



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 (with connection head N1)
II 1/2G Ex ia IIC T6
II 1/2D Ex ia IIIC T85°C
 cable gland **II 2GD Ex eb IIC, Ex ta IIIC** (for the cable 5÷10mm)

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+173
- pipe insert W1./6 Exi
- mineral insulated insert W2./6 Exi

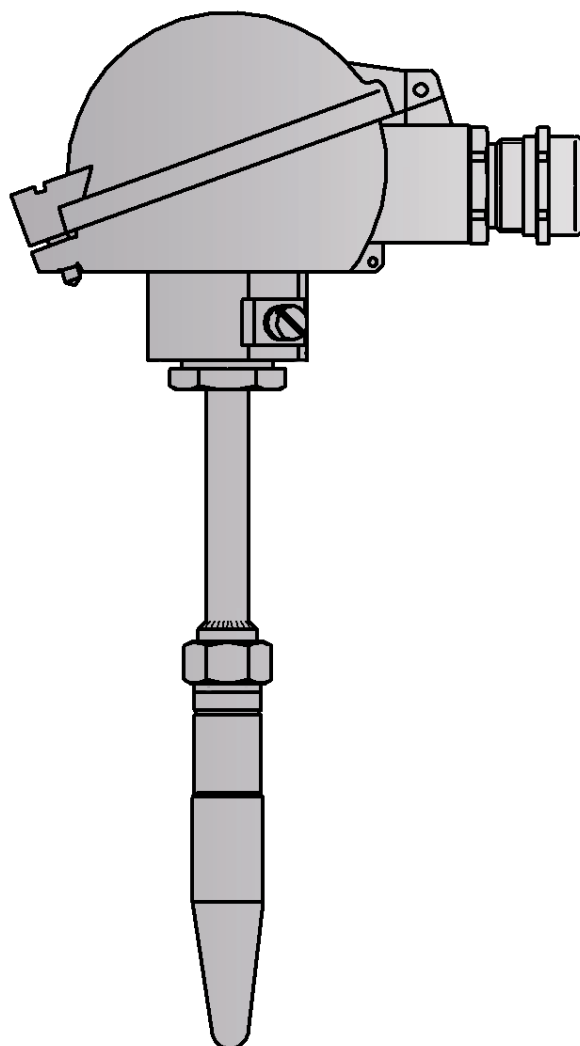
Thermowell

- material: boiler steel 1.7335 (15HM) or other acc. to requirements
- diameter [mm]ø18 (SW1) orø24 (SW2)
- dimensions L/L₁ [mm]: 100/ 35, 140/ 65, 200/ 65, 260/ 125 (SW1)
140/ 65, 200/ 65, 260/ 125 (SW2)

Connection head

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

Other parameters acc. to requirements



Options

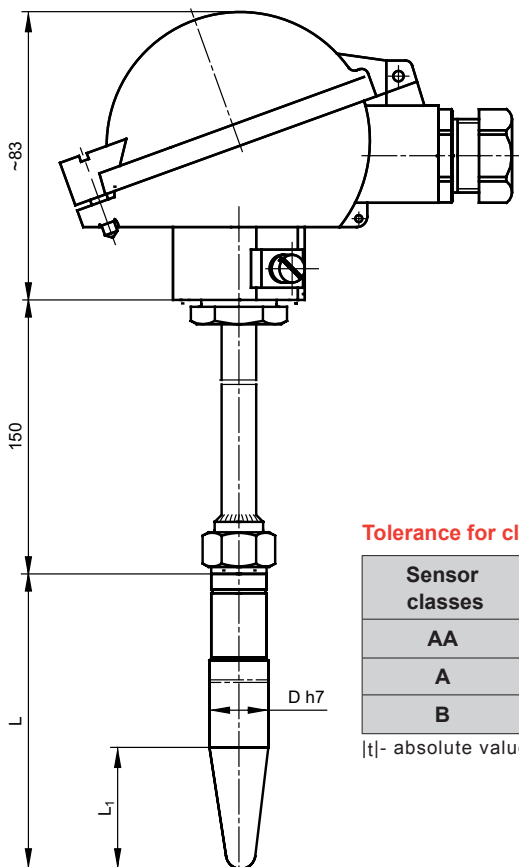
Temperature transmitter application

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, 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]
100
140
200
260

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

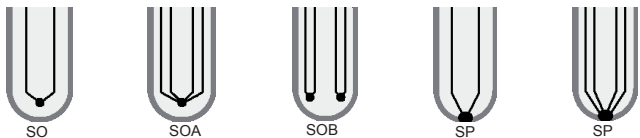
1 x Pt100			2 x Pt100			1 x TC	2 x TC
2-wire	3-wire	4-wire	2-wire	3-wire	4-wire	2-wire	2-wire
✓	✓	✓	✓	✓	x	✓	✓

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	$\pm 1,5$ $\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

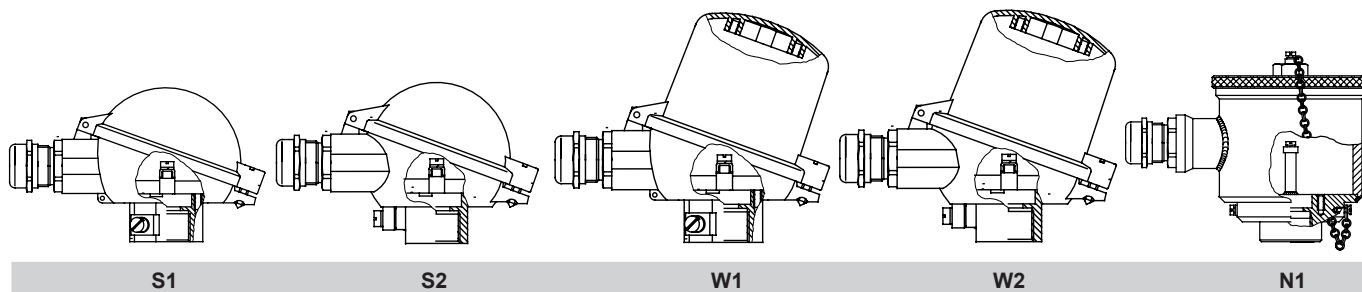
Thermocouple hot junction types



Connection head types

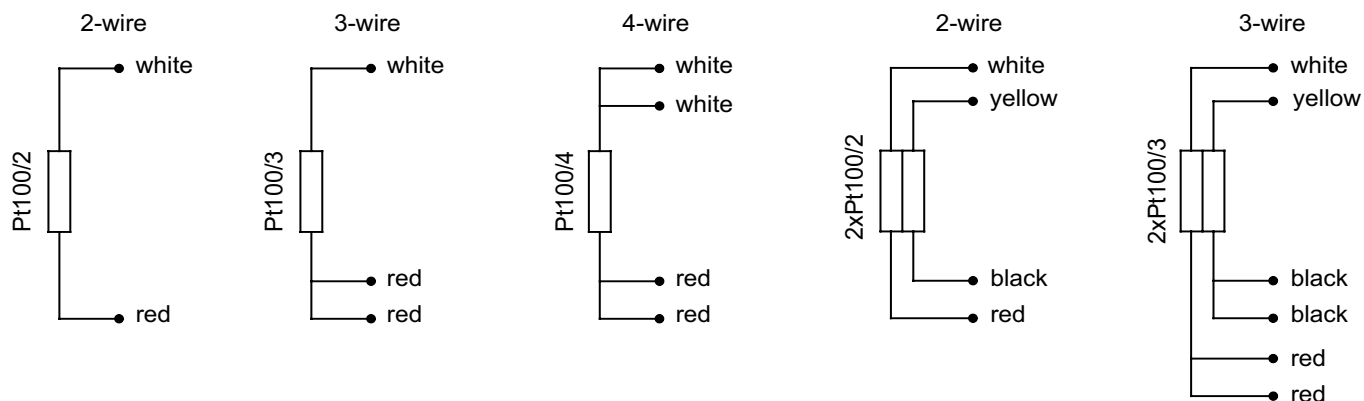
Connection head type S1 in standard.

Possibility to mount the connection head of different type.

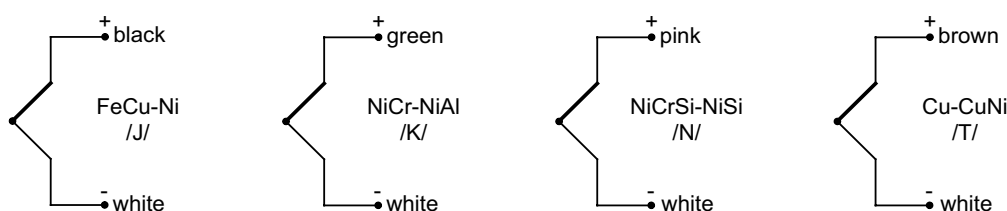


Connection schemes

Pt100 (thermometric resistor)

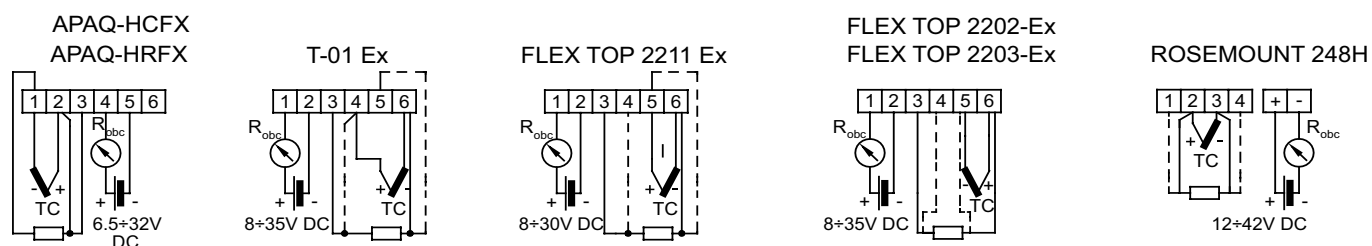


TC (thermocouple)



In double sensors one of thermocouples is additionally marked out.

Transmitters



Product code

		Sensor version	
		no designation	without transmitter
0		AP	with transmitter
		2AP	with two transmitters
1		no designation	single
		2	double
		Sensing element	
		OP	resistor Pt
		TJ	thermocouple Fe-CuNi /J/
		TK	thermocouple NiCr-NiAl /K/
		TN	thermocouple NiCrSi-NiSi /N/
2		TT	thermocouple Cu-CuNi /T/
		Thermowell	
		1	ø18mm (only with mineral insulated insert)
3		2	ø24mm (with mineral insulated or pipe insert)
		Measuring insert type	
		1	pipe
4		2	mineral insulated
		Connection head type	
5		S1, S2, W1, W2, N1	standard S1 (for group II) or N1 (for group I and II)
		Thermowell length	
		140	140mm
6			other parameters acc. to requirements
		Diameter	
		18	ø18mm
		24	ø24mm
7			other parameters acc. to requirements
		Resistor type for Pt or hot junction type for thermocouple	
		Pt100	Pt100
		Pt500	Pt500
		Pt1000	Pt1000
		SO	insulated hot junction
		SP	grounded hot junction
8		SOA	one hot junction for two thermocouples insulated form the sheath
		Accuracy	
		A or B	for resistor Pt
9		1 or 2	for thermocouple
		Measurement circuit (for resistor)	
		2	2 - wire
		3	3 - wire
10		4	4 - wire
		Transmitter type (optionally)	
		FT2201 - Exi	head mounted FT2201-Exi transmitter
11			other parameters acc. to requirements
		Temperature range of transmitter	
		(0÷100°C)	transmitter configured for temperature range 0÷100°C
12			other parameters acc. to requirements

		T		SW	-			Exi	-		-		-		-		-		-		-		-		-	
0	1	2				3	4			5		6		7		8		9		10		11		12		

Ordering example: **APTOSW-12Exi-S1-140-Pt100-B-3-FT2202Ex-(0÷100)°C**