

**Harmonized standards applied:** EN 1434-1:2007, EN 1434-2:2007/AC:2007, EN 1434-4:2007/AC:2007, EN 1434-5:2007.

The measuring instrument must correspond with the following specifications:

## 1 Design of the instrument

### 1.1 Construction

The temperature sensor pair TF-6 is a sub-assembly of a heat meter. The sensors are connected to the calculator of the heat meter and measure the temperature difference between the forward and return line. The temperature sensors have a permanently connected signal leads. The sensors can have either 2-wire or 4-wire connection. The length of cables can be 3, 5 or 10 m. The temperature sensors are intended for mounting in pockets. The sensors pockets are available in 85, 120 or 210 mm.

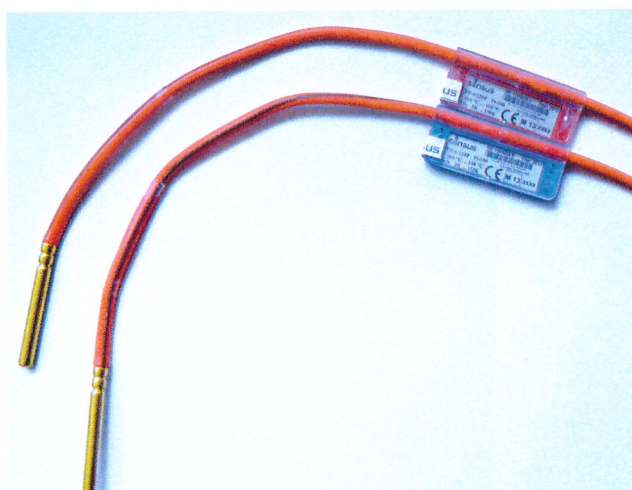


Fig.1. Temperature sensor pair TF-6

### Type number combination of temperature sensor pair TF-6:

|                                                                                                                                                            | TF-6          | - | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | -  | <input type="checkbox"/> | * |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---|--------------------------|--------------------------|--------------------------|--------------------------|----|--------------------------|---|
| Pt- designation:                                                                                                                                           | Pt500         | - | 2                        |                          |                          |                          |    |                          |   |
| Connection circuit:                                                                                                                                        | 2-wire method | - | 2                        |                          |                          |                          |    |                          |   |
|                                                                                                                                                            | 4-wire method | - | 4                        |                          |                          |                          |    |                          |   |
| Connection cable length, m:                                                                                                                                | 3,            | 5 | either                   | 10                       |                          |                          |    |                          |   |
| Temperature sensor pair:                                                                                                                                   |               |   |                          |                          |                          |                          | P  |                          |   |
| Temperature sensor double pair (three sensors):                                                                                                            |               |   |                          |                          |                          |                          | PD |                          |   |
| Mounting set (pocket, boss, sealing ring) depending on the diameter of the pipeline (DN20, DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200: |               |   |                          |                          |                          |                          |    | DN20...DN200             |   |
| No mounting set:                                                                                                                                           | (omitted)     |   |                          |                          |                          |                          |    | -                        |   |

Note: \* - marked code numbers are used only for order coding.



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**1.2 Measurand sensor**

Platinum resistance thermometer with Pt500 sensor and resistance characteristics according to EN 60751:2008.

**1.3 Measurand processing**

Not applicable.

**1.4 Indication of the measurement results**

The output signal in the form of resistance is transferred to the heat meter calculator, which displays the values of temperatures in forward and return pipes and values of temperature differences.

**1.5 Optional equipment and functions subject to MID requirements**

Not applicable.

**1.6 Technical documentation**

Platinum resistance temperature sensors TF-6 .Technical description, user manual PETF-6\_V01MID, 2013-07-01.

Other reference documents on which basis this certificate is issued, are stored in a file LEI-12-MP-019.13.

**1.7 Integrated equipment and functions not subject to MID**

Double pair – temperature sensor pair with additional temperature sensor, which is paired with flow temperature sensor.

**2 Technical data**

**2.1 Rated operating conditions**

**2.1.1 Measurand**

Temperature difference, which is directly related to the thermal energy, measured by the calculator.

**2.1.2 Measurement range**

- limits of temperature :  $\Theta = (0 \div 150)^{\circ}\text{C}$ ;
- limits of temperature differences :  $\Delta\Theta = (3 \div 150) \text{ K}$ .

**2.1.3 Maximum permissible error**

$$E_t = \pm (0,5 + 3\Delta\Theta_{min}/\Delta\Theta), \%$$

where:  $\Delta\Theta_{min}$  - the lower limit of the temperature difference, K;  
 $\Delta\Theta$  - the measured temperature difference, K.

**2.1.4 Environmental conditions/ Influence quantities**

|                             |   |                 |
|-----------------------------|---|-----------------|
| Ambient temperature         | : | +5°C to +55°C;  |
| Humidity                    | : | non condensing; |
| Location                    | : | closed;         |
| Mechanical environment      | : | class M1;       |
| Electromagnetic environment | : | class E1.       |



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### 3 Interfaces and compatibility conditions

#### 3.1 Compatibility conditions

The heat meter calculator must be intended for the connection of the temperature sensors Pt500.

