



### Advantages/Benefits

- ▶ Measuring range -50 to 150 °C
- ▶ Pt 100 resistance element
- ▶ Exchangeable process probe
- ▶ Two-wire transmitter with 4...20 mA output signal as an option
- ▶ Accuracy Class B to DIN 43760
- ▶ Classification standard IP 54

### Design/Function

Generally the entire device consists of protective tube, connection head and process probe. The stainless steel 1.4571 protective armatures conform to DIN standards and are plasma arc welded. The aluminium die casting connection head conforms to the DIN Type B.

The process probe consisting of a stainless steel pipe with a diameter of 6 mm, is provided with 1 or 2 Pt100 elements. The internal wires from the measuring element to the electrical terminal block are isolated.

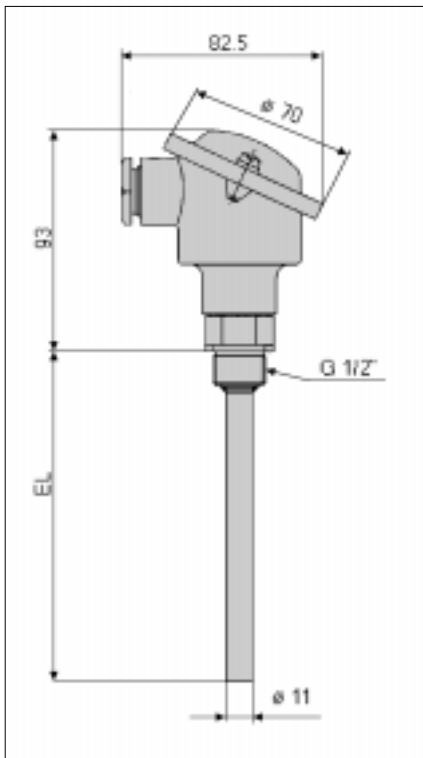
In case that a current signal 4–20mA instead of the Pt100 resistance shall be used, a transmitter is mounted in place of the terminal socket in the connection head.

### Applications

- Industrial platinum resistance thermometer with exchangeable process probes for temperature measurements. The process probes and protective armatures conform to DIN standards and provide simple installation into pipelines and containers. The permissible application ranges in gas, liquid and steam are specified by the relevant load diagrams.

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## Dimensions



## General technical data

Design:	according to DIN 43763
Measuring range:	-50 to 150 °C
Process probe:	1 or 2 Pt 100 resistance elements
Response time up to 50% and up to 90% of full scale in water with 0,4 m/s:	$T_{50} = 25 \text{ s}$ $T_{90} = 75 \text{ s}$
Tube dimension:	$\varnothing 6 \text{ mm}$
Tube material:	stainless steel
Protective tube to DIN 43763:	$\varnothing 11 \text{ mm}$ , 1 mm wall thickness material: 1.4571
Mounting:	thread: G 1/2, NPT 1/2
Connection:	aluminium die casting connection head Type B to DIN 43729
Installation:	Suitable for low pressure and low flow rate applications.

For the model with the two-wire measuring transmitter, the transmitter is directly mounted in the connection head. The transmitter converts the resistance of the Pt100 element into a temperature linear output current.

## Technical data of transmitter

Measuring range:	-50 to 500 °C
Span:	adjustable via DIP-switch
Supply voltage:	$U_s = 12 \dots 36 \text{ VDC}$
Input:	Pt100 DIN IEC 751    2-wire connection
Output:	4...20 mA
Load:	$R = \frac{U_s - 12 \text{ V}}{20 \text{ mA}}$
Ambient temperature:	-20 °C ... 70 °C

## Basic Values and Tolerances

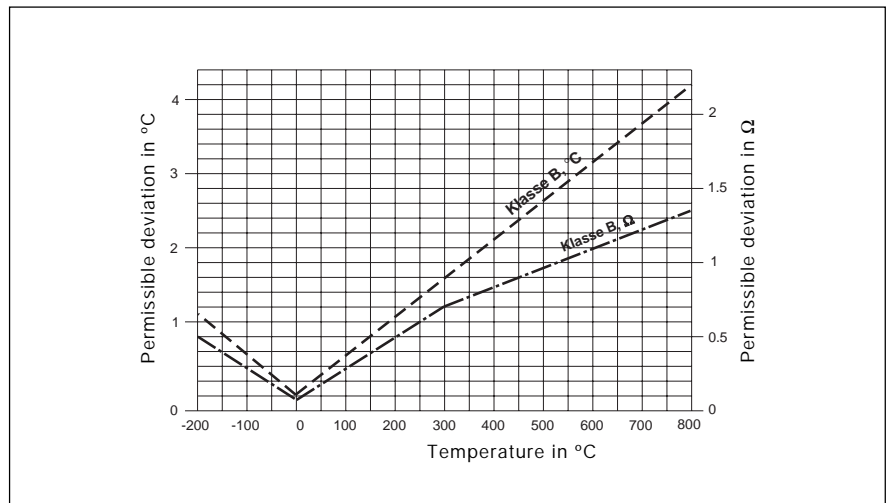
The basic values and tolerances for the Pt100 conform to DIN 43760. This standard classifies the permissible resistance tolerances and the temperature value deviations.

