

### APPLICATION

- For remote measurement of temperature, especially for measurement of temperature of the plasticizing cylinder of machines for processing plastic materials and for other similar applications when the sensor is installed into the bore of the measured equipment

The sensors are not rated products pursuant to the Act No. 22/1997 Coll.

### DESCRIPTION

The temperature sensor consists of a jacket thermoelectric couple with connected compensation wiring. The sensor is spring-loaded and cup union or union with bayonet closure is used for its connection. The immersion of the sensor can be adjusted within the range from 20 to 120 mm.

To measure temperature, a defined change of thermoelectric voltage of the thermocouple in dependence on the change of temperature of the measured environment is used.

### TECHNICAL DATA

The sensor is designed pursuant to ČSN EN 61010-1 as an electrical equipment of protection class III for the application in networks with the category of overvoltage in the installation II and pollution grade 2, the follow-up (evaluation) device shall comply with Article 6.3 of the said standard.

**Measuring range:** 0 to 400 °C

**Electrical strength** pursuant to ČSN EN 61010-1 Article 6.8.4: 500 V eff

**Electrical insulation resistance** pursuant to ČSN EN 61515:  
min. 1000 M $\Omega$ , at ambient temperature 20  $\pm$  15 °C  
and max. 80 % relative humidity

**Ingress protection** pursuant to ČSN EN 60529: IP 60

**Operation position:** discretionary

**Sensor weight:** approx. 0.35 kg

**Type of operation:** continuous

**Applied materials:**

Jacket of thermocouple	inconel 600 or steel 1.4541
Union and tube	steel of class 11, galvanic zinc coating
Cable terminal	aluminium alloy
Bayonet closure	aluminium alloy
Compensation wiring	insulation from glass fibres, external braid from galvanized steel wire

### OPERATION CONDITIONS

The environment is defined by the group of parameters and their severity grades IE 36 pursuant to ČSN EN 60721-3-3 and the following operation conditions.

**Temperature of stem of the sensor in the place of connection of the compensation wiring:**

continually max. 180 °C

**Relative ambient humidity:**

10 to 100 % with condensation, with upper limit of water content of 29 g H<sub>2</sub>O/kg of dry air

**Atmospheric pressure:** 70 to 106 kPa

**Vibrations:**

Frequency range	10 to 500 Hz
Drift amplitude	0.075 mm
Acceleration amplitude	10.0 ms <sup>-2</sup>

Drift amplitude 1.5 mm is permitted by frequency 16 Hz.

### METROLOGICAL DATA

**Probe:** thermoelectric couple J (Fe-CuNi)  
or K (NiCr-Ni) single,  $\varnothing$  of jacket 3 mm  
tolerance class 2 pursuant to ČSN IEC 584-2

**Calibration depth of immersion:** 100 mm

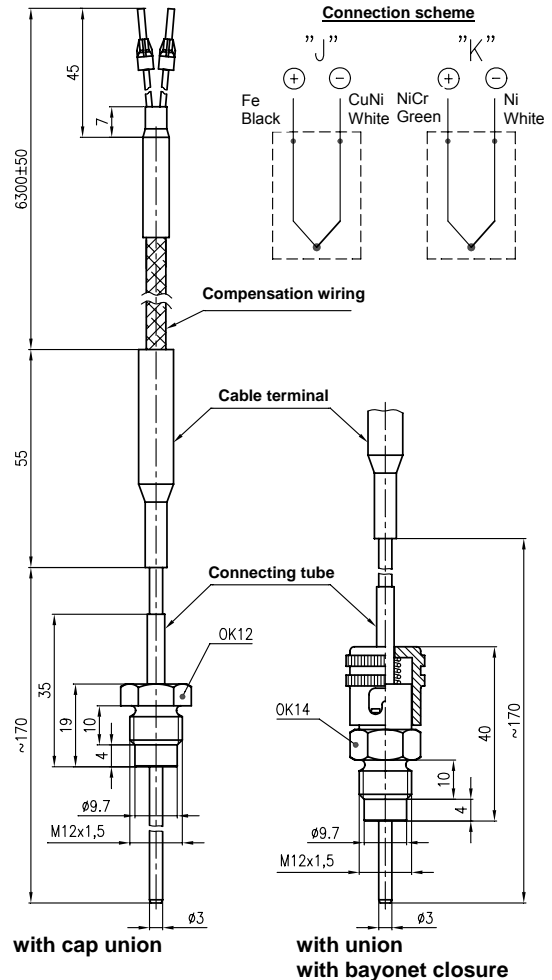
**Temperature response time** pursuant to ČSN IEC 751 in whirling water (characteristic value):

0.5	1.5 s
0.9	3.4 s

### DESIGNATION

Data on cable terminal of the sensor

- Trademark of the manufacturer
- Type of thermoelectric couple / tolerance class
- Measuring range
- Product ordering number
- Ingress protection
- Manufacturing number



### DELIVERY

Unless agreed otherwise with the customer, each delivery includes:

- Delivery note
- Sensor pursuant to the purchase order
- Accompanying technical documentation in Czech:
  - o Product quality and completeness certificate, which also serves as the warranty certificate
  - o Calibration sheet (for calibrated design)
  - o Product manual

If it is established in the purchase contract or agreed otherwise, the following documentation may be also delivered with the product:

- o Copy of the Inspection Certificate 3.1 for the material of the thermocouple jacket with the casting number

### ORDERING

The purchase order shall specify

- Name
- Product ordering number
- If calibration is required and in what temperature points
- Other (special) requirements
- Number of pieces or pairs

