

TEMPERATURE SENSORS FOR OUTDOOR USE WITH A PLASTIC CONNECTION HEAD

008.18en

DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for contact temperature measurement of gaseous substances. The plastic connection head is provided with a cable outlet bushing (terminal board is located in the head) or a connector. The standard temperature range in which the sensors are allowed to be utilised is -50 to 100 °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. Easy mounting of the temperature sensor is ensured by the unique "S head" design invented by SENSIT s.r.o. The sensors are designed to be operated in a chemically non-aggressive environment.

ACCESSORIES

- lead-in connector CONEC 43-00092
- connection cable with the straight-type RKT connector or with the rectangular - type RKWT connector

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. Caution: The temperature sensors with the output 4–20 mA can be delivered with the new connection head only in the version A.



version A



version B

SPECIFICATIONS

Sensor type (K – with connector)	NS 110x NS 110xK	NS 111x NS 111xK	NS 112x NS 112xK	NS 310x NS 310xK	NS 311x NS 311xK
Type of sensing element	Ni 1000/5000	Ni 1000/6180	Ni 891	Ni 10000/5000	Ni 10000/6180
Measuring range	-50 to 100 °C				
Maximum measuring DC current	1 mA	1 mA	1 mA	0.3 mA	0.3 mA

Sensor type (K – with connector)	NS 113x NS 113xK	PTS 110x PTS 110xK	PTS 210x PTS 210xK	PTS 310x PTS 310xK	HS 110x HS 110xK
Type of sensing element	T1 = Ni 2226	Pt 100/3850	Pt 500/3850	Pt 1000/3850	thermistor NTC 20 kΩ
Measuring range	-50 to 100 °C				
Maximum measuring DC current	0.7 mA	3 mA	1.5 mA	1 mA	1 mW *)

*) maximum power consumption

Sensor type (K – with connector)	NS 510A NS 510AK	NS 710x NS 710xK	Note
Type of sensing element	Pt 1000/3850	Pt 1000/3850	
Output signal	4 to 20 mA	0 to 10 V	
Measuring ranges**)	-30 to 60 °C 0 to 35 °C 0 to 100 °C 0 to 150 °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}	15 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	> 10 kΩ	
Output signal - sensing element break	> 24 mA	> 10.5 V	
Output signal - sensing element short circuit	< 3.5 mA	~ 0 V	

Note: x = version A or version B

**)According to the customer's requirement, it is possible to provide a customized measuring range from -40 to 150 °C; the minimum span of the range must be 35 °C (e.g. -20 to 15 °C; -30 to 80 °C)

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 NS 510A(K), NS 710x(K)	NS 510A ± 1.5 °C (based on air flow speed) NS 710A 0.6 % of the measuring range, min. 0.5 °C
Sensor connection	according to the wiring diagram
Standard length of the stem (version A)	for resistance output and for output 0 to 10 V: 25 mm for output 4 to 20 mA: 50 mm
Time response	$\tau_{0.5} < 9$ s (in air flow at 1 m s^{-1}) – version A $\tau_{0.5} \leq 30$ s (in air flow at 1 m s^{-1}) – version B
Recommended wire cross section – sensors with grommet	0.35 to 1.5 mm ²
Type of connector in the head – sensors with connector	RSFM4 - Lumberg
Insulation resistance	$> 200 \text{ M}\Omega$ at 500 V _{DC} , $25^\circ \pm 3$ °C; humidity < 85 %
Ingress protection	IP 65 in accordance with EN 60529, as amended
Material of the sensor stem	stainless steel DIN 1.4301 – version A
Material of the connection head	POLYAMIDE
Operating conditions	ambient temperature: -50 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

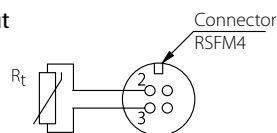
SENSOR WITH THE GROMMET:

With a resistance output



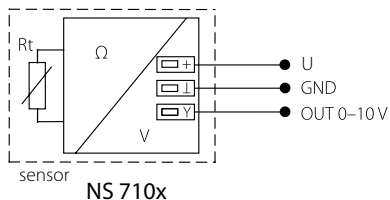
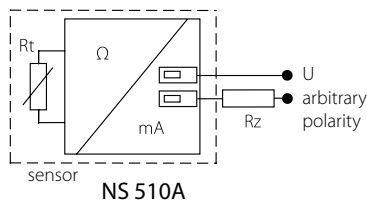
SENSOR WITH CONNECTOR:

With a resistance output



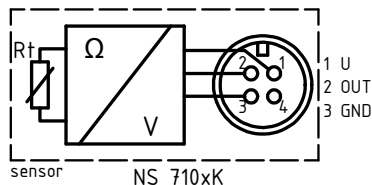
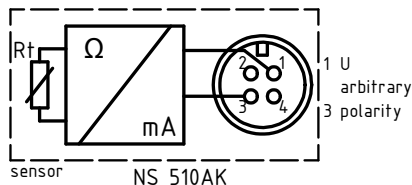
SENSOR WITH THE GROMMET:

With a converter



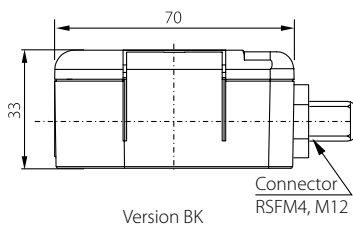
SENSOR WITH CONNECTOR:

With converter

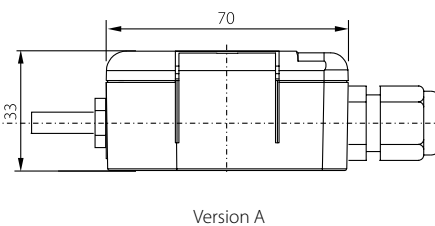
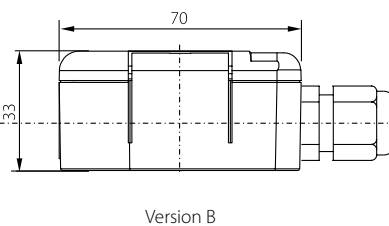


DIMENSIONAL DRAFT

Sensors with connector



Sensors with the grommet:



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
- possibility of providing custom temperature ranges for temperature sensors with converter

