

Application

- Measuring range: -50 .. +600°C
- Suitable for additional thermowell
- Technological process installations in all branches of industry

Features

- Stainless Steel AISI316 (1.4401) or upon request
- Spring-loaded measuring insert provides ideal contact with the thermowell
- Temperature transmitter can be installed in the sensor head
- Optionally the head can be installed with a local temperature display (see model DANWdie-LED)
- Neck extension (nipple) with 1/2" NPT thread

The sensor consists of a replaceable insert, neck extension and an aluminium connection head where a programmable temperature transmitter with 4-20 mA output signal can be installed.

The measuring insert is a replaceable element of the complete sensor, which significantly reduces the time and cost of maintenance of measuring instruments on site.

Thanks to the spring-loaded fastening of the measuring insert it is perfectly pressed against the bottom of the protective tube, which reduces the time of reaction to temperature changes, increases accuracy of measurement and reduces natural vibrations, thus mechanical and electrical damages can be avoided.

Immersion length, length of the extension neck, connection head can be selected depending on the requirements of the application.

Temperature Transmitter (Option)

Transmitter is mounted inside the connection head of the sensor. There are two ways of installation: directly on the measuring insert or in the higher cap of the head.

The advantage of the second solution is that replacing the standard insert with a terminal block is easy without having to dismantle the transmitter, which significantly shortens the time and lowers the cost of sensor maintenance and protects the connection cables.

Mounting two transmitters is possible upon customer's request.



Sensor with connection head DANW and temperature transmitter

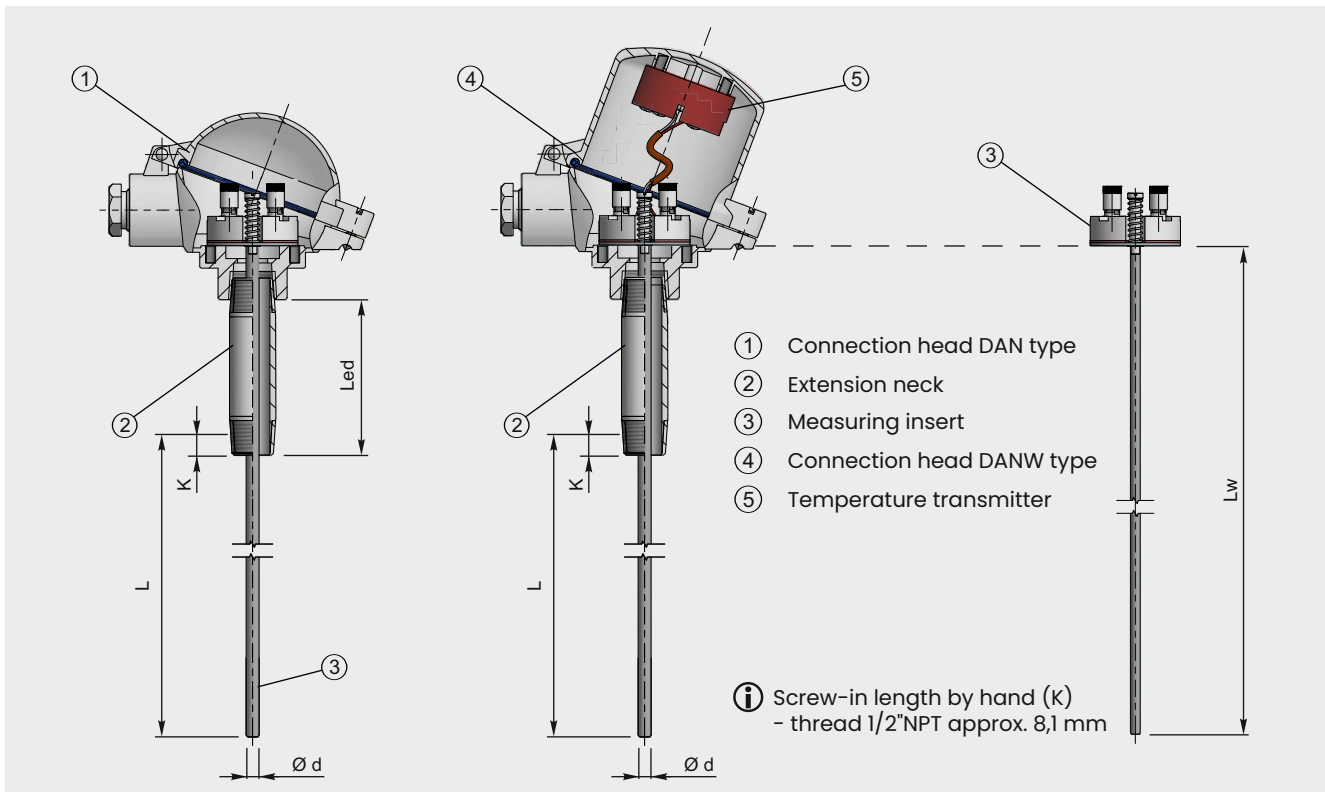
Sensor with connection head DAN

Other versions

This data sheet contains only a small portion of our program of supplying thermocouple thermometer with a replaceable measuring insert.

