TEMPERATURE SENSORS WITH A STEM, MINI SERIES

117.08en

DESCRIPTION AND APPLICATION

These resistance-type temperature sensors of serie MINI are designed for temperature measurements of liquid or gaseous substances in the temperature range -30 to 150 °C. The plastic connection head is provided with a cable outlet ending (the terminal board is placed in the connection head) or a connector. 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. 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

- central plastic holder (part of the packaging)
- stainless steel thermowell JS 130
- metal central holder K 120
- lead-in connector CONEC 43-00092
- connection cable with the straight-type RKT connector or with the rectangular - type RKWT connector
- 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.

SPECIFICATIONS

Sensor type (K – with connector)	MINI N 120 MINI N 120K	MINI N 121 MINI N 121K	MINI N 122 MINI N 122K	MINI N 320 MINI N 320K	MINI N 321 MINI N 321K
Type of sensing element	Ni 1000/5000	Ni 1000/6180	Ni 891	Ni 10000/5000	Ni 10000/6180
Measuring range	-30 to 150 °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 (K – with connector)	MINI N 123 MINI N 123K	MINI P 120 MINI P 120K	MINI P 220 MINI P 220K	MINI P 320 MINI P 320K	MINI H 120 MINI H 120K
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 150 °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	MINI N 520 MINI N 520K	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	ambient temperature around the connection head -30 to 70 °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 - sensing element break	> 24 mA	
Output signal - sensing element short circuit	< 3 mA	

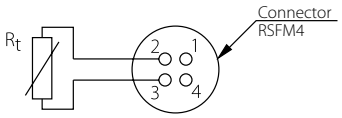
OTHER PARAMETERS

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
Measuring error (MINI N 520)	< 0.6 % of the range, minimum 0.5 °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 $m.s^{-1}$)
Type of terminal board - sensors with grommet	Weco 951-A-LFDS, maximum wire cross section 1.5 mm^2
Type of connector - sensors with connector	RSFM4 – Lumberg, M12
Type of lead-in cable - sensors with the output 4 to 20 mA	2 x 0.25 mm^2, PVC shielded, up to 80 °C
Insulation resistance	> 200 MΩ at 500 V_{DC}, 25° ± 3 °C; humidity < 85 %
Ingress protection	IP 65 in accordance with EN 60529, as amended
Material of the stem	stainless steel DIN 1.4301
Material of the connection head	POLYAMIDE
Operating conditions	ambient temperature: -30 to 100 °C; -30 to 70 °C with a converter or PVC cable relative humidity: max. 100 % (at the ambient temperature 25 °C) atmospheric pressure: 70 to 107 kPa
Weight	MINI approximately 60 g, MINI K 35 g

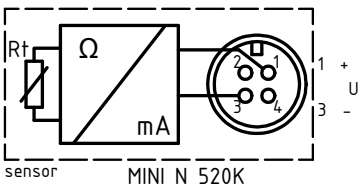
WIRING DIAGRAM

SENSORS WITH A CONNECTOR:

With resistant output

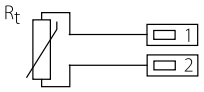


With the converter 4 to 20 mA

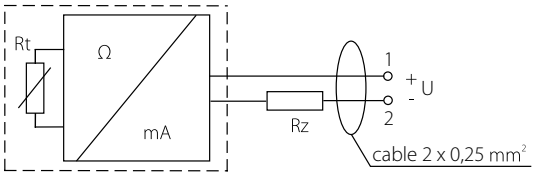


SENSORS WITH A GROMMET:

With resistant output



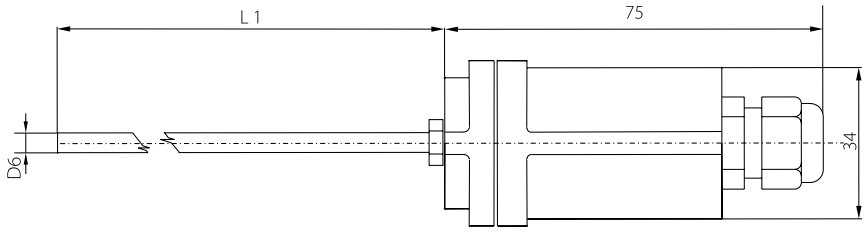
With the converter 4 to 20 mA



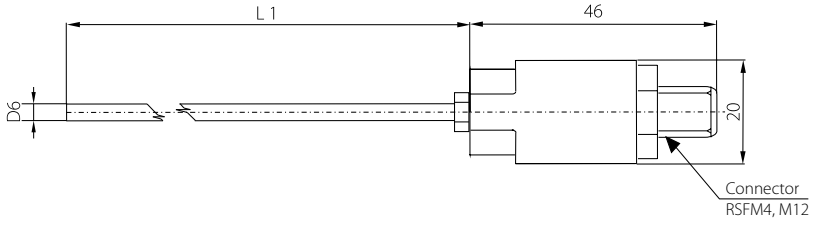
MINI N 520

DIMENSIONAL DRAFT

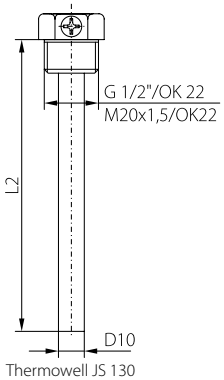
With a grommet

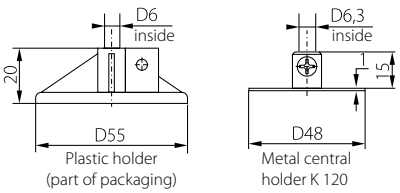


With a connector



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