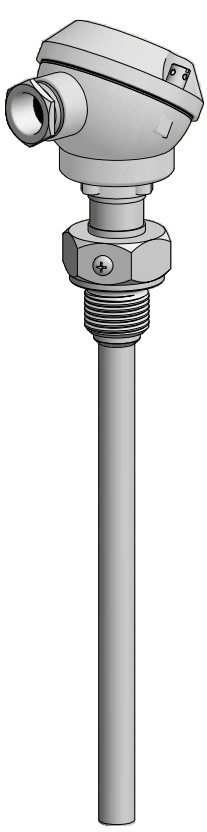
Applications

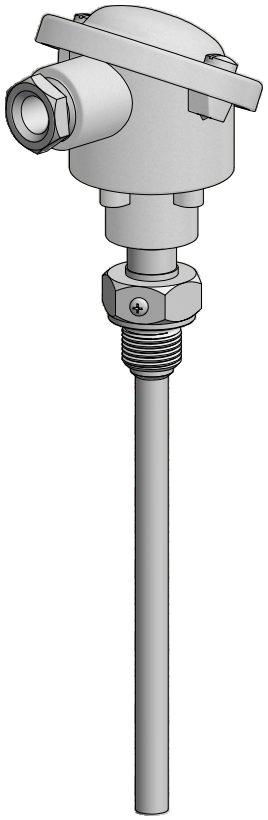
- Measuring range: -50 .. +150°C
- Fine chemical industry
- General industrial services
- Light energy industry

Features

- Single RTD
- Protection tube diameter: Ø6 ÷ Ø12 mm
- Standard thermowell material: stainless steel 1H18N9T (1.4541 / AISI321)*
- Non-exchangeable measuring insert
- Temperature transmitter can be installed inside connection head of sensor (connection head type B, NA, DAN, BEG)
- Connection head with local LED display as an option (see model DANWdie-LED)



Sensor with connection head type MA



Sensor with connection head type B

The sensor consists of non-exchangeable measuring insert, outer protective tube with threaded process connection (thermowell) and aluminum connection head where mounting a temperature transmitter with 4-20 mA signal is possible (connection head type B, NA, DAN, BEG).

Miniature connection head type MA reduces a size of complete sensor construction to make possible installation in confined areas.

Insertion length, process connection, design of thermowell, connection head as well as type and number of sensors, accuracy can be selected individually for the respective application.

Other versions

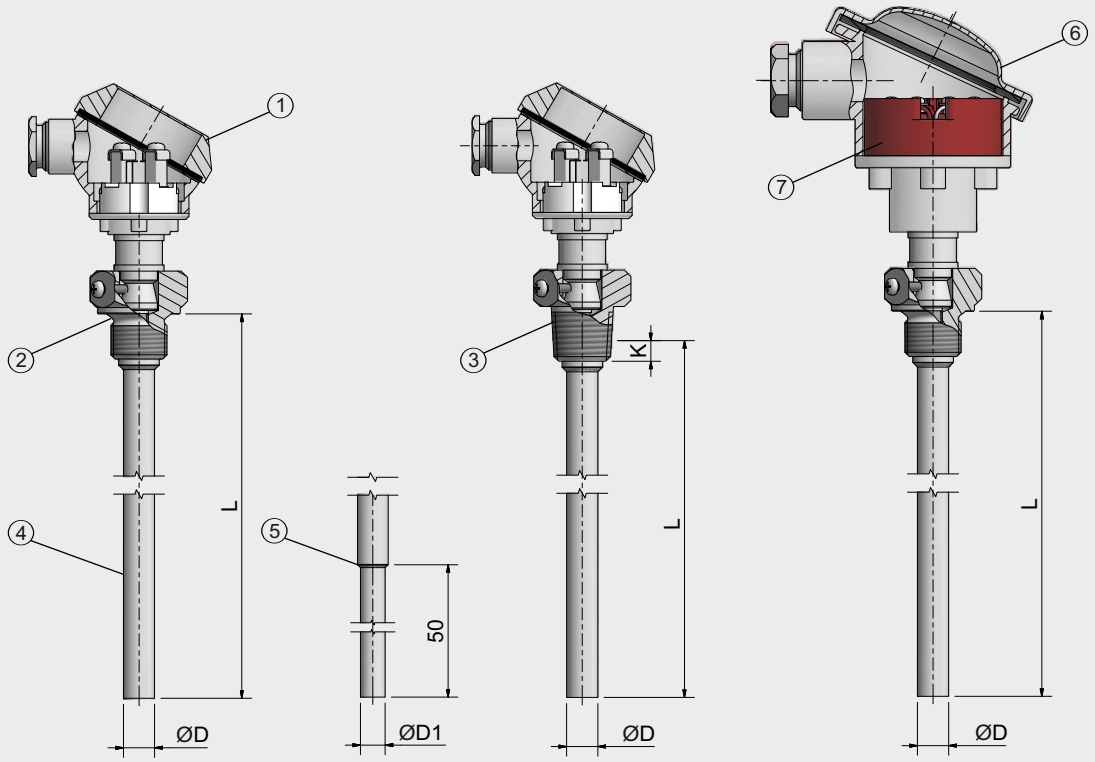
This data sheet contains only small part of our supplies program of resistance thermometers with non-exchangeable measuring insert.

