



EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 321/15 – 5330

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In accordance: with Directive 2004/22/EC of the European Parliament and of the Council as amended implemented in Czech Republic by Government Order No. 464/2005 Coll. as amended that lays down technical requirements on measuring instruments.

Manufacturer: Limatherm Sensor Sp. z o.o.
Tarnowska 1
34-600 Limanowa
Poland

For: temperature sensor as a part of heat meters
type: TOPI 3P-xxx
Accuracy class: B

Valid until: 3 November 2025

Document No: 0511-CS-A036-15

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate.

Date of issue: 4 November 2015

Certificate approved by:




RNDr. Pavel Klenovský

1. Measuring device description

Industrial platinum resistance sensor with measuring resistor Pt 100 or Pt 500 in connection pursuant to scheme and table of designs, $\alpha = 0.00385 \text{ [K}^{-1}\text{]}$, tolerance class B pursuant to EN 60751. The sensors are provided in head design. Measuring range is from 0 °C to +150 °C. Model type TOPI-3P xxx.

A pair of sensors consists of two identically configured sensors marked with the same serial number, differing only in colour head:

- The sensor with red connection head, for installation on the power heat exchange circuit (flow)
- The sensor with blue connection head, for installation on the return heat exchange circuit (return)

Connection head consists of head body and cover made from aluminium alloy and covered with red or blue polyurethane varnish. The cover is connected to the body by two screws with holes in screws heads allowing the seal mounting.

To ensure of the tightness of connection head, there is flat silicone seal between the head body and cover, and on the head body is mounted the cable gland allowing to put tightly the cable with a diameter of 3mm to 9 mm.

One side blinded, thin-wall thermowell made from steel X6CrNiTi18-10(no. 1.4541) with fitting thread is screwed into connection head.

Inside the thermowell there is measuring resistor type Pt 100 or Pt 500 with characteristics in accordance with standard EN 60751.

The sensor pairs resistors are selected (chosen so, that in the entire measuring range (0 to 150) °C), the difference between the indications was no more than 0,1 K.

Resistor is connected with ceramic terminal block with brass terminals mounted into the connection head via two or four Cu/Sn wires.

On the connection head there is affixed nameplate with the technical data (see Article 4 and Fig. 5).

The sensors are provided for mounting in an additional thermowell, made from steel X6CrNiTi18-10(no. 1.4541) which consists of fitting thread G1/2B according to standard EN ISO 228-1 and one side blinded, made in special accuracy tolerances. Individual parts of the thermowell are joined together by TIG method, and additional, inside screws is mounted on the thread allowing to block the sensor inside the thermowell and mount the seal.

2. Basic technical data (Temperature sensor pair)

Type identification	1 x Pt 100 or Pt 500 class B acc. EN 60751:2009
Wiring of sensors	2- or 4- wires
Resistance of inner wires of 2-wire connection	0,022 Ohm
Construction	Head design
Measuring range	(0 to 150) °C
Range of temperature difference	(3 to 150) °C
Installation requirements	Pocket mounting
Physical dimension	Length: 105 mm or 140 mm Diameter: 6 mm
Minimum immersion depth	50 mm
Response time $t_{0,5}$	$\leq 10 \text{ s}$
Maximum admissible working pressure	According to thermowell 2.5 MPa
Indication of flow and return temperature sensors	Colour: Flow – RED Return - BLUE
Maximum RMS value of sensor current	1 mA



3. Test

Technical tests of the temperature sensors TOPI-3P-XXX were performed in compliance with the International Recommendation OIML R 75 Edition 2006 (E) with conformity to EN 1434-4:2008, articles 6.4.4.1 to 6.4.4.4 and 6.8.3. Results are reported in Test report No. 6036-PT-0001-15 from October 2015. All records of the tests are stored by the provider of the tests.

