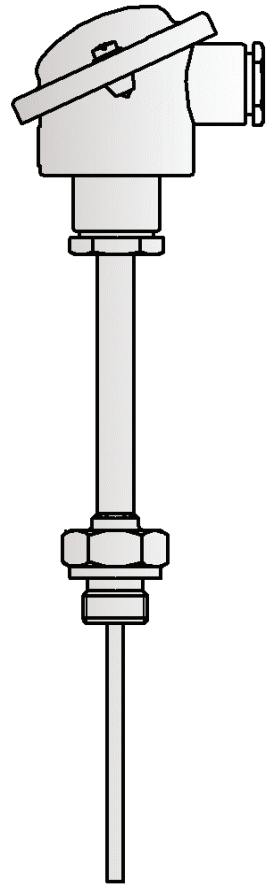
limatherm SENSOR

Temperature Sensors with Replaceable Measuring Inserts
TOPGI-11, TTJGI-11, TTKGI-11

AP 108

Sensor without a sheath but with a threaded process connection that enables sensor mounting in the thermowell placed on the object. An adequate sheath of the replaceable measuring insert determines product suitability for specific applications.



Specification

Temperature range / sensing element

-200÷600ºC	**Pt100**	class B
-40÷600ºC	**K, J**	class 2

Measuring insert

– resistance (diameter [mm]: 3; 6; 8)
– thermocouple (diameter [mm]: 3; 4,5; 6; 8)
– 2-, 3-, 4- wire connection (for Pt100)
– 2-, 3- wire connection (for 2xPt100)
– W1 pipe insert [mm]: 50÷1500
– W2 mineral insulated insert [mm]: 50

Thermowell

– extension pipe material: steel 1.4541
– unsheathed immersion part of the insert
– for mounting in additional protection tubes and thermowells: OSG, OTG, OGG, SW, SWT, SWG

Connection head

– BA, IP55, -40÷100 ºC

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 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).

Local display application

The temperature sensor can be equipped with the connection head enabling the local LED display installation. The local display operates in current loop 4÷20mA. This version makes the local temperature reading and transmission of the analogue signal possible.

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.

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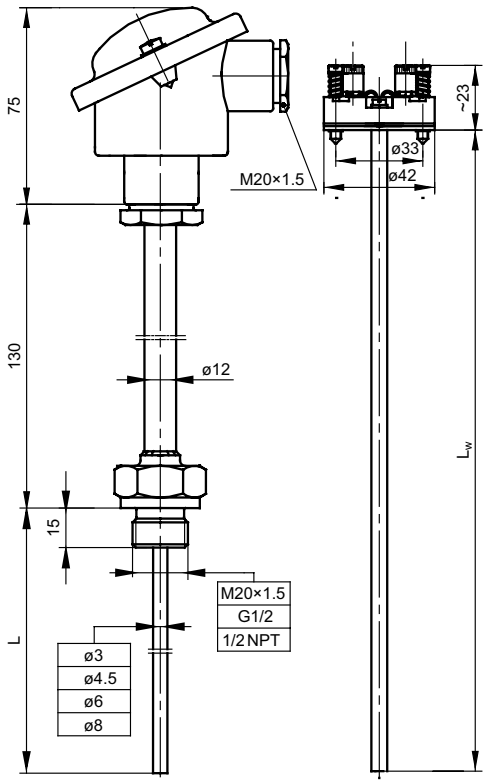
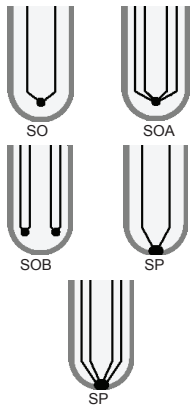


Standard length

Immersion length L [mm]	Measuring insert length L_w [mm]
100	255
150	305
250	405
400	555

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 = ±(0,10 + 0,0017 |t|)
A	-100÷450	T = ±(0,15 + 0,002 |t|)
B	-196÷600	T = ±(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

