

## INSTRUCTION MANUAL

# TEMPERATURE SENSOR TG8 Pt 1000/3850

The temperature sensor with a cable for measuring temperatures of gaseous and liquid substances ranging from -50 to 200 °C intended for universal application.



Instruction Manual in Czech language is available here: [www.cometsystem.cz/sondy.htm](http://www.cometsystem.cz/sondy.htm), or can be obtained from your supplier.

**SENSIT s.r.o.**

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Supersede	

## Legal regulations and standards:

- Laws, regulations and technical standards referring to occupational safety must be followed during installation.
- Electrical connection of the detector may only be carried out by a competent person with electrician qualification who is familiarized with the "Instruction Manual" in detail.
- The Instruction Manual is part of the product and it is necessary to keep it for the entire service life of the product.
- The Instruction Manual must be transferred to any other owner or user of the product.

## Application:

The temperature sensors TG8 are designed for measuring temperatures of gaseous and liquid substances. The temperature range for application of the sensor is  $-50^{\circ}\text{C}$  to  $200^{\circ}\text{C}$  and it must not be exceeded even for a short term. The sensors may be used for all control systems compatible with the Pt 1000 temperature sensor with a temperature coefficient of 3850 ppm /  $^{\circ}\text{C}$ . The temperature sensors are designed for universal application. The sensors in combination with JTG8 thermowell can be used for measuring temperatures in piping and simultaneously as pressure equipment in terms of Government Order No. 26/2003 Coll. as amended, in which the Pressure Equipment Directive 97/23/ES is implemented. The sensors are intended for operation in chemically non-aggressive environments.

## Sensor description:

The sensor consists of a metallic housing with the sensing element inside and a supply cable. The sensor housing is made of stainless steel grade 17240. The sensors are connected as two-wire probes. The supply cable has external silicone insulation and is shielded. The shielding is not connected with the housing or with the temperature element. The length of housing can be selected from 40 to 200 mm as a standard.

## Technical parameters:

Type of element	Pt 1000 / 3850 ppm / $^{\circ}\text{C}$
Accuracy class of element *	$\pm (0,15 + 0,002  t )$ in $^{\circ}\text{C}$
Temperature element wiring	Two-wire configuration
Measuring range	$-50^{\circ}\text{C}$ to $200^{\circ}\text{C}$
Max. / recomm. measuring current	1 mA / 0,3 mA
Sensor IP code	IP 67 according to ČSN EN 60 529
Response time	$\tau_{0,5} < 7$ sec (in flowing water $> 0,2 \text{ m}\cdot\text{s}^{-1}$ )
Housing material	stainless steel 17240
Housing diameter	$5.7 \pm 0,1$ mm
Housing length	
Dielectric strength	500 Vef according to ČSN EN 61010-1 Art. 6.8.4.
Insulation resistance	$> 200 \text{ M}\Omega$ at 500VDC, $25 \pm 3^{\circ}\text{C}$
Supply cable type	shielded silicone $2 \times 0,34 \text{ mm}^2$
Supply cable length	
Supply leads resistance	$0,105 \Omega / 1 \text{ m}$ at a temperature of $25^{\circ}\text{C}$
External pressure endurance	without thermowell 2,5 MPa with thermowell 6,3 MPa
Maximum water flow speed when measuring temperature in piping with JTG8 thermowell	Thermowell length up to 60 mm $2 \text{ m}\cdot\text{s}^{-1}$ Thermowell length $>60$ to 100mm $1,5 \text{ m}\cdot\text{s}^{-1}$ Thermowell length $>100$ to 160mm $1,0 \text{ m}\cdot\text{s}^{-1}$
Maximum speed of water and water vapour flow when measuring temperature in piping with JTG8 thermowell	Thermowell length up to 60 mm $20 \text{ m}\cdot\text{s}^{-1}$ Thermowell length $>60$ to 100mm $15 \text{ m}\cdot\text{s}^{-1}$ Thermowell length $>100$ to 160mm $10 \text{ m}\cdot\text{s}^{-1}$
Class of electrical equipment	Protection class III
Weight	$0,05 \text{ kg} / 1 \text{ m}$

\* In the case of two-wire connection, it is necessary to add the effect of supply cable line resistance to the measured values, which is  $0,027^{\circ}\text{C} / 1 \text{ m}$  at a temperature of  $25^{\circ}\text{C}$ .

## Operating conditions:

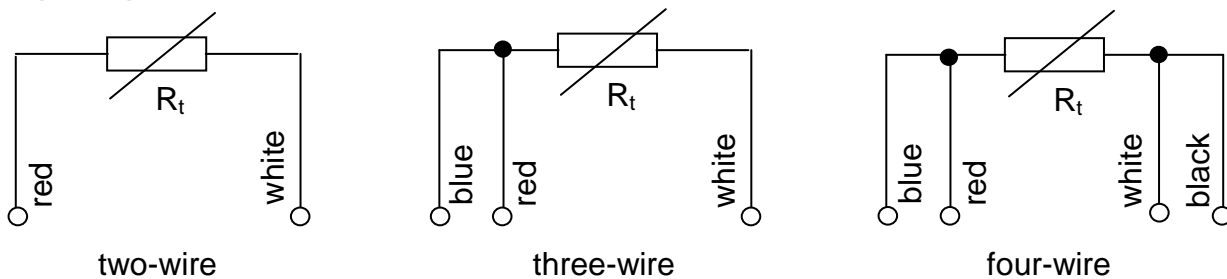
The sensors are designed for continuous operation in the environment defined by the parameters according to ČSN EN 60721-3-3 with the degree of strictness IE 37 and on the following conditions:

