



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÷600°C	Pt100	class B
-40÷700°C	J, K	class 2

Measuring insert

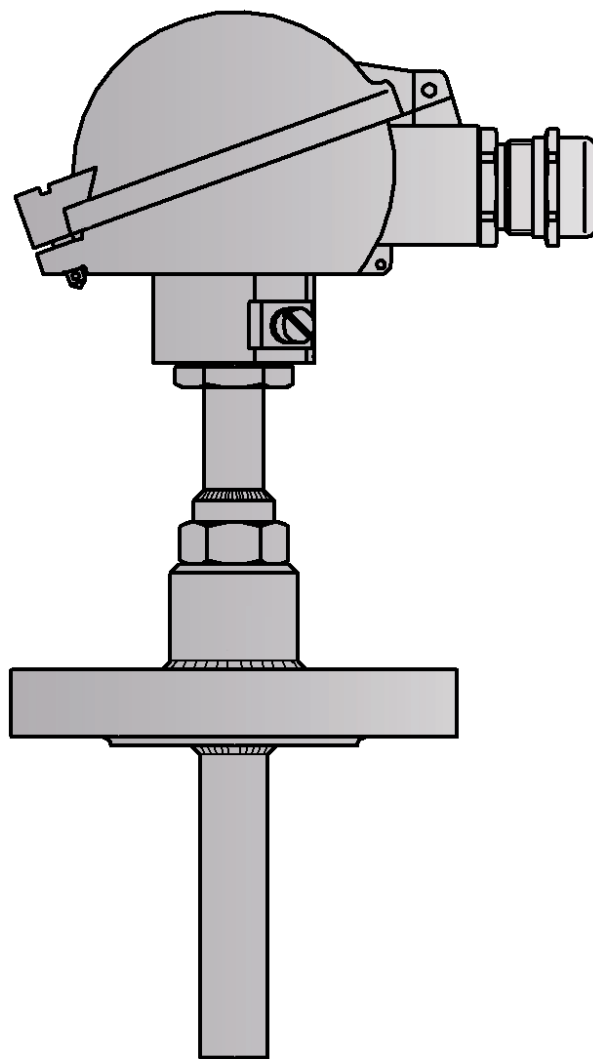
- 2-, 3-, 4-wire connection (for Pt100)
- 2-, 3-wire connection (for 2xPt100)
- insert length [mm]: L+225
- pipe W1./6
- mineral insulated W2./6

Thermowell

- material: steel 1.4541
- SWG thread M20x1,5; G½; ½NPT
- SWT flange PN16DN20, DN25, B1 acc. to PN-EN 1092-1
- stainless steel
- thermowell dimension L_{max.} [mm]: 570

Connection head

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



Other parameters acc. to requirements

Options

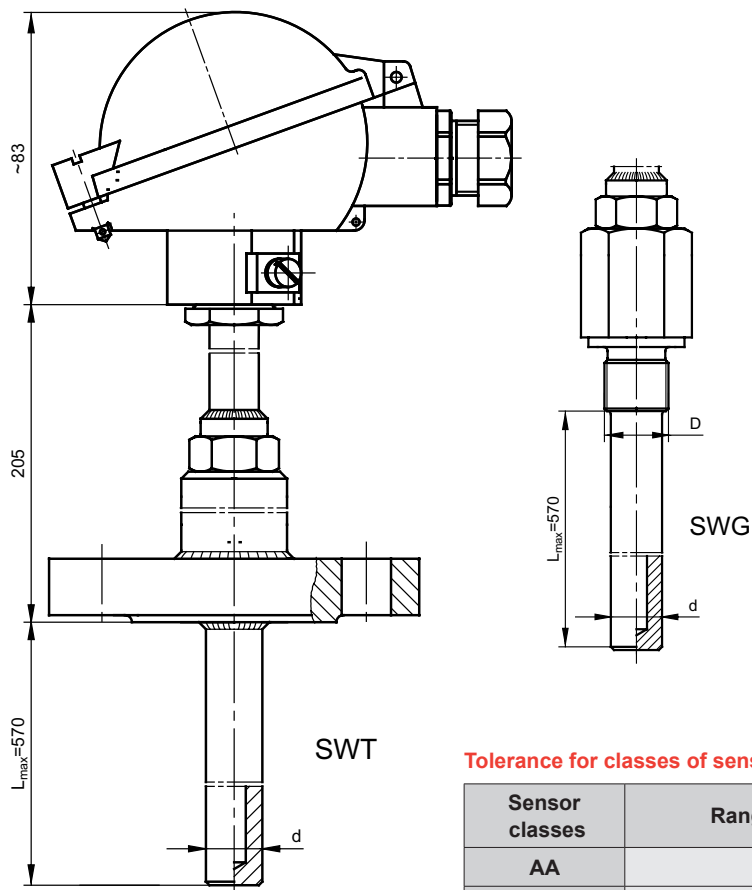
Temperature transmitter application

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, 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	325
150	375
250	475
400	625

