

## Applications

- Measuring range depends on thermowell type
- Tanks construction
- Installations of technological processes in all branches of industry
- Machine construction
- Ventilation and air conditioning installations
- Heating installations

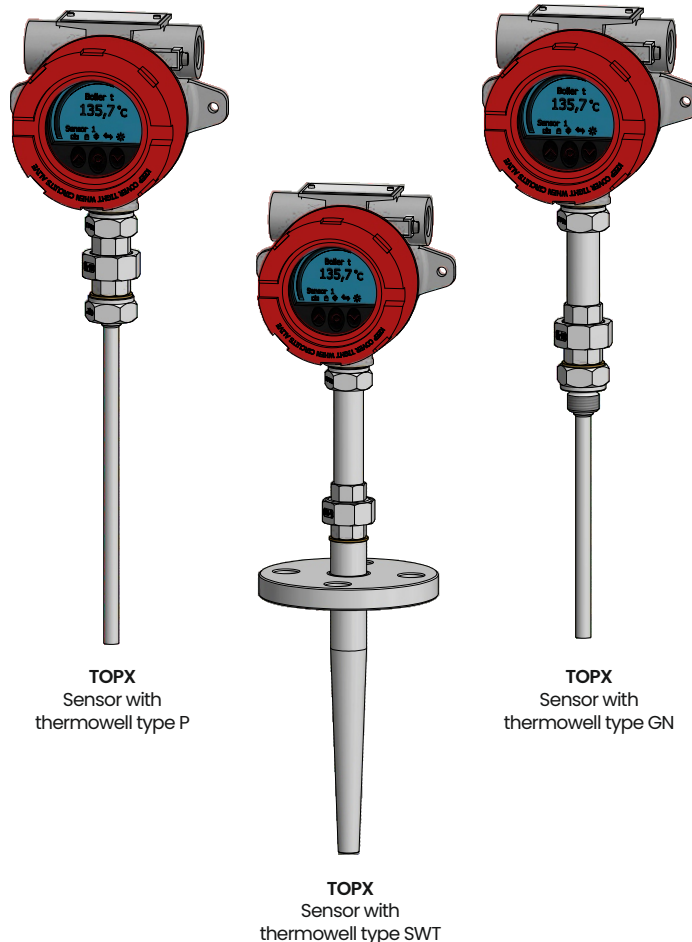
## Features

- Measuring range depends on thermowell type
- Standard thermowell material: stainless steel 1H18N9T ( 1.4541 / AISI321 )\*
- Spring-loaded measuring insert ensure reliable contact with thermowell
- Non-standard sensor version available upon customer's request
  - thermowell construction version with reduced tip
  - field mounted temperature transmitter iTEMP® TMT142 or iTEMP® TMT162

Sensor consists of an exchangeable measuring insert, welded thermowell with process connection and field mounted temperature transmitter PR7501.

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 and material of thermowell, connection head can be selected individually for the respective application.