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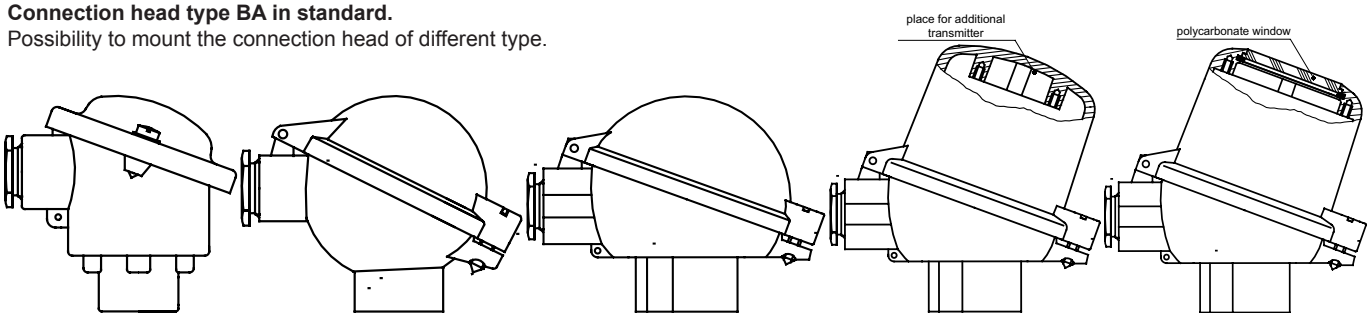
Connection head types

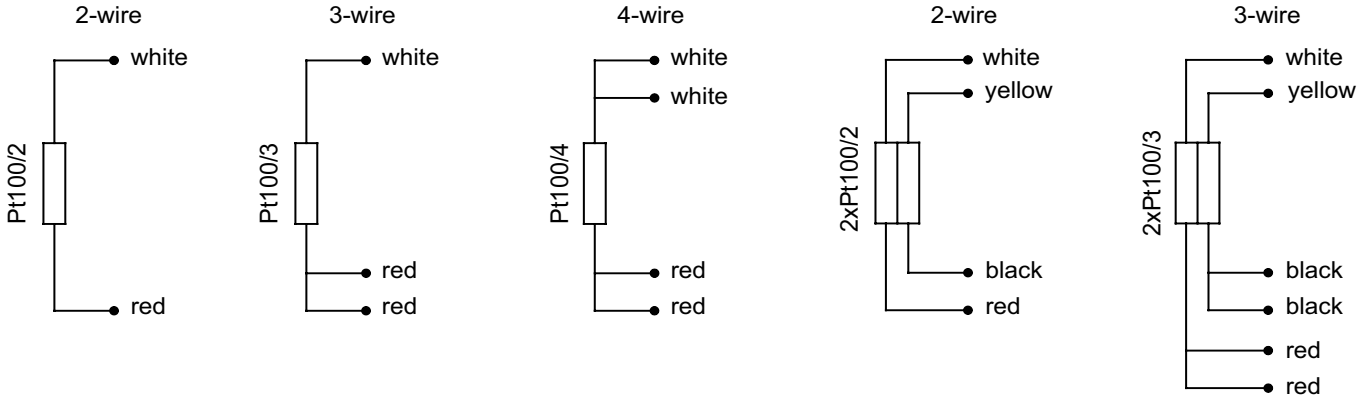
Connection head type BA in standard.
Possibility to mount the connection head of different type.



