

CONTACT TEMPERATURE SENSORS WITH A PLASTIC CONNECTION HEAD

011.19en

DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for contact surface temperature measurement. The sensors, which are available including the fastening strap and a closing device are suitable for temperature measurements on piping. The plastic connection head is provided with a cable outlet ending (the terminal board is placed in the connection head) or a connector. The standard operating temperature range is -50 to 130 °C. The proper sensing element is constructed to be isolated from the ambient influence. 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.



TEMPERATURE SENSORS WITH A CONNECTION HEAD

ACCESSORIES

- lead-in connector CONEC 43-00092
- connection cable with the straight-type RKT connector or with the rectangular-type RKWT connector
- thermal conductive paste up to 200 °C, 5g

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)	NS 140 NS 140K	NS 141 NS 141K	NS 142 NS 142K	NS 340 NS 340K	NS 341 NS 341K
Type of sensing element	Ni 1000/5000	Ni 1000/6180	Ni 891	Ni 10000/5000	Ni 10000/6180
Measuring range	-50 to 130 °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)	NS 143 NS 143K	PTS 140 PTS 140K	PTS 240 PTS 240K	PTS 340 PTS 340K	HS 140 HS 140K
Type of sensing element	T1 = Ni 2226	Pt 100/3850	Pt 500/3850	Pt 1000/3850	thermistor NTC 20 kΩ
Measuring range	-50 to 130 °C (connection head ambient temperature -30 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 540 NS 540K	NS 740 NS 740K	Note
Type of sensing element	Pt 1000/3850	Pt 1000/3850	
Output signal	4 to 20 mA	0 to 10 V	
Measuring ranges**)	-50 to 50 °C -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	

**)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: class B, $t = \pm (0.4 + 0.007t)$, for $t \geq 0$; $t = \pm (0.4 + 0.028 t)$, for $t \leq 0$ in °C; Pt sensing elements: class B 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 for NS 540(K), NS 740(K) (*), (**)	< 0.6 % of the measuring range, minimum 0.5 °C
Sensor connection	according to the wiring diagram
Time response	$\tau_{0.5} < 13$ s (on the smooth surface without paste)
Recommended wire cross section - sensors with the grommet	0.35 to 1.5 mm ²
Type of connector in the head - sensors with connector	RSFM4 - Lumberg
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 case	brass
Material of connection head	POLYAMIDE
Standard strap length	40 cm
Minimum pipe diameter	20 mm
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

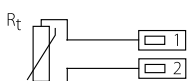
*) The temperature sensor's measurement error is dependent on the influence of ambient temperature, environmental variables and the characteristics of the measured surface (error of method).

**) It is recommended to apply heat-conducting paste or silicon grease to the measured surface, which will ensure faster response time and minimise the measurement error of the contact temperature sensor.

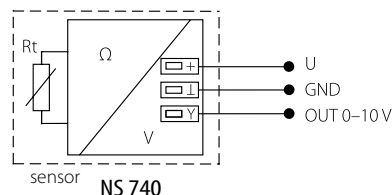
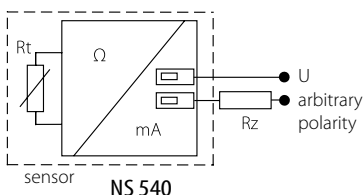
WIRING DIAGRAM

SENSORS WITH THE GROMMET:

With resistance output

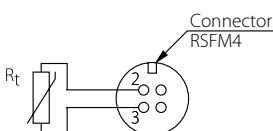


With the converter

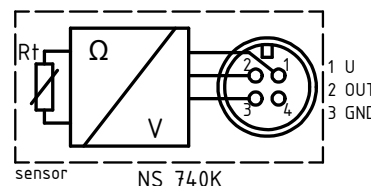
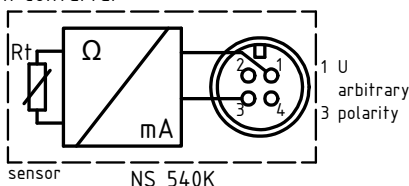


SENSORS WITH THE CONNECTOR:

With resistance output

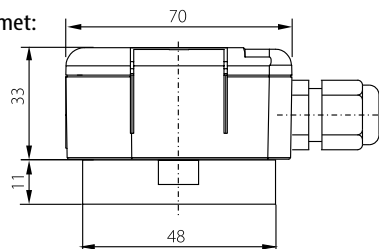


With converter

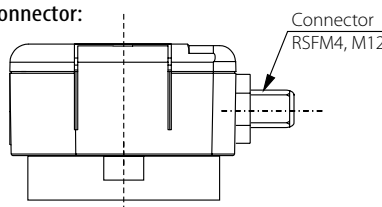


DIMENSIONAL DRAFT

Sensors with the grommet:



Sensors with the connector:



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
- various length of the fastening strap
- possibility of providing custom temperature ranges for temperature sensors with converter

