

Temperature sensor suitable for measurement of aggressive liquid and gaseous media, especially in chemical industry, galvanizing plants, etc.

## Specification

### Temperature range / sensing element

0÷100°C      **Pt100**    class B

### Sheath

– material: steel 1.4541, shielded with heat-resistant PVC  
– length L [mm]: 200÷2000

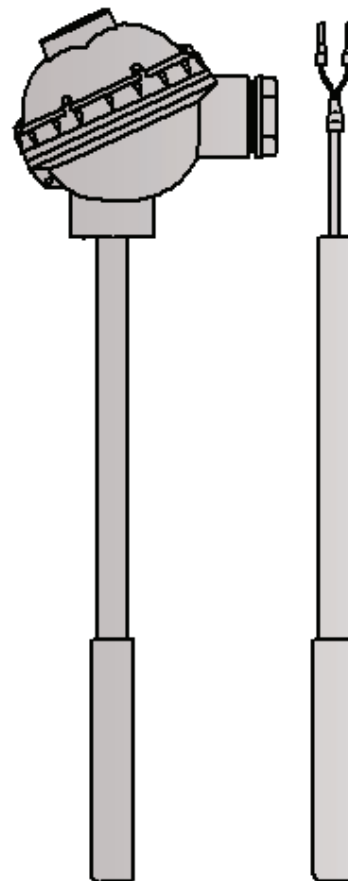
### Lead wire for TOPCVE-1

– stranded Cu wire 2 or 4×0,22mm<sup>2</sup> with double teflon insulation  
– length L<sub>p</sub>[m]: 1,5 (standard)

### Connection head for TOPCV-1

– NS, IP54, -30÷130°C

Other parameters acc. to requirements



## Options

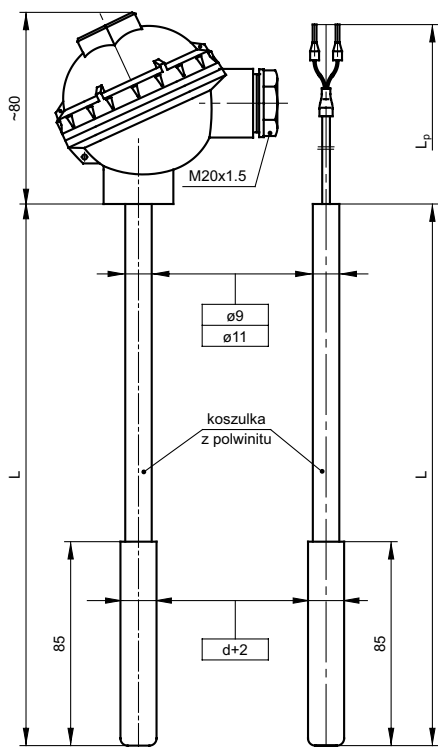
### Temperature transmitter application

Temperature transmitter with standard 4÷20mA, 0÷10V output signals and with the HART or PROFIBUS communication protocols can be mounted in the connection head (in place of a terminal block).

### Non-standard design

Immersion length, shape and material of the sheath, connection head type and other parameters can be customized per client request.

**Calibrations performed by Limatherm Sensor Sp. z o.o. are confirmed with the Calibration Certificate of the Accredited Laboratory for Temperature Measurements.**



### Compensation / thermocouple wire insulations

Insulation material	Operating temperature range [°C]	Properties
PCW (PCV)	-10÷105	Applied in mild environmental conditions. Waterproof and flexible.
Yc- polyvinyl chloride	-10÷105	Applied in mild environmental conditions. Waterproof and flexible.
FEP-teflon	-50÷200	Resistant to oils, acids and other aggressive liquids. Good flexibility.
Si-silicone	-50÷180	Waterproof, flexible. Applied in high humidity conditions.
Ws-fiberglass	-60÷400	Good resistance to high temperature Low resistance to liquid penetration.

**Notes:** Additionally, copper or steel braids/shields are used on wires to prevent electrical noises, increasing, at the same time, wire insulation resistance to mechanical damages. In case of longer wire lengths grounding may be needed to minimize the noise in measurement circuit

### Standard length

Immersion length	
L	L <sub>1</sub>
280	300
480	500
680	700

### Tolerance for classes of sensors with resistors Pt acc. to PN-EN 60751

Sensor classes	Range of application [°C]	Formula for calculating acceptable deviations [°C]
AA	-50÷250	$T = \pm(0,10 + 0,0017  t )$
A	-100÷450	$T = \pm(0,15 + 0,002  t )$
B	-196÷600	$T = \pm(0,3 + 0,005  t )$

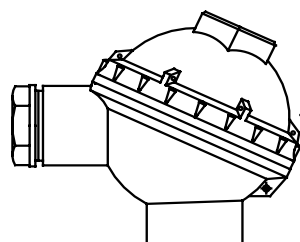
|t| - absolute value of temperature

### Measurement circuit

1 x Pt100			2 x Pt100			1 x TC	2 x TC
2-wire	3-wire	4-wire	2-wire	3-wire	4-wire	2-wire	2-wire
✓	✓	✓	✓	✓	x	x	x