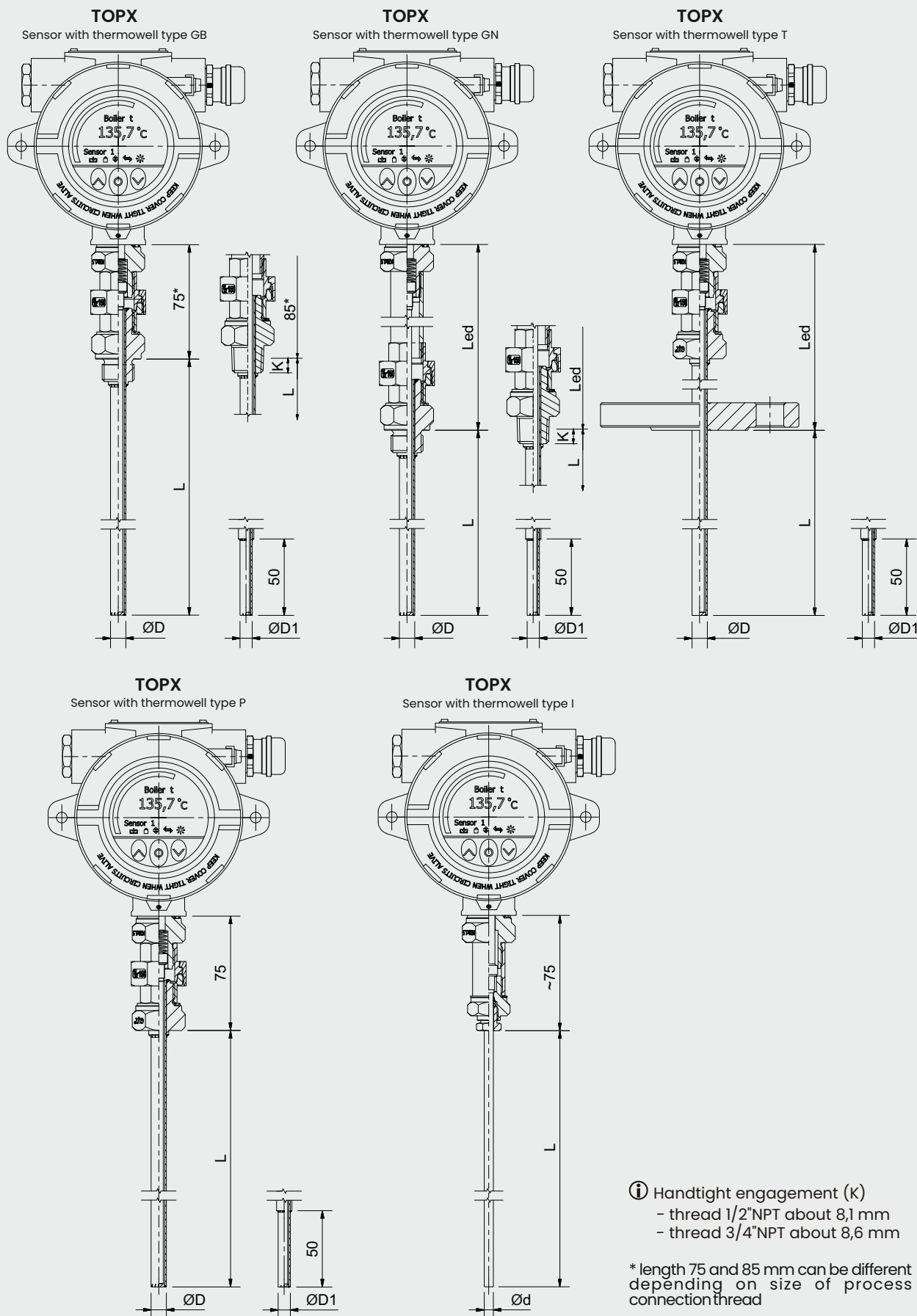
## Other versions

This data sheet contains only small part of our supplies program of thermometers with field mounted temperature transmitter PR7501.

