



AP 108

Temperature sensor suitable for measurement primarily in heat-treating furnaces, boiler houses, etc. This sensor has double ceramic protection tube.

## Specification

### Temperature range / sensing element

-40÷1200°C	<b>K</b>	class 2
0÷1600°C	<b>S,R</b>	class 2
600÷1800°C	<b>B</b>	class 3

### Protection tube

- holding tube material: steel 1.4841,  $\varnothing$ 22mm, 32mm, Ld= min 150
- double ceramic sheath: mullite 610 or corundum 799
- length L[mm]: 300÷2000

Holding tube diameter [mm]	Outer sheath diameter [mm]	Inner sheath diameter [mm]
32	24	15
22	15	10

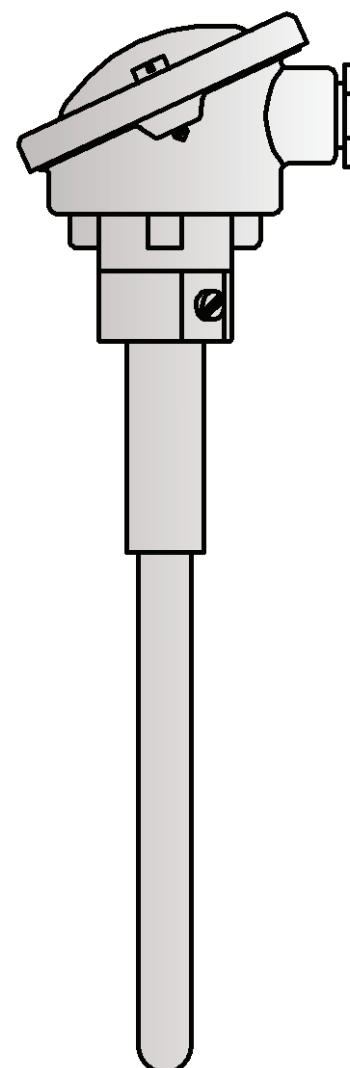
### Thermocouple wire diameter

- $\varnothing$ 2mm for K
- $\varnothing$ 0,35mm or  $\varnothing$ 0,5mm for R, S, B

### Connection head

- AA, IP53, -40÷100 °C

Other parameters acc. to requirements



## Options

### Temperature transmitter application

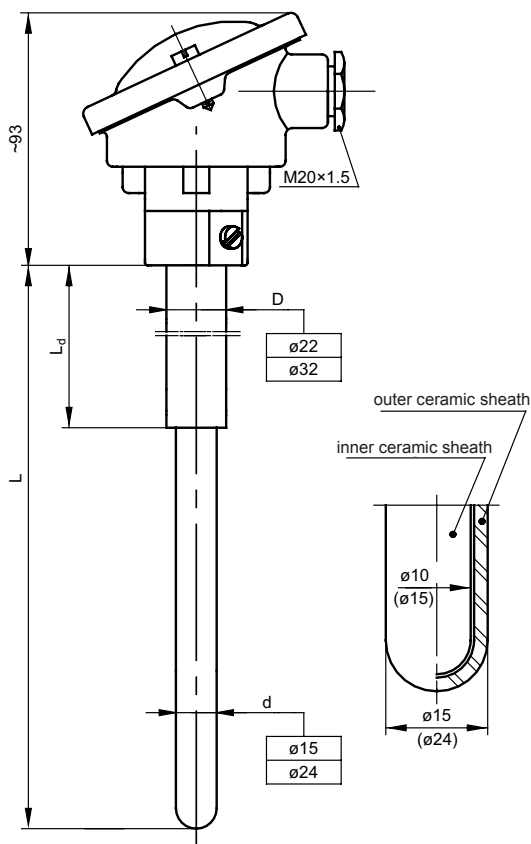
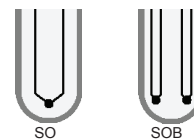
Temperature transmitter with standard 4÷20mA, 0÷10V output signals and with the HART or PROFIBUS communication protocols can be mounted in the connection head. Transmitter installation is carried out in the high cover connection head.

