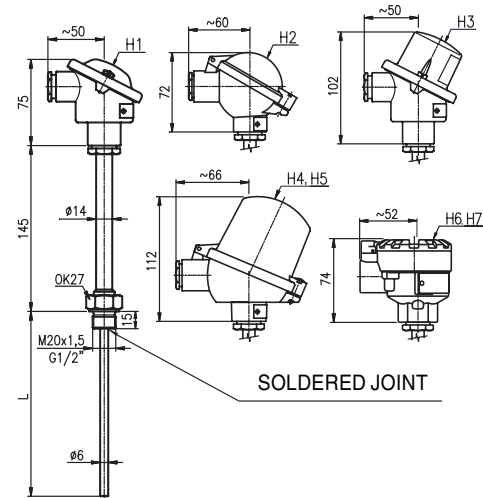


T1020

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

- Measuring resistor Pt100
- Measuring range -50 to +600 (+300¹⁾ °C
- Accuracy class A, B according to EN 60751
- Head form B according to DIN (Al alloy or Stainless Steel)
- Stem and extension material: stainless steel DIN 1.4541
- 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 II 1G EEx ia IIC T4 ... T6 (ATEX) version



Application

Resistance temperature sensors T1020 without a thermowell are intended for remote temperature measurement of flowing non-aggressive liquid as well as gaseous media in pipelines, tank 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

A sensor of the thermometer is one or two measuring resistors which are placed in the stem and connected through an inside wiring to a terminal board inside the head form B according to DIN. There is made use of sensor resistance-temperature dependence. With a version with a transmitter the resistance signal is converted to a unified linear current signal of 4 to 20 mA. The thermometer should be mounted on piping by a fixing shift pipe union into a straight or an oblique welded-on piece.

Technical Specifications

Measuring Resistor:

1xPt100, accuracy class A, B according to EN 60751, four-wire inside wiring or two-wire inside wiring
 2xPt100, accuracy class B according to EN 60751, two-wire inside wiring or three-wire inside wiring

Measuring Range: -50 to +600 (+300¹⁾°C

Measuring Current²⁾: 0.3 to 1 mA

Output signal: linearized 4 to 20 mA³⁾

Dielectric Strength: 500 V eff

Electrical insulation resistance:

min. 100 MΩ according to EN 60751, for temperature (25 ±10)°C, max. 80 % relative humidity

Response Time (in water v = 0.4 m/s):

stem Ø 6: $T_{0.5} = 4 \text{ s}$ $T_{0.9} = 13 \text{ s}$

Materials: Head - Aluminium alloy (H1, H2, H3, H4, H5, H6)
 Stem - Stainless steel DIN 1.4541
 Inside wiring - Cu

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

Operation conditions

Maximal Temperature of Head:

100 °C (without transmitter)
 80 °C (with transmitter PT-011 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: 100 ... 0.52 kg
 160 ... 0.53 kg
 250 ... 0.55 kg
 400 ... 0.58 kg
 630 ... 0.63 kg
 500 ... 0.39 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-011 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 fixing pipe union 300 °C

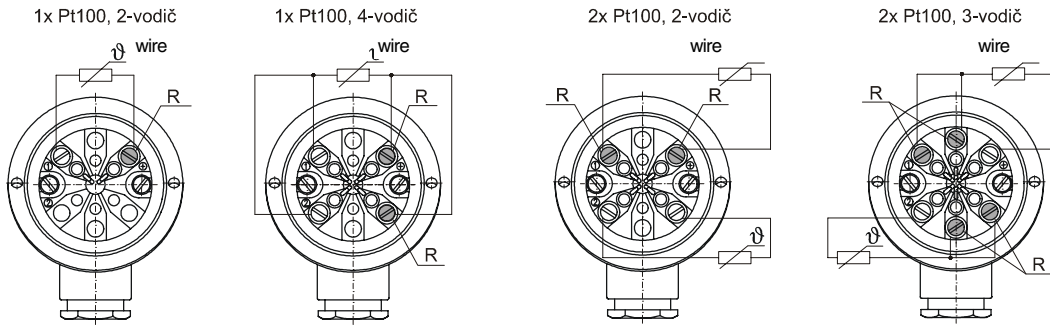
²⁾... Only for sensor without transmitter