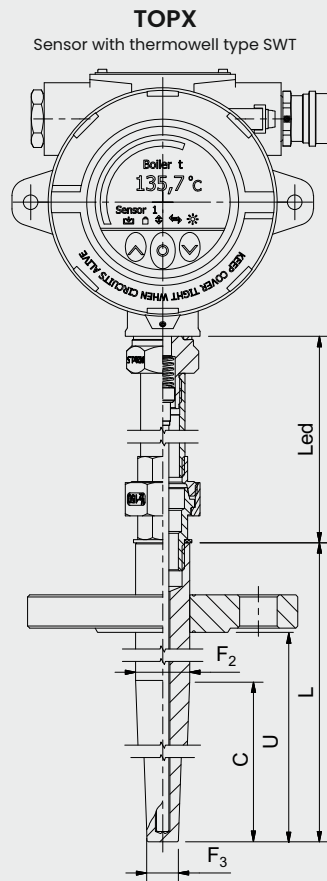
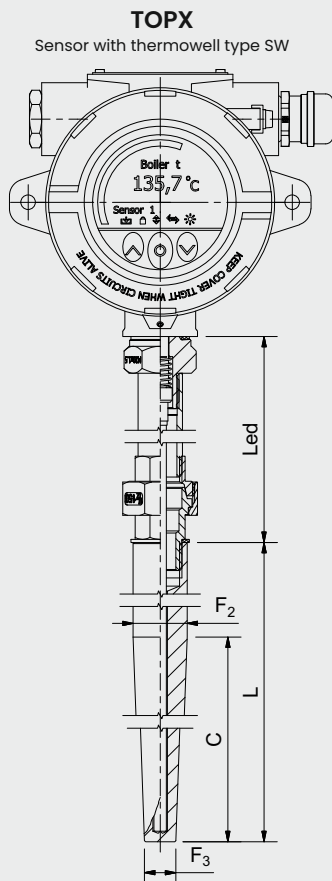
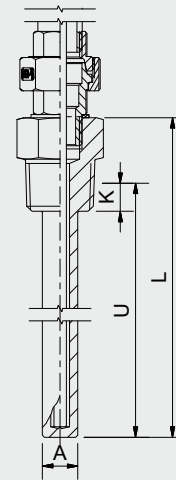
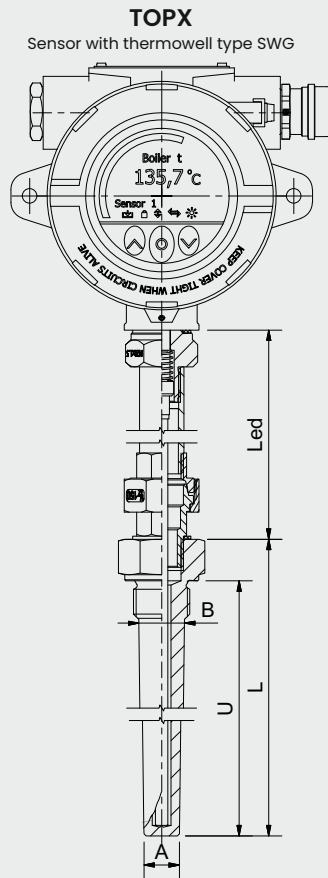
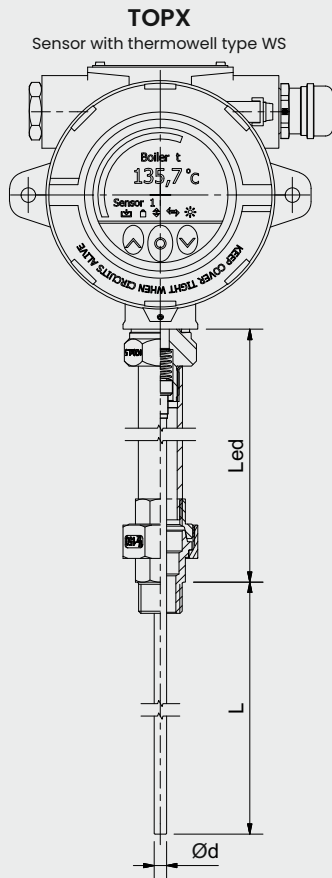
Upon the customer's request, other versions can also be delivered.

\*other materials, see: „Thermowell materials“

## Designs



Designs



- ① Handtight engagement (K)  
 - thread 1/2"NPT about 8,1 mm  
 - thread 3/4"NPT about 8,6 mm

## Measuring range

from -200°C to +600°C  
except sensor with thermowell type GB (-50°C to +150°C)

## Tolerance class

Platinum            Class A ( $\pm 0.15^\circ\text{C}$  in temp.  $0^\circ\text{C}$ )  
                          Class B ( $\pm 0.30^\circ\text{C}$  in temp.  $0^\circ\text{C}$ )