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

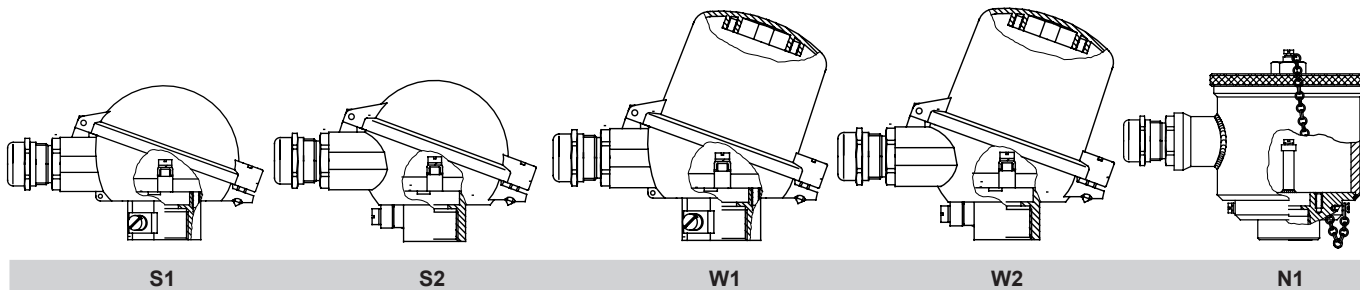
Thermocouple hot junction types



Connection head types

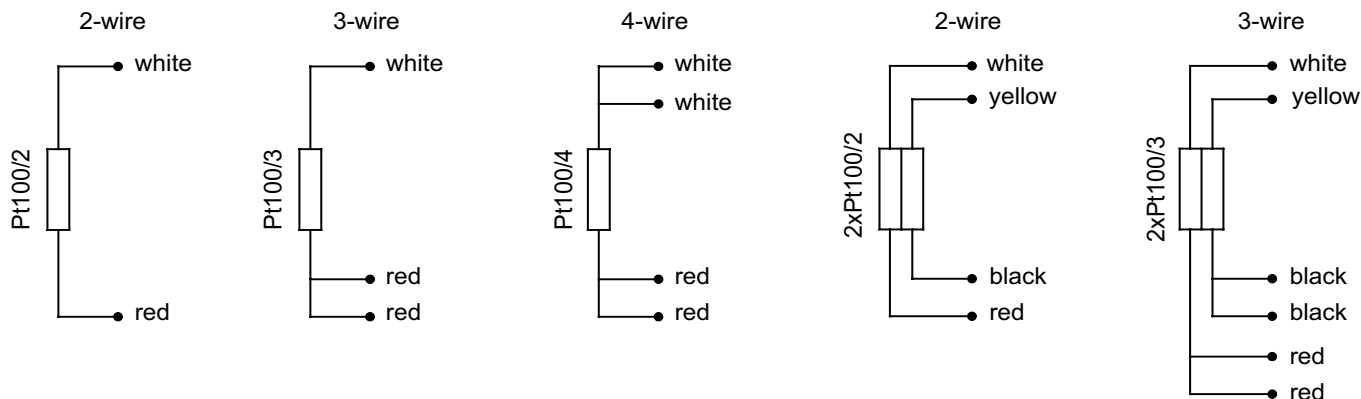
Connection head type S1 in standard.

Possibility to mount the connection head of different type.

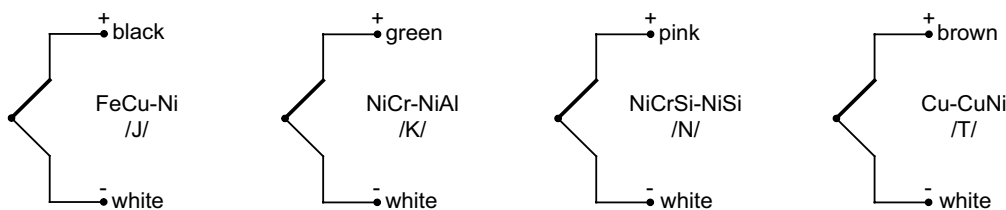


Connection schemes

Pt100 (thermometric resistor)

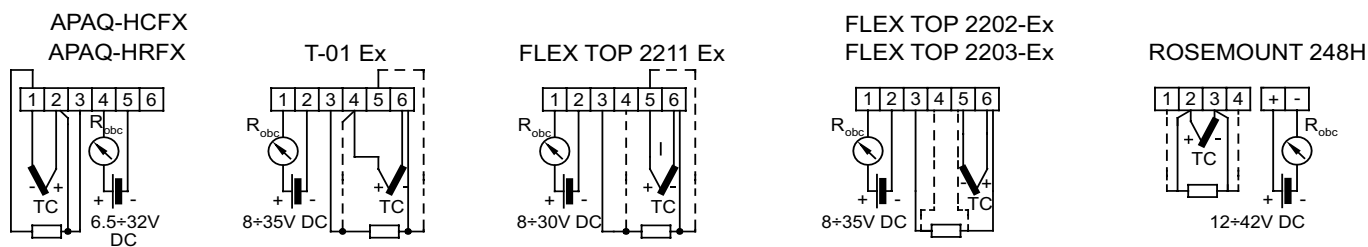


TC (thermocouple)



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
		Sensing element	
2		OP	resistor Pt
		TJ	thermocouple Fe-CuNi /J/
		TK	thermocouple NiCr-NiAl /K/
		TN	thermocouple NiCrSi-NiSi /N/
		TT	thermocouple Cu-CuNi /T/
		Thermowell	
3		T	flanged
		G	threaded
		Measuring insert type	
4		1	pipe
		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 dimensions	
6		12/16x150	12/16x150mm
			other parameters acc. to requirements
		Flange or thread designation	
7		G¾	pipe thread (inch) G¾
		PN40DN50B1	PN40DN50B1
			other parameters acc. to requirements
		Resistor type for Pt or hot junction type for thermocouple	
8		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
		Accuracy	
9		A or B	for resistor Pt
		1 or 2	for thermocouple
		Measurement circuit (for resistor)	
10		2	2 - wire
		3	3 - wire
		4	4 - wire
		Transmitter type (optionally)	
11		248HAI	head mounted 248HAI transmitter
			other parameters acc. to requirements
		Temperature range of transmitter	
12		(0÷100°C)	transmitter configured for temperature range 0÷100°C
			other parameters acc. to requirements

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

Ordering example: **AP2TOPSWG-12Exi-W2-15/20x160-G3/4-Pt100-B-2-248HAI- (0÷400)°C**