

TEMPERATURE SENSORS WITH A STEM AND METAL CONNECTION HEAD

043.17en

DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for contact temperature measurements of liquid or gaseous substances. The sensor-central holder combination is suitable for temperature measurements in air condition ducts. The sensor-thermowell combination is suitable for temperature measurements in tubing. The sensor variant with welded thread is ideal for direct measuring of mediums in ducts. The standard operating temperature range is -30 to 200 °C. By using a sensor with a longer stem the upper limit of allowable temperature can be extended up to 250 °C. The sensors can be utilised for any control systems that are compatible with sensing element output signals or output signals quoted in the table of sensing element types.

The sensors are designed to be operated in a chemically non-aggressive environment.

ACCESSORIES

- metal central holder K 120
- stainless steel thermowell JS 130
- screw with collet or cutting rings – if different lengths of stem immersion of the temperature sensor are set.

DECLARATION, CERTIFICATES, CALIBRATION

Manufacturer provides **EU Declaration of Conformity**.

Calibration – The final metrological inspection – comparison with standards or working instruments – is carried out for all the products. Continuity of the standards and working measuring instruments is ensured within the meaning of the Section 5 of Act no.505/1990 on metrology. The manufacturer offers a possibility to supply the sensors calibrated in SENSIT s.r.o.'s laboratory (according to requirements of the EN ISO/IEC 17025 standard, as amended) or in an Accredited laboratory.



TEMPERATURE SENSORS WITH A CONNECTION HEAD

SPECIFICATIONS

Sensor type	NK 120	NK 121	NK 122	NK 320	NK 321
Type of sensing element	Ni 1000/5000	Ni 1000/6180	Ni 891	Ni 10000/5000	Ni 10000/6180
Measuring range	-30 to 200 °C (connection head ambient temperature -30 to 100 °C)				
Maximum measuring DC current	1 mA	1 mA	1 mA	0.3 mA	0.3 mA
Sensor type	NK 123	PTK 120	PTK 220	PTK 320	HK 120
Type of sensing element	T1 = Ni 2226	Pt 100/3850	Pt 500/3850	Pt 1000/3850	thermistor NTC 20 kΩ
Measuring range	-30 to 150 °C	-50 to 200 °C (connection head ambient temperature -30 to 100 °C)			-30 to 150 °C
Maximum measuring DC current	0.7 mA	3 mA	1.5 mA	1 mA	10 mW *)

*) maximum power consumption

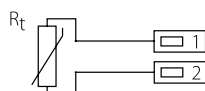
Sensor type	NK 520	Note
Type of sensing element	Pt 1000/3850	
Output signal	4 to 20 mA	
Measuring ranges	-50 to 50 °C -30 to 60 °C 0 to 35 °C 0 to 100 °C 0 to 150 °C 0 to 200 °C 0 to 250 °C	ambient temperature around the connection head -30 to 70 °C
Measurement error	< 0.6 % of the range	no less than 0.5 °C
Power supply (U)	11 to 30 V _{DC}	recommended value 24 V _{DC}
Load resistance	150 Ω for power supply 12 V 700 Ω for power supply 24 V	
Output signal - sensor element break	> 24 mA	
Output signal - sensor element short circuit	< 3.5 mA	

OTHER PARAMETERS

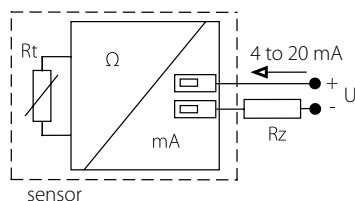
Accuracy class	Ni sensing elements: B class, $t = \pm (0.4 + 0.007t)$, for $t \geq 0$; $t = \pm (0.4 + 0.028 t)$, for $t \leq 0$ in °C; Pt sensing elements: B class according to EN 60751, $t = \pm (0.3 + 0.005 t)$ in °C NTC 20 kΩ: ± 1 °C for the range 0 to 70 °C
Sensor connection	according to the wiring diagram
Standard length of the stem L1	70, 120, 180, 240, 300, 360, 420 mm
Time response	$\tau_{0.5} < 9$ s (in flowing water at 0.4 m.s ⁻¹)
Recommended wire cross section	0.35 to 1.5 mm ²
Insulation resistance	> 200 MΩ at 500 V _{DC} , 25° ± 3 °C; humidity < 85 %
Ingress protection	IP 54 in accordance with EN 60529, as amended
Material of the stem	stainless steel DIN 1.4301
Type of connection head	LIMATHERM MA
Material of connection head	aluminium alloy
Operating conditions	ambient temperature: -30 to 100 °C; -30 to 70 °C with a converter relative humidity: max. 100 % (at the ambient temperature 25 °C) atmospheric pressure: 70 to 107 kPa
Weight approximately	0.15 kg

WIRING DIAGRAM

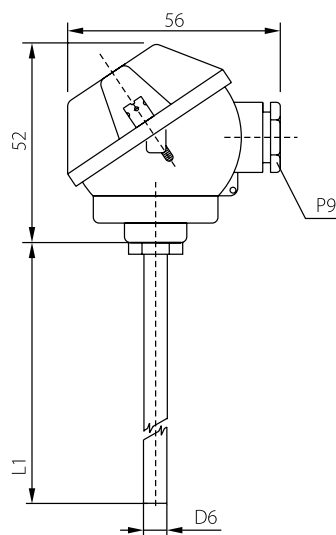
With the resistance output



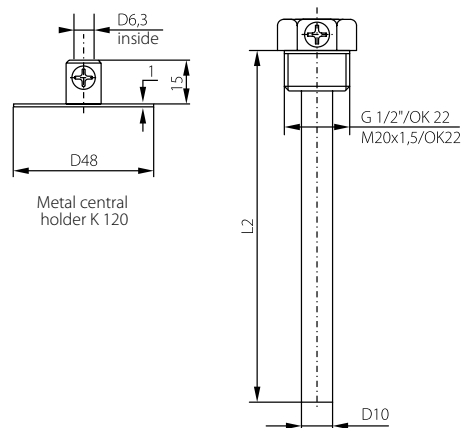
With a converter 4 to 20 mA



DIMENSIONAL DRAFT



Accessories



MODIFICATION AND CUSTOMIZATION

- option of encasing two sensing elements
- option of encasing non-standard temperature sensors (DALLAS, TSic, KTY, SMT, etc.)
- Accuracy class A (with the exception of sensors Ni 10000/5000, Ni 10000/6180, T1 = Ni 2226, termistor NTC 20 kΩ)
- option of three- or four-wire connection
- variable stem design – L1 length, materials, diameters, option of thread design
- thermowell thread type options

