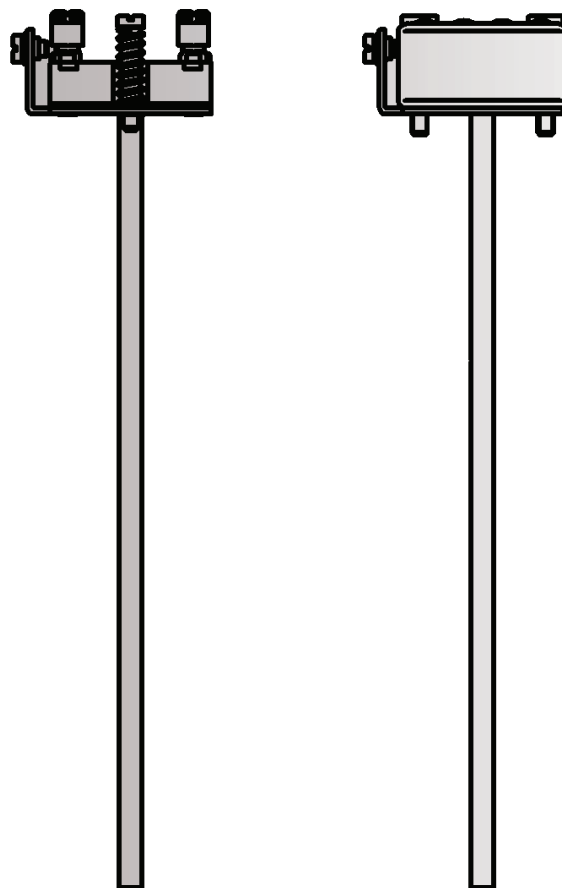




AP 108

Mineral insulated metal sheathed insert is used as a replaceable element of temperature sensors. Insert design enables its installation in the connection head and pressing insert tip to the bottom of the sensor thermowell.



Specification

Temperature range / sensing element

-200÷600°C	Pt100	class B
-40÷700°C	J	class 2
-40÷1200°C	K, N,	class 2
-40÷350°C	T	class 2

Version I, pipe execution

- material: steel 1.4541, sheath diameter [mm]: 6, 8
- operating temperature: max. 600°C
- standard sheath lengths L_w [mm]:
115, 175, 245, 375, 525 [mm] for $\varnothing 6$,
495, 705, 995, 1395, 1995 [mm] for $\varnothing 8$, or other*
- $L_{max.}$ [mm]= 1500 for $\varnothing 6$
- $L_{max.}$ [mm]= 2000 for $\varnothing 8$

Version II, mineral insulated execution: max. operating temperature

sheath diameters d [mm]	$\varnothing 3$	$\varnothing 4,5$	$\varnothing 6$	$\varnothing 8$
TC (J) material 1.4541	450°C	550°C	700°C	–
TC (K, N) material INCONEL	900°C	1000°C	1200°C	1200°C
RTD Pt100 material 1.4571	400°C	–	600°C	–

length L [mm]: acc. to requirements

Other parameters acc. to requirements

Options

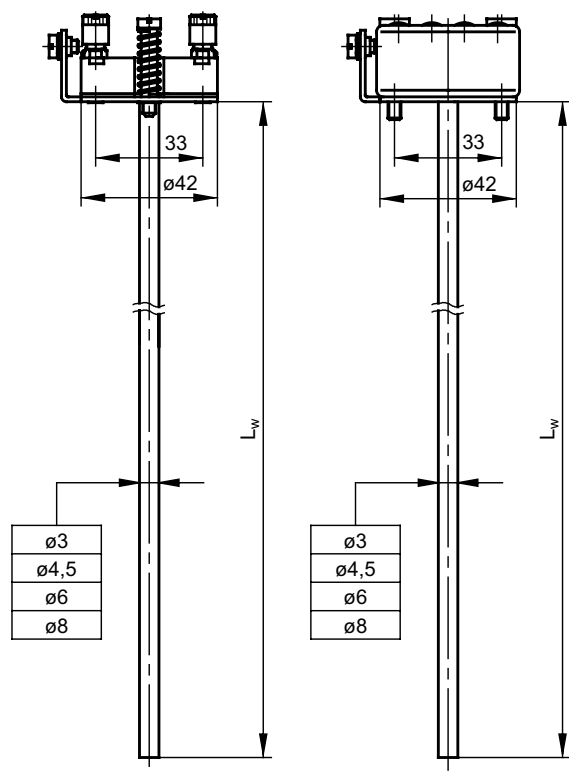
Temperature transmitter application

ATEX approved temperature transmitter with standard 4÷20mA output signal and with the HART communication protocol can be mounted in the connection head. Transmitter installation is carried out directly on the measuring insert (in place of a terminal block) or in the high cover connection head (solution used to enable installation of two transmitters).

