Tmc Sensortechnik GmbH
Thermal Micro Control

Temperature sensor

Series PT100

Features

- **Very exact measuring**
  PT element is used for high-precision measuring and monitorings of temperatures in a wide range of applications, where it is important to avoid measuring errors.

- **Very good linearity of the temperature-resistance characteristic curve**
  The value of resistance increases linear according to the increasing temperature.

- **Thin-film technology**
  The temperature sensors are produced on a ceramic base chip with a thin film laser structured platinum layer

- **Value of resistance according to DIN 60751**
  The requirements of DIN 60751 are met by default

- **Wide temperature range**
  Standard measuring range from -50°C up to + 250°C

- **Small dimensions**
  The construction of the sensors ensures high reliability in many applications and guarantees the highest possible stability with the smallest dimensions

- **Quick and reliable response time**

Description

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 incomer and will be substracts 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.

Technical datas

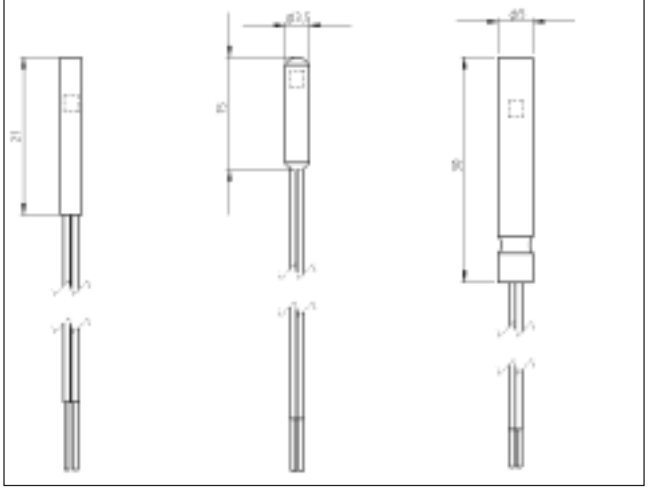
Nominal resistance	100 Ω at 0°C
Resistance basic values	for measuring resistance with basic material Platinum acc. DIN IEC 751 Kl.B
Measuring range	-50°C to + 250°C
Circuit	Standard: 2-wire optional 3- or 4-wire connection
Dielectric strength	2,5 kV
Connecting lead	AWG24, Teflon-wire Standard colour: red/white optional: stranded
Insulation class	H (Standard)

Special executions possible.
PT-500, PT-1000 and other executions available on request.

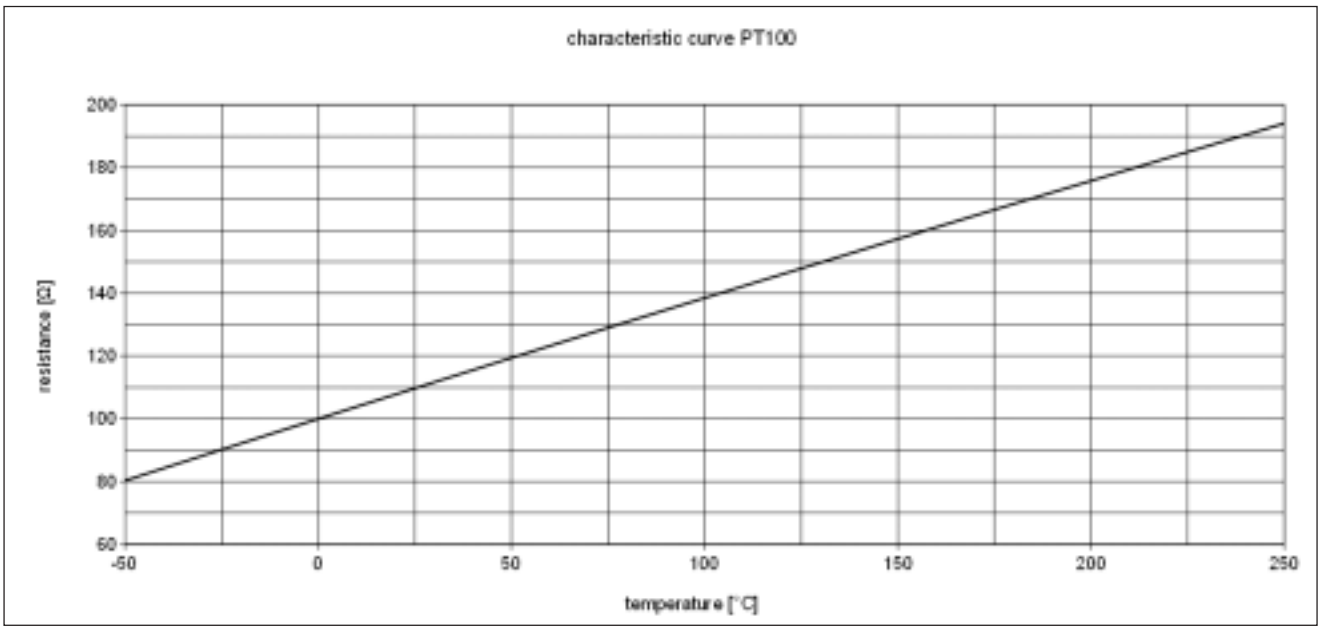
Dimensions (data in mm)

Executions of insulation:

Heat shrink tube | Polymerceramic | Stainless steel housing



Standard lead: Cu-wires, silver-plated, teflon insulated AWG 24
Standard colour: red/white
Standard length: 500 mm



Resistance table

temperature [°C]	resistance [Ω]
-50	80,3
-25	90,2
0	100,0
25	109,7
50	119,4
75	129,0
100	138,5
125	147,9
150	157,3
175	166,6
200	175,8
225	185,0
250	194,1

Calculation formula

t = -200°C ... 0°C

$R(t) = R_0(1+At+Bt^2+C(t-100°C)t^3))$

t = 0°C ... 850°C

$R(t) = R_0(1+At+Bt^2)$

whereby $A=3{,}9083*10^{-3}\ °C^{-1}$, $B=-5{,}775*10^{-7}\ °C^{-2}$ and $C=-4{,}183*10^{-12}\ °C^{-4}$

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. issue 06/14

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