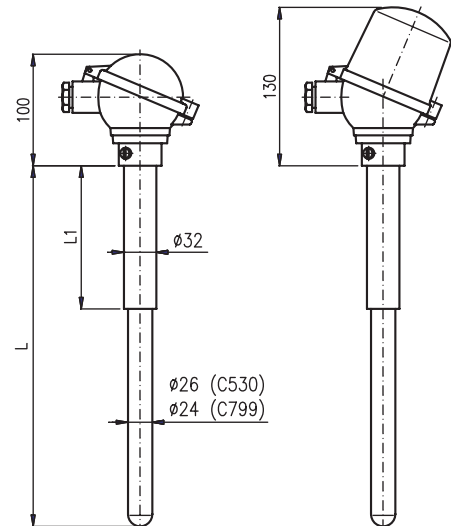


T1538

Straight Thermocouple Temperature Sensors with Ceramic and SAPPHIRE Protective Tubes C530/C610 without/with Transmitters 4 to 20 mA

- Thermocouple "S", "B" (wire \varnothing 0.5 mm)
- Measuring range 0 to +1300 °C ("S"), +300 to +1600 °C ("B")
- Accuracy class 2 to 3 according to EN 60584-2
- Spherical head form A according to DIN
- Three protective tubes of materials:
C530 / C610 / SAPPHIRE
C799 / C799 / SAPPHIRE
- Selectable protective tube lengths
- Mounting temperature sensor by means of Fixing Flange
- Housing IP 55
- Optional headmounted programmable transmitter with output 4 to 20 mA, including circuit isolation version and II 1G EEx ia IIC T4 ... T6 (ATEX) version



Application

Thermoelectric temperature sensors T1538 of bar type are intended for remote temperature measurement in foundries when melting lead crystal etc. They are designed for mounting into furnace walls and other technologic plants. They can be supplied with or without 4 to 20 mA headmounted transmitter.

Description

Single wire thermocouple of „S“, „B“ type is placed in a sapphire capillary and in three protective pipes of following materials: C530 / C610 / SAPPHIRE or C799 / C799 / SAPPHIRE and connected to a terminal block inside the spherical head form 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. A version with a transmitter the thermoelectric voltage is converted to a unified linear current signal of 4 to 20 mA. The sensors are attached, into the technology, after the supporting tube (\varnothing 32 mm) by means of a sliding flange.

Technical Specifications

Thermocouple:

- "S" (PtRh10-Pt), accuracy class 2 according to EN 60584-2
- "B" (PtRh30-PtRh6), accuracy class 3 according to EN 60584-2

Measuring Range:

- | | |
|-----------------------------------|---------------------------------|
| Permanent | Short-term |
| 0 to +1300 °C | up to +1500 °C (thermocouple S) |
| +300 to +1600 °C (thermocouple B) | |

Output signal: linearized 4 to 20 mA ¹⁾

Diameter of Wires: \varnothing 0.5 mm

Materials:

- Outside protective tube \varnothing 24x3 mm - C799 ceramics
- Centre protective tube \varnothing 15x2.5 mm - C799 ceramics
- Outside protective tube \varnothing 26x4 mm - C530 ceramics
- Centre protective tube \varnothing 15x2.5 mm - C610 ceramics
- Inside protective tube \varnothing 4.85 mm - SAPPHIRE
- Insulation tube of T/C \varnothing 2.1 mm - SAPPHIRE
- Support tube \varnothing 32x2 - Varnished carbon steel
- Head - Aluminium alloy

Housing: IP 55

Operation Conditions

Maximal Temperature of Head:

- 100 °C (without transmitter)
- 80 °C (with transmitter PT-031 and P3301)
- 85 °C (with transmitter P5102, P5201 and P5310)

Other specifications

EMC (Electromagnetic Compatibility):

According to EN 61326-1:98 / A1:99

Weight:

a) without transmitters with head H1:

- | | |
|-------------------|------------------|
| Nominal length L: | 500 ... 1.30 kg |
| | 710 ... 1.50 kg |
| | 800 ... 1.60 kg |
| | 1000 ... 2.10 kg |
| | 1400 ... 2.60 kg |
| | 1600 ... 2.80 kg |
| | 2000 ... 3.30 kg |

b) with head H2 plus 0.03 kg

- c) with transmitter PT-031 plus 0.02 kg
- with transmitter P5102 plus 0.04 kg
- with transmitter P5201 plus 0.05 kg
- with transmitter P3301 plus 0.04 kg
- with transmitter P5310 plus 0.04 kg

¹⁾... Only for sensor with transmitter

Straight Thermocouple Temperature Sensors T1538

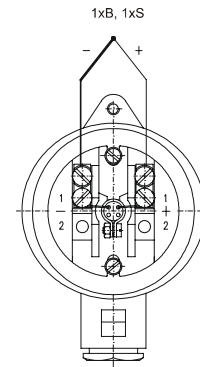
Caution!

