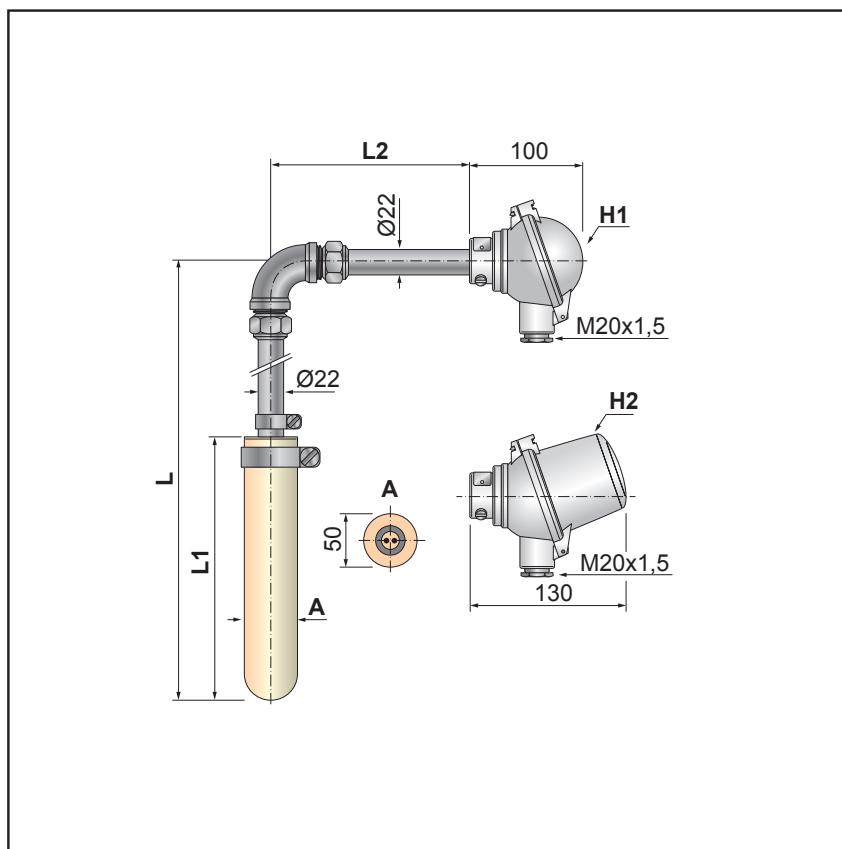


MANUAL

T1507

Angle-type Thermocouple Temperature Sensors with SiC Protective Tube



- Thermocouple 1x / 2x "J", "K"
- Measuring range 0 to +800 °C ("J"), 0 to +1200 °C ("K")
- Accuracy class 2 according to EN 60584-1
- Spherical head form A according to DIN
- Measuring of temperature in melting furnaces for non-ferrous metals
- Protective tube material SiC
- Selectable protective tube length
- Housing IP 53

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1. General instructions and information

1.1 Symbols used



Symbol of warning; for safe use it is necessary to proceed according to the instructions



This product does not belong to public waste and it is subjected to separate collection

1.2 Safety warnings and cautions

The equipment may be installed only by a qualified personnel who are familiar with national and international laws, directives, standards and with the instructions manual. The equipment shall be supplied from a safe voltage source that meets all requirements of the standard EN 61010-1 and must be-installed in compliance with national requirements and standards providing safety.

The instrument may not be used for other purposes than as specified in this instruction manual. For elimination of a risk of injury from electric shock or fire, the maximum operational parameters of the instrument may not be exceeded.

1.3 Scope of delivery

With the product is delivered:

- Manual for installation, operation and maintenance
- Certificate of calibration (only with calibrated sensors)

1.4 Description of the delivery and packing

The product is packaged in a protective cover and provided with an identification label with a mark of the output control.

The product must not be exposed to direct rain, vibrations and shocks during transport.

1.5 Storage

The products shall be stored at temperatures from 5 °C to 35 °C and maximum relative humidity 80% in the rooms with elimination of condensation of water vapours on the products. The stored products shall not be exposed to any shocks, vibrations and effects of harmful vapours and gases.

1.6 Installation and commissioning

During installation, commissioning, operation and maintenance follow the instructions in chapter 4.

1.7 Spare parts

Any of the compact parts of the product can be also ordered as a spare part if there are not required special procedures or technological operations for the exchange.

1.8 Repairs

Products are repaired by the manufacturer. The products for repair should be sent in a packing that guarantees damping of shocks and vibrations and protects against damage during transport.

