

Sensor applied for temperature measurement of movable and exposed to vibration parts of machines and devices.

Specification

Temperature range / sensing element

-40÷600°C K, J class 2

Thermowell

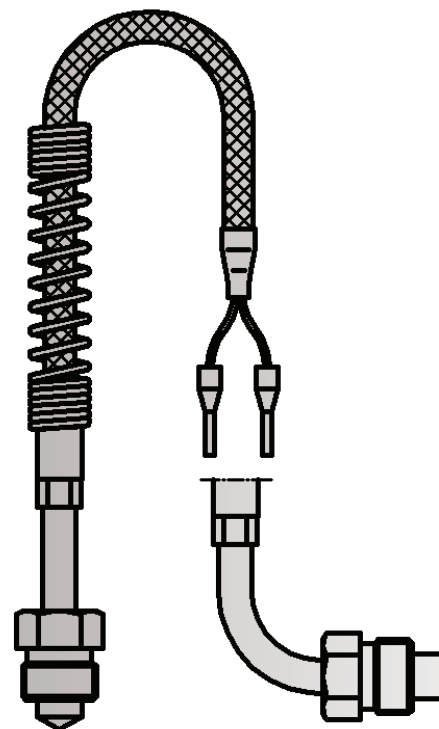
- connector and tip; material: steel 1.4541
- mineral insulated thermocouple (J), material: steel 1.4541
- mineral insulated thermocouple (K), material: Inconel 600

D	M10x1; M10x1,5	M8x1, M8x1,25	M6
d	6	5	4
d ₁	3; 4,5	1,5; 2; 3	1,5; 2

– length L [mm]: 50÷100, L₁[mm]: 30÷100

Lead wire

- stranded thermocouple wire: 2x0,22mm², fiberglass insulation metal overbraid
- length L_p [m]: 1,5(standard)



Other parameters acc. to requirements

Options

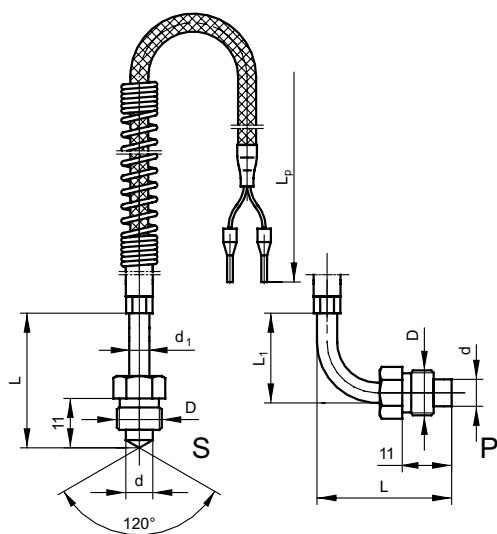
Temperature transmitter application

Temperature transmitter with standard 4÷20mA, 0÷10V output signals and with the HART or PROFIBUS communication protocols can be installed in the control cabinet.

Non-standard design

Immersion length, diameter and material of the sheath, and measuring insert parameters can be customized per client request.

Calibrations performed by Limatherm Sensor Sp. z o.o. are confirmed with the Calibration Certificate of the Accredited Laboratory for Temperature Measurements.



Seat for tapered tip

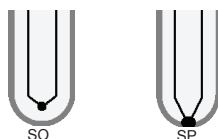
Seat for flat tip

Compensation / thermocouple wire insulations

Insulation material	Operating temperature range [°C]	Properties
PCW (PCV)	-10÷105	Applied in mild environmental conditions. Waterproof and flexible.
Yc- polyvinyl chloride	-10÷105	Applied in mild environmental conditions. Waterproof and flexible.
FEP-teflon	-50÷200	Resistant to oils, acids and other aggressive liquids. Good flexibility.
Si-silicone	-50÷180	Waterproof, flexible. Applied in high humidity conditions.
Ws-fiberglass	-60÷400	Good resistance to high temperature Low resistance to liquid penetration.

Notes: Additionally, copper or steel braids/shields are used on wires to prevent electrical noises, Increasing, at the same time, wire insulation resistance to mechanical damages. In case of longer wire lengths grounding may be needed to minimize the noise in measurement circuit

Thermocouple hot junction types



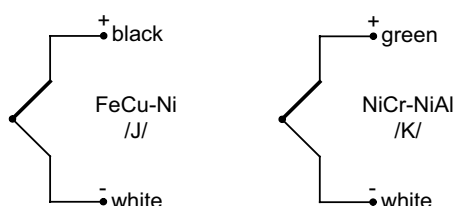
Tolerance for thermocouple classes acc. to PN-EN 60584

Thermocouple type	Class 1		Class 2	
	Range of application [°C]	Tolerance [°C]	Range of application [°C]	Tolerance [°C]
J Fe-CuNi	from -40 to +375 from +375 to +750	±1,5 ±0,004 t	from -40 to +333 from +333 to +750	±2,5 ±0,0075 t
K NiCr-NiAl	from -40 to +375 from +375 to +1000	±1,5 ±0,004 t	from -40 to +333 from +333 to +1200	±2,5 ±0,0075 t

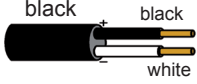
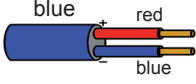
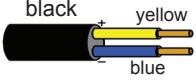
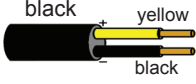
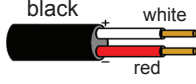
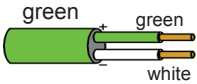
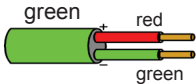
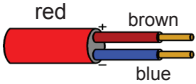
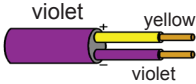
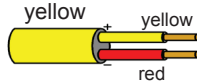
|t|- absolute value of temperature

Connection schemes

TC (thermocouple)



Cable types and colours acc. to the norm

EU	D	GB	F	USA
Thermocouple J type				
				
Thermocouple K type				
				

Product code

		Sensing element	
1	<input type="text"/>	J	thermocouple Fe-CuNi /J/
		K	thermocouple NiCr-NiAl /K/
		Tip type	
2	<input type="text"/>	P	flat
		S	tapered
		Thermocouple hot junction type	
3	<input type="text"/>	SO	insulated hot junction
		SP	grounded hot junction
		Accuracy	
4	<input type="text"/>	1 or 2	for thermocouple
		Length L or LxL₁	
5	<input type="text"/>	30x50	30x50mm
			other parameters acc. to requirements
		Tip diameter / sheath diameter d/d₁	
6	<input type="text"/>	5/3	5/3mm
			other parameters acc. to requirements
		Thread dimension	
7	<input type="text"/>	M8	M8
			other parameters acc. to requirements
		Lead wire length	
8	<input type="text"/>	1,5	1,5m
			other parameters acc. to requirements

1 2 3 4 5 6 7 8

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Ordering example:

TTPK-187S-SO-2-30x50-5/2-M8x1-1 m sensor with thermocouple NiCr-NiAl /K/, class 2, insulated hot junction, sheath diameter 2 mm bent 30x50 mm, with tapered tip ø5 mm, threaded connector M8x1, lead wire with fiberglass insulation length L_p=1 m