

PLATINUM RESISTANCE TEMPERATURE SENSORS PLT

1. General information

Resistance thermometers with Pt-500 sensors are designed for temperature measurement and are used as sub-assembly of heat meter.

Temperature sensors type according to EN1434 - 2: PLT – pocket mounted long probes.

Temperature sensors according to EN 60751+A2:2000 are selected as matched pairs according to EN1434:2007. Temperature sensors pair corresponds to essential requirements of the Technical Regulation for Measuring Instruments, dated 30 March 2006 (transposing in the NB's country law Directive 2004/22/EC of 31 March 2004 on measuring instruments):

- Annex I Essential requirements
- Annex MI-004 Heat meter.

Type numbers combination of temperature sensors pair (or an individual sensor) PLT:

Type	PLT - □ □ □ □ - □□*
Pt-designation:	Pt500 -2
Connection method:	2-wire - 2 4-wire - 4
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... DN200
No mounting set:	(omitted) -

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

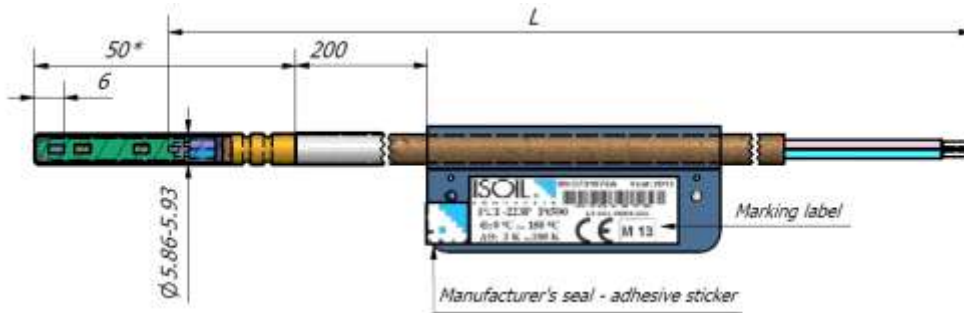
2. Technical data

Temperature measurement range	0°C ... 150 °C.
Temperature difference measurement range	3°C ... 100 °C.
Maximum admissible temperature of medium	150 °C
Tolerance class	B according to EN 60751
Connection cable length	3m, 5m, 10m
Cable type for 4-wire connection	Not shielded, 4 x 0,35mm ² (connected permanently)
Cable type for 2-wire connection	Not shielded, 2 x 0,5mm ² (connected permanently)
Maximum permissible RMS value of sensor current	0,5 mA
Response time $\tau_{0,5}$	< 10 s.
Total resistance of signal leads (2-wire connection)	0,22 Ω - for wire length 3m 0,36 Ω - for wire length 5m 0,72 Ω - for wire length 10m
Environmental	Ambient temperature +5°C... +55°C Mechanical environment class M1 Electromagnetic environment class E1

3. Complete set

		Amount, pcs
1	Temperature sensors pair (double pair or individual sensor) PLT	2 (3; 1)
2	Mounting set	2 (3; 1), (optional)

4. Dimensional drawing



L	3 m	5 m	10 m

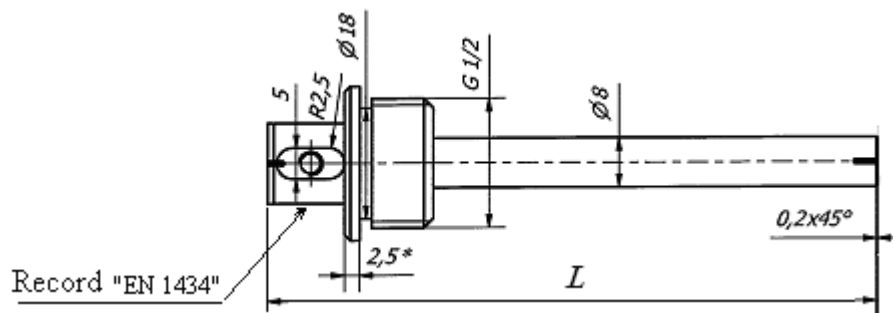
Fig.4.1. Sensor dimensions

5. Operating principle

Temperature sensors PLT are platinum resistance temperature sensors used for temperature measurement. Temperature sensor output parameter is electrical resistance. The operating principle is based on change of electric resistance of sensing element proportionally to change of temperature of the measured medium. Resistance dependence on temperature of medium, depending on the Pt-designation is according to EN 60751

6. Mounting of sensors

Temperature sensors PLT are fitted by means of suitable length protective pocket (Fig.6.1)



Nominal diameter of pipe, mm	Overall length of protective pocket L, mm
DN20...DN100	100
DN125...DN150	135
DN200	225

Fig.6.1. Protective pocket

and suitable type and length of a boss (Fig.5.2 and Fig.5.3).