1.9 Warranty

Products are covered by a warranty for a period of 24 months from the delivery date on the delivery note. The manufacturer guarantees technical and operational parameters of the products within scope of the applicable documentation. Warranty period is specified with individual items and begins from the day of takeover of the goods by the purchaser or

delivery to the carrier. Any claims concerning to defects of the goods together can be filed in writing with the manufacturer within the warranty period and the claimed product shall be presented. The claiming party shall give identification of the product, number of the delivery note and description of the fault or defect.

The manufacturer is not responsible for any defects caused by improper storage, incorrect connection, damages caused by external effects, in particular by effects of factors with excessive values, unqualified installation, improper operation or common wearing.

1.10 Lifetime

Lifetime of the product cannot be exactly determined, it depends on the operational conditions.

2. End of service and disposal

2.1 End of service

Before removing and ending of service of the thermocouple sensor is at first necessary to switch the control loop to manual operation, or take other appropriate action to prevent potential harm associated with the end of sensor operation. The head is than opened, connecting wires of the sensor are disconnected (cut off) and sensor is dismantled.

2.2 Disposal

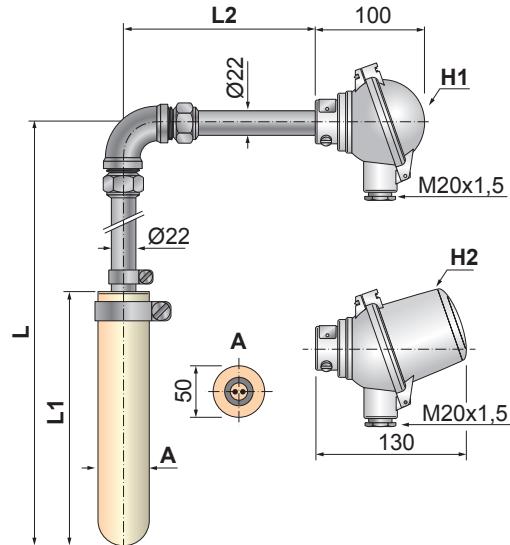
When disposing the packing and destroyed or irreparably damaged product proceed according to the local regulations.

3. Product description

T1507

Angle-type Thermocouple Temperature Sensors with SiC Protective Tube

- Thermocouple 1x / 2x "J", "K"
- Measuring range 0 to +800 °C ("J"), 0 to +1200 °C ("K")
- Accuracy class 2 according to EN 60584-1
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3.1 Application

Angle-type thermocouple temperature sensors T1507 are designed for remote measuring of temperature in melting furnaces for non-ferrous metals. They are designed for mounting into furnace walls and other technological plants.

3.2 Description

A single or dual thermocouple type "J" or type "K" which is placed in the protective tube of silicon carbide and connected to a terminal block inside the head type A. There is made use of rise of thermoelectric voltage. Its size depends on a temperature difference between a measuring junction and a cold junction of the thermocouple. The thermometer should be mounted by a special bracket.

4. Installation, operation and maintenance

4.1 Installation and commissioning

4.1.1 General

 Mounting position of the sensors is optional, with cable gland facing down, if possible. Vertical position with the head up is deemed to be basic position.

The device may be installed only by qualified personnel.

The thermometer should be mounted by a special bracket.

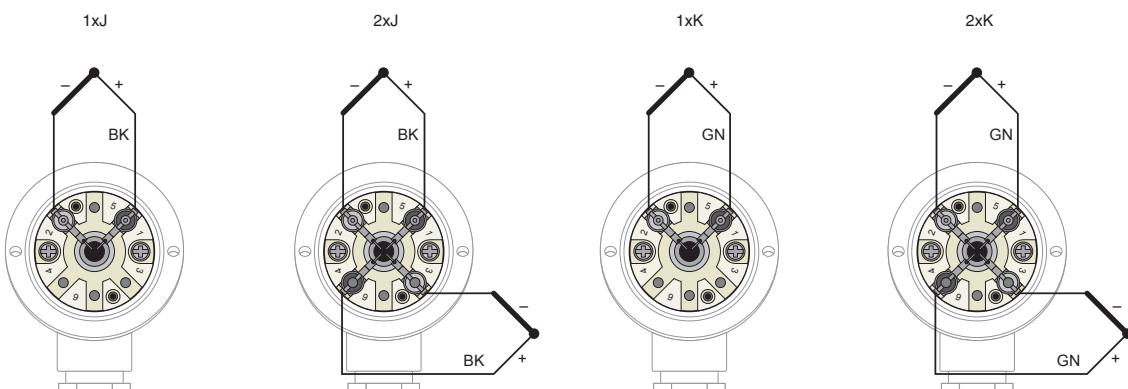
Thermocouple sensors without installed transmitter are connected to the decoding devices using extension or compensation cable wires with cross section 0.5 to 1.5 mm².

Connection terminal is accessible after removal of the head cover. Drawing of the connection terminals and wiring are shown on the scheme of electrical connection. The sensor outlet shall be carefully sealed after connection of the wires.

4.1.2 Commissioning

Temperature sensor is ready for operation after connection of compensation (extension) wires between the sensor terminals and terminals of the associated apparatus (transmitter, thermostat of comparator connections, devices with internal compensation, etc.) and after mounting head cover.

4.1.3 Electrical connection



BK - black
GN - green

4.2 Operation and maintenance

The product does not need any operation and maintenance. It is recommended to check the mounting of the sensor at preselected intervals.

To ensure metrological parameters of the sensors, periodic checks of calibration parameters must be performed. Period of calibrations is set by the user and it is based on operating conditions and internal metrology regulations. Manufacturer's recommended period is 12 months. If there is during the calibration found difference from the expected metrological parameters, it is necessary to replace the sensor.

5. Product specifications

5.1 Technical specifications

Thermocouple:

"J" (Fe-CuNi) accuracy class 2 acc. to EN 60584-1
"K" (NiCr-Ni) accuracy class 2 acc. to EN 60584-1

Measuring range:

0 to +800 °C ("J")
0 to +1200 °C ("K")

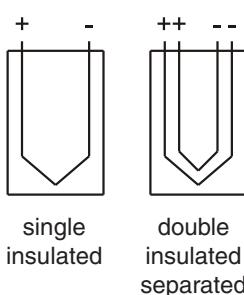
Output signal:

voltage

Dielectric strength:

500 V eff

Version of measuring end



Materials:

head - aluminium alloy
outside protective tube
- silicon carbide SiC
outside protective tube
- heat-resisting steel

Housing (according to EN 60529):

IP 53

5.2 Operation conditions

Maximal temperature of the head:

150 °C

5.3 Metrological parameters

Temperature sensors can be supplied:

- as sensors with calibration,
- as sensors without calibration.

Tolerance limits of accuracy classes are listed EN 60584-1. The initial tolerance is related to the initial calibration of the sensor. To ensure accuracy of measurement, it is necessary to calibrate sensors periodically according to the operating parameters. Sensors can be supplied with calibration at several temperature points, according to customer requirements.

6. Tests, certificates, standards and marking

6.1 Standards

General:

EN 60584-1

Electromagnetic compatibility:

EN 61326-1

6.2 Marking and type tag information

Marking on temperature sensors head:

Standard version - aluminium tag (example):

T1507-6 22 7 150 O3 H1 number type (version number)

- incomplete marking

1xK/2 number of sensors, sensor

material, accuracy class

0 .. 1100 °C temperature range

11030371 serial number

IP 53 housing

Czech Republic country of origin



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website address

7. Ordering information

7.1 Ordering table

Type	Description		
T1507-6	Angle-type thermocouple temperature sensor with SiC protective tube		
Code	Thermocouple		Measuring range
21	1x"J" (Fe-CuNi), insulated	0 to +800 °C	
61	2x"J" (Fe-CuNi), insulated, isolated junctions	0 to +800 °C	
22	1x"K" (NiCr-Ni), insulated	0 to +1200 °C	
62	2x"K" (NiCr-Ni), insulated, isolated junctions	0 to +1200 °C	
Code	Accuracy class according to EN 60584-1		
7	2		
Code	Nominal length L [mm]	L1 [mm]	L2 [mm]
150	500	400	500
171	710	600	570
210	1000	900	570
Code	Protective tube - outer diameter [mm]	Material	Inner steel tube [mm]
O3	Ø 50	SiC	Ø 22
Code	Head		
H1	Al alloy, with terminal board, for cable diameter 4 to 12.5 mm, housing IP 53		
H2	Al alloy, with cap for mounting of transmitter Ø 62 mm, with terminal board, for cable diameter 4 to 12.5 mm, housing IP 53		
Code	OPTIONAL ACCESSORIES		
Calibration in customer defined points, including certificate of calibration			
KTE32AB	Thermocouple temperature sensor calibration in three points in range 0 to +1100 °C		
KTE42AB	Thermocouple temperature sensor calibration in four points in range 0 to +1100 °C		
KTE52AB	Thermocouple temperature sensor calibration in five points in range 0 to +1100 °C		
KTE32B	Thermocouple temperature sensor calibration in three points in range +400 to +1200 °C		
KTE42B	Thermocouple temperature sensor calibration in four points in range +400 to +1200 °C		
KTE52B	Thermocouple temperature sensor calibration in five points in range +400 to +1200 °C		
KTE9	Other		
Example of order: T1507-6 21 7 150 O3 H1 KTE32AB (0, 400, 700 °C)			



JSP Industrial Controls

JSP, s.r.o. | Raisova 547, 506 01 Jičín, Czech Republic
+420 493 760 811 | export@jsp.cz | www.jsp.cz

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