³⁾... Only for sensor with transmitter

Resistance Temperature Sensors without Thermowells T1020

Electrical Connections

R - red



Type	Description
◦ T1020-5 →	Resistance Temperature Sensors T1020 without Thermowells
Code	Temperature Sensor Measuring Range Temperature on fixing shift pipe union
◦ 04	1xPt100, Two-wire Inside Wiring -50 to +600 °C max. +300 °C
◦ 06 →	1xPt100, Four-wire Inside Wiring -50 to +600 °C max. +300 °C
◦ 07	2xPt100, Three-wire Inside Wiring -50 to +600 °C max. +300 °C
◦ 08	2xPt100, Two-wire Inside Wiring -50 to +600 °C max. +300 °C
Code	Accuracy Class according to IEC 751
◦ 1 →	B
2	A (for Sensors with Four-wire Inside Wiring Only, Range 0 to +300 °C)
Code	Nominal Length L
◦ 110 →	100
◦ 116	160
◦ 125	250
◦ 140	400
◦ 163	630
999	Other
Code	Stem
Code	Outside Diameter [mm] Stem Coat Material
◦ S31 →	Ø 6 Stainless Steel DIN 1.4541
Code	Extension Piece
Code	Outside Ø x Wall Th Length [mm] Material
◦ N1 →	Ø 14x2.5 145 Stainless Steel DIN 1.4541
N9	Other
Code	Head
◦ H1	Al Alloy, Cable Outlet M20x1.5, Housing IP 54, with Terminal Board
◦ H2	Al Alloy, Cable Outlet M20x1.5, Housing IP 65, with Terminal Board
◦ H3 →	Al Alloy, with High Cap for Mounting of Transmitter Ø 44 mm into Cap, Cable Outlet M20x1.5, Housing IP 54, with Terminal Board
◦ H4	Al Alloy, with High Cap for Mounting of Transmitter up to Ø 62 mm and High 50 mm, Span of Mounting Bolts 33 mm, Cable Outlet M20x1.5, Housing IP 65, with Terminal Board
H5	Al Alloy, with High Cap for Mounting of Transmitter up to Ø 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
◦ H6 ¹	Al Alloy, for Transmitters Ø 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
◦ H7 ¹	Stainless Steel, for Transmitters Ø 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
H9	Other
◦ S1 ¹	Terminal Board for Connection Wire (for Heads H6, H7 without transmitter)
Code	Connection Thread
◦ P1 →	M20x1.5
◦ P2	G1/2"
P9	Other
Code	OPTIONAL ACCESSORIES
Code	Calibration
◦ KTE3	Sensor Calibration in Three Customer's Given Temperature Points (0 to +300 °C)
KTE9	Other
Code	Transmitters for Head mounting
• P5310	Programmable Transmitter P5310 with LHP Communication, Input Accuracy up to 0.1 % from Set Range (See Data Sheet No. 824)
• PT-011	Programmable Transmitter for Resistance Sensors PT-011, Base Accuracy 0,15 % from Input Range (See Data Sheet No. 471)
• P5102	Programmable Transmitter P5102 H11, Base Accuracy to 0,07 % from Set Range (See Data Sheet No. 451)
• P5102EEx	Intrinsically Safe Programmable Transmitter P5102 H11EEx, Base Accuracy to 0,07 % from Set Range (See Data Sheet No. 451)
• P5201 →	Universal Programmable Transmitter P5201 H10 with Circuit Isolation, Base Accuracy to 0,05 % from Set Range (See Data Sheet No. 288)
◦ P5201EEx	Intrinsically Safe Universal Programmable Transmitter P5201 H10EEx with Circuit Isolation, Base Accuracy to 0,05 % from Set Range (See Data Sheet No. 288)
• P3301	Universal Programmable Transmitter P3301 SMART with Circuit Isolation, Base Accuracy to 0,065 % from Set Range HART Communication Interface (See Data Sheet No. 507)
Code	Other
• KM1	Cable Outlet, Nickel Silver, IP68, Diameter of Cable 5 to 10 mm (for Heads H6, H7)
KM9	Other Outlet

Example of Order: T1020-5 06 1 110 S31 N1 H3 P1 P5201 H10 R11 C3 RL 0°C RH 350°C ECL

◦ ... Ex Stock Version ◦ ... Marked Version can be Dispatched up to 10 Working Days

¹ ... Temperature transmitter is mounted directly on flange of measuring insert in lieu of ceramic terminal block when temperature sensor is supplied with head H6 or H7.