

Temperature sensor with band clamp for measurement of pipes and shafts. The band clamp enables sensor installation on different types of pipes and shafts which are to be measured.

Specification

Temperature range / sensing element

-50÷400°C	Pt100	class B
-40÷400°C	K, J	class 2

Pipe band clamp

- material: steel 1.4301
- pipe band clamp diameter [mm]: 16÷180
- width b: 9 for D<110
12 for D>110

Sheath

- material: steel 1.4541: welded tangentially to band clamp (S)
welded perpendicularly to band clamp (P)

Lead wire

- stranded Cu wire or stranded thermocouple wire: 2x0,22mm²
- fiberglass insulation, metal overbraid
- length L_p [m]: 1,5 (standard)
- Cu wire resistance~0,14 Ω/m = ~0,36°C

Other parameters acc. to requirements

Options

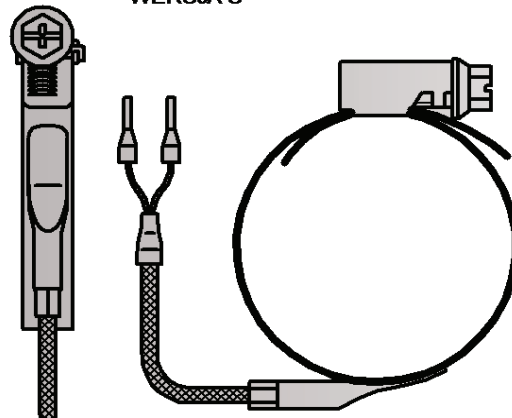
Temperature transmitter application

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.

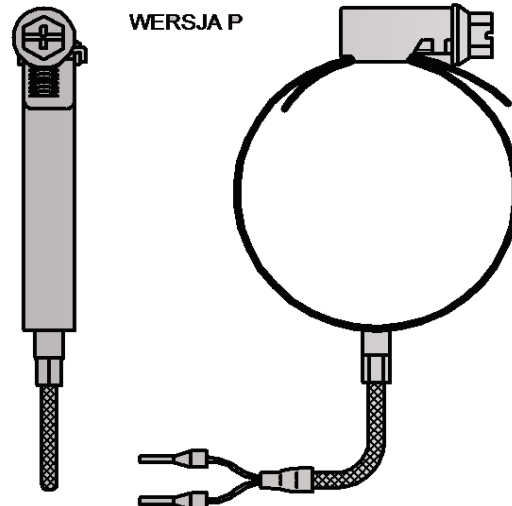
Non-standard design

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

WERSJA S

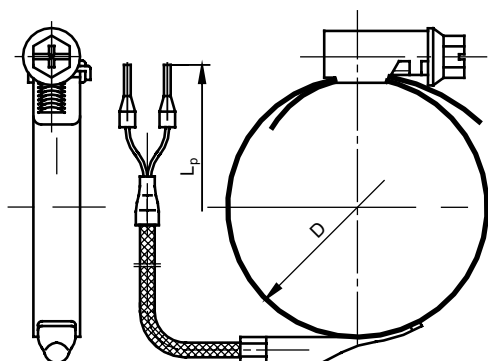


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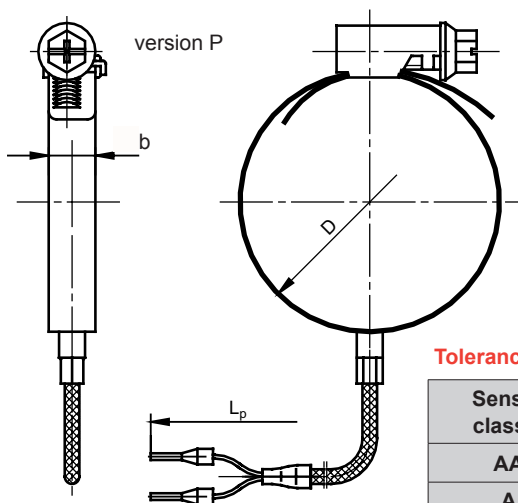


Calibrations performed by Limatherm Sensor Sp. z o.o. are confirmed with the Calibration Certificate of the Accredited Laboratory for Temperature Measurements.

version S



version P



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

Tolerance for classes of sensors with resistors Pt acc. to PN-EN 60751

Sensor classes	Range of application [°C]	Formula for calculating acceptable deviations [°C]
AA	0÷150	$T = \pm(0,10 + 0,0017 t)$
A	-30÷300	$T = \pm(0,15 + 0,002 t)$
B	-50÷500	$T = \pm(0,3 + 0,005 t)$

|t| - absolute value of temperature

Measurement circuit

1 x Pt100			2 x Pt100			1 x TC	2 x TC
2-wire	3-wire	4-wire	2-wire	3-wire	4-wire	2-wire	2-wire
✓	✓	✓	x	x	x	✓	x

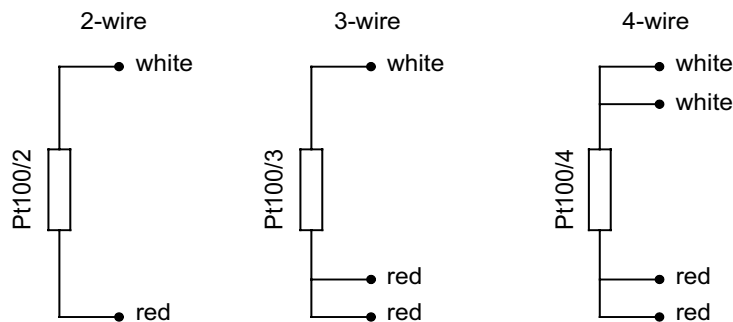
Tolerance for thermocouple classes acc. to PN-EN 60584

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

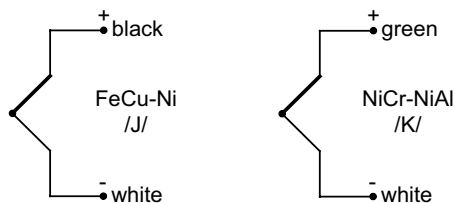
|t| - absolute value of temperature

Connection schemes

Pt100 (thermometric resistor)



TC (thermocouple)



Cable types and colours acc. to the norm

EU	D	GB	F	USA
Thermocouple J type				
Thermocouple K type				

Product code

1		Sensing element	
		OP	resistor Pt (only for S version)
		TJ	thermocouple Fe-CuNi /J/
		TK	thermocouple NiCr-NiAl /K/
2		Sheath position	
		P	radial
		S	tangential
		Pipeline diameter	
3		40	40mm
		25÷40	specified diameter range for band clamp
			other parameters acc. to requirements
		Resistor type	
4		Pt100	Pt100/Pt500/Pt1000
			other parameters acc. to requirements

5		Accuracy	
		A or B	for measuring resistor
		1 or 2	for thermocouple
6		Measurement circuit	
		2	2 - wire
		3	3 - wire
7		4	4 - wire
		Lead wire length	
		1,5	1,5m
8			other parameters acc. to requirements
		Lead wire insulation	
		Si	silicone
		Ws	fiberglass with steel overbraid
		F	teflon

	1		2		3		4		5		6		7		8
T		E-243		-		-		-		-		-		-	

Ordering example: **TTJE-243S-25÷40-2-1,5 m-Si** single sensor with thermocouple Fe-CuNi /J/, class 2, with sheath welded tangentially to band clamp, band clamp diameter 25÷40 mm, silicone insulated lead wire length L_p=1,5 m