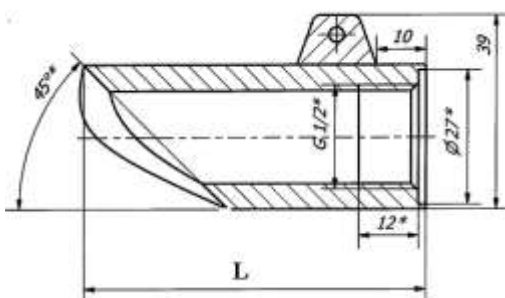


Fig.6.2. Example of boss for pipes sizes DN < 65 mm

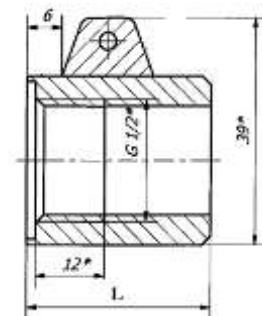


Fig.6.3. Example of boss for pipes sizes DN ≥ 65 mm

Nominal diameter of pipe, mm	L, mm
DN20	79,3
DN25	69
DN32, DN40	59
DN50	49

Nominal diameter of pipe, mm	L, mm
DN65, DN80, DN125, DN150	32
DN100	18
DN200	90

For installation in pipes with sizes $DN < 65\text{mm}$ the temperature sensor is mounted with 45° angle to pipe axis by means of sensor pocket (Fig. 6.4a). The sensor pocket is chosen according to nominal size of pipe (Fig.6.2). The temperature sensor must be inclined downstream and the sensing element must be inserted to pipe axis or beyond.

For installation in pipes with sizes $DN \geq 65$ the temperature sensor is mounted perpendicular to pipe axis by means of sensor pocket (Fig. 6.4b). The sensor pocket is chosen according to nominal size of pipe (Fig.6.3). The temperature sensing element must be inserted to pipe axis or beyond.

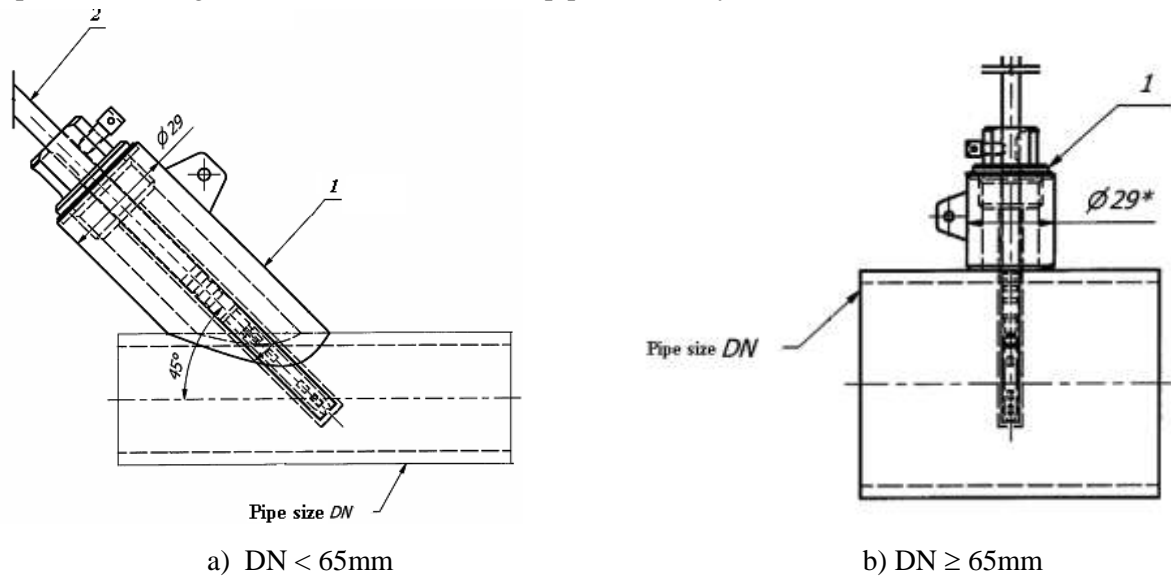


Fig.6.4. Temperature sensors fitting examples depending on the pipe size

Installation recommendations:

1. The suitable boss (1) is welding,
2. The protective pocket together with ring (gasket) is screwing by means of a wrench (dog-hook),
3. The temperature sensor (2) is fitting into protective pocket, plunging up to the end
4. The fixing bolt is fully screwed.

