



Features

- R_0 : 1000 Ω
- TCR 3850ppm/K
- Application temperature -50°C...600°C
- Resistance tolerance $\pm 0.12\%$
- Size 13 mm x 2.8 mm (length/diameter)
- Gold coated nickel wire, lead extension with tinned nickel wire

Applications

- Various Temperature feedback control
- Industrial applications
- Medical
- ...

PTRB101BG03

Platinum Temperature Sensor

PT100, 13 x 2.8, Class B, assembly, ceramic tube

Product Description

This sensor is a resistance temperature detector (RTD) using a platinum resistor as sensing element. This platinum resistor consists of a structured platinum film on a ceramic substrate, passivated by a ceramic cover. The connection wires are protected with glass ceramic on the welding area. This standard element is mounted into a ceramic tube. The material for the connection wire is gold coated nickel wire, extended with a partly tinned nickel wire.

The characteristic curve of this Platinum RTD complies with DIN EN 60751. The usage of Platinum as resistive material guarantees high long term stability.

Due to relative small outline and low mass this RTD has a low time constant; therefore it is a suitable solution for fast and precise feedback control systems.

The sensor is designed for temperature applications up to 200°C.

Sensors are packed in slide blister.

- Platinum Temperature Sensor
- Conformal to DIN EN 60751
- Global interchangeability
- Wide temperature range
- Fast response time
- Class B (F0.3) tolerance
- Small outline dimensions
- Gold coated nickel lead wires, leads extended
- Good solderability
- Slide blister packing

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Platinum Temperature Sensor

Sensor properties

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Nominal Resistance at 0 °C	R ₀	Class B (F0.3)	99.88	100.00	100.12	Ω
Temperature Coefficient of Resistance	TCR	0 °C, 100 °C		3850		ppm/°C
Tolerance Temperature Range *		Class B (F0.3)	-50		200	°C
Self-Heating Coefficient in air, flow: 1 m/s				0.2		°C/mW
Response Time Water Flow: 0.4 m/s	τ _{W,0.9}			3		s
Response Time Air Flow: 1 m/s	τ _{A,0.9}			40		s
Measuring Current		Class B (F0.3)			2.2	mA
Lead wire Au-coated Ni-wire		Diameter length		0.25 2		mm mm
Lead extension Partly tinned Ni-wire		Diameter length Tinned length		0.25 13 8		mm mm mm

*possible operating temperature range is, -200°C to +600°C for Au-coated Ni- wire type.

Specified accuracy is not guaranteed if the sensor is exposed to temperatures outside the specified tolerance temperature range.

Calculation Formulas

The calculation formulas of this Pt-RTD are defined in DIN EN 60751 as following:

$$\text{For } T \geq 0 \text{ °C:} \quad R(T) = R(0) \cdot (1 + a \cdot T + b \cdot T^2)$$

$$\text{For } T < 0 \text{ °C:} \quad R(T) = R(0) \cdot [1 + a \cdot T + b \cdot T^2 + c \cdot (T - 100 \text{ °C}) \cdot T^3]$$

$$\text{Polynomial coefficients:} \quad a = 3.9083\text{E-}03 \quad b = -5.775\text{E-}07 \quad c = -4.183\text{E-}12$$

$$\text{Tolerances: Class B (F 0.3):} \quad \pm (0.3 + 0.005 \cdot |T/\text{°C}|) \text{ °C} \quad (-50 \dots 600 \text{ °C})$$