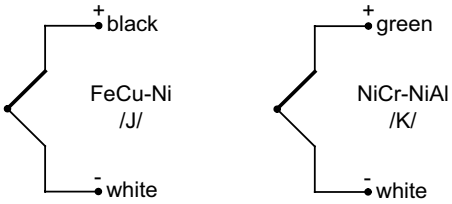
BA | NAA | DANA | DANAW | DANAW-win

Connection schemes

Pt100 (thermometric resistor)



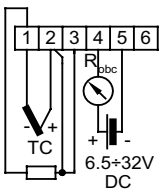
TC (thermocouple)



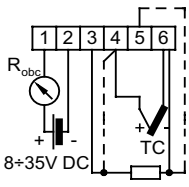
In double sensors one of thermocouples is additionally marked out.

Transmitters

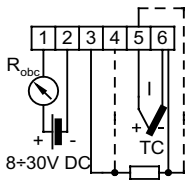
APAQ-HCF
APAQ-HRF



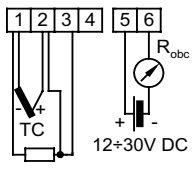
LTT-01



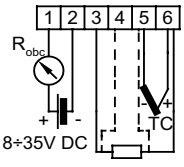
FLEX TOP 2211



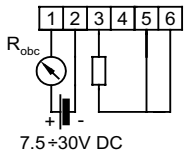
TxIsoPack
TxBlock



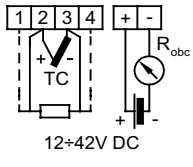
FLEX TOP 2202
FLEX TOP 2203



LTT-03B

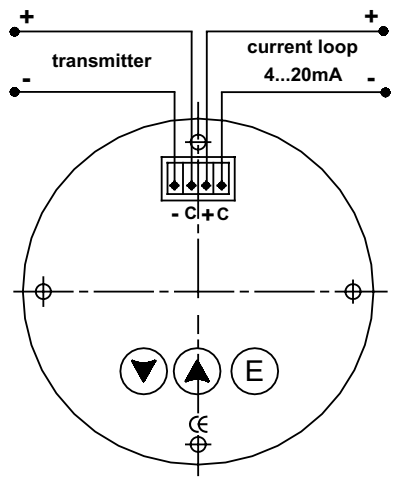


ROSEMOUNT 248H



Local LED display

LPI-01
LPI-02



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Product code

		Sensor version	
		AP	with transmitter
		2AP	with two transmitters
0		**APW**	with display
		no designation	single with pipe insert
		2	double with pipe insert
		P	single with mineral insulated insert
1		**2P**	double with mineral insulated insert
		Sensing element	
		OP	resistor Pt
		TJ	thermocouple Fe-CuNi /J/
		TK	thermocouple NiCr-NiAl /K/
2			other parameters acc. to requirements
		Measuring inserts	
		GI-11	pipe W1
3		**GI-12**	mineral insulated W2
		Thermocouple hot junction type	
		SO	insulated hot junction
		SP	grounded hot junction
		SOA	one hot junction for two thermocouples insulated form the sheath
4		**SOB**	hot junctions insulated from each other and from the sheath
		Unsheathed insert length	
		100	100mm
		150	150mm
		250	250mm
		400	400mm
5			other parameters acc. to requirements
		Measuring insert diameter	
		3; 4,5; 6; 8	ø3; 4,5; 6; 8mm
6			other parameters acc. to requirements
		Process connection dimensions	
		M210x1,5	metric thread M20x1,5
		G½	pipe thread (inch) G½
7			other parameters acc. to requirements
		Accuracy	
		A or B	for measuring resistor
8		**1 or 2**	for thermocouple
		Measurement circuit (for resistor)	
		2	2 - wire
		3	3 - wire
9		**4**	4 - wire
		Transmitter type (optionally)	
		Tx	head mounted transmitter TxBlock
10			other parameters acc. to requirements
		Temperature range of transmitter	
		(0÷100ºC)	transmitter configured for temperature range 0÷100ºC
11			other parameters acc. to requirements

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

Ordering example: **TOPGI-11–160–6–M20x1,5–B–2** single sensor with Pt100, class B, 2-wire connection, threaded fitting M20x1,5, insert diameter 6mm and length L = 160mm

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