

Applications

- Measuring range: -50 .. +600°C
- Construction of tanks / apparatus
- Plant processes in all industries with a particular exposure to attrition
- Heating, air conditioning and ventilation

Features

- Thermowell material: Stainless Steel AISI321 / 1.4541
- Thermowell covered with hard chrome layer
- Spring-loaded measuring insert provides ideal contact with protective tube
- Temperature transmitter can be installed inside connection head of sensor
- Connection head with local LED display as an option (see model DANWdie-LED)

The sensor consists of an exchangeable measuring insert, outer protective tube (thermowell) with 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.

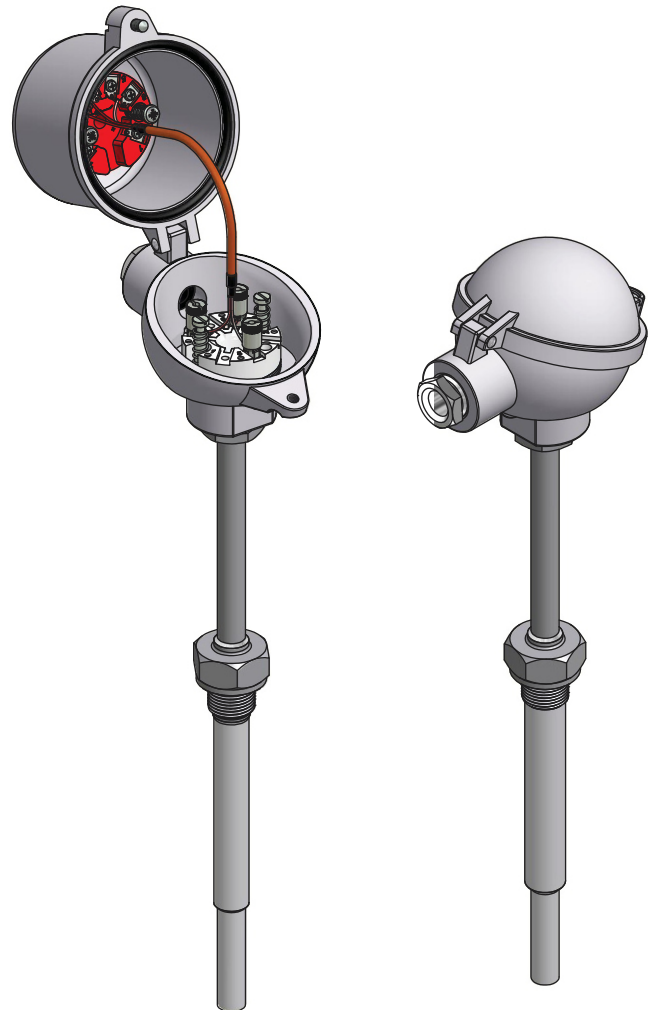
Insertion length, process connection, design of thermowell, connection head as well as type and number of sensors, accuracy and method of connection can be selected individually for the respective application.

Temperature Transmitter (Option)

Transmitter is mounted inside the connection head of the sensor: directly on measuring insert or in the high cap of head.

The second method is advantageous as it allows changing standard measuring insert quickly without a need to disassemble the transmitter; it means reduction of time and costs of maintenance of the sensor and protecting wires against any damage possible.

Mounting of two transmitters inside the connection head available upon request.



Sensor with connection head DANW.
Thermowell with reduced tip.

Sensor with
connection head NA

ATEX and EAC Ex versions

Intrinsically safe and Flameproof designs are available for applications in hazardous areas. These models are provided with certificate for „intrinsically safe“ type of protection according to Directive 2014/34/UE (ATEX) and EAC Ex TR-CU 012/2011 (Eurasian Economic Union).