Upon the customer's request, other versions can also be delivered.

* other materials, see: "Thermowell materials"

Type **TOP-145**

Designs



1. Connection head MA type
2. Process connection (parallel threads)
3. Process connection (tapered threads)
4. Protection tube
5. Reduced tip of protection tube ∅ D / ∅ D1 mm
6. Connection head B type
7. Measuring insert

ⓘ Screw-in length by hand (K)
- thread 1/2"NPT approx. 8,1 mm
- thread 3/4"NPT approx. 8,6 mm

Connection line

Protection tube [mm]	Connection line		
	1 x Pt100		
	2 - wire	3 - wire	4 - wire
Ø6 Ø8 Ø9 Ø10 Ø12	✔	✔	✔

Tolerance class

Platinum — Class A (±0.15°C in temp. 0°C)
Class B (±0.30°C in temp. 0°C)

PN-EN 60751 standards defines the formulas for calculating acceptable measure tolerance.

Class of tolerance	Tolerance °C
A	± 0.15 + (0.002 x | t |)
B	± 0.30 + (0.005 x | t |)

Measuring range

From -50°C to +150°C

Max pressure (at 100 °C)

Admissible pressure of application for max. speed of flow of steam 25 m/s and water 3 m/s. Thermowell standard diameter Ø9 mm.

Length L	Max. pressure of application
160 mm	6.4 MPa
250 mm	4.9 MPa
< 400 mm	2.0 MPa

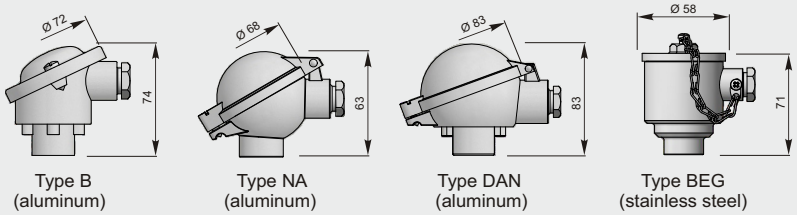
Response time

Averange response time at mixed water 0.4 m/s (acc. to DIN EN 60751), at temperature change from 23 to 33°C.

Diameter of protection tube	Response time
Ø6 mm	t_{50} = 12 s
	t_{90} = 55 s
Ø8 mm	t_{50} = 20 s
	t_{90} = 85 s
Ø10 mm	t_{50} = 35 s
	t_{90} = 100 s

Connection heads

This sensor can be fitted with one of the following connection heads. For more information about the connection heads see section "Accessories".



