

Temperature sensor

Series PT100

Features

- **Very exact measuring:** measuring temperature $\pm 0,5^{\circ}\text{C}$
- **Very good linearity** of the temperature-resistance-characteristic curve
- **Thin-film technology**
- **Value of resistance according to DIN 60751**
- **Large temperature range**
- **Small dimensions**
- **Vibration-firm**
- **Quick and reliable response time**
- **Large temperature range**



Description

The PT-100 sensor is a temperature-sensitive component, which's value of resistance increases linear according to the increasing temperature.

It's insert for highly exact measuring of temperatures or monitorings in all ranges of application, where it's important to avoid measuring mistakes.

The strictly linear dependence of the resistance of the temperature makes the insert of electronical evaluation easier. The accuracy of the probe allows f.ex. the universal use for temperature monitoring with limit circuit in:

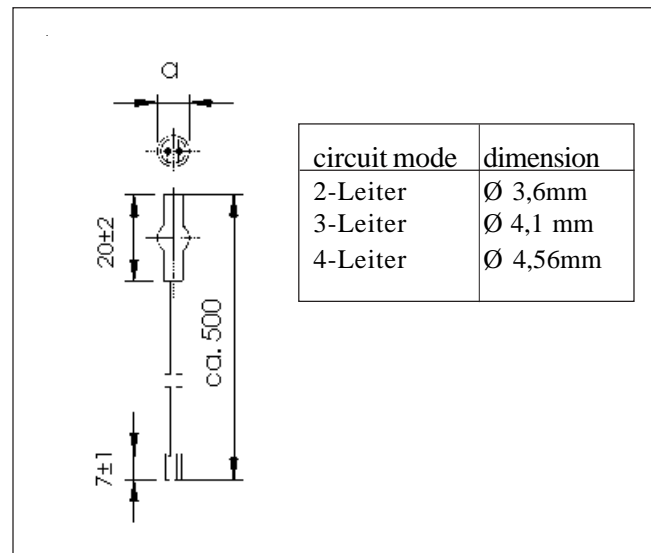
- bearings
- machines
- windings of motors and transformers
- systems
- pumps

Technical datas

Nomina resistance	100Ω bei 0°C
Resistance basic values	for measuring resistance with basic material Platinum acc. DIN IEC 751 Kl.B
Measuring range	-100°C to + 850°C
Circuit	Standard: 2-wire optional 3- or 4-wire connection
Dielectric strength	2,5 kV, optional 8 kV
Connecting lead	AWG24, Teflon-wire stranded, Standard colour: red/white
Insulation class	H (Standard)

Special types will be produced according to customer specified applications and wishes. Also it's possible to get PT-500 and PT-1000.

Dimensions (data in mm)



Standard lead: Cu-Litzen, silvered, teflon insulated
AWG 24
Teflon insulation, stranded
Standard colour: red/white
Standard length: 500 mm

Basic values according to DIN EN 60751

The basic values for the range from 0° to + 850° can be computed after the following equation :

For the range from 0° to + 850°C is valid:

$$R_t = R_0 (1 + At + Bt^2)$$

Hereunder are:

$$R_T \text{ resistance in Ohmic at temperature } t \quad A = 3,9083 \times 10^{-3} \text{ } ^\circ\text{C}^{-1}$$

$$R_0 \text{ nominal resistance at } 0^\circ\text{C} \quad B = -5,775 \times 10^{-7} \text{ } ^\circ\text{C}^{-2}$$

$$t \text{ temperature in } ^\circ\text{C} \quad C = -4,183 \times 10^{-7} \text{ } ^\circ\text{C}^{-4}$$

The sensors specified in this data sheet will in principle be delivered to tolerance class B.

$$A \text{ in } ^\circ\text{C} = \pm (0,3 + 0,005 = (t))$$

2-, 3- and 4-wire connecting technology

2-wire circuit

The result of the measurement concludes also the lead resistance, which can be compensated by a line-balancing resistance..

3- wire circuit

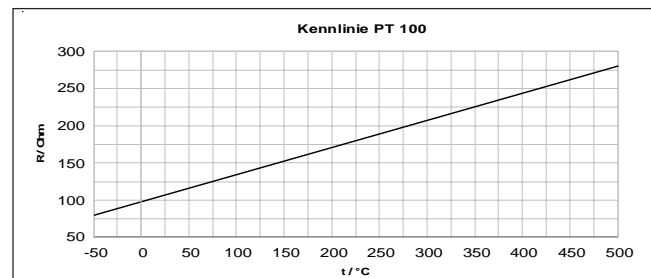
Using another access line through the temperature sensor a further measuring circle is realized, which stands for the resistance of the incommer and will be subtracts through the measuring electronics of the resistance value of the measuring circuit.

4-wire circuit

Using two additional lines to the sensor cables two separate measuring circles will be created, by which the measurement of the amperage and the voltage drop is made..

In principle all connecting cables must have the same electrical characteristics.

All rights reserved. TMC will neither assume the liability for any improper utilization of the sensor nor for the violation of third-party rights.



Sample for ordering

PT100-2-500/500

lead length L2 (500 mm),
lead length L1 (500 mm)
2-wire connection
Type

We reserve the right to modify specification and dimensions. Regarding the information of this brochure there can't lay claim of liability or to acceptance guarantee.

This new data sheet obsoletes all previous issues.

Stand 06/10