

T1529

Thermocouple Temperature Sensors without Thermowells without/with Transmitters 4 to 20 mA

- Thermocouple J, K
- Measuring range -200 to +600 (+300 ¹⁾°C
- Accuracy class 1, 2 according to EN 60584-2
- Head form B according to DIN (Al alloy or stainless steel)
- Stem material: stainless steel DIN 1.4541, Inconel
Extension piece material: stainless steel DIN 1.4541
- Selectable stem length
- Flexible stem
- Fast reaction at temperature change
- Housing IP 54, IP 65, IP 68
- Optional headmounted programmable transmitter with output 4 to 20 mA, including circuit isolation version and EEx ia IIC T4 ... T6 (ATEX) version

Application

Thermoelectric temperature sensors T1529 without a thermowell are intended for applications where some of their advantages can be utilized such rapid response to temperature changes, elasticity, small dimensions, higher stability of output signal compared with wire thermocouples, resistance to high pressure etc. up to the overpressure PN 16. Sealing of the sensor stem inlet into the fastening screwed fitting is performed by means of the hard solder AgCuZn. Measuring medium should not get in touch with this joint. Advantage of the sensors is rapid response to temperature changes. It is possible to deliver these sensors with or without transmitter 4 up to 20 mA in the sensor head. The sensor can be used for measurement of temperatures higher than 300 °C provided that the temperature of the sensors stem outlet from the fastening screwed fitting (soldered joint) does not exceed 300 °C.

Description

The sensing element of the sensor is formed by a shell thermocouple with outside diameter of 6 mm, in single or double version. This thermocouple can be delivered with a shell of stainless steel 17248 (1.4541 DIN) or of Inconel 600 (2.4816 DIN). Measuring end of the thermocouple is in isolated make, or in independent isolated make for double thermocouples, and it is possible to bend it with radius equal to fivefold of shell outside diameter, which extends further possibilities of application. The sensors are mounted by means of a fastening screwed fitting into straight or welded-on piece on the piping etc.

Technical Specifications

Thermocouple:

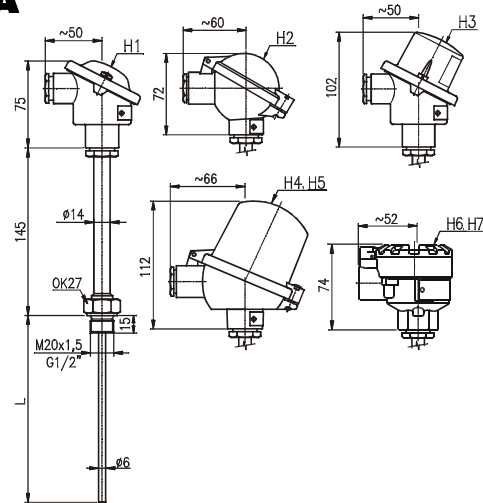
J, K, accuracy class 1, 2 according to EN 60584-2

Measuring Range:

-200 to +600 (+300 ¹⁾°C - thermocouple J
(material DIN 1.4541)
-200 to +600 (+300 ¹⁾°C - thermocouple K
(material Inconel 600)

Output signal: linearized 4 to 20 mA ²⁾

Dielectric Strength: 500 V eff



Electrical insulation resistance:

min. 100 MΩ according to EN 61515,
for temperature (25 ±10)°C, max. 80 % relative humidity

Response Time (in water v = 0.2 m/s):

T_{0.5} = 3 s T_{0.9} = 9 s

Materials: Head - Aluminium alloy (H1, H2, H3, H4, H5,

- Stainless steel DIN 1.4312 (H7)

Extension piece - Stainless steel DIN 1.4541

Stem - Stainless steel DIN 1.4541 (J)

- Inconel 600 (K)

Housing: IP 54, IP 65, IP 68 (according to head)

Minimal radius of stem flexibility:

R_{min} = 30 mm

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: 100 ... 0.52 kg
160 ... 0.53 kg
250 ... 0.55 kg
400 ... 0.58 kg
630 ... 0.63 kg

b) with head H2 plus 0.04 kg
H3 plus 0.05 kg
H4, H5 plus 0.20 kg
H6 plus 0.16 kg
H7 plus 0.70 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

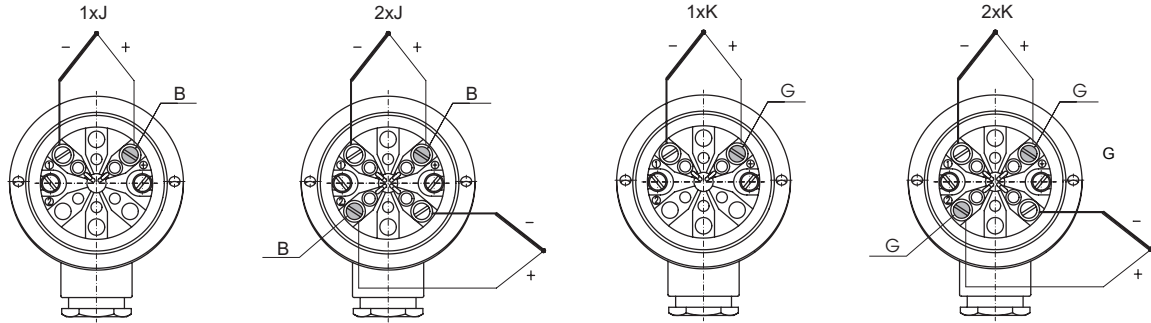
¹⁾ ... Maximal temperature on screw connection of temperature sensors