### PURCHASE ORDER EXAMPLE Standard design

Thermoelectric temperature sensor for plastics with cable outlet  
113 750 715 - 15 pcs

**Special requirement:**

Thermoelectric temperature sensor for plastics with cable outlet  
113 750 899 – 3 pcs  
Thermocouple K, without connecting union, length of compensation wiring 8 m

**DESIGN OF TEMPERATURE SENSORS**

SPECIFICATIONS		ORDERING NUMBER				
		113 75	0	x	x	x
Thermoelectric couple pursuant to ČSN EN 60584-1, tolerance class 2 pursuant to ČSN IEC 584-2	J			7		
	K *)			8		
Sensor design	With cap union				1	
	With union with bayonet closure				2	
	Other (without union)				9	
Length of compensation wiring	6.3 m					5
	Other *)					9

\*) Only as a special requirement after an agreement with the manufacturer

**PACKING**

Both sensors and accessories are delivered in a packing ensuring resistance to the impact of thermal effects and mechanical effects pursuant to controlled packing regulations.

**TRANSPORT**

The sensors may be transported on conditions corresponding to the set of combinations of classes IE 21 pursuant to ČSN EN 60721-3-2 (i.e. by airplanes and trucks, in premises that are ventilated and protected against atmospheric conditions).

**STORAGE**

The sensors may be stored on conditions corresponding to the set of combinations of classes IE 11 pursuant to ČSN EN 60721-3-1 (i.e. in places with uninterrupted temperature control from 5 to 40 °C and humidity from 5 to 85%, without a special threat of an attack with biological agents, with vibrations of small significance and not situated close to sources of dust and sand).

**CALIBRATION**

It is performed pursuant to TPM 3322-94 and in compliance with ČSN EN 584, usually in three temperature points evenly distributed within the operation range of the sensor or in the points pursuant to the requirement of the customer. A calibration sheet with measured data is issued for calibrated sensors.

**INSTALLATION AND CONNECTION**

Connect the sensors by screwing into the bore. The operation position of the sensors is discretionary. Compensation wiring shall be supported.

Adjust the immersion pursuant to the drawing by bending the stem of the measuring insert with a tube. By seizing the stem in the tube with a spring, secure its position both in case of the application of the union itself and in case of the bayonet closure. If greater bending is required, bend the stem of the measuring insert for ensuring immersion as specified above but beyond the tube. The smallest diameter of bending of the stem shall be 9 mm.

The electrical connection may be only realized by qualified workers pursuant to § 5 of the Decree 50/1978 Coll.

Connect the sensor to the evaluation device either directly by the connection of the compensation wiring to the applicable terminals with inner compensation of the device with inner compensation or to the terminals of the compensation box (or thermostat of comparison connections) and further by connecting wiring to the terminals of devices without inner compensation.

**COMMISSIONING**

After the sensor installation and connection of the follow-up (evaluation) device to the supply voltage, the equipment is prepared for operation.

**OPERATION AND MAINTENANCE**

The sensor does not require any operation and maintenance.

**SPARE PARTS**

The design of the sensor does not require any delivery of spare parts.

**WARRANTY**

Pursuant to § 429 of the Commercial Code and the provisions of § 620 (2) of the Civil Code, the manufacturer warrants for technical and operation parameters of the product specified in the manual. The warranty period is 24 months from the receiving of the product by the customer, unless established otherwise in the contract. The rejection of defects shall be enforced in writing at the manufacturer within the warranty period. The rejecting side shall identify the product name, ordering and manufacturing numbers, date of issue and number of the delivery note, clear description of the occurring defect and the subject of the claim. If the rejecting side is invited to send the device for repair, it shall do so in the original package of the manufacturer and/or in another package ensuring safe transport.

The warranty shall not apply to defects caused by unauthorized intervention into the device, its forced mechanical damage or failure to comply with operation conditions of the product and the product manual.

**REPAIRS**

The sensors shall be repaired by the manufacturer. They shall be sent for repair in the original or equal package without accessories.

**DISABLING AND LIQUIDATION**

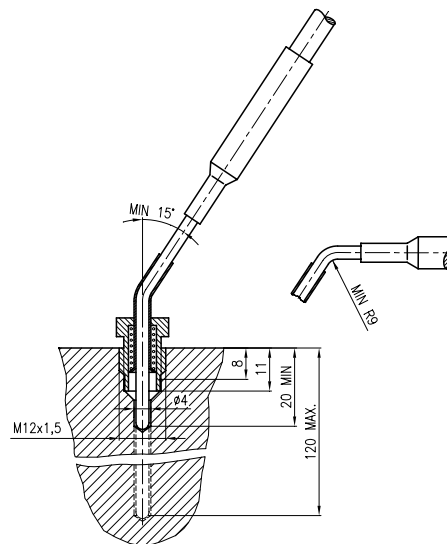
They shall be realized in compliance with the Waste Act No. 106/2005 Coll.

Both the product and its package do not include any parts that could impact the environment.

Products that are withdrawn from operation, including their packages (with the exception of products marked as electrical equipment for the purposes of return withdrawal and selected salvage of electrical waste), may be disposed of to the sorted or unsorted waste pursuant to the type of waste.

The manufacturer realizes free return withdrawal of marked electrical equipment (from 13.8.2005) from the consumer and points out the danger connected with their illegal disposal. The package of the sensor can be recycled completely.

Metal parts of the products are recycled, non-recyclable plastic materials and electrical waste shall be disposed of in compliance with the aforesaid Act.



May 2005  
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