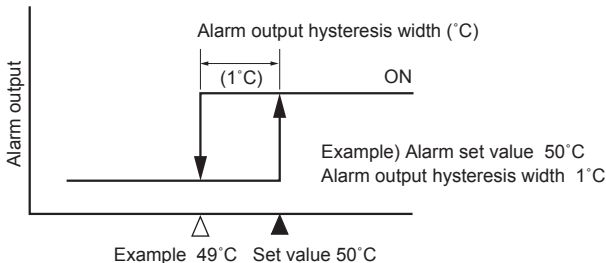
Code of PA1 and 2	Alarm type	Set value	Hold function	Relay operation at alarm	Action diagram
0	No alarm	If your PXR3 has two alarms but you want to use only one alarm, set the other alarm to "0".			
1	Upper limit	Absolute value	Without	Relay energization	
2	Lower limit	Absolute value	Without	Relay energization	
3	Upper limit	Absolute value	With	Relay energization	
4	Lower limit	Absolute value	With	Relay energization	
5	Upper limit	Absolute value	Without	Relay de-energization	
6	Lower limit	Absolute value	Without	Relay de-energization	
7	Upper limit	Absolute value	With	Relay de-energization	
8	Lower limit	Absolute value	With	Relay de-energization	

- Notes
- 1) Be sure to power-cycle PXR3 after you change the alarm type.
  - 2) How to read activation diagram
    - area: Range in which the AL1 or the AL2 indicator lights.
    - area: Range in which the alarm relay is energized
    - point: Alarm set value
    - The horizontal represents PV.
  - 3) What is the hold function?
 

Even if the process value is within the alarm range when turning on power, the alarm does not turn on immediately but only after it leaves and then returns to the alarm range.



**Fig. 1 Alarm output hysteresis**



**CODE SYMBOLS**

Input signal	Temperature sensor	Number of alarm	Model code
Thermocouple	Option	1	PXR3TAY2-0V061
		2	PXR3TAY2-1V061
Thermistor	Provided	1	PXR3HAY2-0V061
		2	PXR3HAY2-1V061

**OPTIONAL ITEM**

DIN rail adapter (Model: ZZP\*CTK368715P1)

**DEFAULT SETTING**

Measurable range	K thermocouple input (0 to 1200°C) Thermistor input (0 to 100°C)
Alarm set value	K thermocouple input: For 1-point alarm (upper limit 1200°C) K thermocouple input: For 2-point alarm (upper limit 1200°C, lower limit alarm 0°C) Thermistor input: For 1-point alarm (upper limit 100°C) Thermistor input: For 2-point alarm (upper limit 100°C, lower limit alarm 0°C)
Alarm hysteresis width	1°C
Alarm delay time	0 sec.
Indication	Measured value
Burnout	Upscale at burnout
Input filter	5 sec.
Input value compensation	0%

- Note 1) Switching between a thermistor and a thermocouple is not allowed.  
Note 2) Thermocouple input type can be changed by front key operation.

**SCOPE OF DELIVERY**

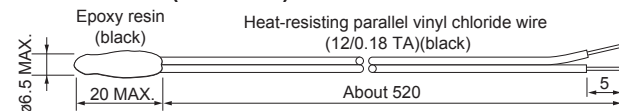
Thermostat, panel-mounting adapter, front waterproof packing, instruction manual  
Thermistor sensor added for thermistor input

**ATTACHED THERMISTOR SENSOR**

**• For thermistor-input thermostat**

Measurable range	0 to 100°C
B constant	3390 K
Nominal resistance value	6 kΩ (0°C)
Lead wire	Heat-resisting vinyl chloride wire
Lead wire length	520 mm
Lead wire heat resisting temperature	-20 to 105°C
Color code	Black
Accuracy	Within 2°C

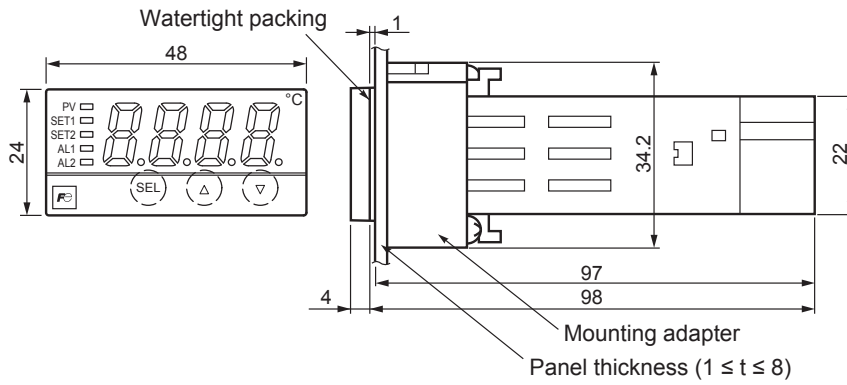
**• Dimensions (unit: mm)**



**CODE SYMBOLS OF SPARE THERMISTOR SENSOR**

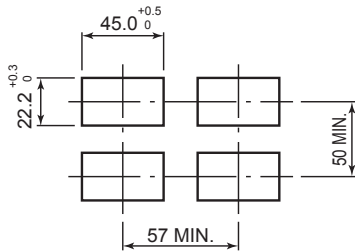
ZZP\*CTK7L3941P1

## DIMENSIONS (Unit : mm)

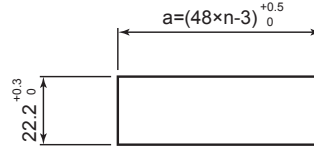


## PANEL CUTOUT (Unit : mm)

For separate mounting (Unit: mm)