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

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

## Response time for thermowell with protection tube (type GB, GN, T, P.)

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

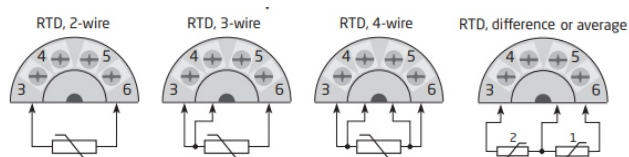
Diameter of protection tube „D”	Response time
Ø9 mm	$t_{50} = 18 \text{ s}$
	$t_{90} = 55 \text{ s}$
Ø9 mm with reduced tip to Ø6 mm	$t_{50} = 8 \text{ s}$
	$t_{90} = 22 \text{ s}$
Ø12 mm	$t_{50} = 38 \text{ s}$
	$t_{90} = 125 \text{ s}$
Ø12mm with reduced tip to Ø9 mm	$t_{50} = 18 \text{ s}$
	$t_{90} = 55 \text{ s}$

## Response time for drilled thermowell (type SW)

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

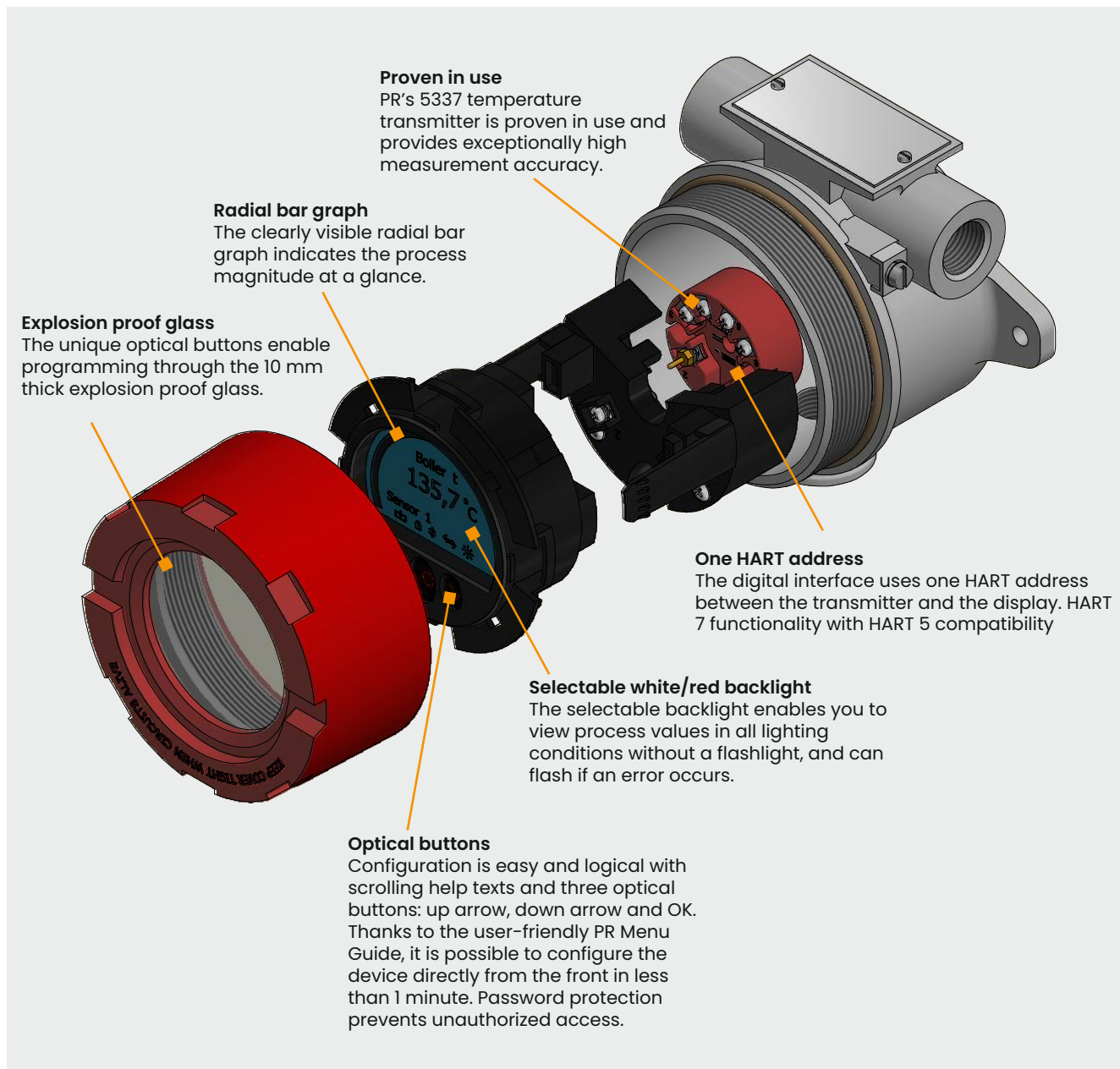
Diameter of thermowell „F2”	Response time	Length C = 65mm	Length C = 125mm
Ø18h7	$t_{50}$	22 s	22 s
	$t_{90}$	60 s	60 s
Ø24h7	$t_{50}$	31 s	31 s
	$t_{90}$	96 s	96 s