After mounting of the temperature sensors by means of a pendant seal are sealed up a sensors installation site (see Fig.6.5).

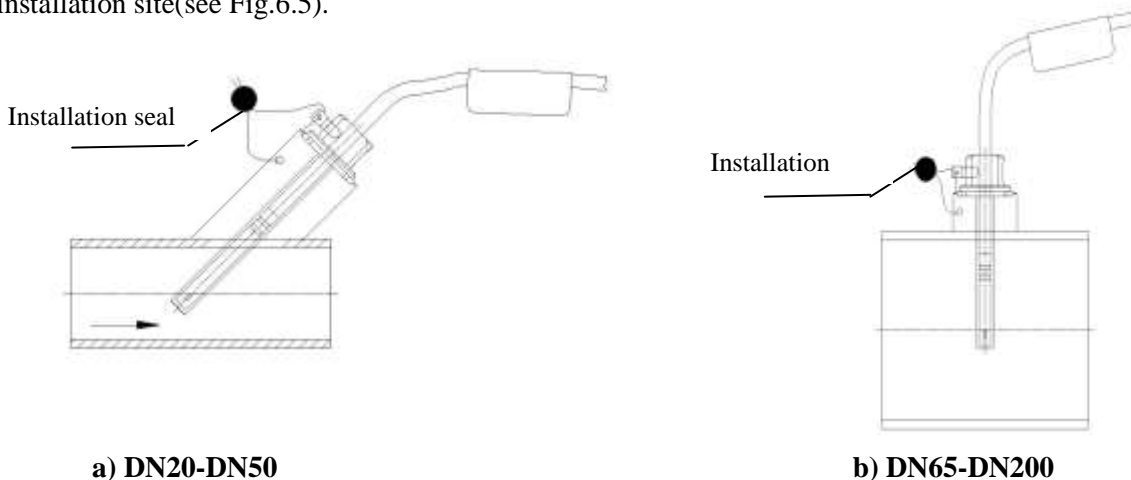
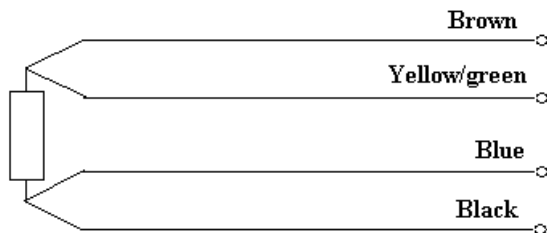


Fig.6.5. Temperature sensors sealing examples

At Installation of temperature sensors on equal diameters of pipes symmetric installation of both sensors (the same method of installation, the same immersion depth) should be provided.

Colour performance of the connection cable wires for 4-wire connection method is presented below:



7. Marking and security seals

The following information are on the marking label of the temperature sensor:

- EC-type examination certificate number,
- manufacturer's trade mark: Isoil Industria SpA
- type and type identification number—inclusive Pt-designation (Pt500),
- serial number,
- year of manufacture,
- limits of temperature (Θ_{\min} and Θ_{\max}),
- limits of temperature difference ($\Delta\Theta_{\min}$ and $\Delta\Theta_{\max}$),
- maximum admissible working pressure,

The pocket of temperature sensor is marked with „EN 1434“ according EN 1434-2:2007 (see Fig.6.1).

Serial number of temperature sensor consists of six digits and the letter. The pair or double pair of temperature sensors has the same number and the several letters:

XXXXXX „A“ – temperature sensor is used for flow temperature measurement. The base of marking label is red,

XXXXXX „B“ – temperature sensor is used for return temperature measurement. The base of marking label is blue,

XXXXXX „C“ – temperature sensor is selected as matched pair with flow temperature sensor and is used for measurement of liquid temperature in replenishment or in second return line. The base of marking label is blue,

Security seals:

Manufacturer seals:

- The marking label should be sealed as shown in fig. 4.1.

Installation seal:

- The installation site of temperature sensors in the pipeline should be sealed as shown in

fig. 6.6

8. Warranty

Warranty period of temperature sensors service - 12 months from the time of the sale date

The company performs warranty service only in this case: the sensor seals are undamaged, the sensor mechanically is not damaged, the sensor service was carried out strictly under requirements of this instruction

Warranty service does not include verification of sensors.