### 4 Requirements on production, putting into use and utilization

#### 4.1 Requirements on production

At the end of the manufacturing process the temperature sensor pair shall be tested according to requirements of EN 1434-5 section 5.3. Errors of the temperature sensor pair shall not exceed the maximum permissible errors, described in Annex MI-004 of Directive 2004/22/EC.

#### 4.2 Requirements on putting into use

The temperature sensor pair TF-6 must be installed in accordance with the requirements of document listed in section 1.6.

#### 4.3 Requirements for utilization

No special requirements identified.

### 5 Control of the measuring process after tasks of the instrument in use

#### 5.1 Documentation of the procedure

No special requirements identified.

#### 5.2 Special equipment of hardware or software

No special requirements identified.

#### 5.3 Identification of hardware and software

Not applicable.

#### 5.4 Calibration-adjustment procedure

The tests of the temperature sensor pair should be carried out according to requirements of EN 1434-5 section 5.3.

### 6 Security measures

#### 6.1 Sealing

The marking label should be sealed by means of manufacturer's seal as shown in fig.2.

The temperature sensors must be sealed according to the mounting instructions to ensure that after the temperature sensors have been installed, it is not possibility of dismantle, remove or altering the sensors without evident damage on the sensors or the seal (see fig. 3).

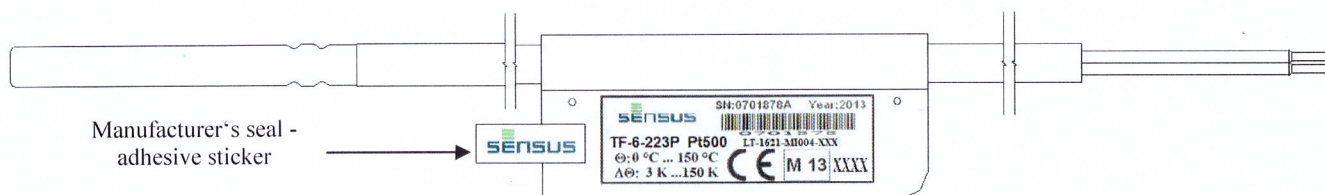


Fig. 2. Sealing of the temperature sensors by means of manufacturer's seal-sticker

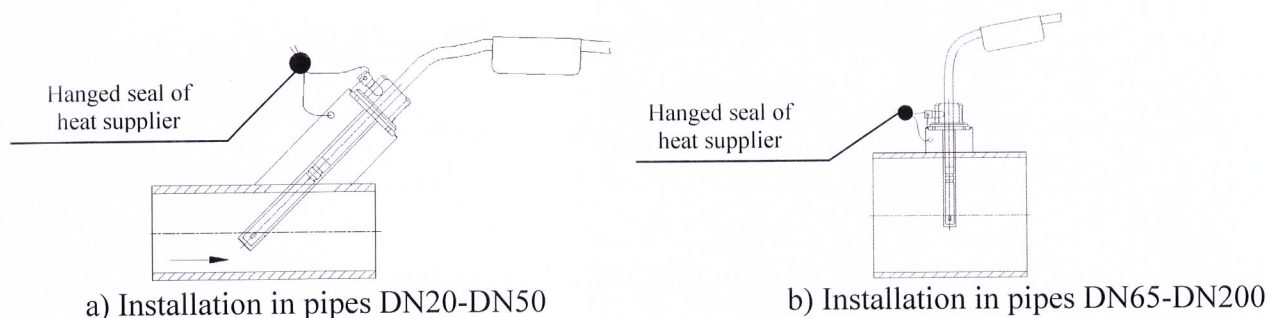


Fig. 3. Sealing of the temperature sensors after installation

## 6.2 Data logger

Not applicable.

## 7 Marking and inscriptions

### 7.1 Information to be borne by and to accompany the measuring instrument

The following information shall appear on the type label of the temperature sensors:

- EC-type examination certificate number (LT-1621-MI004-014);
- name of the supplier or this trade mark;
- type designation;
- sensor type;
- year of manufacture and serial number\*;
- limits of temperature;
- limits of temperature differences.

Note: \* - serial number of temperature sensor consists of six digits and the letter. The pair or double pair has the same number and the different letters:

- „XXXXXXA“- temperature sensor is used for mounting in flow pipe. The base of marking label is red;
- „XXXXXXB“- temperature sensor is used for mounting in return pipe. The base of marking label is blue;
- „XXXXXXC“- additional temperature sensor of the double pair. The base of marking label is blue.

In addition, the pockets of temperature sensors shall be marked with „EN 1434“.

### 7.2. Conformity marking

In addition, the label of the temperature sensor should contain the following marking:

- “CE” marking;
- metrology marking, consisting of the capital letter “M” and the last two digits of the year of its affixing, surrounded by a rectangle;
- identification number of the notified body, which carried out the conformity assessment.

## 8 List of the drawings attached to the certificate

Drawings are not added.

## 9 Certificate history

| Issue Nr.         | Date       | Description                               |
|-------------------|------------|-------------------------------------------|
| LT-1621-MI004-014 | 2013-10-17 | Type examination certificate first issued |