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INSTRUCTIONS FOR USE

TEMPERATURE SENSORS NS 130Rs Ni 1000/5000

Temperature sensor with cable for measuring the temperature of gaseous and liquid substances in the range from -30°C to 150°C, designed for general use.



SENSIT s.r.o.
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The company is registered in the Commercial Register at the Regional Court in Ostrava, Section C, Insert 13728, sensit@sensit.cz, www.sensit.cz

9053.6	02.19
Replaces	9053.5

Legislation and standards:

- The electrical connection of the sensor may only be carried out by a person knowledgeable in accordance with Section 5 of Decree No. 50/1978 Coll. who has read this "Instructions for Use" in detail.
- Instructions for use are included with the product and must be kept for the life of the product.
- Instructions for use must be forwarded to any other holder or user of the product
- During disposal, it is necessary to proceed in accordance with Act No. 185/2001 Coll. on waste as amended and the implementing decree No. 352/2005 Coll. on the management of electrical equipment and electrical waste as amended. In European Union countries, it is necessary to comply with Directive 2012/19/EU of the European Parliament and of the Council on waste electrical and electronic equipment - WEEE.
- All production undergoes an output metrology check, which is carried out by comparison with standards or working gauges. The consistency of standards and working gauges is ensured in accordance with Section 5 of Act No. 505/1990 on metrology. The manufacturer offers the possibility to deliver sensors calibrated in the laboratory of SENSIT s.r.o. (according to the requirements of ČSN EN ISO/IEC 17025 or in AKL.
- The sensors are supplied in packaging guaranteeing resistance to mechanical influences and meet the conditions of Act 477/2001 Coll. on packaging, as amended, which is in compliance with Directive 94/62/EC of the European Parliament and of the Council on packaging and packaging waste, as amended.

Using the sensor:

NS 130Rs resistance temperature sensors are designed for temperature measurement of gaseous and liquid substances. The temperature range of the sensor is -30°C to 150°C. The sensors can be used on all control systems that are compatible with the Ni 1000 temperature sensor with a temperature coefficient of 5000 ppm / °C. The sensors comply with protection class IP 67 according to EN 60 529. The design of the sensor stem allows the sensor to be used for direct temperature measurement in pipes and also ensures a fast response of the sensor to temperature changes compared to sensors with a protective sump. The sensors are designed for operation in chemically non-aggressive environments, the method of use must be chosen with regard to the temperature and chemical resistance of the housing and the supply cable

Recommendations for the use and placement of sensors:

- Temperature sensors should be mounted against the direction of the medium flow
- The length of immersion of the sensor in the medium should be at least 2/3 of the length of the stem, but preferably the entire stem
- If the sensor is located downstream of the mixer or at various bends where turbulent flow may occur, the sensors must be located at a distance of at least 10 times the pipe diameter.
- If the sensor stem is longer than the pipe diameter, it is recommended to mount the sensors diagonally or in a bypass

Warnings and Restrictions:

The sensors must not be used to measure temperature in places:

- where the specified technical parameters and operating conditions are not met
- where there is a mechanical action on the sensor
- with explosion hazard
- with a chemically aggressive environment not corresponding to the stainless steel and plastic materials used
- where the sensor could be subjected to permanent immersion in liquid, including the supply cable

The sensors are not suitable for measuring temperature in places:

- where sufficient contact with the medium is not ensured (low sensor immersion, influence of the surrounding environment).
- where the homogeneity of the medium to be measured is not guaranteed, in places of turbulent flow (behind bends, in places with a change of cross-section, in places behind a mixer of two different streams, etc.)
- where the supply cable could be routed in parallel with the mains (risk of induction of interference signals and thus affecting the measurement results), the safe distance from the mains in parallel cable routing can be up to 0.5 m depending on the nature of the interference fields
- where the sensor could be exposed to strong organic and inorganic acids of medium and strong concentrations at high temperatures, weak organic acids of high concentrations and temperatures, chlorinated hydrocarbons, undiluted alkalis.

Failure to follow these recommendations will adversely affect the accuracy of the measurement, reliability and lifetime of the temperature sensor.

Declaration of conformity:

The product is issued by SENSIT s.r.o. **EU Declaration of Conformity** issued in accordance with Act No. 91/2016 Coll. and Act No. 22/1997 Coll., as amended. The product meets the requirements of the following government regulations:

- Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 and Directive 2015/863/EU of the European Parliament and of the Council of 31 March 2015 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, implemented into the legal order of the Czech Republic by Government Decree No. 481/2012 Coll., as amended by Government Decree No. 391/2016 Coll.)

Security:

Product safety and technical parameters were assessed in the type tests according to the following standards and technical regulations as amended:

- EN 60730-1, EN 60730-2-9, EN 60751 and EN 60 529,

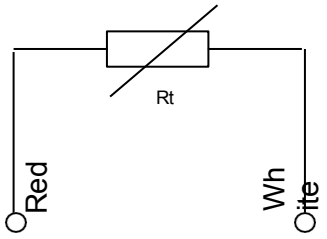
Sensor description:

The sensors consist of a metal housing in which the sensor is placed and a supply cable. The metal housing of the sensor is made of DIN 1.4301 stainless steel. The sensor wiring is 2-wire. The supply cable has silicone outer insulation and is shielded. The shielding is not connected to the housing but **is connected to one pin of the temperature sensor**. The standard length of the housing is 70 mm.

