**LITHUANIAN ENERGY INSTITUTE**
*LABORATORY OF HEAT EQUIPMENT*
*RESEARCH AND TESTING*

Appendix to EC-Type Examination
Certificate Nr. LT-1621-MI004-002
issued 16th January 2009

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**Applied harmonised standards:** LST EN 1434:2007: part 1, 2 and 4.
The measuring instrument must correspond with the following specifications:

## 1 Design of the instrument

### 1.1 Construction

The temperature sensors pair PL-6 is a sub-assembly of a district 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 PL-6 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.
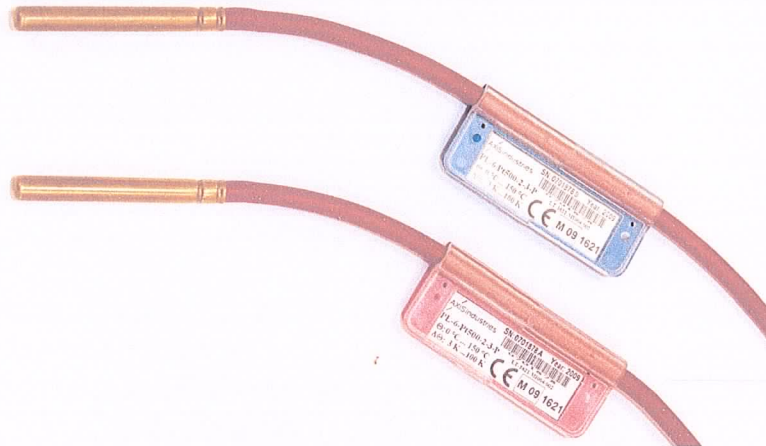


Fig.1. Temperature sensor pair PL-6

**Type number combination of temperature sensors pair (or an individual sensor) PL-6:**

PL - 6 - □　□　□　□ - □*

| | | |
|---|---|---|
| Type | | |
| Pt- designation: | Pt500 - 2 | |
| Connection circuit: | 4-wire method - 4 <br> 2-wire method - 2 | |
| Connection cable length, m: | 3, 5 or 10 | |
| Temperature sensors pair: | | P |
| Temperature sensors double pair (three sensors): | | PD |
| Individual sensor: | (omitted) | - |
| Mounting set (pocket, boss, and sealing ring) depending on the diameter of the pipeline (DN20,DN25,DN32, DN40,DN50, DN65, DN80,DN100, DN125,DN150,DN200): | | DN20 <br> ..... <br> DN200 |
| No mounting set: | (omitted) | - |

Remark: * - marked numbers are used only for order coding (It is not used for sensor marking).

### 1.2 Sensor

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

### 1.3 Measurand processing

Not applicable.

### 1.4 Measurement result reading

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

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### 1.5   Optional equipment and functions subject to MID requirements
Not applicable.

### 1.6   Technical documentation
- Platinum resistance temperature sensors PL-6 .Technical description, user manual, certificate PLPL6V03MID, 2009 01 12;
Other reference documents on which basis this certificate is issued are stored in a file LEI-12-MP-002-08.

### 1.7   Integrated equipment and functions not subject to MID
Not applicable.

### 2   Technical data

### 2.1   Rated operating conditions
### 2.1.1 Measurand
Temperature difference, which is measured by temperature sensors pair and which is directly related to the quantity of thermal energy, calculated by the calculator, to that sensors pair is connected.

### 2.1.2  Measurement limits:
- limits for temperature ranges          :   $\Theta = (0....150)$°C;
- limits for temperature difference ranges : $\Delta\Theta = (3....100)$K.

### 2.1.3  Maximum permissible error

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

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

$\Delta\Theta$     - is the measured temperature difference, K.

### 2.1.4   Environmental conditions/ Influence quantities
- Climatic environment         :   ambient temperature +5°C to +55°C;
- Mechanical environment       : class M1;
- Electromagnetic environment: class E1.

### 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
No special requirements identified.

### 4.2   Requirements on putting into use
The temperature sensor pair must be mounted and placed into use in accordance with the requirements of the document "Technical description, user manual, and certificate PLPL6V03MID".

### 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
Not applicable.

### 5.2   Special equipment or software
Not applicable.

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### 5.3 Identification of hardware and software
Not applicable.

### 5.4 Calibration-adjustment procedure
Not applicable.

## 6 Security measures

### 6.1 Sealing
The marking label should be sealed by means of manufacturer's seal as shown in fig.2.
After the installation in the heating system, the installation site of temperature sensors in the pipeline should be sealed by means of hanged seal as shown in fig. 3. The sealing wire should be passed through the special holes of the boss and of the screw head of the protective pocket.
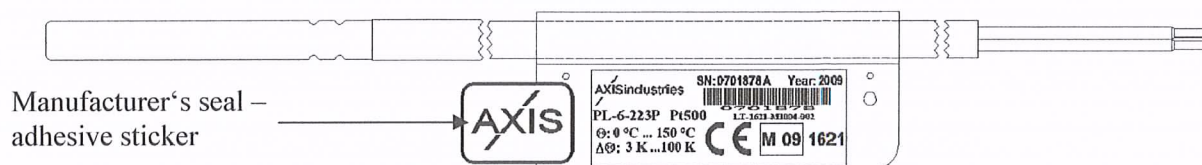


Manufacturer's seal – adhesive sticker

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



Installation sealing          Installation sealing

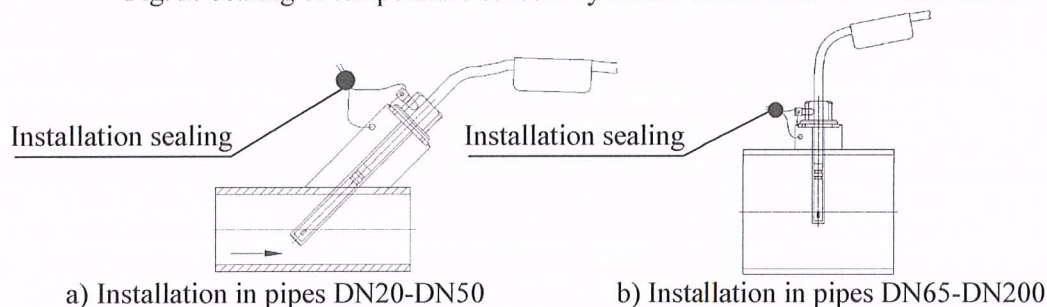a) Installation in pipes DN20-DN50          b) Installation in pipes DN65-DN200

Fig.3. Examples of temperature sensors sealing after installation

### 6.2 Data loggers
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:
- number of EC-type examination certificate: **LT-1621-MI004-002**;
- manufacturer's name or logo: Axis Industries;
- identity marking (type designation and type number): PL-6-XXXX;
- sensor type: Pt500;
- year of manufacture, serial number;
- limits of temperature: $\Theta = (0....150)$°C;
- limits of temperature difference: $\Delta\Theta = (3....100)$K;

The colour marking of temperature sensors pair is used: the sensor for mounting in flow pipe is equipped with a red type sign, the sensor for mounting in return pipe - with blue type sign.
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:
- symbol "CE";
- metrology mark "M" and the last two digits of 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.