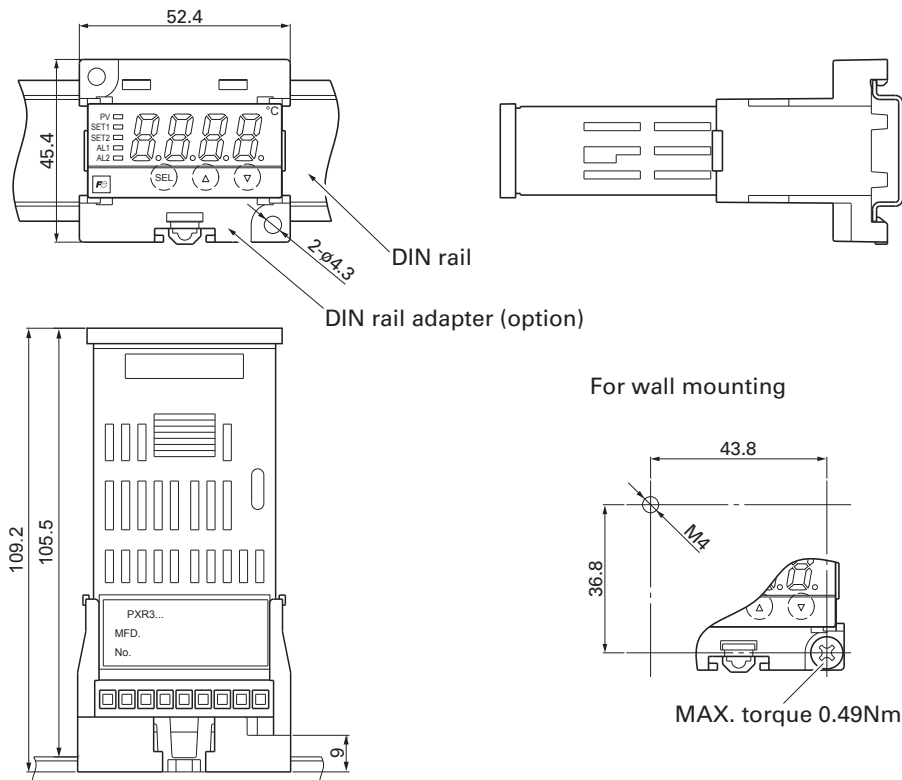


For mounting close together

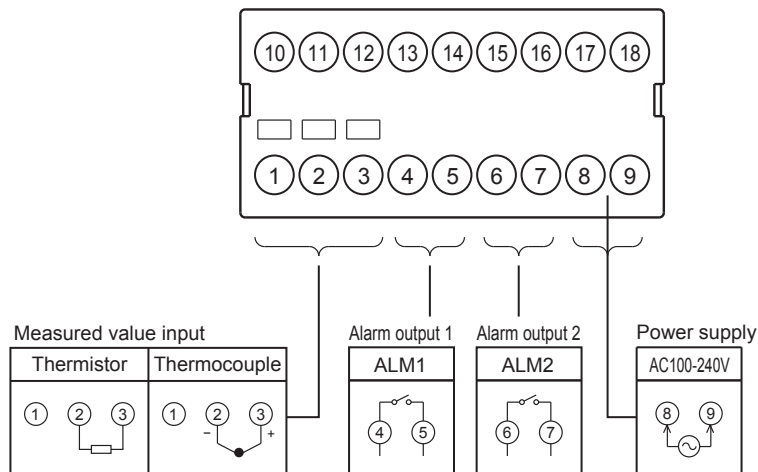


This mounting does not meet NEMA-4X/IP66 (front waterproof specification). (Because the packing cannot be used in horizontally close mounting.)

## DIN RAIL ADAPTER



## CONNECTION DIAGRAM



- Notes 1) Check the power supply voltage before installation.  
 2) Tighten the terminal screw securely with fastening torque of 0.4N·m.

## USABLE WIRING MATERIALS

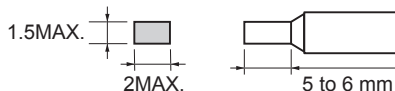
- Wire

Gauge: AWG28 (0.1 mm<sup>2</sup>) ... AWG16 (1.25 mm<sup>2</sup>)  
 Strip-off length: 5 to 6 mm



- Bar terminal

Dimension of strip-off conductor section: 2 x 1.5 mm or smaller  
 Length of strip-off conductor section: 5 to 6 mm



Recommended terminals:

Manufacturer: NICHIFU CO., LTD.

Model: TMEV TC-0.3-9.5

TMEV TC-1.25-11S

TGN TH-0.75N

Manufacturer: DAIDO SOLDERLESS TERMINAL MFG.CO., LTD.

Model: AVA-1.25L

BVA-1.25L

⚠ Caution on Safety

\*Before using this product, be sure to read its instruction manual.

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