Other versions can be supplied upon customer's request.

Designs



Connection line

Measuring insert [mm]	Connection line					
	1 x Pt 100			2 x Pt 100		
	2-wire	3-wire	4-wire	2-wire	3-wire	4-wire
Ø 6	✓	✓	✓	✓	✓	✓
Ø 4.5	✓	✓	✓	✓	✓	✓
Ø 3	✓	✓	✓	✓	✓	✗

Tolerances

Basic values and limiting errors for the platinum measurement resistances are laid down in PN-EN 60 751.

Class of tolerance	Tolerance °C
A	$\pm 0.15 + (0.002 \times t)$
B	$\pm 0.30 + (0.005 \times t)$

Response time

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

Measuring insert diameter	Response time
Ø 3 mm	t ₅₀ = 1.5 s
	t ₉₀ = 4.5 s
Ø 6 mm	t ₅₀ = 4 s
	t ₉₀ = 10 s

Standard lengths

Immersion length L	Measuring insert length L _w
100 mm	212 mm
140 mm	252 mm
200 mm	312 mm
260 mm	372 mm

In case of non-standard lengths, below formula should be used to calculate length of measuring insert:

$$L_w = L \text{ (thermowell length)} + L_{ed} \text{ (neck length)} + 12$$

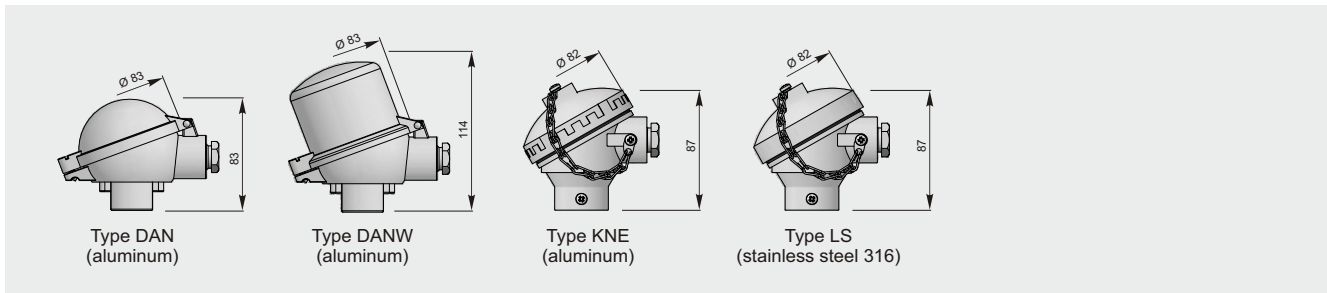
Example:

$$L_w = 200 + 100 + 12$$

For thermowell L=200 mm long, length of measuring insert is 312mm.