²⁾ ... Only for sensor with transmitter

Thermocouple Temperature Sensors T1529 without Thermowells

Electrical Connections

R - red
G - green



| Type | Description | | |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------|
| o T1529-5 → | Thermocouple Temperature Sensors T1529 without Thermowells | | |
| Code | Thermocouple | Measuring Range | Temp on Fixing Pipe Union |
| o 21 → | 1x"J" (Fe-CuNi), Insulated | -200 to +600 °C | max. 300 °C |
| o 61 | 2x"J" (Fe-CuNi), Insulated, Isolated Junctions | -200 to +600 °C | max. 300 °C |
| o 22 | 1x"K" (NiCr-NiAl), Insulated | -200 to +600 °C | max. 300 °C |
| o 62 | 2x"K" (NiCr-NiAl), Insulated, Isolated Junctions | -200 to +600 °C | max. 300 °C |
| Code | Accuracy Class according to EN 60584-2 | | |
| o 6 | 1 | | |
| o 7 → | 2 | | |
| Code | Nominal Length L | | |
| o 110 | 100 | | |
| o 116 → | 160 | | |
| o 125 | 250 | | |
| o 140 | 400 | | |
| o 163 | 630 | | |
| o 999 | Other | | |
| Code | Stem | | Material |
| o S31 → | Outside Diameter of Stem [mm] | ∅ 6 | Stainless Steel DIN 1.4541 (for "J") |
| o S33 | | ∅ 6 | Inconel (for "K") |
| Code | Extension Piece | | Material |
| o N1 → | Outside ∅ x Wall Thickness [mm] | ∅ 14x2.5 | 145 |
| o N9 | | Other | Stainless Steel DIN 1.4541 |
| o N9 | | Other | |
| Code | Head | | |
| o H1 | Al Alloy, Cable Outlet M20x1.5, Housing IP 54, with Terminal Board | | |
| o H2 | Al Alloy, Cable Outlet M20x1.5, Housing IP 65, with Terminal Board | | |
| o H3 → | Al Alloy, with High Cap for Mounting of Transmitter ∅ 44 mm into Cap, Cable Outlet M20x1.5, Housing IP 54, with Terminal Board | | |
| o H4 | Al Alloy, with High Cap for Mounting of Transmitter up to ∅ 62 mm and High 50 mm, Span of Mounting Bolts 33 mm, Cable Outlet M20x1.5, Housing IP 65, with Terminal Board | | |
| o H5 | Al Alloy, with High Cap for Mounting of Transmitter up to ∅ 62 mm and High 50 mm, Span of Mounting Bolts 33 mm, Cable Outlet M20x1.5, Housing IP 65, with Terminal Board, Outside and Inside Ground Clamp | | |
| o H6 ¹ | Al Alloy, for Transmitters ∅ 44 mm with Mounting on Bulb Flange, Thread for Cable Outlet M20x1.5, Outside and Inside Ground Clamp, without Cable Outlet, without Terminal Board, Housing IP 68 | | |
| o H7 ¹ | Stainless Steel, for Transmitters ∅ 44 mm with Mounting on Bulb Flange, Thread for Cable Outlet M20x1.5, Outside and Inside Ground Clamp, without Cable Outlet, without Terminal Board, Housing IP 68 | | |
| o S1 ¹ | Terminal Board for Connection Wire (for Heads H6, H7) | | |
| Code | Connection Thread | | |
| o P1 → | M20x1.5 | | |
| o P2 | G1/2" | | |
| o P9 | Other | | |
| Code | OPTIONAL ACCESSORIES | | |
| Code | Calibration | | |
| o KTE3 | Sensor Calibration in Three Customer's Given Temperature Points (0 to +600 °C) | | |
| o KTE9 | Other | | |
| Code | Transmitters for Headmounting | | |
| o P5310 | Programmable Transmitter P5310 with Communication LHP, Base Accuracy 0,1 % from Set Range (See Data Sheet No. 824) | | |
| o PT-031 | Programmable Transmitter for Thermoelectric Sensors PT-031, Base Accuracy 0,15 % from Input Range (See Data Sheet No. 471) | | |
| o P5102 | Programmable Transmitter P5102 H11 for Headmounting (See Data Sheet No. 451) | | |
| o P5102EEx | Intrinsically Safe Programmable Transmitter P5102 H11EEx for Headmounting (See Data Sheet No. 451) | | |
| o P5201 → | Universal Programmable Transmitter P5201 H10 with Circuit Isolation for Headmounting (See Data Sheet No. 288) | | |
| o P5201EEx | Intrinsically Safe Universal Programmable Transmitter P5201 H10EEx with Circuit Isolation for Headmounting (See Data Sheet No. 288) | | |
| o P3301 | Universal Programmable Transmitter P3301 SMART with Circuit Isolation for Headmounting, HART Communication Interface (See Data Sheet No. 507) | | |
| Code | Cable Outlet | | |
| o KM1 | Nickel Silver, IP68, Diameter of Cable 5 to 10 mm (for Heads H6, H7) | | |
| o KM9 | Other | | |

Example of Order: T1529-5 21 7 116 S31 N1 H3 P1 P5201 H10 R51 C7 RL 0 °C RH 650 °C ECL

- o ... Ex Stock Version
- o ... Marked Version can be Dispatched up to 10 Working Days
- ¹ ... Temperature transmitter is mounted directly on flange of measuring insert instead of ceramic terminal block when temperature sensor is supplied with head H6 or H7.