4. The measuring device data

There are following data on the nameplate of temperature sensor:

- CE marking, additional metrology marking and number of notified body issuing the certificate
- No. Of type Examination Certificate
- Manufacturer's mark or name
- Serial number – year of manufacture
- Measuring device type
- Type of resistor
- Limits of temperature range
- Limits of temperature difference
- Marking of the sensor installation (flow, return)

5. Sealing

The cover of the head is connected to the body by two screws with holes in screws heads allowing the seal mounting.

The location of the seal is described in Figure 2 and 3. Opening of cover of the sensor head is protecting by sealed screw.



Figure 1: Sensor pairs TOPI-3P xxx, length 105 mm and 140 mm:

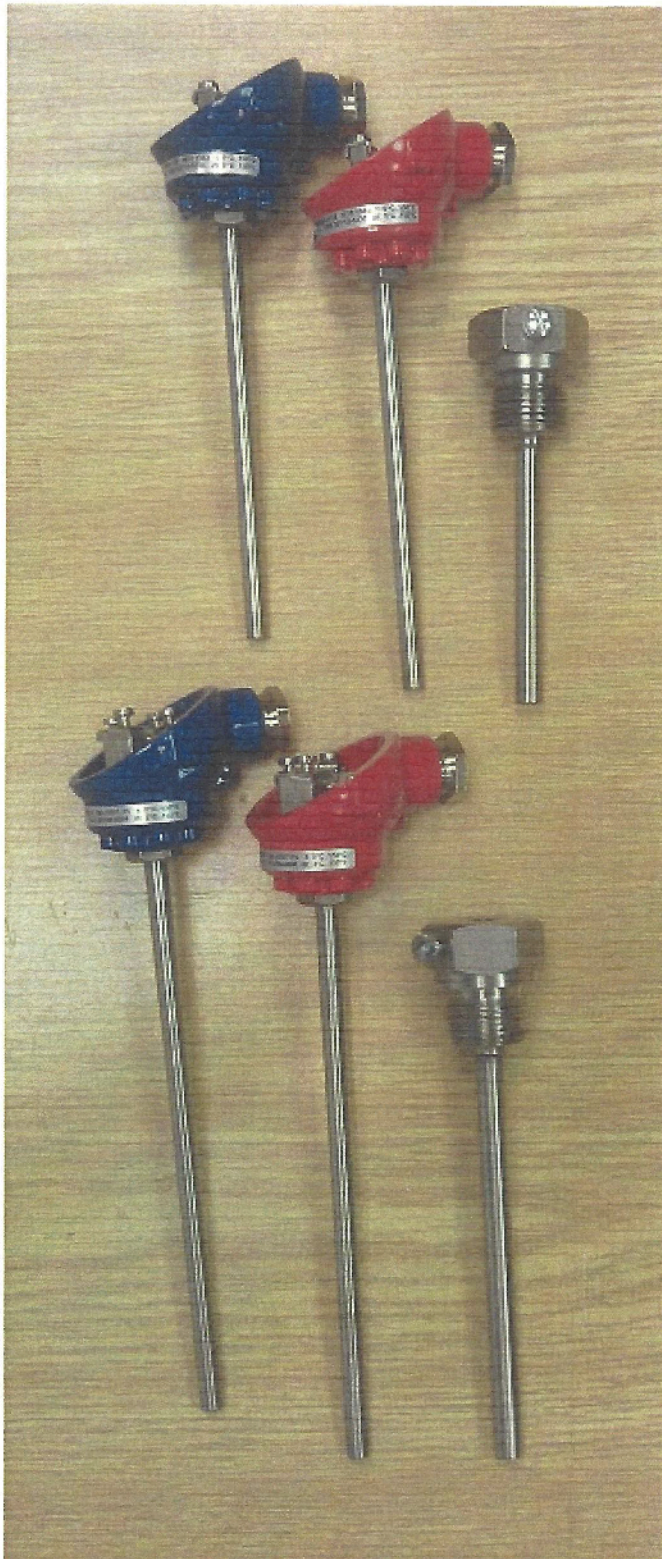


Figure 2: The sealing of temperature sensor type TOPI-3P-XXX (direct mounting)

