



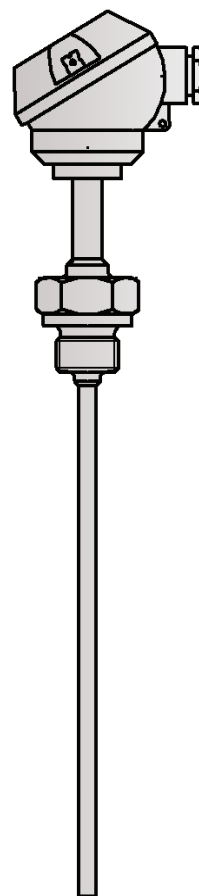
AP 108

Temperature sensor applied in industrial pipelines, pressure and other tanks for temperature measurement of liquids and gases. Sensing element is placed directly in the thermowell.

Specification

Temperature range / sensing element		
-200÷550°C	Pt100	class B
-40÷600°C	K, J	class 2
Measuring insert		
– non-replacable		
Thermowell		
– material: steel 1.4541		
– length [mm]: 50÷1500		
Connection head		
– MA, IP54, -40÷100°C		
Process connection		
G½; M20x1,5		

Other parameters acc. to requirements



Options

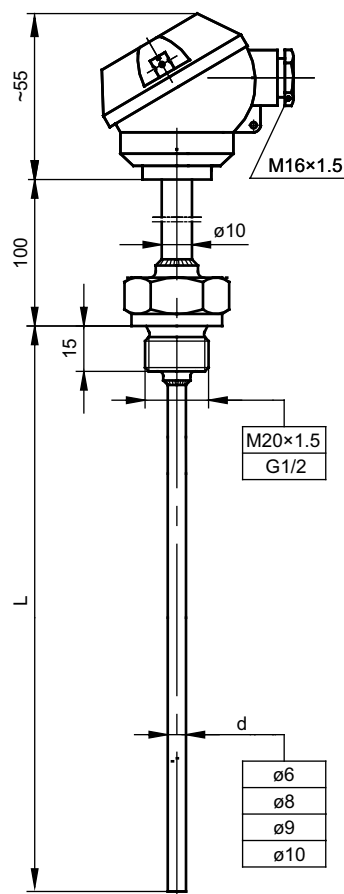
Temperature transmitter application

For Pt100 sensors temperature transmitter 4÷20mA can be installed in the connection head.

Non-standard design

Immersion length, process connection thread, shape and material of the thermowell, connection head type 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
160
200
250

Maximum pressure

Length L [mm]	Maximum pressure [MPa]
	ø9mm
do 160	6.4
do 250	4.9
do 400	2.0

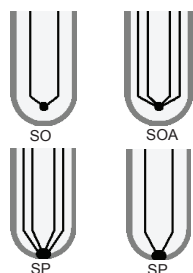
Values specified on the basis of the maximum speed of steam flow: 25 m/s and water flow: 3 m/s with thermowell standard diameter 9 mm.

Response time to temperature change

Thermowell diameter [mm]	Response time [s]
ø6	$t_{0.5} = 12$
	$t_{0.9} = 55$
ø8	$t_{0.5} = 20$
	$t_{0.9} = 85$
ø10	$t_{0.5} = 35$
	$t_{0.9} = 100$

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	-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	x	✓	✓

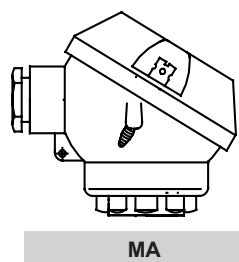
Tolerance for thermocouple classes acc. to PN-EN 60584

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

Connection head types

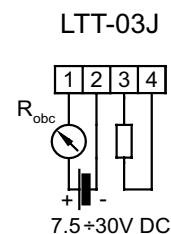
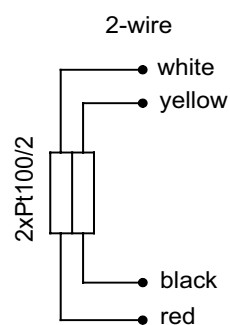
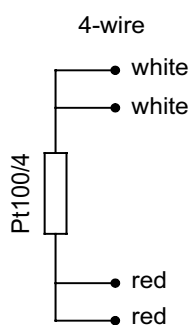
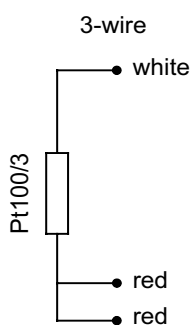
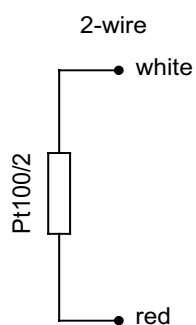
Connection head type MA in standard.



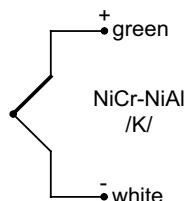
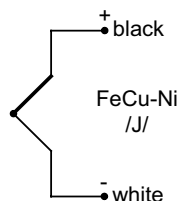
Connection schemes

Pt100 (thermometric resistor)

Transmitter



TC (thermocouple)



In double sensors one of thermocouples is additionally marked out.

Product code

Sensor version	
no designation	single
2	double
AP	with transmitter (tylko Pt100)
Sensing element	
OP	resistor Pt
TJ	thermocouple Fe-CuNi /J/
TK	thermocouple NiCr-NiAl /K/
	other parameters acc. to requirements
Thermocouple hot junction type	
SO	insulated hot junction
SP	grounded hot junction
SOA	one hot junction for two thermocouples insulated form the sheath

1

2

3

		Thermowell diameter
	6	ø6mm
	8	ø8mm
	9	ø9mm
	10	ø10mm
4		other parameters acc. to requirements
		Thermowell length
	100	100mm
	160	160mm
	200	200mm
	250	250mm
5		other parameters acc. to requirements
		Dimension of process connection thread
	M20x1,5	metric thread M20x1,5
	G½	pipe thread (inch) G½
6		other parameters acc. to requirements
		Accuracy
	A or B	for measuring resistor
	1 or 2	for thermocouple
7		
		Measurement circuit (for resistor)
	2	2 - wire
	3	3 - wire
8		4 - wire
		Transmitter type (optionally)
	LTT-03J	head-mounted LTT-03J transmitter
9		other parameters acc. to requirements
		Temperature range of transmitter
	(0÷100°C)	transmitter configured for temperature range 0÷100°C
10		other parameters acc. to requirements

0	1	2	3	4	5	6	7	8	9	10										
		T		GN-55	-		-		-		-		-		-		-		-	

Ordering example: **TTJGN-55-SO-8-600-M20x1,5-1** single sensor with thermocouple Fe-CuNi /J/, class 1, insulated hot junction SO, thermowell diameter 8 mm and length L=600 mm, threaded fitting M20x1,5