### Non-standard design

Immersion length, shape and material of the sheath, 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.**

### Thermocouple hot junction types



### Standard length

Immersion length L [mm]
500
710
1000
1400
2000

Sheat material	Wire diameter [mm]	Thermocouple type	Max. operating temperature [°C]
mullite 610	0,35	R, S	1200
mullite 610	0,5	R, S	1400
corundum 799	0,35	R, S	1500
corundum 799	0,5	R, S	1600
corundum 799	0,35	B	1600
corundum 799	0,5	B	1800
mullite 610	2	K	1200

### Tolerance for thermocouple classes acc. to PN-EN 60584

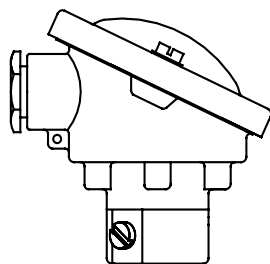
Thermocouple type	Class 1		Class 2	
	Range of application [°C]	Tolerance [°C]	Range of application [°C]	Tolerance [°C]
<b>K</b> NiCr-NiAl	from -40 to +375 from +375 to +1000	±1,5 ±0,004  t	from -40 to +333 from +333 to +1200	±2,5 ±0,0075  t
<b>R</b> PtRh13-Pt	from 0 to +1100 from +1100 to +1600	±1 ±(1 + 0,003 ( t  - 1100))	from 0 to +600 from +600 to +1600	±1,5 ±0,0025  t
<b>S</b> PtRh10-Pt				
<b>B</b> PtRh30-PtRh6	–	–	from +600 to +1700	±0,0025  t

|t|- absolute value of temperature

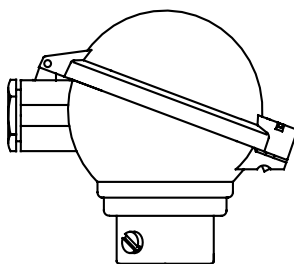
### Connection head types

Connection head type AA in standard.

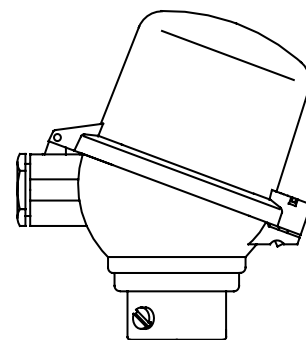
Possibility to mount the connection head of different type.



AA



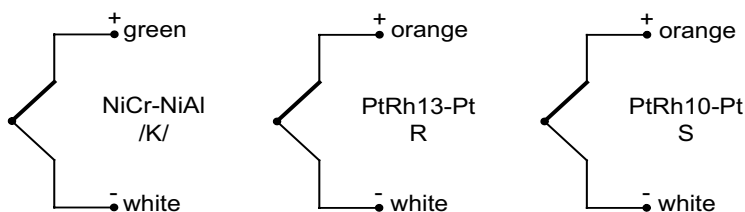
DA



DAW

## Connection schemes

### TC (thermocouple)



In double sensors one of thermocouples is additionally marked out.

## Product code

		<b>Sensor version</b>	
		<b>no designation</b>	single
1	<input type="text"/>	<b>2</b>	double
		<b>AP</b>	with transmitter
		<b>Sensing element</b>	
		<b>B</b>	thermocouple PtRh30-PtRh6
		<b>S</b>	thermocouple PtRh10-Pt
		<b>R</b>	thermocouple PtRh13-Pt
2	<input type="text"/>	<b>K</b>	thermocouple NiCr-NiAl
		<b>Ceramic sheat material</b>	
		<b>610</b>	mulit 610
3	<input type="text"/>	<b>799</b>	korund 799
		<b>Outer sheath diameter</b>	
		<b>15</b>	ø15mm
4	<input type="text"/>	<b>24</b>	ø24mm
		<b>Thermowell length</b>	
		<b>500</b>	500mm
		<b>710</b>	710mm
		<b>1000</b>	1000mm
		<b>1400</b>	1400mm
		<b>2000</b>	2000mm
5	<input type="text"/>		other parameters acc. to requirements
		<b>Accuracy</b>	
		<b>1 or 2</b>	for thermocouple (K, S, R)
6	<input type="text"/>	<b>2 lub 3</b>	for thermocouple (B)
		<b>Platinum wire diameter</b>	
		<b>0,35</b>	ø0,35mm
7	<input type="text"/>	<b>0,5</b>	ø0,5mm
		<b>Transmitter type (optionally)</b>	
		<b>Tx</b>	head mounted transmitter TxBlock
8	<input type="text"/>		other parameters acc. to requirements
		<b>Temperature range of transmitter</b>	
		<b>(0÷1200°C)</b>	transmitter configured for temperature range 0÷1200°C
9	<input type="text"/>		other parameters acc. to requirements



**Ordering example:**

**TTSCC-22-799-24-200-1000-1-0,5** single sensor with thermocouple PtRh10-Pt /S/, class 1, platinum wire diameter 0,5 mm, with double ceramic sheath corundum 799, outer diameter 24 mm, length L=1000 mm, holding tube diameter 32 mm and length L=200 mm

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