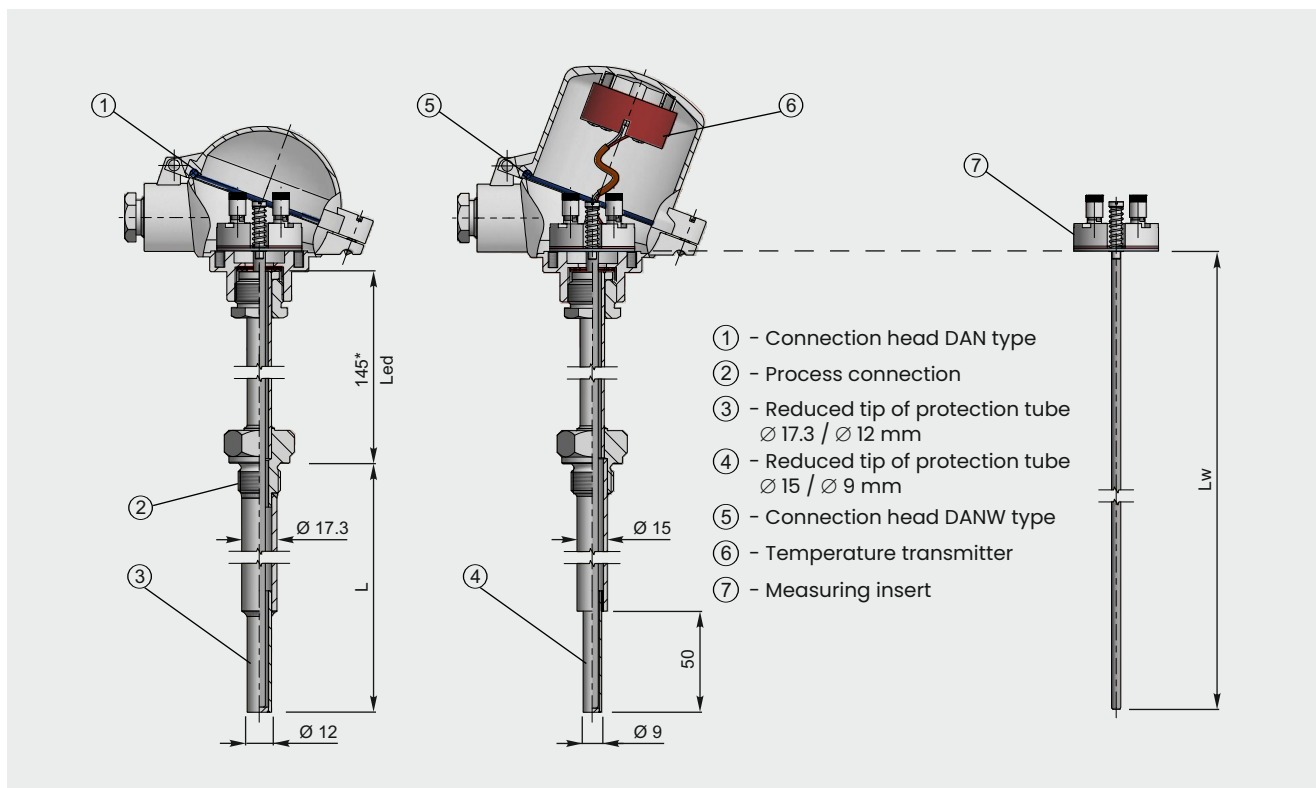
Intrinsically safe (Exi) data sheet XI-TOPGS

Other versions

This data sheet contains only small part of our supplies program of resistance thermometers with exchangeable measuring insert. Upon the customer's request, other versions can also be delivered.

* other materials, see: "Thermowell materials"

Designs



* other parameters available upon request

Connection line

Protection tube [mm]	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 17.3 / Ø 12	Ø 6	✓	✓	✓	✓	✓	✓
Ø 15 / Ø 9	Ø 6	✓	✓	✓	✓	✓	✓

Tolerances

Basic values and limiting errors for the platinum measurement resistances are laid down in PN-EN 60751

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

Standard lengths

Immersion length L	Measuring insert length Lw
100 mm	255 mm
160 mm	315 mm
200 mm	355 mm
250 mm	405 mm
400 mm	555 mm

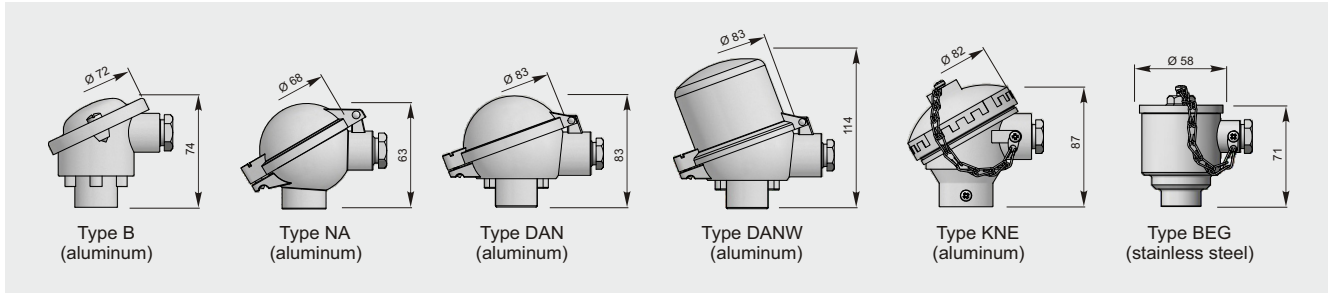
Response time

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

Diameter of protection tube	Response time
Ø 17.3 / Ø 12 mm	t ₅₀ = 38 s
	t ₉₀ = 125 s
Ø 15 / Ø 9 mm	t ₅₀ = 18 s
	t ₉₀ = 55 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".



