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-union-nipple) with 1/2" NPT thread

The sensor consists of a replaceable insert, neck extension with threaded process connection and an aluminium connection head where a programmable temperature transmitter with a 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.
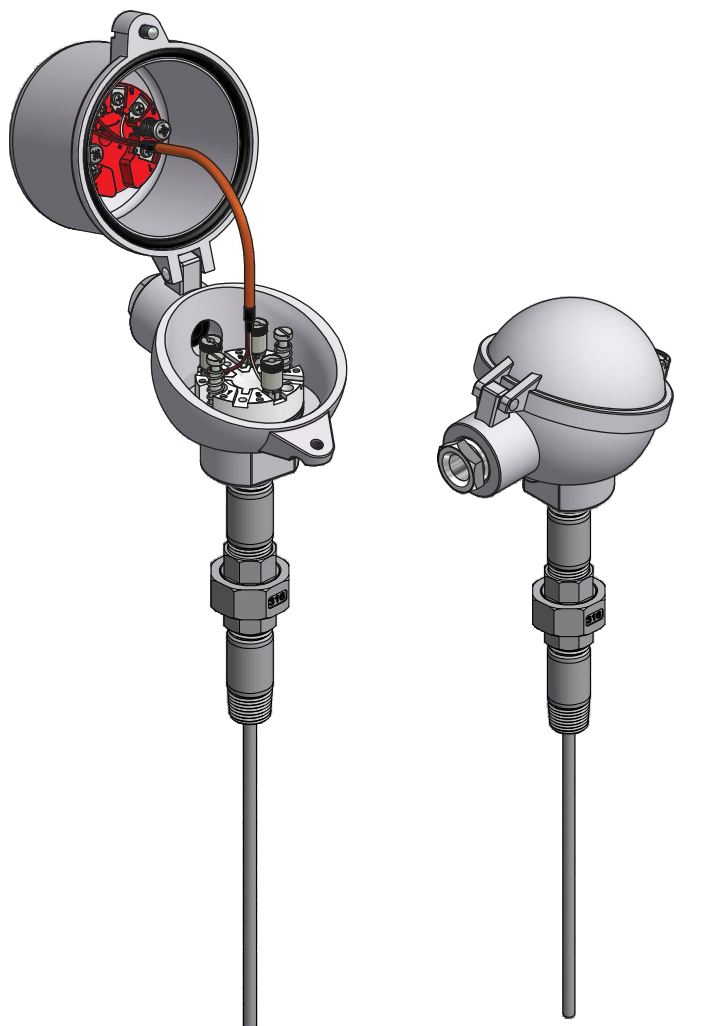
Immersion length, length of the extension neck, connection head can be selected depending on the requirements

Sensor with
connection head DANW
and temperature transmitter

Sensor
with connection head DAN

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.

