

Applications

- Measuring range: -200 .. +600°C
- Suitable for additional thermowell
- Fine chemicals industry
- Light energy industry
- General industrial services
- Food industry

Features

- Exchangeable measuring insert made of mineral insulated cable (vibration proof)
- Spring-loaded measuring insert provides ideal contact with protective tube
- Temperature transmitter can be installed inside connection head of sensor
- Connection head with local LCD or LED display as an option (see models TWR01H, DANWdie-LED)

The sensor consists of an exchangeable measuring insert, neck and aluminum connection head where mounting a temperature transmitter with 4-20 mA/HART® or Profibus®PA output signal is possible.

The measuring insert represents the replaceable element of the complete sensor which reduces time and costs of maintenance of the measuring apparatus installed in the object. Spring fixation of the measuring insert provides perfect pressure to the bottom of the protecting tube, reduces time of reaction to changes of temperature and increases accuracy of measurement as well as reduces natural vibration thus mechanical and electrical defects can be avoided.

Insertion length, thermometer thread, connection head as well as type and number of sensors, accuracy and method of connection can be selected individually for the respective application.

Other versions

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

Other versions can be supplied upon customer's request.



Czujnik z głowicą DANW
Osłona z przewężeniem

Czujnik z głowicą NA

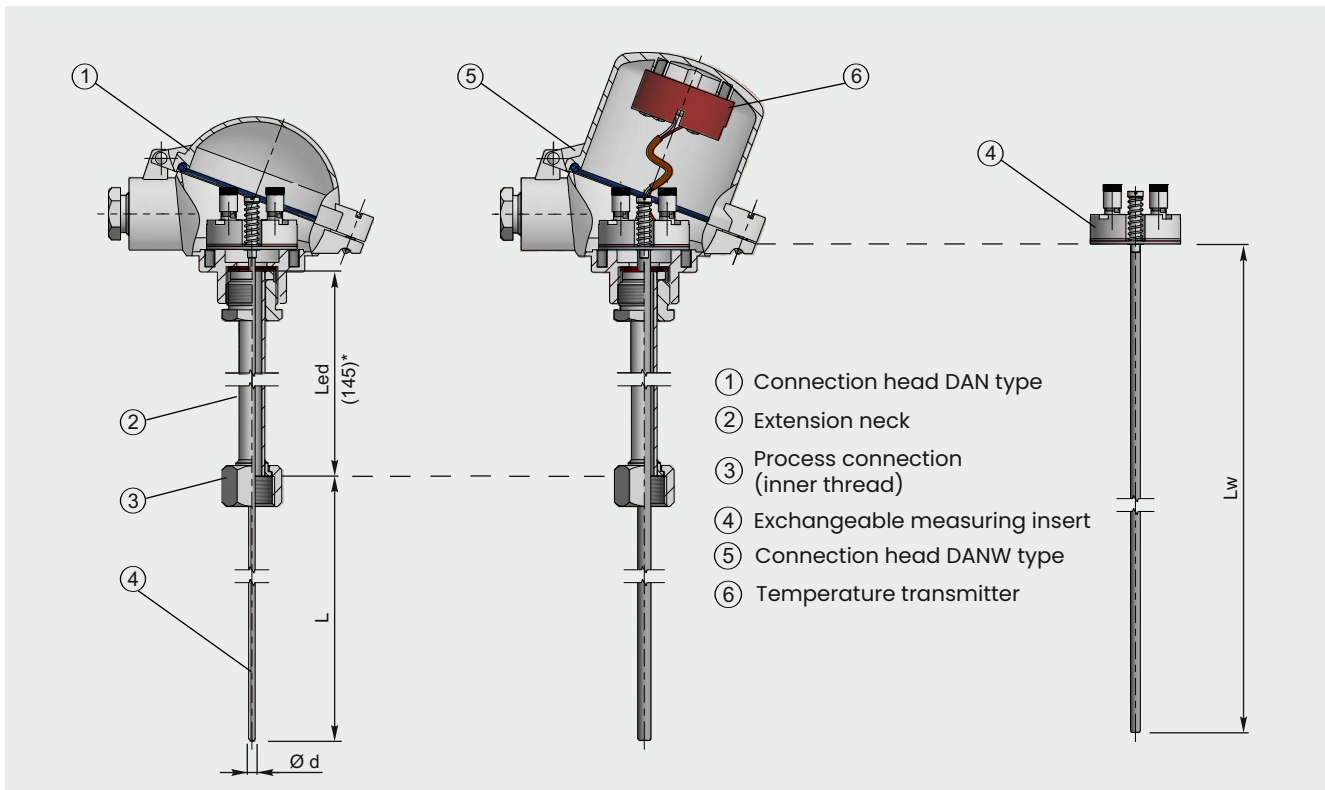
Temperature Transmitter (Option)