- temperature round the supply cable: -50 °C to 200 °C
- relative humidity of the surroundings: 10 to 100 %
- atmospheric pressure: 70 to 106 kPa

## Sensor installation:

1. If the sensor is used in combination with the thermowell, screw the latter in the welded-on piece on the piping or in the specific threaded location.
2. Install the sensor in the measured location or insert it in the thermowell.
3. Connect the wires of the supply cable to the evaluation unit according the wiring diagram. **The supply cable shielding is not conductively connected with the external housing of the sensor or with the temperature element.**
4. After installation and connection to the consequential electrical measuring device, the sensor is ready for operation. The sensor does not require any special attendance or maintenance. **Operating position is arbitrary.**

## Wiring diagram:



## Warnings and restrictions:

### The sensors must not be used for measuring in locations:

- Where the specified operating conditions are not adhered to
- Where the sensor is exposed to mechanical action
- With explosion hazard (the supply cable is not resistant to flame propagation)
- For measuring temperatures of subjects under voltage
- With the operating pressure higher than indicated in technical parameters
- Where the sensor could be exposed to permanent submersion in a liquid

### It is not suitable to use the sensors for measuring temperature in locations:

- Where sufficient contact with the measured fluid is not secured (low submersion of the sensor, effects of the surroundings).
- Where the supply cable might run parallel to mains cables (risk of interference signal induction and the measurement results may be influenced), the safe distance from mains power cables when cables run parallel can be as much as 0,5 m according to the nature of interfering fields.
- Where the sensor might be exposed to effects of strong organic and inorganic acids with medium and strong concentrations at high temperatures, weak organic acids with high concentrations and high temperatures, chlorinated hydrocarbons, and undiluted alkaline substances.

Failure to follow the said recommendations will negatively affect measurement accuracy, reliability and service life of the temperature sensor.

## Calibration:

SENSIT s.r.o. performs the initial calibration of meters in compliance with § 10 Act 505/1990 Coll. as subsequently amended within the scope of their manufacturing processes. The calibration is performed by submersion of the measuring stem into a liquid bath. The continuity of operating meters is ensured in compliance with § 9, Sect. 4 in this Act.

## **Delivery:**

Each delivery contains the following unless otherwise agreed by the customer:

- Sensor according to purchase order
- Instruction Manual, including Guarantee Certificate
- Delivery Note

## **Packaging:**

The sensors are delivered in packages that meet the conditions of Act 477/2011 Coll. on packaging as subsequently which is in compliance with the European Parliament and Council Directive 94/62/ES on packaging and packaging waste

## **Storage:**

The sensors located in their original delivered packages can be stored under conditions corresponding to IE 11 Class according to ČSN EN 60721-3-1:

- Ambient temperature 5 to 40 °C
- Humidity 5 to 95%

## **Complaints and repairs:**

Guarantee and after-guarantee repairs of sensors are ensured by the manufacturer. The product must be delivered including a copy of the Guarantee Certificate, duly packed and fit to shipment so as not to get damaged during transportation.

## **Disposal:**

The disposal must be performed in compliance with Act No. 185/2001 Coll. on waste as subsequently amended and Implementation Decree No. 352/2005 Coll. on details of electronic equipment and electronic waste management in which the Directive 2002/95/ES – RoHS of the European Parliament and of the Council is implemented. Individual materials used are disposed of in the following manner:

- Product package --- is fully recyclable --- dispose in compliance with local regulations (forwarding to authorized person), catalogue number of waste 150101
- Metallic parts (ferrous metals) --- are recyclable --- dispose in compliance with local regulations (forwarding to the authorized person), catalogue number of waste 160117
- Cables, insulation tubing --- dispose in compliance with local regulations (forwarding to authorized person), catalogue number of waste 170411
- Defective products (non-disassembled) --- dispose in compliance with local regulations (forwarding to authorized person) - catalogue number of waste 160216 - Other constituents removed from discarded equipment.

# **DECLARATION OF CONFORMITY, CERTIFICATES**

SENSIT s.r.o. provides the product with the manufacturer's Declaration of Conformity issued according to Act ČSN EN ISO/IEC 17050-1 as subsequently amended.

ČSN EN 60 529      Certificate No. 97 E 0229 issued 29.11.1997 by Physical-Technical Testing Institute, Ostrava-Radvanice

## **GUARANTEE CERTIFICATE**

**The product is covered by guarantee for 30 months from the date of purchase.**

In this period, SENSIT s.r.o. will remove all manufacturing defects free of charge. When filing a claim, the product along with its Guarantee Certificate and the Claim Report with a concise description of the fault must be submitted. The guarantee does not cover the product damaged during shipment, undue storage and mishandling, the product used for purposes other than intended or failure to follow the operating instructions, the product being tampered with and the product without Guarantee Certificate or its name plate.

**Serial number:** ...../.....