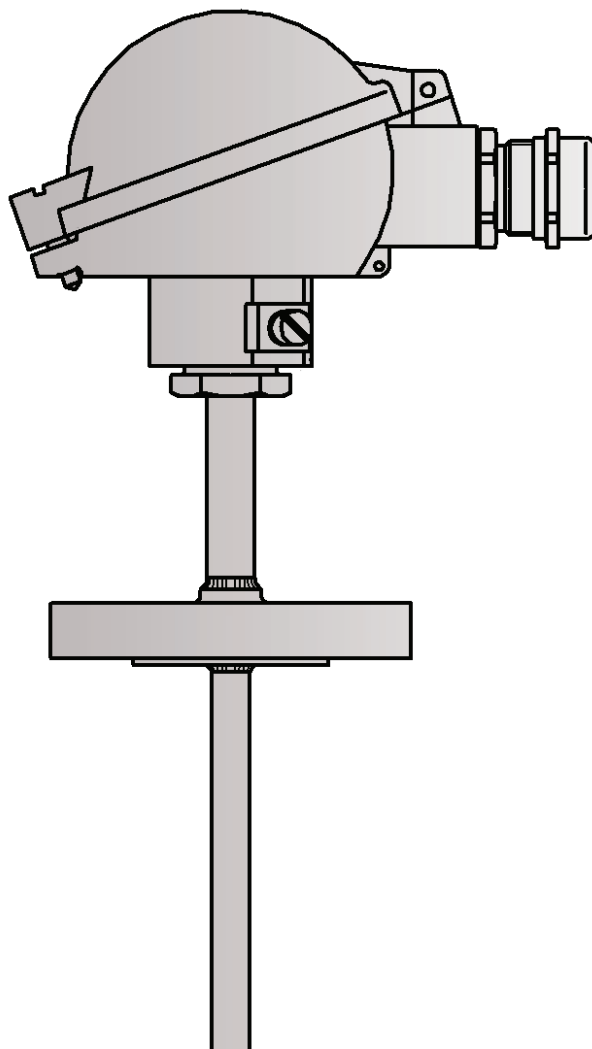




AP 108

Temperature sensor suitable for measurement of liquid and gaseous media. It has a replaceable measuring insert adequate for various industrial applications. Replacement of the measuring insert does not cause the technological installation damage. Spring-loaded insert ensures an excellent connection with the bottom of the sensor thermowell. Temperature sensor has ATEX approval for application in hazardous area: **I M1 Ex ia I (with N1 connection head); II ½G Ex ia IIC T6; II ½D Ex iaD 20/21 T85°C**



Specification

Temperature range / sensing element

-200+550°C	Pt100	class B
-40+550°C	J, K	class 2

Measuring insert

- 2-, 3-, 4-wire connection (for Pt100)
- 2-, 3-wire connection (for 2xPt100)
- Insert length [mm]: L+155
- pipe insert W1./6 Exi
- mineral insulated insert W2./6 Exi

Thermowell

- material: steel 1.4541; flange PN16, DN20 or DN25*
- diameter d [mm]: 9
- length L [mm]: 50+2000

Connection head

- aluminium XE-DANA(S1-standard), XE-DAND(S2), XE-DANAW(W1), XE-DANDW(W2), IP65, XE-BE(N1), IP65,
- stainless steel
- cable gland ATEX II GD IP65 (for cable 5+10mm) operating temperature up to 100°C

Other parameters acc. to requirements

Options

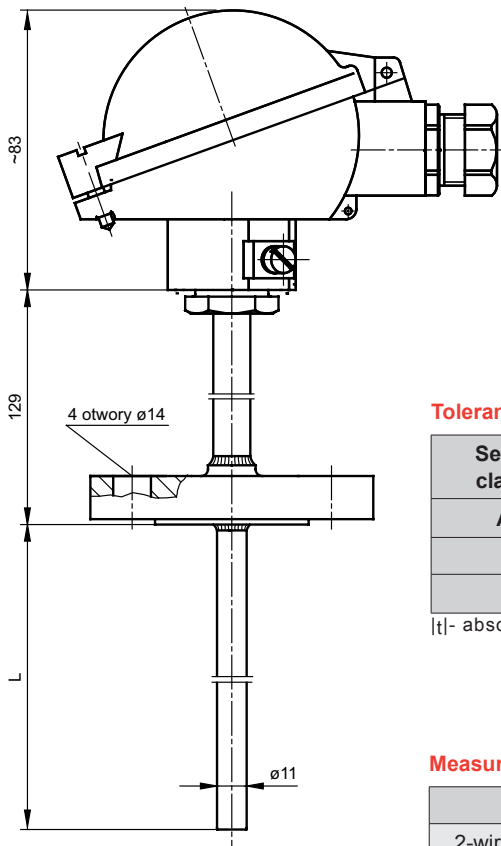
Temperature transmitter application

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, flange dimension, shape and material of the thermowell 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.