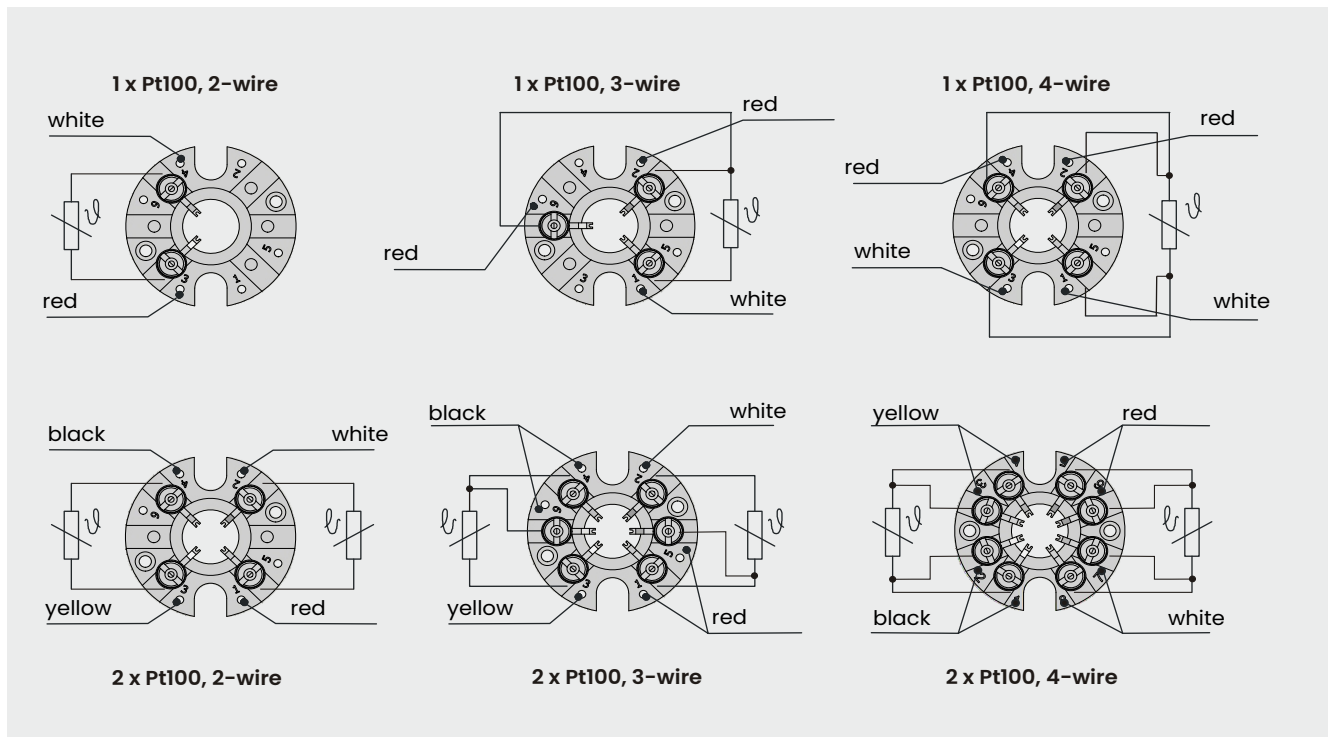
Connection head DANWdie with local LED display

The display is mounted in connection head cover 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
 TOPGS - - - - - - - - -

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"/>	Protection tube (thermowell)			
		1	Ø17.3 mm with reduced tip Ø12 mm		
	2	Ø15 mm with reduced tip Ø9 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
		BEG	Type BEG	Stainless Steel	Cable gland: M20x1.5 IP65
	xxx	other, please specify			
5	<input type="text"/>	Length L [mm]			
		100	100 mm		
		160	160 mm		
		200	200 mm		
		250	250 mm		
		400	400 mm		
	xxx	other, please specify			
6	<input type="text"/>	Process connection			
		M20x1.5	M20x1.5		
		G1/2"	G1/2"		
	xxx	other, please specify			
7	<input type="text"/>	Tolerance			
		A	Class A according to PN-EN 60751		
		B	Class B according to PN-EN 60751		
		1/3B	Class 1/3B 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 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

Temperature sensor TOPGS11-DAN-200-G1/2-A-4
 (sensor 1xPt100, connection head DAN closing by screw, length L=200mm, process connection G1/2", thermowell diameter Ø17.3mm with reduced tip Ø12mm, class A 4-wire).

Temperature sensor APWTOPGS21-DANWdie-500-M20x1.5-A-3-0..100°C-PR5335A
 (sensor 1xPt100 with transmitter 4..20mA, connection head DANWdie with local LED display, closing by screw, length L=500mm, process connection M20x1.5, thermowell Ø15 with reduced tip Ø9mm, class A 3-wire, temperature transmitter PR5335A).