If the temperature sensor is being installed or replaced in operation it is necessary to insert it into a furnace tube gradually (see table) so as to prevent the ceramic protective tubes from cracking because of the heat stress caused by a rapid temperature change.

| Working Temperature [°C] | 1200 | 1400 | 1500 |
|-------------------------------|------|------|------|
| Velocity of shifting [mm/min] | 200 | 60 | 20 |

If it is impossible to provide recommended velocity of shifting, sensors have to be slowly and evenly pre-heating.

Electrical Connections



| Typ | Description | | |
|-------------|---|---------------------------|------------------------|
| ° T1538-6 → | Straight Thermocouple Temperature Sensors T1538 | | |
| Code | Thermocouple | Measuring Range | Diameter of Wires |
| ° 26 → | 1x"S" (PtRh10-Pt), Insulated | 0 to +1300 °C | 0.5 mm |
| ° 28 | 1x"B" (PtRh30-PtRh6), Insulated | +300 to +1600 °C | 0.5 mm |
| ° 99 | Other | | |
| Code | Accuracy Class according to EN 60584-2 | | |
| ° 7 → | 2 (Standard for Thermocouple "S") | | |
| ° 8 | 3 (Standard for Thermocouple "B") | | |
| Code | Nominal Length L | | |
| ° 150 | 500 | | |
| ° 171 → | 710 | | |
| ° 180 | 800 | | |
| ° 210 | 1000 | | |
| ° 214 | 1400 | | |
| ° 999 | Other | | |
| Code | Protective tubes | Outside / Centre / Inside | Max. Temperature |
| ° O1 → | C530 ceramics / C610 ceramics / SAPPHIRE | | 1500 °C |
| ° O2 | C799 ceramics / C799 ceramics / SAPPHIRE | | 1600 °C |
| ° O9 | Other | | |
| Code | Support Tube | L1 Length | Material |
| ° N0 → | 200 (Standard for Lengths 500, 710 and 800 mm) | | Varnished Carbon Steel |
| ° N1 | 400 (Standard for Lengths 1000 a 1400 mm) | | Varnished Carbon Steel |
| ° N9 | Other | | |
| Code | Head | | |
| ° H1 → | Al Alloy, Cable Outlet M20x1.5, Housing IP 55, with Terminal Board | | |
| ° H2 1 | Al Alloy, with High Cap for Mounting of Transmitter into Cap, Cable Outlet M20x1.5, Housing IP 55, with Terminal Board | | |
| ° H9 | Other | | |
| Code | OPTIONAL ACCESSORIES | | |
| Code | Calibration | | |
| ° KTE3 | Sensor Calibration in Three Customer's Given Temperature Points (0 to +1100 °C) | | |
| ° KTE9 | Other | | |
| Code | Fixing Flanges | | |
| ° P1 → | Fixing Shift Flange UP04 (See Data Sheet No. 126) | | |
| Code | Transmitters for Headmounting | | |
| • P5310 | Programmable Transmitter P5310 with Communication LHP, Base Accuracy 0,1 % from Set Range (See Data Sheet No. 824) | | |
| • PT-031 | Programmable Transmitter for Thermoelectric Sensors PT-031, Base Accuracy 0,15 % from Input Range (See Data Sheet No. 471) | | |
| • P5102 | Programmable Transmitter P5102 H11 for Headmounting (See Data Sheet No. 451) | | |
| ° P5102EEEx | Intrinsically Safe Programmable Transmitter P5102 H11EEEx for Headmounting (See Data Sheet No. 451) | | |
| • P5201 → | Universal Programmable Transmitter P5201 H10 with Circuit Isolation for Headmounting (See Data Sheet No. 288) | | |
| ° P5201EEEx | Intrinsically Safe Universal Programmable Transmitter P5201 H10EEEx with Circuit Isolation for Headmounting (See Data Sheet No. 288) | | |
| • P3301 | Universal Programmable Transmitter P3301 SMART with Circuit Isolation for Headmounting, HART Communication Interface (See Data Sheet No. 507) | | |

Example of Order: T1538-6 26 7 171 O1 N0 H1 P1 P5201 H10 R11 C2 RL 0 °C RH 350 °C EHL

1 ... Temperature of head with transmitter inside should not exceed 80 or 85 °C according to transmitter type.

• For Stock Version ... • Modified Version can be Dispatched up to 40 Working Days