Non-standard design

Immersion length and the 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.



Insert length

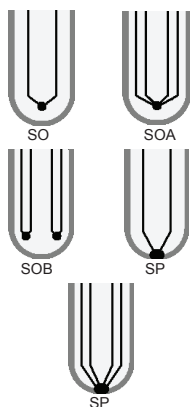
Insert length L_w	
Type	L+
TOPGN-1 Exi	155
TOPGB-1 Exi	43
TOPP-1 Exi	25
TOPT-1 Exi	155
TOPSW-1 Exi	173
TOPSWT-1 Exi	225
TOPGI1. Exi	157

Response time to temperature change

Thermowell diameter [mm]	Response time [s]
ø6	$t_{0,5} = 12$
	$t_{0,9} = 55$
ø8	$t_{0,5} = 20$
	$t_{0,9} = 85$

test carried out in mixed water 0,4 m/s acc. to PN-EN 60751

Thermocouple hot junction types



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	-50÷250	$T = \pm(0,10 + 0,0017 t)$
A	-50÷450	$T = \pm(0,15 + 0,002 t)$
B	-196÷600	$T = \pm(0,3 + 0,005 t)$

|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	✓	✓

Tolerance for thermocouple classes acc. to PN-EN 60584

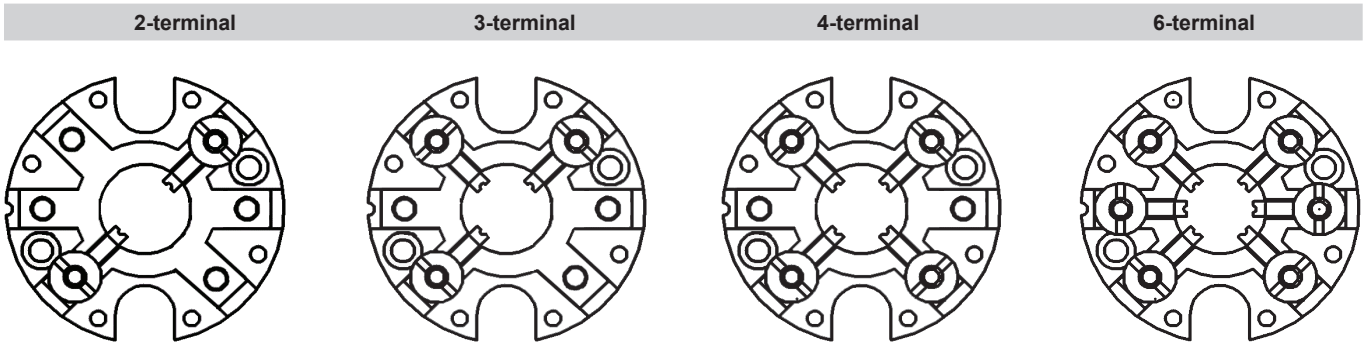
Thermocouple type	Class 1		Class 2	
	Range of application [°C]	Tolerance [°C]	Range of application [°C]	Tolerance [°C]
J Fe-CuNi	from -40 to +375 from +375 to +750	$\pm 1,5$ $\pm 0,004 t $	from -40 to +333 from +333 to +750	$\pm 2,5$ $\pm 0,0075 t $
K NiCr-NiAl	from -40 to +375 from +375 to +1000	$\pm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