The sensor corresponds to accuracy Class B, which is normally used in industrial applications.

Temperature	Basic Value	Tolerance	Class B
-200 °C	18.49 Ω	±1.3 °C	±0.56 Ω
-100 °C	60.25 Ω	±0.8 °C	±0.32 Ω
0 °C	100.00 Ω	±0.3 °C	±0.12 Ω
100 °C	138.50 Ω	±0.8 °C	±0.30 Ω
200 °C	175.84 Ω	±1.3 °C	±0.48 Ω
300 °C	212.02 Ω	±1.8 °C	±0.64 Ω
400 °C	247.04 Ω	±2.3 °C	±0.79 Ω
500 °C	280.90 Ω	±2.8 °C	±0.93 Ω
600 °C	313.59 Ω	±3.3 °C	±1.06 Ω
650 °C	329.51 Ω	±3.6 °C	±1.13 Ω
700 °C	345.13 Ω	±3.8 °C	±1.17 Ω
800 °C	375.51 Ω	±4.3 °C	±1.28 Ω
850 °C	390.26 Ω	±4.6 °C	±1.34 Ω

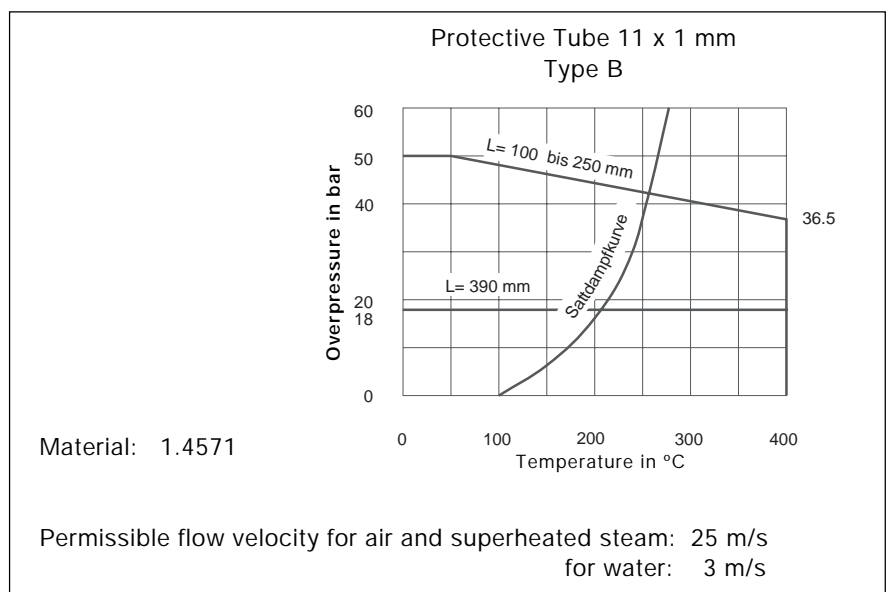
## Installation

When installing make sure that the sensor takes up the temperature to be measured accurately. Avoid heat absorption or heat supply. When installing into pipelines the installation should be within the range of the larger flow velocity. The protective tube may either be in vertical or angular position to the flow. It is important to oppose it to the flow direction in order to guarantee that the fluid contacts the temperature sensitive part first.



## Mechanic and Thermal Load Rating of Protective Tube Type B to DIN 43763

The max. load rating depends upon the fluid to be measured, its temperature and flow velocity. Material and installation are also of importance. The specific values are valid for water and air, and for steam when pressurized vertically. The load rating varies with fluids of other densities.



## Ordering Chart (Other Versions on Request)

Version	Length [mm]	Probe Length [mm]		Order-No.
Sensor, 1 x Pt100 2-wire	100	145	screw-in thread G 1/2"	413 939 M
	160	205		413 941 P
	230	275		413 943 R
	390	435		413 945 K
	510	555		413 947 M
Sensor, 1 x Pt100 2-wire	100	145	screw-in thread NPT 1/2"	414 103 R
	160	205		414 104 J
	230	275		414 105 K
	390	435		414 106 L
	510	555		414 107 M
Sensor, 1 x Pt100 3-wire	100	145	screw-in thread G 1/2"	414 996 G
	160	205		414 838 R
	230	275		414 758 G
	390	435		414 712 J
	510	555		414 997 H
Sensor, 2 x Pt100 2-wire	100	145	screw-in thread G 1/2"	413 940 S
	160	205		413 942 Q
	230	275		413 944 J
	390	435		413 946 L
	510	555		413 948 W
Sensor, 2 x Pt100 2-wire	100	145	screw-in thread NPT 1/2"	414 108 W
	160	205		414 109 X
	230	275		414 110 K
	390	435		414 111 G
	510	555		414 112 H
Transmitter, 1 x Pt100 2-wire	100	145	screw-in thread G 1/2"	414 531 D
	160	205		414 690 Z
	230	275		414 998 J
	390	435		414 999 K
	510	555		415 000 S