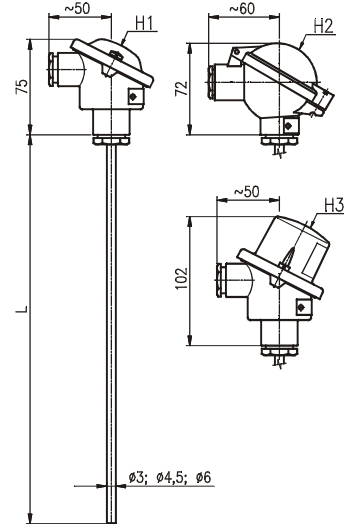


T1511

Mineral Insulated Thermocouple Temperature Sensors without/with Transmitters 4 to 20 mA

- Thermocouple "J", "K"
- Measuring range -200 to +800 °C ("J"), -200 to +1100 °C ("K")
- Accuracy class 1, 2 according to EN 60584-2
- Head form B according to DIN
- Stem material: stainless steel DIN 1.4541 ("J") Inconel 600 ("K")
- Selectable stem length and diameter
- Flexible stem
- Mounting temperature sensor by means of Fixing Shift Pipe Union
- Housing IP 54, IP 65
- 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

Mineral insulated thermocouple temperature sensors T1511 without thermowells are designed for applications where can be applied some of their virtues such as short response time, flexibility, small dimensions, higher stability of output signal than wire thermocouples, resistance against high pressure etc. Temperature sensors can be supplied with or without 4 to 20 mA headmounted transmitters.

Description

Mineral insulated thermocouple temperature sensors with outside diameters 3 / 4.5 / 6 mm are supplied in single and dual versions. These thermocouples can be supplied with insulation of stainless steel DIN 1.4541 or of Inconel 600 (DIN 2.4816). Thermocouple measuring junctions are insulated and in addition to it dual thermocouples have isolated junctions. The supplied mineral insulated thermocouple temperature sensors can be bended at radius of fivefold of insulation outside diameter which further extends their application possibilities. The thermometer should be mounted on piping by a fixing shift pipe union etc.

Technical Specifications

Thermocouple:

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

Measuring Range:

-200 to +800 °C („J“)
-200 to +1100 °C („K“)

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

Insulated, stem Ø 3	$T_{0.5} = 1.2$ s	$T_{0.9} = 2.9$ s
Insulated, stem Ø 4.5	$T_{0.5} = 2.5$ s	$T_{0.9} = 5.9$ s
Insulated, stem Ø 6	$T_{0.5} = 4$ s	$T_{0.9} = 9.6$ s

Materials:

Head - Aluminium alloy
Stem - Stainless steel DIN 1.4541 („J“)
- Inconel 600 („K“)

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

Minimal radius of stem flexibility:

Ø 3 ... $R_{min} = 15$ mm
Ø 4,5 ... $R_{min} = 22,5$ mm
Ø 6 ... $R_{min} = 30$ mm

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:	240 ... 0.31 kg
	300 ... 0.32 kg
	390 ... 0.33 kg
	500 ... 0.35 kg
	710 ... 0.38 kg
	1000 ... 0.43 kg
	1400 ... 0.50 kg
	2000 ... 0.60 kg

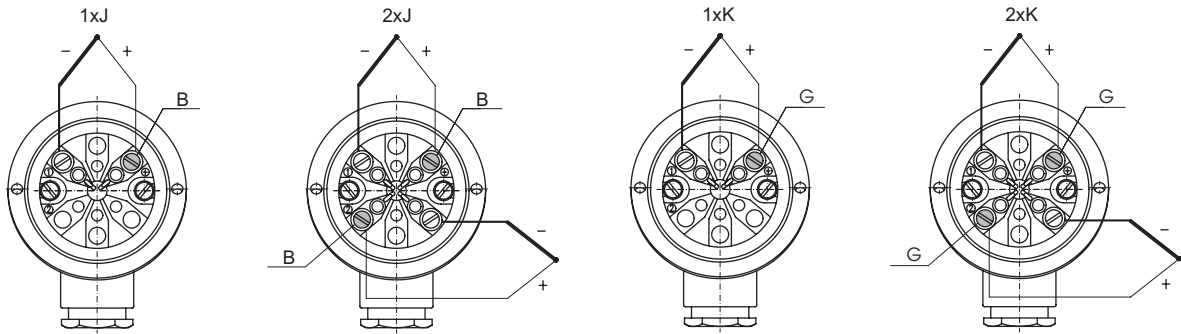
b) with head H2 plus 0.04 kg
H3 plus 0.05 kg

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

Mineral Insulated Thermocouple Temperature Sensors T1511

Electrical Connections

B - black
G - green



Type	Description	
◦ T1511-5	→ Mineral Insulated Thermocouple Temperature Sensors	
	Code	Measuring Range
◦ 21	→ 1x"J" (Fe-CuNi), Insulated	-200 to +800 °C
61	2x"J" (Fe-CuNi), Insulated, Isolated Junctions	-200 to +800 °C
◦ 22	1x"K" (NiCr-NiAl), Insulated	-200 to +1100 °C
62	2x"K" (NiCr-NiAl), Insulated, Isolated Junctions	-200 to +1100 °C
Code	Accuracy Class according to EN 60584-2	
6	1	
◦ 7	→ 2 (standard)	
Code	Nominal Length L [mm]	
◦ 124	→ 240	
◦ 130	300	
◦ 139	390	
◦ 150	500	
◦ 171	710	
◦ 177	770	
◦ 210	1000	
◦ 214	1400	
220	2000	
999	Other	
Code	Stem - Outside Diameter of Measuring Insert Stem [mm]	Stem Coat Material
S11	∅ 3	Stainless Steel DIN 1.4541 (for "J" Only)
S21	∅ 4.5	Stainless Steel DIN 1.4541 (for "J" Only)
◦ S31	→ ∅ 6	Stainless Steel DIN 1.4541 (for "J" Only)
S13	∅ 3	Inconel 600 (for "K" Only)
S23	∅ 4.5	Inconel 600 (for "K" Only)
◦ S33	∅ 6	Inconel 600 (for "K" Only)
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 ∅ 44 mm into Cap, Cable Outlet M20x1.5, Housing IP 54, 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 Pipe Unions and Holders	
◦ P1	→ Fixing Shift Pipe Union for Stem ∅ 3 mm UPS 3M12 (See Data Sheet No. 126)	
◦ P2	Fixing Shift Pipe Union for Stem ∅ 4.5 mm UPS 4.5M12 (See Data Sheet No. 126)	
◦ P3	Fixing Shift Pipe Union for Stem ∅ 6 mm UPS 6M20 (See Data Sheet No. 126)	
P9	Other	
◦ D1	Thermometer Holder for Wallmounting (for Heads H1, H3)	
◦ D2	Thermometer Holder for Wallmounting (for Head H2)	
Code	Transmitters for Headmounting	
• P5310	Programmable Transmitter P5310 with LHP Communication, Base Accuracy up to 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 H10, Base Accuracy to 0.07 % from Set Range (See Data Sheet No. 451)	
◦ P5102EEx	Intrinsically Safe Programmable Transmitter P5102 H10EEx, 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)	

Example of Order: T1511-5 21 7 124 S31 H3 P1 P5201 H10 RL 0 °C RH 350 °C ECL

◦ ... Ex Stock Version

° ... Marked Version can be Dispatched up to 10 Working Days