### Connection head types

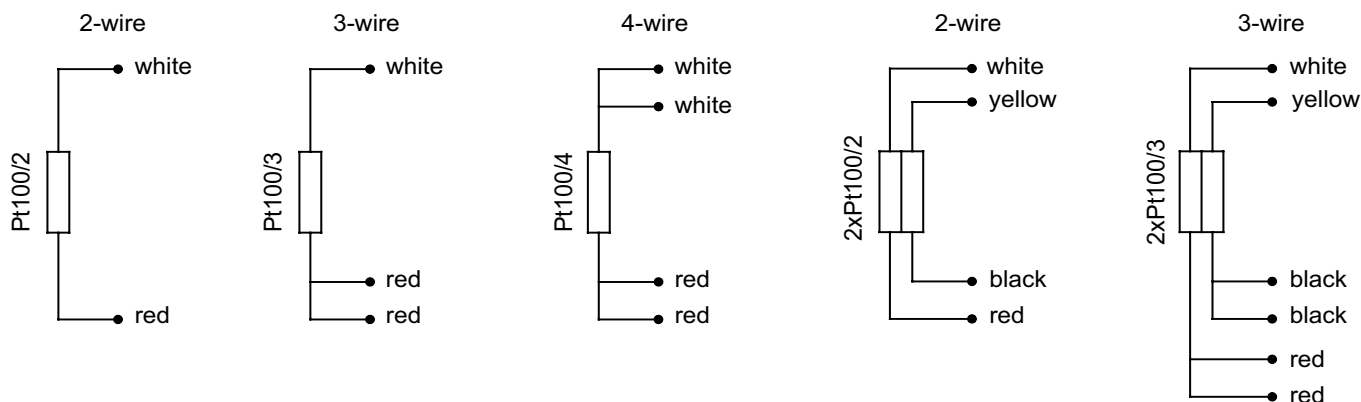
Connection head type NA in standard.



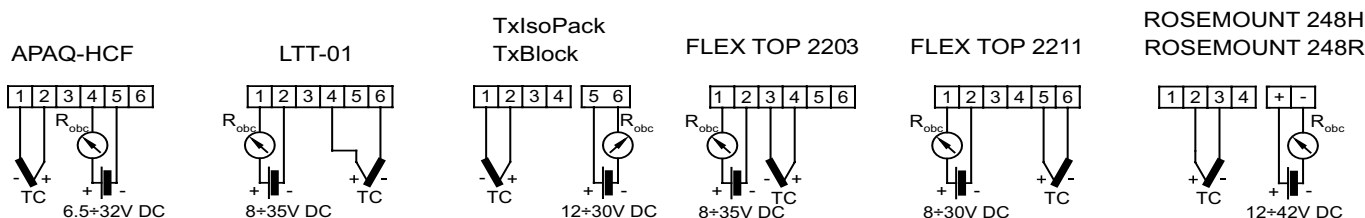
NS

### Connection schemes

#### Pt100 (thermometric resistor)

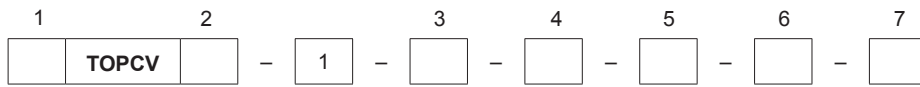


#### Transmitters



### Product code

		<b>Sensor version</b>			
	1	<input type="text"/>	<b>AP</b>		with transmitter (single)
			<b>no designation</b>		single
			<b>2</b>		double
		<b>Sensor version</b>			
	2	<input type="text"/>	<b>no designation</b>		version with connection head
			<b>E</b>		version with lead wire
		<b>Sheath length</b>			
			<b>L</b>	<b>L<sub>1</sub></b>	L (version with connection head)
			<b>280</b>	<b>300</b>	L <sub>1</sub> (version with lead wire)
			280mm	300mm	
			<b>480</b>	<b>500</b>	480mm
			480mm	500mm	
			<b>680</b>	<b>700</b>	680mm
			680mm	700mm	
	3	<input type="text"/>	other parameters acc. to requirements		
		<b>Sheath diameter</b>			
			<b>9</b>		ø9mm
	4	<input type="text"/>	<b>11</b>		ø11mm
		<b>Accuracy</b>			
	5	<input type="text"/>	<b>A or B</b>		for resistor Pt
		<b>Measurement circuit</b>			
			<b>2</b>		2 - wire
			<b>3</b>		3 - wire
	6	<input type="text"/>	<b>4</b>		4 - wire (only single)
		<b>Lead wire length for TOPCVE</b>			
			<b>1,5</b>		1,5m
	7	<input type="text"/>	other parameters acc. to requirements		



**Ordering example:**      **TOPCVE-1-500-11-A-3-2** single RTD sensor with Pt100, class A, 3-wire connection, sheath diameter 11 mm, sheath length L=500 mm, lead wire length  $L_p=2$  m