|t|- absolute value of temperature

Terminal block types

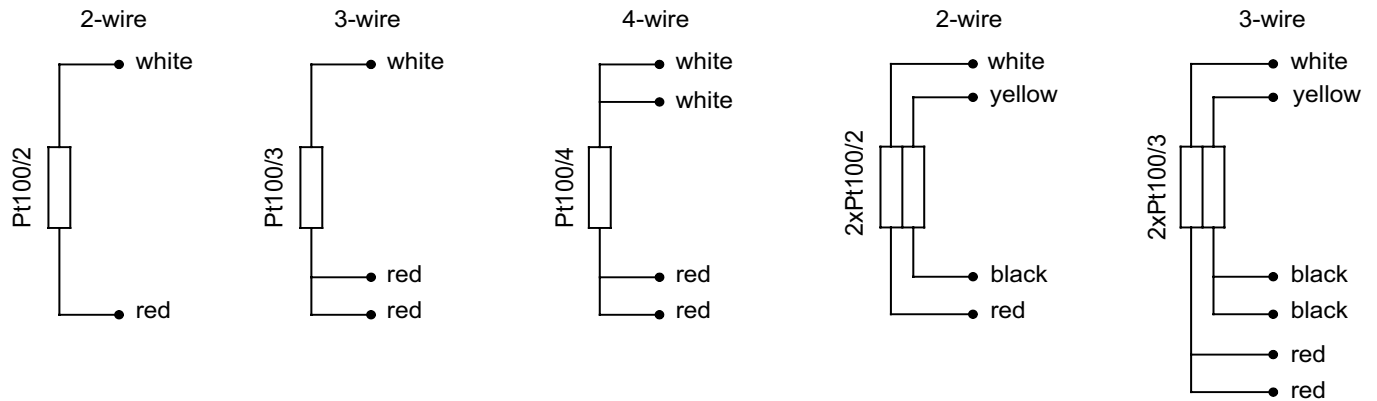
Terminal block with 4 terminals in standard.

Possibility to mount different type of a terminal block

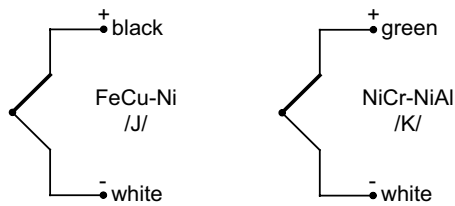


Connection schemes

Pt100 (thermometric resistor)

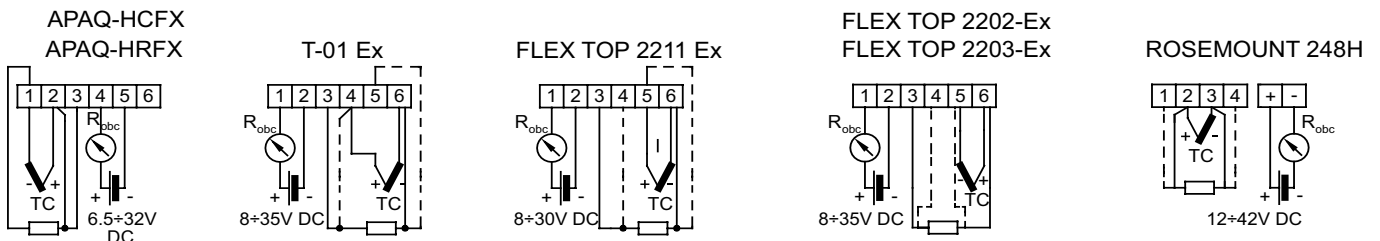


TC (thermocouple)



In double sensors one of thermocouples is additionally marked out.

Transmitters



Product code

		Sensor version	
		no designation	single
0	<input type="text"/>	2	double
		no designation	with terminal block
1	<input type="text"/>	AP	with transmitter
		Measuring insert type	
		1	pipe
2	<input type="text"/>	2	mineral insulated
		Sensing element	
		P	resistor Pt
		J	thermocouple Fe-CuNi /J/
		T	thermocouple Cu-CuNi /T/
		K	thermocouple NiCr-NiAl /K/
3	<input type="text"/>	N	thermocouple NiCrSi-Nisi /N/
		Insert sheath diameter	
		3	ø3mm
		4,5	ø4,5mm
		6	ø6mm
4	<input type="text"/>	8	ø8mm
		Sheath length	
		245	245mm
5	<input type="text"/>		other parameters acc. to requirements
		Accuracy	
		A or B	for measuring resistor
		1 or 2	for thermocouple
6	<input type="text"/>	Measurement circuit (for resistor)	
		2	2 - wire for 2xPt100
		3	3 - wire for 2xPt100
7	<input type="text"/>	4	4 - wire
		Hot junction for J, T, K, N	
		SO	insulated hot junction
		SP	grounded hot junction
8	<input type="text"/>	SOA	one hot junction for two thermocouples insulated form the sheath
		Transmitter type (optionally)	
		HRFX	HRFX transmitter
9	<input type="text"/>		other parameters acc. to requirements
		Temperature range of transmitter	
		(0±100°C)	transmitter configured for temperature range 0±100°C
10	<input type="text"/>		other parameters acc. to requirements

0 1 2 3 / 4 5 6 7 8 9 10

W / - - - - - -

Ordering example: **APW2K/3-5000-1-SO-FlexTop2211-Ex- (0±800)°C-Exi**