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.

Designs



- ① Connection head DAN type
- ② Extension neck
- ③ Process connection (inner thread)
- ④ Exchangeable measuring insert
- ⑤ Connection head DANW type
- ⑥ Temperature transmitter

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 | $t_{50} = 1.5 \text{ s}$ |
| | $t_{90} = 4.5 \text{ s}$ |
| Ø 6 mm | $t_{50} = 4 \text{ s}$ |
| | $t_{90} = 10 \text{ s}$ |

Standard lengths

| Immersion length L | Measuring insert length Lw |
|--------------------|----------------------------|
| 100 mm | 275 mm |
| 140 mm | 315 mm |
| 200 mm | 375 mm |
| 260 mm | 405 mm |

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

$$Lw = L_{(\text{thermowell length})} + 165_{(\text{neck length})} + 10$$

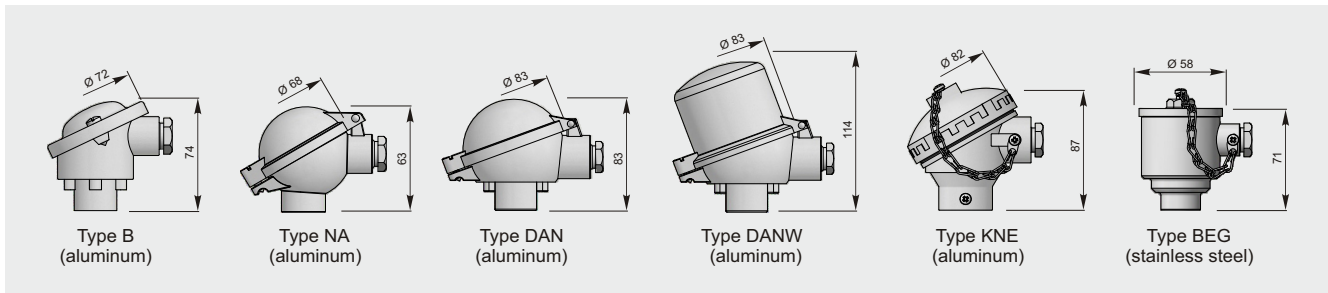
Example:

$$Lw = 200 + 165 + 10$$

For thermowell L=200 mm long, length of measuring insert is 375 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".