Connection heads

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



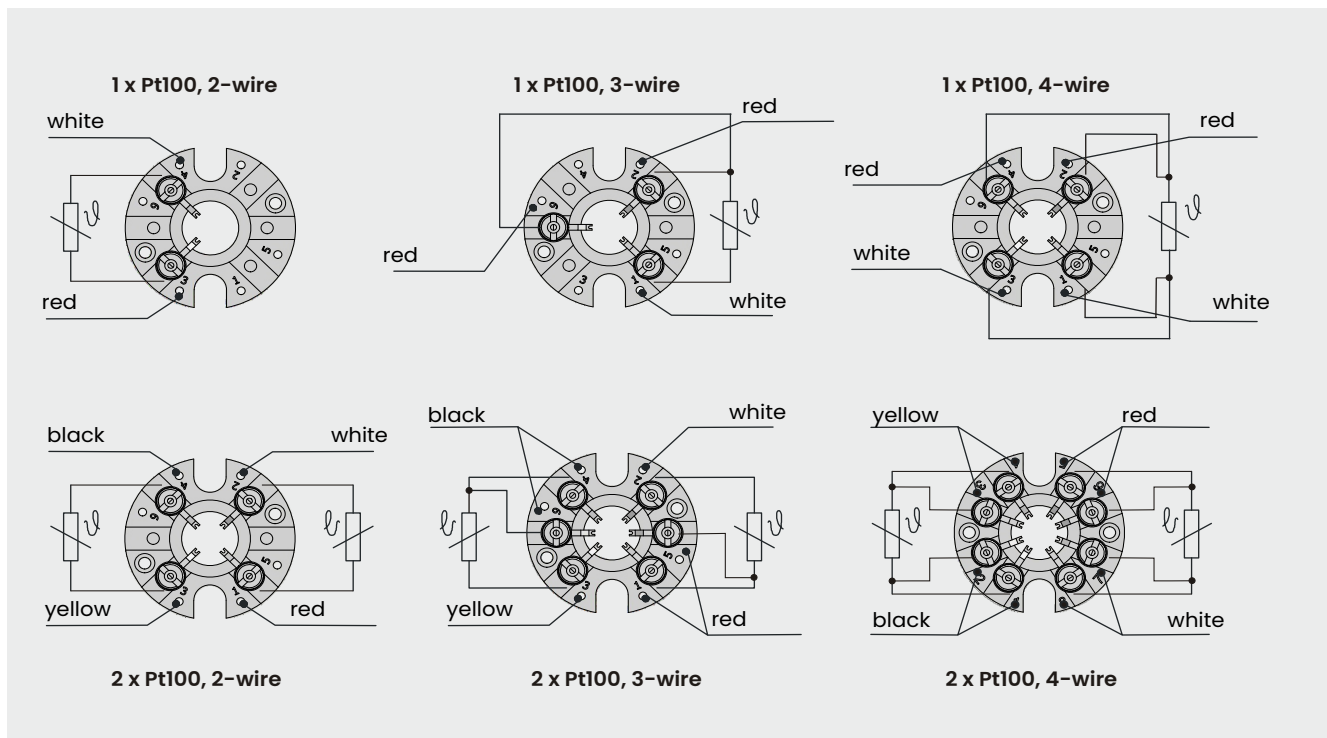
Connection head DANWdie with local LED display

The display is mounted in connection head cover with glass window which allows preview of measuring temperature. 4 digits with a height of 9.5 millimeter 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



Ordering code

1 2 3 4 5 6 7 8 9 10

TOPN - - - - - - - - -

1	<input type="text"/>	Resistance element	
		AP	1 x Pt100
		APW	1 x Pt100, with installed transmitter 4..20 mA
		2	1 x Pt100, with installed transmitter 4..20 mA and local LED display
			2 x Pt100
		* available only with connection head DANWdie	
2	<input type="text"/>	Measuring insert diameter d	
		1	Ø3.0 mm
		2	Ø6.0 mm
		3	Ø4.5 mm
3	<input type="text"/>	Closing method of connection head	
		1	closing by screw
		3	closing by clamp
4	<input type="text"/>	Connection head	
		DAN	Type DAN Aluminum Cable gland: M20x1.5 IP65
		DANW	Type DANW Aluminum Cable gland: M20x1.5 IP65
		KNE	Type KNE Aluminum Cable gland: M20x1.5 IP65
		LS	Type LS Stainless Steel 316 Cable gland: M20x1.5 IP65
		xxx	other, please specify
5	<input type="text"/>	Length L [mm]	
		100	100 mm
		140	140 mm
		200	200 mm
		260	260 mm
		xxx	other, please specify
6	<input type="text"/>	Neck length Led [mm]	
		150	150 mm
		250	250 mm
		xxx	other, please specify
7	<input type="text"/>	Tolerance	
		A	Class A acc. to PN-EN 60751
		B	Class B acc. to PN-EN 60751
		1/3B	Class 1/3B acc. to DIN
		xxx	other, please specify
8	<input type="text"/>	Connection line	
		2	2-wire
		3	3-wire
		4	4-wire
9	<input type="text"/>	Measuring range of temperature transmitter	
		0..100	input signal for 4..20mA: 0..100°C
		xxx	other, please specify
10	<input type="text"/>	Type of temperature transmitter	
		PR5333A	Output 4..20 mA
		PR5335A	Output 4..20 mA, with HART® communication protocol
		PR5350A	Output Profibus® PA / Foundation Fieldbus
		xxx	other, please specify

Example

Temperature sensor TOPN11-DAN-200-98-A-4
 (sensor 1xPt100, connection head DAN closing by screw, measuring insert diameter Ø3 mm, length L=200mm, length Led=98mm, class A 4-wire).

Temperature sensor APWTOPN21-DANWdie-260-150-A-3-0..100°C-PR5335A
 (sensor 1xPt100 with transmitter 4..20mA, connection head DANWdie with local LED display, closing by screw, measuring insert diameter Ø6 mm, length L=260mm, length Led=150mm, class A 3-wire, temperature transmitter PR5335A).