# SENSOR TRANSDUCER

RESISTANCE TEMPERATURE TRANSDUCER

# Use

By inputting resistance value of a 3-wire thermal resistance based on the JIS, this device insulates and converts the resistance value into a DC signal proportional to temperature.

### Features

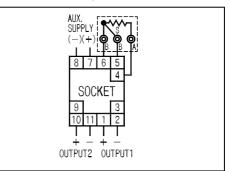
Specification

- 1. Constant voltage/current output.
- 2. Withstand voltage between input, output, auxiliary supply and outer case is AC2, 000V (50/60Hz), complete insulation for 1 min..
- 3. Withstand voltage between 1st output and 2nd output is AC1, 000V.
- 4. Impulse withstands voltage 5kV, 1.2/50µs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.



WRHTP2-1A4H51 (80 × 50 × 133mm/500g)

Connection diagram



Kind of resistance thermomet er bulb		Ir	nput*	1 <sup>st</sup> Output (load resistance)	2 <sup>nd</sup> Output (load resistance)	Auxiliary supply	Common specification
Π-Pt, 100Ω   at 0   2-Pt, 50Ω   at 0   3:Cu,100Ω   at 0   4:Cu,50Ω   at 0	Tempera- ture span 50 Specified current: 2mA	A1: 0-50   A2: 0-60   A3: 0-80   A4: 0-100   A5: 0-120   A6: 0-150   A7: 0-200   A8: 0-300   B1: -10-40   B2: -10-50   B3: -10-60   C1: -20-40   C2: -20-50	C5: -20-100   C6: -20-120   D1: -30-50   D2: -30-60   D3: -30-80   E1: -50-50   E2: -50-60   E3: -50-80   E4: -50-100   E5: -50-120   E6: -50-150   F1: -70-30   F2: -70-80	1 DC0-100mV(200Ω)   2 DC0-1V (200Ω)   3 DC0-5V (1kΩ)   4 DC 0-10V (2kΩ)   5 DC1-5V (1kΩ)   4 DC0-1mA (12kΩ)   5 DC0-5mA (2.4kΩ)   6 DC0-10mA (12kΩ)   9 DC0-10mA (750Ω)   1 DC1-6mA (2.4kΩ)   1 DC1-5mA (2.4kΩ)   1 DC1-6mA (600Ω)   0 other than those above	1: DC0-100mV (200Ω)   2: DC0-1V (200Ω)   3: DC0-5V (1kΩ)   4: DC 0-10V (2kΩ)   5: DC1-5V (1kΩ)   4: DC0-1mA (7kΩ)   6: DC0-1mA (7kΩ)   6: DC0-1mA (700Ω)   7: DC0-16mA (430Ω)   1: DC1-5mA (1.4kΩ)   1: DC1-5mA (1.4kΩ)   1: DC1-5mA (350Ω)   1: DC4-20mA (350Ω)   1: other than those above	☐: AC100V±10%,   50/60Hz   ⊉: AC110V±10%,   50/60Hz   ∄: AC200V±10%,   50/60Hz   ④: AC220V±10%,   50/60Hz   ④: AC220V±10%,   50/60Hz   ⑤: DC24V±10%   ⑨: other than those above	Tolerance: ±0.5% Response time: 0.5sec./90% Consumption VA: AC power source:3VA DC power source:3.5W Weight: AC power source:500g DC power source:400g
Orother than those above		C3: -20-60 C4: -20-80	Gi: -100-100 O: other than those above	H: DC4-20mA( 800Ω) DC1-5V( 250kΩ) With output switching function	δ <mark>:</mark> DC1-5V ( 1kΩ)	1: AC100V+10%, -15%, 50/60Hz   2: AC110V+10%, -15%, 50/60Hz   3: AC200V+10%, -15%, 50/60Hz   4: AC220V+10%, -15%, 50/60Hz   5: DC24V+10%, -15\%, -15\%, -10\%, -15\%, -10\%, -15\%, -10\%, -1	

• Operating temperature range of thermal resistance: -200- + 650

Open of current output: even if the current output terminal is used in a state of regular open, there is no problem. Also, a voltage of approx. 25V occurs on the output terminal.

## Built-in linearizer

Thermal electromotive force of a thermocouple is not proportional to temperature. It is the linearizer that converts thermal electromotive force into an output proportional to temperature.

### Built-in burnout

The device detects disconnection of thermocouple and does scale-out of output to positive (+) side. Scale-out to negative (-) side is also manufacturable if specified.

#### Specified current

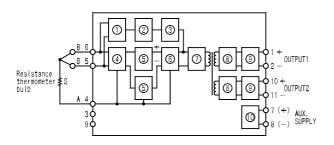
Specified current is a current flowing into a thermal resistance. Change of resistance value can be measured by voltage drop caused by the specified current. In the case of Pt, standard specified current is 2mA.

#### Built-in external conducting wire resistance compensating circuit

External conducting wire resistance is the resistance value of a conducting wire excluding the resistance value of element S. As the influence of external conducting wire resistance, it does compensate when resistance values of all conducting wires are the same, but it becomes an error when resistance values of all conducting wires are different from each other. Generally, taking into consideration the variousness of conducting wires, use the product under ranges listed in the table below.

Thermal	External conducting wire resistance				
resistance	Input span 100	50 Input span < 100			
Pt $100\Omega$	10 /line	5 /line			
Pt $50\Omega$	5 /line	2.5 /line			
Cu 100Ω	10 /line	5 /line			
Cu 50Ω	5 /line	2.5 /line			

Block diagram



Constant current circuit (measuring current) Reference voltage circuit Linearity correction circuit Burnout detecting circuit High input resistance amplifying circuit Differential amplifying circuit Pulse width modulation circuit Pulse width demodulation circuit Output circuit Insulated power source circuit

### Purchase specifications