Mounting the sensor:

1. Place the temperature sensor in the area where the temperature will be measured. For the actual mounting and fixing of the sensor, use an OK wrench according to the type of fitting supplied with the stem. Suitable sealants, tow or sealing tape, etc. can be used as seals. **When mounting the sensor, the cable must be placed loosely and allowed to rotate at the same time as the housing.**
2. Ensure that the sensor is fixed so that it does not move
3. Connect the lead wires to the evaluation device according to the wiring diagram. **The shield of the lead cable is not conductively connected to the outer housing of the sensor, but is connected to one pin of the temperature sensor.**
4. After installation and connection to the downstream electrical measuring equipment, the sensor is ready for operation. The sensor requires no special operation or maintenance.

Wiring diagram:



2-wire

Technical parameters:

Sensor type	Ni 1000 / 5000 ppm / °C
Accuracy class *	For t ≤°C : ±(0,4 + 0,028 |t|) in °C For t ≥°C : ± (0,4 + 0,007 t) in °C
Temperature sensor wiring	2-wire
Measuring range	-30 °C to 150 °C
Power	From a PELV or SELV source
Max. / Sup. measuring current	1 mA / 0.3 mA
Sensor Coverage	IP 67 according to EN 60 529
Response time	$\tau 0_{.5} < 7$ s (in flowing water > 0.2 m/s)
Metal housing material	Stainless steel DIN 1.4301
Housing diameter	4,5 ± 0,1 mm
Length of the sleeve	70 mm
Thread type / OK	G ½" / OK24
Electrical strength	500 VAC according to EN 60730-1
Insulation resistance	> 200 ⊠Ω at 500 VDC, 25° ± 3°C
Type of supply cable	silicone shielded 2 x 0,22 mm^2
Length of supply cable	2 m
Resistance of supply wires	0.162 Ω/1 m at 25 °C
Resistance to pressure (action on the stem with medium)	2,5 MPa
Weight	120 g for 1 m

*for two-wire wiring, the effect of the resistance of the supply cable must be added to the measured values, which at a temperature of 25°C is 0.032°C / 1m.

Operating conditions:

- temperature around the supply cable: -30 to 150 °C
- ambient relative humidity: 10 to 100%
- atmospheric pressure: 70 to 106 kPa
- maximum water/air flow rate (water vapour) when measuring the temperature in the pipe:

Housing length in mm	up to 60 mm	>60 ÷ 100	>100 ÷ 160	>160 ÷ 220
Air/water velocity	8 / 0.8 $m.s^{-1}$	6 / 0.6 $m.s^{-1}$	3.2 / 0.4 $m.s^{-1}$	1 / 0.25 $m.s^{-1}$

Storage, delivery, claims and repairs:

The sensors can be stored in rooms with an ambient temperature of 5 to 40 °C and a relative humidity of 5 to 85%.

Each delivery contains (unless otherwise agreed with the customer) the sensor as ordered, the instruction manual including the warranty card and the delivery note.

Warranty and post-warranty repairs of sensors are provided by the manufacturer. The product must be delivered with a copy of the warranty card, carefully packed and adapted for transport so that it is not damaged during transport.

WARRANTY LETTER

The product is guaranteed for 24 months from the date of sale.

Within this period, the manufacturer shall remedy free of charge all defects that are proven to have occurred during the valid warranty period, either due to a defect in materials or a manufacturing defect. The manufacturer guarantees the technical and operational parameters of the product as stated in the instructions for use. The purchaser shall claim any defects found without undue delay after they have been discovered or after the time when they could have been discovered with ordinary care. When making a claim, a completed warranty card and a brief description of the defect must be submitted together with the product.

The warranty does not apply to the product:

- damaged during transport and improper storage, improper commissioning, or used for a purpose other than that specified
- used in an improper manner incompatible with the instructions for use or with generally applicable technical standards or safety regulations
- worn and damaged by normal use of the product, without loss of its operational characteristics and guaranteed technical parameters
- unqualified interventions, unauthorized design changes, or other modifications (reprogramming, reconfiguration of set parameters, etc.)
- damaged mechanically, e.g. by falling, hitting with a hard object, cleaning with improper means, tearing/breaking of the power cord, breaking or other damage to individual parts of the products
- Exposed to adverse external influences, e.g. object intrusion, faulty supply voltage, influence of chemical processes, electrical overvoltage (visibly burned components or circuit boards), dusty, dirty, aggressive or otherwise unsuitable environment except for normal deviations
- damaged by accidental or natural occurrence or due to natural or external phenomena such as storm, fire, water, excessive heat
- claimed without a warranty card or manufacturing label.

The rights and obligations regarding the rights of defective performance are governed by the relevant generally binding regulations (in particular the provisions of §§ 1914 to 1925, § 2099 to 2117 and § 2161 to 2174 of the Civil Code) and the valid terms and conditions of SENSIT s.r.o. and this warranty card.

Stamp and date of sale:

Production number: