Thermocouple Temperature Sensors for Melting Furnaces

- Straight or Angled Thermocouple Temperature sensors
- Measurement of temperature in melting furnaces for non-ferrous metals
- Thermocouple 1× / 2× “J“, “K“
- Measuring range 0 to +800 °C (“J“), 0 to +1 200 °C (“K“)
- Protective tube material SiC
- Selectable protective tube length

Application

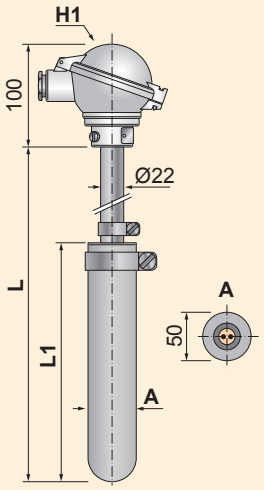
Straight or angled thermocouple temperature sensors T1508/T1507 are designed for remote measurement of temperature in melting furnaces for non-ferrous metals and alloys such as tin, zinc, aluminium, copper and others. They are designed to be installed into furnace walls or other parts of the technology and the measurement end protected by SiC protective tube is placed permanently or repeatedly in the melt.

Description

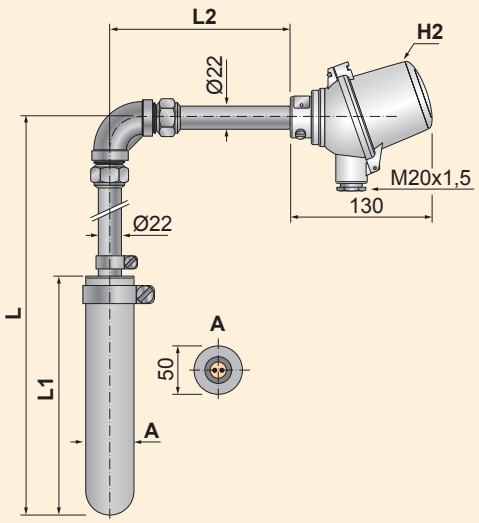
A single or dual thermocouple type “J“ or type “K“ which is placed in the protective tube of silicon carbide. Silicon carbide SiC 60 protection tube features increased resistance to temperature changes and is suitable for direct placement into the non-ferrous metal melt. The measurement range is between 0 to +1 200°C depending on the choice of thermocouple sensing element type. Based on the application requirements, the temperature sensor can be delivered either as a straight or angled version. The length of the sensor can be selected from a standard range (see page 2 – ordering table), other dimensions are available on request. The temperature sensor should be mounted by a special bracket.

Cold junctions of thermocouple sensing elements are connected to a terminal board in the sensor head, which is used for connection of compensating or extension cables. When the arrangement of the sensor ensures that temperature in the sensor head does not exceed 80 °C, sensor can be equipped with a temperature transmitter mounted directly in the sensor head with 4 to 20 mA output, alternatively with HART, Fieldbus or Profibus communication protocol.

T1508 – STRAIGHT VERSION



T1507 – ANGLED VERSION



Ordering table

Type	Description
T1508-6	Straight thermocouple temperature sensor with SiC protective tube
T1507-6	Angle-type thermocouple temperature sensor with SiC protective tube

Code	Thermocouple	Measuring range
21	1× "J" (Fe-CuNi), insulated	0 to +800 °C
61	2× "J" (Fe-CuNi), insulated, isolated junctions	0 to +800 °C
22	1× "K" (NiCr-Ni), insulated	0 to +1 200 °C
62	2× "K" (NiCr-Ni), insulated, isolated junctions	0 to +1 200 °C

Code	Accuracy class according to EN 60584-1
7	2

Code	Nominal length L [mm]	L1 [mm]	L2 [mm] – only T1507
150	500	400	500
171	710	600	570
210	1000	900	570
999	Other dimensions available on request		

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

Optional accessories

Code	Calibration in customer defined points, including certificate of calibration
KTE32AB	Thermocouple temperature sensor calibration in 3 points in range 0 to +1 100 °C
KTE42AB	Thermocouple temperature sensor calibration in 4 points in range 0 to +1 100 °C
KTE52AB	Thermocouple temperature sensor calibration in 5 points in range 0 to +1 100 °C
KTE32B	Thermocouple temperature sensor calibration in 3 points in range +400 to +1 200 °C
KTE42B	Thermocouple temperature sensor calibration in 4 points in range +400 to +1 200 °C
KTE52B	Thermocouple temperature sensor calibration in 5 points in range +400 to +1 200 °C
KTE9	Other

Example of order: T1507-6 21 7 150 O3 H1 KTE32AB (0, 400, 700 °C)

Technical specifications

Thermocouple:
"J" (Fe-CuNi) accuracy class 2 acc. to IEC 584-2
"K" (NiCr-Ni) accuracy class 2 acc. to IEC 584-2

Measuring range:
0 to +800 °C ("J")
0 to +1 200 °C ("K")

Output signal:
voltage

Dielectric strength:
500 Veff

Version of measuring end:

a) single insulated
b) double insulated separated

Materials:

Head: aluminium alloy

Outside protective tube:
silicon carbide SiC 60

Support tube:
heat-resistant steel

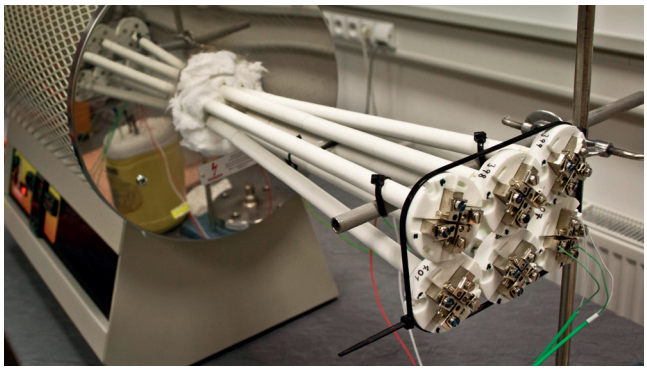
Housing:
IP 53 (according to EN 60529)

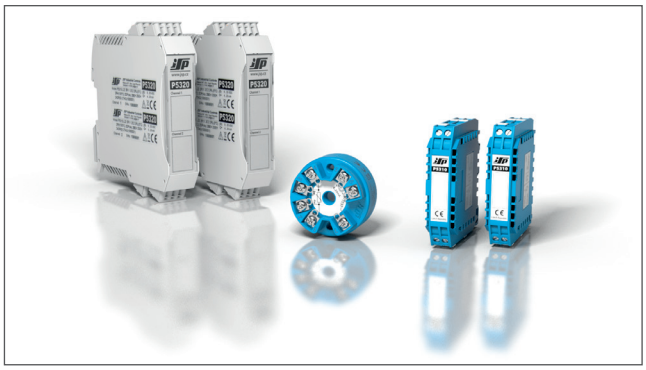
Operation conditions

Max. temperature of the head:
150 °C

Supplementary parameters

EMC (electromagnetic compatibility): acc. to EN 61326-1





Calibration in selected number of temperature points, including calibration certificate

JSP operates its own calibration laboratory accredited according to standard EN ISO/IEC 17025 by the Czech Accreditation Institute for temperature and pressure calibration. Accreditation also applies to calibrations performed at the place of sensor installation.

T1508/T1507 sensors can be supplied calibrated in required number of temperature points in the range of 0 up to +1 200 °C. Calibration could be performed separately or including a temperature transmitter.

Head mounted or DIN rail mounted transmitters

JSP produces a range of precise, programmable temperature transmitters which could be mounted directly into the sensor head or on a DIN rail. Transmitters feature current output 4 to 20 mA, optionally HART protocol, galvanic isolation and ATEX approvals.

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