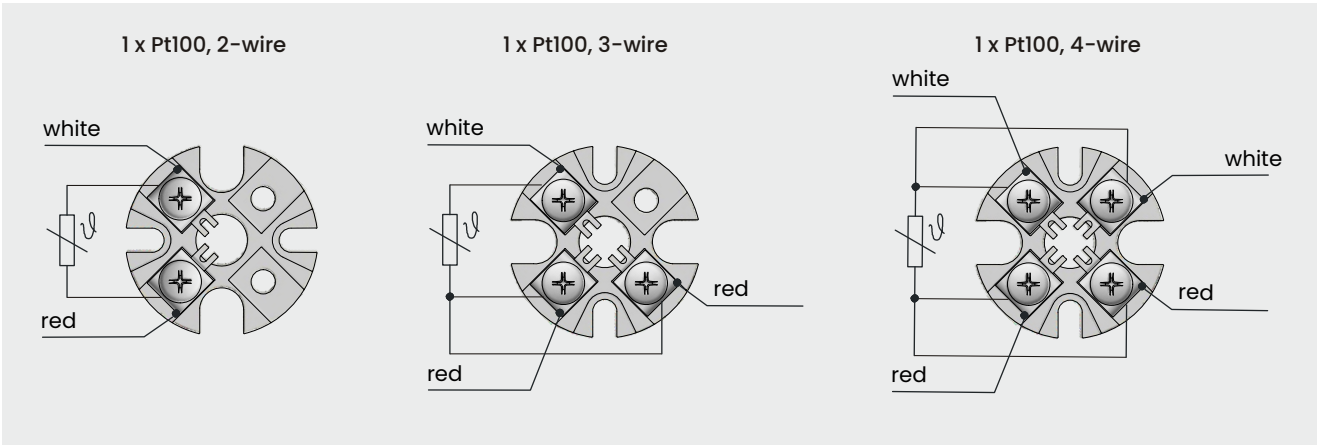
Connection head DANWdie with local LED display

The display is mounted in connection head cover withglass window which allows preview of measuring temperature. 4 digits with a height of 9.5 milimeter ensure clear reading of values.

Programming of measure range can be performed via three buttons placed on the back of display panel.

Mounted temperature transmitter 4..20mAon measuring insert is necessary for proper use. It also works with temperature transmitters with HART® protocol.

Electrical connection on Ceramic Block (Ceramic block of connection head type MA)



Type **TOP-145**

Ordering code

1 2 3 4 5 6 7 8 9

□ **TOP-145 -** □ - □ - □ - □ - □ - □ - □ - □

Resistance element

1		
		1 x Pt100
	AP	1 x Pt100, with installed transmitter 4..20 mA*
	APW	1 x Pt100, with installed transmitter 4..20 mA and local LED display**

* available only with connection head B, NA, DAN, BEG
** available only with connection head DANWdie

Connection head

2					
	MA	Type MA	Aluminum	Cable gland: M16x1.5	IP54
	B	Type B	Aluminum	Cable gland: M20x1.5	IP65
	NA	Type NA	Aluminum	Cable gland: M20x1.5	IP65
	DAN	Type DAN	Aluminum	Cable gland: M20x1.5	IP65
	BEG	Type BEG	Stainless steel	Cable gland: M20x1.5	IP65
	DANWdie	Type DANWdie	Aluminum	Cable gland: M20x1.5	IP65

Length L

3		
	100	100 mm
	150	150 mm
	200	200 mm
	xxx	other, please specify

Protection tube diameter ØD

4		
	6	Ø6 mm
	9	Ø9 mm
	9/6	Ø9 mm with reduced tip Ø6 mm
	xxx	other, please specify

Process connection

5		
	M18x1.5	M18x1.5
	M20x1.5	M20x1.5
	G1/2"	G1/2"
	xxx	other, please specify

Tolerance

6		
	A	Class A acc. to PN-EN 60751 / IEC 751 (available only for platinum sensing element)
	B	Class B acc. to PN-EN 60751 / IEC 751 / DIN43760 / GOST 6651-94
	1/3B	Class 1/3B DIN

Connection line

7		
	2	2-wire (available only in B tolerance class)
	3	3-wire
	4	4-wire

Measuring range of temperature transmitter

8		
	0..100	input signal for 4..20mA: 0..100°C
	xxx	other, please specify

Type of temperature transmitter

9		
	PR5333A	Output signal 4..20 mA
	PR5335A	Output signal 4..20 mA, with HART® communication protocol
	PR5350A	Output signal Profibus® PA / Foundation Fieldbus
	xxx	other, please specify

Example

TOP-145-MA-100-8-M20x1.5-A-3
Sensor 1xPt100, connection head type MA, thermowell length L=100mm, protection tube diameter Ø8 mm, threaded process connection M20x1.5, thermowell made out of stainless steel 1.4541, tolerance A, connection line 3-wire

APTOP-145-B-150-12/10-G1/2"-B-2-(0..+100)°C-PR5333A
Sensor 1xPt100, connection head type B, thermowell length L=150mm, protection tube diameter Ø12 mm with reduced tip Ø10 mm on length of 50mm, threaded process connection G1/2", thermowell made out of stainless steel 1.4541, tolerance B, connection line 2-wire, output signal 4..20mA: 0..100°C, temperature transmitter PR5333A