## Connection scheme



## The details that make the difference

PR7501 field mounted HART® temperature transmitter with display and optical buttons allows to easy programming, review and diagnostics from the front of the sensor. Sensor display can be rotated in 90 degree increments for easy vertical or horizontal viewing.

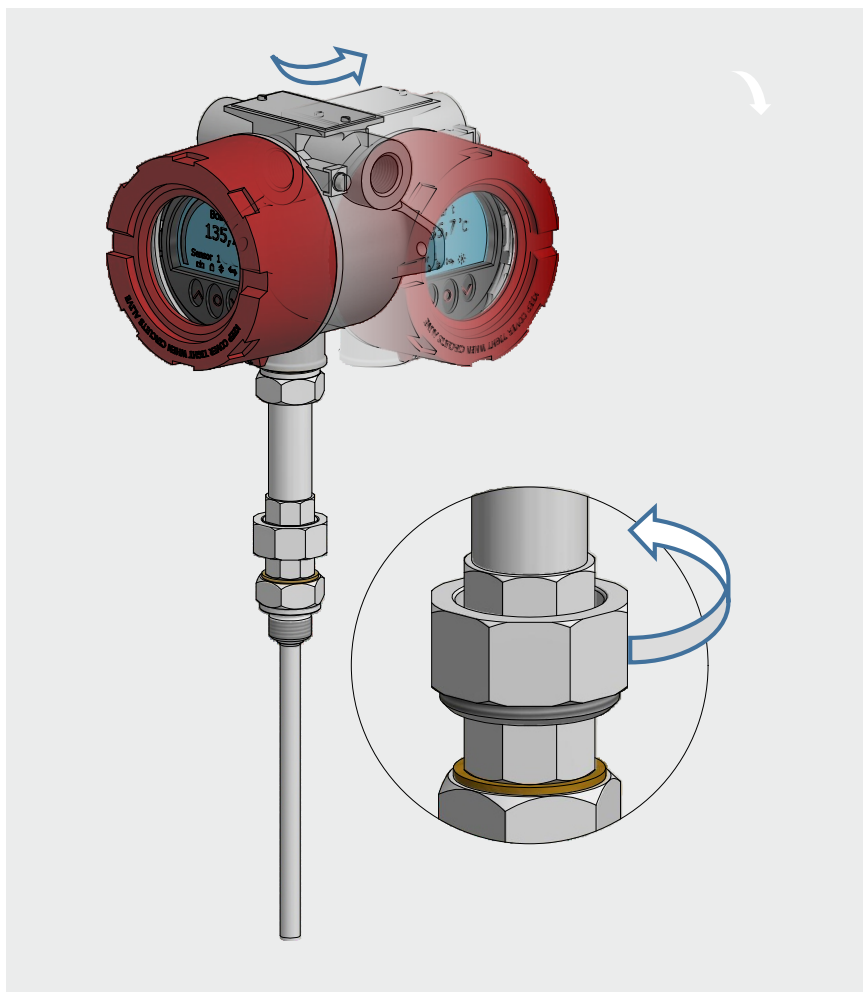


## Unique specifications of PR7501 transmitter

Accuracy:	Better than 0.05% of selected range	Humidity:	0-100% relative humidity
Response time (analog) :	1-60 seconds	Configuration types:	LOI, PC with HART® or HART® terminal
Temperature coefficient:	50 ppm / °C (0.005% / °C)	Display type / diameter:	Dot matrix / 60 mm
RTD types:	Pt50, Pt100, Pt200, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000	No of process value digits:	5
Output types:	4-20 mA	Buttons:	Three optical buttons: up arrow, down arrow and OK.
Voltage drop:	10 VDC (backlight off) 12 VDC (backlight off)	Backlight color:	Selectable red or white
Operating temperature:	-40°C to +85°C		

## TOPX sensor head angular position adjustment

TOPX thermowell allows for angular position adjustment of sensor head to adapt it to needs of application.



## Other version

Sensor with field mounted temperature transmitter of another manufacturer is possible.



## Ordering code

TOPX -  -  -  -  -  -  -  -  -  -

1	<input type="text"/>	<b>Thermowell type</b>	
		GB	sensor with thermowell type GB
		GN	sensor with thermowell type GN
		T	sensor with thermowell type T
		P	sensor with thermowell type P
		WS	sensor with thermowell type WS
2	<input type="text"/>	<b>Thermowell length L</b>	
		50	50 mm
		100	100 mm
		150	150 mm
3	<input type="text"/>	<b>Length of neck Led (except thermowells type GB, P and I)</b>	
		115	neck length Led = 115 mm (except thermowell type T)
		150	neck length Led = 150 mm
		200	neck length Led = 200 mm
