AP 108

Temperature sensor suitable for measurement of flat screws and mandrels. The hole inside the ring enables sensor screwing to flat surface or mounting on the mandrel for temperature measurement.

Specification

### Temperature range / sensing element

-40÷400ºC	**K, J**	class 2

Sheath

– material: steel 1.4541
– ring dimensions: d_{min}=4mm,   D=10÷25mm, L_{min}=4mm

Lead wire

– stranded thermocouple wire: $2x0,22mm^2$ fiberglass insulation, metal overbraid for L≥5mm
– solid thermocouple wire: 2x0,2mm fiberglass insulation, metal overbraid for L<5mm
- length L_p [m]: 1,5 (standard)

Other parameters acc. to requirements
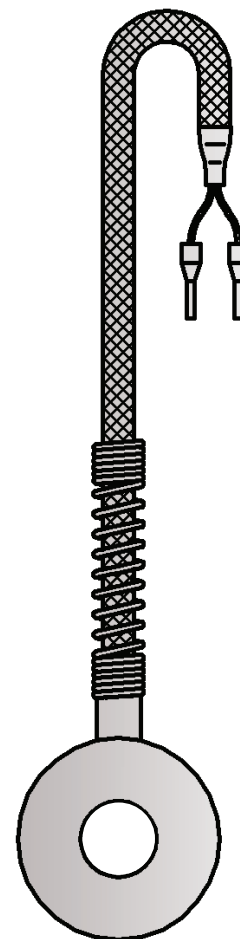
Options

### 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.
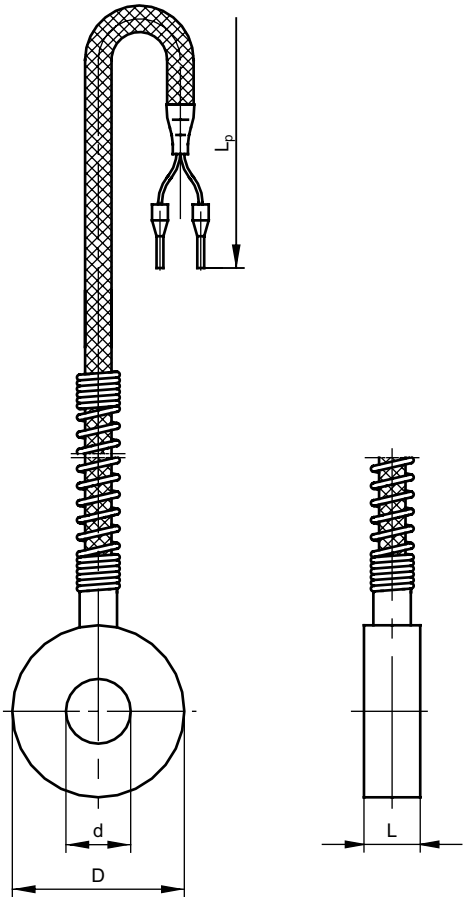
Compensation / thermocouple wire insulations

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
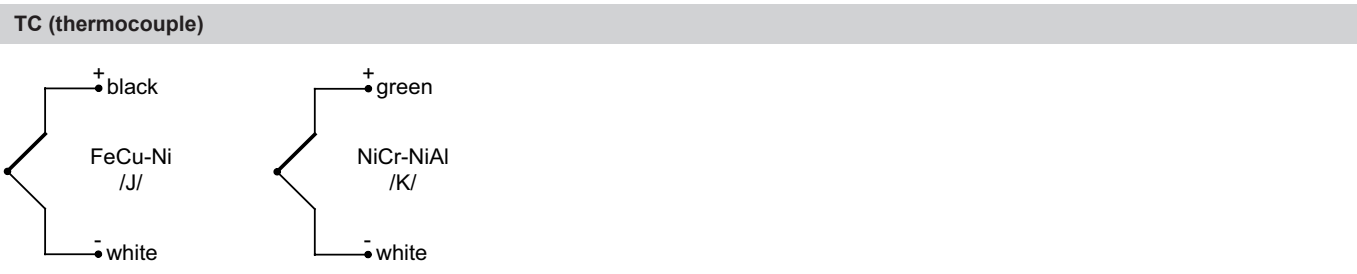
Thermocouple hot junction types

SO   SP
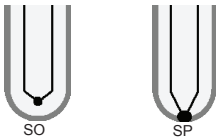
Tolerance for thermocouple classes acc. to PN-EN 60584

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)

+ black
FeCu-Ni /J/
- white

+ green
NiCr-NiAl /K/
- white

Cable types and colours acc. to the norm

EU	D	GB	F	USA

Thermocouple J type

black — black / white	blue — red / blue	black — yellow / blue	black — yellow / black	black — white / red

Thermocouple K type

green — green / white	green — red / green	red — brown / blue	violet — yellow / violet	yellow — yellow / red

Product code

1		**Sensing element**	
		J	thermocouple Fe-CuNi /J/
		K	thermocouple NiCr-NiAl /K/
2		**Ring dimensions d/DxL**	
		5/10x5	5/10x5mm
			other parameters acc. to requirements
3		**Accuracy**	
		1 or 2	for thermocouple
4		**Lead wire length**	
		1,5	1,5m
			other parameters acc. to requirements

	1		2	3	4
TT		E-306 –		–	–

Ordering example: **TTKE-306–4,5/8x5–2–2 m** single sensor with thermocouple NiCr-NiAl /K/, class 2, ring dimensions d=4,5 mm, D=8 mm, L=5 mm, lead wire length L_p=2 m