

## DESCRIPTION AND APPLICATION

These paired temperature sensors are used as component parts of the electrical heat quantity meters. They meet the requirements of the IEC 751 and EN 1434 standards and they have the EU Certificate - type approval identification TCM 321/07-4530. They are produced with the Pt 100, Pt 500 and Pt 1000 temperature sensing elements and consist of a case, in which the resistance-type sensing element is encapsulated, and a lead-in cable provided with a silicone insulation and a shielding.

The sensor cases are made of the stainless steel EN X5CrNi18-10 (DIN 1.4301) and are produced with the diameter 3,6 mm (TP 13) or 5 mm (TP 13A). The fixing nut, which forms the sensor's component part, is made of brass. All dimensions and tolerances are in correspondence with the requirements of the EN 1434 standard. The resistance-type sensing elements are connected by means of 2-wire or 4-wire connection. The TEMASIL sealing is available optionally.

The sensor case construction makes it possible to install the sensor directly into a tubing without the necessity to use a thermowell, thus providing for a fast sensor response to temperature changes. The sensors are designed to operate in a chemically non-aggressive environment. The standard operating temperature range is 0 to 180 °C or 0 to 150 °C. The sensors are produced in accordance with the Council Directive 2004/22/EEC for measure devices that was implemented to the legal system of the Czech Republic by the government regulation no. 464/2005 Col.



## SPECIFICATIONS

### BASIC DATA

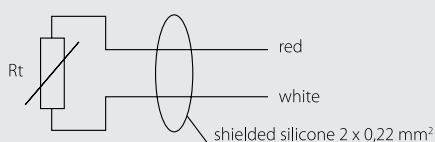
Type of sensing element	Pt 100, Pt 500, Pt 1000
Maximum measuring DC current	3 mA (Pt 100); 1,5 mA (Pt 500); 1 mA (Pt 1000)
Measuring range	0 to 180 °C or 0 to 150 °C
$\Delta\Theta_{\min}$	2 °C or 3 °C
$\Delta\Theta_{\max}$	180 °C or 150 °C
Accuracy class of individual sensors	B according to IEC 751
Sensor connection	according to the wiring diagram

### OTHER PARAMETERS:

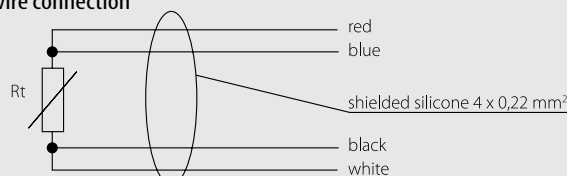
Length of the case	27,5 mm
Diameter of the case	3,6 mm (TP 13); 5 mm (TP 13A)
Material of the case	stainless steel EN X5CrNi18-10 (DIN 1.4301)
Material of the fastening nut	brass
Lead-in cable	2-wire shielded silicone 2 x 0,22 mm <sup>2</sup> 4-wire shielded silicone 4 x 0,12 mm <sup>2</sup>
Lengths of the cable	According to EN 1434-2, art. 3.3.4, tab. 2
Wire resistance	0,16 Ω per 1 m of the 2-wire cable
Temperature stability of the cable	-25 to 180 °C
Ingress protection	IP 67 according to EN 60 529
Insulation resistance	> 100 MΩ at 100 V DC, 15 to 35 °C, humidity < 80 %
Time response	TP 13: $\tau_{0,5} < 3$ s (in streaming water at 0,4 m.s <sup>-1</sup> ) TP 13A: $\tau_{0,5} < 8$ s (in streaming water at 0,4 m.s <sup>-1</sup> )

## WIRING DIAGRAM

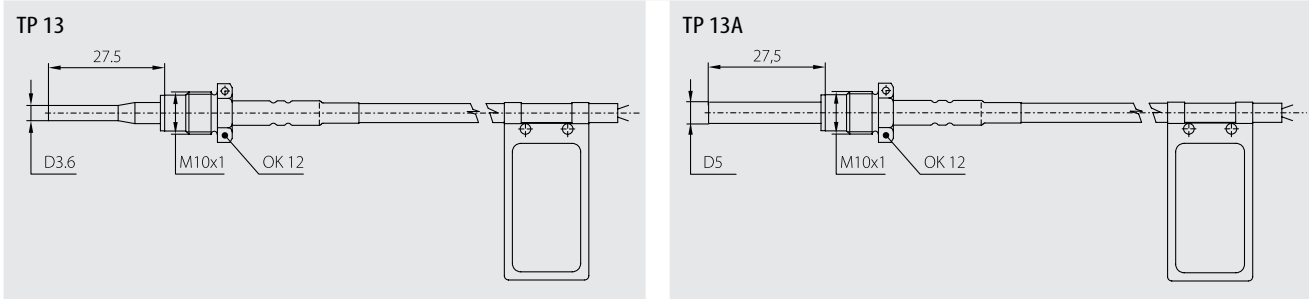
### 2-wire connection



### 4-wire connection



## DIMENSIONAL DRAFT



## SENSOR INSTALLATION AND SERVICING

These sensors are intended for a direct installation in a tubing. As a rule, the sensors are fitted in a skew position at an angle of 45° counter to the streaming of the media the temperature of which is to be measured. Before connecting the temperature sensor to the heat consumption meter insert the sensor in the opening designed for the sensor installation, screw in the fixing nut, which is the sensor's component part, and tighten it to secure the sensor reliably.

The sensor marked with the red identification label, the red plug and the red spaghetti insulation is intended for wiring in supply circuit. The second sensor with blue identification label, plug and insulation is intended for assembly in reverse branch.

To prevent unauthorised manipulation, the sensors are provided with sealing openings. The installation seal wire has first to be pushed through the fixing nut opening, then through the installation opening in the flow meter (or the weld-on piece) body, after which it has to be sealed in such a way that the fixing nut cannot be turned! In the last step the individual sensors are connected to the heat consumption meter according to wiring diagram.

**Caution:** Before installation check the identity of the paired sensors by means of the code quoted in the sensor's name plate. The numbers within one pair must be identical. Also, check the attestation date. Consult the producer in case the serial numbers in the name plate are not identical.

**Caution:** The lead-in cable resistance in the two-wire connection depends on the cable length. That is why the conductors must not be changed (shortened). The superfluous cable has to be rolled up and fastened.

## HOW TO ORDER

Paired temperature sensors TP 13

		3	1	3	B	B	C	D	E	0	2	7	0	F	0
Type	TP 13	0	0												
	TP 13A	0	A												
Type of sensing element	Pt 100			1											
	Pt 500			2											
	Pt 1000			3											
Class	$\Delta\Theta_{\min} = 3\text{ }^{\circ}\text{C}$				3										
	$\Delta\Theta_{\min} = 2\text{ }^{\circ}\text{C}$					4									
Connection	2-wire								3						
	4-wire								4						
Cable length	2 m													2	
	3 m													3	
	4 m													4	

WHEN ORDERING GOODS, THE FOLLOWING DATA ARE REQUIRED:

Required data	Example
Product type	TP 13
Type of sensing element	Pt 100
Connection	2-wire
Cable length	2 m

The accuracy class is  $\Delta\Theta_{\min} = 3\text{ }^{\circ}\text{C}$  if not stated otherwise.

## DELIVERY

The sensors are packed in pasteboard boxes provided by a label, by 1 pair.

When not agreed with the customer otherwise, each delivery contains: 2 pcs sealing rings