Standard length

Immersion length L [mm]	Measuring insert length L _w [mm]
100	255
160	315
250	405
400	555

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	-100÷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

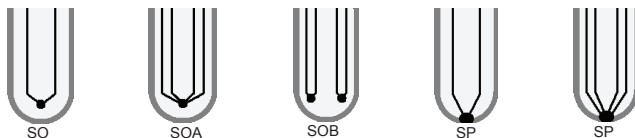
1 x Pt100			2 x Pt100			1 x TC	2 x TC
2-wire	3-wire	4-wire	2-wire	3-wire	4-wire	2-wire	2-wire
✓	✓	✓	✓	✓	x	✓	✓

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	±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

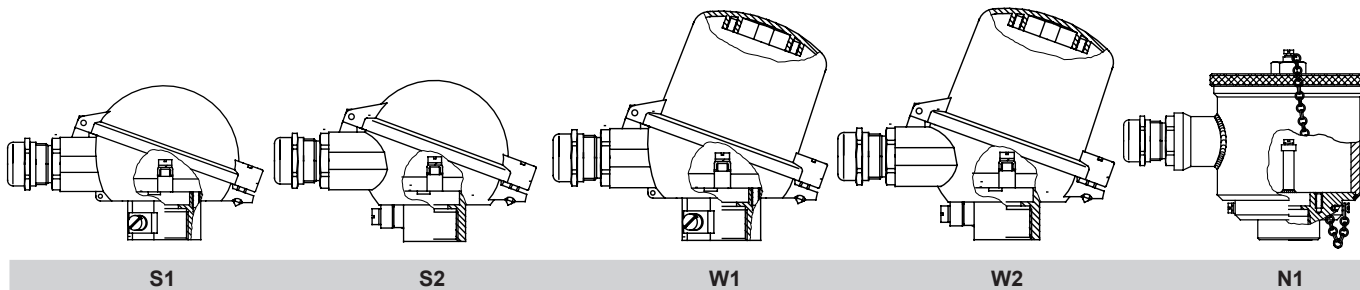
Thermocouple hot junction types



Connection head types

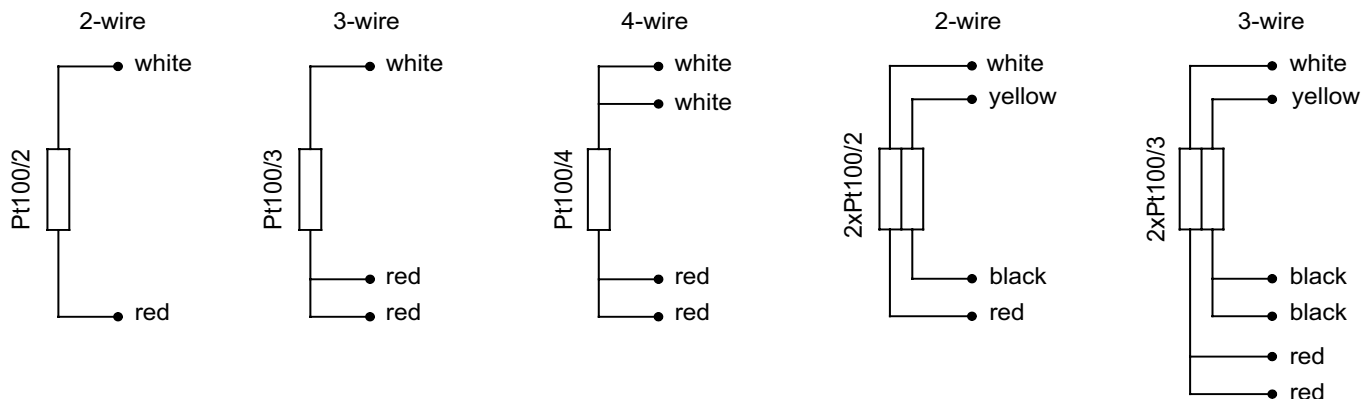
Connection head type S1 in standard.

Possibility to mount the connection head of different type.

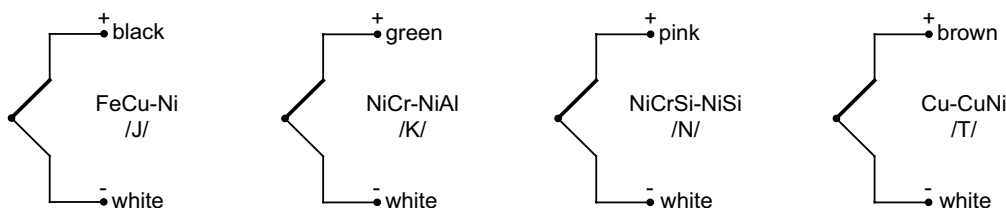


Connection schemes

Pt100 (thermometric resistor)

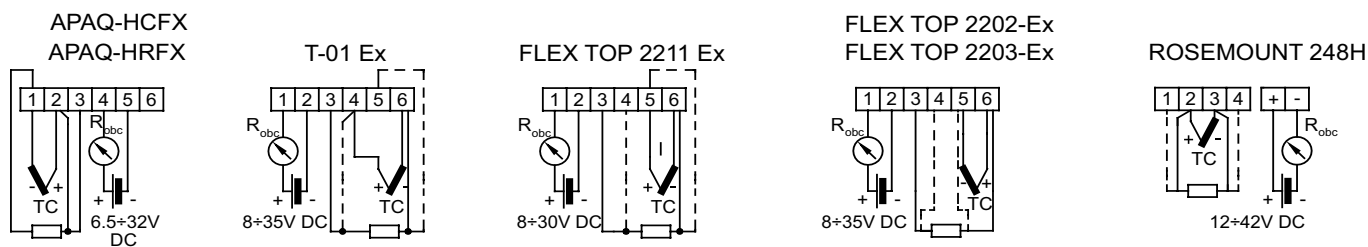


TC (thermocouple)



In double sensors one of thermocouples is additionally marked out.

Transmitters



Product code

		Sensor version	
0		no designation	without transmitter
		AP	with transmitter
		2AP	with two transmitters
1		no designation	single
		2	double
2		Sensing element	
		OP	resistor Pt
		TJ	thermocouple Fe-CuNi /J/
		TK	thermocouple NiCr-NiAl /K/
		TN	thermocouple NiCrSi-NiSi /N/
		TT	thermocouple Cu-CuNi /T/
3		Measuring insert type	
		1	pipe
		2	mineral insulated
4		Connection head type	
		S1, S2, W1, W2, N1	standard S1 (for group II) or N1 (for group I and II)
5		Thermowell length	
		100	100mm
		160	160mm
		250	250mm
		400	400mm
			other parameters acc. to requirements
6		Flange dimension	
		DN20	DN20
			other parameters acc. to requirements
7		Resistor type for Pt or hot junction type for thermocouple	
		Pt100	Pt100
		Pt500	Pt500
		Pt1000	Pt1000
		SO	insulated hot junction
		SP	grounded hot junction
		SOA	one hot junction for two thermocouples insulated form the sheath
8		Accuracy	
		A or B	for resistor Pt
		1 or 2	for thermocouple
9		Measurement circuit (for resistor)	
		2	2 - wire
		3	3 - wire
		4	4 - wire
10		Transmitter type (optionally)	
		248HAI	head mounted 248HAI transmitter
			other parameters acc. to requirements
11		Temperature range of transmitter	
		(0÷100°C)	transmitter configured for temperature range 0÷100°C
			other parameters acc. to requirements



Intrinsically Safe Temperature Sensors with Replaceable Measuring Inserts
TOPT-1..Exi, TTKT-1..Exi, TTJT-1..Exi

0	1	2	3	4	5	6	7	8	9	10	11						
		T	T-1		Exi	-		-		-		-		-		-	

Ordering example: **2TTTT-12Exi-S1-160-DN20-SOA-2**