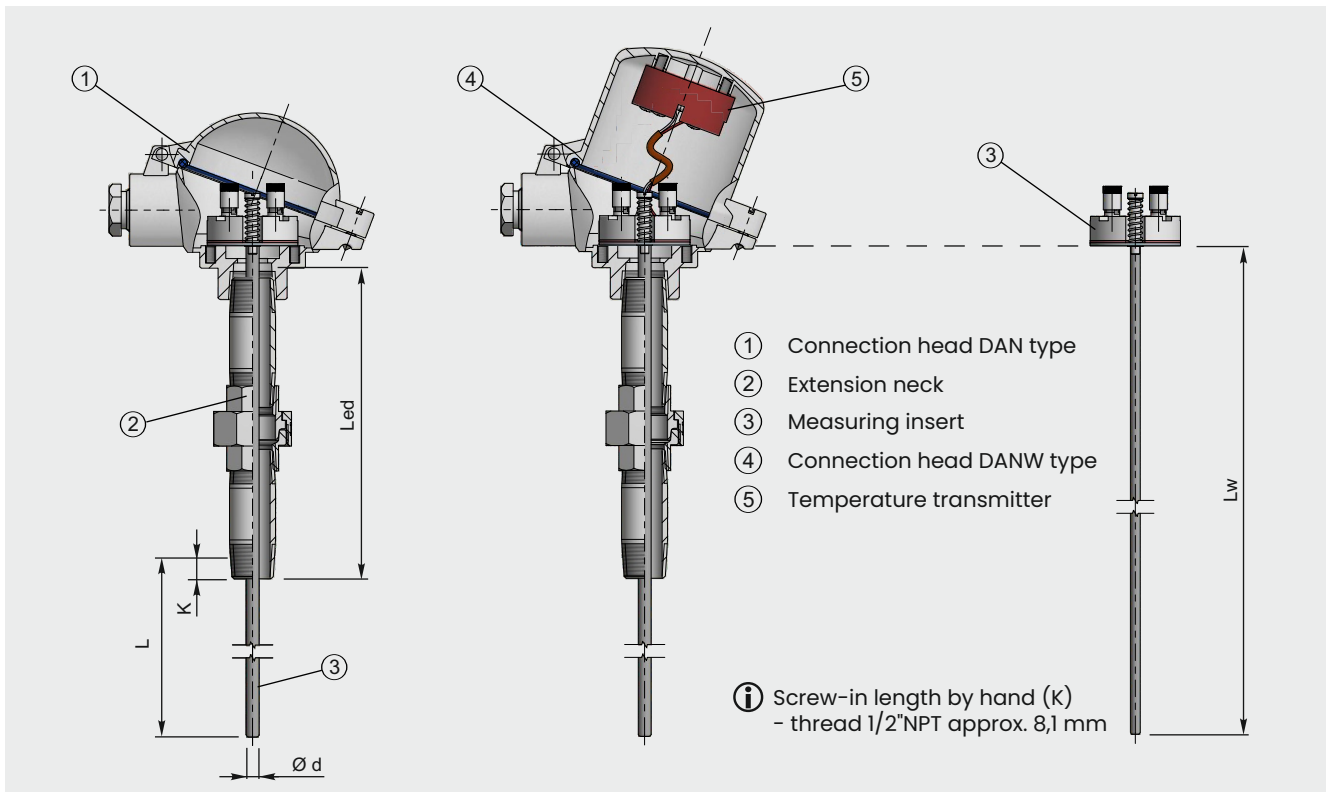# Other versions

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.

Sensors with connection cable

Mineral insulated sensors

Sensors with GDM connectors

Sensors with MI2 connectors

Sensors with field transmitter

Stator RTDs

Ambient temperature sensors

Type **TOPNUN**

Designs

1. Connection head DAN type
2. Extension neck
3. Measuring insert
4. Connection head DANW type
5. Temperature transmitter

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

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

Averange 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 Lw
100 mm	202 mm
140 mm	242 mm
200 mm	302 mm
260 mm	362 mm

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

$$Lw = L_{(thermowell\ length)} + Led_{(neck\ length)} + 2$$
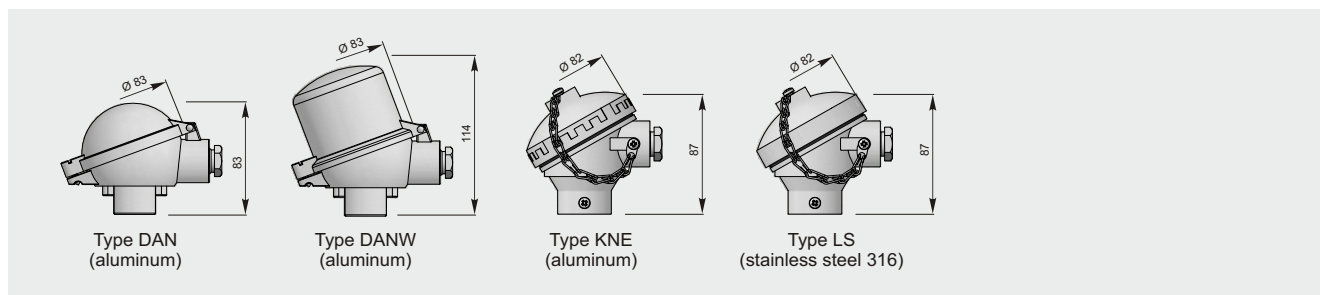
Example:

$$Lw = 200 + 100 + 2$$

For thermowell L=200 mm long, length of measuring insert is 302 mm.