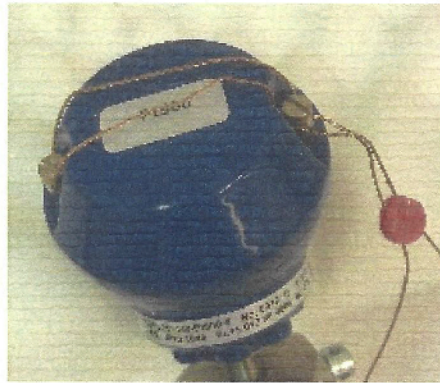


Figure 3: The sealing of temperature sensor type TOPI-3P-XXX (thermowell mounting)

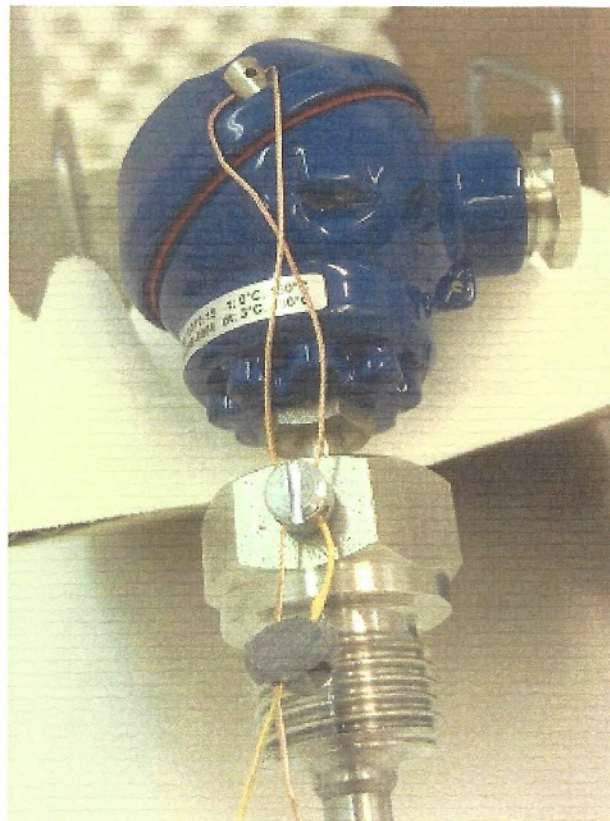


Figure 4: Placing of the nameplate:

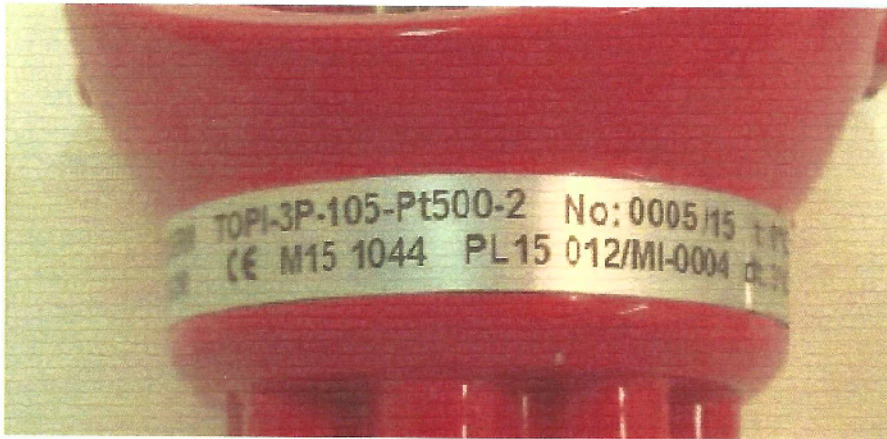


Figure 5: Marking of the temperature sensors (firsts for FLOW, second for RETURN):