4	<input type="text"/>	<b>Thermowell dia. ØD (ref. to type GB, GN,T i P) or measuring insert dia. (ref. to type WS and I)</b>	
		6	Ø6 mm
		8	Ø8 mm
		9	Ø9 mm
5	<input type="text"/>	<b>Process connection / Flange connection (except thermowells type P and I)</b>	
		M20x1.5	M20x1.5
		G1/2"	G1/2"
		DN20PN16	Flange DN20PN16 acc. to ISO 7005-1 (ref. to thermowell type T)
5	<input type="text"/>	<b>Thermowell material (ref. to type GB, GN,T and P) or measuring insert (ref. to type WS and I)</b>	
		1.4541	Stainless steel 1H18N9T ( 1.4541, AISI321)
		1.4404	Stainless steel 00H17N14M2 ( 1.4404, AISI316L)
		xxx	other, please specify
6	<input type="text"/>	<b>Tolerance</b>	
		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
7	<input type="text"/>	<b>Connection line</b>	
		2	2-wire (available only in B tolerance class)
		3	3-wire
		4	4-wire
8	<input type="text"/>	<b>Measuring range of temperature transmitter</b>	
		0..100	input signal for 4..20mA: 0..100°C
9	<input type="text"/>	<b>Transmitter version Pr7501</b>	
			without optical buttons
		OPTO	with optical buttons

## Example

TOPX-GN-200-115-10-M20x1.5-1.4541-A/3p.-(0..100°C)

Construction version with thermowell type GN, length of neck Led=115mm, thermowell length L=200mm, thermowell diameter Ø10 mm, process connection thread M20x1.5, thermowell material stainless steel 1.4541, tolerance class A, connection line 3-wire, input signal 4..20mA: 0..100°C, transmitter version PR7501 without optical buttons

TOPX-T-150-150-12/10-DN20PN16-1.4404-B/2p.-(0..150°C)-OPTO

Construction version with thermowell type T, length of neck Led=150mm, thermowell length L=150mm, thermowell diameter Ø12 mm with reduced tip Ø10 mm on length 50mm, process connection flange DN20PN16 acc to ISO 7005-1, thermowell material stainless steel 1.4404, tolerance class B, connection line 2-wire, input signal 4..20mA: 0..150°C, transmitter version PR7501 with optical buttons