Connection heads

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

Type DAN
(aluminum)

Type DANW
(aluminum)

Type KNE
(aluminum)

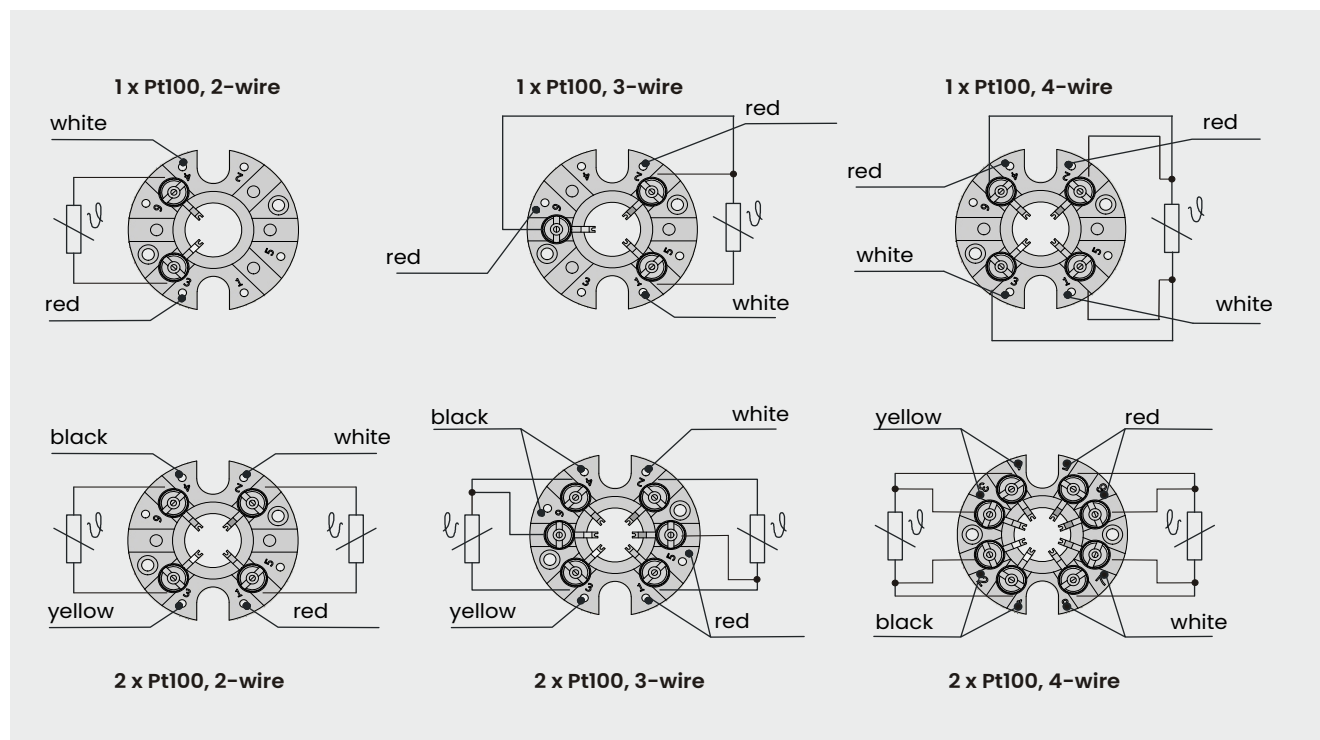Type LS
(stainless steel 316)

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 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

1 x Pt100, 2-wire

white

red

1 x Pt100, 3-wire

red

red

white

1 x Pt100, 4-wire

red

red

white

white

black

white

yellow

red

2 x Pt100, 2-wire

black

white

yellow

red

2 x Pt100, 3-wire

yellow

red

black

white

2 x Pt100, 4-wire

Type **TOPNUN**

| Ordering code

1		2	3	4	5	6	7	8	9	10
☐	TOPNUN ☐	☐	- ☐	- ☐	- ☐	- ☐	- ☐	- ☐	- ☐	

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
		2	2 x Pt100

* available only with connection head DANWdie

Measuring insert diameter d

2			
		1	Ø3.0 mm
		2	Ø6.0 mm
		3	Ø4.5 mm

Closing method of connection head

3			
		1	closing by screw
		3	closing by clamp

Connection head

4					
		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		

Length L [mm]

5			
		100	100 mm
		140	140 mm
		200	200 mm
		260	260 mm
		xxx	other, please specify

Neck length Led [mm]

6			
		150	150 mm
		250	250 mm
		xxx	other, please specify

Tolerance

7			
		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

Connection line

8			
		2	2-wire
		3	3-wire
		4	4-wire

Measuring range of temperature transmitter

9			
		0..100	input signal for 4..20mA: 0..100°C
		xxx	other, please specify

Type of temperature transmitter

10			
		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 TOPNUN11-DAN-200-150-A-4
(sensor 1xPt100, connection head DAN closing by screw, measuring insert diameter Ø3 mm, length L=200mm, length Led=150mm, class A 4-wire).

Temperature sensor APWTOPNUN21-DANWdie-260-300-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=300mm, class A 3-wire, temperature transmitter PR5335A).