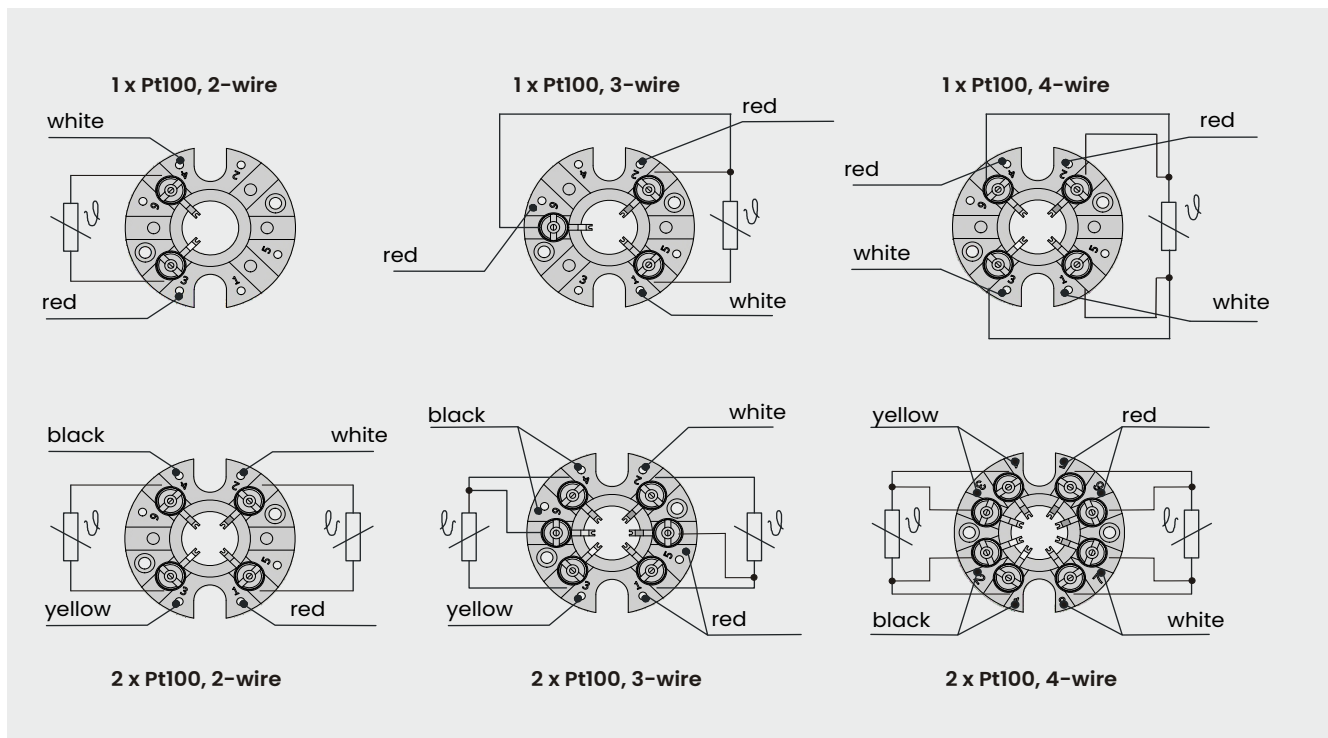
Connection head DANWdie with local LED display

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 11
 TOPGWN - - - - - - - - - -

| | | | | | | |
|---|-----------------------|---|---|----------|----------------------|------|
| 1 | <input type="text"/> | Resistance element | | | | |
| | | | 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 | | | | | | |
| 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 | | | | |
| | | NA | Type NA | Aluminum | Cable gland: M20x1.5 | IP65 |
| | | DAN | Type DAN | Aluminum | Cable gland: M20x1.5 | IP65 |
| | | DANW | Type DANW | Aluminum | Cable gland: M20x1.5 | IP65 |
| | | B | Type B | Aluminum | 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] | | | | |
| | | | 145 mm (standard) | | | |
| | | 250 | 250 mm | | | |
| | xxx | other, please specify | | | | |
| 7 | <input type="text"/> | Process connection with internal thread | | | | |
| | | M20x1.5 | M20x1.5 | | | |
| | | M27x2 | M27x2 | | | |
| | | G1/2" | G1/2" | | | |
| | | xxx | other, please specify | | | |
| 8 | <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 | | | |
| 9 | <input type="text"/> | Connection line | | | | |
| | | 2 | 2-wire | | | |
| | | 3 | 3-wire | | | |
| | 4 | 4-wire | | | | |
| 10 | <input type="text"/> | Measuring range of temperature transmitter | | | | |
| | | 0..100 | input signal for 4..20mA: 0..100°C | | | |
| | xxx | other, please specify | | | | |
| 11 | <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 TOPGWN11-DAN-200/250-M20x1.5-A-4
 (sensor 1xPt100, connection head DAN closing by screw, measuring insert diameter Ø3 mm, length L=200mm, neck Led=250mm, internal thread M20x1.5, class A 4-wire).