TOPX-I-250-6-1.4541-A/4p.-(0..80°C)

Construction version with thermowell type I, measuring insert length L=200mm, measuring insert diameter Ø6 mm, sheath material stainless steel 1.4541, tolerance class A, connection line 4-wire, input signal 4..20mA: 0..80°C, transmitter version PR7501 without optical buttons

## Ordering code

TOPX -  -  -  -  -  -  -  -  -  -

1	<input type="text"/>	<b>Thermowell type</b>	
		SW	sensor with thermowell type SW
		SWT	sensor with thermowell type SWT
2	<input type="text"/>	<b>Thermowell length L / U</b>	
		100	100 mm
		140	140 mm
		250/180	thermowell overall length 250mm, immersion length 180mm (ref. to type SWT and SWG)
3	<input type="text"/>	<b>Length of neck Led</b>	
		115	neck length Led = 115 mm
		150	neck length Led = 150 mm
		200	neck length Led = 200 mm
4	<input type="text"/>	<b>Thermowell dia. F2 or A/B</b>	
		18	Ø18h7 mm
		24	Ø24h7 mm
		16/20	thermowell bottom dia. Ø16 mm, thermowell top dia. Ø20 mm (ref. to type SWG)
5	<input type="text"/>	<b>Process connection / Flange connection (except thermowells type SW)</b>	
		M20x1.5	M20x1.5 (ref. to thermowell type SWG)
		G1/2"	G1/2" (ref. to thermowell type SWG)
		DN20PN16	Flange DN20PN16 wg ISO 7005-1 (ref. to thermowell type SWT)
6	<input type="text"/>	<b>Thermowell material</b>	
		1.4541	Stainless steel 1H18N9T ( 1.4541, AISI321)
		1.4571	Stainless steel 00H17N14M2 ( 1.4404, AISI316L)
		1.7335	Steel 15HM (1.7335) (ref. to thermowell type SW)
		1.7380	Steel 10H2M (1.7380) (ref. to thermowell type SW)
7	<input type="text"/>	<b>Tolerance</b>	
		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
8	<input type="text"/>	<b>Connection line</b>	
		2	2-wire (available only in B tolerance class)
		3	3-wire
9	<input type="text"/>	<b>Measuring range of temperature transmitter</b>	
		0..100	input signal for 4..20mA: 0..100°C
10	<input type="text"/>	<b>Transmitter version Pr7501</b>	
		OPTO	with optical buttons

## Example

TOPX-SW-200-150-24-1.4541-A/3p.-(0..100°C)

Construction version with thermowell type SW, length of neck Led=150mm, thermowell length L=200mm, thermowell diameter Ø24h7 mm, thermowell material stainless steel 1.4541, tolerance class A, connection line 3-wire, input signal 4..20mA: 0..100°C, transmitter version PR7501 without optical buttons

TOPX-SWT-200/150-115-19/24-DN20PN16-1.4571-B/2p.-(0..150°C)-OPTO

Construction version with thermowell type SWT, length of neck Led=115mm, thermowell length L=200mm, immersion length 150mm, thermowell top diameter Ø24 mm, thermowell bottom diameter Ø19 mm, process connection flange DN20PN16 acc to ISO 7005-1, thermowell material stainless steel 1.4571, tolerance class B, connection line 2-wire, input signal 4..20mA: 0..150°C, transmitter version PR7501 with optical buttons

TOPX-SWG-250/180-115-15/20-M24x1.5-1.4541-A/4p.-(0..80°C)

Construction version with thermowell type SWG, length of neck Led=115mm, thermowell length L=250mm, immersion length U=180mm, thermowell bottom diameter A=Ø15 mm, thermowell top diameter B=Ø20 mm, process connection thread M24x1.5, thermowell material stainless steel 1.4541, tolerance class A, connection line 4-wire, input signal 4..20mA: 0..80°C, transmitter version PR7501 with optical buttons